



Truck Transportation

Program 5791



Loading and unloading

860-363

Student's name: _____

Competency 7

Table of contents

7.1	Knowledge Required for Loading	2
7.2	Loading and Unloading	16
7.4	Load Standards	27
7.5	Weighing Techniques	36
7.6	Loading Standards	47
7.7	Securing the Goods	48
7.9	Plan Cargo Securement Operations	67
7.12	Recovery of the Competency	78



Competency 7

Knowledge Required for Loading

Lesson Objectives:

- Knowing the competency
- Arrange the goods in the vehicle based on the information provided, while taking into account the regulations and maximizing the efficiency of the deliveries

Understanding competency 7

Total duration: 45 hours

Evaluation time: 2 hours

Upon completion of this competency, you should be able to perform the maneuvers necessary to load and unload a truck in accordance with health, safety and regulatory requirements.

Competency statement

Proceed with the loading and unloading of a truck.

Competency elements targeted

1. Prepare the work.
2. Position the vehicle.
3. Perform the loading and unloading maneuvers.
4. Perform the weighing and adjustments.
5. Securing and untying the goods.
6. Communicate the information.

Competency 7 is split into **2** distinct **modes** of instruction:

1. **The theory** is the part where you make the connections between the various parts of the regulation and its application.
2. **Practice** is the application of what has been learned in simulated and/or real loading and unloading situations.

In the common language of road transport, some terms and abbreviations are commonly used. Here is a list of the most common ones.

ABBREVIATIONS AND EXPRESSIONS

Abbreviations	English expressions	French expressions
AS A FULL LOAD	Considered a full load for special deliveries	Expédition considérée comme une charge entière même si elle ne remplit pas la semi-remorque
BDL	Bundle	Paquet, ballot
B/L (BOL)	Bill of lading	Connaissance
B/T	Bobtail	Solo, haut le pied (tracteur seulement)
COD	Cash on delivery	PSL (payable sur livraison)
COLL	Collect	Frais à percevoir (transport et/ou marchandise)
DELY	Delivery	Livraison
LOAD AND GO	Directly from a shipper to a consignee without going through a terminal	Chargé chez l'expéditeur et livré directement chez le consignataire sans passer par un intermédiaire
LTL	Less than truckload	Lots brisés, charge partielle
MIN	Minimum	Minimum
N/C	No charge	Sans frais de transport et/ou de marchandise
PACKING SLIP	Document detailing the content of a package or bundle	Document qui décrit le contenu de l'expédition
PCS	Pieces (number of)	Pièces (nombre de)
PKG	Package	Colis
PPD	Prepaid	Payé à l'avance
PRO No.	Freight bill number	Billet de livraison
P/U	Pick-up	Ramassage, cueillette
RO	Routing order	Acheminement, route désirée
RUSH, ASAP	Urgent, as soon as possible	Urgent
SLC	Shipper load & count	Chargé et compté par l'expéditeur
TL	Truckload	Charge complète
W/B	Waybill	Feuille de route

On the following bill of lading, can you find the five most relevant pieces of information for the driver regarding loading/unloading?

Write them on the next page and tell why they are important.



Bureau Chef
17000 rue Aubin
Mirabel, Québec
J7J 1B1
450-435-0167

www.cftr.ca
CONNAISSEMENT
Non negociable

1-877-435-0167 Service à la clientèle

BILL OF LADING NO. / N° DE CONN. P1440134		PLEASE PLACE TOP OF BAR CODE STICKER STRAIGHT ON DOTTED LINE S.V.P. PLACER LA PARTIE SUPÉRIEURE DU CODE À BARRE AUTOCOLLANT EN LIGNE DROITE SUR LE POINTILLÉ	
28 ^{D/J}	09 ^M	2020 ^{Y/A}	
SHIPPER / EXPÉDITEUR CUSTOMER CODE CODE DU CLIENT NAME / NOM Tuiles Olympia ADDRESS / ADRESSE 555 Rue Locke CITY / VILLE Saint-Laurent, QC H4T 1X7		Declared Valuation \$ Valeur déclarée _____ Per: _____ Maximum liability of \$2.00 per pound ON THE ACTUAL WEIGHT OF THE SHIPMENT unless declared valuation states otherwise. A surcharge is applicable when the declared value is in excess of \$2.00 per pound. Responsabilité maximum de \$2.00/livre SUR LE POIDS RÉEL DE L'EXPÉDITION à moins d'indication contraire. Un supplément s'applique quand la valeur déclarée dépasse deux dollars la livre.	
CONSIGNEE / CONSIGNATAIRE CUSTOMER CODE CODE DU CLIENT NAME / NOM Floor Fashion World Ltd (705-482-1679) ADDRESS / ADRESSE 2-34 Marshall Ave E CITY / VILLE North Bay ON P1A 1R1		FREIGHT CHARGES / FRAIS DE TRANSPORT PREPAID / PORT PAYÉ Bill Shipper / Facturer l'Expéditeur COLLECT / À PERCEVOIR Bill Consignee / Facturer le Destinataire X Freight charges will be collect unless marked prepaid. Les frais seront à percevoir à moins d'avis contraire - OR - OU:	
ROUTING / CARRIER TRANSFER POINT / POINT DE TRANSBORDEMENT ROUTE / TRANSPORTEUR		BILL THIRD PARTY FACTURER UNE TIERCE PARTIE PARTIE Cust.Code Code du Client Name & Address Nom et Adresse	
Pieces and Type of Packaging Nombre de pièces et le Type d'emballage	DG MD (X)	UN Number Numéro UN	Shipping Name And Description Nom d'expédition et la description
1skid	x	UN 1090	Acetone
12 skids		UN	Ceramic
2 skids		UN	Glue and grout
		UN	
		UN	
		UN	
		UN	
		UN	
P.O. #		REF#	SHIPPER'S #
SHIPPER: PLEASE COMPLETE THE FOLLOWING / EXPÉDITEUR: S.V.P. REMPLIR CE QUI SUIT			
TOTAL NO. OF PIECES NOMBRE TOTAL DE COLIS 15	DIMENSIONS OF SHIPMENT / DIMENSIONS DU CHARGEMENT LENGTH / LONGUEUR WIDTH / LARGEUR HEIGHT / HAUTEUR		C.O.D. <input type="checkbox"/> C.O.D. FEE PREPAID / FRAIS C.O.D. PAYÉS D'AVANCE <input type="checkbox"/> C.O.D. FEE COLLECT / FRAIS C.O.D. À PERCEVOIR
TOTAL CUBIC FEET TOTAL PIEDS CUBES	TOTAL WEIGHT POIDS TOTAL 20636 kg	DIMENSIONAL WEIGHT / POIDS DIMENSIONNEL * * 10 lb/cu.ft./li./p.c.	AMOUNT MONTANT \$ C.O.D. charges will be collect unless marked prepaid /Les frais C.O.D. seront à percevoir à moins d'avis contraire.
I HEREBY DECLARE that the contents of this consignment are fully and accurately described above by the proper shipping name, are properly classified and packaged, have dangerous goods safety marks properly affixed or displayed on them, and are in all respects in proper condition for transport according to the Transportation of Dangerous Goods Regulations. JE DÉCLARE QUE le contenu de cette expédition est complètement et correctement décrit ci-dessus avec la désignation officielle de transport, qu'il est classé et emballé correctement, que les indications de danger pour les produits dangereux sont correctement appliquées ou affichées, et qu'il est, à tous les égards, en bon état pour être transporté selon les Règlements sur le transport des marchandises dangereuses.		1. Any agreement covering transportation of the goods described herein with other than due dispatch, or for specific time, must be endorsed on this bill of lading and signed by the parties hereto. 2. When a shipment is at shipper's risk, the words "At Shipper's Risk" must be entered and initialed by both parties hereto. 1. Toute entente spéciale concernant le transport des biens décrits ci-haut, soit heure spéciale de livraison ou autre, doit être indiquée sur ce connaissement et signée par les parties concernées. 2. Si la marchandise est expédiée au risque de l'expéditeur, les mots "Au risque de l'expéditeur" doivent être inscrits et initialed par les deux parties concernées.	
SHIPPER / EXPÉDITEUR PER: _____		CARRIER / TRANSPORTEUR PER: _____	UNIT NO. / NO.D'UNITÉ CHECKER CONTRÔLEUR
NOTE: UNCRATED & USED MERCHANDISE AT SHIPPER'S RISK. / THIS BILL OF LADING TO BE SIGNED BY SHIPPER AND CARRIER. MARCHANDISE DÉBALLÉE ET UTILISÉ AU RISQUE DE L'EXPÉDITEUR / CE CONNAISSEMENT DOIT ÊTRE SIGNÉ PAR L'EXPÉDITEUR ET LE TRANSPORTEUR			

1.
Piece of information:

Reason(s):

2.

Piece of information:

Reason(s):

3.

Piece of information:

Reason(s):

4.

Piece of information:

Reason(s):

5.

