SURFACE VEHICLE RECOMMENDED PRACTICE

J694	MAY2015
Issued 1955-05 Revised 2015-05 Superseding J694 JUN2007	

(R) Disc Wheel and Hub or Drum Interface Dimensions - Truck and Bus

RATIONALE

The primary change was adding provisions for interrupted hub flange surfaces to accommodate some disc brake mounting designs. Reworded scope to apply to truck and bus not commercial vehicles and multipurpose passenger vehicles. “for single applications” changed to “designed only” for “single wheel applications (not dual wheels) for light trucks” in scope. Added section 5.2.2.2, Figure 4, and Table 3. Table 1 and 2 were revised to show options for various different rim widths. “Aluminum disc wheels” removed from footnote 1. Footnote 3 added. Section 2.1 title changed from “Publications” to “Documents”. “SAE” changed to “SAE International”. Section 2.1.1 Title of SAE J1671 was updated. Section 2.2.1 added SAE J2696 reference. Corrected titles to SAE J1842 and SAE J2696, ISO 7575. Reworded Section 3 introduction describing SAE J393 further. Sections 1 and 2 are now titled with very large text to clearly separate them. Section 1 title now includes ISO 7575 reference. Added “nut” reference to title of section 2. Figures 1 and 2: added “Only required on face or faces mounting to hub or drum” to further specify wheel chamfer. Figure 3 further specified alternate fillet within the bounds of a 1.4mm maximum regular fillet. Table 4 corrected title of d4 dimension to “Maximum” was “minimum”. Table 5 mounting system XVII aluminum wheel thickness 20mm was 15.5mm. Table 6 0.38 was 0.36. Figures 6 and 7, chamfers made optional on ball seat wheels, and minimum on flange nut mounting only on surface mounting to wheel or drum. Table 8 added Aluminum to mounting system XVII. Table 9 system VII G 1.47, 1.85 was 1.45, 1.81.

1. SCOPE

This SAE Recommended Practice contains dimensions and their tolerances concerning disc wheel to hub or drum interface areas for truck and bus applications. Disc wheels designed only for single wheel applications (not dual wheels) for light trucks and special or less common applications are not covered in this document.

1.1 Purpose

This document defines wheel mounting systems and documents the dimensions and tolerances necessary to maintain serviceability, and interchangeability in the interface areas. To be consistent with ISO, it is divided into two sections (I and II). Section I is in concert with ISO 4107, describing mounting systems currently used internationally and nominated for, or included in, the international standard for bolt circle interfaces. Section II records information on current mounting systems also used in North America. ***Components of different mounting systems with common bolt patterns could be mis-assembled together and cause service problems. Therefore, it is important to note that each mounting system should be treated individually and their components not be intermixed.***

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

2.1.2 ISO Publications

Available from American National Standards Institute, 25 West 43rd Street, New York, NY 10036-8002, Tel: 212-642-4900, www.ansi.org.

ISO 4107 Commercial vehicles - Wheel hub attachment dimensions

ISO 7575 Commercial Road Vehicles - Flat Attachment Wheel Fixing Nuts

2.2 Related Publication

The following publications are provided for information purposes only and are not a required part of this SAE Technical Report.

2.2.1 SAE Publication

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 J1842 Disc Wheel Hub/Spoke Wheel and Axle Interface Dimensions - Commercial Vehicles

SAE J2696 Inboard Mounted Disc Brake Rotor/Disc Wheel Hub Interface Dimensions - Commercial Vehicles

3. DEFINITIONS

A detailed listing of basic nomenclature is contained in SAE J393 which introduces, illustrates, and specifies additional nomenclature and definitions.

3.1 MOUNTING SYSTEM

The combination of wheel/hub or drum interface characteristics that identify uniqueness. These characteristics are: number of bolt holes, bolt circle diameter, and fastener type. Unique mounting systems are identified by the Roman numerals in applicable tables throughout the document. Within a given mounting system, the wheels are interchangeable only by use of the appropriate fasteners and/or hubs with appropriate dimensions for the wheel material shown.

3.2 SCALLOPED HUBS

In an attempt to reduce wheel end package weight, some hub manufacturers have adopted the practice of creating scallops in the wheel mounting flange on the hub. The term scallop refers to the removal of material from the wheel backup diameter that results in an interrupted support face. In some applications, the use of scalloped hubs has led to the development of cyclical fatigue cracks in disc wheels. It is recommended that scalloped hubs not be used when the disc wheel is mounted directly to the mounting face on the hub. Use of scalloped hubs with outboard mounted brake drums is generally deemed acceptable. Wheel manufacturers should be consulted for each particular application.

4. ABBREVIATIONS

Abbreviations used are as follows:

BSN = Ball seat nut
BSN-AL = Ball seat nut for aluminum wheels
BSN-HD = Ball seat nut, heavy duty
FN = Flange nut
N/A = Not applicable

5. SECTION 1 - DISC WHEEL/HUB OR DRUM INTERFACE COMPATIBLE WITH ISO 4107 AND ISO 7575 NUTS AND USED

5.1 Wheel Dimensions

5.1.1 Definitions of Wheel Dimensions

Reference Figures 1 and 2.

