Truck Tractor Semitrailer Interchange Coupling Dimensions – SAE J701a

SAE Information Report
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THIS IS A PREPRINT WHICH IS SUBJECT TO REVISIONS AND CORRECTIONS. THE FINAL VERSION WILL APPEAR IN THE 1983 EDITION OF THE SAE HANDBOOK.

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PREPRINT

TRUCK TRACTOR SEMITRAILER INTERCHANGE COUPLING DIMENSIONS—SAE J701a

SAE Information Report

Report of Truck and Bus Technical Committee approved January 1956 and last revised by Transportation and Maintenance Technical Committee July 1968.

The information in this SAE Information Report is the result of studies by Automobile Manufacturers Association, American Trucking Association, and Truck Trailer Manufacturers Association, to achieve interchangeability of equipment which will comply with the legal dimension limitations for the majority of states and yet permit increased loading space within these dimensions.

This in no way supersedes other information in the SAE Handbook on this subject. It will, in some cases, require more care in application allowing 3 in. minimum chain clearance (at trailer support interference points); 4 in. minimum cab-to-trailer corner clearance is permitted.

1. Trailer support height retracted, 14 in.
2. Semitrailer brake connection locations, see SAE J702.
3. Air hose length, 118 in. recommended.

Table 1 and Figs. 1 and 3 show basic requirements for interchangeability of truck tractor and semitrailer equipment. Fig. 2 shows the interchangeability of the doubles converter dolly.

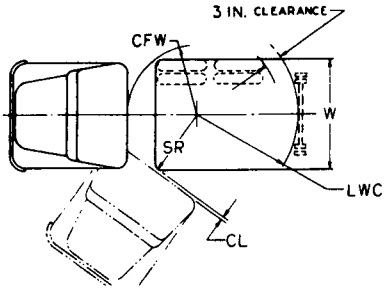


FIG. 1

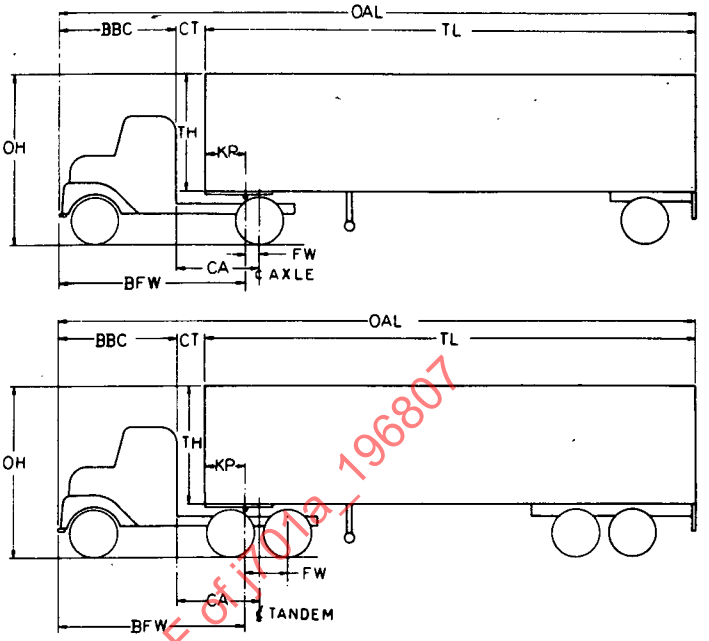


TABLE 1 — HEIGHT[a] FROM TOP FACE OF TRACTOR FIFTH WHEEL TO GROUND UNCOUPLED

Tire Size	Height	Tire Size	Height
7.50/20	43	11.00/20	49
8.25/20	44	11.00/22	51
9.00/20	46	11.00/24	53
10.00/20	48	12.00/20	51
10.00/22	49	12.00/24	55
10.00/24	50		

NOTE: 5th wheel height = 48 (10.00 × 20 tires) standard unless otherwise specified.
[a] Height can vary by ± 1 in.

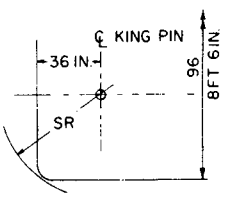
The formulas for determining LWC and overall combination lengths are:

