

Contents

- 1 Purpose of the guide
- 1 Logging truck weight allowances
- 2 Regulations common to all combinations
- 9 Non-TAC short log combinations
- 9 Pending regulation changes
- 9 References
- 9 Acknowledgements

B.C. log hauling configurations: maximum weights and dimensions guide, September 2003

Abstract

The Forest Engineering Research Institute of Canada (FERIC) periodically publishes a guide that summarizes the maximum weights and dimensions for on-highway vehicle configurations hauling logs and operating under the British Columbia Commercial Transport Act Regulations. This latest guide supersedes all previous FERIC guides on this topic.

Keywords

Regulations, Vehicle weights, Vehicle dimensions, British Columbia.

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Purpose of the guide

This guide summarizes the legal weights and dimensions for on-highway vehicle configurations hauling logs and operating under the British Columbia Commercial Transport Act Regulations.¹

Information for log hauling combinations that are available under permit only can be found in the Commercial Transport Manual.² This guide supersedes previous FERIC guides on this topic (Webb 1998a, b). It does not replace the British Columbia Commercial Transport Act Regulations, which should be referred to for more detail on the information provided in this guide.

Logging truck weight allowances

Unless highway signage restricts vehicles by weight, all log-hauling vehicles may exceed their allowable gross weights by the allowances indicated below. However, no allowance is applicable to the drive axle group of a tridem log truck when pulling a tridem pole trailer unless the tridem-tridem interaxle spacing is 7.0 m or greater. The axle weight

allowances presented in this guide do not include tolerance.

Summer (March 2 to November 30)

Single axle (not including steering axle): 500 kg. Tandem or tridem axle groups and triaxle trailers: 1 100 kg. Maximum for a vehicle combination: 1 500 kg.

Winter (December 1 to March 1)

Single axle (not including steering axle): 500 kg. Tandem or tridem axle groups and triaxle trailers: 1 500 kg. Maximum for a vehicle combination: 2 500 kg.

¹ The British Columbia Commercial Transport Act Regulations can be accessed through the B.C. government website at http://www.qp.gov.bc.ca/statreg/reg/C/CommerTrans/30_78/30_78.htm. Note that this website provides unofficial versions of Acts and Regulations; the Queen's Printer official printed version must be obtained for legal and other purposes.

² The Commercial Transport Manual can be accessed through the B.C. Ministry of Public Safety and Solicitor General website at <http://www.pssg.gov.bc.ca/cvse/Manual/Compliance/index.htm>.

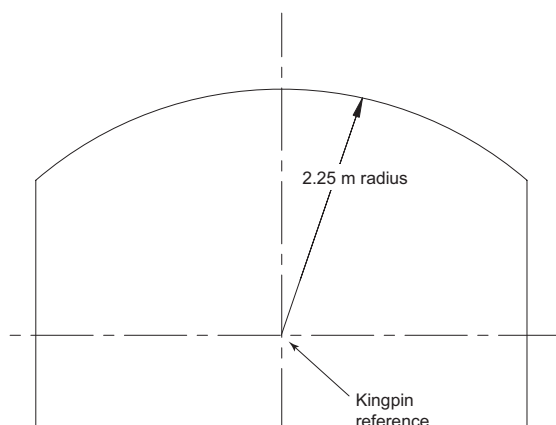
All year

The gross vehicle weight (GVW) including all applicable logging truck weight allowances must not, without a permit, exceed 63 500 kg. See also Motor Vehicle Act Reg 19.11.³

Regulations common to all combinations

- Maximum height of 4.15 m and maximum width of 2.6 m (mirrors not to extend more than 20 cm each side).
- Gross axle weight must not exceed manufacturer's rating of any installed component. This includes, but is not limited to, axles, suspension, tires, and brakes.
- Tandem axle group weight not to exceed 17 000 kg for spreads from 1.0 m to 1.85 m inclusive.
- Single axle not to exceed 9 100 kg, or two adjacent axles within a tridem group on a semi-trailer or B-train must not exceed 17 000 kg.
- Maximum steering axle weight on all long log tandem drive tractor, tandem drive truck full trailer and all non-TAC⁴ combinations is 9 100 kg.
- Maximum steering axle weight for all combinations equipped with a self-loader is 9 100 kg.

Figure 1. Radial front overhang for kingpin connected jeeps and trailers.



