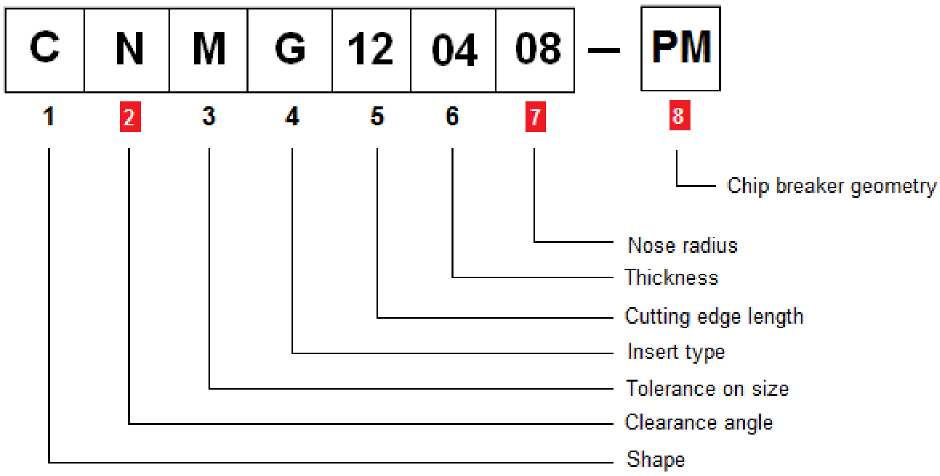
CADEM effiCNC

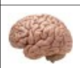
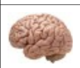
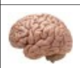
Inserts – ISO nomenclature

Inserts are known by an ISO naming convention that describes their shape and size. Each alphabet and number in the name signifies an aspect of the insert’s shape or size. The example below is for a CNMG120408 insert commonly used in turning. The chip breaker geometry name is assigned by the tool manufacturer. Other than this, all other designations are common across manufacturers.

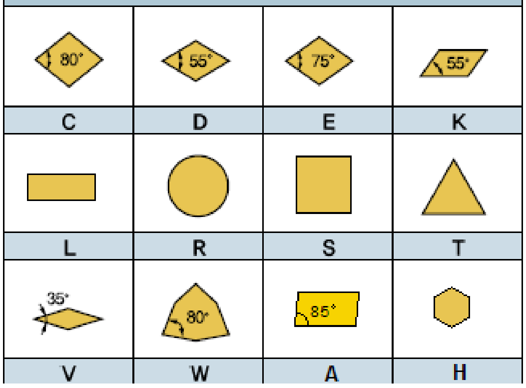


Inserts - ISO nomeclature

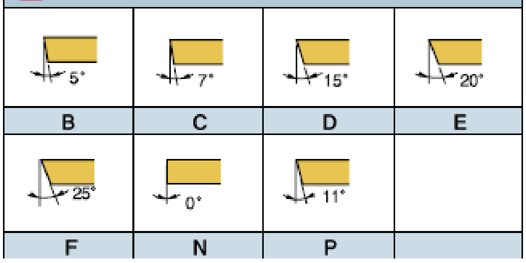
Where's the hard work in selecting an insert ?
When selecting an insert for an application, you mainly have to concentrate on the numbers marked in red in the above nomenclature. The others, like the insert shape and cutting edge length, are automatically decided based on the holder that you are using. In the table below, you have to use your brain only in selecting the parameters where there is a brain in the row.

	Parameter		**How is this decided ?**
1	Insert shape		Decided by holder.
2	Relief angle		Decide based on part material and application – roughing / medium machining / finishing.
3	Tolerance		No need to decide. It is generally G.
4	Cross-section		Decided by holder clamping style and relief angle.
5	Cutting edge length		Decided by holder size.
6	Thickness		Decided by holder size.
7	Nose radius		Decide based on slenderness of part, nose radius required on part.
8	Chipbreaker geometry		Decide based on part material, application (roughing / medium machining / finishing).

