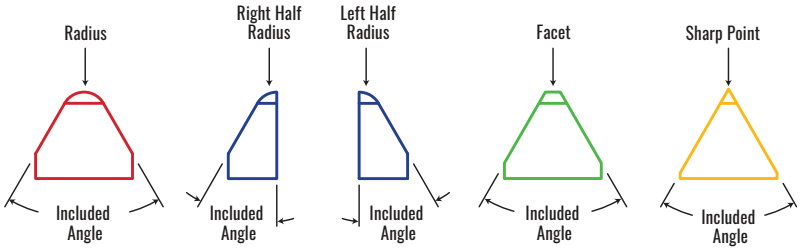
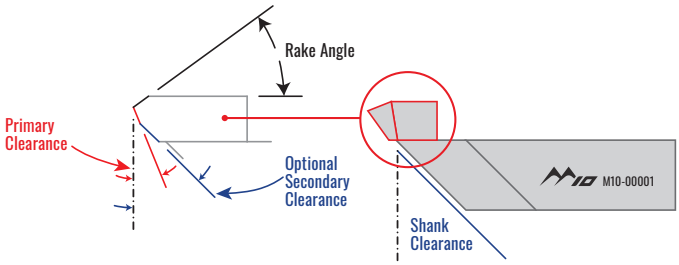
M10 Edge Conventional Tooling Configurator

A Micro-LAM Brand





Conventional Geometry Code

Primary Secondary Shank

N-R0.120m WFCy1 100-C4-60 W8QZ

DIAMOND TYPE

N = Natural, 2pt
M = HPHT4, 4pt
H = HPHT2, 2pt
C = Clear CVD, 2pt
D = Clear CVD, 4pt
S = Sumitomo, 4pt
B = Black CVD
P = PCD
K = PCBN

TOOL TYPE

Full Radius = R
R - 0.120 mm

Right Half Radius = H
H - 0.120 mm

Left Half Radius = L
L - 0.120 mm

Facet Tool = F
F - 0.120 mm

Sharp Point = P

RAKE ANGLE

D = + 7.5˚
J = + 5˚
K = + 2.5˚
L = 0˚
M = - 2.5˚
G = -3˚
N = - 5˚
O = - 7.5˚
R = - 10˚
T = - 15˚
A = - 17˚
V = - 20˚
W = - 25˚
C = - 30˚
X = - 35˚
B = - 40˚
Y = - 45˚

See additional notes on page 2

CLEARANCE ANGLES:

Standard Clearance Angles

G = 10˚	M,S
F = 12.5˚	N,M,H,C,B
T = 14˚	N,M,H,C,B
E = 15˚	N,H,C,B
V = 16˚	N,H,C,B
X = 17˚	N,H,C,B
W = 18˚	N,H,C,B
D = 20˚	N

Non-Standard, Secondary, and Shank Clearances

1= NO CLEARANCE
J = 5˚
H = 7.5˚
S = 8˚
B = 25˚
N = 23˚
M = 28˚
A = 30˚
Z = 35˚
L = 37˚
I = 40˚
C = 45˚
P = 50˚
Y = 55˚
U = 60˚
R = 70˚
# = CUSTOM

See additional notes on page 2

CLEARANCE TYPE

Cy = Cylindrical
Co = Conical

CONTROLLED ARC

001˚ - 170˚

WAVINESS

C0 = < 2.00 µm
C1 = < 1.00 µm
C2 = < 0.75 µm
C3 = < 0.50 µm
C4 = < 0.25 µm
C5 = < 0.20 µm
C6 = < 0.15 µm
C7 = < 0.10 µm
C8 = < 0.05 µm
C9 = < 0.03 µm

INCLUDED ANGLE

10˚ - 170˚

SHANK MATERIALS

W = Tungsten
M = Molybdenum
T = Titanium

SHANK HEIGHT & WIDTH

6 = 6 mm
8 = 8 mm
1 = 10 mm
Q = 6.35 mm (1/4”)
T = 9.525 mm (3/8”)
C = Custom

ADDITIONAL NOTES

INTERPLAY BETWEEN INCLUDED ANGLE AND CONTROLLED ARC

- Tools will be manufactured with a total cutting edge equal to the **controlled arc**, while the sizing tool for lateral clearances will be determined by the **included angle**. This ensures the maximum usable diamond height, prolonging the life of the tool through multiple re-sharpenings.
- The controlled arc is the part of the tool with a controlled waviness specification.

CONTROLLED WAVINESS:

- For 2pt diamond types: There is no guarantee of controlled waviness outside of 120°. Any specification outside this range is considered best-effort.
- For 4pt diamond types: There is no guarantee of controlled waviness outside of 140°. Any specification outside this range is considered best-effort.
- It is more cost-effective to manufacture tools with a smaller controlled arc. For example, if only 80° of a tool is used to cut a part, then specifying a controlled arc of 90° is a more cost-effective tool than a 120° controlled arc tool.
- Certificates of conformance will automatically accompany C1 – C9 tools.

CONICAL CLEARANCES (HIGH ANGLE):

- Conical clearance angles >20° will be delivered as a 20° conical clearance plus an added *cylindrical* clearance to match the requested clearance. For example, a requested 25° conical clearance will be manufactured as a 20° conical clearance + a 5° cylindrical clearance.

RAKE ANGLES:

- Positive rake angles can be applied but need clearance from hitting the shank during manufacturing. This is usually accomplished by having a stepped shank made. Please contact your Sales Representative for further information.
- Negative rake angles can be put on most diamond types with the noted exceptions. Sumitomo diamonds generally perform best with a rake between 0° and -2.5°.

TOLERANCES & METROLOGY:

- The tool radius is measured using a three-point circular fit over the controlled waviness arc. The tool is aligned with no tilt on the diamond turning machine, unless otherwise specified.
- The radius tolerance is ±10% or ±0.007 mm, whichever is larger, unless otherwise specified.
- The rake depth tolerance for negative rake tools is +0.050 mm/-0.0 mm, where the minimum rake depth in the tolerance band is the value needed to achieve the desired controlled arc. For conical tools, this means lapping the tool further would reduce the tool radius.

HALF RADIUS TOOLS:

- The standard undercut on the vertical face of a half radius tool is 3°.

SPLIT RADIUS TOOLS:

- It is possible to make tools with a different radius value on the separate halves of the tool. Additional information is needed to properly specify these types of tools. Please contact your sales representative if you are interested in split radius tools.