- Tire loading not to exceed 3 000 kg/tire for all axles except steering axles.
- Axle width for a pole, pony, semi, or full-trailer manufactured after December 31, 1993, must be not less than 2.5 m and not more than 2.6 m.
- Maximum tridem axle group loading on a pole or semi-trailer is 24 000 kg and requires an axle group spread of not less than 2.4 m and not more than 3.1 m.
- Tire loading is limited to 110 kg/cm of nominal tire width for all non-TAC combinations (except tridem drive combinations put into service after October 1, 2002 which are limited to 100 kg/cm). This will be reduced to 100 kg/cm tire width effective January 1, 2005.
- Maximum front overhang for all long log combinations is 3.0 m measured from the centre of the bunk, except those with jeeps which are allowed 2.25 m, measured radially from the kingpin (refer to Figure 1).
- Maximum rear overhang for all long log combinations (with compensating reach system) is 5.0 m, measured from the centre of the rear bunk.
- Maximum length for tandem tractor in combination with a tandem or tridem pole trailer is 21.5 m, and 23.0 m for all

³ The Motor Vehicle Act Regulations can be accessed through the B.C. government website at http://www.qp.gov.bc.ca/statreg/reg/M/MotorVehicle/26_58/26_58-00.htm. Note that this website provides unofficial versions of Acts and Regulations; the Queen's Printer official printed version must be obtained for legal and other purposes.

⁴ Transportation Association of Canada (TAC) is a national organization that has membership from all provincial governments. In terms of trucking, its mandate is to develop regulations that promote truck safety and are harmonized throughout Canada. TAC classified combinations are a result of this work.

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other long log combinations with more than one articulation point and all tridem drive tractor combinations. Term permits are available that allow an increased maximum length up to and including 25.0 m.

- Table 1 shows the weight limits at various distances between the centres of the first and last axle of axle groups. Figure 2 is an example of how Table 1 is applied. These dimensions and axle weight allowances apply to all non-TAC combinations.

For tridem drive truck/tractor and all TAC combinations, a minimum spacing between groups, as shown in Table 2, is required to qualify for maximum axle weight allowances. This spacing refers to the distance

Table 2. Interaxle spacing for TAC and tridem drive combinations

	Minimum interaxle spacing (m)		
	Single	Tandem	Tridem
Single	3	3	3
Tandem	3	5	5.5
Tridem	3	5.5	6

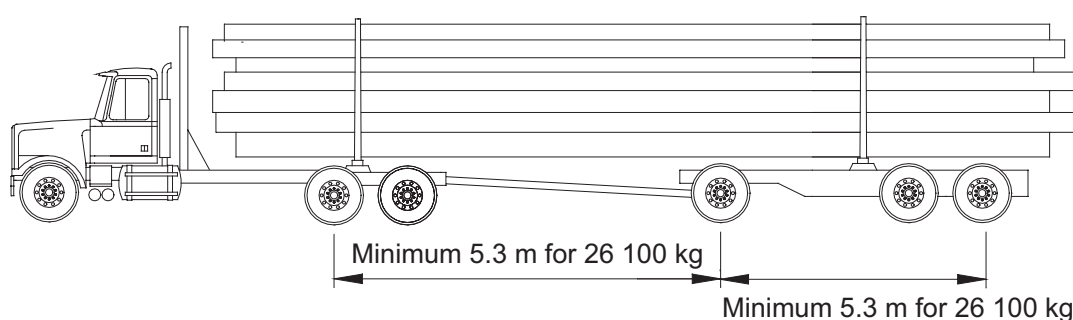


Figure 2.
Dimensional
reference for
maximum axle
weights for non-
TAC combinations.

Table 1. Maximum gross weight for axle groups except for TAC and tridem drive combinations

Distance between the centres of the first and last axle of any group of axles of a vehicle or combination of vehicles (m)		Maximum gross weight, group of axles (kg)	
	less than	1.0	9 100
1.0	up to but not including	1.2	16 500
1.2	up to but not including	1.9	17 000
1.9	up to but not including	2.3	18 000
2.3	up to but not including	2.6	19 000
2.6	up to but not including	3.0	20 000
3.0	up to but not including	3.4	21 000
3.4	up to but not including	3.8	22 000
3.8	up to but not including	4.2	23 000
4.2	up to but not including	4.6	24 000
4.6	up to but not including	5.0	25 000
5.0	up to but not including	5.3	26 000
5.3	up to but not including	5.7	27 000
5.7	up to but not including	6.1	28 000
6.1	up to but not including	6.5	29 000
6.5	up to but not including	6.9	30 000
6.9	up to but not including	7.2	31 000
7.2	up to but not including	7.6	32 000
7.6	up to but not including	8.0	33 000
8.0	or more		34 000

from the centre of the rearmost axle of one group to the centre of the first axle of the following group.

Regulations for tridem drive tractor/truck combinations

The following regulations apply only with tandem, tridem or triaxle pole trailers, four-axle full trailers (for short logs only), semi-trailers, B-trains, and pony trailers.

