



SURFACE VEHICLE RECOMMENDED PRACTICE

J2696™

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Inboard Mounted Disc Brake Rotor/Disc Wheel Hub Interface Dimensions - Commercial Vehicles

RATIONALE

This SAE Recommended Practice has been revised to incorporate new designs that have emerged in the industry, with splined interfaces between hub and rotor. These designs are now included in the hat and flat rotor descriptions. Section 3.2 was added to comment on the splined design features and clarify their current proprietary nature.

1. SCOPE

This SAE Recommended Practice establishes dimensions and tolerances for the interface between inboard mounted disc brake rotors and disc wheel hubs. This document is intended for inboard mounted disc brake rotors and disc wheel hubs for Class 5, 6, 7, and 8 commercial vehicles. Special and less-common applications are not covered.

1.1 Purpose

This document defines and documents the dimensions and tolerances necessary to maintain interchangeability in the interface of disc brake rotors and hubs. It is intended to provide direction for future designs and aid in industry standardization.

This document uses the practice of defining hub and rotor mounting systems. Components of different mounting systems, but with common bolt patterns, could be mis-assembled and cause service problems. Therefore, it is important to note that each mounting system should be treated individually and their components should not be intermixed. It should also be noted that images shown are typical of the various hub and rotor systems. However, other variants may exist.

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2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or + 1 724-776-4970 (outside USA), www.sae.org.

SAE J393 Nomenclature - Wheels, Hubs, and Rims for Commercial Vehicles

SAE J694 Disc Wheel and Hub or Drum Interface Dimensions - Truck and Bus

SAE J1671 Outboard Mounted Brake Drum/Disc Wheel Hub Interface Dimensions - Truck and Bus

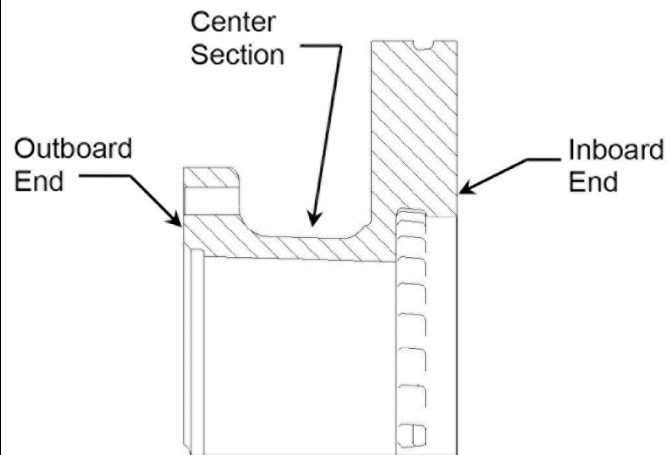
3. DEFINITIONS

A listing of basic nomenclature and definitions are shown in 3.1. Metric mounting systems are defined using millimeters (mm). Non-metric mounting systems are defined using inches. Note that the mounting systems defined in this document do not correspond to the mounting systems defined in SAE J694.

3.1 Feature Definitions

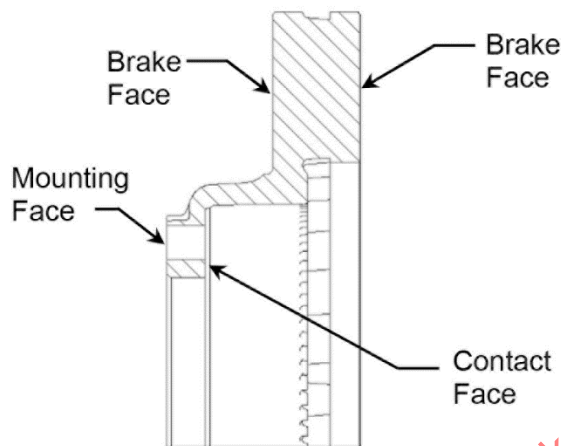
See Figures 1 to 5 and Tables 1 to 4.

