



SURFACE VEHICLE RECOMMENDED PRACTICE

J2475

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(R) Wheel End Assembly and Axle Spindle Interface Dimensions - Truck and Bus

RATIONALE

Figure 2, configuration I80 may produce a condition where bearing "B" axial contact area with the spindle seat becomes zero. Changing the radii on the spindle and bearing (by means of a different bearing part number) increases this bearing area. This is R2 on Figure 2 for configuration I80 and was 6.10(.240). The prior bearing is now listed in footnote 2 as a legacy configuration. Axle configurations were alphabetized in the scope and figures. In the procedure clarification was made that the line of maximum material condition is for the spindle. Some dimensions were updated to reflect current industry practices: R3 is now a range in Figures 1, 2, and 3. Figure 2 J MIN 14.22 (.560) was 18.29 (.720). Figure 3 J MIN 24.80 (.976) was 26.00 (1.024). Figure 2: Footnote 1 added under R2 column for FF configuration. Figure 3: Footnotes shown as 1,2,3 were *, ^, " respectively. The * (now (1)) was deleted from the R2 header. Footnote (3) shown with the R3 header and deleted the " (now (3)) from the individual dimensions in that column. R₁, R₂, R₃ were replaced with R1, R2, R3 in the definitions for consistency.

1. SCOPE

This recommended practice contains dimensions and tolerances for spindles in the interface area. Interfacing components include axle spindle, bearing cones, bearing spacer, seal and wheel hub. This recommended practice is intended for axles commonly used on Class 7 and 8 commercial vehicles. Included are SAE axle configurations FF, FL, I80, L, N, P, R, U, and W.

1.1 Purpose

The purpose of this recommended practice is to establish dimensional guidelines to promote a functional standardization of spindle dimensions for wheel end assemblies. Proper hub component dimensions can then be established.

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

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

3. DEFINITIONS

A list of basic nomenclature and definitions are shown in 3.1.

3.1 Feature Definition

A – Typical Outboard Bearing Cone (per American Bearing Manufacturers Association (ABMA))

B – Typical Inboard Bearing Cone (per ABMA)

C – Inboard Bearing Cone Spindle Length

D – Spindle Transition Length

E – Outboard Bearing Cone Spindle Starting Length

F – Outboard Bearing Spindle Diameter

G – Spindle Transition Diameter

H – Inboard Bearing Spindle Diameter

J – Seal Shoulder Length

K – Seal Shoulder Diameter

R1 – Spindle Transition Fillet Radius

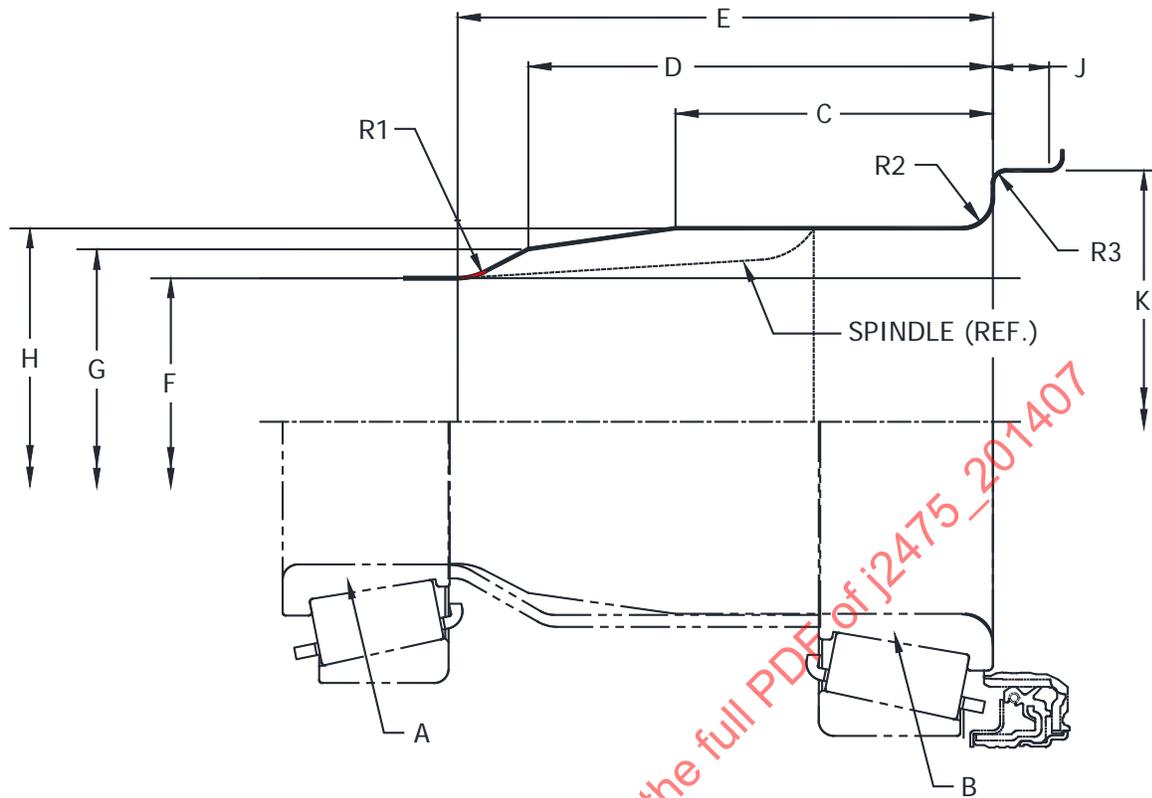
R2 – Inboard Bearing Spindle Fillet Radius (per ABMA)

