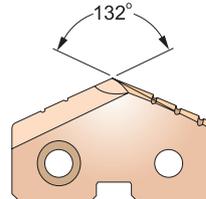


### SPADE DRILL INSERTS - CARBIDE(P40) EINWEG BOHREINSATZ - VOLLHARTMETALL(P40)

- ▶ For general use in carbon steels and alloy steels.
- ▶ Set up time can be reduced due to changing inserts easily on the machine.
- ▶ Any non-standard size available.

- ▶ Für allgemeine Anwendung in Kohlenstoffstählen und legierten Stählen
- ▶ Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- ▶ Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.326

| Series<br>Min. to Max.<br>(mm/inch)                   | Diameter       |                |                   | Thick<br>Metric<br>(mm/inch) | EDP No.<br>CARBIDE (P40) |          |          |          |
|---|----------------|----------------|-------------------|------------------------------|--------------------------|----------|----------|----------|
|   | Inch<br>(inch) | Metric<br>(mm) | Decimal<br>(inch) |                              | TiN                      | TiCN     | TiAlN    |          |
| <b>Y</b><br>9.50<br>(.374")<br>to<br>11.07<br>(.436") | 3/8"           | 9.50           | .3740"            | 2.4<br>(3/32")               | S1855095                 | S1860095 | S1865095 |          |
|   |                | 9.53           | .3750"            |                              | S1805024                 | S1810024 | S1815024 |          |
|   | 25/64"         | 9.80           | .3860"            |                              | S1855098                 | S1860098 | S1865098 |          |
|   |                | 9.92           | .3906"            |                              | S1805025                 | S1810025 | S1815025 |          |
|   | 13/32"         | 10.00          | .3937"            |                              | S1855100                 | S1860100 | S1865100 |          |
|   |                | 10.20          | .4016"            |                              | S1855102                 | S1860102 | S1865102 |          |
|   |                | 10.32          | .4063"            |                              | S1805026                 | S1810026 | S1815026 |          |
|   |                | 10.50          | .4134"            |                              | S1855105                 | S1860105 | S1865105 |          |
|   |                | 27/64"         | 10.72             |                              | .4219"                   | S1805027 | S1810027 | S1815027 |
|   |                | 10.80          | .4252"            |                              | S1855108                 | S1860108 | S1865108 |          |
| <b>Z</b><br>11.11(.437")<br>to<br>12.95(.510")        | 7/16"          | 11.00          | .4331"            | 2.4<br>(3/32")               | S1855110                 | S1860110 | S1865110 |          |
|   |                | 11.11          | .4375"            |                              | S1805028                 | S1810028 | S1815028 |          |
|   | 29/64"         | 11.50          | .4528"            |                              | S1855115                 | S1860115 | S1865115 |          |
|   |                | 11.51          | .4531"            |                              | S1805029                 | S1810029 | S1815029 |          |
|   | 15/32"         | 11.91          | .4688"            |                              | S1805030                 | S1810030 | S1815030 |          |
|   |                | 12.00          | .4724"            |                              | S1855120                 | S1860120 | S1865120 |          |
| 31/64"  | 12.30          | .4844"         | 3.2<br>(1/8")     | S1805031                     | S1810031                 | S1815031 |          |          |
|   | 12.50          | .4921"         |                   | S1855125                     | S1860125                 | S1865125 |          |          |
| 1/2"  | 12.70          | .5000"         |                   | S1805032                     | S1810032                 | S1815032 |          |          |
|   | 13.00          | .5118"         |                   | S1855130                     | S1860130                 | S1865130 |          |          |
| 33/64"  | 13.10          | .5156"         |                   | S1805033                     | S1810033                 | S1815033 |          |          |
|   | 17/32"         | 13.49          |                   | .5313"                       | S1805034                 | S1810034 | S1815034 |          |
| 35/64"  | 13.50          | .5315"         | 3.2<br>(1/8")     | S1855135                     | S1860135                 | S1865135 |          |          |
|   | 13.89          | .5469"         |                   | S1805035                     | S1810035                 | S1815035 |          |          |
| 9/16"   | 14.00          | .5512"         |                   | S1855140                     | S1860140                 | S1865140 |          |          |
|   | 14.29          | .5625"         |                   | S1805036                     | S1810036                 | S1815036 |          |          |
| 37/64"  | 14.50          | .5709"         |                   | S1855145                     | S1860145                 | S1865145 |          |          |
|   | 14.68          | .5781"         |                   | S1805037                     | S1810037                 | S1815037 |          |          |
| 19/32"  | 15.00          | .5906"         | 3.2<br>(1/8")     | S1855150                     | S1860150                 | S1865150 |          |          |
|   | 39/64"         | 15.08          |                   | .5938"                       | S1805038                 | S1810038 | S1815038 |          |
| 5/8"  | 15.48          | .6094"         |                   | S1805039                     | S1810039                 | S1815039 |          |          |
|   | 15.50          | .6102"         |                   | S1855155                     | S1860155                 | S1865155 |          |          |
| 5/8"  | 15.88          | .6250"         |                   | S1805040                     | S1810040                 | S1815040 |          |          |
|   | 16.00          | .6299"         |                   | S1855160                     | S1860160                 | S1865160 |          |          |