Piece of information:

Reason(s):

Before taking possession of the goods, the driver must ensure that the vehicle is suitable **for picking up the goods**. What are the three points to check?

1.

2.

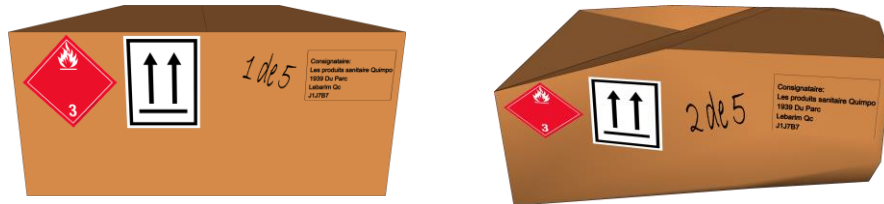
3.

Identification of the goods

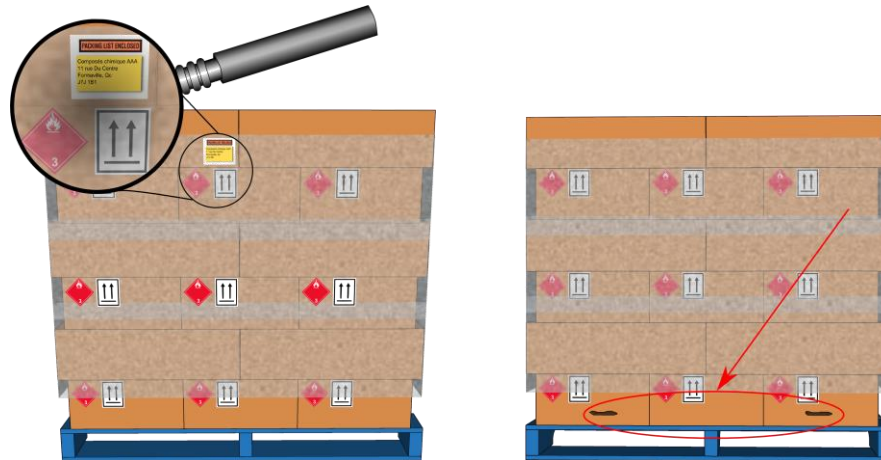
Drivers assigned to multiple pickups of goods must ensure that the goods are properly identified and meet their description (weight, volume, condition, etc.).

Examples

Boxes



Pallets



And any of the goods



Compliance

What does conformity of goods mean?

What should you do if there is excess, missing or damaged merchandise (O, S and D)?

Packing slip

It is usually included in a self-adhesive envelope affixed to a box or to the last pallet of the shipment.



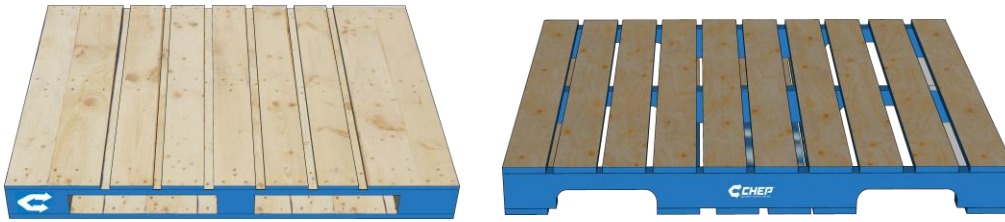
A packing slip is a document that contains details about the contents of a shipment. It is intended to inform transport agencies, government authorities and customers of the contents of the package or shipment.

The packing slip is created by the sender. Generally, it is inserted in a self-adhesive envelope on the package or on the last pallet of the shipment for easy access, if necessary.

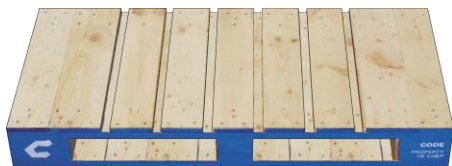
Taking into account the weight of the pallets

When the sender fills out the bill of lading, the weight of the pallets is often not included in the weight indicated. This can greatly influence the total weight of the shipment.

Weight of empty pallets (for information only)



Hardwood pallets (CHEP) of 40" x 48"



Half pallets of hardwood

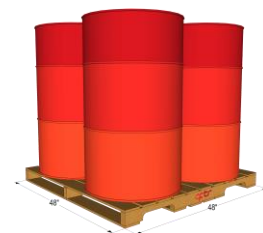
The (mixed) pallets are of various weights and sizes. Most of the time, they are non-returnable. However, if there is a name written on the side of the pallet, that means it is returnable. The price of a pallet can reach \$80.

The carrier will pay for the missing pallets if they are lost in transit, so it's up to you to be careful.



Returnable pallets

Some senders ship their goods using their own pallets. The pallets are then identified by name and a process for returning the pallets is put in place. It is therefore important to follow the process, as it is the carrier who will pay for the missing pallets.



(7.1)



Weight / volume ratio

Since transport rates are based on the weight of the goods, it would be disadvantageous for transport companies to transport goods that are too light. For this reason, when the weight of the merchandise is less than 10 pounds/cubic foot, it is given this equivalence. It is the driver who must indicate the space that the goods occupy in the vehicle.

Check the delivery route before leaving

If the driver's job is to do LTL transportation, then multiple deliveries and pick-ups will be required. The assigned semi-trailer will be loaded in a logical delivery order. It is then up to the driver to check for errors in the delivery order by checking the route established by the dispatcher and, if possible, checking the cargo inside the semi-trailer.

Here are some scenarios.

Scenario 1

The home port is Montréal. From the information you find on the invoices (pro-bills), indicate in which order the delivery should be made, knowing that the first customer must be in Sainte-Agathe-des-Monts.


Stop #1, consignee:


Stop #2, consignee:


Stop #3, consignee:


Stop #4, consignee:


Stop #5, consignee:

		17 000, rue Aubin Mirabel, Qc J7J 1B1		ABITIBI - LA SARRE BOUCHERVILLE COWANSVILLE GATINEAU	JOLIETTE LAVAL MONT-LAURIER MONTRÉAL	SAINT-HYACINTHE SAINT-JEAN-SUR-RICHELIEU SHERBROOKE VAUDREUIL
DATE	UNITÉ - UNIT	CHAUFFEUR - DRIVER	CONNAISSEMENT - BOL	# PRO		
2029-05-05	8021	Joe PickUp	44665	154856		
EXPÉDITEUR - SHIPPER			CONSIGNATAIRE - CONSIGNEE			
Métal Gosselin Ltée 1591 Boulevard Albiny Paquette, Mont-Laurier, QC J9L 1M8			Aciers Sofatec Inc (Les) 867 5e Ave, Sainte-Anne-des-Plaines, QC J0N 1H02			
QUANT.	DESCRIPTION	POIDS - WEIGHT	COMME - AS	FRAIS - CHARGES		
4	Metal product box	6541 lbs				
HEURE D'ARRIVÉE - IN		HEURE SORTIE - OUT		DATE		
LIVRÉE PAR: DELIVERED BY:			REÇU PAR: RECEIVED BY:			

		17 000, rue Aubin Mirabel, Qc J7J 1B1		ABITIBI - LA SARRE JOLIETTE BOUCHERVILLE LAVAL COWANSVILLE MONT-LAURIER GATINEAU MONTRÉAL		SAINT-HYACINTHE SAINT-JEAN-SUR-RICHELIEU SHERBROOKE VAUDREUIL	
DATE	UNITÉ - UNIT	CHAUFFEUR - DRIVER	CONNAISSEMENT - BOL	# PRO			
2029-05-05	8021	Joe PickUp	45532	154722			
EXPÉDITEUR - SHIPPER			CONSIGNATAIRE - CONSIGNEE				
Kuehne & Nagel Ltée 2500 Avenue Marie Curie Saint-Laurent, QC H4S 1N1			Goulet Moto Sports St-Jérôme. 55 Rue Mathilde Saint-Jérôme, QC J7Y 1E3				
QUANT.	DESCRIPTION	POIDS - WEIGHT	COMME - AS	FRAIS - CHARGES			
7	Crates of moto ATV	2100 kg					
HEURE D'ARRIVÉE - IN		HEURE SORTIE - OUT		DATE			
LIVRÉE PAR: DELIVERED BY:			REÇU PAR: RECEIVED BY:				

		17 000, rue Aubin Mirabel, Qc J7J 1B1		ABITIBI - LA SARRE JOLIETTE BOUCHERVILLE LAVAL COWANSVILLE MONT-LAURIER GATINEAU MONTRÉAL		SAINT-HYACINTHE SAINT-JEAN-SUR-RICHELIEU SHERBROOKE VAUDREUIL	
DATE	UNITÉ - UNIT	CHAUFFEUR - DRIVER	CONNAISSEMENT - BOL	# PRO			
2029-05-05	8021	Joe PickUp	45548	154776			
EXPÉDITEUR - SHIPPER			CONSIGNATAIRE - CONSIGNEE				
Les Industries Radisson 136, rue Léon-Vachon Saint-Lambert-de-Lauzon, Qc, G0S 2W0			PJC Jean Coutu 225 Rue Principale E Sainte-Agathe-des-Monts, QC J8C 2V6				
QUANT.	DESCRIPTION	POIDS - WEIGHT	COMME - AS	FRAIS - CHARGES			
100	Toilet paper case	2500 lbs	6400 lbs				
HEURE D'ARRIVÉE - IN		HEURE SORTIE - OUT		DATE			
LIVRÉE PAR: DELIVERED BY:			REÇU PAR: RECEIVED BY:				

