



# HELLERDEX SOLID DRILLING TOOLS

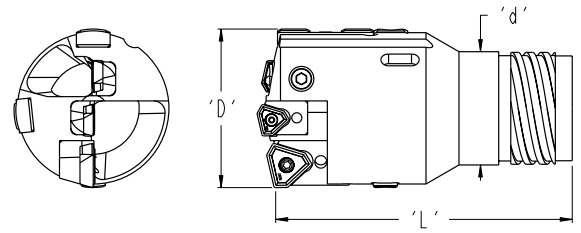
Diameter range 38.00 mm - 245.99mm (1.496 in - 9.684 in)



# HellerDex Standard 4 Start Thread Single Tube

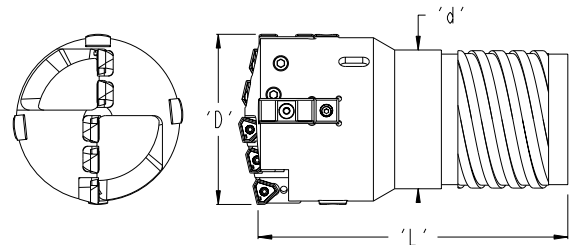
## HellerDex, 3 Cartridge Style, Outer Four Start Thread, Single Tube

| Drill              | Item Code     | Drill Tube | Dimensions |          |          |
|--------------------|---------------|------------|------------|----------|----------|
| 'D'                |               |            | Tube OD    | 'L'      | 'd'      |
| 38.00 - 39.60 mm   | HDSM#####M407 | 07         | 33 mm      | 85 mm    | 30 mm    |
| 1.496 - 1.559 in   | HDS#####M407  |            | 1.299 in   | 3.346 in | 1.181 in |
| 39.61 - 43.00 mm   | HDSM#####M408 | 08         | 36 mm      | 85 mm    | 33 mm    |
| 1.559 - 1.692 in   | HDS#####M408  |            | 1.417 in   | 3.346 in | 1.299 in |
| 43.01 - 47.00 mm   | HDSM#####M409 | 09         | 39 mm      | 95 mm    | 36 mm    |
| 1.693 - 1.850 in   | HDS#####M409  |            | 1.535 in   | 3.740 in | 1.417 in |
| 47.01 - 51.70 mm   | HDSM#####M410 | 10         | 43 mm      | 95 mm    | 39 mm    |
| 1.851 - 2.035 in   | HDS#####M410  |            | 1.693 in   | 3.740 in | 1.535 in |
| 51.71 - 56.20 mm   | HDSM#####M411 | 11         | 47 mm      | 100 mm   | 43 mm    |
| 2.036 - 2.212 in   | HDS#####M411  |            | 1.850 in   | 3.937 in | 1.693 in |
| 56.21 - 60.60 mm   | HDSM#####M412 | 12         | 51 mm      | 110 mm   | 47 mm    |
| 2.213 - 2.385 in   | HDS#####M412  |            | 2.008 in   | 4.331 in | 1.850 in |
| 60.61 - 65.00 mm   | HDSM#####M413 | 13         | 56 mm      | 110 mm   | 51 mm    |
| 2.386 - 2.559 in   | HDS#####M413  |            | 2.205 in   | 4.331 in | 2.008 in |
| 65.00 - 66.99 mm   | HDSM#####M414 | 14         | 56 mm      | 150 mm   | 52 mm    |
| 2.559 - 2.637 in   | HDS#####M414  |            | 2.205 in   | 5.905 in | 2.047 in |
| 67.00 - 72.99 mm   | HDSM#####M415 | 15         | 62 mm      | 150 mm   | 58 mm    |
| 2.638 - 2.873 in   | HDS#####M415  |            | 2.441 in   | 5.905 in | 2.283 in |
| 73.00 - 79.99 mm   | HDSM#####M416 | 16         | 68 mm      | 150 mm   | 63 mm    |
| 2.874 - 3.149 in   | HDS#####M416  |            | 2.677 in   | 5.905 in | 2.480 in |
| 80.00 - 86.99 mm   | HDSM#####M417 | 17         | 75 mm      | 180 mm   | 70 mm    |
| 3.150 - 3.424 in   | HDS#####M417  |            | 2.953 in   | 7.087 in | 2.756 in |
| 87.00 - 99.99 mm   | HDSM#####M418 | 18         | 82 mm      | 180 mm   | 77 mm    |
| 3.425 - 3.936 in   | HDS#####M418  |            | 3.228 in   | 7.087 in | 3.031 in |
| 100.00 - 106.99 mm | HDSM#####M419 | 19         | 94 mm      | 180 mm   | 89 mm    |
| 3.937 - 4.212 in   | HDS#####M419  |            | 3.701 in   | 7.087 in | 3.504 in |



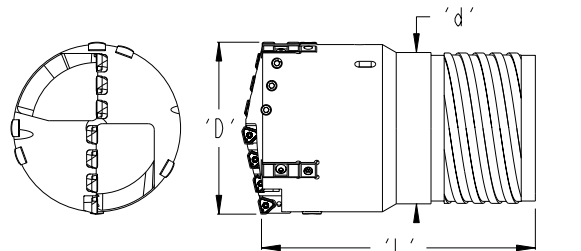
## HellerDex, 5 Cartridge Style, Outer Four Start Thread, Single Tube

| Drill              | Item Code     | Drill Tube | Dimensions |          |          |
|--------------------|---------------|------------|------------|----------|----------|
| 'D'                |               |            | Tube OD    | 'L'      | 'd'      |
| 107.00 - 111.99 mm | HDSM#####M419 | 19         | 94 mm      | 180 mm   | 89 mm    |
| 4.213 - 4.409 in   | HDS#####M419  |            | 3.701 in   | 7.087 in | 3.504 in |
| 112.00 - 123.99 mm | HDSM#####M420 | 20         | 106 mm     | 205 mm   | 101 mm   |
| 4.410 - 4.881 in   | HDS#####M420  |            | 4.173 in   | 8.071 in | 3.976 in |
| 124.00 - 135.99 mm | HDSM#####M421 | 21         | 118 mm     | 205 mm   | 113 mm   |
| 4.882 - 5.353 in   | HDS#####M421  |            | 4.646 in   | 8.071 in | 4.449 in |
| 136.00 - 147.99 mm | HDSM#####M422 | 22         | 130 mm     | 205 mm   | 125 mm   |
| 5.354 - 5.826 in   | HDS#####M422  |            | 5.118 in   | 8.071 in | 4.921 in |
| 148.00 - 159.99 mm | HDSM#####M423 | 23         | 142 mm     | 225 mm   | 137 mm   |
| 5.827 - 6.298 in   | HDS#####M423  |            | 5.591 in   | 8.858 in | 5.394 in |
| 160.00 - 168.99 mm | HDSM#####M424 | 24         | 154 mm     | 225 mm   | 149 mm   |
| 6.299 - 6.653 in   | HDS#####M424  |            | 6.063 in   | 8.858 in | 5.866 in |