◎ : Excellent ○ : Good

| Non-alloy Steels, Free Machining Steels | Carbon Steels   |                 | Alloy Steels     |                 | High Alloyed steels |                 | Structural Steels |                 | Tool Steels      |                 | Stainless Steels | Cast Iron       |                 | Aluminum         | Copper Alloys  |        |
|---|-----------------|-----------------|------------------|-----------------|---------------------|-----------------|-------------------|-----------------|------------------|-----------------|------------------|-----------------|-----------------|------------------|----------------|--------|
|   | ~HRC24 (~HB250) | ~HRC28 (~HB275) | HRC28~ (~HB275~) | ~HRC28 (~HB275) | HRC28~ (~HB275~)    | ~HRC37 (~HB350) | HRC37~ (~HB350~)  | ~HRC24 (~HB250) | HRC24~ (~HB250~) | ~HRC13 (~HB200) | HRC13~ (~HB200~) | ~HRC28 (~HB275) | ~HRC19 (~HB220) | HRC19~ (~HB220~) | ~HRC8 (~HB180) | ~HB110 |
| ◎                                       | ◎               | ◎               | ◎                | ◎               | ◎                   | ◎               | ◎                 | ◎               | ◎                | ◎               | ○                | ○               | ○               | ○                | ○              | ○      |

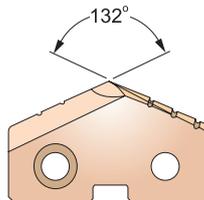
**YG SPADE DRILLS**

**SERIES 0,1**

**SPADE DRILL INSERTS - CARBIDE(P40)**  
**EINWEG BOHREINSATZ - VOLLHARTMETALL(P40)**

- ▶ For general use in carbon steels and alloy steels.
- ▶ Set up time can be reduced due to changing inserts easily on the machine.
- ▶ Any non-standard size available.

- ▶ Für allgemeine Anwendung in Kohlenstoffstählen und legierten Stählen
- ▶ Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- ▶ Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.326