A	Number of studs or bolts
B	Rotor mounting bolt circle
C	Rotor pilot hole diameter
D	Rotor nominal mounting through-hole size or thread
E	Rotor minimum chamfer
F	Rotor chamfer angle
G	Rotor minimum pilot length
H	Rotor maximum pilot radius
J	Hub pilot diameter
K	Hub nominal mounting through-hole size or thread
L	Hub maximum pilot root radius
M	Hub maximum pilot length
N	Hub nominal mounting counter bore diameter
P	Hub minimum mounting counter bore depth
Q	Hub mounting pilot chamfer angle
R	Hub maximum mounting pilot chamfer length



U-section rotors are identified by their distinct cross section. Both the axial inboard and outboard end of the rotor have larger outer diameters than the center section.

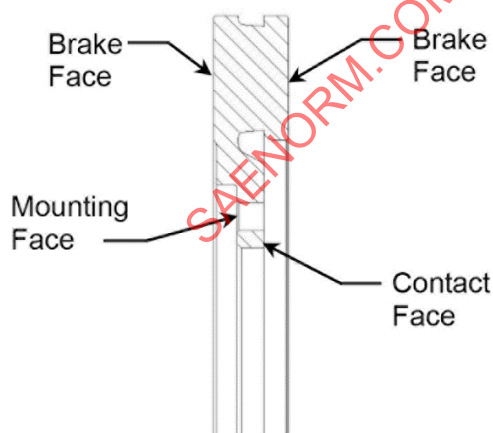
U-Section Rotor



Hat-section rotors are identified by the location of their attachment interface surfaces.

- (1) The mounting face or contact face, or both, are not between the braking faces. The entire mounting flange has a maximum diameter which is smaller than the inside diameter of the braking surfaces.
- (2) An internally and radially splined interface having some portion of splined surfaces not between the brake faces.

Hat Rotor



Flat-section rotors are identified by the location of their attachment interface surfaces.

- (1) Both the mounting face and the contact face are axially located between the braking surfaces. The entire mounting flange has a maximum diameter which is smaller than the inside diameter of the braking surfaces.
- (2) An internally and radially splined interface with all splined surfaces between the two brake faces.