A = Number of bolt holes
B = Bolt circle diameter
C = Center hole diameter
D = Bolt hole diameter
E = Disc flat clearance diameter
F = Disc thickness

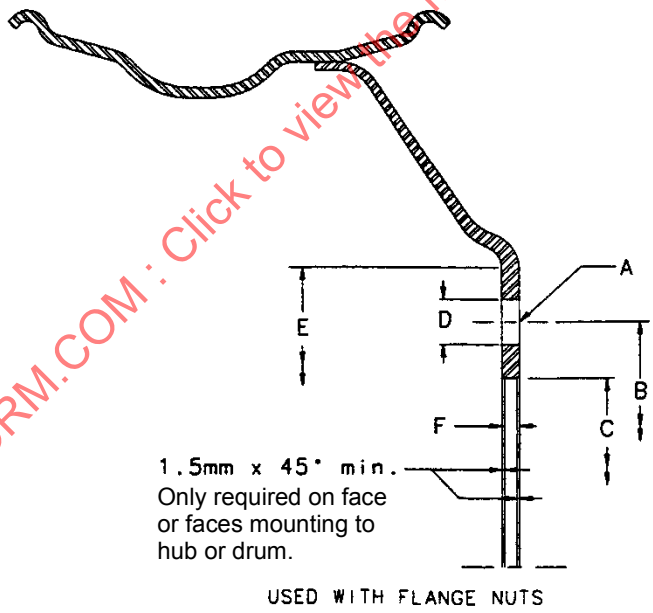

Figure 1 - Ferrous disc wheel

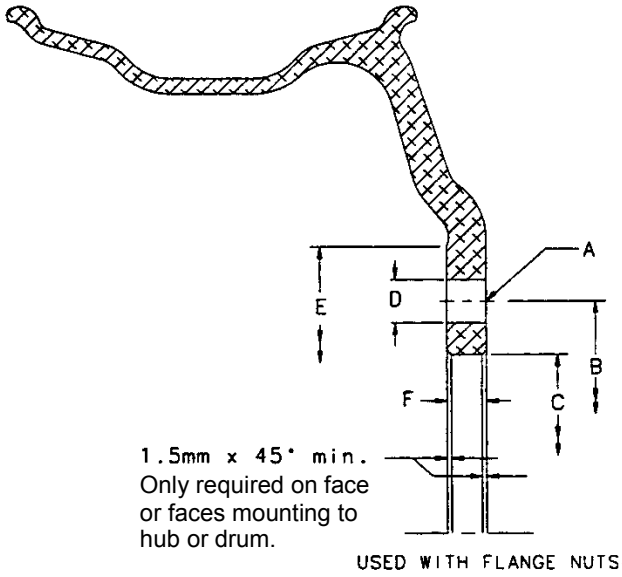

Figure 2 - Aluminum disc wheel

5.1.2 Dimensions and Tolerances of Wheels

5.1.2.1 Metric System Mountings - Wheel Dimensions. All dimensions in millimeters. Reference Table 1.

Table 1 - Metric system mountings - wheel dimensions

Mounting System	Mounting Systems # of Bolt Holes A	Mounting Systems Bolt Circle Diameter B ⊕ 0.40 ∅	Mounting Systems Fastener Type(1)	Mounting Systems Wheel Material(1)	Dimensions Center Hole Diameter C +0.2, –0	Dimensions Bolt Hole Diameter D +1, –0	Dimensions Disc Flat Clearance Diameter E Minimum	Dimensions Disc Thickness(1)(2) F Maximum		
								≤8.25 Rim Width	8.50 & 9.00 Rim Width	>9.00 Rim Width
II	8	275	FN	Ferrous	221.0	24	325	13	N/A	N/A
				Aluminum	221.1(3)	24	325	25.4	N/A	N/A
III	10	285.75	FN	Ferrous	220.0	26	345	14	16	16
				Aluminum	220.1	26	345	25.4	25.4	30
IV	10	335	FN	Ferrous	281.0	26	390	14	16	16
				Aluminum	281.1	26	390	25.4	25.4	30
XIII	6	205	FN	Ferrous	161.0	21	255	13	N/A	N/A
				Aluminum	161.1	21	255	20	N/A	N/A
XV	6	245	FN	Ferrous	202.0	21	295	13	N/A	N/A
				Aluminum	202.1	21	295	20	N/A	N/A
XVI	8	222.25	FN	Ferrous	164.0	24	280	13	N/A	N/A
				Aluminum	164.1	24	280	20	N/A	N/A

1. Disc thickness and fastener type are not included in ISO 4107.
2. N/A signifies a number not applicable to the given configuration
3. This value is 221.2 in ISO 4107.

5.2 Hub or Drum Interface Dimensions

5.2.1 Definitions of Hub or Drum Interface Dimensions

Reference Figure 3.