| Series<br>Min. to Max.<br>(mm/inch)                        | Diameter       |                |                   | Thick<br>Metric<br>(mm/inch) | EDP No.<br>CARBIDE (P40) |          |          |
|--|----------------|----------------|-------------------|------------------------------|--------------------------|----------|----------|
|  | Inch<br>(inch) | Metric<br>(mm) | Decimal<br>(inch) |                              | TiN                      | TiCN     | TiAlN    |
| <b>0</b><br><br>12.98(.511")<br>to<br>17.65(.695")         | 41/64"         | 16.27          | .6406"            | 3.2<br>(1/8")                | S1805041                 | S1810041 | S1815041 |
|  |                | 16.50          | .6496"            |                              | S1855165                 | S1860165 | S1865165 |
|  | 21/32"         | 16.67          | .6563"            |                              | S1805042                 | S1810042 | S1815042 |
|  |                | 17.00          | .6693"            |                              | S1855170                 | S1860170 | S1865170 |
|  | 43/64"         | 17.07          | .6719"            |                              | S1805043                 | S1810043 | S1815043 |
|  |                | 17.46          | .6875"            |                              | S1805044                 | S1810044 | S1815044 |
|  | 11/16"         | 17.50          | .6890"            |                              | S1855175                 | S1860175 | S1865175 |
|  |                | 17.86          | .7031"            |                              | S1805045                 | S1810045 | S1815045 |
|  | 23/32"         | 18.00          | .7087"            |                              | S1855180                 | S1860180 | S1865180 |
|  |                | 18.26          | .7188"            |                              | S1805046                 | S1810046 | S1815046 |
| <b>1</b><br><br>17.53<br>(.690")<br>to<br>24.38<br>(.960") | 47/64"         | 18.50          | .7283"            | 4.0<br>(5/32")               | S1855185                 | S1860185 | S1865185 |
|  |                | 18.65          | .7344"            |                              | S1805047                 | S1810047 | S1815047 |
|  | 3/4"           | 19.00          | .7480"            |                              | S1855190                 | S1860190 | S1865190 |
|  |                | 19.05          | .7500"            |                              | S1805048                 | S1810048 | S1815048 |
|  | 49/64"         | 19.45          | .7656"            |                              | S1805049                 | S1810049 | S1815049 |
|  |                | 19.50          | .7677"            |                              | S1855195                 | S1860195 | S1865195 |
|  | 25/32"         | 19.84          | .7813"            |                              | S1805050                 | S1810050 | S1815050 |
|  |                | 20.00          | .7874"            |                              | S1855200                 | S1860200 | S1865200 |
|  | 51/64"         | 20.24          | .7969"            |                              | S1805051                 | S1810051 | S1815051 |
|  |                | 20.50          | .8071"            |                              | S1855205                 | S1860205 | S1865205 |
| 13/16"   | 20.64          | .8125"         | S1805052          | S1810052                     | S1815052                 |          |          |
|  | 21.00          | .8268"         | S1855210          | S1860210                     | S1865210                 |          |          |
| 27/32"   | 21.43          | .8438"         | S1805054          | S1810054                     | S1815054                 |          |          |
|  | 21.83          | .8594"         | S1805055          | S1810055                     | S1815055                 |          |          |
| 55/64"   | 22.00          | .8661"         | S1855220          | S1860220                     | S1865220                 |          |          |
|  | 22.23          | .8750"         | S1805056          | S1810056                     | S1815056                 |          |          |
| 7/8"   | 22.62          | .8906"         | S1805057          | S1810057                     | S1815057                 |          |          |
|  | 23.00          | .9055"         | S1855230          | S1860230                     | S1865230                 |          |          |
| 29/32"   | 23.02          | .9063"         | S1805058          | S1810058                     | S1815058                 |          |          |
|  | 23.42          | .9219"         | S1805059          | S1810059                     | S1815059                 |          |          |
| 59/64"   | 23.42          | .9219"         | S1805060          | S1810060                     | S1815060                 |          |          |
|  | 23.81          | .9375"         | S1855240          | S1860240                     | S1865240                 |          |          |
| 15/16"   | 24.00          | .9449"         |                   |                              |                          |          |          |

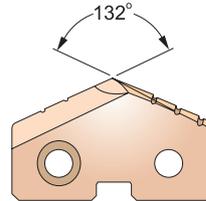
◎ : Excellent ○ : Good

| Non-alloyed Steels, Free Machining Steels | Carbon Steels   |                 | Alloy Steels     |                 | High Alloyed steels |                 | Structural Steels |                 | Tool Steels      |                 | Stainless Steels | Cast Iron       |                 | Aluminum         | Copper Alloys  |
|---|-----------------|-----------------|------------------|-----------------|---------------------|-----------------|-------------------|-----------------|------------------|-----------------|------------------|-----------------|-----------------|------------------|----------------|
|   | ~HRc24 (~HB250) | ~HRc28 (~HB275) | HRc28~ (~HB275~) | ~HRc28 (~HB275) | HRc28~ (~HB275~)    | ~HRc37 (~HB350) | HRc37~ (~HB350~)  | ~HRc24 (~HB250) | HRc24~ (~HB250~) | ~HRc13 (~HB200) | HRc13~ (~HB200~) | ~HRc28 (~HB275) | ~HRc19 (~HB220) | HRc19~ (~HB220~) | ~HRc8 (~HB180) |
| ◎   | ◎               | ◎               | ◎                | ◎               | ◎                   | ◎               | ◎                 | ◎               | ◎                | ◎               | ○                | ○               | ○               | ○                | ○              |