Flat Rotor

Figure 1 - Rotor configurations

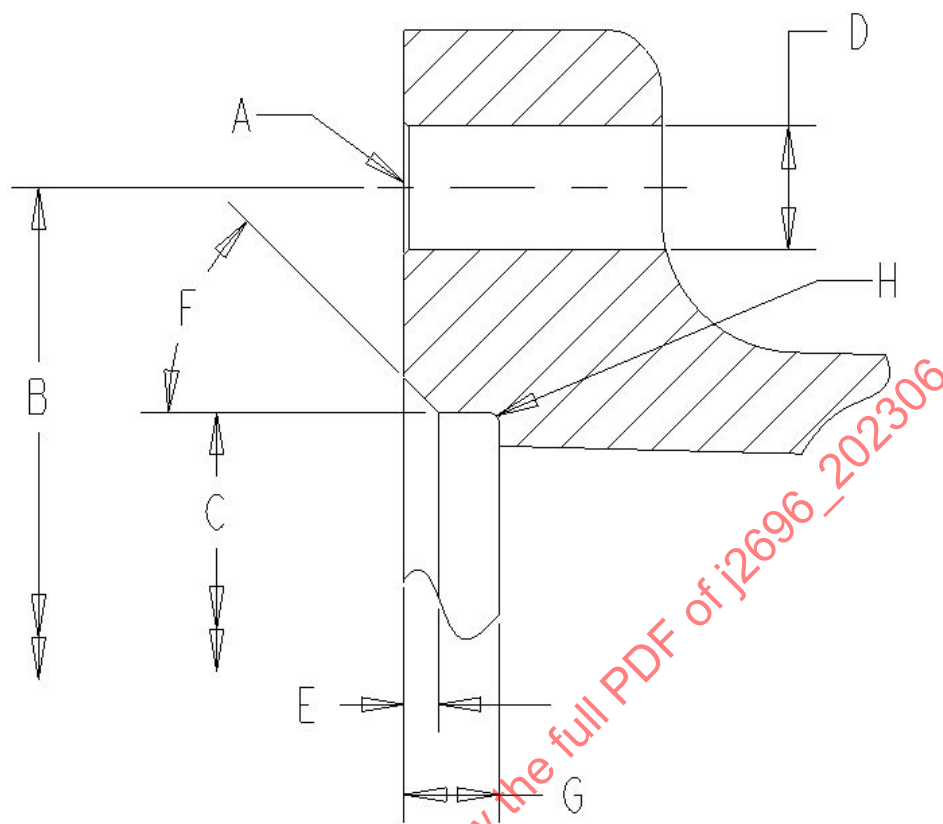


Figure 2 - Rotor interface dimensions—U-section rotors

Table 1 - U-section brake rotor dimensions—metric (inch)

	A	B	C	D	E	F	G	H
Mounting System	No. of Studs or Bolts	Mounting Bolt Circle ⊕ 0.38 Ø (⊕ 0.015 Ø)	Pilot Hole Diameter	Nominal Mounting Through-Hole Size or Thread	Chamfer	Chamfer Angle	Min Pilot Length	Max Pilot Radius
Ai	10	266.70 (10.500)	216.00/215.90 (8.504/8.500)	5/8-18	3.56/4.83 (0.140/0.190)	45 degrees	10.41 (0.410)	2.03 (0.080)
Aii	10	249.50 (9.823)	194.08/194.01 (7.641/7.638)	M16 x 2	22.49/23.76 (0.885/0.935)	35 degrees	28.83 (1.135)	1.14 (0.045)
Aiii	10	249.50 (9.823)	194.08/194.01 (7.641/7.638)	5/8-18	6.60/7.87 (0.260/0.310)	45 degrees	16.89 (0.665)	2.29 (0.090)
Aiv	10	249.50 (9.823)	219.99/219.91 (8.661/8.658)	5/8-11	2.50/3.77 (0.098/0.148)	20 degrees	9.90 (0.390)	2.70 (0.107)
Av	10	285.75 (11.250)	241.40/241.30 (9.504/9.500)	26.92 (1.060)	1.52/2.79 (0.060/0.110)	45 degrees	8.64 (0.340)	2.03 (0.080)
Avi	8	266.70 (10.500)	216.00/215.90 (8.504/8.500)	5/8-18	3.56/4.83 (0.140/0.190)	45 degrees	10.41 (0.410)	2.03 (0.080)