- Adjacent axles for tridem drive tractor/pole trailer and triaxle trailer (long log) combinations must be load equalized to within 1 000 kg.
- When carrying an empty four-axle full trailer on a tridem drive truck, a permit is required to increase the single vehicle length from 12.5 m to 13.5 m and rear overhang from 4 m to 5 m.
- Tridem drive axle width must be not less than 2.5 m and not more than 2.6 m for tractors manufactured after July 31, 1997.
- Truck wheelbase to be a minimum of 6.6 m. Tractor wheelbase to be a minimum of 6.6 m and maximum of 6.8 m.
- Maximum steering axle load without a self-loader is 7 300 kg. This is increased to 9 100 kg with a self-loader.
- Single steering axle must carry a minimum of 25% of tridem drive group weight when loaded.
- Maximum tire loading of 100 kg/cm of tire width applies to all new tridem drive combinations put into service after October 1, 2002. Maximum tire loading 110 kg/cm tire width applies to tridem drive combinations in service before October 1, 2002.
- Maximum drive axle load is 24 000 kg and requires an axle group spread of not less than 2.4 m and not more than 2.8 m.

Figure 3 illustrates the basic dimensions and Table 3 outlines the maximum axle weights for the common long log combinations used in British Columbia.

TAC and TAC (BC) short log combinations

Section 7.30 (2) of the Commercial Transport Act Regulations and related appendices have been amended to allow TAC straight truck and trailer combinations to operate at non-TAC weights until the full TAC implementation date of January 1, 2005. Therefore, non-TAC weights should be referenced for these configurations until January 1, 2005.

- TAC and TAC (BC) combinations include semi-trailers, pony trailers, and B-trains with at least one semi-trailer manufactured after August 31, 1988 and licensed in British Columbia after June 30, 1990, and truck/full trailer combinations where the truck or both vehicles of the combination were manufactured after December 31, 1992.
- Maximum steering axle weight allowance for tandem drive tractors is 5 500 kg and 7 300 kg for tridem drive tractors. This is increased to 9 100 kg when equipped with a self-loader.
- Tire loading not to exceed 100 kg/cm of nominal tire width, up to manufacturer's rated capacity. Therefore, the self-loader's 9 100 kg steering axle load requires 45.5 cm (18 in.) steer tires.
- Front overhang on semi-trailer configurations not to exceed 2.0 m radius measured forward from the kingpin centre (Figure 1).
- Rear overhang not to exceed 35% of the trailer's wheelbase, this includes trailer tailframe and/or load overhang.
- Minimum wheelbase 6.25 m, maximum 12.5 m for B-train trailers, four-axle full trailers and semi-trailers. For three-axle full trailers, minimum wheelbase is 4.4 m, maximum length is 12.5 m.
- Axle width minimum of 2.5 m but not more than 2.6 m required for trailers 2.6 m wide.

Figure 4 illustrates the dimensions for common TAC short log combinations and Table 4 outlines the axle weight regulations for these combinations.