A = Number of studs or bolts
B = Bolt circle diameter
C1 = Wheel pilot diameter
D2 = Stud or bolt size
E1 = Diameter of wheel backup - hub or outboard drum (usually not coincident with hub flange outside diameter)
F1 = Wheel pilot length (does not include lead in radius or chamfer)
G = Stud or bolt standout beyond wheel mounting face of hub or outboard drum. This is calculated with the maximum wheel thickness plus the maximum nut thickness to permit full thread engagement.

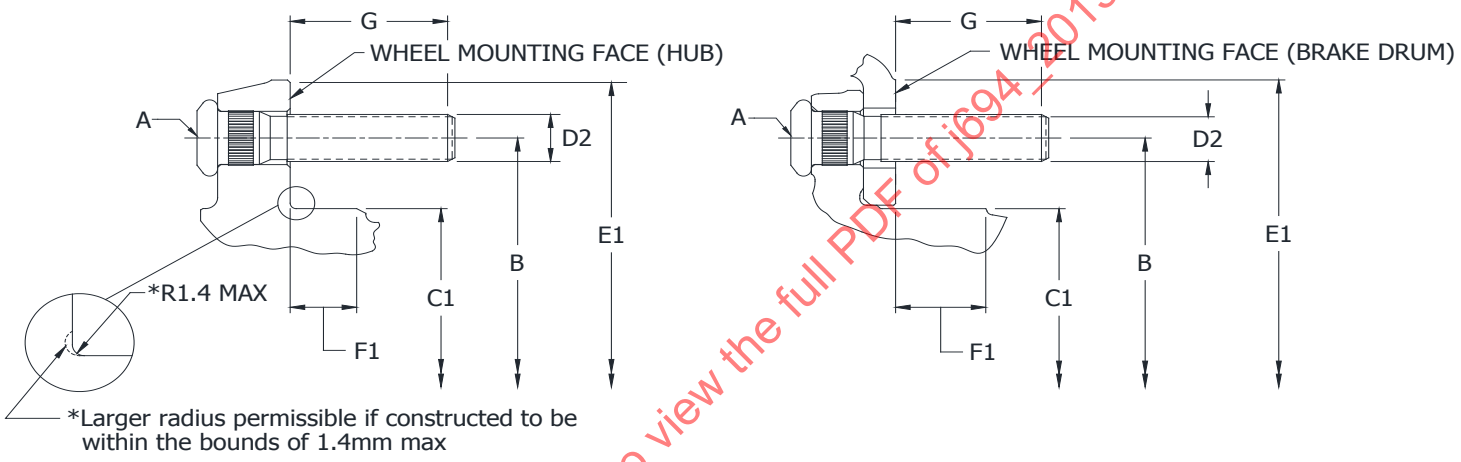

Figure 3 - Hub or drum interface dimensions

5.2.2 Interface Dimensions and Tolerances of Hubs or Drums

5.2.2.1 Metric System Mountings - Hub Dimensions

All dimensions in millimeters. Reference Table 2.

Table 2 - Metric system mountings - hub dimensions

Mounting System	Mounting Systems # of Studs or Bolts A	Mounting Systems Bolt Circle Diameter B ⊕ 0.40 ∅	Mounting Systems Fastener Type(1)	Mounting Systems Wheel Material(1)	Stud or Bolt Diameter D2	Wheel Pilot Diameter C1 +0, –0.2	Wheel Backup Diameter E1	Wheel Pilot Length Single(1) F1 Minimum	Wheel Pilot Length Dual(1) F1 Minimum	Standout Single G(1,2) Minimum ≤8.25 Rim Width	Standout Dual G(1,2) Minimum ≤8.25 Rim Width	Standout Single G(1,2,3) Minimum 8.5&9.0 Rim Width	Standout Dual G(1,2,3) Minimum 8.5&9.0 Rim Width	Standout Single G(1,2,3) Minimum >9.0 Rim Width
II	8	275	FN	Ferrous	20	220.8	315/320	13	20	42	55	N/A	N/A	N/A
				Aluminum	20	220.8	315/320	13	35	55	80	N/A	N/A	N/A
III	10	285.75	FN	Ferrous	22	219.8	335/340	13	20	48	62	50	66	50
				Aluminum	22	219.8	335/340	13	35	60	85	60	85	64.6
IV	10	335	FN	Ferrous	22	280.8	380/385	13	20	48	62	50	66	50
				Aluminum	22	280.8	380/385	13	35	60	85	60	85	64.6
XIII	6	205	FN	Ferrous	18	160.8	245/250	10	20	40	53	N/A	N/A	N/A
				Aluminum	18	160.8	245/250	10	30	47	67	N/A	N/A	N/A
XV	6	245	FN	Ferrous	18	201.8	285/290	10	20	40	53	N/A	N/A	N/A
				Aluminum	18	201.8	285/290	10	30	47	67	N/A	N/A	N/A
XVI	8	222.25	FN	Ferrous	20	163.8	272/277	10	20	42	55	N/A	N/A	N/A
				Aluminum	20	163.8	272/277	10	30	49	69	N/A	N/A	N/A

1. Wheel pilot length, stud or bolt standout, and fastener type are not included in ISO 4107.
2. For wheels with disc thicknesses that are outside the scope of this document, longer standouts than those shown may be required.
3. N/A signifies a number not applicable to the given configuration.