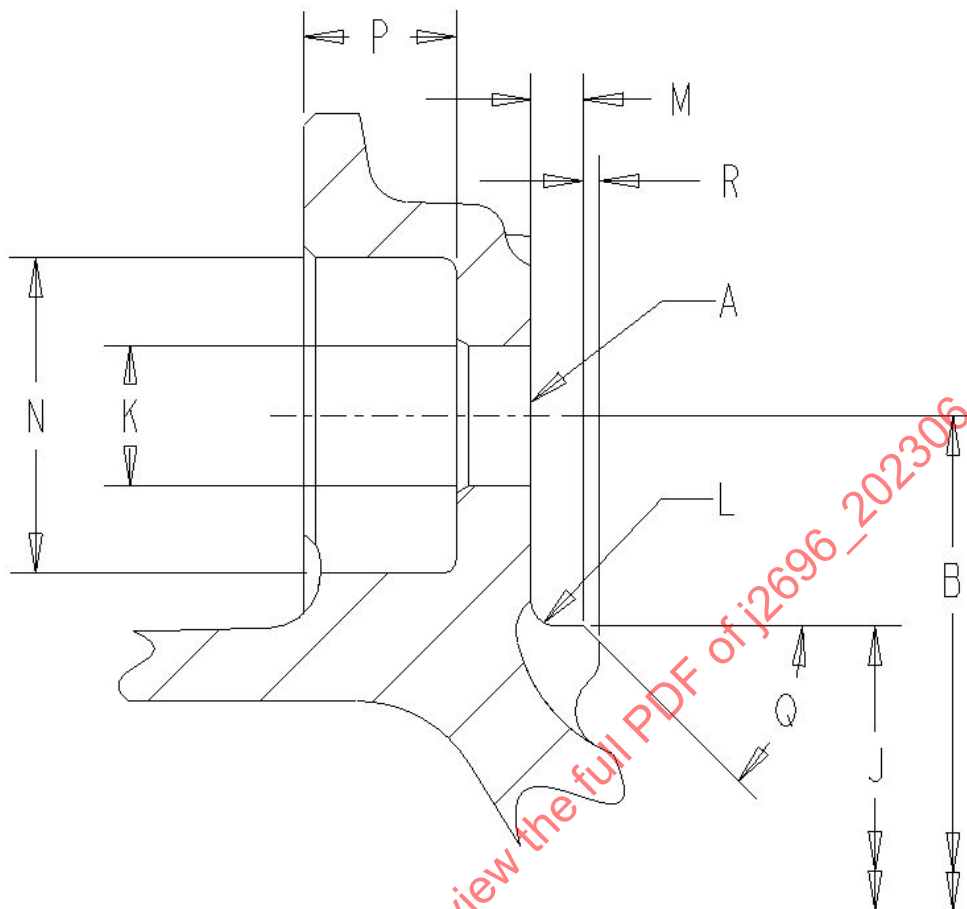


Figure 3 - Hub interface dimensions for use with U-section rotors

Table 2 - Disc brake hub dimensions for use with U-section rotors—metric (inch)

Mounting System	A No. of Studs or Bolts	B Mounting Bolt Circle $\pm 0.38 \text{ } \varnothing$ ($\pm 0.015 \text{ } \varnothing$)	J Pilot Diameter	K Nominal Mounting Through-Hole Size or Thread	L Max Pilot Root Radius ⁽¹⁾	M Pilot Length	N Nominal Mounting Counter Bore Diameter	P Min Mounting Counter Bore Depth	Q Mounting Pilot Chamfer Angle	R Max Mounting Pilot Chamfer Length
Ai	10	266.70 (10.500)	215.82/215.72 (8.497/8.493)	16.66 (0.656)	3.43 (0.135)	5.34/6.73 (0.210/0.265)	38.10 (1.500)	14.63 (0.576)	45 degrees	0.97 (0.038)
Aii	10	249.50 (9.823)	193.93/193.85 (7.635/7.632)	16.99 (0.669)	17.86 (0.703)	24.27/27.13 (0.955/1.068)	N/A	N/A	45 degrees	2.29 (0.090)
Aiii	10	249.50 (9.823)	194.00/193.93 (7.638/7.635)	17.00 (0.669)	5.48 (0.216)	8.38/14.34 (0.330/0.565)	25.50 (1.004)	17.60 (0.693)	45 degrees	N/A
Aiv	10	249.50 (9.823)	219.86/219.81 (8.656/8.654)	16.66 (0.656)	0.00 (0.000)	4.28/6.35 (0.168/0.250)	36.83 (1.450)	17.02 (0.670)	20 degrees	2.8 (0.110)
Av	10	285.75 (11.250)	241.30/241.22 (9.500/9.497)	25.40 (1.000)	1.52 (0.060)	3.30/6.60 (0.130/0.260)	N/A	N/A	N/A	N/A
Avi	8	266.70 (10.500)	215.82/215.72 (8.497/8.493)	16.66 (0.656)	3.43 (0.135)	5.34/6.73 (0.210/0.265)	38.10 (1.500)	14.63 (0.576)	45 degrees	0.97 (0.038)

⁽¹⁾ Pilot root radii identified as "0.00" may require an undercut.