### SPADE DRILL INSERTS - CARBIDE(P40) EINWEG BOHREINSATZ - VOLLHARTMETALL(P40)

- ▶ For general use in carbon steels and alloy steels.
- ▶ Set up time can be reduced due to changing inserts easily on the machine.
- ▶ Any non-standard size available.

- ▶ Für allgemeine Anwendung in Kohlenstoffstählen und legierten Stählen
- ▶ Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- ▶ Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.326

| Series<br>Min. to Max.<br>(mm/inch)                         | Diameter       |                |                   | Thick<br>Metric<br>(mm/inch) | EDP No.       |          |          |
|---|----------------|----------------|-------------------|------------------------------|---------------|----------|----------|
|   | Inch<br>(inch) | Metric<br>(mm) | Decimal<br>(inch) |                              | CARBIDE (P40) |          |          |
|   |                |                |                   |                              | TiN           | TiCN     | TiAlN    |
| <b>2</b><br><br>24.41<br>(.961")<br>to<br>35.05<br>(1.380") | 31/32"         | 24.61          | .9688"            | 4.8<br>(3/16")               | S1805062      | S1810062 | S1815062 |
|   | 63/64"         | 25.00          | .9843"            |                              | S1855250      | S1860250 | S1865250 |
|   | 1"             | 25.40          | 1.0000"           |                              | S1805100      | S1810100 | S1815100 |
|   | 1-1/64"        | 25.80          | 1.0156"           |                              | S1805101      | S1810101 | S1815101 |
|   |                | 26.00          | 1.0236"           |                              | S1855260      | S1860260 | S1865260 |
|   | 1-1/32"        | 26.19          | 1.0313"           |                              | S1805102      | S1810102 | S1815102 |
|   | 1-3/64"        | 26.59          | 1.0469"           |                              | S1805103      | S1810103 | S1815103 |
|   | 1-1/16"        | 26.99          | 1.0625"           |                              | S1805104      | S1810104 | S1815104 |
|   |                | 27.00          | 1.0630"           |                              | S1855270      | S1860270 | S1865270 |
|   | 1-3/32"        | 27.78          | 1.0938"           |                              | S1805106      | S1810106 | S1815106 |
|   |                | 28.00          | 1.1024"           |                              | S1855280      | S1860280 | S1865280 |
|   | 1-7/64"        | 28.18          | 1.1094"           |                              | S1805107      | S1810107 | S1815107 |
|   | 1-1/8"         | 28.58          | 1.1250"           |                              | S1805108      | S1810108 | S1815108 |
|   |                | 29.00          | 1.1417"           |                              | S1855290      | S1860290 | S1865290 |
|   | 1-5/32"        | 29.37          | 1.1563"           |                              | S1805110      | S1810110 | S1815110 |
|   |                | 30.00          | 1.1811"           |                              | S1855300      | S1860300 | S1865300 |
|   | 1-3/16"        | 30.16          | 1.1875"           |                              | S1805112      | S1810112 | S1815112 |
|   | 1-7/32"        | 30.96          | 1.2188"           |                              | S1805114      | S1810114 | S1815114 |
|   |                | 31.00          | 1.2205"           |                              | S1855310      | S1860310 | S1865310 |
|   | 1-1/4"         | 31.75          | 1.2500"           |                              | S1805116      | S1810116 | S1815116 |
|   |                | 32.00          | 1.2598"           |                              | S1855320      | S1860320 | S1865320 |
|   | 1-9/32"        | 32.54          | 1.2813"           |                              | S1805118      | S1810118 | S1815118 |
|   |                | 33.00          | 1.2992"           |                              | S1855330      | S1860330 | S1865330 |
|   | 1-5/16"        | 33.34          | 1.3125"           |                              | S1805120      | S1810120 | S1815120 |
|   | 34.00          | 1.3386"        | S1855340          | S1860340                     | S1865340      |          |          |
| 1-11/32"  | 34.13          | 1.3438"        | S1805122          | S1810122                     | S1815122      |          |          |
| 1-3/8"  | 34.93          | 1.3750"        | S1805124          | S1810124                     | S1815124      |          |          |
|   | 35.00          | 1.3780"        | S1855350          | S1860350                     | S1865350      |          |          |