R3 – Seal Shoulder Fillet Radius

4. PROCEDURE

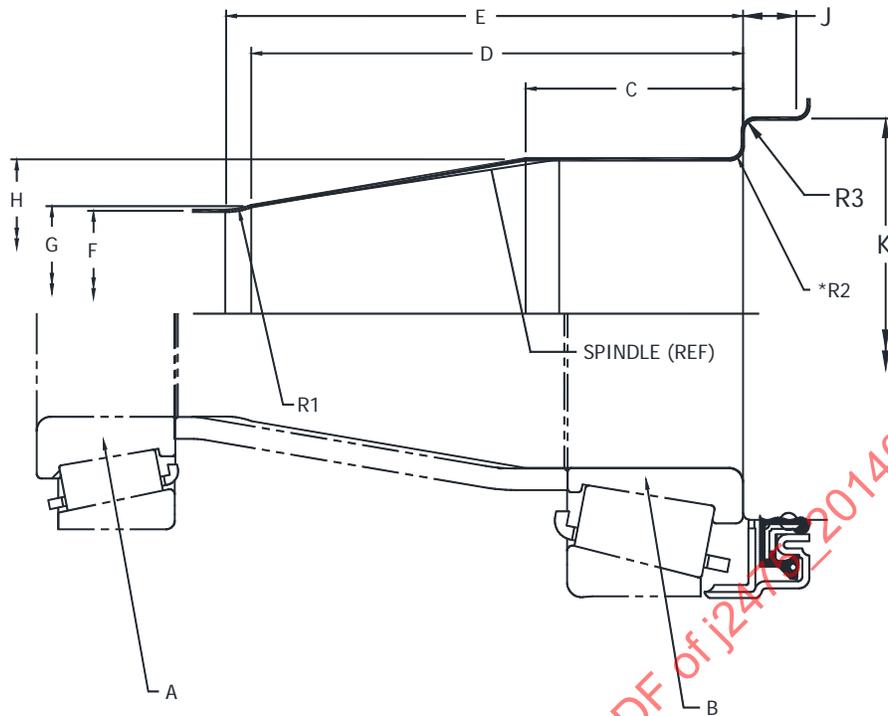
A line of maximum material for the spindle is established as shown in the figures with dimensions. All dimensions are in millimeters (inches).

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SAE CONFIGURATION	A TYPICAL	B TYPICAL	C MAX	D MAX	E MAX	F MAX	G MAX	H MAX	J MIN	K NOM	R1 MAX	R2 MAX	R3
N	HM212049	HM218248	72.90 (2.870)	106.68 (4.200)	122.94 (4.840)	66.670 (2.6248)	80.26 (3.16)	89.962 (3.5418)	18.29 (.720)	117.53 (4.627)	13.46 (0.530)	7.11 (0.280)	1.575-6.35 (.062-0.250)
P	HM518445	HM518445	N/A N/A	153.42 (6.040)	N/A N/A	88.887 (3.4995)	N/A N/A	88.887 (3.4995)	15.75 (0.620)	107.95 (4.250)	N/A N/A	6.35 (.250)	1.575-3.05 (.062-0.120)

FIGURE 1 - TRAILER



SAE CONFIGURATION	A TYPICAL	B TYPICAL	C MAX	D MAX	E MAX	F MAX	G MAX	H MAX	J MIN	K NOM	R1 MAX	R2 MAX	R3
FF	3782	HM212049 ⁽¹⁾	45.72 (1.800)	112.52 (4.430)	118.36 (4.660)	44.445 (1.7498)	45.72 (1.800)	66.670 (2.6248)	14.22 (.560)	88.90 (3.500)	15.75 (0.620)	3.56 ⁽¹⁾ (0.140)	1.575-3.05 (.062-0.120)
FL	555-S	6461A	62.74 (2.470)	124.46 (4.900)	129.54 (5.100)	57.145 (2.2498)	59.94 (2.360)	76.195 (2.9998)	17.02 (0.670)	111.13 (4.375)	25.40 (1.000)	9.65 (.380)	1.575-3.05 (.062-0.120)
I80 ⁽²⁾	25877	JM207049X	34.54 (1.360)	87.66 (3.451)	95.25 (3.750)	34.920 (1.3748)	40.39 (1.590)	54.981 (2.1646)	17.42 (0.686)	73.03 (2.875)	11.94 (0.470)	5.08 (0.200)	1.575-1.83 (.062-0.072)

(1) R2=7.0 (0.275) IF B TYPICAL IS HM212049X

(2) LEGACY CONFIGURATION: R2=6.10 (0.240) AND R3=1.575-3.05 (.062-0.120) IF B TYPICAL IS JM207049A. IN THIS CASE, AXIAL CONTACT AREA IS REDUCED AT BEARING "B" AND THE SPINDLE.

FIGURE 2 - NON-POWERED FRONT