# PATRIOT HP PM3 INDEXABLE HI-FEED MILL SPEEDS & FEEDS

**Chipbreaker:**
**HCX** : Strong cutting edge for general steels, cast irons, and hard conditions in milling application
**SCX** : Sharp cutting edge for general stainless steels and super alloy applications

| ISO | MATERIAL | HARDNESS | CHIPBREAKER | GRADE | Vc (SFM)* | Fz (INCH PER TOOTH)* |
|---|---|---|---|---|---|---|
| P | **CARBON STEELS** 1018, 1040, 1080, 1090, 10L50, 1140, 1212, 12L15, 1525, 1536 | ≤ 275 BHN or ≤ 28 HRC | HCX | HP470 | 220 - 820 | .009 - .075 |
| | **ALLOY STEELS** 4140, 4150, 4320, 5120, 5150, 8630, 86L20, 17-4 PH | ≤ 375 BHN or ≤ 40 HRC | | | 220-720 | .009 - .065 |
| M | **STAINLESS STEELS** (FREE MACHINING) 303, 416, 420F, 430F, 440F | ≤ 275 BHN or ≤ 28 HRC | SCX | HM470 | 230-650 | .009 - .045 |
| | **STAINLESS STEELS** (DIFFICULT) 304, 304L,316, 316L | ≤ 275 BHN or ≤ 28 HRC | | | 260-700 | .009 - .045 |
| K | **GRAY IRONS** Class 20, 30, 40, 50, 60, G3000, G3500 | ≤ 220 BHN or ≤ 19 HRC | HCX | HK430 | 400 - 900 | .009 - .063 |
| | **DUCTILE IRONS** D&M series, 250, 300, 350, 400, 60-40-18, 65-45-12 | ≤ 260 BHN or ≤ 26 HRC | | | 300 - 850 | .009 - .055 |
| H | **TOOL STEELS** A2, D2, H13, L2, M2, P20, S7, T15, W2 | ≤ 375 BHN or ≤ 55 HRC | SCX | HS470 | 100-350 | .009 - .040 |
| S | **HR SUPER ALLOYS** Inconel 718, Waspaloy, Hastelloy, Inconel 625, Stellite 31, Haynes 25, Rene 41 | ≤ 275 BHN or ≤ 28 HRC | SCX | HS470 | 60 - 220 | .007 - .035 |
| | **TITANIUM** 6AL-4V, ASTM 1, 2, 3, 6AL-2S | ≤ 275 BHN or ≤ 28 HRC | | | 90 - 400 | .008 - .050 |

**Recommendations:**

- Keep the cutter constantly engaged, when possible, to reduce enter and exit onto the machined component
- Utilize roll technique around all corners to avoid harsh directional changes
- The width of cut, $a_e$, should be 30% or 70% of DC to ensure maximum efficiency and process security
- Program tool paths around interruptions and holes when possible

**Speeds & feeds are starting recommendations only. Factors such as machine type, fixture, tooling rigidity, available horsepower, coolant delivery method and others will affect the performance significantly.*