		17 000, rue Aubin Mirabel, Qc J7J 1B1		ABITIBI - LA SARRE BOUCHERVILLE COWANSVILLE GATINEAU	JOLIETTE LAVAL MONT-LAURIER MONTRÉAL	SAINT-HYACINTHE SAINT-JEAN-SUR-RICHELIEU SHERBROOKE VAUDREUIL
DATE	UNITÉ - UNIT	CHAUFFEUR - DRIVER	CONNAISSEMENT - BOL	# PRO		
2029-05-05	8021	Joe PickUp	45658	154896		
EXPÉDITEUR - SHIPPER			CONSIGNATAIRE - CONSIGNEE			
Les Industries Radisson 136, rue Léon-Vachon Saint-Lambert-de-Lauzon, Qc, G0S 2W0			Les produits EXM 870 Boulevard Michèle-Bohec, Blainville, QC J7C 5E2			
QUANT.	DESCRIPTION	POIDS - WEIGHT	COMME - AS	FRAIS - CHARGES		
2	Hardware product pallets	1500 kg				
HEURE D'ARRIVÉE - IN		HEURE SORTIE - OUT	DATE			
LIVRÉE PAR: DELIVERED BY:		REÇU PAR: RECEIVED BY:				

		17 000, rue Aubin Mirabel, Qc J7J 1B1		ABITIBI - LA SARRE BOUCHERVILLE COWANSVILLE GATINEAU	JOLIETTE LAVAL MONT-LAURIER MONTRÉAL	SAINT-HYACINTHE SAINT-JEAN-SUR-RICHELIEU SHERBROOKE VAUDREUIL
DATE	UNITÉ - UNIT	CHAUFFEUR - DRIVER	CONNAISSEMENT - BOL	# PRO		
2029-05-05	8021	Joe PickUp	45721	154500		
EXPÉDITEUR - SHIPPER			CONSIGNATAIRE - CONSIGNEE			
I-D Foods Corporation 1800 Desserte S Autoroute 440 Laval, QC H7S 2E7			Metro Plus Thibeault Ste-Sophie 2380 Boulevard Ste Sophie Sainte-Sophie, QC J5J 2P5			
QUANT.	DESCRIPTION	POIDS - WEIGHT	COMME - AS	FRAIS - CHARGES		
5 skids	Food products	4450 kg				
HEURE D'ARRIVÉE - IN		HEURE SORTIE - OUT	DATE			
LIVRÉE PAR: DELIVERED BY:		REÇU PAR: RECEIVED BY:				

Scenario 2

The home port is Montréal. Indicate the order in which the delivery should be made, starting with Drummondville. Note that the driver will have to perform the following pickup:

Sender:
 AirBoss
 970 Landry Street, Acton Vale (QC)
 J0H 1A0
 8 pallets of automotive products


Stop #1, consignee:


Stop #2, consignee:


Stop #3, consignee:


Stop #4, consignee:


Stop #5, consignee:

		17 000, rue Aubin Mirabel, Qc J7J 1B1		ABITIBI - LA SARRE JOLIETTE BOUCHERVILLE LAVAL COWANSVILLE MONT-LAURIER GATINEAU MONTRÉAL SAINT-HYACINTHE SAINT-JEAN-SUR-RICHELIEU SHERBROOKE VAUDREUIL	
DATE	UNITÉ - UNIT	CHAUFFEUR - DRIVER	CONNAISSEMENT - BOL	# PRO	
2029-05-06	8256	Speedy Gonzales	41888	156956	
EXPÉDITEUR - SHIPPER			CONSIGNATAIRE - CONSIGNEE		
Camden Iron & Metal 1257 S 2nd St, Camden, NJ 08104, USA			Airex Industries Inc 3025 Rue Kunz, Drummondville, QC J2C 6Y4		
QUANT.	DESCRIPTION	POIDS - WEIGHT	COMME - AS	FRAIS - CHARGES	
8	pallets recycled products	12000 lbs			
HEURE D'ARRIVÉE - IN		HEURE SORTIE - OUT		DATE	
LIVRÉE PAR: DELIVERED BY:			REÇU PAR: RECEIVED BY:		

		17 000, rue Aubin Mirabel, Qc J7J 1B1		ABITIBI - LA SARRE JOLIETTE BOUCHERVILLE LAVAL COWANSVILLE MONT-LAURIER GATINEAU MONTRÉAL		SAINT-HYACINTHE SAINT-JEAN-SUR-RICHELIEU SHERBROOKE VAUDREUIL	
DATE	UNITÉ - UNIT	CHAUFFEUR - DRIVER	CONNAISSEMENT - BOL	# PRO			
2029-05-06	8256	Speedy Gonzales	44581	155362			
EXPÉDITEUR - SHIPPER			CONSIGNATAIRE - CONSIGNEE				
Uniboard Canada Inc 152 Route Pouliot Sayabec, QC G0J 3K0			Armoires de cuisine Multi-Concept 1340 Rue Bernier Saint-Jean-sur-Richelieu, QC J2W 1G4				
QUANT.	DESCRIPTION	POIDS - WEIGHT	COMME - AS	FRAIS - CHARGES			
3	bundles MDF (4' x 8')	3750 kg kg					
HEURE D'ARRIVÉE - IN		HEURE SORTIE - OUT		DATE			
LIVRÉE PAR: DELIVERED BY:			REÇU PAR: RECEIVED BY:				

		17 000, rue Aubin Mirabel, Qc J7J 1B1		ABITIBI - LA SARRE JOLIETTE BOUCHERVILLE LAVAL COWANSVILLE MONT-LAURIER GATINEAU MONTRÉAL		SAINT-HYACINTHE SAINT-JEAN-SUR-RICHELIEU SHERBROOKE VAUDREUIL	
DATE	UNITÉ - UNIT	CHAUFFEUR - DRIVER	CONNAISSEMENT - BOL	# PRO			
2029-05-06	8256	Speedy Gonzales	45666	155226			
EXPÉDITEUR - SHIPPER			CONSIGNATAIRE - CONSIGNEE				
Kaycan 2505 Rue Halpern, Saint-Laurent, QC H4S 1N9			Aluminium Goulet & Fils Inc 27 Rue Azarie-Côté, Granby, QC J2J 2Y9				
QUANT.	DESCRIPTION	POIDS - WEIGHT	COMME - AS	FRAIS - CHARGES			
42	Outer cover box (24 foot)	6000 kg					
HEURE D'ARRIVÉE - IN		HEURE SORTIE - OUT		DATE			
LIVRÉE PAR: DELIVERED BY:			REÇU PAR: RECEIVED BY:				

		17 000, rue Aubin Mirabel, Qc J7J 1B1		ABITIBI - LA SARRE JOLIETTE BOUCHERVILLE LAVAL COWANSVILLE MONT-LAURIER GATINEAU MONTRÉAL		SAINT-HYACINTHE SAINT-JEAN-SUR-RICHELIEU SHERBROOKE VAUDREUIL	
DATE	UNITÉ - UNIT	CHAUFFEUR - DRIVER	CONNAISSEMENT - BOL	# PRO			
2029-05-06	8256	Speedy Gonzales	41589	156461			
EXPÉDITEUR - SHIPPER				CONSIGNATAIRE - CONSIGNEE			
Betz Dearborn Canada Inc 75 Boul Hymus Pointe-Claire, Quebec H9R 1E2				Cascades Papier 408 Boulevard Marie Victorin Kingsey Falls, QC J0A 1B0			
QUANT.	DESCRIPTION	POIDS - WEIGHT	COMME - AS	FRAIS - CHARGES			
6 totes tank	Acid	8156 kg					
HEURE D'ARRIVÉE - IN		HEURE SORTIE - OUT		DATE			
LIVRÉE PAR: DELIVERED BY:			REÇU PAR: RECEIVED BY:				

		17 000, rue Aubin Mirabel, Qc J7J 1B1		ABITIBI - LA SARRE JOLIETTE BOUCHERVILLE LAVAL COWANSVILLE MONT-LAURIER GATINEAU MONTRÉAL		SAINT-HYACINTHE SAINT-JEAN-SUR-RICHELIEU SHERBROOKE VAUDREUIL	
DATE	UNITÉ - UNIT	CHAUFFEUR - DRIVER	CONNAISSEMENT - BOL	# PRO			
2029-05-06	8256	Speedy Gonzales	41253	156337			
EXPÉDITEUR - SHIPPER				CONSIGNATAIRE - CONSIGNEE			
Pacific Bolt Manufacturing Ltd. 5250 272 St, Langley Twp, BC V4W 1S3				BMR-Acton Vale 950 rue Landry Acton Vale, Quebec J0H 1A0			
QUANT.	DESCRIPTION	POIDS - WEIGHT	COMME - AS	FRAIS - CHARGES			
3	skids bolts and fasteners	5789 lbs					
HEURE D'ARRIVÉE - IN		HEURE SORTIE - OUT		DATE			
LIVRÉE PAR: DELIVERED BY:			REÇU PAR: RECEIVED BY:				



Competency 7

Loading and Unloading

Lesson Objectives:

- Recognize the hazards associated with loading and unloading
- Identify the loading and unloading locations according to the type of transport
- Resolve questions related to the arrangement of the goods
- Identify the physical forces that impact the driving, depending on the arrangement of the load, and that influence the securing method

The hazards

Most workplace accidents involving truck drivers occur during the loading or unloading of their vehicles. Depending on the type of load, the associated risks are more or less great.