## HellerDex, 7 Cartridge Style, Outer Four Start Thread, Single Tube

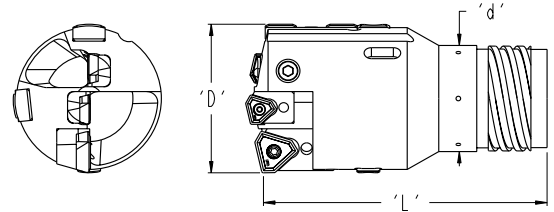
| Drill              | Item Code     | Drill Tube | Dimensions |           |          |
|--------------------|---------------|------------|------------|-----------|----------|
| 'D'                |               |            | Tube OD    | 'L'       | 'd'      |
| 169.00 - 171.99 mm | HDSM#####M424 | 24         | 154 mm     | 250 mm    | 149 mm   |
| 6.654 - 6.771 in   | HDS#####M424  |            | 6.063 in   | 9.842 in  | 5.866 in |
| 172.00 - 183.99 mm | HDSM#####M425 | 25         | 166 mm     | 250 mm    | 161 mm   |
| 6.772 - 7.243 in   | HDS#####M425  |            | 6.535 in   | 9.842 in  | 6.339 in |
| 184.00 - 195.99 mm | HDSM#####M426 | 26         | 178 mm     | 270 mm    | 173 mm   |
| 7.244 - 7.716 in   | HDS#####M426  |            | 7.008 in   | 10.630 in | 6.811 in |
| 196.00 - 207.99 mm | HDSM#####M427 | 27         | 190 mm     | 270 mm    | 185 mm   |
| 7.717 - 8.188 in   | HDS#####M427  |            | 7.480 in   | 10.630 in | 7.283 in |
| 208.00 - 219.99 mm | HDSM#####M428 | 28         | 202 mm     | 270 mm    | 197 mm   |
| 8.189 - 8.660 in   | HDS#####M428  |            | 7.953 in   | 10.630 in | 7.756 in |
| 220.00 - 231.99 mm | HDSM#####M429 | 29         | 214 mm     | 290 mm    | 208 mm   |
| 8.661 - 9.133 in   | HDS#####M429  |            | 8.425 in   | 11.417 in | 8.189 in |
| 232.00 - 243.99 mm | HDSM#####M430 | 30         | 226 mm     | 290 mm    | 220 mm   |
| 9.134 - 9.605 in   | HDS#####M430  |            | 8.898 in   | 11.417 in | 8.661 in |



# HellerDex 4 Start Thread Double Tube

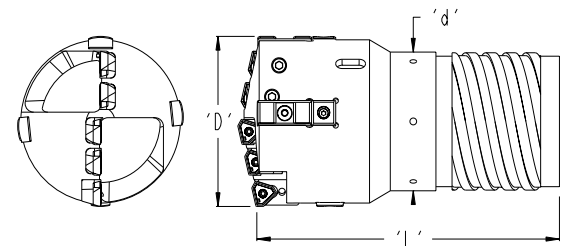
## HellerDex, 3 Cartridge Style, Outer Four Start Thread, Double Tube

| Drill              | Item Code     | Drill Tube | Dimensions |          |          |
|--------------------|---------------|------------|------------|----------|----------|
| 'D'                |               |            | Tube OD    | 'L'      | 'd'      |
| 38.00 - 39.60 mm   | HDDM#####M408 | 08         | 35,5 mm    | 85 mm    | 33 mm    |
| 1.496 - 1.559 in   | HDD#####M408  |            | 1.398 in   | 3.346 in | 1.299 in |
| 39.61 - 43.00 mm   | HDDM#####M409 | 09         | 39 mm      | 85 mm    | 36 mm    |
| 1.559 - 1.692 in   | HDD#####M409  |            | 1.535 in   | 3.346 in | 1.417 in |
| 43.01 - 47.00 mm   | HDDM#####M410 | 10         | 42.5 mm    | 95 mm    | 39 mm    |
| 1.693 - 1.850 in   | HDD#####M410  |            | 1.673 in   | 3.740 in | 1.535 in |
| 47.01 - 51.70 mm   | HDDM#####M411 | 11         | 46.5 mm    | 95 mm    | 43 mm    |
| 1.851 - 2.035 in   | HDD#####M411  |            | 1.831 in   | 3.740 in | 1.693 in |
| 51.71 - 56.20 mm   | HDDM#####M412 | 12         | 51 mm      | 100 mm   | 47 mm    |
| 2.036 - 2.212 in   | HDD#####M412  |            | 2.008 in   | 3.937 in | 1.850 in |
| 56.21 - 65.00 mm   | HDDM#####M413 | 13         | 55.5 mm    | 110 mm   | 51 mm    |
| 2.213 - 2.559 in   | HDD#####M413  |            | 2.185 in   | 4.331 in | 2.008 in |
| 65.00 - 66.99 mm   | HDDM#####M414 | 14         | 56 mm      | 150 mm   | 52 mm    |
| 2.559 - 2.637 in   | HDD#####M414  |            | 2.205 in   | 5.905 in | 2.047 in |
| 67.00 - 72.99 mm   | HDDM#####M415 | 15         | 62 mm      | 150 mm   | 58 mm    |
| 2.638 - 2.873 in   | HDD#####M415  |            | 2.441 in   | 5.905 in | 2.283 in |
| 73.00 - 79.99 mm   | HDDM#####M416 | 16         | 68 mm      | 150 mm   | 63 mm    |
| 2.874 - 3.149 in   | HDD#####M416  |            | 2.677 in   | 5.905 in | 2.480 in |
| 80.00 - 86.99 mm   | HDDM#####M417 | 17         | 75 mm      | 180 mm   | 70 mm    |
| 3.150 - 3.424 in   | HDD#####M417  |            | 2.953 in   | 7.087 in | 2.756 in |
| 87.00 - 99.99 mm   | HDDM#####M418 | 18         | 82 mm      | 180 mm   | 77 mm    |
| 3.425 - 3.936 in   | HDD#####M418  |            | 3.228 in   | 7.087 in | 3.031 in |
| 100.00 - 106.99 mm | HDDM#####M419 | 19         | 94 mm      | 180 mm   | 89 mm    |
| 3.937 - 4.212 in   | HDD#####M419  |            | 3.701 in   | 7.087 in | 3.504 in |



## HellerDex, 5 Cartridge Style, Outer Four Start Thread, Double Tube

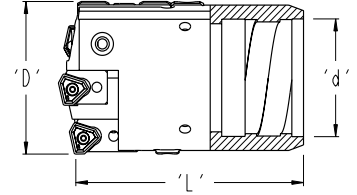
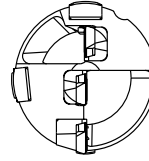
| Drill              | Item Code     | Drill Tube | Dimensions |          |          |
|--------------------|---------------|------------|------------|----------|----------|
| 'D'                |               |            | Tube OD    | 'L'      | 'd'      |
| 107.00 - 111.99 mm | HDDM#####M419 | 19         | 94 mm      | 180 mm   | 89 mm    |
| 4.213 - 4.409 in   | HDD#####M419  |            | 3.701 in   | 7.087 in | 3.504 in |
| 112.00 - 123.99 mm | HDDM#####M420 | 20         | 106 mm     | 205 mm   | 101 mm   |
| 4.410 - 4.881 in   | HDD#####M420  |            | 4.173 in   | 8.071 in | 3.976 in |
| 124.00 - 135.99 mm | HDDM#####M421 | 21         | 118 mm     | 205 mm   | 113 mm   |
| 4.882 - 5.353 in   | HDD#####M421  |            | 4.646 in   | 8.071 in | 4.449 in |
| 136.00 - 147.99 mm | HDDM#####M422 | 22         | 130 mm     | 205 mm   | 125 mm   |
| 5.354 - 5.826 in   | HDD#####M422  |            | 5.118 in   | 8.071 in | 4.921 in |
| 148.00 - 159.99 mm | HDDM#####M423 | 23         | 142 mm     | 225 mm   | 137 mm   |
| 5.827 - 6.298 in   | HDD#####M423  |            | 5.591 in   | 8.858 in | 5.394 in |
| 160.00 - 168.99 mm | HDDM#####M424 | 24         | 154 mm     | 225 mm   | 149 mm   |
| 6.299 - 6.653 in   | HDD#####M424  |            | 6.063 in   | 8.858 in | 5.866 in |