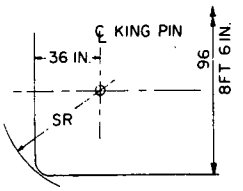
$$(FW + R)^2 = (LWC - C)^2 - (W/2)^2$$

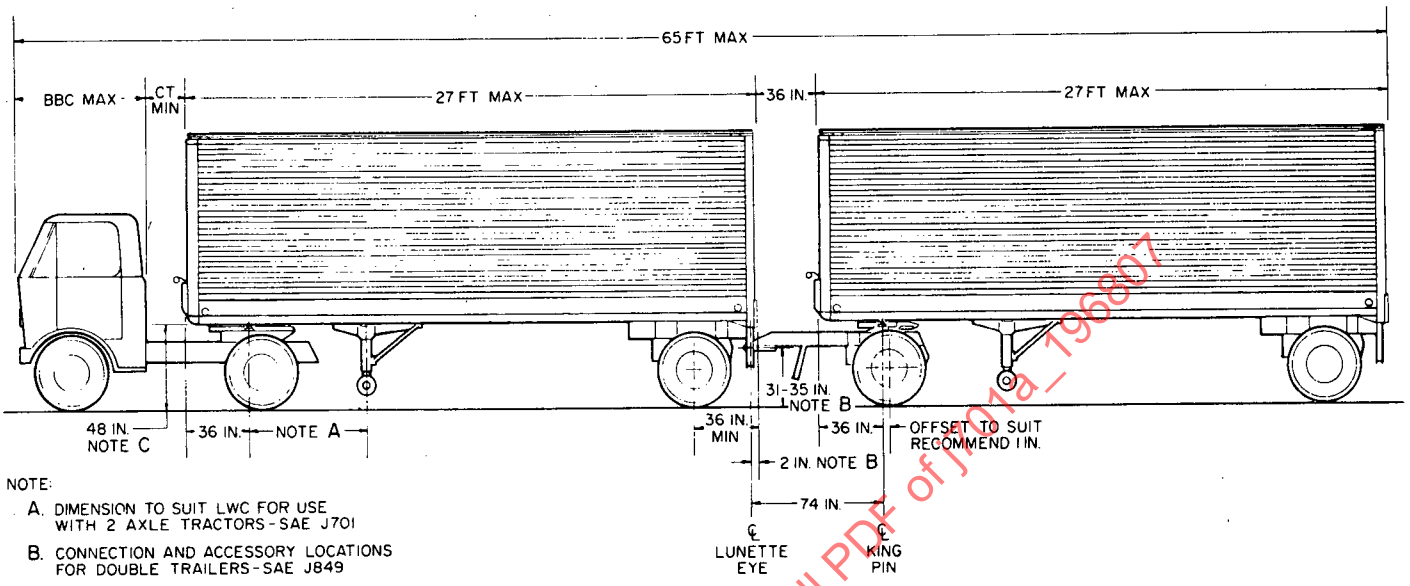
where: FW = 5th wheel advance
R = Rear axle tire radius
LWC = 90 in.
= 64 in. (short trailers or trailers specifically intended for use with 2 axle tractors)
W = 96 in.
= 102 in.
C = Clearance, 3 in.

The overall combination length formulas are as follow:

$$OAL = (TL - KP) + BFW$$
$$OAL = (TL - KP) + (BBC + CFW)$$
$$OAL = TL\ TCT + BBC$$







NOTE:

A. DIMENSION TO SUIT LWC FOR USE WITH 2 AXLE TRACTORS - SAE J701

B. CONNECTION AND ACCESSORY LOCATIONS FOR DOUBLE TRAILERS - SAE J849

C. REFER TO SAE J701 FOR APPLICABLE 5TH WHEEL HEIGHT DEFINITIONS

D. EACH TRAILER TO BE EQUIPPED AS LEAD UNIT

Trailer Width, in.	Corner R	SR	CT Min.	BBC Max.
96	10 in.	56	24	72
102	10 in.	58-1/2	26-1/2	69-1/2
96	Square	60	28	68
102	Square	62-1/2	30-1/2	65-1/2

FIG. 2

SYMBOLS FOR TRUCK TRACTOR SEMITRAILER INTERCHANGE COUPLING DIMENSIONS

TRAILER

TL	TRAILER LENGTH
SR*	SWING RADIUS (60 IN. FOR 96 IN. WIDTH; 62-1/2 IN. FOR 102 IN. WIDTH)
KP	FRONT OF TRAILER TO KINGPIN, 36 IN.
LWC**	KINGPIN TO TRAILER SUPPORT CLEARANCE, 90 IN. (64 IN. FOR SHORT TRAILERS INTENDED FOR USE WITH 2 AXLE TRACTORS) INCLUDES 3 IN. CLEARANCE
TH	TRAILER HEIGHT

TRACTOR

CFW	BACK OF CAB TO 5TH WHEEL (64 MIN — 96 IN. WIDTH; 66-1/2 MIN — 102 IN. WIDTH)
BBC	BUMPER TO BACK OF CAB
BFW	BUMPER TO 5TH WHEEL
FW	KINGPIN TO REAR AXLE
CA	CAB TO AXLE

COMBINATION

W	WIDTH
OAL	OVERALL LENGTH
OH	OVERALL HEIGHT
CL	CLEARANCE BETWEEN REAR OF CAB AND TRAILER CORNER (4 IN. MINIMUM)
CT	CLEARANCE BETWEEN REAR OF CAB AND TRAILER FRONT IN STRAIGHT AHEAD POSITION

* Maximum dimensions for square front trailer.

** For determining LWC on support mounting structure of frame, top of tire is assumed to be 3 in. below trailer coupler plate.