

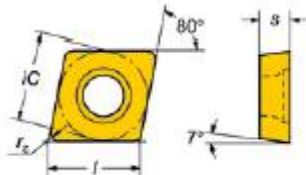
Positive and Negative inserts

Every cutting tool catalog has the words Positive and Negative in relation to inserts and tool holders, like in the picture below. The same shape of insert can come in both types. E.g., you can have a rhombic (C shape) insert in both negative and positive types.

Selecting the right type of insert can make a big difference to productivity and part quality.

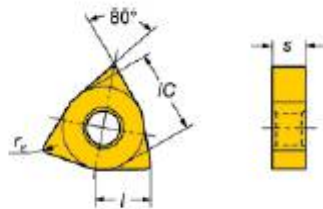
Positive basic-shape inserts

CoroTurn[®] 107
Rhombic 80°

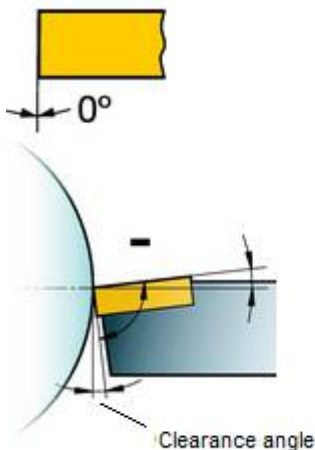


Negative basic-shape inserts

T-Max P
Trigon 80°

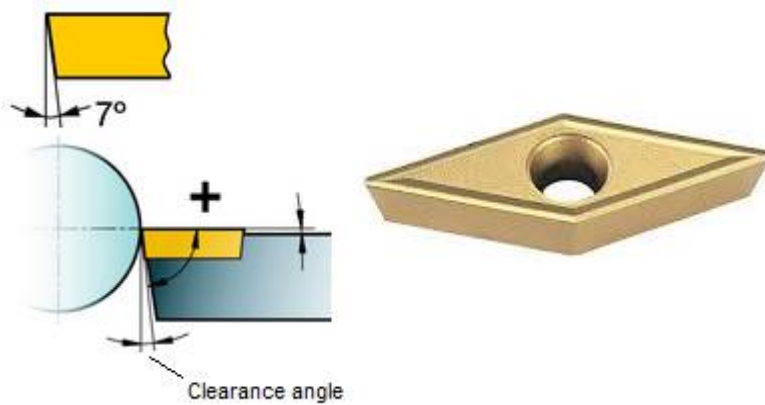


Negative insert



- The insert does not have a clearance angle. The holder seat is angled to provide the necessary clearance and rake angles.
- The wedge angle is 90 degrees. The insert is stronger near the cutting edge, and hence can be used for roughing and interrupted cutting.
- The cutting forces are higher than for a positive insert. It is therefore not preferred for applications where cutting forces must be low.
- Cutting edges are available on both sides of the insert. E.g., a VNMG insert has 4 cutting edges, but a VBMT has only 2.

Positive insert



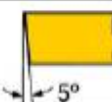
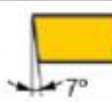
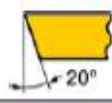
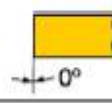
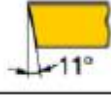
- The insert has a clearance angle. The holder does not provide clearance or rake angles.
- The wedge angle is less than 90 degrees, and the insert is weaker near the cutting edge because the cross section is less. Because of this it is used for finishing and medium machining, and cannot be used in interrupted cutting.
- The cutting edge is sharper, and cutting forces are hence lower. It is therefore preferred for applications where cutting forces must be low, like finishing, cutting slender parts, parts with low wall thickness, etc.
- Because of the clearance angle, cutting edges are available only on one side. E.g., a VNMG insert has 4 cutting edges, but a VBMT has only 2.

Figuring out the insert type from its ISO name

The second letter of the name is the insert clearance angle.
N stands for zero clearance angle, and always means a negative insert.
Any other letter means a positive insert.

Insert shape Clearance angle

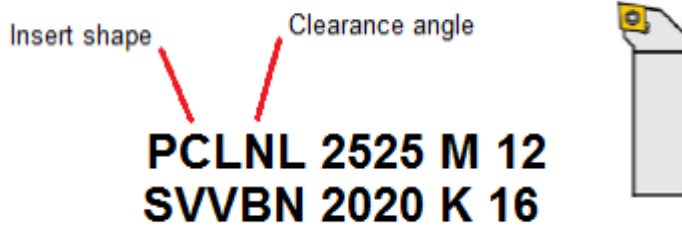
CNMG 12 04 08
VBMT 16 04 04

| 2 Insert clearance angle | |
|--|---|
| B  | C  |
| E  | N  |
| P  | O Specific description |

Figuring out the matching insert type from a holder's ISO name

A holder's insert seat matches the insert type.

The 4th letter of the holder name is the insert clearance angle.



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