# HellerDex Single Start Thread Single Tube

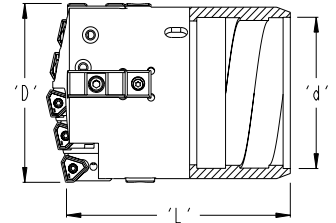
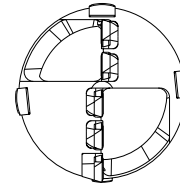
## HellerDex, 3 Cartridge Style, Inner Single Start Thread, Single Tube

| Drill            | Item Code     | Drill Tube | Dimensions |          |          |
|------------------|---------------|------------|------------|----------|----------|
| 'D'              |               |            | Tube OD    | 'L'      | 'd'      |
| 38.00 - 39.99 mm | HDSM#####F108 | 08M        | 33 mm      | 80 mm    | 30 mm    |
| 1.496 - 1.574 in | HDS#####F108  |            | 1.299 in   | 3.150 in | 1.181 in |
| 40.00 - 43.99 mm | HDSM#####F109 | 09M        | 36 mm      | 80 mm    | 33 mm    |
| 1.575 - 1.731 in | HDS#####F109  |            | 1.417 in   | 3.150 in | 1.299 in |
| 44.00 - 46.99 mm | HDSM#####F110 | 10M        | 39 mm      | 90 mm    | 37 mm    |
| 1.732 - 1.849 in | HDS#####F110  |            | 1.535 in   | 3.543 in | 1.457 in |
| 47.00 - 51.99 mm | HDSM#####F111 | 11M        | 43 mm      | 90 mm    | 41 mm    |
| 1.850 - 2.046 in | HDS#####F111  |            | 1.693 in   | 3.543 in | 1.614 in |
| 52.00 - 56.99 mm | HDSM#####F112 | 12M        | 47 mm      | 100 mm   | 44 mm    |
| 2.047 - 2.243 in | HDS#####F112  |            | 1.850 in   | 3.937 in | 1.732 in |
| 57.00 - 60.99 mm | HDSM#####F113 | 13M        | 51 mm      | 110 mm   | 49 mm    |
| 2.244 - 2.401 in | HDS#####F113  |            | 2.008 in   | 4.331 in | 1.929 in |
| 61.00 - 67.99 mm | HDSM#####F114 | 14M        | 56 mm      | 110 mm   | 53 mm    |
| 2.402 - 2.676 in | HDS#####F114  |            | 2.205 in   | 4.331 in | 2.087 in |
| 68.00 - 74.99 mm | HDSM#####F115 | 15M        | 62 mm      | 120 mm   | 59 mm    |
| 2.677 - 2.952 in | HDS#####F115  |            | 2.441 in   | 4.724 in | 2.323 in |
| 75.00 - 80.99 mm | HDSM#####F116 | 16M        | 68 mm      | 150 mm   | 65 mm    |
| 2.953 - 3.188 in | HDS#####F116  |            | 2.677 in   | 5.905 in | 2.559 in |
| 81.00 - 90.99 mm | HDSM#####F117 | 17M        | 75 mm      | 150 mm   | 71 mm    |
| 3.189 - 3.582 in | HDS#####F117  |            | 2.953 in   | 5.905 in | 2.795 in |
| 91.00 - 98.99 mm | HDSM#####F118 | 18M        | 82 mm      | 150 mm   | 79 mm    |
| 3.583 - 3.897 in | HDS#####F118  |            | 3.228 in   | 5.905 in | 3.110 in |
| 99.00 - 106.99   | HDSM#####F119 | 19M        | 94 mm      | 150 mm   | 90 mm    |
| 3.898 - 4.212 in | HDS#####F119  |            | 3.701 in   | 5.905 in | 3.543 in |



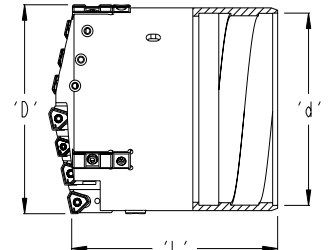
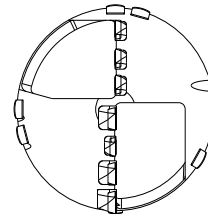
## HellerDex, 5 Cartridge Style, Inner Single Start Thread, Single Tube

| Drill              | Item Code     | Drill Tube | Dimensions |          |          |
|--------------------|---------------|------------|------------|----------|----------|
| 'D'                |               |            | Tube OD    | 'L'      | 'd'      |
| 107.00 - 110.99 mm | HDSM#####F119 | 19M        | 94 mm      | 150 mm   | 90 mm    |
| 4.213 - 4.369 in   | HDS#####F119  |            | 3.701 in   | 5.905 in | 3.543 in |
| 111.00 - 122.99 mm | HDSM#####F120 | 20M        | 106 mm     | 150 mm   | 102 mm   |
| 4.370 - 4.842 in   | HDS#####F120  |            | 4.173 in   | 5.905 in | 4.016 in |
| 123.00 - 134.99 mm | HDSM#####F121 | 21M        | 118 mm     | 150 mm   | 114 mm   |
| 4.843 - 5.314 in   | HDS#####F121  |            | 4.646 in   | 5.905 in | 4.488 in |
| 135.00 - 148.99 mm | HDSM#####F122 | 22M        | 130 mm     | 150 mm   | 126 mm   |
| 5.315 - 5.865 in   | HDS#####F122  |            | 5.118 in   | 5.905 in | 4.961 in |
| 149.00 - 161.99 mm | HDSM#####F123 | 23M        | 142 mm     | 150 mm   | 139 mm   |
| 5.866 - 6.377 in   | HDS#####F123  |            | 5.591 in   | 5.905 in | 5.472 in |
| 162.00 - 168.99 mm | HDSM#####F124 | 24M        | 154 mm     | 190 mm   | 151 mm   |
| 6.378 - 6.653 in   | HDS#####F124  |            | 6.063 in   | 7.480 in | 5.945 in |



## HellerDex, 7 Cartridge Style, Inner Single Start Thread, Single Tube

| Drill              | Item Code     | Drill Tube | Dimensions |          |          |
|--------------------|---------------|------------|------------|----------|----------|
| 'D'                |               |            | Tube OD    | 'L'      | 'd'      |
| 169.00 - 173.99 mm | HDSM#####F124 | 24M        | 154 mm     | 190 mm   | 151 mm   |
| 6.654 - 6.849 in   | HDS#####F124  |            | 6.063 in   | 7.480 in | 5.945 in |
| 174.00 - 185.99 mm | HDSM#####F125 | 25M        | 166 mm     | 190 mm   | 163 mm   |
| 6.850 - 7.322 in   | HDS#####F125  |            | 6.535 in   | 7.480 in | 6.417 in |
| 186.00 - 197.99 mm | HDSM#####F126 | 26M        | 178 mm     | 190 mm   | 175 mm   |
| 7.323 - 7.794 in   | HDS#####F126  |            | 7.008 in   | 7.480 in | 6.890 in |
| 198.00 - 209.99 mm | HDSM#####F127 | 27M        | 190 mm     | 190 mm   | 187 mm   |
| 7.795 - 8.267 in   | HDS#####F127  |            | 7.480 in   | 7.480 in | 7.362 in |
| 210.00 - 221.99 mm | HDSM#####F128 | 28M        | 202 mm     | 190 mm   | 199 mm   |
| 8.268 - 8.739 in   | HDS#####F128  |            | 7.953 in   | 7.480 in | 7.835 in |
| 222.00 - 233.99 mm | HDSM#####F129 | 29M        | 214 mm     | 190 mm   | 211 mm   |
| 8.740 - 9.212 in   | HDS#####F129  |            | 8.425 in   | 7.480 in | 8.307 in |
| 234.00 - 245.99 mm | HDSM#####F130 | 30M        | 226 mm     | 190 mm   | 223 mm   |
| 9.213 - 9.684 in   | HDS#####F130  |            | 8.898 in   | 7.480 in | 8.780 in |



