

Countersinks

These countersinks are often mistakenly classified as milling cutters, but if we taking into account the definition of countersinks they fall into this category.

The German unification includes 4 values of the angle of the cone, namely:

- *DIN 334* with $\alpha = 60^\circ$
- *DIN 381* with $\alpha = 75^\circ$
- *DIN 335* with $\alpha = 90^\circ$
- *DIN 347* with $\alpha = 120^\circ$

The commonest types are those with an angle of 60° and 90° .

The countersink may have a tapered or cylindrical shank can be equipped with a front guide useful, the latter, when you need to make seats for countersunk screws.

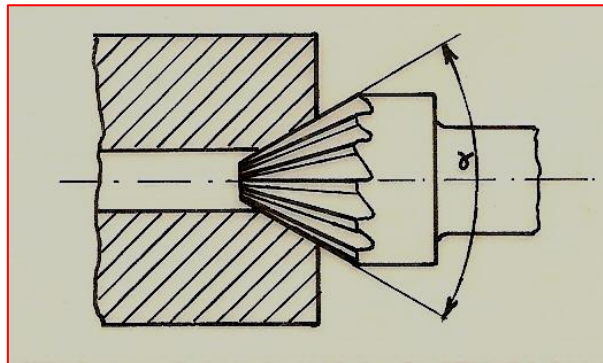


Figure N°1- Conical countersink

In the tables and figures below are the sizes of unified countersinks.

