

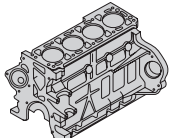






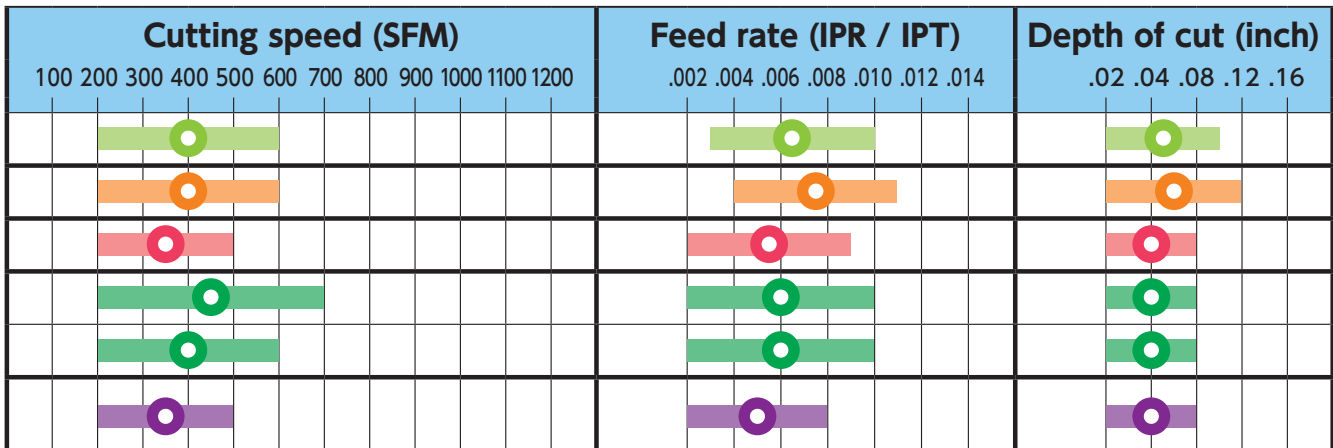
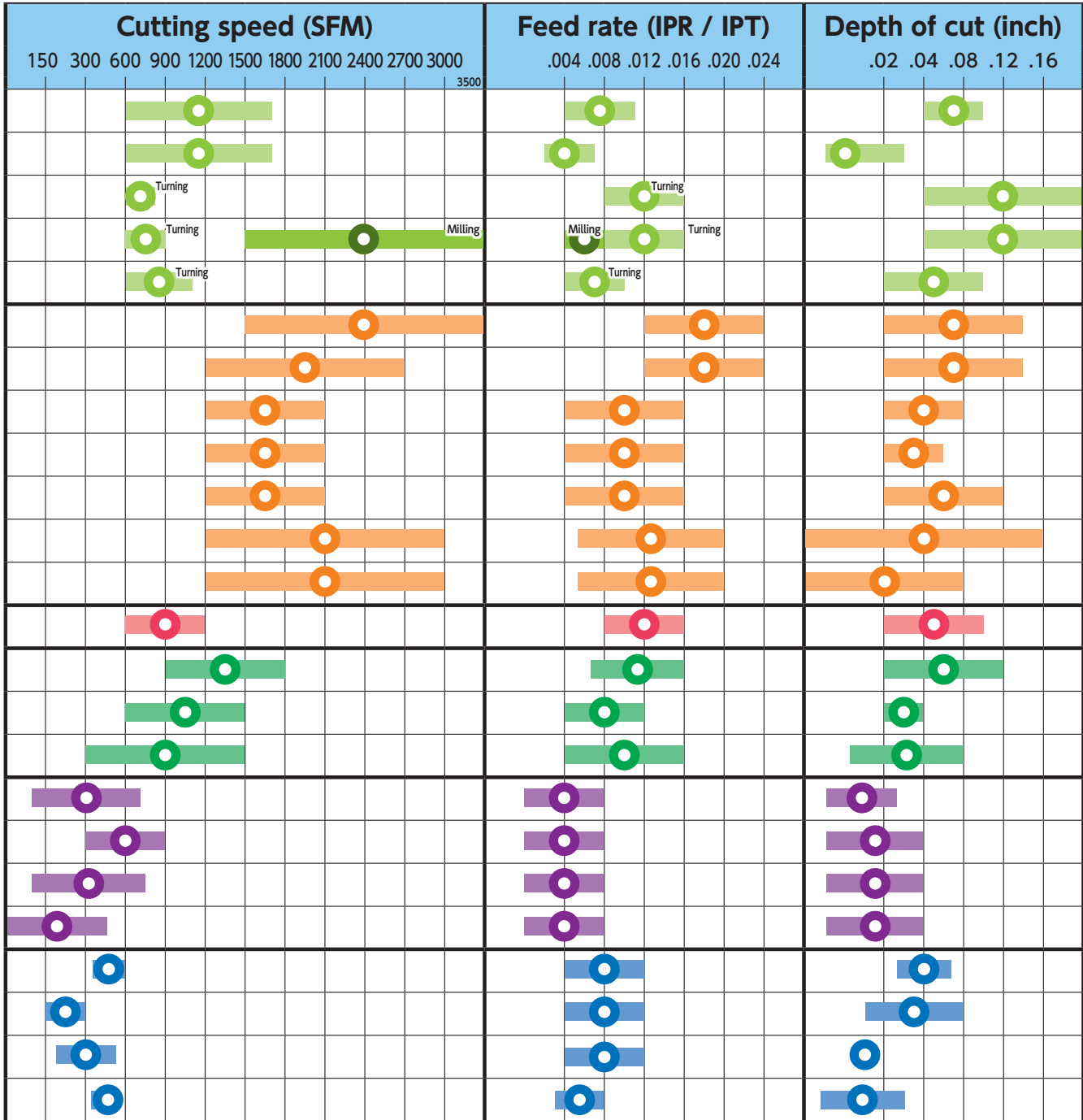
Tool Materials / Selection Guide