## Cartridges & Guide Pads

| Drill Ø            | Peripheral |     | Intermediate |     | Central   |     | Guide Pad    |     | Guide Pad Protector |     |       | Sub Guide Pad |  |
|--------------------|------------|-----|--------------|-----|-----------|-----|--------------|-----|---------------------|-----|-------|---------------|--|
| 'D'                | Cartridge  | Qty | Cartridge    | Qty | Cartridge | Qty | Pad          | Qty | Pad                 | Qty | Pad   | Qty           |  |
| 38.00-39.99 mm     | CTHDN05RO  | 1   | CTHDN05RI    | 1   | CTHDN05RI | 1   | GPB0825D0350 | 2   | GPT08               | 2   | CUG08 | 1             |  |
| 1.496 - 1.574 in   |            |     |              |     |           |     |              |     |                     |     |       |               |  |
| 40.00 - 44.99 mm   | CTHDT04RO  | 1   | CTHDN05RI    | 1   | CTHDN05RI | 1   | GPB0825D0350 | 2   | GPT08               | 2   | CUG08 | 1             |  |
| 1.575 - 1.771 in   |            |     |              |     |           |     |              |     |                     |     |       |               |  |
| 45.00 - 47.99 mm   | CTHDT04RO  | 1   | CTHDN05RI    | 1   | CTHDT04RI | 1   | GPB1035D0400 | 2   | GPT10               | 2   | CUG08 | 1             |  |
| 1.772 - 1.889 in   |            |     |              |     |           |     |              |     |                     |     |       |               |  |
| 48.00 - 51.99 mm   | CTHDT04RO  | 1   | CTHDT04RI    | 1   | CTHDT04RI | 1   | GPB1035D0400 | 2   | GPT10               | 2   | CUG08 | 1             |  |
| 1.890 - 2.046 in   |            |     |              |     |           |     |              |     |                     |     |       |               |  |
| 52.00 - 54.99 mm   | CTHDT32RO  | 1   | CTHDT04RI    | 1   | CTHDT04RI | 1   | GPB1035D0400 | 2   | GPT10               | 2   | CUG08 | 1             |  |
| 2.047 - 2.164 in   |            |     |              |     |           |     |              |     |                     |     |       |               |  |
| 55.00 - 57.99 mm   | CTHDT32RO  | 1   | CTHDT04RI    | 1   | CTHDT32RI | 1   | GPB1035D0400 | 2   | GPT10               | 2   | CUG08 | 1             |  |
| 2.165 - 2.283 in   |            |     |              |     |           |     |              |     |                     |     |       |               |  |
| 58.00 - 59.99 mm   | CTHDT32RO  | 1   | CTHDT32RI    | 1   | CTHDT32RI | 1   | GPB1035D0400 | 2   | GPT10               | 2   | CUG08 | 1             |  |
| 2.284 - 2.361 in   |            |     |              |     |           |     |              |     |                     |     |       |               |  |
| 60.00 - 63.99 mm   | CTHDT32RO  | 1   | CTHDT32RI    | 1   | CTHDT32RI | 1   | GPB1440D0500 | 2   | GPT14               | 2   | CUG08 | 1             |  |
| 2.362 - 2.519 in   |            |     |              |     |           |     |              |     |                     |     |       |               |  |
| 64.00 - 67.99 mm   | CTHDT43RO  | 1   | CTHDT32RI    | 1   | CTHDT32RI | 1   | GPB1440D0500 | 2   | GPT14               | 2   | CUG10 | 1             |  |
| 2.520 - 2.676 in   |            |     |              |     |           |     |              |     |                     |     |       |               |  |
| 68.00 - 77.99 mm   | CTHDT32RO  | 1   | CTHDT43RI    | 1   | CTHDT43RI | 1   | GPB1440D0500 | 2   | GPT14               | 2   | CUG10 | 1             |  |
| 2.677 - 3.070 in   |            |     |              |     |           |     |              |     |                     |     |       |               |  |
| 78.00 - 84.99 mm   | CTHDT43RO  | 1   | CTHDT43RI    | 1   | CTHDT43RI | 1   | GPB1440D0500 | 2   | GPT14               | 2   | CUG10 | 1             |  |
| 3.071 - 3.346 in   |            |     |              |     |           |     |              |     |                     |     |       |               |  |
| 85.00 - 91.99 mm   | CTHDT63RO  | 1   | CTHDT43RI    | 1   | CTHDT43RI | 1   | GPB1440D0500 | 2   | GPT14               | 2   | CUG10 | 1             |  |
| 3.347 - 3.621 in   |            |     |              |     |           |     |              |     |                     |     |       |               |  |
| 92.00 - 98.99 mm   | CTHDT43RO  | 1   | CTHDT63RI    | 1   | CTHDT63RI | 1   | GPB1440D0500 | 3   | GPT14               | 3   | CUG10 | 1             |  |
| 3.622 - 3.897 in   |            |     |              |     |           |     |              |     |                     |     |       |               |  |
| 99.00 - 106.99 mm  | CTHDT63RO  | 1   | CTHDT63RI    | 1   | CTHDT63RI | 1   | GPB1840D0600 | 3   | GPT18               | 3   | CUG14 | 1             |  |
| 3.898 - 4.212 in   |            |     |              |     |           |     |              |     |                     |     |       |               |  |
| 107.00 - 117.99 mm | CTHDT43RO  | 1   | CTHDT32RI    | 3   | CTHDT43RI | 1   | GPB1840D0600 | 3   | GPT18               | 3   | CUG14 | 1             |  |
| 4.213 - 4.645 in   |            |     |              |     |           |     |              |     |                     |     |       |               |  |
| 118.00 - 135.99 mm | CTHDT43RO  | 1   | CTHDT43RI    | 2   | CTHDT43RI | 2   | GPB1840D0600 | 3   | GPT18               | 3   | CUG14 | 1             |  |
| 4.646 - 5.353 in   |            |     |              |     |           |     |              |     |                     |     |       |               |  |
| 136.00 - 144.99 mm | CTHDT43RO  | 1   | CTHDT43RI    | 3   | CTHDT63RI | 1   | GPB1840D0600 | 5   | GPT18               | 5   | CUG14 | 1             |  |
| 5.354 - 5.708 in   |            |     |              |     |           |     |              |     |                     |     |       |               |  |
| 145.00 - 150.99 mm | CTHDT43RO  | 1   | CTHDT43RI    | 2   | CTHDT63RI | 2   | GPB1840D0600 | 5   | GPT18               | 5   | CUG14 | 1             |  |
| 5.709 - 5.944 in   |            |     |              |     |           |     |              |     |                     |     |       |               |  |
| 151.00 - 156.99 mm | CTHDT63RO  | 1   | CTHDT43RI    | 2   | CTHDT63RI | 2   | GPB1840D0600 | 5   | GPT18               | 5   | CUG14 | 1             |  |
| 5.945 - 6.180 in   |            |     |              |     |           |     |              |     |                     |     |       |               |  |
| 157.00 - 162.99 mm | CTHDT63RO  | 1   | CTHDT43RI    | 1   | CTHDT63RI | 3   | GPB1840D0600 | 5   | GPT18               | 5   | CUG14 | 1             |  |
| 6.181 - 6.416 in   |            |     |              |     |           |     |              |     |                     |     |       |               |  |
| 163.00 - 168.99 mm | CTHDT63RO  | 1   | CTHDT63RI    | 2   | CTHDT63RI | 2   | GPB1840D0600 | 5   | GPT18               | 5   | CUG14 | 1             |  |
| 6.417 - 6.653 in   |            |     |              |     |           |     |              |     |                     |     |       |               |  |
| 169.00 - 188.99 mm | CTHDT43RO  | 1   | CTHDT43RI    | 3   | CTHDT43RI | 3   | GPB1840D0600 | 5   | GPT18               | 5   | CUG14 | 1             |  |
| 6.654 - 7.440 in   |            |     |              |     |           |     |              |     |                     |     |       |               |  |
| 189.00 - 196.99 mm | CTHDT43RO  | 1   | CTHDT43RI    | 5   | CTHDT63RI | 1   | GPB1840D0600 | 5   | GPT18               | 5   | CUG14 | 1             |  |
| 7.441 - 7.755 in   |            |     |              |     |           |     |              |     |                     |     |       |               |  |
| 197.00 - 202.99 mm | CTHDT43RO  | 1   | CTHDT43RI    | 4   | CTHDT63RI | 2   | GPB1840D0600 | 5   | GPT18               | 5   | CUG14 | 1             |  |
| 7.756 - 7.991 in   |            |     |              |     |           |     |              |     |                     |     |       |               |  |
| 203.00 - 208.99 mm | CTHDT43RO  | 1   | CTHDT43RI    | 3   | CTHDT63RI | 3   | GPB1840D0600 | 5   | GPT18               | 5   | CUG14 | 1             |  |
| 7.992 - 8.227 in   |            |     |              |     |           |     |              |     |                     |     |       |               |  |
| 209.00 - 214.99 mm | CTHDT63RO  | 1   | CTHDT43RI    | 3   | CTHDT63RI | 3   | GPB1840D0600 | 5   | GPT18               | 5   | CUG14 | 1             |  |
| 8.228 - 8.464 in   |            |     |              |     |           |     |              |     |                     |     |       |               |  |
| 215.00 - 220.99 mm | CTHDT63RO  | 1   | CTHDT43RI    | 2   | CTHDT63RI | 4   | GPB1840D0600 | 5   | GPT18               | 5   | CUG14 | 1             |  |
| 8.465 - 8.700 in   |            |     |              |     |           |     |              |     |                     |     |       |               |  |
| 221.00 - 226.99 mm | CTHDT63RO  | 1   | CTHDT43RI    | 1   | CTHDT63RI | 5   | GPB1840D0600 | 5   | GPT18               | 5   | CUG14 | 1             |  |
| 8.701 - 9.684 in   |            |     |              |     |           |     |              |     |                     |     |       |               |  |