Identify the hazards and risks associated with loading and unloading ~~a shipment for van transport in a closed van.~~

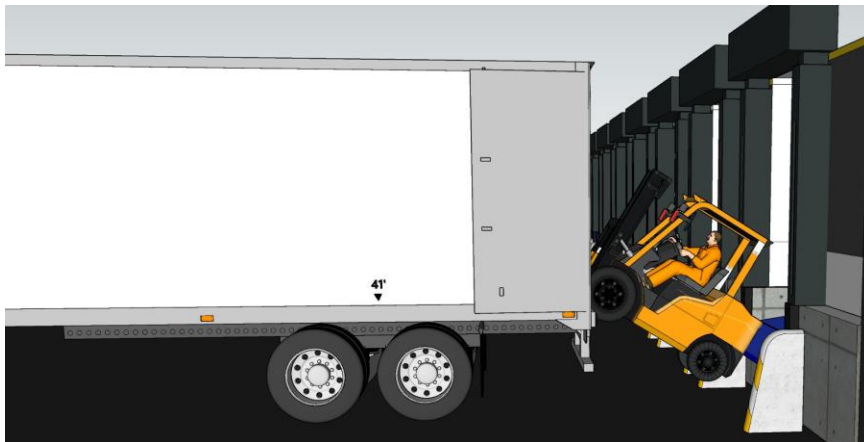


Find the error



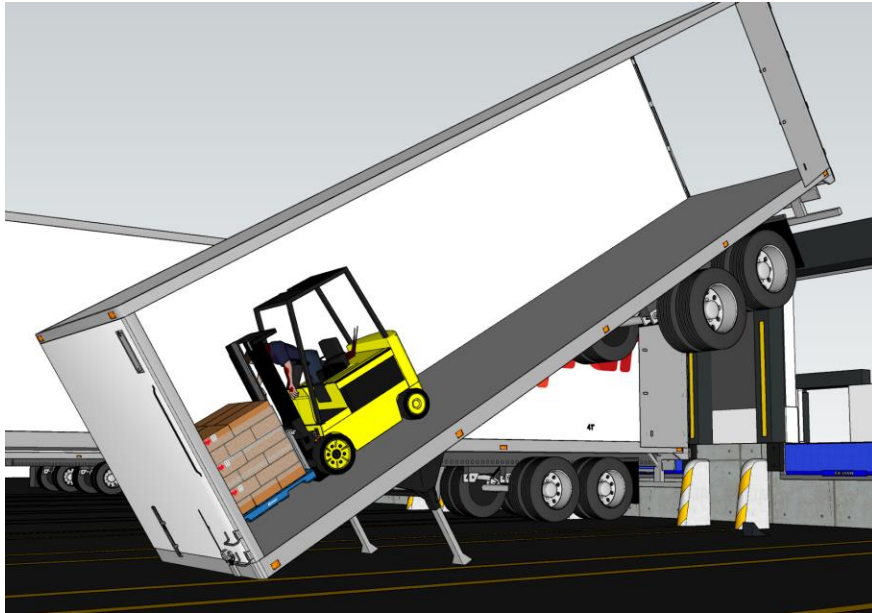
Find the error

Too many accidents happen because the vehicle leaves the loading dock without good communication between the parties involved. All arrangements must be made before taking action. What are these arrangements?





Uncoupling a semi-trailer can bring about certain hazards. What can be done to avoid them?



Delivery with tailgate

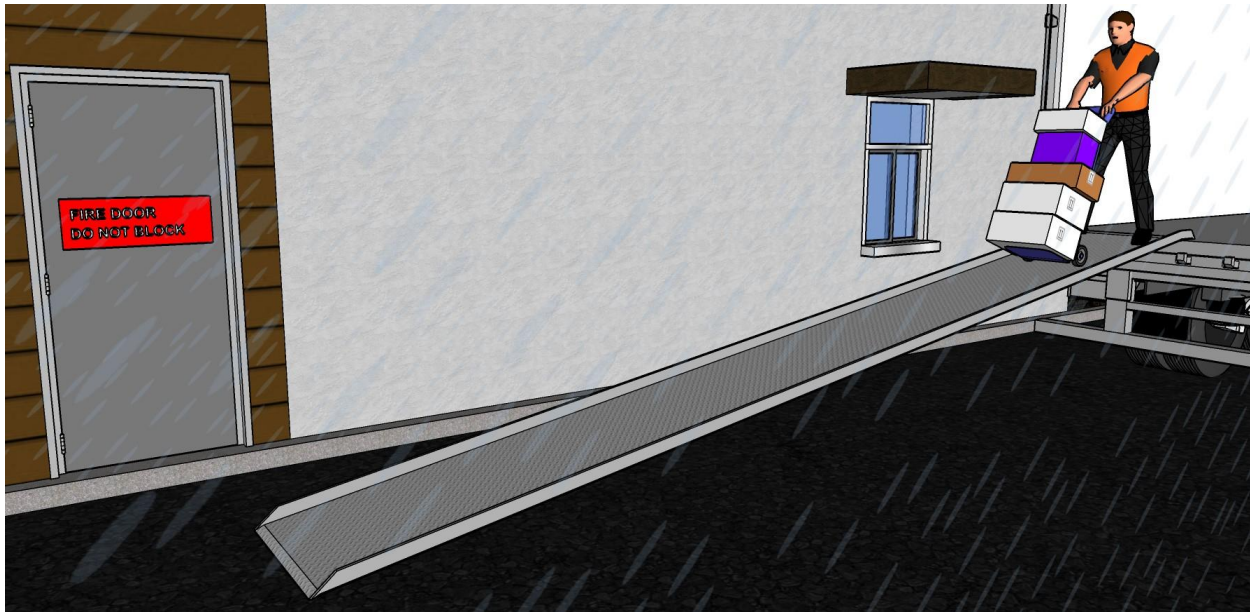


What are the risks?



(7.2)

Delivery with ramp



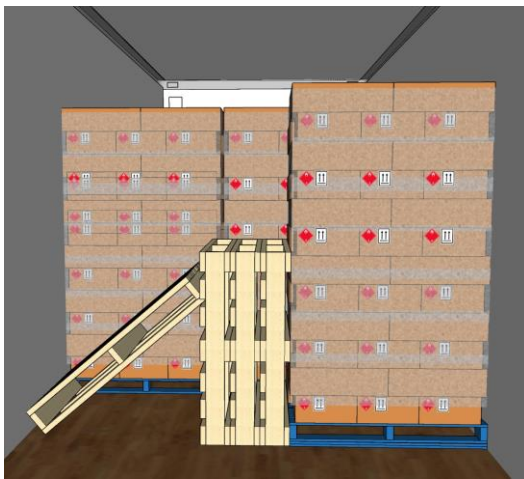
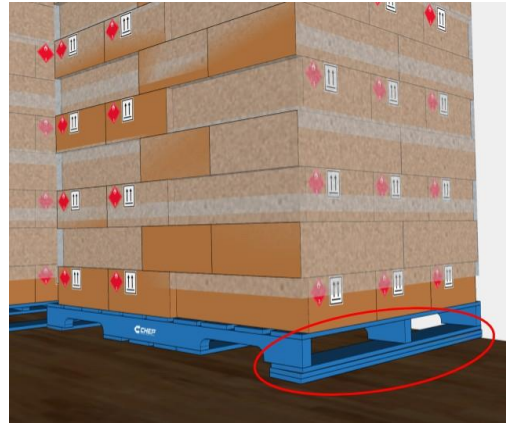
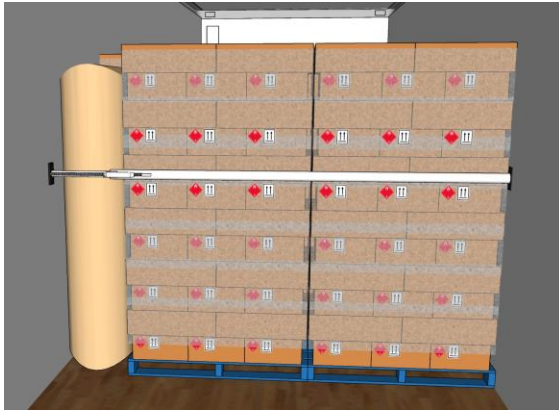
What are the risks?