◎ : Excellent ○ : Good

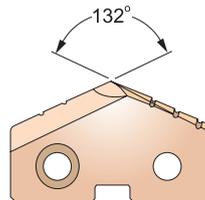
| Non-alloy Steels, Free Machining Steels | Carbon Steels   |                 | Alloy Steels    |                 | High Alloyed steels |                 | Structural Steels |                 | Tool Steels     |                 | Stainless Steels | Cast Iron       |                 | Aluminum        | Copper Alloys  |        |
|---|-----------------|-----------------|-----------------|-----------------|---------------------|-----------------|-------------------|-----------------|-----------------|-----------------|------------------|-----------------|-----------------|-----------------|----------------|--------|
|   | ~HRC24 (~HB250) | ~HRC28 (~HB275) | HRC28~ (~HB275) | ~HRC28 (~HB275) | HRC28~ (~HB275)     | ~HRC37 (~HB350) | HRC37~ (~HB350)   | ~HRC24 (~HB250) | HRC24~ (~HB250) | ~HRC13 (~HB200) | HRC13~ (~HB200)  | ~HRC28 (~HB275) | ~HRC19 (~HB220) | HRC19~ (~HB220) | ~HRC8 (~HB180) | ~HB110 |
| ◎                                       | ◎               | ◎               | ◎               | ◎               | ◎                   | ◎               | ◎                 | ◎               | ◎               | ◎               | ○                | ○               | ○               | ○               | ○              | ○      |

**YG SPADE DRILLS**

**SERIES 3**

**SPADE DRILL INSERTS - CARBIDE(P40)**  
**EINWEG BOHREINSATZ - VOLLHARTMETALL(P40)**

- ▶ For general use in carbon steels and alloy steels.
- ▶ Set up time can be reduced due to changing inserts easily on the machine.
- ▶ Any non-standard size available.
- ▶ Für allgemeine Anwendung in Kohlenstoffstählen und legierten Stählen
- ▶ Reduzierte Rüstzeiten, einfacher Einsatzwechsel auf der Maschine
- ▶ Jede Abmessung außerhalb des Kataloges lieferbar



