



SURFACE VEHICLE RECOMMENDED PRACTICE	J393™	JUN2022
	Issued	1969-06
	Revised	2022-06
Superseding J393 OCT2017		
Nomenclature - Wheels, Hubs, and Rims for Commercial Vehicles		

RATIONALE

This document has been revised to include a flat rotor configuration and nomenclature in Figure 4 and to add an additional reference to SAE J2696 in the reference section.

1. SCOPE

This SAE Recommended Practice establishes uniform engineering nomenclature for wheels, hubs, rims, and their components used in truck, bus, and trailer applications. This nomenclature and accompanying drawings are intended to define functional truck wheel, hub, and rim designs. For nomenclature specific to “passenger-type” disc wheels, refer to SAE J1982. The International Standard (ISO) nomenclature is shown in parentheses when different than SAE J393.

2. REFERENCES

2.1 Related Publications

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

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 J694 Disc Wheel and Hub or Drum Interface Dimensions - Truck and Bus
- SAE J851 Dimensions - Wheels for Demountable Rims, Demountable Rims, and Spacer Bands - Truck and Bus
- SAE J1865 Dimensional Compatibility for Commercial Vehicles Fitment of Complete Wheels in Drum Brake Applications - Truck and Bus
- SAE J1982 Nomenclature - Wheels for Passenger Cars, Light Trucks, and Multipurpose Vehicles

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https://www.sae.org/standards/content/J393_202206/

SAE J2133 Disc Wheel Radial Runout Low Point Marking

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

SAE J2803 Dimension Compatibility for Commercial Vehicle Wheels to Air Disc Brake Calipers - Truck and Bus

2.1.2 ISO Publications

Copies of these documents are available online at <https://webstore.ansi.org/>.

ISO 3911 Wheels and rims for pneumatic tyres - Vocabulary, designation and marking

3. DEFINITIONS

RIM: A supporting member for the tire or tire and tube assembly (Figure 1).

DISC WHEEL: A permanent combination of a rim and a disc (Figures 2 and 3).

DISC (SPIDER): The center member of a disc wheel (Figure 2).

RIM CENTERLINE: An imaginary line bisecting the rim width of a disc wheel or demountable rim; equivalent to “rim center plane” (Figure 2).

HUB ASSEMBLY: A system which provides the interface between an axle and one- or two-disc wheels (Figures 4 and 7).

WHEEL ASSEMBLY FOR DEMOUNTABLE RIM (SPOKE WHEEL ASSEMBLY): A system which provides the interface between an axle and one or two demountable rims (Appendices A and B).

HIGHWAY USE: A speed of over 30 mph on improved roads.

RADIAL RUNOUT: Total indicator reading in the radial direction, taken at the rim bead seat, for one revolution, with the wheel located on the specified datum (Figure 5).

LATERAL RUNOUT: Total indicator reading in the lateral direction, taken at the rim flange, for one revolution, with the wheel located on the specified datum (Figure 6).

DATUM: The combination of physical features used to locate a wheel during runout measurement (Figures 5 and 6).

AVERAGE RADIAL RUNOUT: The total indicator reading obtained by simultaneously averaging radial runout readings at both rim bead seats (Figure 5).

AVERAGE LATERAL RUNOUT: The total indicator reading obtained by simultaneously averaging lateral runout readings at both rim flanges (Figure 6).

LUG NUT (WHEEL FIXING NUT): A nut used to fasten disc wheel(s) or demountable rim(s) onto their supporting vehicle component.

DEMOUNTABLE RIM: A rim with permanent 28 degree bevel mountings (Figure 1, Appendices A and B).

ADAPTOR: A 28 degree bevel mounting member of a tubeless demountable rim (Figure 1, Appendices A and B).

ABS RING: A ferromagnetic annular feature or component presenting a series of uniform air gaps for sensing wheel rotational speed (Figure 4).

INSET WHEEL: A wheel so constructed that the rim centerline is located inboard of the attachment face of the disc. Inset is the distance from the attachment face of the disc to the centerline of the rim (Figure 3).