Recommended Types of Materials and Applications : BIDE MICS, Ceramics and CBN ●1st Choice ○2nd Choice

| Work material | Tool Grade | Application | | | Coolant | | | | | |
|---|------------|-------------|----------------|-----------|------------|--------------------|--------------|-----|-------------|-------------|
| | | Roughing | Semi-finishing | Finishing | Continuous | Light interruption | Interruption | Dry | Wet | |
| Heat-resistant alloy  * Based on Using 1/2" IC Insert except JP2 | BIDE MICS | JX1/JX3 | ○ | ● | ○ | ○ | ○ | | ● | |
| | | JP2 | | ○ | ○ | ○ | ○ | | ● | |
| | Ceramic | SX5 | ○ | | | ○ | ○ | | | ● (Turning) |
| | | SX3/SX7/SX9 | ○ | | | ○ | ○ | | ○ (Milling) | ● (Turning) |
| | | WA1 | ○ | | | ○ | ○ | | ○ | ● |
| Gray cast iron   | Ceramic | SX6 | ○ | | | ○ | ○ | ● | ● | |
| | | SP9 | | ○ | | | ○ | ○ | ● | ○ |
| | | HC1/HW2 | | | ○ | ○ | ○ | | ● | ● |
| | | HC2/HC6 | | | ○ | ○ | ○ | | ● | ● |
| | | WA1 | | | ○ | ○ | ○ | | ● | ● |
| | ZrC | B99 | ○ | | | ○ | ○ | | ● | ● |
| | | B23/B30 | | ○ | | ○ | ○ | | ○ | ● |
| Chilled Liners  | Ceramic | HW2 | | ○ | ○ | ○ | | ● | | |
| Ductile cast iron  | Ceramic | SP9 | ○ | | | ○ | ○ | ○ | ● | |
| | | HC6 | | ○ | ○ | ○ | ○ | | ○ | ● |
| | ZrC | B52 | | ○ | ○ | ○ | ○ | | ○ | ● |
| Hardened material  | Ceramic | ZC4/ZC7 | | | ○ | ○ | | ● | ● | |
| | | B5K/B52 | | | ○ | ○ | | ○ | ● | |
| | ZrC | B6K/B36 | | ○ | | | ○ | | ● | ● |
| | | B40 | ○ | | | | ○ | | ● | ○ |
| Rolls  Steel, Cast iron, Ductile iron Carbide * Based on Using 1/2" IC Insert CPM | Ceramic | HC5/HC7 | | ○ | | | ○ | ○ | ● | |
| | | WA1 | | ○ | | | ○ | ○ | ● | |
| | ZrC | B30/B99 | | ○ | | | ○ | ○ | ● | |
| | | Ceramic | HC5/ZC4/HC7 | | ○ | | | ○ | ○ | ● |

Recommended Types of Materials and Applications : Carbide ●1st Choice ○2nd Choice

| Work material | Tool Grade | Application | | | Coolant | | | | | |
|-------------------------------------|----------------------------------|-------------|-----------------|-----------|------------|--------------------|--------------|-----|-----|---|
| | | Roughing | Semi-finishing | Finishing | Continuous | Light interruption | Interruption | Dry | Wet | |
| 400 series Stainless | Hardness (HB) 160-350 | Carbide | QM3/DM4/DT4/ST4 | ● | ● | | ○ | ○ | | ● |
| 300 series Stainless | Hardness (HB) 200-350 | Carbide | QM3/DM4/DT4/ST4 | ● | ● | | ○ | ○ | | ● |
| Precipitation Hardness (17-4PH etc) | Hardness (HB) 175-350 | Carbide | QM3/DM4/DT4 | ● | ● | | ○ | ○ | | ● |
| Carbon Steels Alloy Steels | Hardness (HB) 130-300 300-400 | Carbide | QM3/DM4/DT4 | ● | ● | | ○ | ○ | | ● |
| | | | | ● | ● | | ○ | ○ | | ● |
| Tool Steels | Hardness (HRC) -45 Turning | Carbide | QM3/DM4/DT4 | ● | ● | | ○ | ○ | | ● |



• Starting speed based on using CN.432 insert