5.2.2.2 Interface area of wheel and hub

There are applications that can reduce the contact area between the wheel and the hub. A typical application is the case of a disc brake rotor attachment. SAE J2696 defines rotor attachment methods for wheel hubs.

Figure 4 illustrates the least material condition of the most common areas of contact for mounting systems II, III, and IV. Only one option in Figure 4 can be used for each hub and wheel. Testing has demonstrated that for the most common mounting (system III), that there is no measurable degradation in wheel performance when tested per SAE J267. One assembly configuration was tested for each option. As part rigidity may vary, consult wheel manufacturers for specific configurations. The diameters specified represent holes where no contact is offered to mating wheels.

5.2.2.3 Definitions of Hub or Drum Interface Dimensions - Reference Figure 4.

A = Basic angle of symmetry for rotor mounting pitch circle
R1 = Maximum radius of rotor mounting holes for rotor mounted on wheel mounting pitch diameter
R2 = Maximum radius of rotor mounting holes for rotor mounted below wheel mounting pitch diameter
D1 = Rotor mounting pitch circle diameter (option 1)
D2 = Rotor mounting pitch circle diameter (option 2)

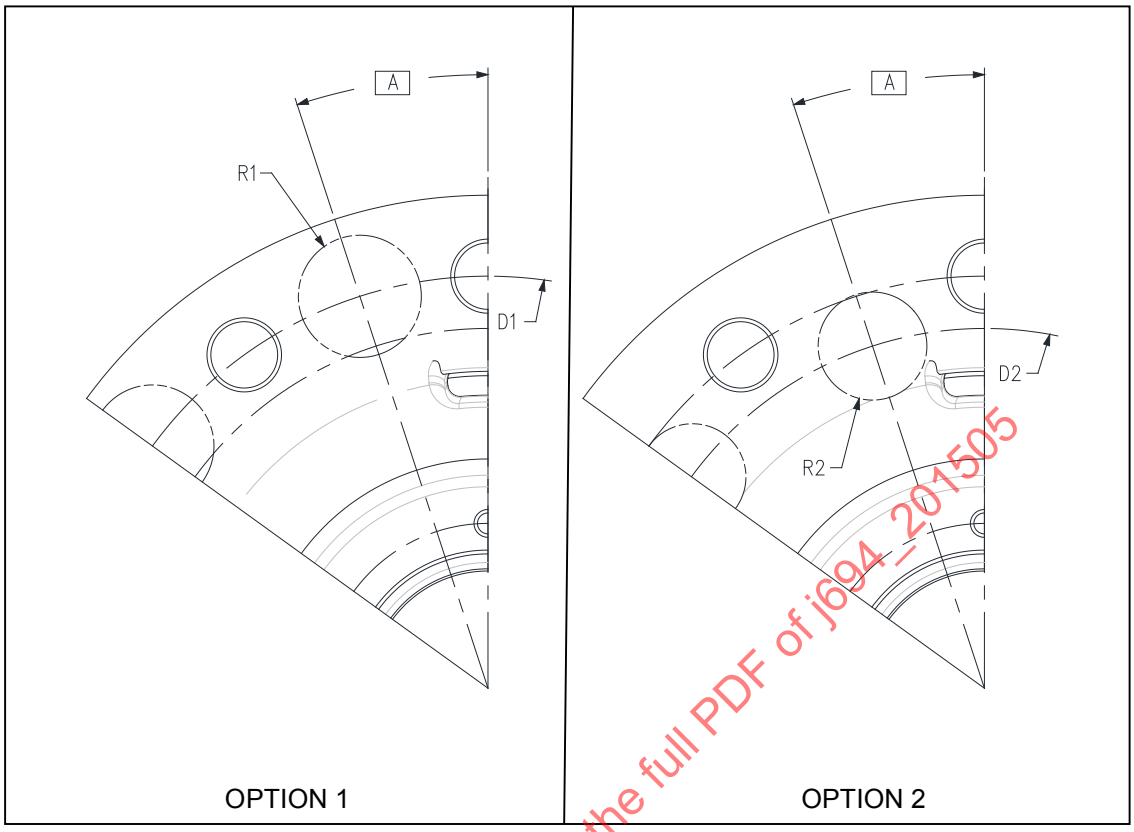

Figure 4 - Interface area of hub and wheel

Table 3 - Hub interface dimensions

Mounting System	D1	D2	Basic Angle A	R1 Maximum	R2 Maximum
II	275	266.7	22.5	TBD	TBD
III	285.75	249.5	18	21.3	21.3
IV	335	249.5	18	TBD	TBD

5.3 Fastener Dimensions and Tolerances

5.3.1 Definitions of Fastener Dimensions

Reference Figure 5.