ZEROSET WHEEL: A wheel so constructed that the rim centerline is coincident with the attachment face of the disc (Figure 3).

OUTSET WHEEL: A wheel so constructed that the rim centerline is located outboard of the attachment face of the disc. Outset is the distance from the attachment face of the disc to the centerline of the rim (Figure 3).

CARTRIDGE BEARING: A self-contained non-serviceable assembly comprising complete inner and outer bearings with seals and lubricant, for insertion into a hub (Figure 7).

FLANGED BEARING HUB ASSEMBLY: A complete bearing/seal/lubricant assembly whose outer race embodies a flange for mounting to the vehicle, for use with a hub/spindle extending through the inner bearing races (Figure 7).

WHEEL ADAPTOR: A separate intermediate part used with a unitized hub, attached to the hub and providing a surface for disc wheel mounting (Figure 7).

TRUCK HUB UNIT: An assembly comprising inner and outer bearings with seals and lubricant, and an attachment feature for rotating brake components and a wheel adaptor (Figure 7).

TRUCK AXLE MODULE: An assembly comprising inner and outer bearings with seals and lubricant, and an attachment feature for rotating brake components and a wheel adaptor, in which bearing races are integral to the attachment feature (Figure 7).

UNITIZED HUB: Any pre-assembled, non-serviceable hub/bearing/lubricant/seal combination (Figure 7).

CONVENTIONAL HUB ASSEMBLY (ADJUSTABLE HUB ASSEMBLY): A hub with individual components removable for service, whose bearing setting is adjusted by the spindle nut (Figure 4).

PRE-ADJUSTED HUB ASSEMBLY: A hub/bearing assembly whose bearing setting is predetermined by use of a spacer between the bearings, or by a shoulder on the axle (Figure 7).

SCALLOPED HUB: A hub with discontinuous outer diameter at the point of wheel impingement.

ADHESIVE BALANCE WEIGHT: A weight for balancing a disc wheel/tire assembly with an adhesive surface for attaching to an exterior area of the rim wheel for reducing unbalance.

ADHESIVE BALANCE WEIGHT FLAT: A flat area on the exterior of an aluminum wheel for installation of an adhesive balance weight (Figure 2).

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- 1 RIM FIXED FLANGE
- 2 BEAD SEAT RADIUS
- 3 BEAD SEAT
- 4 GUTTER GROOVE
- 5 GUTTER TIP
- 6 REMOVABLE SIDE RING
(DETACHABLE SPRING FLANGE)
- 7 SIDE RING TOE
- 8 SIDE RING BEAD SEAT RADIUS
- 9 SIDE RING FLANGE
- 10 RIM WELL (DROP CENTER)
- 11 RIM GUTTER HOOK
- 12 REMOVABLE CONTINUOUS SIDE RING
(DETACHABLE ENDLESS FLANGE)
- 13 REMOVABLE LOCK RING
(SPRING LOCK RING)
- 14 LOCK RING TOE
- 15 INFLATION LEDGE
- 16 VALVE HOLE OR SLOT
(VALVE APERTURE)
- 17 28 DEGREE BEVEL
- 18 RIM FLANGE
- 19 VALVE HOLE LOCATORS
- 20 ADAPTOR
- 21 BEAD HUMP
- 22 FLANGE RADIUS LOCATION
- 23 SPECIFIED RIM DIAMETER
- 24 SPECIFIED RIM WIDTH
- 25 FLANGE HEIGHT
- 26 FLANGE WIDTH
- 27 FLANGE RADIUS
- 28 FLANGE TIP RADIUS
(FLANGE EDGE RADIUS)
- 29 BEAD SEAT WIDTH
- 30 BEAD SEAT ANGLE
- 31 WELL TOP RADIUS
- 32 WELL ANGLE
- 33 WELL DEPTH
- 34 WELL WIDTH
- 35 WELL POSITION
- 36 WELL BOTTOM RADIUS
- 37 VALVE HOLE OR SLOT LOCATION
(VALVE APERTURE LOCATION)
- 38 LEDGE DEPTH
- 39 FLANGE COMPOUND RADIUS
- 40 FLANGE OFFSET
- 41 RIM INSIDE DIAMETER
- 42 WELL WALL RADIUS

