

	SURFACE VEHICLE RECOMMENDED PRACTICE		J1982 JAN2010
		Issued Revised	1991-12 2010-01
		Superseding	J1982 AUG1998
Nomenclature—Wheels for Passenger Cars, Light Trucks, and Multipurpose Vehicles			

RATIONALE

The major revision to this document was to include the geometry and associated nomenclature that is unique to forged and cast wheels. These wheels share many common features with disc wheels, but they also have many unique features that were not shown in previous revisions of this document.

1. SCOPE

This SAE Recommended Practice establishes uniform engineering nomenclature for the most common wheel constructions, and their components used on passenger cars, light trucks, and multipurpose vehicles. These wheel constructions are welded “Disc Wheels”, “Cast Wheels” and “Forged Wheels”. This nomenclature and the accompanying drawings are intended to define fundamental wheel terms rather than to provide a comprehensive tabulation of all wheel design types.

2. REFERENCES

2.1 Related Publications

The following publications are provided for information purposes only and are not required part of this document.

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 724-776-4970 (outside USA), www.sae.org.

SAE J393	Nomenclature—Wheels, Hubs, and Rims for Commercial Vehicles
SAE J694	Disc Wheel/Hub or Drum Interface Dimensions—Truck and Bus
SAE J851	Dimensions—Wheels for Demountable Rims, Demountable Rims, and Spacer Bands—Truck and Bus
SAE J1986	Balance Weight and Rim Flange Design Specifications, Test Procedures, and Performance Recommendations
SAE J1992	Wheel/Rims—Military Vehicles—Test Procedures and Performance Requirements

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2.1.2 ISO Publication

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

ISO 3911 Wheels/rim—Nomenclature, designation, and marking

3. DEFINITIONS

3.1 Wheel

A rotating load-carrying member supporting the tire and affixed to the hub. Disc Wheels usually consist of two major components: (a) the rim, as shown in Figure 1; (b) the disc, as shown in Figure 2. The rim and wheel disc may be integral, permanently attached, or detachable. Cast Wheels or Forged Wheels typically have a one-piece construction, as shown in Figure 3.

3.1.1 Rim

That part of the wheel on which the tire is mounted and supported. (See Figure 1.)

3.1.2 Wheel Disc

That part of the wheel which is the supporting member between the hub and the rim. (See Figure 2.)