cutting conditions : P.326

| Series<br>Min. to Max.<br>(mm/inch)                          | Diameter       |                |                   | Thick<br>Metric<br>(mm/inch) | EDP No.       |          |          |
|--|----------------|----------------|-------------------|------------------------------|---------------|----------|----------|
|  | Inch<br>(inch) | Metric<br>(mm) | Decimal<br>(inch) |                              | CARBIDE (P40) |          |          |
|  |                |                |                   |                              | TiN           | TiCN     | TiAlN    |
| <b>3</b><br><br>34.37<br>(1.353")<br>to<br>47.80<br>(1.882") | 1-13/32"       | 35.72          | 1.4063"           | 6.4<br>(1/4")                | S1805126      | S1810126 | S1815126 |
|  |                | 36.00          | 1.4173"           |                              | S1855360      | S1860360 | S1865360 |
|  | 1-7/16"        | 36.51          | 1.4375"           |                              | S1805128      | S1810128 | S1815128 |
|  |                | 37.00          | 1.4567"           |                              | S1855370      | S1860370 | S1865370 |
|  | 1-15/32"       | 37.31          | 1.4688"           |                              | S1805130      | S1810130 | S1815130 |
|  |                | 38.00          | 1.4961"           |                              | S1855380      | S1860380 | S1865380 |
|  | 1-1/2"         | 38.10          | 1.5000"           |                              | S1805132      | S1810132 | S1815132 |
|  | 1-17/32"       | 38.89          | 1.5313"           |                              | S1805134      | S1810134 | S1815134 |
|  |                | 39.00          | 1.5354"           |                              | S1855390      | S1860390 | S1865390 |
|  | 1-9/16"        | 39.69          | 1.5625"           |                              | S1805136      | S1810136 | S1815136 |
|  |                | 40.00          | 1.5748"           |                              | S1855400      | S1860400 | S1865400 |
|  | 1-19/32"       | 40.48          | 1.5938"           |                              | S1805138      | S1810138 | S1815138 |
|  |                | 41.00          | 1.6142"           |                              | S1855410      | S1860410 | S1865410 |
|  | 1-5/8"         | 41.28          | 1.6250"           |                              | S1805140      | S1810140 | S1815140 |
|  |                | 42.00          | 1.6535"           |                              | S1855420      | S1860420 | S1865420 |
|  | 1-21/32"       | 42.07          | 1.6563"           |                              | S1805142      | S1810142 | S1815142 |
|  | 1-11/16"       | 42.86          | 1.6875"           |                              | S1805144      | S1810144 | S1815144 |
|  |                | 43.00          | 1.6929"           |                              | S1855430      | S1860430 | S1865430 |
|  | 1-23/32"       | 43.66          | 1.7188"           |                              | S1805146      | S1810146 | S1815146 |
|  |                | 44.00          | 1.7323"           |                              | S1855440      | S1860440 | S1865440 |
| 1-3/4"   | 44.45          | 1.7500"        | S1805148          | S1810148                     | S1815148      |          |          |
|  | 45.00          | 1.7717"        | S1855450          | S1860450                     | S1865450      |          |          |
| 1-25/32"   | 45.24          | 1.7813"        | S1805150          | S1810150                     | S1815150      |          |          |
|  | 46.00          | 1.8110"        | S1855460          | S1860460                     | S1865460      |          |          |
| 1-13/16"   | 46.04          | 1.8125"        | S1805152          | S1810152                     | S1815152      |          |          |
| 1-27/32"   | 46.83          | 1.8438"        | S1805154          | S1810154                     | S1815154      |          |          |
|  | 47.00          | 1.8504"        | S1855470          | S1860470                     | S1865470      |          |          |
| 1-7/8"   | 47.63          | 1.8750"        | S1805156          | S1810156                     | S1815156      |          |          |

◎ : Excellent ○ : Good

| Non-alloyed Steels, Free Machining Steels | Carbon Steels   |                 | Alloy Steels     |                 | High Alloyed steels |                 | Structural Steels |                 | Tool Steels      |                 | Stainless Steels | Cast Iron       |                 | Aluminum         | Copper Alloys  |
|---|-----------------|-----------------|------------------|-----------------|---------------------|-----------------|-------------------|-----------------|------------------|-----------------|------------------|-----------------|-----------------|------------------|----------------|
|   | ~HRc24 (~HB250) | ~HRc28 (~HB275) | HRc28~ (~HB275~) | ~HRc28 (~HB275) | HRc28~ (~HB275~)    | ~HRc37 (~HB350) | HRc37~ (~HB350~)  | ~HRc24 (~HB250) | HRc24~ (~HB250~) | ~HRc13 (~HB200) | HRc13~ (~HB200~) | ~HRc28 (~HB275) | ~HRc19 (~HB220) | HRc19~ (~HB220~) | ~HRc8 (~HB180) |
| ◎   | ◎               | ◎               | ◎                | ◎               | ◎                   | ◎               | ◎                 | ◎               | ◎                | ◎               | ○                | ○               | ○               | ○                | ○              |