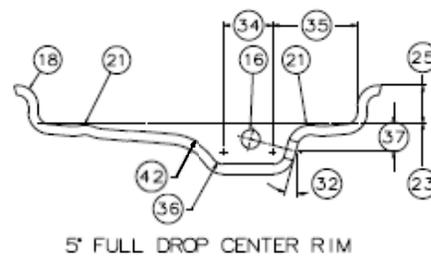
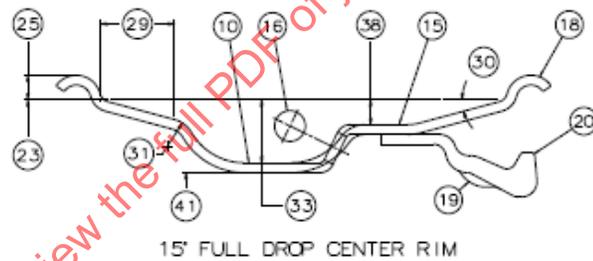
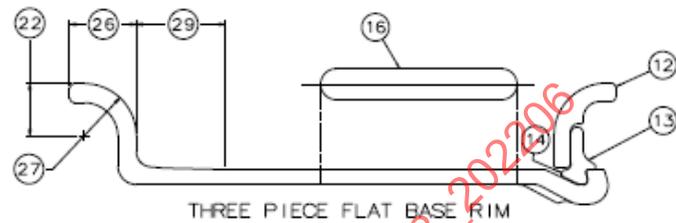
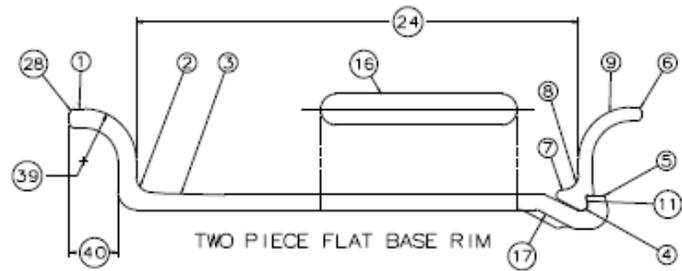


Figure 1 - Rim

- 1 INNER DUAL WHEEL POSITION
- 2 OUTER DUAL WHEEL POSITION
- 3 SINGLE WHEEL POSITION
- 4 BRAKE DRUM
- 5 HUB
- 6 STUD (BOLT)
- 7 INNER DUAL BALL SEAT NUT
- 8 OUTER DUAL BALL SEAT NUT
- 9 SINGLE BALL SEAT NUT
- 10 TWO-PIECE FLANGE NUT
- 11 ONE-PIECE FLANGE NUT
- 12 STUD (BOLT) HOLE CHAMFER
- 13 BOLT (PITCH) CIRCLE DIAMETER
- 14 RIM CENTERLINE
- 15 OFFSET OR HALF DUAL SPACING
- 16 DUAL SPACING
- 17 RIM
- 18 DISC
- 19 STUD (BOLT) HOLE
- 20 BALL SEAT
- 21 CENTER HOLE
- 22 DISC SKIRT
- 23 DISC TAPERED SECTION
- 24 DISC NAVE
- 25 WHEEL MOUNTING FACE (WHEEL ATTACHMENT FACE)
- 26 HAND HOLD
- 27 INSET
- 28 DISC THICKNESS
- 29 AXLE TRACK
- 30 ADHESIVE BALANCE WEIGHT FLAT