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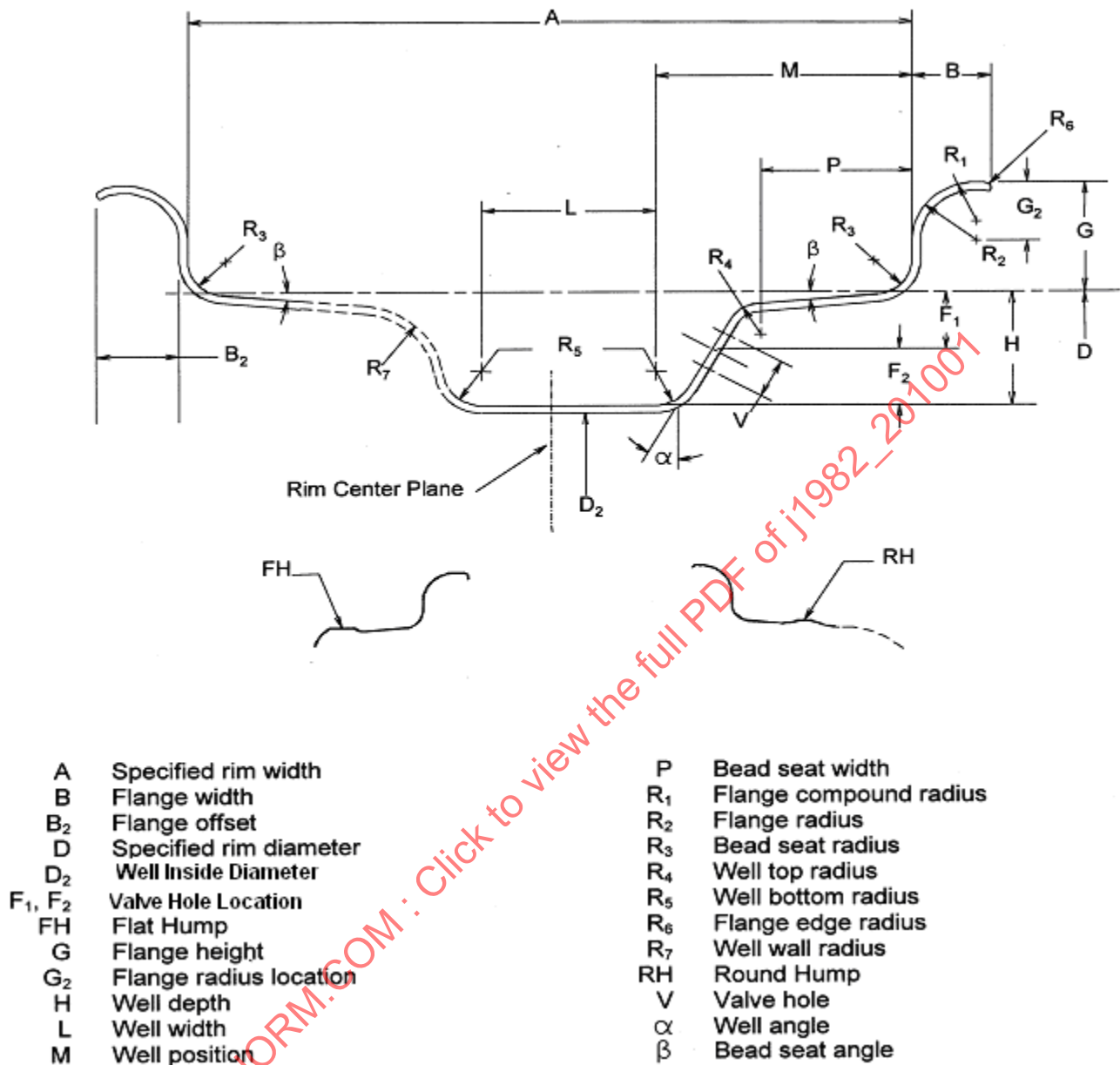
