Recommended Cutting Conditions for SRFT Ball-nose inserts

	Work Material	Hardness	Insert Grades	Cutting Speed **vc** (SFM)	Feed per Tooth **fz** (IPT)	Depth of Cut **ap** (inch)
P	Carbon Steel Alloy Steel	180—280HB	**VP15TF**	655 (260—985)	.008 (.004—.012)	≤0.05D1
	Pre-hardened steels	≤45HRC	**VP15TF**	490 (260—655)	.008 (.004—.012)	≤0.05D1
	Alloy Tool Steel	180—380HB	**VP15TF**	490 (260—655)	.008 (.004—.012)	≤0.05D1
K	Cast Iron	Tensile Strength ≤350MPa	**MP8010**	820 (590—1475)	.008 (.004—.012)	≤0.05D1
	Ductile Cast Iron	Tensile Strength ≤800MPa	**MP8010**	655 (260—985)	.008 (.004—.012)	≤0.05D1
H	Hardened Steel	45—55HRC	**MP8010**	330 (195—395)	.008 (.004—.012)	≤0.05D1
		≥55HRC	**MP8010**	260 (195—395)	.008 (.004—.012)	≤0.01D1

(Note 1) The values above are for average machining conditions. The optimum values can change slightly according to the condition and rigidity of the machine and work holding. Adjust the values accordingly.
(Note 2) For end mills with a carbide shank, up to 20 percent higher cutting conditions are possible.
(Note 3) Please note the following when machining hardened steel with MP8010.
- Please shorten the overhang length as much as possible.
- Use with carbide shank recommended.
- Take special care with the depth of cut to prevent fracture.

Calculating Actual Cutting Speed

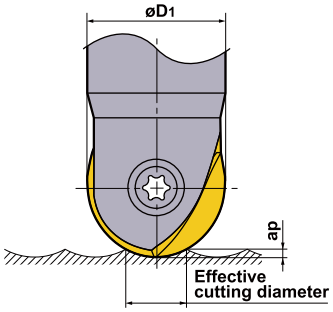
1. Effective cutting diameter = $2\sqrt{ap\ (D_1\text{-}ap)}$

D_1 : Tool diameter (inch)
ap : Depth of Cut (inch)

2. Using ap ➡ Calculate cutting speed at the depth of cut line.

$$vc = \frac{2\pi n\sqrt{ap\ (D_1\text{-}ap)}}{12}$$

vc : Actual cutting speed (SFM)
n : Revolution (min^{-1})



Selecting Pick Feed

Theoretical $h = \frac{(Pf)^2}{8R}$

h : Cusp height
pf : Pick feed
R : Ball nose or corner radius

Actual surface roughness Rz will be about 3 times worse than theoretical h.
This is because of the effect of a built-up edge.
To determine Pf, use the formula below based on a particular Rz value.

$$Pf = \sqrt{\frac{8xRxRz}{3}}$$