# Insert & Screws

| Outer Cartridge |                 |           |              |                  |
|-----------------|-----------------|-----------|--------------|------------------|
| Cartridge       | Cartridge Screw | Insert    | Insert Screw | Adjustment Screw |
| CTHDN05RO       | PHSM-500        | BTHDN05R* | PHSM-1258    | PHSM-1283        |
| CTHDT04RO       | PHSM-1241       | BTHDT04R* | PHSM-1260    | PHSM-1242        |
| CTHDT32RO       | PHSM-432        | BTHDT32R* | PHSM-1263    | PHSM-1243        |
| CTHDT43RO       | PHSM-541        | BTHDT43R* | PHSM-1267    | PHSM-1243        |
| CTHDT63RO       | PHSM-541        | BTHDT63R* | PHSM-1269    | PHSM-1244        |

NOTE\*: The following Grade/Coatings are available for all inserts: B1FC for standard steel and stainless steel B1TM for Nickel based alloys. Ex.BTHDT43RBITM

| Inner Cartridge |                 |          |              |
|-----------------|-----------------|----------|--------------|
| Cartridge       | Cartridge Screw | Insert   | Insert Screw |
| CTHDN05RI       | PHSM-500        | BTHDN05R | PHSM-1258    |
| CTHDT04RI       | PHSM-1282       | BTHDT04R | PHSM-1260    |
| CTHDT32RI       | PHSM-401        | BTHDT32R | PHSM-1263    |
| CTHDT43RI       | PHSM-405        | BTHDT43R | PHSM-1267    |
| CTHDT63RI       | PHSM-405        | BTHDT63R | PHSM-1269    |

| Guide Pad    |           |
|--------------|-----------|
| Pad          | Pad Screw |
| GPB0825D0350 | PHSM-500  |
| GPB1035D0400 | PHSM-623  |
| GPB1440D0500 | PHSM-472  |
| GPB1840D0600 | PHSM-1280 |

| Guide Pad Protector |           |
|---------------------|-----------|
| Pad                 | Pad Screw |
| GPT08               | PHSM-1266 |
| GPT10               | PHSM-1267 |
| GPT14               | PHSM-1257 |
| GPT18               | PHSM-1276 |

| Sub Guide Pad |           |
|---------------|-----------|
| Pad           | Pad Screw |
| CUG08         | PHSM-1266 |
| CUG10         | PHSM-1266 |
| CUG14         | PHSM-1257 |

## Plus Size Cartridges & Guide Pads

| Plus Size Outer Cartridge |              |              |              |              |              |
|---------------------------|--------------|--------------|--------------|--------------|--------------|
| Cartridge                 | + 1 mm       | + 2 mm       | + 3 mm       | + 4 mm       | + 5 mm       |
| CTHDN05RO                 | CTHDN05ROP10 | CTHDN05ROP20 |              |              |              |
| CTHDT04RO                 | CTHDT04ROP10 | CTHDT04ROP20 | CTHDT04ROP30 |              |              |
| CTHDT32RO                 | CTHDT32ROP10 | CTHDT32ROP20 | CTHDT32ROP30 | CTHDT32ROP40 | CTHDT32ROP50 |
| CTHDT43RO                 | CTHDT43ROP10 | CTHDT43ROP20 | CTHDT43ROP30 | CTHDT43ROP40 | CTHDT43ROP50 |
| CTHDT63RO                 | CTHDT63ROP10 | CTHDT63ROP20 | CTHDT63ROP30 | CTHDT63ROP40 | CTHDT63ROP50 |

| Plus Size Guide Pad |                 |                 |                 |                 |                 |
|---------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Guide Pad           | + 1 mm          | + 2 mm          | + 3 mm          | + 4 mm          | + 5 mm          |
| GPB0825D0350        | GPB0825D0350P10 | GPB0825D0350P20 | GPB0825D0350P30 |                 |                 |
| GPB1035D0400        | GPB1035D0400P10 | GPB1035D0400P20 | GPB1035D0400P30 | GPB1035D0400P40 |                 |
| GPB1440D0500        | GPB1440D0500P10 | GPB1440D0500P20 | GPB1440D0500P30 | GPB1440D0500P40 | GPB1440D0500P50 |
| GPB1840D0600        | GPB1840D0600P10 | GPB1840D0600P20 | GPB1840D0600P30 | GPB1840D0600P40 | GPB1840D0600P50 |



# Sunnen's SHDD Series Deep Hole Drills

## Easy-to-use, efficient, heavy-duty



- **Available in three standard models**
  - 2-meter maximum part length (SHDD-2500)
  - 4-meter maximum part length (SHDD-4500)
  - 6-meter maximum part length (SHDD-6500)
- Large 394 mm (15.5 in) color HMI with intuitive controls for ease of use.
- Heavy-duty Bosch-Rexroth 55 mm (2.16 in) linear rails for maximum durability.
- Standard safety system with a combination of multiple E-stops, light curtains, interlocked guarding and fencing.
- Standard 67 kw (90 hp) tool motor with headstock drive for optimum power.
- Standard 38 kw (50 HP) workpiece headstock drive (counter rotation).
- Beckhoff servo driven heavy-duty ball screws for tool feed.
  - 80 mm ball screw (3.15 in) SHDD-2500/SHDD-4500
  - 100 mm ball screw (3.84 in) SHDD-6500
- Electrical enclosure air conditioning unit standard to protect critical electronics in high temperature environments.
- Heavy-duty welded base.
- Heavy-duty 3-jaw chucks standard.
- Automatic lubrication system for ball screw, rack and pinion, and linear rails standard.
- Heavy-duty servo rack and pinion driven work piece positioning and clamping.
- Spindle carriage control station for ease of driveshaft installation.
- Sunnen is the complete system supplier ... machines, tools, chip management, cooling systems and cutting fluids.



## Sunnen's Deep Hole Drilling Tools

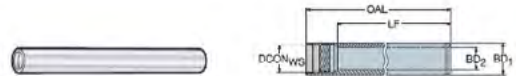
**Offering the lowest cost per hole for identical replacements of discontinued Sandvik Tools**

Sunnen is committed to designing, manufacturing, and delivering world class deep hole machining tools and systems that meet or exceed customer requirements.

Whether a Single Tube, Double Tube, Gun Drilling or other specialty system is needed, Sunnen has the engineering expertise and manufacturing capabilities to meet any deep hole machining requirements.

