

## HIGH-PERFORMANCE MILLING

Application : Ideal for for increased metal removal rates and cutting depth ISO Material Grades : P M K S H


## 1. 5 Flute Variable

Engineered to eliminate harmful harmonics at the point of contact, producing a smoother finish
2. Eccentric $O D$
design consists of an eccentric OD,
asymmetrical flutes, and a $35^{\circ}$ helix

## 3. Exxtral® Silver Coating

Is ideal for machining abrasive and gummy materials, High speed operations, semi-dry or dry machining.

| D1 <br> Diameter | D2 <br> Shank | $\begin{aligned} & \text { L1 } \\ & \text { LOC } \end{aligned}$ | $\begin{aligned} & \text { L3 } \\ & \text { OAL } \end{aligned}$ | Square | $\begin{aligned} & 0.015 \\ & \text { RAD } \end{aligned}$ | $\begin{aligned} & 0.030 \\ & \text { RAD } \end{aligned}$ | $\begin{gathered} 0.060 \\ \text { RAD } \end{gathered}$ | $\begin{aligned} & 0.090 \\ & \text { RAD } \end{aligned}$ | $\begin{aligned} & 0.125 \\ & \text { RAD } \end{aligned}$ | $\begin{gathered} 0.188 \\ \text { RAD } \end{gathered}$ | $\begin{aligned} & 0.250 \\ & \text { RAD } \end{aligned}$ | Ball |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1/4 | 1/4 | 1/2 | 2 | 9531113 | 9502272 | 9505225 | 9508248 |  |  |  |  | 9531115 |
| 1/4 | 1/4 | 3/4 | 2-1/2 | 9531118 | 9502274 | 9505228 | 9508252 |  |  |  |  | 9531120 |
| 1/4 | 1/4 | 1 | 3 | 9531123 | 9502275 | 9505229 | 9508254 |  |  |  |  | 9531125 |
| 1/4 | 1/4 | 1-1/2 | 4 | 9531130 | 9585960 | 9585963 | 9585992 |  |  |  |  | 9531131 |
| 1/4 | 1/4 | 2 | 4 | 9531133 | 9581559 | 9581848 | 9585993 |  |  |  |  | 9586186 |
| 5/16 | 5/16 | 1/2 | 2 | 9531134 | 9502278 | 9505233 | 9508255 |  |  |  |  | 9531136 |
| 5/16 | 5/16 | 7/8 | 2-1/2 | 9531138 | 9502280 | 9505237 | 9508258 |  |  |  |  | 9531140 |
| 5/16 | 5/16 | 1-1/4 | 3 | 9531143 | 9502282 | 9505239 | 9585996 |  |  |  |  | 9531144 |
| 5/16 | 5/16 | 1-5/8 | 4 | 9531149 | 9581562 | 9581851 | 9585997 |  |  |  |  | 9586190 |
| 5/16 | 5/16 | 2-1/8 | 4 | 9586191 | 9581563 | 9581852 | 9508260 |  |  |  |  | 9586192 |
| 3/8 | 3/8 | 1/2 | 2 | 9531153 | 9502287 | 9505242 | 9508261 | 9509827 | 9586099 |  |  | 9531157 |
| 3/8 | 3/8 | 1 | 2-1/2 | 9531173 | 9502296 | 9505251 | 9508271 | 9509830 | 9512996 |  |  | 9531175 |
| 3/8 | 3/8 | 1 | 3 | 9531177 | 9502298 | 9505252 | 9508272 | 9509831 | 9512997 |  |  | 9531179 |
| 3/8 | 3/8 | 1-1/2 | 4 | 9531184 | 9502300 | 9505256 | 9508277 | 9509832 | 9513001 |  |  | 9531186 |
| 3/8 | 3/8 | 2 | 4 | 9531187 | 9581567 | 9505258 | 9585998 | 9586065 | 9586100 |  |  | 9586194 |
| 3/8 | 3/8 | 2-1/2 | 6 | 9586195 | 9581568 | 9581854 | 9585999 | 9586066 | 9586101 |  |  | 9586196 |
| 7/16 | 7/16 | 1 | 2-3/4 | 9531189 | 9502301 | 9505260 | 9584892 | 9587587 | 9586975 |  |  | 9531191 |