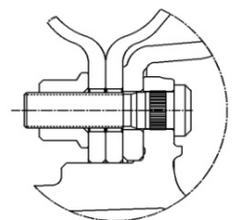
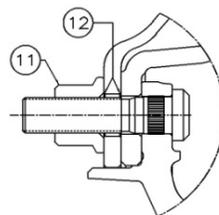
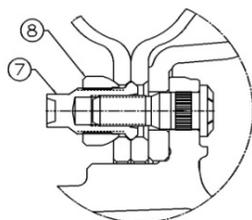
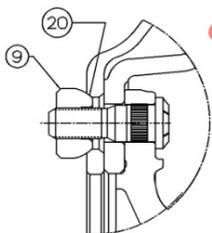
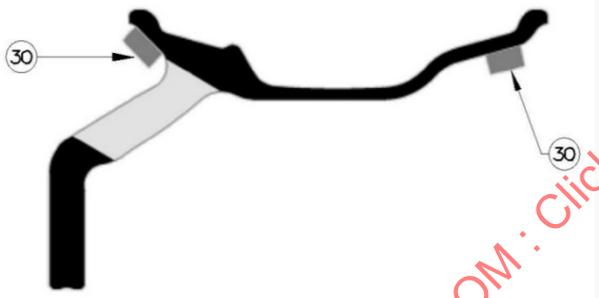
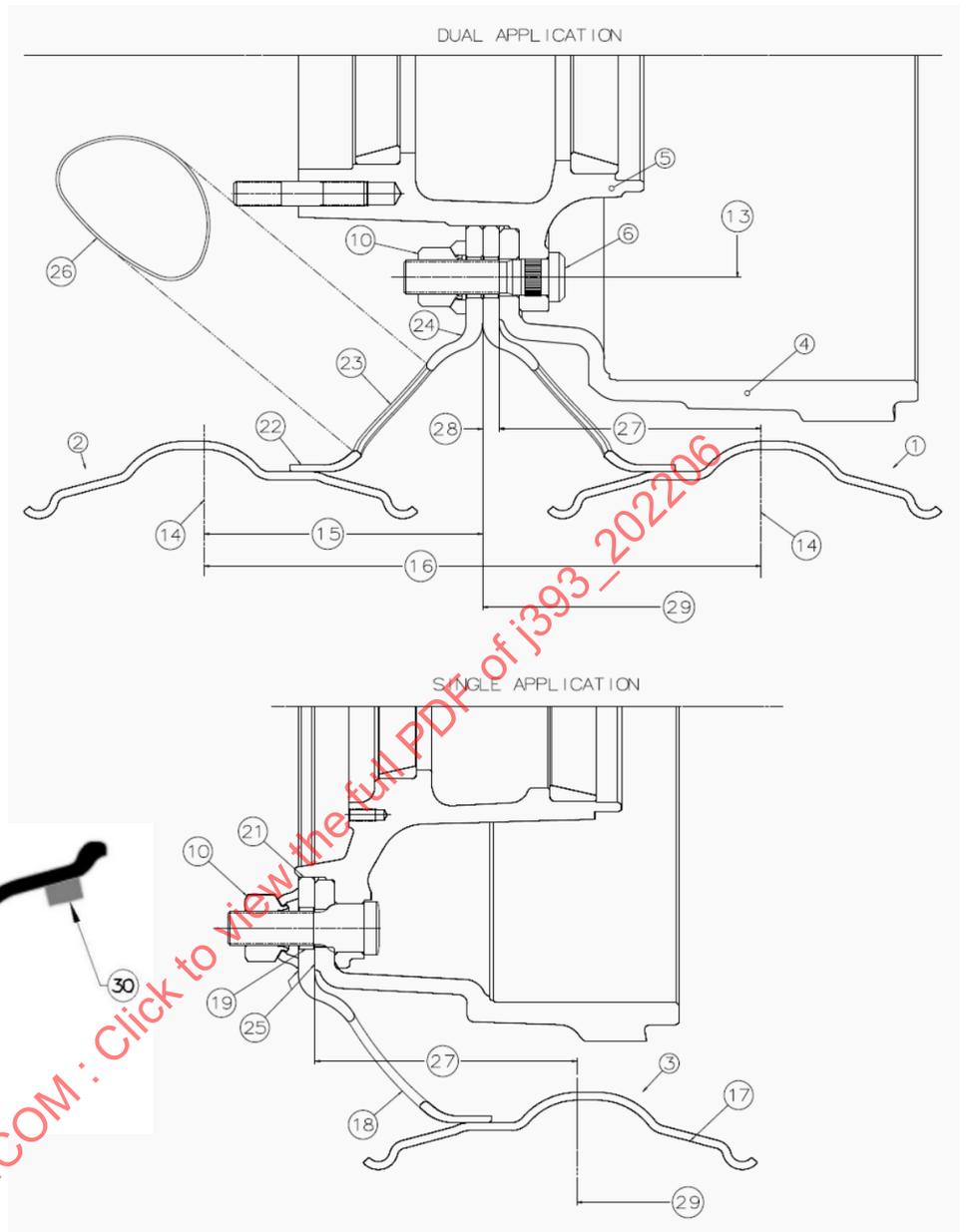