The loading of a dry box semi-trailer

Unlike flatbed trailers, securing is not required in a van-dry box trailer if:

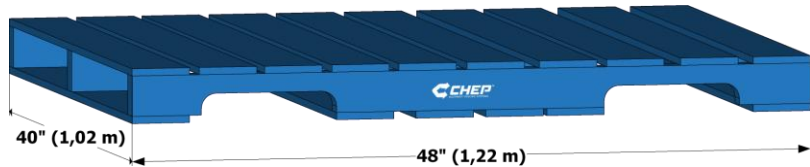
- the cargo is firmly confined or immobilized by:
 - a vehicle structure of adequate capacity to hold the goods;
 - blocking devices, reinforcements, dunnage materials or bags, or shoring bars, also of adequate capacity.





The layout of a load

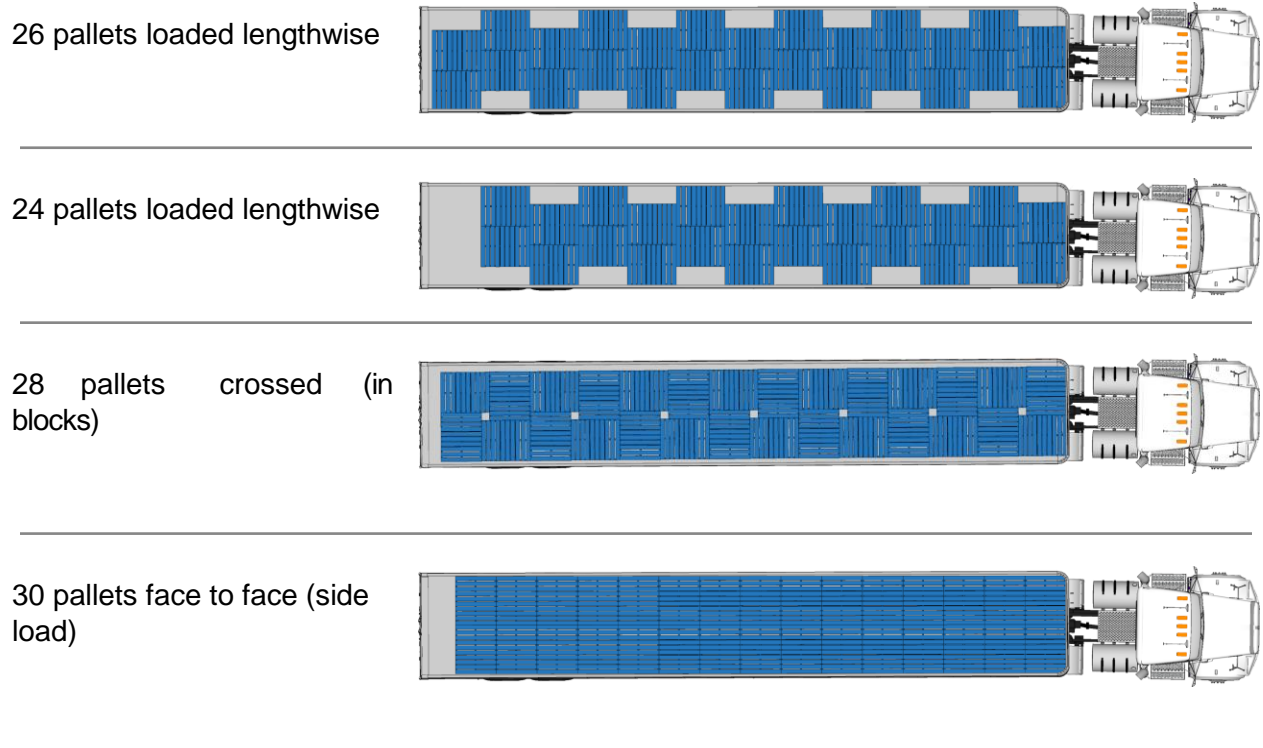
The arrangement of the load inside a dry box semi-trailer can be done in several ways. Weight and volume of the goods are the factors that most influence this arrangement.



In order to facilitate the loading and unloading of a van, the goods will generally be placed on pallets. Although there are several pallet sizes, the most common is 40" x 48" (1.02 m x 1.22 m). Some are returnable and some are not. Those that are not are said to be one-way pallets.



The following arrangements are examples made according to this format in a 53-foot semi-trailer.



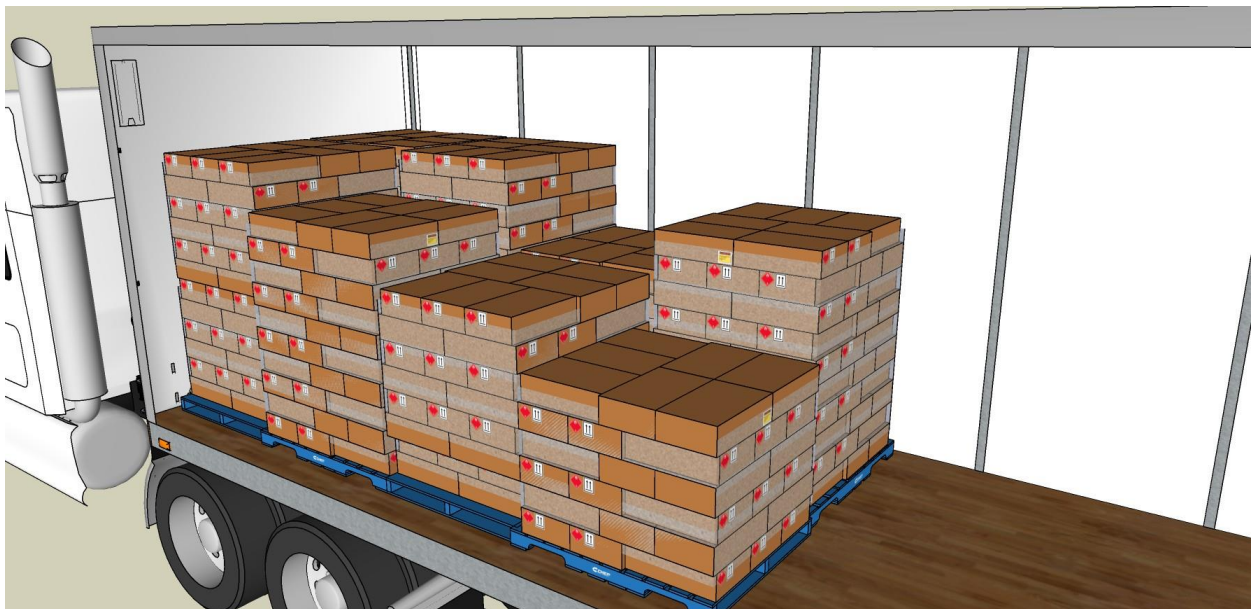
Logistic semi-trailers

Logistic semi-trailers are equipped with a system that allows for the doubling of a van's loading capacity by adding a second level of supporting beams. Supporting beams can slide in rails that are attached to the walls of the semi-trailer. The height of the double floor is adjustable.





The tallest pallets should be loaded at the front.



If it is not possible to load all the tallest pallets in the front, then it is better to load them on the right side.

Reason: _____



Securing and the laws of physics

Do you remember kinetic energy, that ball of energy that builds up exponentially in objects as their speed increases?



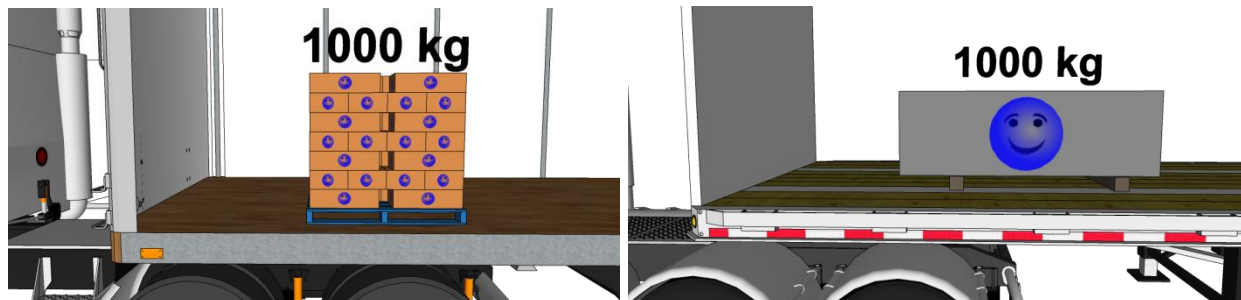
That same energy accumulated in an object doubles when the mass of the object is doubled.

Why is securing mandatory on a flatbed trailer and not in a van?

Actually, it is not the type of vehicle, but rather the type of goods that defines the rules. For example, steel coils weighing 1,000 kg have to be secured in a van or on a platform.