**Sunnen also offers replacement parts for all of these tools, including inserts, pads, cartridges, shims and screws.**

# SDT Drill Tubes



| D                        |      | DT          |      | 803                                         |      | L01600                         |        | T1                 |                         |
|--------------------------|------|-------------|------|---------------------------------------------|------|--------------------------------|--------|--------------------|-------------------------|
| Tube Type                |      |             |      | Connection Size                             |      | Tube Length                    |        | Threads            |                         |
| Description              | Code | Description | Code | Description                                 | Code | Description                    | Code   | Description        | Code                    |
| Single Tube              | S    | Drill Tube  | DT   | Sandvik Ref. #<br>(Female 4-start thread)   | 803  | Length in Metric<br>(##### mm) | L##### | Threaded One End   | T1                      |
| Double Tube<br>(Ejector) | D    |             |      | Sunnen BTA Style #<br>(Male 1-start thread) | 03M  |                                |        | Threaded Both Ends | T2                      |
|                          |      |             |      | SPECIAL                                     | S##  |                                |        | Flange             | FL                      |
|                          |      |             |      |                                             |      |                                |        | Special            | S## S01, S02, S03, S... |

**NOTES:** Sandvik 794 - 798; 2-Start thread  
 Sandvik 800 - 813; inner tube 30mm longer than outer tube  
 Sandvik 814 - 820; inner tube 190mm longer than outer tube  
 Sandvik 821-825; inner tube 220mm longer than outer tube  
 Sandvik Double tubes 814 and larger, threads on both ends, no inner tube flange

## STS Drill Tube (threaded one end)

| Sunnen #           | Sandvik Ref.      | Connection Size | Tube OD (mm) | Tube ID (mm) | Tube OD (in) | Tube ID (in) |
|--------------------|-------------------|-----------------|--------------|--------------|--------------|--------------|
| SDT-794-L#####-T1  | 420.5-794-L#####  | 794             | 11.0         | 7.0          | 0.433        | 0.276        |
| SDT-795-L#####-T1  | 420.5-795-L#####  | 795             | 12.0         | 8.0          | 0.472        | 0.315        |
| SDT-796-L#####-T1  | 420.5-796-L#####  | 796             | 13.0         | 8.5          | 0.512        | 0.335        |
| SDT-797-L#####-T1  | 420.5-797-L#####  | 797             | 14.0         | 9.0          | 0.551        | 0.354        |
| SDT-798-L#####-T1  | 420.5-798-L#####  | 798             | 15.0         | 10.0         | 0.591        | 0.394        |
| SDT-799-L#####-T1  | 420.5-799-L#####  | 799             | 16.0         | 10.5         | 0.630        | 0.413        |
| SDT-800-L#####-T1  | 420.5-800-L#####  | 800             | 17.0         | 11.5         | 0.669        | 0.453        |
| SDT-801-L#####-T1  | 420.5-801-L#####  | 801             | 18.0         | 12.0         | 0.709        | 0.472        |
| SDT-802-L#####-T1  | 420.5-802-L#####  | 802             | 20.0         | 13.0         | 0.787        | 0.512        |
| SDT-803-L#####-T1  | 420.5-803-L#####  | 803             | 22.0         | 14.0         | 0.866        | 0.551        |
| SDT-804-L#####-T1  | 420.5-804-L#####  | 804             | 24.0         | 15.5         | 0.945        | 0.610        |
| SDT-805-L#####-T1  | 420.5-805-L#####  | 805             | 26.0         | 17.0         | 1.024        | 0.669        |
| SDT-806-L#####-T1  | 420.5-806-L#####  | 806             | 28.0         | 18.5         | 1.102        | 0.728        |
| SDT-807-L#####-T1  | 420.5-807-L#####  | 807             | 30.0         | 20.0         | 1.181        | 0.787        |
| SDT-808-L#####-T1  | 420.5-808-L#####  | 808             | 33.0         | 23.0         | 1.299        | 0.906        |
| SDT-809-L#####-T1  | 420.5-809-L#####  | 809             | 36.0         | 25.5         | 1.417        | 0.984        |
| SDT-810-L#####-T1  | 420.5-810-L#####  | 810             | 39.0         | 28.0         | 1.535        | 1.102        |
| SDT-811-L#####-T1  | 420.5-811-L#####  | 811             | 43.0         | 31.0         | 1.693        | 1.220        |
| SDT-812-L#####-T1  | 420.5-812-L#####  | 812             | 47.0         | 35.0         | 1.850        | 1.378        |
| SDT-813-L#####-T1  | 420.5-813-L#####  | 813             | 51.0         | 39.0         | 2.008        | 1.535        |
| SDT-813E-L#####-T1 | 420.5-813E-L##### | 813E            | 56.0         | 39.0         | 2.205        | 1.614        |



# DDT Drill Tubes

## DTS Drill Tube Outer (threaded one end)



| Sunnen #          | Sandvik Ref.    | Outer Tube | Drilled Hole Diameter (mm) | Drilled Hole Diameter (in) | "Tube OD (mm)" | "Tube ID (mm)" | "Tube OD (in)" | "Tube ID (in)" |
|-------------------|-----------------|------------|----------------------------|----------------------------|----------------|----------------|----------------|----------------|
| DDT-800-L#####-T1 | 424.2-800-L#### | 800        | 18.4 - 20.0                | 0.724 - 0.787              | 18.0           | 12.0           | 0.709          | 0.472          |
| DDT-801-L#####-T1 | 424.2-801-L#### | 801        | 20.0 - 21.8                | 0.788 - 0.858              | 19.5           | 14.0           | 0.768          | 0.551          |
| DDT-802-L#####-T1 | 424.2-802-L#### | 802        | 21.8 - 24.1                | 0.859 - 0.948              | 21.5           | 15.0           | 0.846          | 0.591          |
| DDT-803-L#####-T1 | 424.2-803-L#### | 803        | 24.1 - 26.4                | 0.949 - 1.039              | 23.5           | 16.0           | 0.925          | 0.630          |
| DDT-804-L#####-T1 | 424.2-804-L#### | 804        | 26.4 - 28.7                | 1.040 - 1.130              | 26.0           | 18.0           | 1.024          | 0.709          |
| DDT-805-L#####-T1 | 424.2-805-L#### | 805        | 28.7 - 31.0                | 1.131 - 1.220              | 28.0           | 20.0           | 1.102          | 0.787          |
| DDT-806-L#####-T1 | 424.2-806-L#### | 806        | 31.0 - 33.3                | 1.221 - 1.311              | 30.5           | 22.0           | 1.201          | 0.866          |
| DDT-807-L#####-T1 | 424.2-807-L#### | 807        | 33.3 - 36.2                | 1.312 - 1.425              | 33.0           | 24.0           | 1.299          | 0.945          |
| DDT-808-L#####-T1 | 424.2-808-L#### | 808        | 36.2 - 39.6                | 1.426 - 1.559              | 35.5           | 26.0           | 1.398          | 1.024          |
| DDT-809-L#####-T1 | 424.2-809-L#### | 809        | 39.0 - 43.0                | 1.560 - 1.692              | 39.0           | 29.0           | 1.535          | 1.149          |
| DDT-810-L#####-T1 | 424.2-810-L#### | 810        | 43.0 - 47.0                | 1.693 - 1.850              | 42.5           | 32.0           | 1.673          | 1.260          |
| DDT-811-L#####-T1 | 424.2-811-L#### | 811        | 47.0 - 51.7                | 1.851 - 2.035              | 46.5           | 35.0           | 1.831          | 1.378          |
| DDT-812-L#####-T1 | 424.2-812-L#### | 812        | 51.7 - 56.2                | 2.036 - 2.212              | 51.0           | 39.0           | 2.008          | 1.535          |
| DDT-813-L#####-T1 | 424.2-813-L#### | 813        | 56.2 - 65.0                | 2.213 - 2.559              | 55.5           | 43.0           | 2.185          | 1.693          |