Figure 2 - Disc wheel

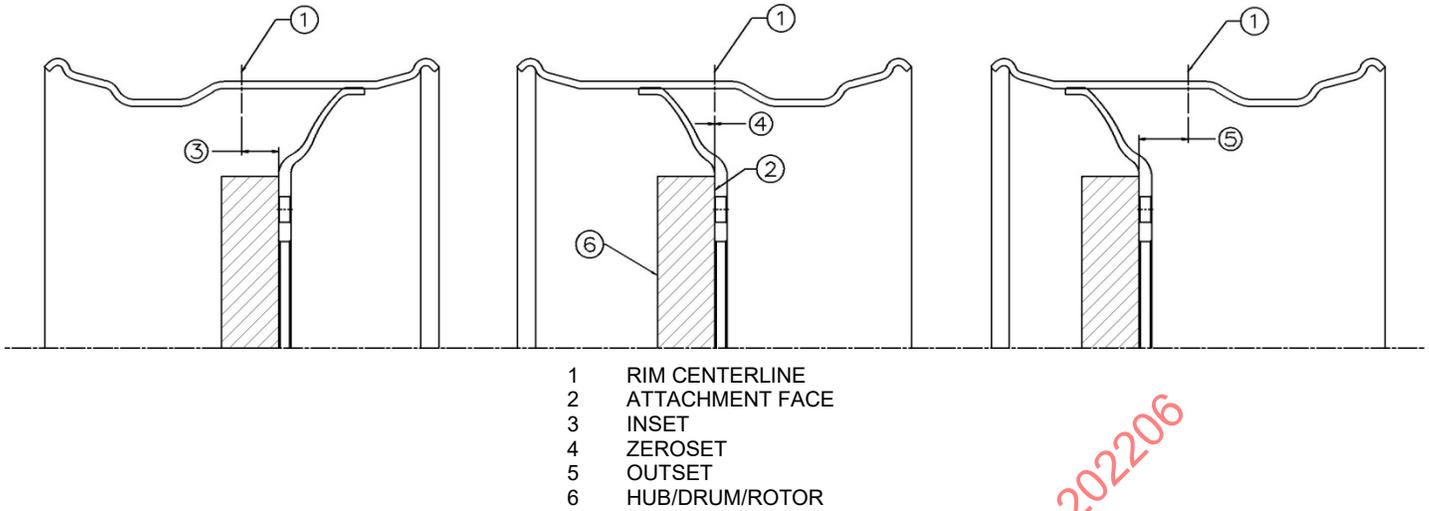


Figure 3 - Rim to disc location

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- 1 INNER SEAL BORE
- 2 INNER BEARING CUP
- 3 BEARING CUP SHOULDER
- 4 HUB CAVITY
- 5 OUTER BEARING CUP
- 6 DRIVE FLANGE STUD
- 7 HUB
- 8 WHEEL PILOT DIAMETER
- 9 WHEEL STUD (BOLT)
- 10 MOUNTING FACE
- 11 HUB FLANGE
- 12 BOSS
- 13 INBOARD MOUNTED BRAKE DRUM
- 14 INBOARD DRUM OR ROTOR PILOT DIAMETER
- 15 HUB CAP BOLT OF DRIVE FLANGE
- 16 BOLT CIRCLE DIAMETER
- 17 OUTBOARD MOUNTED BRAKE DRUM
- 18 WHEEL BOLT CIRCLE DIAMETER
- 19 WHEEL MOUNTING FACE OFFSET
- 20 DRUM MOUNTING FACE OFFSET
- 21 BEARING CUP SPACING
- 22 SLINGER
- 23 SPECIAL INNER HUB MACHINED DIAMETER
- 24 HAT-SHAPED BRAKE ROTOR
- 25 U-SHAPED BRAKE ROTOR
- 26 ROTOR STUD (BOLT)
- 27 WASHER
- 28 ROTOR/DRUM STUD (BOLT) CIRCLE DIAMETER
- 29 ROTOR MOUNTING FACE OFFSET
- 30 BACK NUT
- 31 OUTBOARD MOUNTED DRUM PILOT DIAMETER
- 32 LUBE FILL HOLE
- 33 LUBE FILL PLUG
- 34 ABS RING
- 35 CAST-IN ABS TEETH
- 36 FLAT-SHAPED BRAKE ROTOR