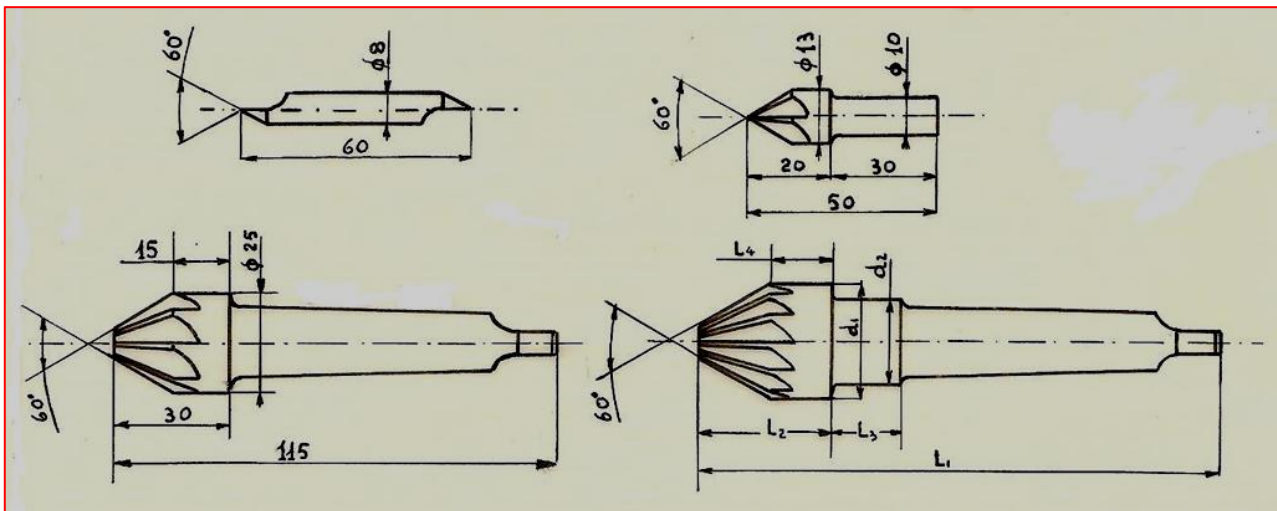


Figure N°2- Conical countersink at 60°

Tab:N°1

d_1	d_2	L_1	L_2	L_3	L_4	C.M.
35	22	135	35	18	17	2
50	28	170	48	20	22	3

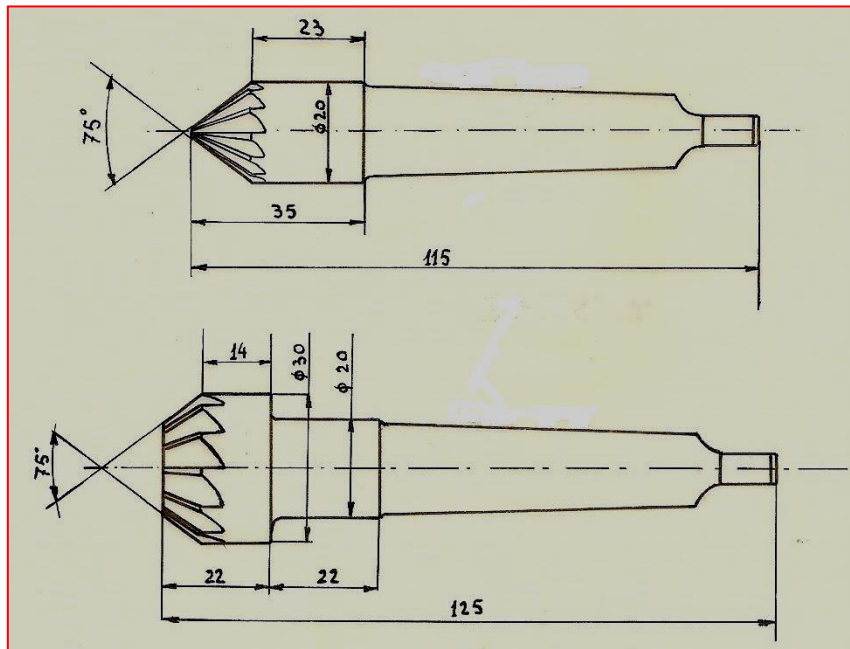


Figure N°2- Conical countersink at 75°

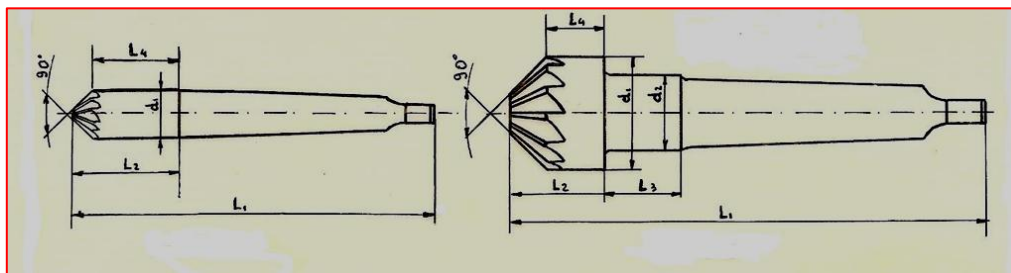


Figure N°3- Conical countersink at 90°

Tab.N°2

d ₁	d ₂	L ₁	L ₂	L ₃	L ₄	C.M.	Type
12	--	95	28	--	23	1	1
20	--	11	35	--	28	2	1
30	20	125	25	20	15	2	2
45	28	155	30	20	15	3	2
60	35	170	40	25	22	3	2
80	35	185	50	28	28	3	2