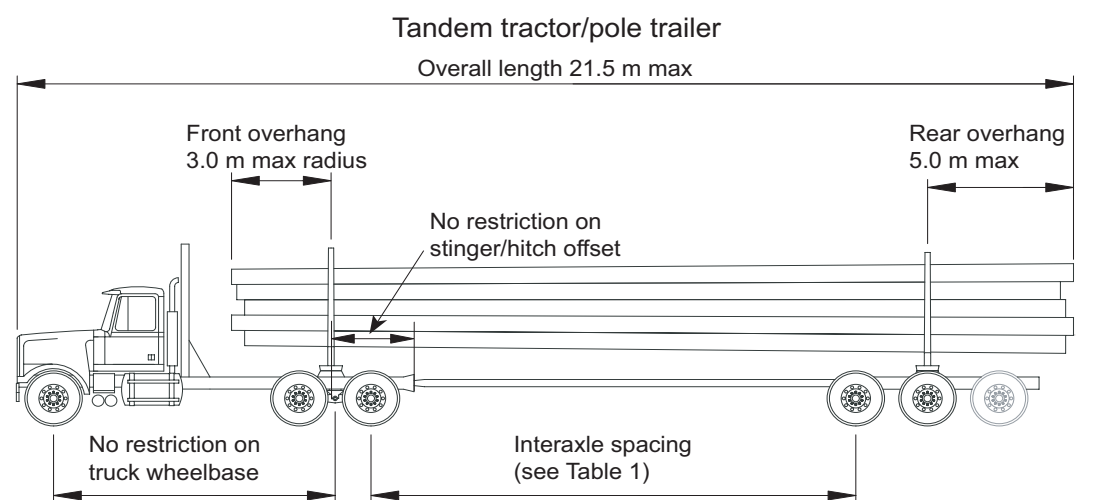
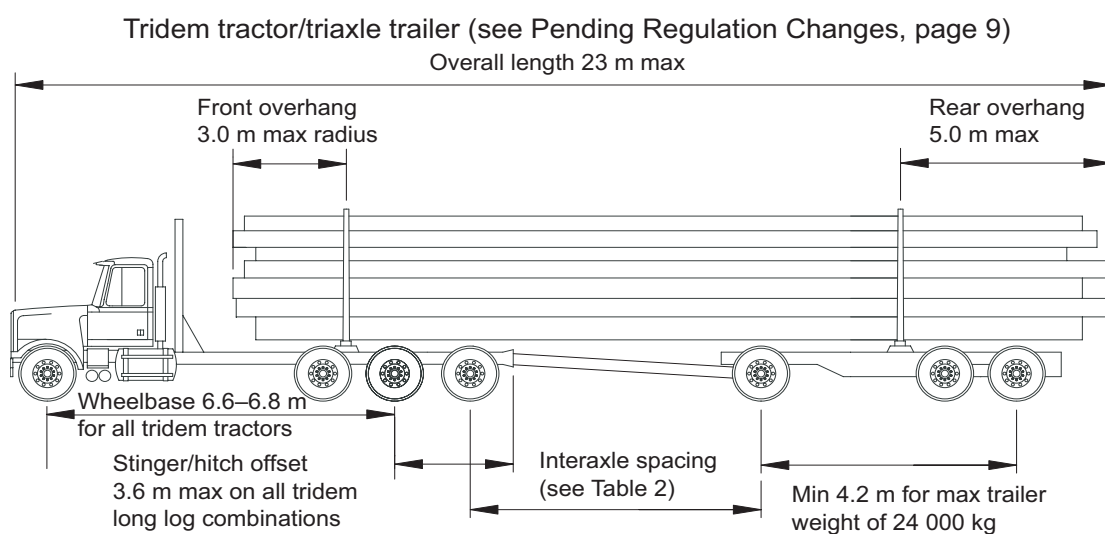
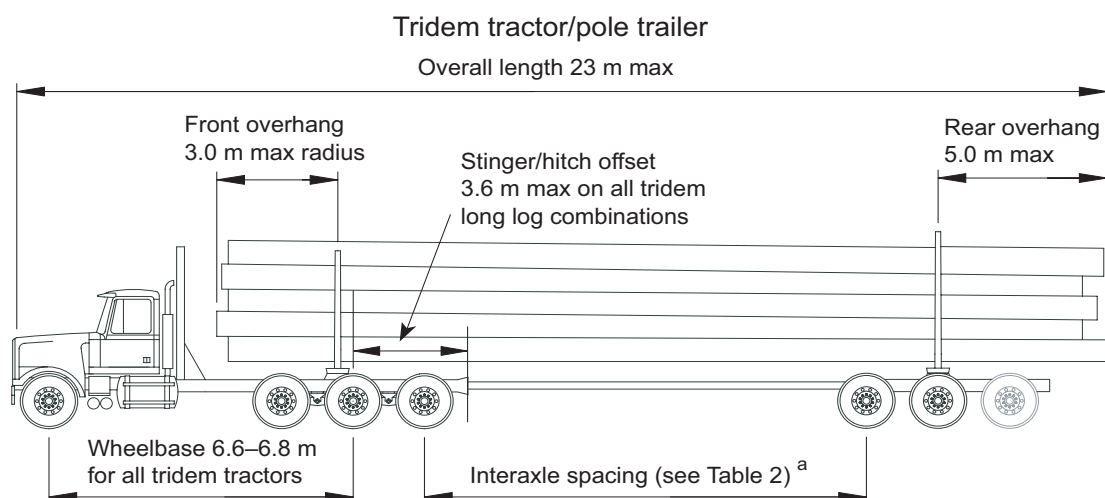










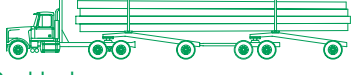



Figure 3.
Dimensional
references for
common long log
combinations.



^a For short wheelbase applications (short logs), this interaxle spacing is reduced to 4.5 m with reduced axle loads.