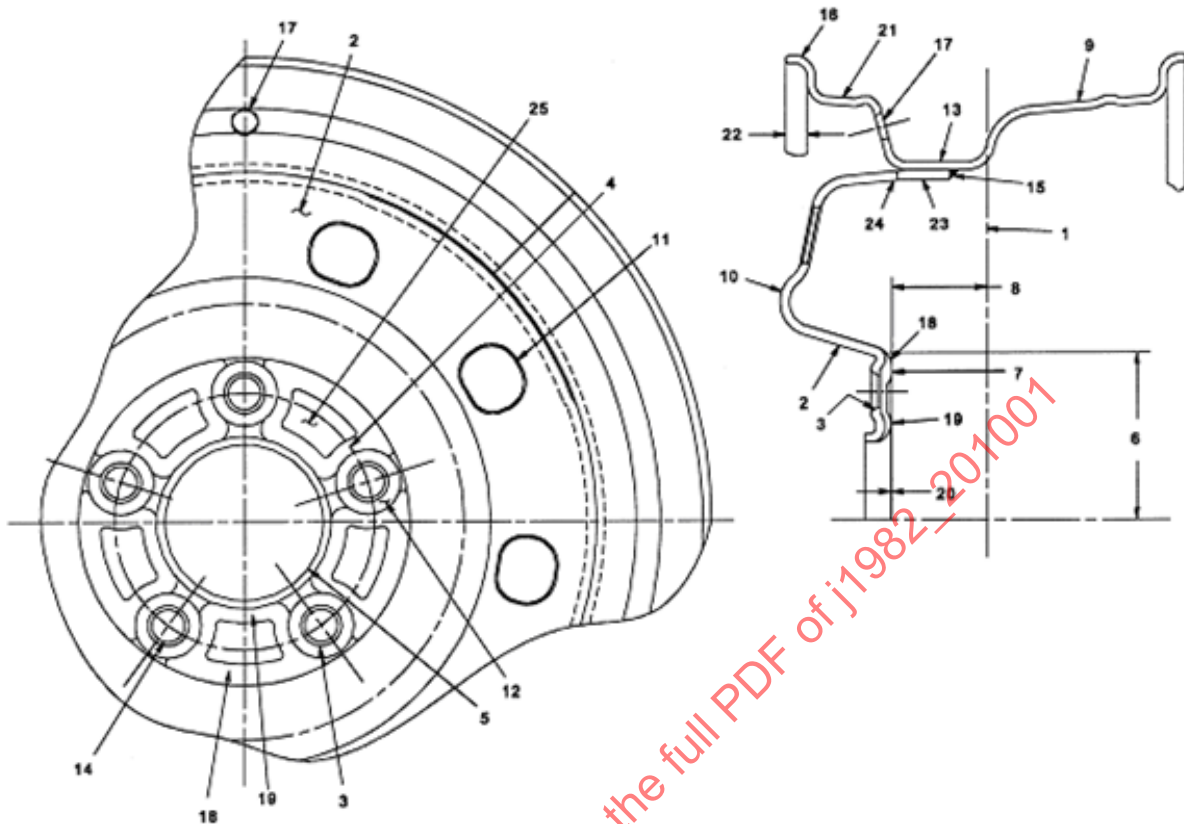
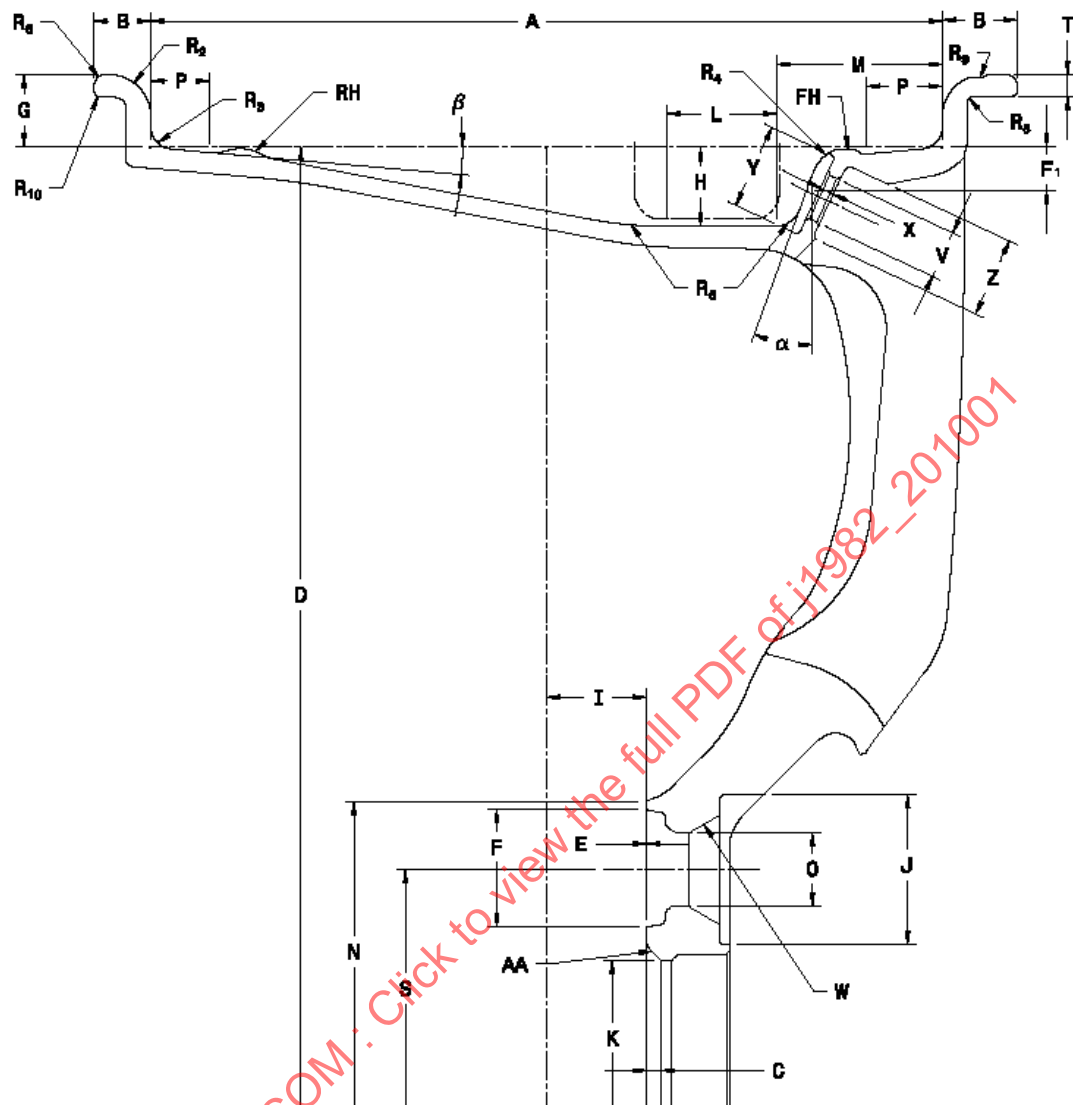