## DTS Drill Tube Inner

| Sunnen #       | Sandvik Ref.    | Inner Tube | "Tube OD (mm)" | "Tube ID (mm)" | "Tube OD (in)" | "Tube ID (in)" |
|----------------|-----------------|------------|----------------|----------------|----------------|----------------|
| DDT-850-L##### | 424.2-850-L#### | 850        | 10.0           | 9.0            | 0.394          | 0.354          |
| DDT-851-L##### | 424.2-851-L#### | 851        | 12.0           | 11.0           | 0.472          | 0.433          |
| DDT-852-L##### | 424.2-852-L#### | 852        | 13.0           | 12.0           | 0.512          | 0.472          |
| DDT-853-L##### | 424.2-853-L#### | 853        | 14.0           | 13.0           | 0.551          | 0.512          |
| DDT-854-L##### | 424.2-854-L#### | 854        | 16.0           | 14.0           | 0.630          | 0.551          |
| DDT-855-L##### | 424.2-855-L#### | 855        | 18.0           | 16.0           | 0.709          | 0.630          |
| DDT-856-L##### | 424.2-856-L#### | 856        | 20.0           | 18.0           | 0.787          | 0.709          |
| DDT-857-L##### | 424.2-857-L#### | 857        | 22.0           | 20.0           | 0.866          | 0.787          |
| DDT-858-L##### | 424.2-858-L#### | 858        | 24.0           | 22.0           | 0.945          | 0.866          |
| DDT-859-L##### | 424.2-859-L#### | 859        | 27.0           | 25.0           | 1.063          | 0.984          |
| DDT-860-L##### | 424.2-860-L#### | 860        | 30.0           | 28.0           | 1.181          | 1.102          |
| DDT-861-L##### | 424.2-861-L#### | 861        | 32.0           | 30.0           | 1.260          | 1.181          |
| DDT-862-L##### | 424.2-862-L#### | 862        | 36.0           | 34.0           | 1.417          | 1.339          |
| DDT-863-L##### | 424.2-863-L#### | 863        | 40.0           | 38.0           | 1.575          | 1.496          |

**Note:** Drill tubes and inner tubes for Ejector drills can be ordered in special lengths, up to 157.480 in/ 4000 mm.  
For sizes larger than 813/863- please call 1-800-325-3670  
The inner tube must always be ordered 1.181 in / 30mm longer than the drill tube.

# HellerDex - Feed & Speed

Inch values



| ISO | MC No.<br>(CMC No.)  | Material                                                           | Specific<br>cutting<br>force kc1 | Hardness<br>Brinell | Geometry / Grade |           |           | Support<br>pad<br>grade | Cutting<br>speed             | Drill diameter, inch |             |
|-----|----------------------|--------------------------------------------------------------------|----------------------------------|---------------------|------------------|-----------|-----------|-------------------------|------------------------------|----------------------|-------------|
|     |                      |                                                                    |                                  |                     | Insert position  |           |           |                         |                              | 1.496-2.283          | 2.284-9.684 |
|     |                      |                                                                    | lbs/in <sup>2</sup>              | HB                  | C                | I         | P         | vc ft/min               | Feed f <sub>n</sub> inch/rev |                      |             |
| P   | P1.1.Z.AN<br>(01.1)  | Unalloyed steel<br>Non-hardened 0.10-0.25% C                       | 216 500                          | 90-200              | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 230-425                      | .004-.008            | .006-.012   |
|     | P1.2.Z.AN<br>(01.2)  | Non-hardened 0.25-0.55% C                                          | 233 000                          | 125-225             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 230-425                      | .004-.008            | .006-.012   |
|     | P1.3.Z.AN<br>(01.3)  | Non-hardened 0.55-0.80% C                                          | 247 000                          | 150-250             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 230-425                      | .004-.008            | .007-.010   |
|     | P1.3.Z.AN<br>(01.4)  | High carbon steel, annealed                                        | 260 500                          | 180-275             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 230-425                      | .004-.008            | .006-.012   |
|     | P2.1.Z.AN<br>(02.1)  | Low alloy steel<br>Non hardened                                    | 246 500                          | 150-260             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 230-390                      | .004-.016            | .008-.018   |
|     | P2.5.Z.HT<br>(02.2)  | Hardened and tempered                                              | 278 500                          | 220-450             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 180-360                      | .004-.016            | .008-.018   |
|     | P3.0.Z.AN<br>(03.11) | High alloy steel<br>Annealed                                       | 282 000                          | 150-250             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 230-390                      | .004-.016            | .008-.018   |
|     | (03.13)              | Annealed HSS                                                       | 311 000                          | 150-250             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 230-390                      | .004-.016            | .008-.018   |
|     | P3.0.Z.HT<br>(03.21) | Hardened tool steel                                                | 420 000                          | 250-350             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 180-360                      | .004-.015            | .008-.016   |
|     | (03.22)              | Hardened steel, others                                             | 448 500                          | 250-450             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 180-360                      | .008-.015            | .008-.016   |
| M   | P1.5.C.UT<br>(06.1)  | Castings<br>Unalloyed                                              | 204 000                          | 90-225              | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 165-360                      | .004-.016            | .008-.018   |
|     | P2.6.C.UT (06.2)     | Low alloyed (alloying elements < 5%)                               | 230 500                          | 150-250             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 165-360                      | .004-.016            | .008-.018   |
|     | (06.32)              | Stainless austenitic                                               | 333 500                          | 150-250             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 165-360                      | .004-.013            | .008-.015   |
|     | (06.33)              | Manganese steel, 12–14% Mn                                         | 420 500                          | 200-300             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 115-280                      | .004-.013            | .008-.015   |
| M   | P5.0.Z.AN (05.11)    | Rolled/forged<br>Ferritic/Martensitic, non hardened                | 262 000                          | 150-270             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 130-360                      | .004-.016            | .008-.018   |
|     | M1.0.Z.AQ (05.21)    | Austenitic                                                         | 285 000                          | 150-275             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 130-360                      | .004-.016            | .008-.018   |
|     | M3.1.Z.AQ (05.51)    | Austenitic / ferritic materials (Duplex) non-weld-able ≥ 0.05% C   | 286 500                          | 180-290             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 130-360                      | .004-.013            | .008-.014   |
|     | M3.2.Z.AQ (05.52)    | Austenitic / ferritic materials (Duplex) weld-able < 0.05% C       | 356 500                          | 200-320             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 130-260                      | .004-.013            | .008-.014   |
| K   | K1.1.C.NS (07.1)     | Malleable<br>Ferritic                                              | 115,000                          | 110-145             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 200-390                      | .004-.015            | .009-.016   |
|     | K1.1.C.NS (07.2)     | Pearlitic                                                          | 131,000                          | 150-270             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 200-390                      | .004-.015            | .009-.016   |
|     | K2.1.C.UT (08.1)     | Grey<br>Low tensile strength                                       | 130,000                          | 150-220             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 200-360                      | .004-.015            | .009-.016   |
|     | K2.2.C.UT (08.2)     | High tensile strength                                              | 159,500                          | 200-330             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 200-360                      | .004-.015            | .009-.016   |
|     | K3.1.C.UT (09.1)     | Nodular<br>Ferritic                                                | 130,000                          | 125-230             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 160-360                      | .004-.015            | .009-.016   |
|     | K3.3.C.UT (09.2)     | Pearlitic                                                          | 194,500                          | 200-300             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 160-360                      | .004-.015            | .009-.016   |
| N   | (30,11)              | Aluminium alloys<br>Wrought or wrought and cold-worked, non- aging | 72 500                           | 30-100              | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 210-490                      | .004-.013            | .009-.014   |
|     | N1.2.Z.AG (30.12)    | Wrought or wrought and aged                                        | 116 000                          | 30-150              | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 210-490                      | .004-.015            | .009-.014   |
|     | N1.3.C.UT (30.21)    | Cast, non aging                                                    | 109 000                          | 40-100              | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 210-490                      | .004-.015            | .009-.014   |
|     | N1.3.C.AG (30.22)    | Cast or cast and aged                                              | 130 500                          | 70-140              | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 210-490                      | .004-.015            | .009-.014   |
|     | N3.3.U.UT (33.1)     | Copper and copper alloys<br>Free cutting alloys (Pb > 1%)          | 101 500                          | 70-160              | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 210-490                      | .004-.015            | .009-.014   |
|     | N3.2.C.UT (33.2)     | Brass and leaded alloys (Pb < 1%)                                  | 101 500                          | 50-200              | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 210-490                      | .004-.015            | .009-.014   |
| S   | (20,11)              | Iron base<br>Annealed or solution treated                          | 435 000                          | 180-230             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 30-180                       | .004-.012            | .008-.013   |
|     | S2.0.Z.AN<br>(20.21) | Nickel base<br>Annealed or solution treated                        | 481 500                          | 140-300             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 30-180                       | .004-.012            | .008-.013   |
|     | (20,31)              | Cobalt alloys Annealed or solution treated                         | 478 500                          | 180-230             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 30-180                       | .004-.012            | .008-.013   |
|     | S4.2.Z.AN<br>(23.21) | Titanium<br>Alfa- , near Alfa- and Alfa + Beta alloys annealed     | 243 000                          | 600-1100            | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 100-200                      | .004-.012            | .008-.013   |