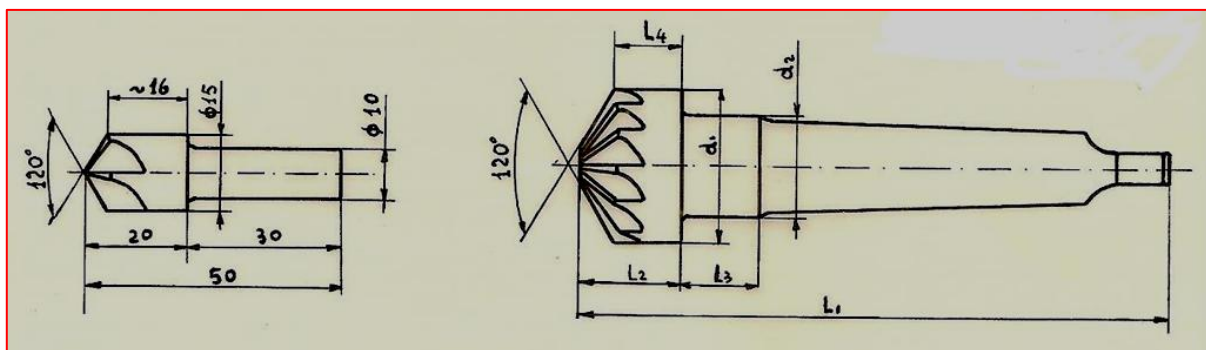


Figure N°4- Conical countersink at 120°

Tab.N°3

d ₁	d ₂	L ₁	L ₂	L ₃	L ₄	C.M.
30	20	115	20	15	13	2
50	28	155	25	25	18	3

Countersink in carbide

The conical countersinks chamfer often are manufactured in carbide and are used with excellent performance on each type of material, but especially on cast iron and aluminum. The carbide can be brazed to a steel body, but in this case there are limitations on both the number of teeth and minimum diameters.

Much more attractive are the conical countersinks in solid carbide. They have a solid carbide head and the shank, which is generally cylindrical, is welded to the head.

The number of possible edges is a function of the diameter and of the angle of the cone. For conical countersinks with carbide brazed inserts you can have a sizing as the table N°4 .

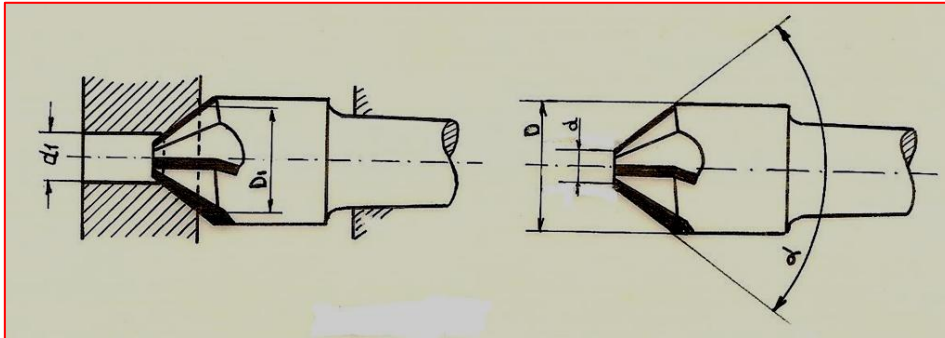


Figure N°5 – Conical countersink with carbide brazed insert

Table N°4

Angle of the cone α	Diameter		Total length	C.M.	N° of cutting edges
	d	D			
60°	5	25	120	2	3
	6	35	150	2	4
	8	50	190	3	5
75°	5	20	115	2	3
	6	30	135	2	4
90°	5	20	115	2	3
	6	30	130	2	4
	8	45	160	3	5
	9	60	180	3	6
120°	12	80	195	3	8
	8	30	115	2	4
	10	50	160	3	5

he conical countersinks in solid carbide can also have one or two or at most three cutting edges. Figure N°7 are represented some conical countersinks in carbide manufactured by Cerin (Affi - Verona - Italy).

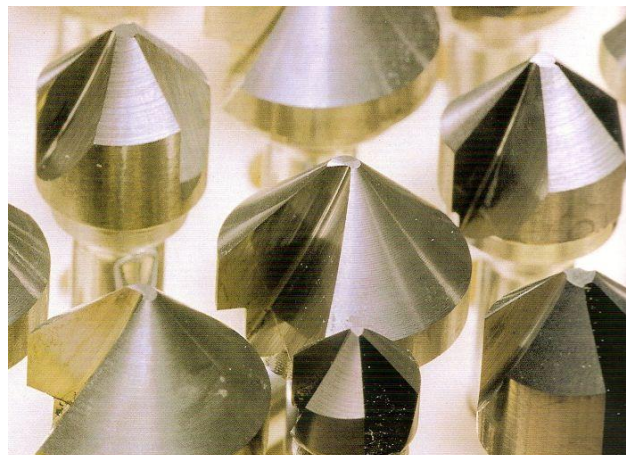


Figure N°7- Countersink made by Cerin (Affi – VR - Italy)