Table 3. Maximum weights for long log combinations September 2003

Configuration	Max GCW (kg) ^{a, b, c}	Max. weight ^{a/} axle group ^d (kg)	Max GCW ^a with typical steer tires ^{b, c} (kg)	Typical tare/maximum payload ^{b, c} (kg)	Articulation points (no.)
 Tandem tractor/Tandem pole trailer	43 100	Steer: 9 100 Drive: 17 000 Trailer: 17 000	40 147	14 700/ 25 447	1
 Tandem tractor/Tridem pole trailer	50 100	Steer: 9 100 Drive: 17 000 Trailer: 24 000	47 147	15 700/ 31 447	1
 Tridem tractor/Tandem pole trailer	48 300	Steer: 7 300 ^e Drive: 24 000 Trailer: 17 000	48 300 ^b	15 700/ 32 600	1
 Tridem tractor/Tridem pole trailer	55 300	Steer: 7 300 ^e Drive: 24 000 Trailer: 24 000	55 300 ^b	16 500/ 38 800	1
 Tandem tractor/Quadaxle trailer	60 100	Steer: 9 100 Drive: 17 000 Tandem: 17 000 each	57 147	17 500/ 39 647	2
 Tandem tractor/Triaxle trailer	52 200	Steer: 9 100 Drive: 17 000 Single: 9 100 Tandem: 17 000	49 247	15 700/ 33 547	2
 Tridem tractor/Triaxle trailer ^f	55 300	Steer: 7 300 ^e Drive: 24 000 Single: 9 100 ^g Tandem: 17 000 ^g	55 300 ^b	17 000/ 38 300	2
 Tandem tractor/Jeep/Pole trailer	52 200	Steer: 9 100 Drive: 17 000 Jeep: 9 100 Tandem: 17 000	49 247	16 700/ 32 547	2
 Doglogger	52 200	Steer: 9 100 Drive: 17 000 Tandem: 17 000 Single: 9 100	49 247	16 500/ 32 747	2
 Tandem tractor/Tandem jeep/Pole trailer	60 100	Steer: 9 100 Drive: 17 000 Tandem: 17 000 each	57 147	18 000/ 39 147	2
 Double dog	61 300	Steer: 9 100 Drive: 17 000 Single: 9 100 Tandem: 17 000	58 347	19 400/ 38 947	3
 Tandem tractor/Jeep/Triaxle trailer	61 300	Steer: 9 100 Drive: 17 000 Single: 9 100 Tandem: 17 000	58 347	18 600/ 39 747	3

^a Weights do not include allowances, see introductory text for details.

^b Maximum of 100 kg/cm tire width applies to all new tridem drive vehicles and combinations put into service after October 1, 2002. Maximum of 110 kg/cm tire width applicable to single, tandem, or tridem drive vehicles in use prior to October 1, 2002. Effective January 1, 2005, 100 kg/cm of tire width applicable to tires on all vehicle configurations. A maximum of 3 000 kg/tire is applicable to all tires except tires in the steering axle(s).

^c Only applicable if axle spacing requirements are met for maximum axle weights. See Tables 1 and 2.

^d Restrictions apply to axle group and steering axle loading, see text for clarification.

^e Legal steering axle load can be increased to 9 100 kg when equipped with a self-loader.

^f Refer to pending regulation changes on page 9.

^g Trailer gross weight not to exceed 24 000 kg.

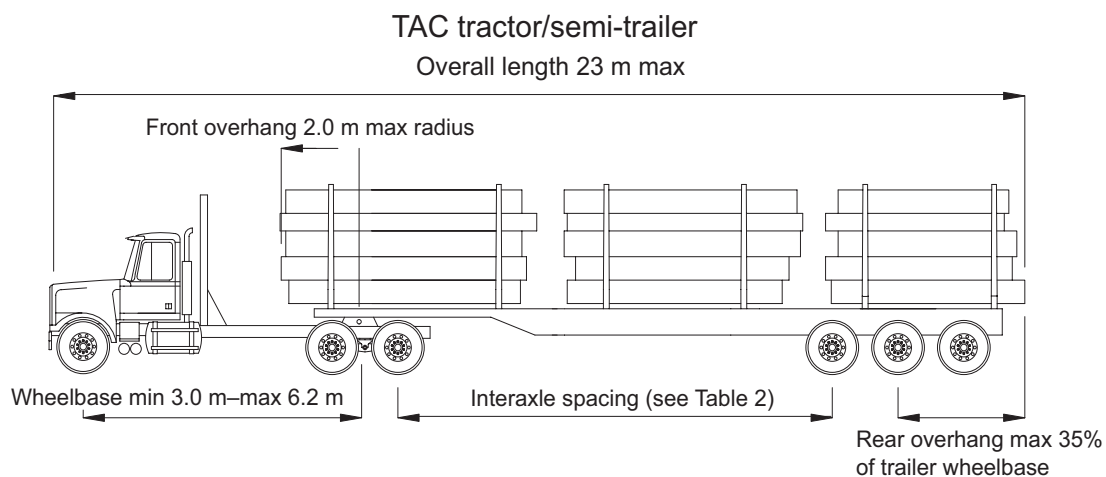


Figure 4.
Dimensional
references for TAC
short log
combinations.