Same speed, same mass = same energy (same danger).

On the other hand, let's compare a pallet of cans with a mass of 1,000 kg and a block of concrete with a mass of 1,000 kg.



The energy accumulated in the pallet of cans is divided among all the boxes that are arranged on the pallet. So, we can say that the pallet is made up of small balls of energy which, therefore, are much less dangerous than the ball of energy accumulated in the block of concrete.

The regulations state that the walls of the vehicle must be capable of holding the cargo. In the example, the walls are capable of holding moving crates, but certainly not a moving block of concrete.

It can be said that the same energy value is divided by the number of boxes on the pallet.



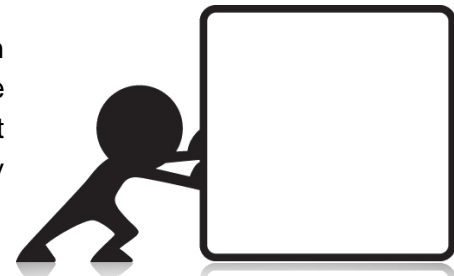


Imagine the same accident with a load of unsecured blocks of concrete.

The purpose of securement is to control the effects of this energy.

How do you do it? By using the principle of the friction technique.

Merchandise placed on the floor of a vehicle tends to stay in place. It is the work of the friction that exists between the floor and the merchandise. However, certain factors can act on this merchandise to make it move, for example, an icy floor, the weight of the merchandise or sudden braking.



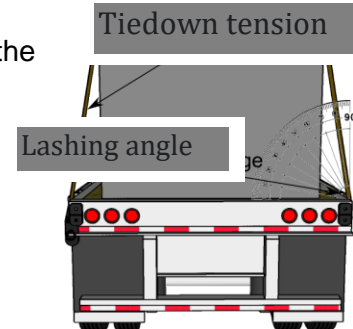
Therefore, the heavier the merchandise, the more it will be difficult to move. However, once in motion, it will be more difficult to stop (accumulated energy).

The basic principle of securement is to increase the friction of the cargo against the vehicle floor, but without increasing the weight (if the weight is not increased, the energy is not).

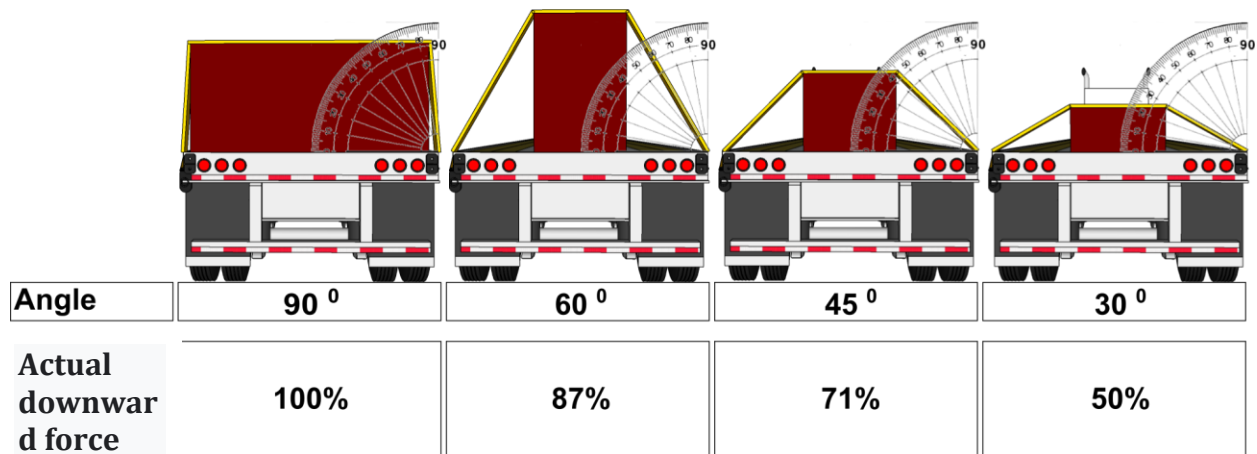
The tension exerted by the tie-down straps creates a pressure force on the cargo that is transmitted to the ground and increases friction. To achieve this **optimal value**, you must:

- that the cargo is rigid enough and cannot be deformed when the tie-down strap is tensioned;
- that the securement angle is between 83 and 90°;
- that the tie-down strap can be properly tensioned when it is put under tension.

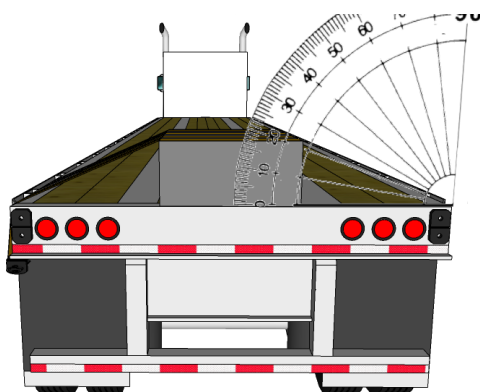
Stiffness of the goods



The angle of the tie-down strap to the horizontal line affects the amount of downward force.



In summary, if the angle of the tie-down straps is insufficient, **it would be ideal** to add additional straps to achieve the optimum value.



Friction

Let's look back at friction. It is the fundamental principle associated with securement. The coefficient of friction of the goods must be taken into account when we perform securement. Imagine the difficulty of moving, once again, a block of concrete on a wooden floor compared to a steel beam on the same floor.

Here, your judgment is paramount. There is no tool that measures the coefficient of friction of the cargo to be stowed. If in doubt, additional tie-down straps should be used.





Before loading, it is important to clean the floor of any particles that could make it slippery. It needs to be cleared of snow and ice. Use salt if necessary.

Spacers

The spacers play two roles. First, they are used to facilitate the handling of the goods by the forklift. Also, they are used to concentrate the mass of the goods in a smaller space. This results in a higher coefficient of friction, which makes it more difficult for the goods to move.



Mats with a high coefficient of friction

This type of mat is widely used in the transport of paper rolls. It is a rubber mat specially designed to increase the coefficient of friction between the cargo and the vehicle floor.





(7.2)



Competency 7

Load Standards

Lesson Objective:

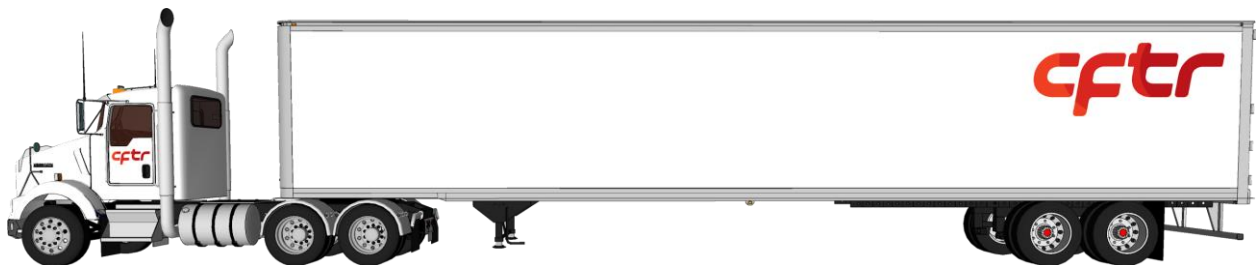
- Be able to apply load standards

A look back at load standards

For the following exercises:

- determine the types of axles and the load capacity of each;
- determine the total allowable weight;
- determine the payload that the vehicle can carry.

A)



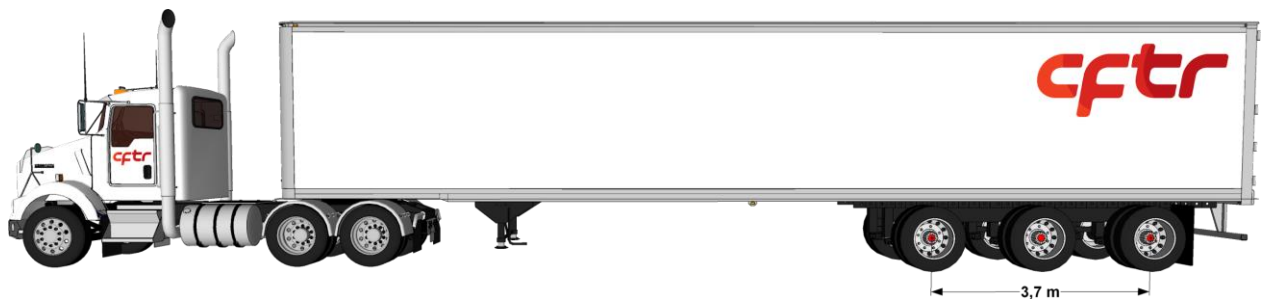
Equipment weight: 16,200 kg

Types of axle: _____

Total allowable weight: _____

Payload that the vehicle can carry in **normal timesperiod**:

B)



Equipment weight: 17,700 kg

Types of axle: _____

Total allowable weight: _____

Payload that the vehicle can carry in **normal timesperiod**:

C)



Equipment weight: 19,900 kg

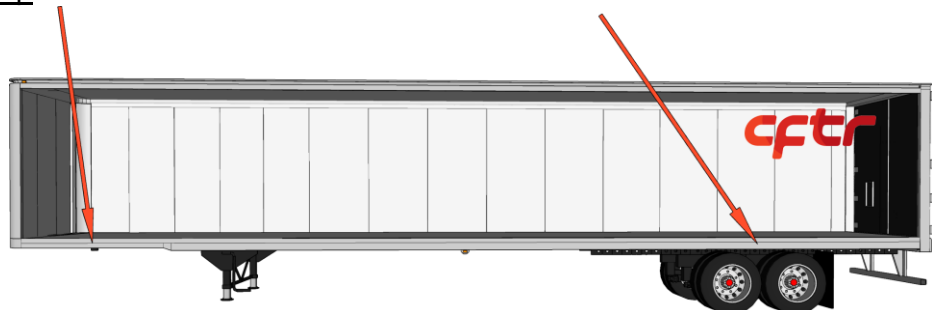
Types of axle: _____

Total allowable weight: _____

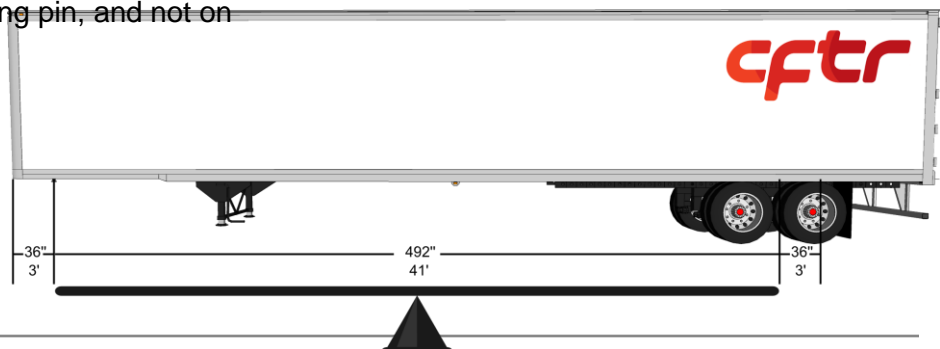
Payload that the vehicle can carry during ~~a period of thaw~~ the thaw period:

Load distribution

1. For a semi-trailer, the weight of the load is distributed in two places: the king pin and the centre of the axle group of the semi-trailer.

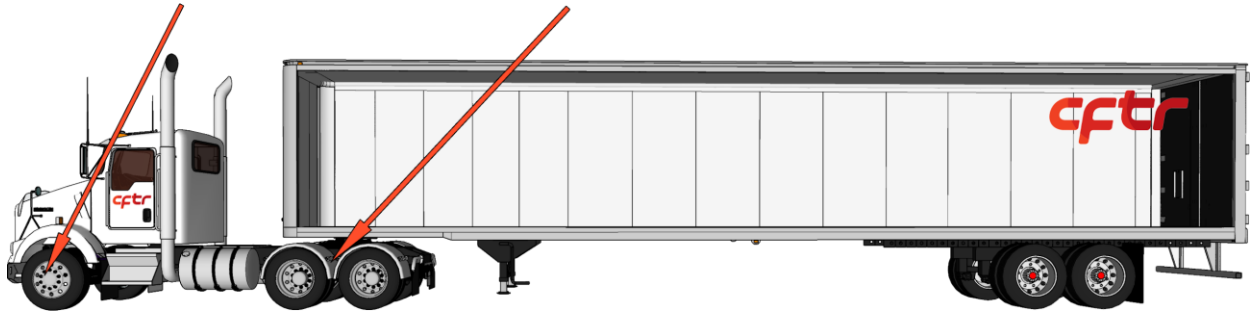


IMPORTANT! It is important to remember that the distribution is made between the centre of the axle group and the king pin, and not on the entire length of the semi-trailer in the case of 53-foot semi-trailers.



(7.4)

- The load that is subjected to the king pin is in turn distributed in two places: between the front axle and the centre of the rear axle group of the trailer.



The load distribution is approximately equal in a two-axle semi-trailer. However, it changes greatly when you add axles.



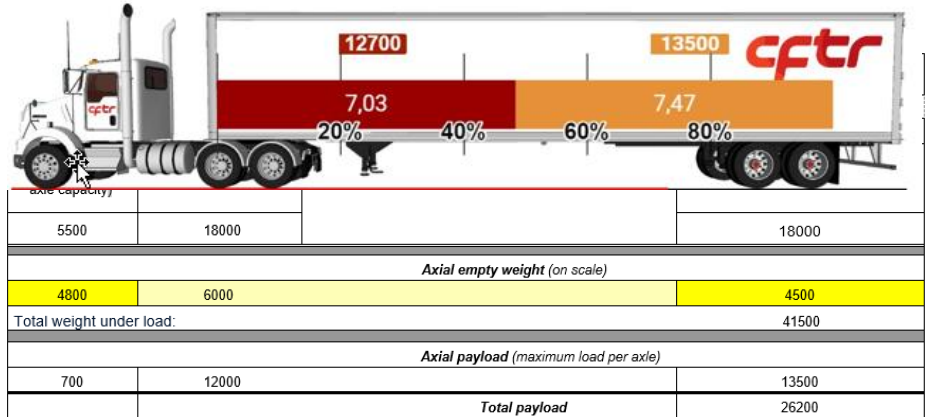
- Now, you can get into some mathematical calculations that can get complicated or simply take the measurements and enter them into the form provided to calculate the load distribution.



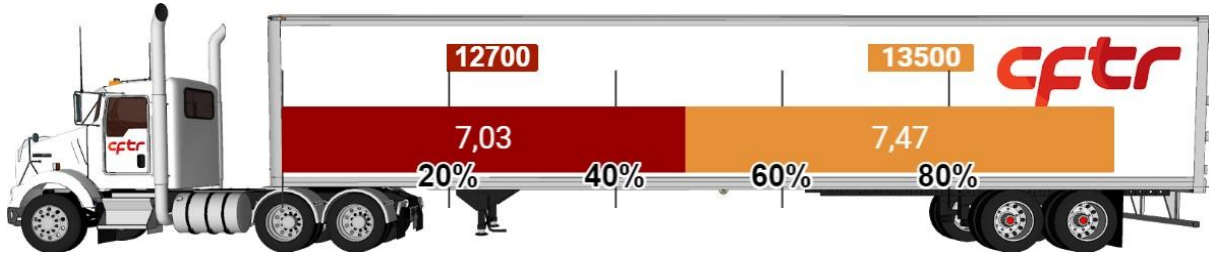
(7.4)

Here is how to fill out the form.

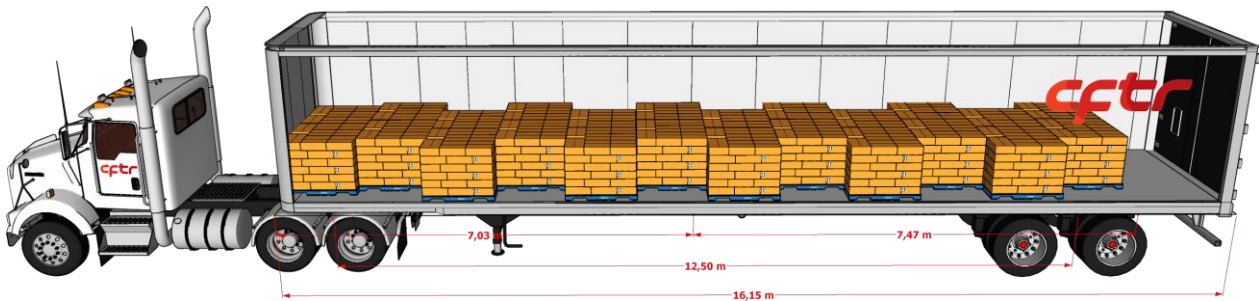
1. Enter the data in the yellow boxes.