**RECOMMENDED CUTTING CONDITIONS**  
**EMPFOHLENE SCHNEIDKONDITIONEN**

**DRILL INSERT (METRIC) - CARBIDE**  
**BOHREINSATZ (METRISCH) - VOLLHARTMETALL**

| Material   | Material Hardness |         | CARBIDE Grade | Speed (M/min) |      |       | Feed (mm/rev) |            |          |          |          |
|--|-------------------|---------|---------------|---------------|------|-------|---------------|------------|----------|----------|----------|
|  | (Bhn)             | (HRc)   |               | TiN           | TiCN | TiAlN | Ø 9.5 ~12.5   | Ø 13 ~17.5 | Ø 18 ~24 | Ø 25 ~35 | Ø 36 ~47 |
| <b>Free machining Steels</b><br>9SMn36, 9SMnPb28<br>10SPb20 etc                      | 100 - 150         |         | P40           | 101           | 113  | 125   | 0.18          | 0.28       | 0.36     | 0.44     | 0.50     |
|  | 150 - 200         | - 13    | P40           | 88            | 99   | 110   | 0.16          | 0.26       | 0.33     | 0.39     | 0.45     |
|  | 200 - 250         | 13 - 24 | P40           | 82            | 88   | 101   | 0.14          | 0.23       | 0.31     | 0.41     | 0.42     |
| <b>Low Carbon Steels</b><br>C10, C15, C22, C25 etc                                   | 85 - 125          |         | P40           | 94            | 110  | 119   | 0.20          | 0.24       | 0.31     | 0.42     | 0.46     |
|  | 125 - 175         | - 7     | P40           | 82            | 88   | 107   | 0.18          | 0.24       | 0.31     | 0.39     | 0.43     |
|  | 175 - 225         | 7 - 20  | P40           | 76            | 82   | 96    | 0.15          | 0.22       | 0.29     | 0.36     | 0.40     |
| <b>Medium Carbon Steels</b><br>C35, C40, C45 etc                                     | 225 - 275         | 20 - 28 | P40           | 62            | 73   | 84    | 0.13          | 0.22       | 0.29     | 0.36     | 0.40     |
|  | 125 - 175         | - 7     | P40           | 82            | 88   | 102   | 0.17          | 0.24       | 0.31     | 0.37     | 0.42     |
|  | 175 - 225         | 7 - 20  | P40           | 75            | 84   | 93    | 0.15          | 0.22       | 0.28     | 0.36     | 0.40     |
| <b>Structural Steels</b><br>St33, St37-2, St44-2<br>St52, St60 etc                   | 225 - 275         | 20 - 28 | P40           | 66            | 70   | 84    | 0.15          | 0.22       | 0.28     | 0.36     | 0.40     |
|  | 275 - 325         | 28 - 34 | P40           | 56            | 64   | 67    | 0.13          | 0.19       | 0.26     | 0.33     | 0.37     |
|  | 100 - 150         |         | P40           | 75            | 82   | 91    | 0.19          | 0.26       | 0.34     | 0.39     | 0.43     |
| <b>Cast Iron / S,G Iron</b><br>GG10, 20, 25, 35, 40<br>GGG50, 70<br>GTW35, GTS70 etc | 150 - 250         | - 24    | P40           | 62            | 70   | 75    | 0.15          | 0.24       | 0.29     | 0.33     | 0.37     |
|  | 250 - 350         | 24 - 37 | P40           | 55            | 64   | 73    | 0.13          | 0.23       | 0.27     | 0.29     | 0.33     |
|  | 120 - 150         |         | K20,K10       | 98            | 125  | 137   | 0.18          | 0.30       | 0.37     | 0.46     | 0.56     |
|  | 150 - 200         | - 13    | K20,K10       | 95            | 101  | 125   | 0.17          | 0.26       | 0.32     | 0.42     | 0.53     |
| <b>Alloy Steels</b><br>45CrNiMo4, 42CrMo4<br>16MnCr5, Ck75<br>35CrMo4, 16MnCr5 etc   | 200 - 220         | 13 - 19 | K20,K10       | 75            | 91   | 111   | 0.14          | 0.23       | 0.30     | 0.38     | 0.45     |
|  | 220 - 260         | 19 - 26 | K20,K10       | 66            | 81   | 93    | 0.13          | 0.15       | 0.28     | 0.33     | 0.37     |
