

[Consultation]



I was recently asked to machine 2 center holes " $\phi 1.25 \times 60^\circ$ " and " $\phi 3.15 \times 60^\circ$ ". Do I need a special center drill for machining these two center holes? Are " $1.2 \times 60^\circ$ " or " $3 \times 60^\circ$ " the standard center holes?

[Answer]

The update JIS standard for center holes has been standardized with the ISO standard and changed into "A type $1.25 \times 60^\circ$ " and "A type $3.15 \times 60^\circ$ " etc. The " $1.2 \times 60^\circ$ " and " $3 \times 60^\circ$ " became the old JIS standard. However, the current situation in Japan, it seems that the old JIS center hole standard is still being used frequently. YAMAWA also has stock of the CESA (JIS A type 60°) center drills that complies with the current JIS standard, so it is still available to purchase.



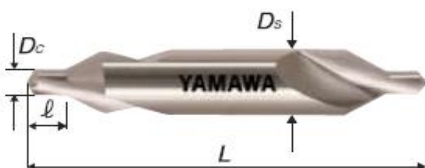
[Explanation]

Comparison of "Current JIS standard" and "Old JIS standard" center drill dimensions

Let's compare the dimensions between the "Current JIS standard", "Old JIS standard" and "YAMAWA standard" center drills with high helix flutes that are used for machining "A type $1.25 \times 60^\circ$ " and "A type $3.15 \times 60^\circ$ ".

Please note that the drill length (ℓ) is specified from the tip of the drill section in the current JIS standard, while the length from the shoulder is specified in the old JIS standard.

[Shape and dimensions in current JIS standard]



[Shape and dimensions in old JIS standard and YAMAWA standard]



Standard Description	Item name	Dc $\times\theta\times Ds$	Dc (mm)	Ds (mm)	L (mm)	ℓ (mm)
		Size	Drill dia	Shank dia	OAL	Drill length
Current JIS	CE-S	1.25 $\times 60^\circ \times 3.15$	1.25	3.15	31.5	1.9
Old JIS(I)	-	-	-	-	-	-
YAMAWA	CE-S	1.2 $\times 60^\circ \times 5$	1.2	5	40	1.2

Standard Description	Item name	Dc $\times\theta\times Ds$	Dc (mm)	Ds (mm)	L (mm)	ℓ (mm)
		Size	Drill dia	Shank dia	OAL	Drill length
Current JIS	CE-S	3.15 $\times 60^\circ \times 8$	3.15	8	50	4.8
Old JIS(I)	CE-S	3 $\times 60^\circ \times 10$	3	10	55	4
YAMAWA 1	CE-S	3 $\times 60^\circ \times 7.7$	3	7.7	55	3
YAMAWA 2	CE-S	3 $\times 60^\circ \times 8$	3	8	55	3

So, depending on the standard, the shank diameter, overall length, and drill length are different?



One Point Advise



The angle, roundness, and surface finish of the center hole are very important because the "center hole" is the standard for cylindrical turning or cylindrical grinding. Therefore, the tolerance of the countersink angle of the center drill is held to a very tight tolerance. On the other hand, the drill diameter, overall length, drill length are specified by relatively loose tolerances. There are also several kinds of shank diameters depending on the type (standard) of the center drill, so when machining the center hole, be sure to check the drill diameter and countersink angle as well as the shank diameter.