FIGURE 1 - RIM



- | | |
|--|------------------------|
| 1. Rim Center Plane | 14. Bolt Hole |
| 2. Disc | 15. Assembly Weld |
| 3. Nut Seat | 16. Rim Flange |
| 4. Pitch Circle Diameter of Bolt Holes | 17. Valve Hole |
| 5. Center Hole Diameter | 18. Outer Mounting Pad |
| 6. Attachment Face Diameter | 19. Inner Mounting Pad |
| 7. Attachment Face | 20. Step |
| 8. Offset (Figure 4 - Detail) | 21. Bead Seat |
| 9. Rim | 22. Flange Offset |
| 10. Hat | 23. Disc Flange |
| 11. Window | 24. Disc Scallop |
| 12. Nut Boss | 25. Rib |
| 13. Well | |

FIGURE 2 - DISC WHEEL



A	Specified rim width	P	Bead seat width
α	Well angle	R_2	Flange radius
β	Bead seat angle	R_3	Bead seat radius
B	Flange width	R_4	Well top radius
C	Center hole height	R_5	Well bottom radius
D	Specified rim diameter	R_6	Flange edge radius
E	Step	R_8	Flange radius, balance weight side
F	Rotor/drum retainer clip pocket	R_9	Balance weight retention groove
F_1	Valve hole location	R_{10}	Flange corner radius, balance weight side
FH	Flat hump	RH	Round hump
G	Flange height	S	Pitch circle diameter of bolt holes
H	Well depth	T	Flange thickness
I	Inset	V	Valve hole diameter
J	Nut seat counterbore	W	Nut seat
K	Center hole diameter	X	Valve hole thickness
L	Well width	Y	Valve hole counterbore diameter tire side
M	Well position	Z	Valve hole counterbore diameter
N	Attachment face diameter	AA	Center hole chamfer
O	Bolt hole diameter		