a = Distance to first thread from seat end
d1 = Thread size
d3 = Flange inner diameter
d4 = Flange outer diameter
h = Overall nut height
j = Hex flat
s = Nominal width across flats
w = Width of flange contact

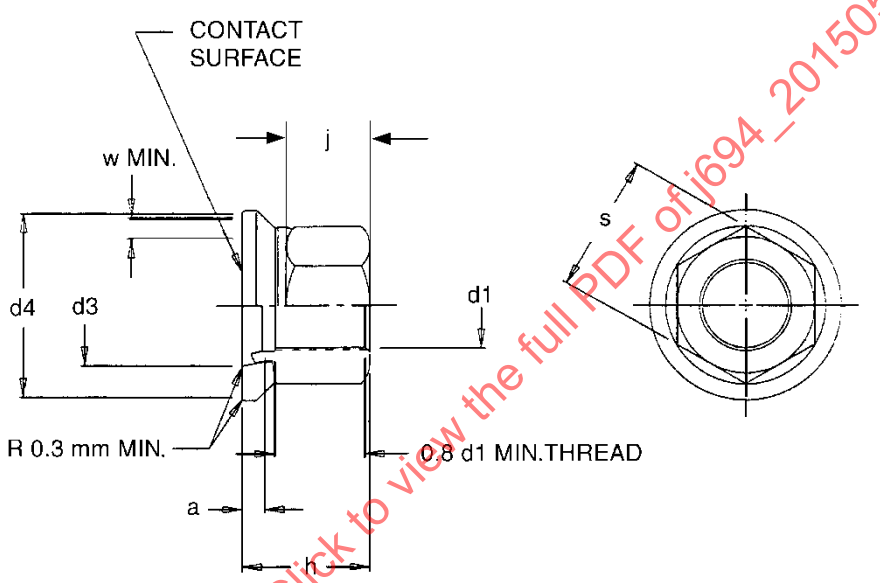

Figure 5- Two-piece flange nut

5.3.2 Dimensions and Tolerances of Two-Piece Flange Nuts (FN)

5.3.2.1 Metric System Mountings

All dimensions in millimeters. Reference Table 4.

Table 4 - Metric system mountings

Thread Size d1	Hex Size s	Flange Inner Diameter d3 Minimum	Flange Outer Diameter d4 Maximum	Thread Start a Minimum	Width of Flange Contact w Minimum	Height of Nut and Flange h Maximum	Hex Flat j Minimum
M18 x 1.5	27	23	40	4.5	5.0	27	10.5
M20 x 1.5	30	26	45	4.5	5.5	29	11.0
M22 x 1.5	33	28	49	4.5	6.0	34	12.5

6. SECTION II - LEGACY DISC WHEEL/HUB OR DRUM INTERFACE AND NUTS USED IN NORTH AMERICA

6.1 Wheel Dimensions

6.1.1 Definitions of Wheel Dimensions

Reference Figures 6 and 7.

A = Number of bolt holes
B = Bolt circle diameter
C = Center hole diameter
D = Bolt hole diameter
E = Disc flat clearance diameter
F = Disc thickness
K = Ball Seat Radius
L = Ball Seat Intersection