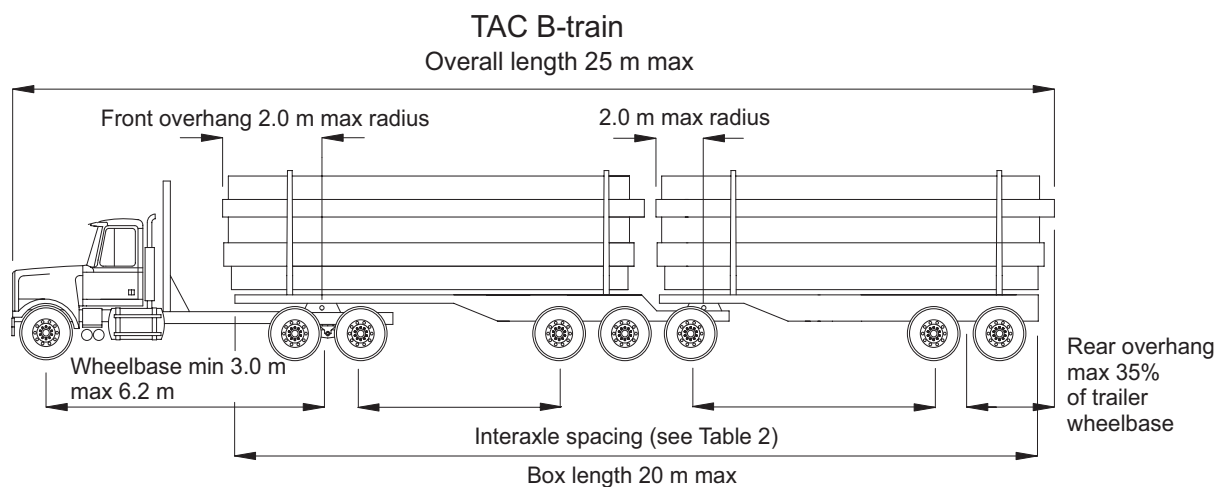
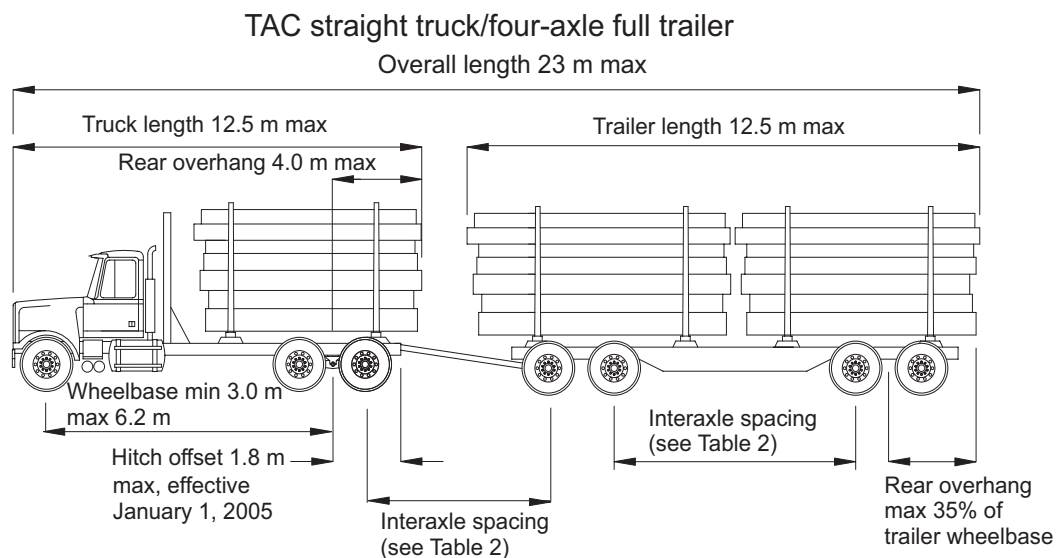

