SAE Aerospace
An SAE International Group

METRIC AEROSPACE STANDARD

SAE MA1759 | REV. A

Issued 1986-09
Revised 1996-08
Reaffirmed 2012-11

Superseding MA1759

Center Hole, Metric

RATIONALE

MA1759A has been reaffirmed to comply with the SAE five-year review policy.

1. SCOPE:

This SAE Metric Aerospace Standard (MA) specifies the drawing requirements for center holes when center holes are required on the finished part.

1.1 Application:

Center holes make it possible to install a part between bench or machine centers in the process of manufacturing. With such center holes, it is possible to:

a. Achieve center related runout requirements
b. Simplify manufacture and inspection of some revolution generated parts, namely those featuring multiple concentric diameters requiring several machining operations

1.2 Dimensional Standards:

Dimensions and tolerances in this standard are expressed in millimeters and comply with those for Type A center holes per ISO 866 and Type B center holes per ISO 2540.

2. REFERENCES:

2.1 ANSI Publications:

Available from ANSI, 11 West 42nd Street, New York, NY 10036-8002.

ISO 866
ISO 2540
ISO/R286

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3. CENTER HOLE DESIGNATIONS:

3.1 Hollow Part Centers:

For hollow parts, the size of the countersink shall be determined from the size of the true hole (ϕA) and specified either by direct dimensioning or by drawing note as follows: HOLLOW PART CENTER, MA1759.

TABLE 1

Dimensions in millimeters

ϕA	CSK ϕ B + 0.05 0.00
Up to 12.00	A Max + 1.5
Over 12.00 to 25.00	A Max + 2.5
Over 25.00 to 37.00	A Max + 3.0
Over 37.00	A Max + 3.5

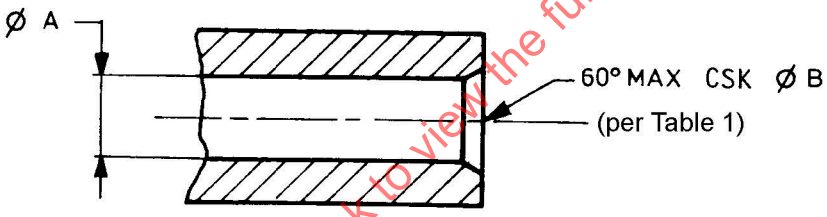

FIGURE 1 - Hollow Part Centers

3.2 Tapped Hole Centers:

Where centering from tapped holes could facilitate production, the hole ends should be designed as shown in Figure 2. Threads must be removed to a depth sufficient to assure that a machine or bench center does not contact on the threaded portion of the hole.

The size of the countersink shall be determined from the size of the hole (ϕA) and specified either by direct dimensioning or by drawing note as follows: TAPPED HOLE CENTER, MA1759.

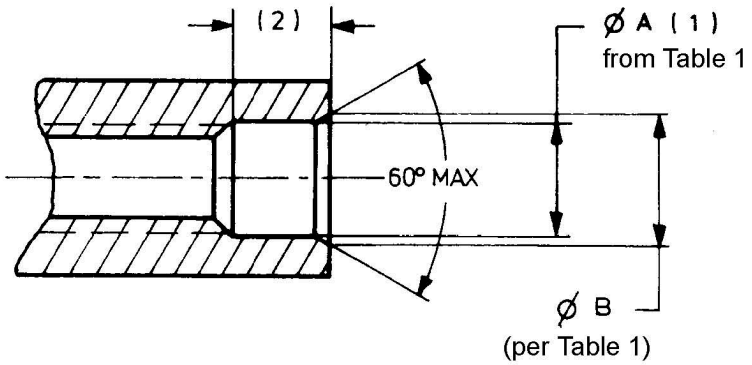

FIGURE 2 - Tapped Hole Centers

(1) This dimension is equal to the major thread diameter rounded off to the next larger standard drill size.
(2) This dimension (length of thread relief) shall be determined by the designer, to provide clearance for machine center and allow sufficient thread engagement.

3.3 Flat End Shaft:

The center hole shall be defined by drawing note or by direct dimensioning.

The note shall designate:

a. Center hole
b. Type of center hole
c. Reference to this Aerospace Standard followed by the nominal diameters

3.3.1 Center Hole, Type A:

DRAWING CALL OUT: CENTER HOLE, MA1759-Ad/D
(d and D from Table 2, nominal values)

TABLE 2 - Dimensions for Center Holes Type A

Dimensions in millimeters

d Nominal	ℓ min	D (Tol. Js11 **) min	D (Tol. Js11 **) nom	D (Tol. Js11 **) max
0.50 *	0.8	1.03	1.06	1.09
0.63 *	0.9	1.29	1.32	1.35
0.80 *	1.1	1.67	1.70	1.73
1.00	1.3	2.09	2.12	2.15
1.25 *	1.6	2.62	2.65	2.68
1.60	2.0	3.31	3.35	3.39
2.00	2.5	4.21	4.25	4.29
2.50	3.1	5.26	5.30	5.34
3.15	3.9	6.66	6.70	6.75
4.00	5.0	8.46	8.50	8.55
5.00 *	6.3	10.55	10.60	10.66
6.30	8.0	13.15	13.20	13.26
8.00 *	10.1	16.95	17.00	17.06
10.00	12.8	21.14	21.20	21.26

* Not preferred
** Tolerances according to ISO/R286

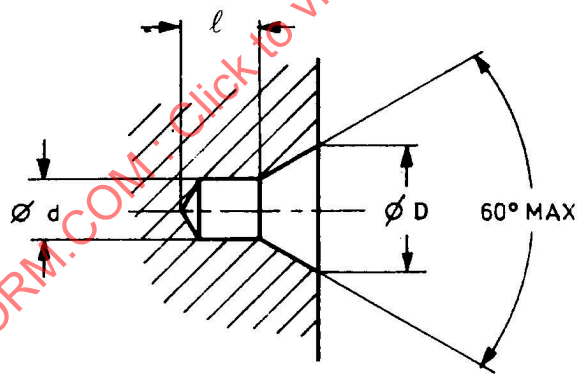

FIGURE 3 - Center Hole, Type A
Dimensions in Millimeters

3.3.2 Center Hole with Protective Chamfer, Type B (Preferred Type):

DRAWING CALL OUT: CENTER HOLE, MA1759-Bd/E
(d and E from Table 3, nominal values)