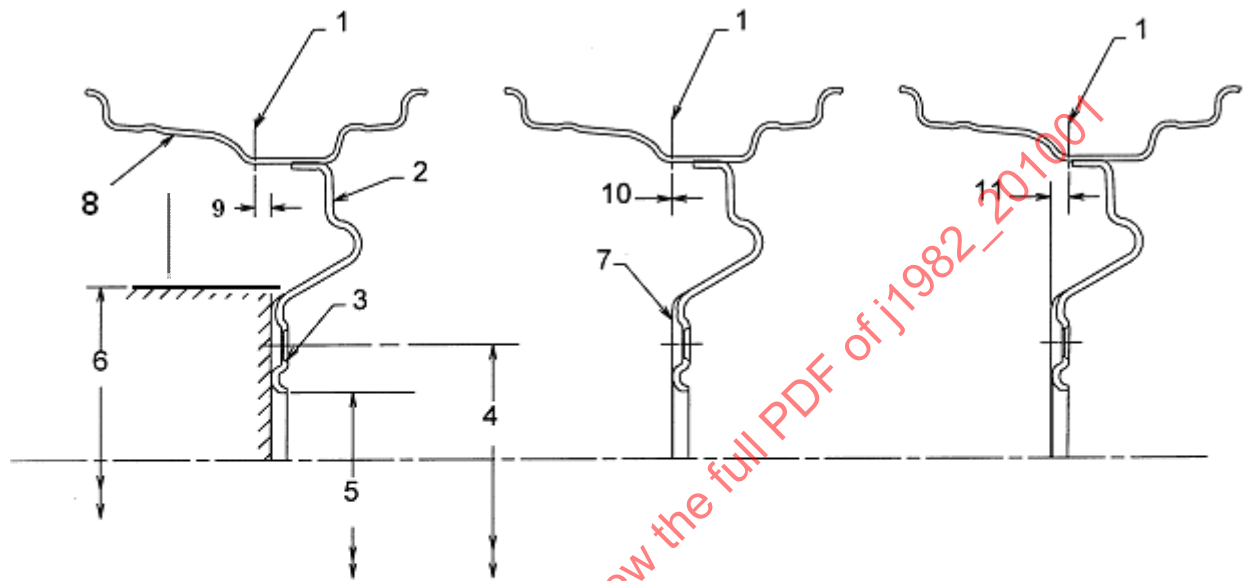
FIGURE 3 - CAST/FORGED WHEEL

3.1.3 Hub

The rotating member to which the wheel is attached.

3.1.4 Inset Wheel

A wheel so constructed that the center plane of the rim is located inboard of the wheel attachment face. Inset is the distance from the wheel attachment face to the center plane of the rim. (See Figure 4.)



- | | |
|--|--------------------|
| 1. Rim Center Plane | 7. Attachment Face |
| 2. Disc | 8. Rim |
| 3. Nut Seat | 9. Inset |
| 4. Pitch Circle Diameter of Bolt Holes | 10. Zero |
| 5. Center Hole Diameter | 11. Outset |
| 6. Attachment Face Diameter | |

FIGURE 4 - RIM TO DISC LOCATION

3.1.5 Zero

A wheel so constructed that the center plane of the rim is coincident with the wheel attachment face. (See Figure 4.)

3.1.6 Outset Wheel

A wheel so constructed that the center plane of the rim is located outboard of the wheel attachment face. Outset is the distance from the wheel attachment face to the center plane of the rim. (See Figure 4.)

3.2 Wheel Types

3.2.1 Disc Wheel

A permanent combination of a rim and wheel disc. (See Figure 2.)

3.2.2 Cast Wheel

A wheel formed by a casting, and subsequent machining process, (See Figure 3.)

3.2.3 Forged Wheel

A wheel that has been forged from a billet and subsequently machined (as necessary) to create functional features for balance, tire mounting, balance weight retention and hub attachment. (See figure 3.)

3.3 Rim Types

3.3.1 One-Piece (Drop Center)

A rim which is of one-piece construction and incorporates a well. (See Figure 1.)

3.3.2 Two-Piece

A rim with two pieces that are not permanently attached.

3.3.3 Average Radial Runout

The average radial run-out of the inner and outer bead seats measured simultaneously. Measurements are taken adjacent to the R_3 radii.

3.3.4 Average Lateral Runout

The average lateral runout of the inner and outer flanges measured simultaneously. Measurements are taken adjacent to the R_3 radii.

3.4 Rim Nomenclature

(See Figures 1. and 3.)

3.4.1 Flange

That part of the rim which provides lateral support to the tire and a means for attaching balance weights and decorative trim components.

3.4.2 Bead Seat

That part of the rim which provides radial support to the tire and air pressure seal for tubeless tires.

3.4.3 Well

That part of the rim so located with sufficient depth and width to enable the tire beads to be mounted and dismounted over the mounting side rim flange.

3.4.4 Valve Hole

The hole or slot in the rim which accommodates the valve for tire inflation.

3.4.5 Balance Weight Retention Groove

A circumferential groove located on the rim flanges to improve balance weight retention.