# HellerDex - Feed & Speed

Metric values



| ISO | MC No.<br>(CMC No.)  | Material                                                                  | Specific<br>cutting<br>force $k_{c1}$ | Hardness<br>Brinell | Geometry / Grade |           |           | Support<br>pad<br>grade | Cutting<br>speed<br><br>$v_c$ m/<br>min | Drill diameter, inch |              |
|-----|----------------------|---------------------------------------------------------------------------|---------------------------------------|---------------------|------------------|-----------|-----------|-------------------------|-----------------------------------------|----------------------|--------------|
|     |                      |                                                                           |                                       |                     | Insert position  |           |           |                         |                                         | 38.00-57.99          | 58.00-245.99 |
|     |                      |                                                                           |                                       |                     | C                | I         | P         |                         |                                         | Feed $f_n$ mm/r      |              |
| P   | P1.1.Z.AN<br>(01.1)  | <b>Unalloyed steel</b><br>Non-hardened 0.10-0.25% C                       | 1500                                  | 90-200              | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 70-130                                  | 0.11-0.20            | 0.14-0.30    |
|     | P1.2.Z.AN<br>(01.2)  | Non-hardened 0.25-0.55% C                                                 | 1600                                  | 125-225             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 70-130                                  | 0.11-0.20            | 0.14-0.30    |
|     | P1.3.Z.AN<br>(01.3)  | Non-hardened 0.55-0.80% C                                                 | 1700                                  | 150-250             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 70-130                                  | 0.11-0.20            | 0.14-0.25    |
|     | P1.3.Z.AN<br>(01.4)  | High carbon steel, annealed                                               | 1800                                  | 180-275             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 70-130                                  | 0.11-0.20            | 0.14-0.30    |
|     | P2.1.Z.AN<br>(02.1)  | <b>Low alloy steel</b><br>Non hardened                                    | 1700                                  | 150-260             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 70-120                                  | 0.11-0.41            | 0.20-0.45    |
|     | P2.5.Z.HT<br>(02.2)  | Hardened and tempered                                                     | 1900                                  | 220-450             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 55-110                                  | 0.11-0.41            | 0.20-0.45    |
|     | P3.0.Z.AN<br>(03.11) | <b>High alloy steel</b><br>Annealed                                       | 1950                                  | 150-250             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 70-120                                  | 0.11-0.41            | 0.20-0.45    |
|     | P3.0.Z.AN<br>(03.13) | Annealed HSS                                                              | 2150                                  | 150-250             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 70-120                                  | 0.11-0.41            | 0.20-0.45    |
|     | P3.0.Z.HT<br>(03.21) | Hardened tool steel                                                       | 2900                                  | 250-350             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 55-110                                  | 0.11-0.38            | 0.20-0.40    |
|     | P3.0.Z.HT<br>(03.22) | Hardened steel, others                                                    | 3100                                  | 250-450             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 55-110                                  | 0.20-0.38            | 0.20-0.40    |
|     | P1.5.C.UT<br>(06.1)  | <b>Castings</b><br>Unalloyed                                              | 1400                                  | 90-225              | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 50-110                                  | 0.11-0.41            | 0.20-0.45    |
|     | P2.6.C.UT (06.2)     | Low alloyed (alloying elements < 5%)                                      | 1600                                  | 150-250             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 50-110                                  | 0.11-0.41            | 0.20-0.45    |
|     | P2.6.C.UT (06.32)    | Stainless austenitic                                                      | 1800                                  | 150-250             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 50-110                                  | 0.11-0.33            | 0.20-0.38    |
|     | P2.6.C.UT (06.33)    | Manganese steel, 12–14% Mn                                                | 2900                                  | 200-300             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 35-85                                   | 0.11-0.33            | 0.20-0.38    |
| M   | P5.0.Z.AN (05.11)    | <b>Rolled/forged</b><br>Ferritic/Martensitic, non hardened                | 1800                                  | 150-270             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 40-110                                  | 0.11-0.41            | 0.20-0.45    |
|     | M1.0.Z.AQ (05.21)    | Austenitic                                                                | 1950                                  | 150-275             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 40-110                                  | 0.11-0.41            | 0.20-0.45    |
|     | M3.1.Z.AQ (05.51)    | Austenitic / ferritic materials (Duplex) non-weld-able $\geq 0.05\%$ C    | 2000                                  | 180-290             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 40-110                                  | 0.11-0.33            | 0.20-0.45    |
|     | M3.2.Z.AQ (05.52)    | Austenitic / ferritic materials (Duplex) weld-able < 0.05% C              | 2450                                  | 200-320             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 40-80                                   | 0.11-0.33            | 0.20-0.35    |
| K   | K1.1.C.NS (07.1)     | <b>Malleable</b><br>Ferritic                                              | 790                                   | 110-145             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 80-120                                  | 0.11-0.38            | 0.24-0.41    |
|     | K1.1.C.NS (07.2)     | Pearlitic                                                                 | 900                                   | 150-270             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 80-120                                  | 0.11-0.38            | 0.24-0.41    |
|     | K2.1.C.UT (08.1)     | <b>Grey</b><br>Low tensile strength                                       | 890                                   | 150-220             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 60-110                                  | 0.11-0.38            | 0.24-0.41    |
|     | K2.2.C.UT (08.2)     | High tensile strength                                                     | 1100                                  | 200-330             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 60-110                                  | 0.11-0.38            | 0.24-0.41    |
|     | K3.1.C.UT (09.1)     | <b>Nodular</b><br>Ferritic                                                | 900                                   | 125-230             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 50-110                                  | 0.11-0.38            | 0.24-0.41    |
|     | K3.3.C.UT (09.2)     | Pearlitic                                                                 | 1350                                  | 200-300             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 50-110                                  | 0.11-0.38            | 0.24-0.41    |
| N   | (30,11)              | <b>Aluminium alloys</b><br>Wrought or wrought and cold-worked, non- aging | 400                                   | 30-100              | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 65-150                                  | 0.09-0.33            | 0.24-0.35    |
|     | N1.2.Z.AG (30.12)    | Wrought or wrought and aged                                               | 650                                   | 30-150              | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 65-150                                  | 0.09-0.33            | 0.24-0.35    |
|     | N1.3.C.UT (30.21)    | Cast, non aging                                                           | 600                                   | 40-100              | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 65-150                                  | 0.09-0.33            | 0.24-0.35    |
|     | N1.3.C.AG (30.22)    | Cast or cast and aged                                                     | 700                                   | 70-140              | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 65-150                                  | 0.09-0.33            | 0.24-0.35    |
|     | N3.3.U.UT (33.1)     | <b>Copper and copper alloys</b><br>Free cutting alloys (Pb > 1%)          | 550                                   | 70-160              | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 65-150                                  | 0.09-0.33            | 0.24-0.35    |
|     | N3.2.C.UT (33.2)     | Brass and leaded alloys (Pb < 1%)                                         | 550                                   | 50-200              | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 65-150                                  | 0.09-0.33            | 0.24-0.35    |
| S   | (20,11)              | <b>Iron base</b><br>Annealed or solution treated                          | 3000                                  | 180-230             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 10-55                                   | 0.09-0.30            | 0.20-0.33    |
|     | S2.0.Z.AN<br>(20.21) | <b>Nickel base</b><br>Annealed or solution treated                        | 3320                                  | 140-300             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 10-55                                   | 0.09-0.30            | 0.20-0.33    |
|     | (20,31)              | <b>Cobalt alloys</b> Annealed or solution treated                         | 3300                                  | 180-230             | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 10-55                                   | 0.09-0.30            | 0.20-0.33    |
|     | S4.2.Z.AN<br>(23.21) | <b>Titanium</b><br>Alfa- , near Alfa- and Alfa + Beta alloys annealed     | 1675                                  | 600-1100            | B1FC/B1TM        | B1FC/B1TM | B1FC/B1TM | DTE                     | 30-60                                   | 0.09-0.30            | 0.20-0.33    |



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