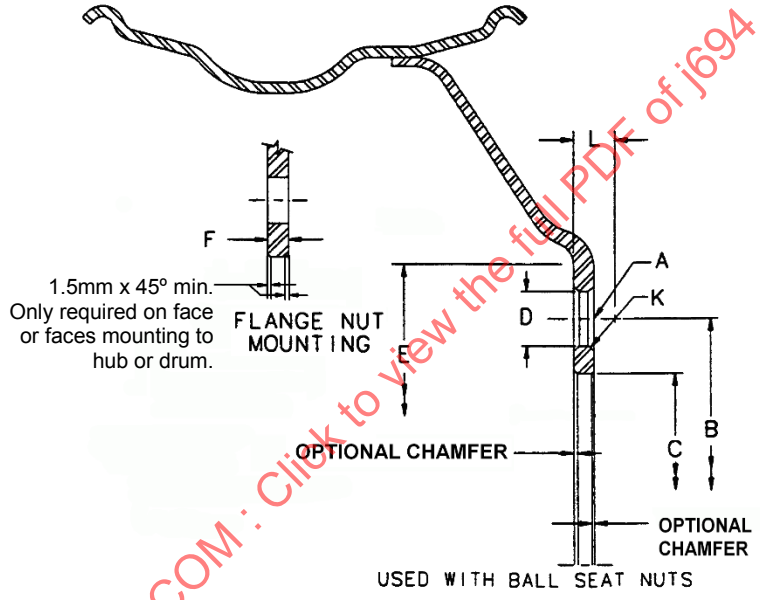

Figure 6 - Ferrous disc wheel

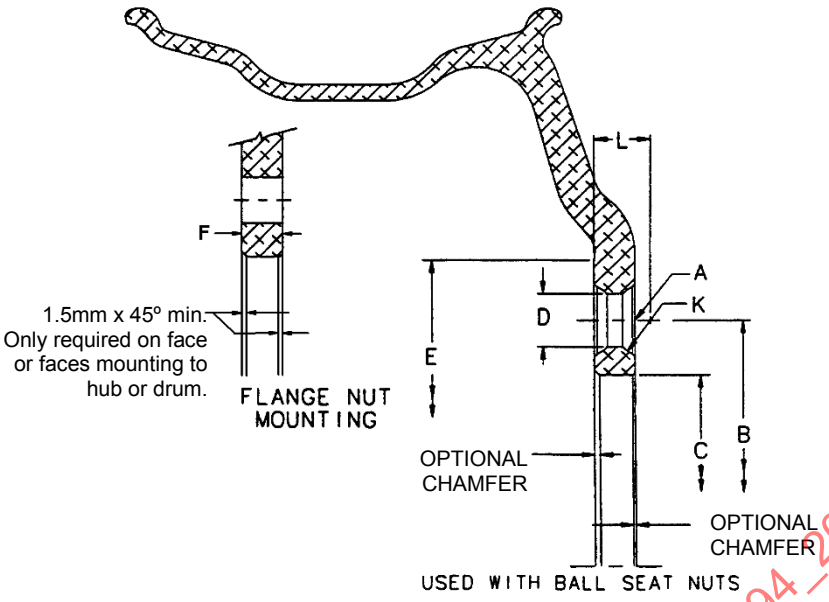

Figure 7 - Aluminum disc wheel

6.1.2 Dimensions and Tolerances of Wheels

6.1.2.1 Metric System Mounting used with Flange Nuts - Wheel Dimensions

All dimensions in millimeters. Reference Table 5.

Table 5 - Metric system mounting used with flange nuts - wheel dimensions

Mounting System	Mounting System # of Bolt Holes A	Mounting System Bolt Circle Diameter B ⊕ 0.40 ∅	Mounting System Fastener Type	Mounting System Wheel Material	Dimensions Center Hole Diameter C +0.2, –0	Dimensions Bolt Hole Diameter D +1, –0	Dimensions Disc Flat Clearance Diameter E Minimum	DImensions Disc Thickness F Maximum
XIV	8	275	FN	Ferrous	221.0	26	345	14
			FN	Aluminum	221.1	26	345	25.4
XVII	10	225	FN	Ferrous	170.15	15.5	279.4	10.2
				Aluminum	170.20	20.0	279.4	15.2
XVIII	8	225	FN	Ferrous	170.15	15.2	279.4	10.2

6.1.2.2 Inch System Mountings used with Flange Nuts – Wheel Dimensions

All dimensions in inches. Reference Table 6

Table 6 - Inch system mountings used with flange nuts - wheel dimensions[1]

Mounting System	Mounting System # of Bolt Holes A	Mounting System Bolt Circle Diameter B ⊕ 0.016 ∅	Mounting System Fastener Type	Mounting System Wheel Material	Dimensions Center Hole Diameter C	Dimensions Bolt Hole Diameter D +0.09, –0	Disc Flat Clearance Diameter E Minimum	Disc Thickness F Maximum
I	8	6.500	FN	Ferrous	4.878/4.888[2]	0.60	8.60	0.35
			FN	Aluminum	4.880/4.888	0.60	8.60	0.57
VI	8	6.500	FN	Ferrous	4.563/4.573[3]	0.60[4]	8.30	0.35
			FN	Aluminum	4.565/4.573	0.60[4]	8.30	0.57
VII	10	7.250	FN	Ferrous	5.251/5.261	0.64	9.23	0.38
			FN	Aluminum	5.251/5.254	0.64	9.23	0.57
IX	10	8.750	FN	Ferrous	6.251/6.259	0.72	11.32	0.50
XI	10	11.250	FN	Ferrous	8.665/8.673	1.18	13.56	0.50
			FN	Aluminum	8.669/8.677	1.18	13.56	0.90

1. **CAUTION**: Components of different mounting systems with common bolt patterns must not be intermixed.
2. Center hole chamfer 0.030 x 45 degrees minimum, non-curb side.
3. Center hole chamfer 0.055 x 45 degrees minimum, non-curb side.
4. 0.75 - for 0.625 diameter stud

6.1.2.3 Inch System Mounting used with Ball Seat Nuts - Wheel Dimensions

All dimensions in inches. Reference Table 7.