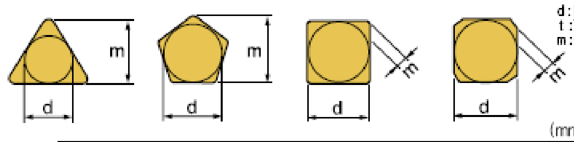
1 Insert Shape



2 Relief Angle



3 Tolerance

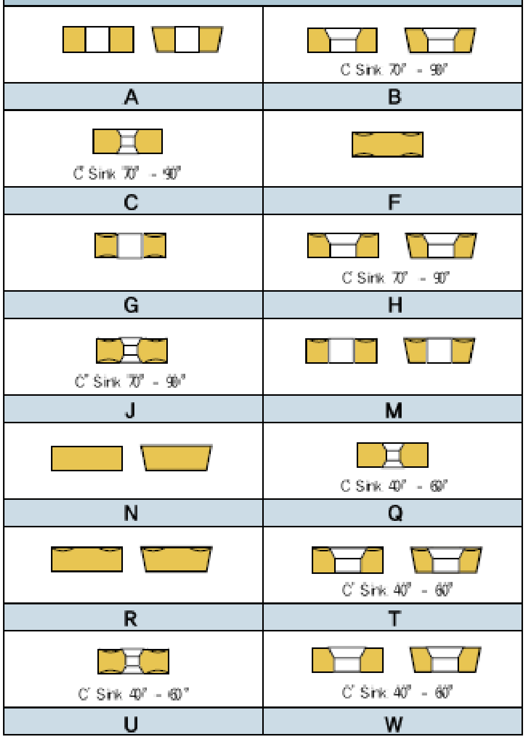


d : Inscribed Circle
t : Thickness
m : refer to figure

(mm)

Class	d	m	t
A	±0.025	±0.005	±0.025
C	±0.025	±0.013	±0.025
H	±0.013	±0.013	±0.025
E	±0.025	±0.025	±0.025
G	±0.025	±0.025	±0.13
J	±0.05 - ±0.15	±0.005	±0.025
K	±0.05 - ±0.15	±0.013	±0.025
L	±0.05 - ±0.15	±0.025	±0.025
M	±0.05 - ±0.15	±0.08 - 0.20	±0.13
U	±0.08 - ±0.25	±0.13 - 0.38	±0.13

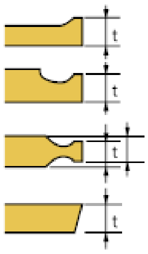
4 Cross Section Type



5 Cutting Edge Length, Diameter of Inscribed circle

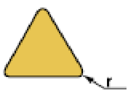
Symbol								IC
C	D	S	T	R	V	W		
Metric							Inch	d(mm)
03	04	03	06	03	-	02	1.2(5)	3.97
04	05	04	08	04	08	S3	1.5(6)	4.76
05	06	05	09	05	09	03	1.8(7)	5.56
-	-	-	-	06	-	-	-	6.00
06	07	06	11	06	11	04	2	6.35
08	09	07	13	07	13	05	2.5	7.94
-	-	-	-	08	-	-	-	8.00
09	11	09	16	09	16	06	3	9.525
-	-	-	-	10	-	-	-	10.00
11	13	11	19	11	19	07	3.5	11.11
-	-	-	-	12	-	-	-	12.00
12	15	12	22	12	22	08	4	12.70
14	17	14	24	14	24	09	4.5	14.29
16	19	15	27	15	27	10	5	15.875
-	-	-	-	16	-	-	-	16.00
17	21	17	30	17	30	11	5.5	17.46
19	23	19	33	19	33	13	6	19.05
-	-	-	-	20	-	-	-	20.00
22	27	22	38	22	38	15	7	22.225
-	-	-	-	25	-	-	-	25.00
25	31	25	44	25	44	17	8	25.40
32	38	31	54	31	54	21	10	31.75
-	-	-	-	32	-	-	-	32.00

6 Thickness



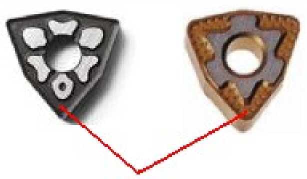
Symbol		Thickness (t)	
Metric	Inch	mm	Inch
-	0.5(1)	0.79	1/32
T0	0.6	1.00	0.040
01	1(2)	1.59	1/16
T1	1.2	1.98	5/64
02	1.5(3)	2.38	3/32
03	2	3.18	1/8
T3	2.5	3.97	5/32
04	3	4.76	3/16
05	3.5	5.56	7/32
06	4	6.35	1/4
07	5	7.94	5/16
09	6	9.52	3/8
11	7	11.11	7/16
12	8	12.70	1/2

7 Nose Radius (Nose R)



Symbol		Corner Radius	
Metric	Inch	mm	Inch
01	0	0.1	0.004
02	0.5	0.2	0.008
04	1	0.4	1/64
08	2	0.8	1/32
12	3	1.2	3/64
16	4	1.6	1/16
20	5	2.0	5/64
24	6	2.4	3/32
28	7	2.8	7/64
32	8	3.2	1/8
00	-	Round insert(Inch)	
M0	-	Round insert(Metric)	

8 Chip Breaker



Varies between manufacturers.
Name is given by them. E.g., WR, FG