| 7/16 | 7/16 | 2 | 4 | 9531201 | 9502302 | 9505263 | 9584893 | 9586988 | 9586986 |  |  | 9531202 |
| 1/2 | 1/2 | 5/8 | 2-1/2 | 9531203 | 9502303 | 9505264 | 9508284 | 9509833 | 9513004 |  |  | 9531205 |
| 1/2 | 1/2 | 1-1/4 | 3 | 9531233 | 9502317 | 9505284 | 9508297 | 9509839 | 9513016 |  |  | 9531236 |
| 1/2 | 1/2 | 1-5/8 | 4 | 9531247 | 9502321 | 9505289 | 9508301 | 9586069 | 9513024 |  |  | 9531249 |
| 1/2 | 1/2 | 2 | 4 | 9531253 | 9502322 | 9505290 | 9508302 | 9509841 | 9513027 |  |  | 9531255 |
| 1/2 | 1/2 | 2-1/2 | 5 | 9531259 | 9502323 | 9505292 | 9508304 | 9585124 | 9513030 |  |  | 9531261 |
| 1/2 | 1/2 | 3-1/8 | 6 | 9531262 | 9502324 | 9505293 | 9508305 | 9585125 | 9513032 |  |  | 9531265 |
| 5/8 | 5/8 | 3/4 | 3 | 9531266 | 9502325 | 9505294 | 9508307 | 9509842 | 9513034 |  |  | 9531267 |
| 5/8 | 5/8 | 1-5/8 | 3-1/2 | 9531282 | 9502329 | 9505314 | 9508315 | 9509847 | 9513042 |  |  | 9531284 |
| 5/8 | 5/8 | 2-1/8 | 4 | 9531288 | 9581576 | 9581860 | 9586004 | 9586071 | 9513043 |  |  | 9586203 |
| 5/8 | 5/8 | 2-1/2 | 5 | 9531289 | 9502331 | 9505320 | 9508316 | 9509849 | 9583918 |  |  | 9531291 |
| 5/8 | 5/8 | 3 | 6 | 9531293 | 9502333 | 9505322 | 9508317 | 9509850 | 9513045 |  |  | 9531294 |
| 3/4 | 3/4 | 1 | 3 | 9531299 | 9502334 | 9505329 | 9508319 | 9509851 | 9513048 | 9586136 | 9516137 | 9531301 |
| 3/4 | 3/4 | 1-5/8 | 4 | 9531334 | 9502338 | 9505344 | 9508332 | 9509857 | 9513062 | 9514678 | 9516142 | 9531337 |
| 3/4 | 3/4 | 2-1/4 | 5 | 9531346 | 9502342 | 9505348 | 9508335 | 9509859 | 9513068 | 9514679 | 9516145 | 9531348 |
| 3/4 | 3/4 | 3-1/4 | 6 | 9531357 | 9502346 | 9505354 | 9508337 | 9509860 | 9513071 | 9586141 | 9516146 | 9531360 |
| 3/4 | 3/4 | 4-1/8 | 7 | 9586207 | 9581582 | 9581864 | 9586007 | 9586074 | 9586107 | 9514681 | 9516149 | 9586208 |
| 1 | 1 | 1-1/2 | 4 | 9531394 | 9502357 | 9505368 | 9508348 | 9509867 | 9513085 | 9514682 | 9516153 | 9531396 |
| 1 | 1 | 2 | 4-1/2 | 9531409 | 9502360 | 9505375 | 9508358 | 9509870 | 9513092 | 9514685 | 9516154 | 9531412 |
| 1 | 1 | 2-1/4 | 5 | 9531418 | 9502361 | 9505379 | 9508362 | 9509871 | 9513095 | 9586147 | 9516158 | 9531420 |
| 1 | 1 | 2-5/8 | 6 | 9531421 | 9502362 | 9505382 | 9508365 | 9509872 | 9513097 | 9586148 | 9516160 | 9531422 |
| 1 | 1 | 3-1/4 | 6 | 9531424 | 9502363 | 9505383 | 9508366 | 9509873 | 9513098 | 9586149 | 9516164 | 9531425 |
| 1 | 1 | 4-1/8 | 7 | 9531428 | 9502364 | 9505384 | 9508367 | 9509874 | 9513101 | 9586150 | 9516167 | 9531429 |
| 1-1/4 | 1-1/4 | 2 | 4-1/2 | 9531436 | 9502366 | 9505386 | 9508370 | 9509875 | 9513103 | 9586151 | 9516168 | 9531437 |
| 1-1/4 | 1-1/4 | 3 | 6 | 9531438 | 9502367 | 9505388 | 9508372 | 9509876 | 9513105 | $\underline{9586152}$ | $\underline{9516171}$ | 9531439 |