Table 7 - Inch system mounting used with ball seat nuts - wheel dimensions

Mounting System	Mounting System # of Bolt Holes A	Mounting System Bolt Circle Diameter B ⊕ 0.016 ∅	Mounting System Fastener Type	Mounting System Wheel Material	Dimensions Center Hole Diameter C Minimum	Dimensions Bolt Hole Diameter D +0.09, –0	Dimensions Disc Flat Clearance Diameter E Minimum	Dimensions Ball Seat Radius Reference K	Dimensions Ball Seat Intersection L Maximum
V	6	8.750	BSN	Ferrous	6.469	1.21	11.32	0.875	0.98
			BSN-AL	Aluminum	6.495	1.18	11.32	0.875	1.50
VIII	10	8.750	BSN	Ferrous	6.469	1.21	11.32	0.875	0.98
X	10	11.250	BSN	Ferrous	8.725	1.21	13.56	0.875	1.02
			BSN-AL	Aluminum	8.722	1.18	13.56	0.875	1.50
XII	10	13.188	BSN-HD	Ferrous	10.650	1.35	15.48	1.188	1.50
			BSN-HD	Aluminum	10.650	1.35	15.48	1.188	2.03

6.1.3 Interface Dimensions and Tolerances of Hubs or Drums

6.1.3.1 Metric System Mountings used with Flange Nuts - Hub Dimensions

All dimensions in millimeters. Reference Table 8.

Table 8 - Metric system mounting used with flange nuts - hub dimensions

Mounting System	Mounting System # of Studs or Bolts A	Mounting System Bolt Circle Diameter B ⊕ 0.40 ∅	Mounting System Fastener Type	Mounting System Wheel Material	Dimensions Stud or Bolt Diameter D2	Dimensions Wheel Pilot Diameter C1 +0, –0.2	Dimensions Wheel Backup Diameter E1	Dimensions Wheel Pilot Length Single F1 Minimum	Dimensions Wheel Pilot Length Dual F1 Minimum	Dimensions Standout Single[1] G Minimum	Dimensions Standout Dual[1] G Minimum
XIV	8	275	FN	Ferrous	22	220.8	334/343	13	20	49	63
				Aluminum	22	220.8	334/343	13	35	61	86
XVII	10	225	FN	Ferrous	14	170.05	273/279	10	20	38	50
				Aluminum	14	170.05	273/279	10	30	44	64
XVIII	8	225	FN	Ferrous	14	170.05	273/279	10	20	38	50

1. For wheels with disc thickness that are outside the scope of this document, longer standouts may be required.

6.1.3.2 Inch System Mountings Used with Flange Nuts - Hub Dimensions

All dimensions in inches. Reference Table 9.

Table 9 - Inch system mounting used with flange nuts - hub dimensions[1]

Mounting System	Mounting System # of Studs or Bolts A	Mounting System Bolt Circle Diameter B ⊕ 0.016 ∅	Mounting System Fastener Type	Mounting System Wheel Material	Dimensions Stud or Bolt Diameter D2	Dimensions Wheel Pilot Diameter C1	Dimensions Wheel Backup Diameter E1	Dimensions Wheel Pilot Length Single F1 Minimum	Dimensions Wheel Pilot Length Dual F1 Minimum	Dimensions Standout Single[2] G Minimum	Dimensions Standout Dual[2] G Minimum
I	8	6.500	FN	Ferrous	0.563	4.872/4.877	8.38/8.50	0.28	0.52	1.39	1.74
			FN	Aluminum	0.563	4.872/4.877	8.38/8.50	0.28	0.86	1.61	2.18
VI	8	6.500	FN	Ferrous	0.563	4.554/4.562	8.00/8.25	0.28	0.52	1.44	1.79
			FN	Aluminum	0.563	4.554/4.562	8.00/8.25	0.28	0.86	1.66	2.23
VII	10	7.250	FN	Ferrous	0.625	5.245/5.250	9.00/9.13	0.28	0.52	1.47	1.85
			FN	Aluminum	0.625	5.245/5.250	9.00/9.13	0.28	0.86	1.66	2.23
IX	10	8.750	FN	Ferrous	0.688	6.242/6.250	11.00/11.25	0.28	0.75	1.59	2.09
XI	10	11.250	FN	Ferrous	0.875	8.656/8.660	13.18/13.50	0.45	0.75	1.88	2.38
			FN	Aluminum	0.875	8.656/8.660	13.18/13.50	0.45	1.35	2.28	3.18

1. **CAUTION**: Components of different mounting systems with common bolt hole patterns must not be intermixed.
2. For wheels with disc thicknesses that are outside the scope of this document, longer standouts than those shown may be required.

6.1.3.3 Inch System Mounting used with Ball Seat Nuts - Hub Dimensions

All dimensions in inches. Reference Table 10.

Table 10 - Inch system mounting used with ball seat nuts - hub dimensions[1]