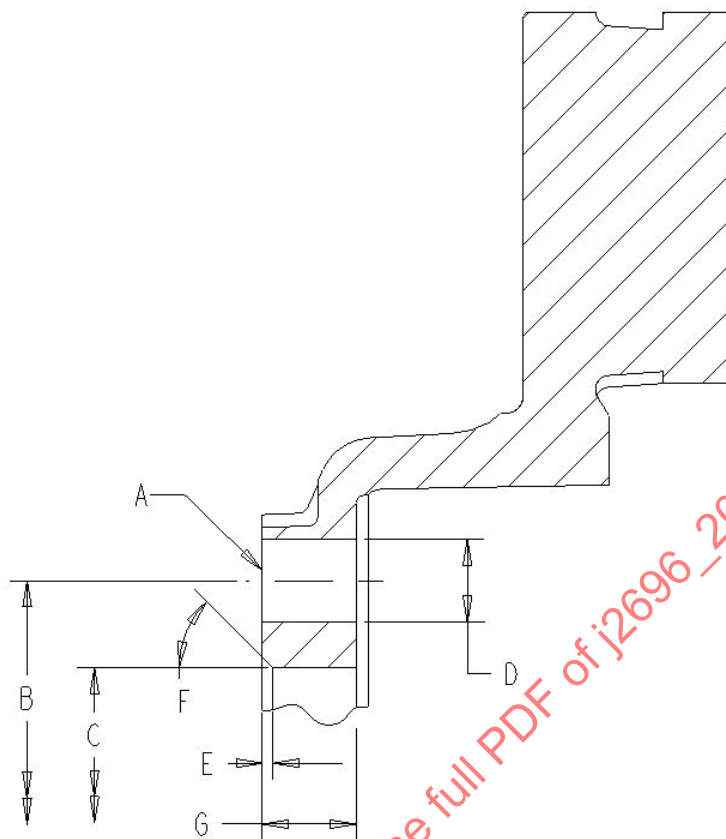


Figure 4 - Rotor interface dimensions—hat-section rotors

Table 3 - Hat-section brake rotor dimensions—metric (inch)

	A	B	C	D	E	F	G
Mounting System	No. of Studs or Bolts	Mounting Bolt Circle $\oplus 0.38 \text{ } \phi$ ($\oplus 0.015 \text{ } \phi$)	Pilot Hole Diameter	Nominal Mounting Through-Hole Size or Thread	Chamfer	Chamfer Angle	Min Pilot Length
Bi	10	184.15 (7.250)	152.50/152.43 (6.004/6.001)	15.09 (0.594)	1.50/2.77 (0.059/0.109)	45 degrees	16.75 (0.659)
Bii	10	184.15 (7.250)	152.50/152.43 (6.004/6.001)	14.70 (0.579)	2.29/3.56 (0.090/0.140)	45 degrees	9.65 (0.380)
Biii	10	184.15 (7.250)	152.48/152.40 (6.003/6.000)	15.09 (0.594)	1.02/2.29 (0.040/0.090)	45 degrees	10.67 (0.420)
Biv	8	184.15 (7.250)	152.50/152.43 (6.004/6.001)	15.09 (0.594)	1.50/2.77 (0.059/0.109)	45 degrees	16.75 (0.659)
Bv	6	171.45 (6.750)	137.24/137.16 (5.403/5.400)	19.46 (0.766)	1.02/2.29 (0.040/0.090)	45 degrees	10.67 (0.420)
Bvi ⁽¹⁾	10	199.64 (7.860)	166.62/166.37 (6.560/6.550)	16.77 (0.660)	3.18/4.45 (0.125/0.175)	45 degrees	N/A
Bvii	16	221.50 (8.720)	192.40/192.33 (7.575/7.572)	15.09 (0.594)	2.20/3.47 (0.087/0.137)	45 degrees	N/A
Bviii	10	219.70 (8.650)	187.62/187.56 (7.387/7.384)	12.70 (0.500)	3.05/4.32 (0.120/0.170)	45 degrees	11.43 (0.450)

⁽¹⁾ Rotors pilot on the mounting stud body.