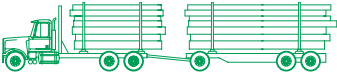











Table 4. Maximum weights for common short log combinations September 2003

Configuration	Max GCW (kg) ^{a, b, c, d}	Max. weight ^{a/} axle group ^{b, e} (kg)	GCW with typical steer tires (kg) ^{a, b, c, d}	Typical tare/maximum payload (kg) ^{c, d}	Articulation points (no.)
 TAC truck/TAC three-axle full trailer	50 100	Steer: 9 100 Drive: 17 000 Single: 9 100 ^f Tandem: 17 000 ^f	47 147	16 700/ 30 447	2
 Non-TAC truck/three-axle full trailer	52 200	Steer: 9 100 Drive: 17 000 Single: 9 100 Tandem: 17 000	49 247	16 650/ 32 597	2
 TAC Truck/TAC four-axle full trailer	57 100	Steer: 9 100 Drive: 17 000 Trailer: 17 000 per tandem, max 31 000	54 147	18 000/ 36 147	2
 Non-TAC truck/four-axle full trailer	60 100	Steer: 9 100 Drive: 17 000 Trailer: 17 000 per tandem group	57 147	18 000/ 39 147	2
 Tridem truck/three-axle full trailer	55 300	Steer: 7 300 ^g Drive: 24 000 Single: 9 100 ^f Tandem: 17 000 ^f	55 300 ^c	17 000/ 38 300	2
 Tridem truck/four-axle full trailer ⁱ	62 300	Steer: 7 300 ^g Drive: 24 000 Single: 17 000 per tandem, max 31 000	62 300 ^c	19 000/ 43 300	2
 TAC tractor/tridem semi-trailer	46 500	Steer: 5 500 Drive: 17 000 Trailer: 24 000	46 500	16 500/ 30 000	1
 Tridem tractor/tandem semi-trailer	48 300	Steer: 7 300 ^g Drive: 24 000 Trailer: 17 000	48 300	16 700/ 31 600	1
 Tridem tractor/tridem semi-trailer	55 300	Steer: 7 300 ^g Drive: 24 000 Trailer: 24 000	55 300	17 500/ 37 800	1
 Tridem tractor/B-train	63 500 ^h	Steer: 7 300 ^g Drive: 24 000 Tandem: 17 000	63 500 ^c	20 000/ 43 500	2
 TAC 8-axle B-train	63 500	Steer: 5 500 ^g Drive: 17 000 Tridem: 24 000 Tandem: 17 000	63 500	19 000/ 44 500	2

^a All non-TAC combinations shown will be required to meet TAC weights and dimensions standards, effective January 1, 2005. Consult regulations for load limitations on other axle groupings with spreads up to 8.0 m and for other vehicle combinations not shown.

^b Weights do not include allowances, see introductory text for details.

^c Maximum of 100 kg/cm of tire width applies to all tires on all new tridem drive vehicles and combinations put into service after October 1, 2002. Maximum of 110 kg/cm tire width applicable to tires on single, tandem, or tridem drive vehicles in use prior to October 1, 2002. Effective January 1, 2005, 100 kg/cm of tire width applicable to tires on all vehicle configurations. A maximum of 3 000 kg/tire is applicable to all tires except tires in the steering axle(s).

^d Only applicable if axle spacing requirements are met for maximum axle weights. See Tables 1 and 2.

^e Restrictions apply to axle group and steering axle loading, see text for clarification.

^f Trailer gross weight not to exceed 24 000 kg.

^g Legal steering axle load can be increased to 9 100 kg when equipped with a self-loader.

^h The tridem tractor/B-train can have a tridem axle group on the lead trailer instead of the tandem group shown. Adding a tridem group does not increase the overall GCW.

ⁱ Refer to pending regulation changes on page 9.

Non-TAC short log combinations

Non-TAC combinations include B-trains with non-tridem semi-trailers, semi-trailers manufactured on or prior to August 31, 1988, and truck/full trailer combinations where the truck or full trailer was manufactured on or prior to December 31, 1992. These combinations will be required to meet TAC weights and dimensions, effective January 1, 2005.

- Steering axles and single axles (including an individual axle in a tandem or tridem group) are allowed up to 9 100 kg, except for the steering axle on a non-TAC B-train which is limited to 6 000 kg.
- Front overhang on semi-trailer configurations is not to exceed the 2.25 m radius as measured forward from the kingpin centre (Figure 1).
- Drawbar length not to exceed 5.0 m except for pole trailers hauling long logs.
- Rear overhang not to exceed 5.0 m from the centre of the last bunk.

Figure 5 illustrates the dimensions for tridem drive tractor short log combinations. Table 4 outlines the axle weight regulations for common short log combinations used in British Columbia.

Pending regulation changes

In August 2003, road testing of a tridem drive tractor/quadaxle trailer hauling long logs was completed. It is anticipated that this configuration will be approved for on-highway use in early 2004.