Mounting System	Mounting System # of Studs or Bolts A	Mounting System Bolt Circle Diameter B ⊕ 0.016 ∅	Mounting System Fastener Type	Mounting System Wheel Material	Dimensions Stud or Bolt Diameter D2	Dimensions Wheel Pilot Diameter C1 Maximum	Dimensions Wheel Backup Diameter E1	Dimensions Standout Single[3] G Minimum	Dimensions Standout Dual[3] G
V	6	8.750	BSN	Ferrous	0.750	6.45	11.00/11.25	1.28	1.31/1.44[2]
			BSN	Ferrous	1.125	6.45	11.00/11.25	1.28	N/a
			BSN-AL	Aluminum	0.750	6.45	11.00/11.25	1.80	1.31/1.44[2]
			BSN-AL	Aluminum	1.125	6.45	11.00/11.25	1.80	N/A
VIII	10	8.750	BSN	Ferrous	0.750	6.45	11.00/11.25	1.28	1.31/1.44[2]
			BSN	Ferrous	1.125	6.45	11.00/11.25	1.28	N/A
X	10	11.250	BSN	Ferrous	0.750	8.720	13.18/13.50	1.32	1.31/1.44[2]
			BSN	Ferrous	1.125	8.720	13.18/13.50	1.32	N/A
			BSN-AL	Aluminum	0.750	8.720	13.18/13.50	1.80	1.31/1.44[2]
			BSN-AL	Aluminum	1.125	8.720	13.18/13.50	1.80	N/A
XII	10	13.187	BSN-HD	Ferrous	0.938	10.645	15.25/15.38	1.98	1.68/1.81[2]
			BSN-HD	Ferrous	1.312	10.645	15.25/15.38	1.98	N/A
			BSN-HD	Aluminum	0.938	10.645	15.25/15.38	2.51	N/A
			BSN-HD	Aluminum	1.312	10.645	15.25/15.38	2.51	N/A

1. **CAUTION**: Components of different mounting systems with common bolt hole patterns must not be intermixed.
2. Standout for dual BSN wheels is to the end of the stud and includes a maximum chamfer of three threads.
3. For wheels with disc thicknesses that are outside the scope of this document, longer standouts than those shown may be required.

6.2 Fastener Types, Dimensions and Tolerances

6.2.1 Definitions of Fastener Dimensions

Reference Figures 8 to 13:

a = Distance to first thread from seat end
b = Depth of inner thread from seat end
c = Distance of outer thread from seat end
d1 = Thread size
d2 = Outer thread size
d3 = Flange inner diameter
d4 = Flange outer diameter
e = Seat diameter
f = Shoulder length
g = Nominal width across flats
h = Bottom of nut to top of threads
r = Ball seat radius (must be appropriate to nut seat of wheel)
w = Width of flange contact
x = Ball seat intersection reference diameter

6.2.2 Dimensions and tolerances of Ball Seat Nuts (BSN) for Inch System Mountings

All dimensions in inches. Reference Figure 8.

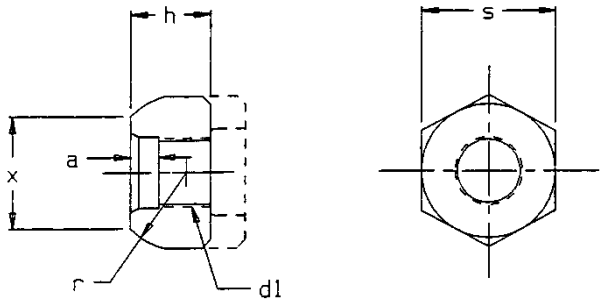

Figure 8 - Single or outer dual ball seat nut for ferrous wheels

6.2.2.1 Single or Outer Dual Ball Seat Nut for Ferrous Wheels (BSN)

Reference Table 11.

Table 11 - Single or outer dual ball seat nut for ferrous wheels (BSN)

Fastener Type	Thread Size d1	Hex Size s	Ball Seat Radius r ±0.010	Thread Start a Minimum	Height to end of Thread h	Reference Intersection Diameter x
BSN	3/4-16	1.50	0.875	0.25	0.91	1.25
BSN	1-1/8-16	1.50	0.875	0.06	0.91	1.25
BSN-HD	15/16-12	1.75	1.188	0.12	1.41	1.47
BSN-HD	1-5/16-12	1.75	1.188	0.12	1.41	1.47

6.2.2.2 Inner Dual Ball Seat Nut for Ferrous Wheels (BSN)

Reference Figure 9 and Table 12.

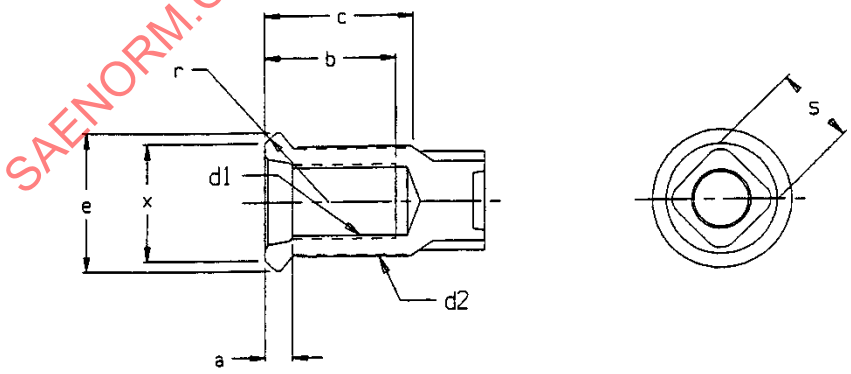

Figure 9 - Inner dual ball seat nut for ferrous wheels