|  | 260 - 320         | 26 - 34 | K20,K10       | 56            | 70   | 79    | 0.13          | 0.18       | 0.23     | 0.28     | 0.33     |
|  | 125 - 175         | - 7     | P40           | 79            | 85   | 98    | 0.18          | 0.25       | 0.32     | 0.40     | 0.45     |
| <b>Tool Steels</b><br>102Cr6, 105WCr6,<br>C75W etc                                   | 175 - 225         | 7 - 20  | P40           | 73            | 81   | 88    | 0.15          | 0.23       | 0.29     | 0.38     | 0.42     |
|  | 225 - 275         | 20 - 28 | P40           | 66            | 73   | 81    | 0.15          | 0.21       | 0.28     | 0.37     | 0.41     |
|  | 275 - 325         | 28 - 34 | P40           | 62            | 70   | 78    | 0.12          | 0.20       | 0.27     | 0.33     | 0.40     |
| <b>High Temp. Alloy</b><br>Hastelloy B, Inconel etc                                  | 325 - 375         | 34 - 40 | P40           | 53            | 58   | 64    | 0.10          | 0.18       | 0.23     | 0.30     | 0.38     |
|  | 150 - 200         | - 13    | P40           | 50            | 56   | 67    | 0.09          | 0.18       | 0.22     | 0.28     | 0.31     |
| <b>High Strength Alloy</b><br>36CrNiMo4, 34CrNiMo8<br>40NiCrMo73 etc                 | 200 - 250         | 13 - 24 | P40           | 37            | 46   | 50    | 0.09          | 0.18       | 0.22     | 0.28     | 0.31     |
|  | 140 - 220         | - 19    | K20           | 26            | 27   | 30    | 0.10          | 0.17       | 0.23     | 0.27     | 0.33     |
| <b>Aluminum</b><br>AlCuSiMn, AlMgSi0.5,<br>AlZnMgCu1.5 etc                           | 220 - 310         | 19 - 33 | K20           | 20            | 23   | 24    | 0.10          | 0.14       | 0.20     | 0.24     | 0.30     |
|  | 225 - 300         | - 32    | P40           | 49            | 55   | 62    | 0.15          | 0.23       | 0.25     | 0.29     | 0.38     |
| <b>Stainless Steels</b><br>X7Cr13, X10CrAl18, X5CrNi189,<br>X5CrNiMo18 10 etc        | 300 - 350         | 32 - 37 | P40           | 43            | 49   | 55    | 0.12          | 0.20       | 0.23     | 0.27     | 0.35     |
|  | 350 - 400         | 37 - 43 | P40           | 38            | 43   | 47    | 0.10          | 0.18       | 0.20     | 0.24     | 0.30     |
| <b>Aluminum</b><br>AlCuSiMn, AlMgSi0.5,<br>AlZnMgCu1.5 etc                           | 30                |         | K20           | 366           | 396  | 427   | 0.24          | 0.38       | 0.45     | 0.50     | 0.53     |
|  | 180               | - 8     | K20           | 244           | 290  | 291   | 0.22          | 0.33       | 0.40     | 0.45     | 0.48     |
| <b>Stainless Steels</b><br>X7Cr13, X10CrAl18, X5CrNi189,<br>X5CrNiMo18 10 etc        | 135 - 185         | - 9     | K20           | 50            | 55   | 62    | 0.19          | 0.19       | 0.21     | 0.24     | 0.30     |
|  | 185 - 275         | 9 - 28  | K20           | 38            | 44   | 46    | 0.15          | 0.17       | 0.20     | 0.21     | 0.25     |

**RPM=** revolution per minute (rev/min)

**M/min=** surface meter per minute(M/min)

**DIA=** diameter of drill (mm)

**mm/rev =** feed rate(mm/rev)

**\* Formulas :**

$$M/min = \frac{(RPM) \cdot (\pi) \cdot (DIA.)}{1000}$$

$$mm/min= (RPM) \cdot (mm/rev)$$

$$RPM = \frac{(M/min) \cdot (1000)}{(\pi) \cdot (DIA.)}$$

The recommendations for speeds, feeds and other parameters presented in this chart are nominal recommendations and should be considered only as good starting points.

Speed and feed reductions (20% reduction in speed and 10% reduction in feed) are recommended.