Based on previous analyses, FERIC has requested that the B.C. Ministry of Public Safety and Solicitor General review trailer weight allowances for the tridem tractor/triaxle trailer hauling long logs. The aim is to increase trailer weight allowances for this combination, and a decision is expected in late 2003 or early 2004.

Consult the Commercial Transport Act Regulations to see if these changes have taken place.

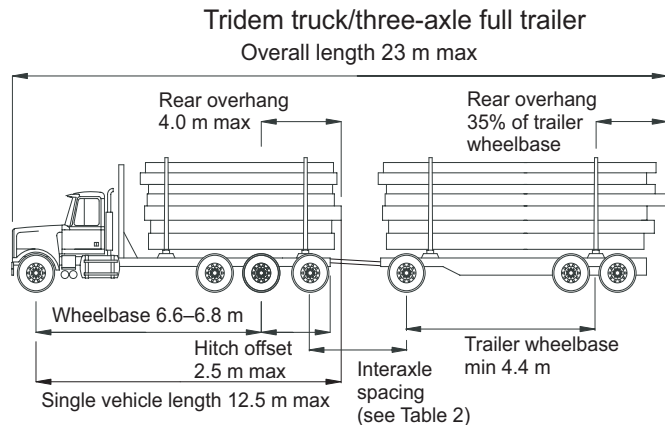
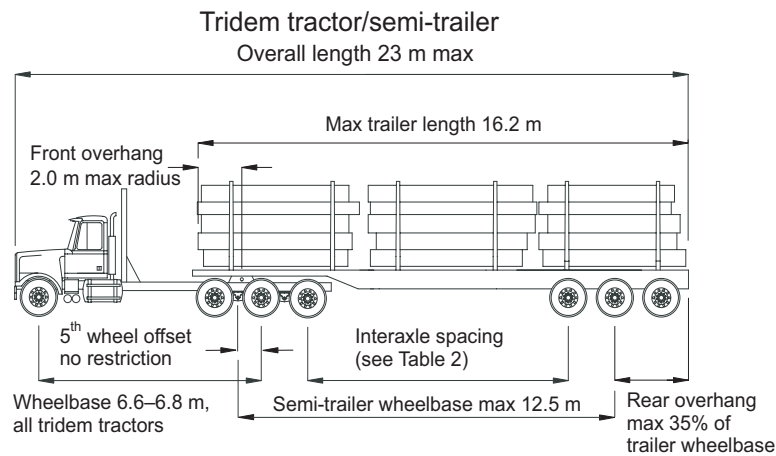
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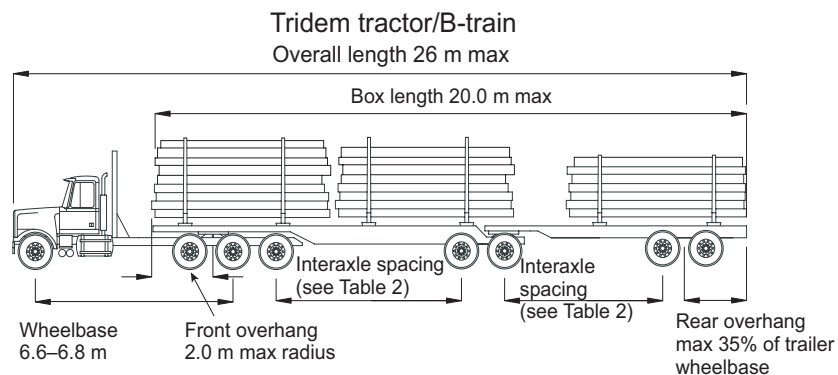
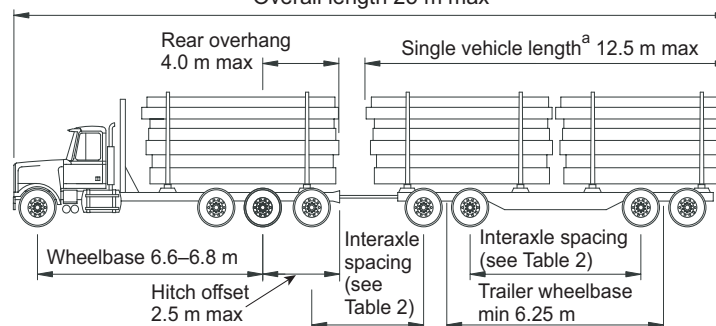
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Figure 5.
Dimensional
references for
tridem drive short
log combinations.



Tridem truck/four-axle full trailer^a (see pending regulation changes, page 9)
Overall length 25 m max



^a When carrying the empty four-axle full trailer, a permit is required to increase the single vehicle overall length limit from 12.5 m, and rear overhang from 4.0 to 5.0 m.