## Extended Neck

| D1 <br> Diameter | D2 Shank | $\begin{gathered} \text { L1 } \\ \text { LOC } \end{gathered}$ | $\begin{gathered} \text { L2 } \\ \text { LBS } \end{gathered}$ | $\begin{gathered} \text { L3 } \\ \text { OAL } \end{gathered}$ | Square | $\begin{aligned} & 0.015 \\ & \text { RAD } \end{aligned}$ | $\begin{aligned} & 0.030 \\ & \text { RAD } \end{aligned}$ | $\begin{aligned} & 0.060 \\ & \text { RAD } \end{aligned}$ | $\begin{aligned} & 0.090 \\ & \text { RAD } \end{aligned}$ | $\begin{aligned} & 0.125 \\ & \text { RAD } \end{aligned}$ | $\begin{aligned} & 0.188 \\ & \text { RAD } \end{aligned}$ | $\begin{aligned} & 0.250 \\ & \text { RAD } \end{aligned}$ | Ball |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1/4 | 1/4 | 1/2 | 1-1/4 | 3 | 9531116 | 9502273 | 9505226 | 9508250 |  |  |  |  | 9585608 |
| 1/4 | 1/4 | 1/2 | 2-1/8 | 4 | 9585609 | 9581556 | 9505227 | 9508251 |  |  |  |  | 9585610 |
| 1/4 | 1/4 | 1/2 | 3-1/8 | 5 | 9586183 | 9581557 | 9581846 | 9585990 |  |  |  |  | 9586184 |
| 1/4 | 1/4 | 1/2 | 4-1/8 | 6 | 9531117 | 9581558 | 9581847 | 9585991 |  |  |  |  | $\underline{9586185}$ |
| 1/4 | 1/4 | 9/16 | 2-1/8 | 4 | 9531137 | 9581560 | 9581849 | 9585994 |  |  |  |  | $\underline{9586187}$ |
| 1/4 | 1/4 | 9/16 | 4-1/8 | 6 | 9586188 | 9581561 | 9581850 | 9585995 |  |  |  |  | 9586189 |
| 3/8 | 3/8 | 3/4 | 1-1/4 | 3 | 9531166 | 9502295 | 9505248 | 9508267 |  |  |  |  | $\underline{9531167}$ |
| 3/8 | 3/8 | 3/4 | 2-1/8 | 4 | 9531168 | 9581564 | 9581853 | 9508268 |  |  |  |  | 9531169 |
| 3/8 | 3/8 | 3/4 | 3.-1/8 | 5 | 9586193 | 9581565 | 9505249 | 9508269 |  |  |  |  | 9531170 |
| 3/8 | 3/8 | 3/4 | 4-1/8 | 6 | 9531171 | 9581566 | 9505250 | 9508270 |  |  |  |  | $\underline{9531172}$ |
| 1/2 | 1/2 | 7/8 | 1-3/8 | 3 | 9531221 | 9502312 | 9505277 | 9584894 | 9585122 | 9585326 |  |  | 9585611 |
| 1/2 | 1/2 | 7/8 | 2-1/8 | 4 | 9531222 | 9502314 | 9505278 | 9508291 | 9585123 | 9513009 |  |  | 9531223 |
| 1/2 | 1/2 | $7 / 8$ | 3-1/8 | 5 | 9531224 | 9581569 | 9505279 | 9586000 | 9509836 | 9513011 |  |  | $\underline{9531225}$ |