HUBS FOR NON-STEERING AXLES

HUBS FOR STEERING AXLES

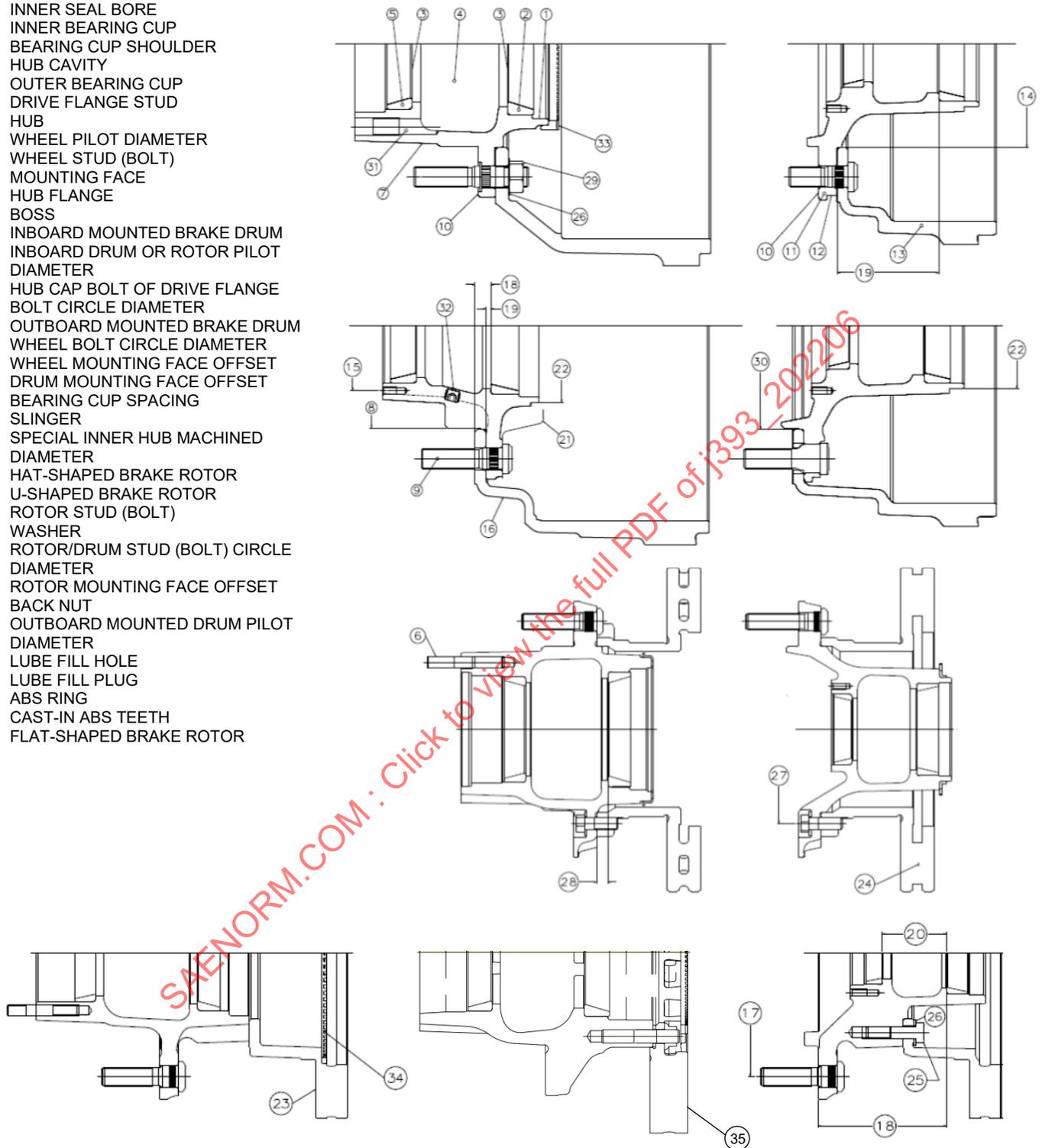


Figure 4 - Hub assembly

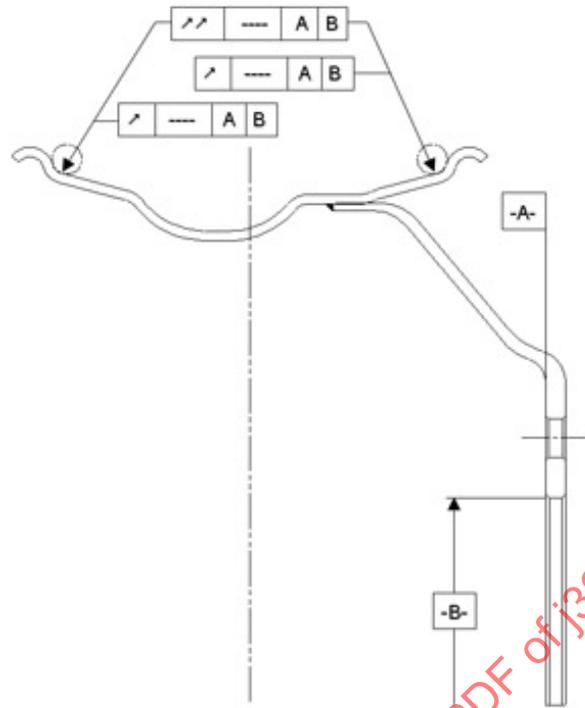


