**Railway Association of Canada**

SECURING VEHICLES

♦ A safety appliance may be temporarily removed to facilitate loading or unloading a commodity, when necessary, provided it is replaced immediately following loading or unloading operations and prior to releasing the car into service.

♦ Ensure all winches are in proper direction so that the chain is taken up on the underside of the ratchet wheel.

♦ Be sure proper tension of wire rope or chains exists.

♦ Tension chain to achieve a moderate deflection of the vehicle's suspension.

♦ After initially tensioning each chain, strike it sharply with a hammer or bar and retighten. This helps the links seat in their longest length and helps prevent loose chains in transit.

♦ Secure excess wire rope or chain to the tension bearing part of the wire rope or chain.

♦ Tie-down equipment should be affixed to designated attachment points on vehicles, not to axles, springs, or bumpers.

♦ On chain devices, secure open-faced hooks to the chain link with wire.

WIRE OR TIE WRAP
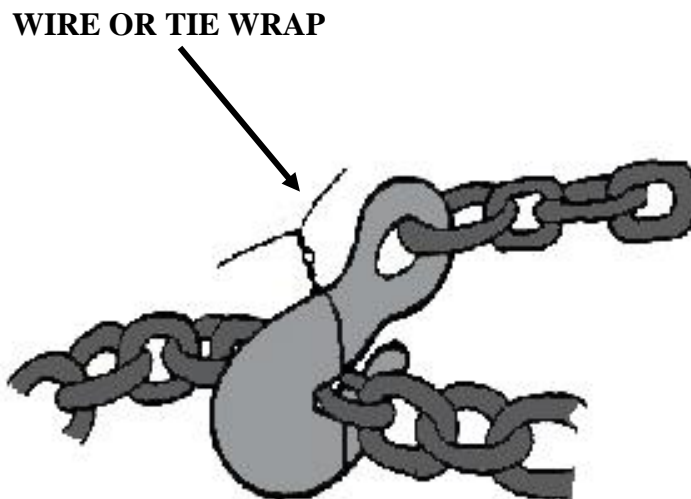
SECURING VEHICLES

♦ All winches/ratchets must be located at equal distances from the vehicles, maintaining a 45-degree angle.

♦ The length of chain should be equal to the distance between the top of the deck and the tie-down point on the vehicles. **(See Note).**
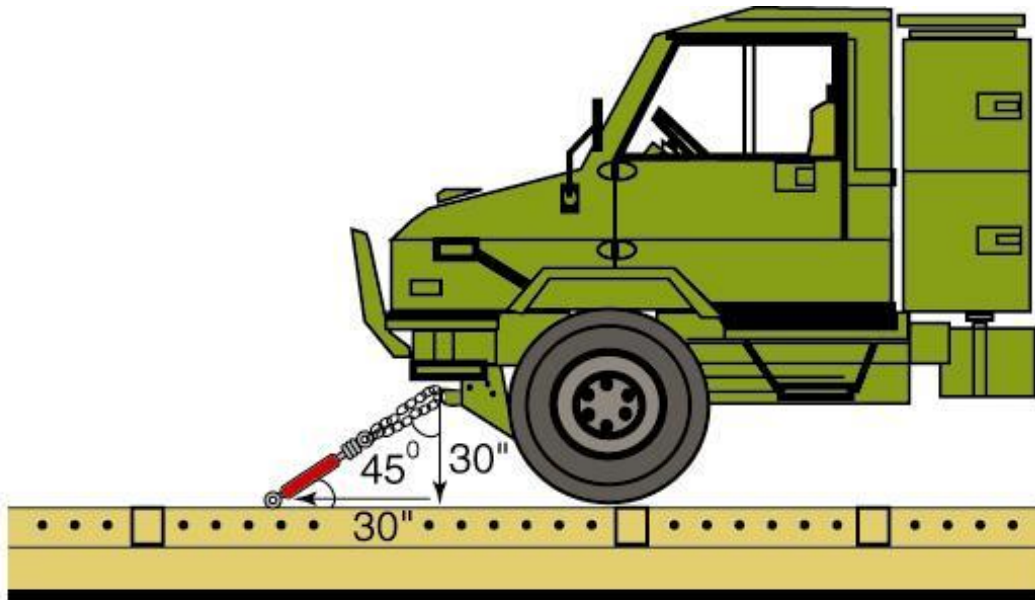

NOTE:	1.	MEASURE DISTANCE FROM ATTACHMENT POINT OF VEHICLE TO FLAT CAR DECK IN A VERTICAL POSITION.
	2.	TAKE VERTICAL DISTANCE (FROM ATTACHMENT POINT TO DECK OF FLAT CAR) AND MEASURE SAME LENGTH HORIZONTALLY AWAY FROM THE VEHICLE.

♦ Before securement, ensure chains are not kinked or twisted and correct position of chain anchor.

♦ Do not cross chains.

♦ Loose chains are not to be wrapped around shackles and winches or ratchets.

SECURING VEHICLES (concluded)

♦ Proper tension is 1/8'' space between metal parts of compression units on chain assemblies so equipped.

PROPER TENSION IS 1/8" SPACE BETWEEN
METAL PARTS OF COMPRESSION UNITS

COMPRESSION UNIT

JAM NUT
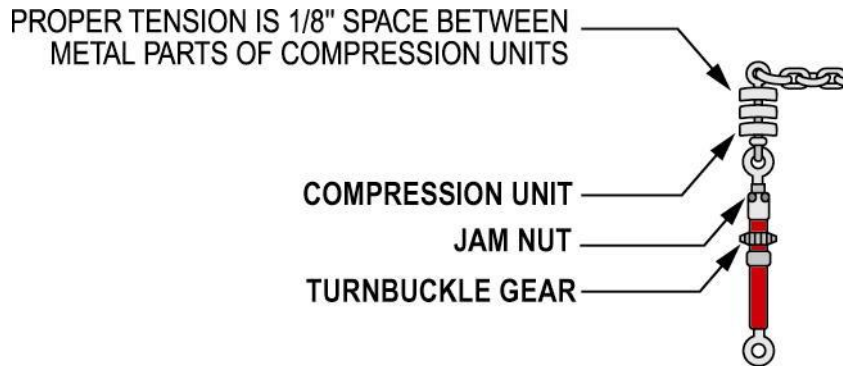
TURNBUCKLE GEAR

♦ Lock chain-tightening devices with wire.

♦ Turnbuckles must have jam nuts tightened wrench tight.

♦ When in doubt concerning number of chains required use the following restraint guidelines:

Restraint values for general commodities

Direction of Restraint	G Force to Yield
Longitudinal	3.0 Gs Total load restraint in each direction should equal three times object weight.
Lateral	2.0 Gs Total load restraint in each direction should equal two times object weight.
Vertical	2.0 Gs Total load restraint should equal two times object weight.