| 1/2 | 1/2 | 7/8 | 4-1/8 | 6 | 9531226 | 9502315 | 9581855 | 9508292 | 9509837 | 9513012 |  |  | 9531227 |
| 1/2 | 1/2 | 7/8 | 5-1/8 | 7 | 9586197 | 9581570 | 9581856 | 9586001 | 9586067 | 9586102 |  |  | 9586198 |
| 1/2 | 1/2 | 7/8 | 6-1/8 | 8 | $\underline{9586199}$ | 9581571 | 9581857 | 9586002 | 9586068 | 9586103 |  |  | 9586200 |
| 5/8 | 5/8 | 1 | 2 | 4 | $\underline{9531277}$ | 9581572 | 9581858 | 9584895 | 9585126 | 9513037 |  |  | 9585612 |
| 5/8 | 5/8 | 1 | 3 | 5 | 9531278 | 9581573 | 9505304 | 9508312 | 9585127 | 9513038 |  |  | 9585613 |
| 5/8 | 5/8 | 1 | 4 | 6 | $\underline{9531279}$ | 9581574 | 9505306 | 9584896 | 9585128 | 9585327 |  |  | $\underline{9585614}$ |
| 5/8 | 5/8 | 1 | 6 | 8 | 9586201 | 9581575 | 9581859 | 9586003 | 9586070 | 9586104 |  |  | $\underline{9586202}$ |
| 3/4 | 3/4 | 1-1/4 | 2 | 4 | 9531318 | 9581577 | 9581861 | 9584897 | 9585129 | 9513055 | 9586137 | 9586153 | 9585615 |
| 3/4 | 3/4 | 1-1/4 | 3 | 5 | 9531320 | 9581578 | 9505340 | 9508329 | 9585130 | 9513057 | 9514677 | 9516139 | 9531321 |
| 3/4 | 3/4 | 1-1/4 | 4 | 6 | $\underline{9531323}$ | 9581579 | 9505341 | 9508330 | 9509855 | 9513058 | 9586138 | 9586154 | 9531324 |
| 3/4 | 3/4 | 1-1/4 | 5 | 7 | 9531325 | 9581580 | 9581862 | 9586005 | 9586072 | 9586105 | 9586139 | 9586155 | 9586204 |
| 3/4 | 3/4 | 1-1/4 | 6 | 8 | $\underline{9586205}$ | 9581581 | 9581863 | 9586006 | 9586073 | 9586106 | 9586140 | 9586156 | 9586206 |
| 1 | 1 | 1-1/2 | 2 | 4 | 9586209 | 9581583 | 9581865 | 9586008 | 9586075 | 9586108 | 9586142 | 9586157 | $\underline{9586210}$ |
| 1 | 1 | 1-1/2 | 3 | 5 | 9531398 | 9581584 | 9505369 | 9508349 | 9585131 | 9513087 | $\underline{9586143}$ | 9586158 | 9531399 |
| 1 | 1 | 1-1/2 | 4 | 6 | 9531402 | 9502358 | 9505370 | 9508352 | 9585132 | 9513089 | 9586144 | 9586159 | 9531403 |
| 1 | 1 | 1-1/2 | 5 | 7 | 9531406 | 9581585 | 9581866 | 9508354 | 9585133 | 9585328 | 9586145 | 9586160 | 9585616 |
| 1 | 1 | 1-1/2 | 6 | 8 | 9586211 | 9581586 | 9581867 | 9508356 | 9586076 | 9586109 | 9586146 | 9586161 | 9586212 |