Figure 5 - Radial runout

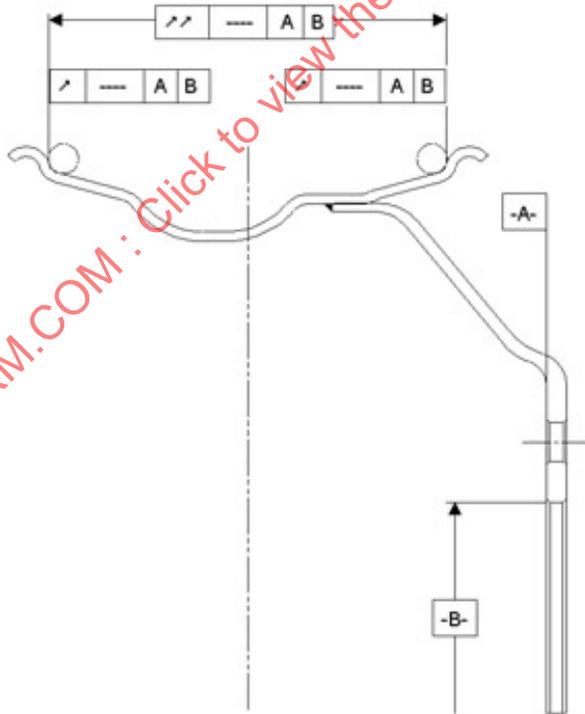


Figure 6 - Lateral runout

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