2. Interpret the information



Example 1: load of 24 pallets of 1,090 kg, for a total of 26,160 kg Wheelbase: 12.5 m

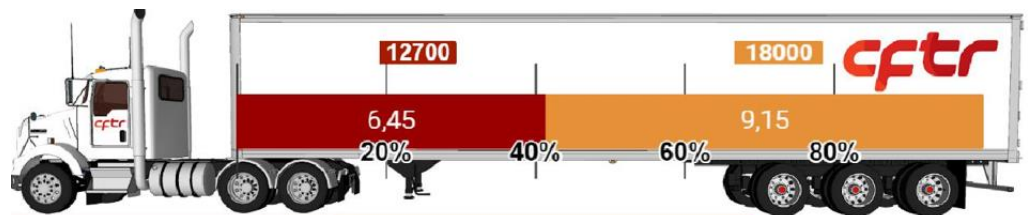
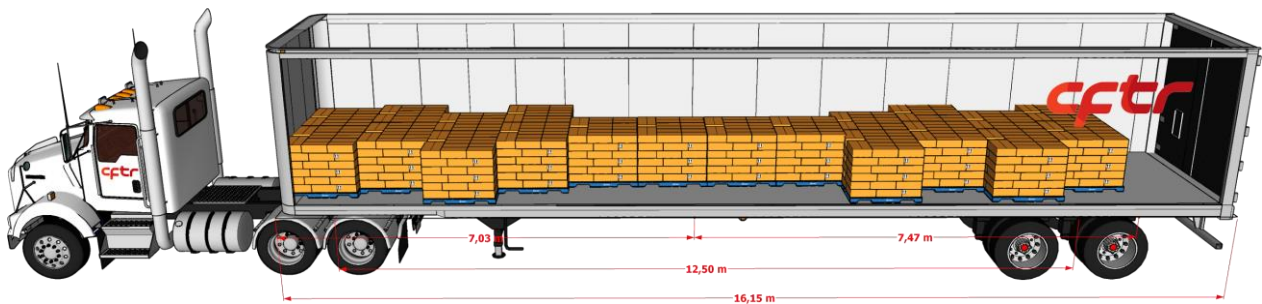


(7.4)

Example 2: load of 24 pallets of 1,090 kg, for a total of 26,160 kg Wheelbase: 12.3 m



Example 3: load of 20 pallets of 1,300 kg, for a total of 26,000 kg Wheelbase: 12.5 m



Let's see the difference with a 6-axle equipment of category B.32



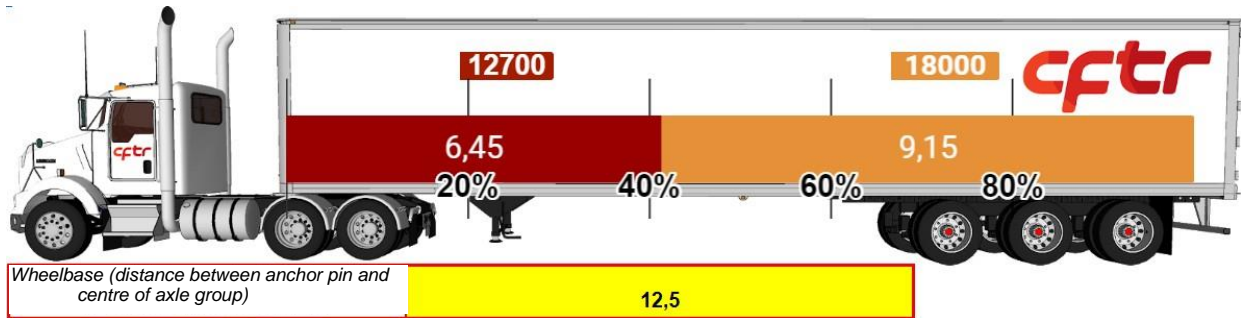
Wheelbase (distance between anchor pin and the centre of the axle group) **12.5**

Fill in the yellow boxes *N.B. All data for guidance only. Certain factors may influence the data.*

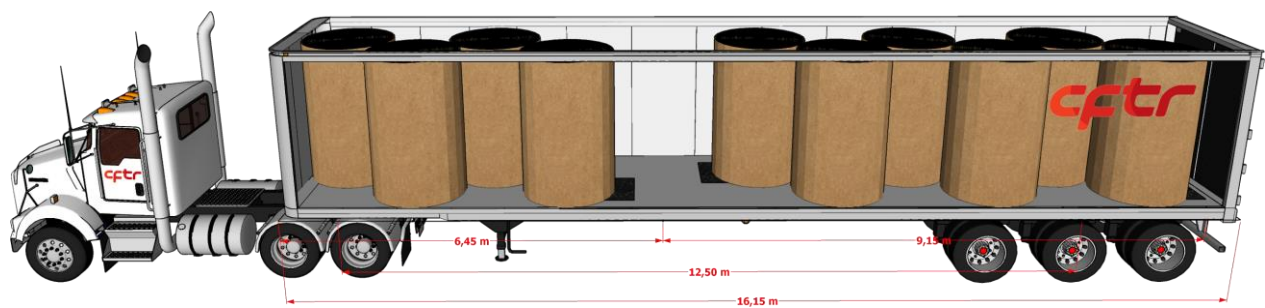
B-1= 5500 kg B-21 a B-31 (-1- depending on capacity axle)	B-21	Axial mass permitted by regulation	B- 32
5500	18000		24000
Axial empty weight (on scale)			
4800	6000		6000
Total allowable weight:			47500
Axial payload (maximum load per axle)			
700	12000		18000
Total payload			30700

(7.4)

Interpret the information

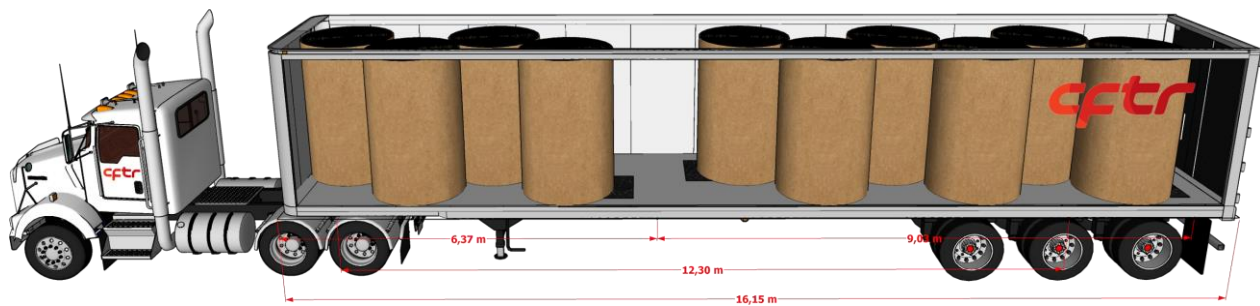


Example 4: load of 10 rolls of kraft paper weighing 3,000 kg each Wheelbase: 12.5 m



Load the first 4 from the front, while the last 6 should finish at the rear end of the 9.15 m.

Example 5: loading of 10 rolls of kraft paper weighing 3,000 kg each
Wheelbase: 12.3 m



Load the first 4 from the front, while the last 6 should finish at the rear end of the 9.03 m.



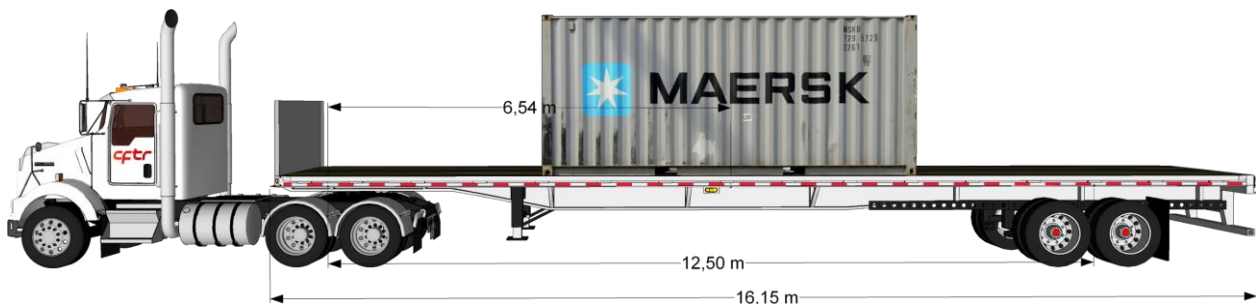
(7.4)

On flatbed semi-trailers, the load is sometimes arranged from the centre, rather than from the front and in an extended manner. In this case, it is necessary to place the centre of the load at the distance indicated on the sheet, from the king pin of the semi-trailer.

Example 6: load of 1 container of 25,500 kg
Wheelbase: 12.5 m



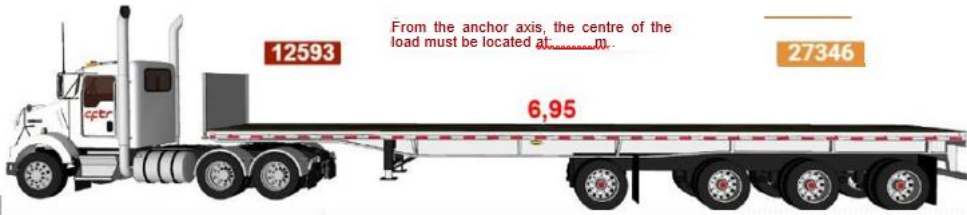
Wheelbase (distance from anchor pin to centre of axle assembly)		12.5	
Fill in the yellow boxes		N.B. All data for guidance only. Certain factors may influence data	
<i>Axial mass permitted by regulation</i>			
B-1= 5500 kg B-21 a B-31 (+ depending on	B-21		B-21
5500	18000		18000
<i>Axial empty weight (on scale)</i>			
4800	5508		3520
Total allowable weight:			41500
		Allowable load	axle load (maximum load per axle)
MO	12580		11480
<i>Total payload</i>			27680



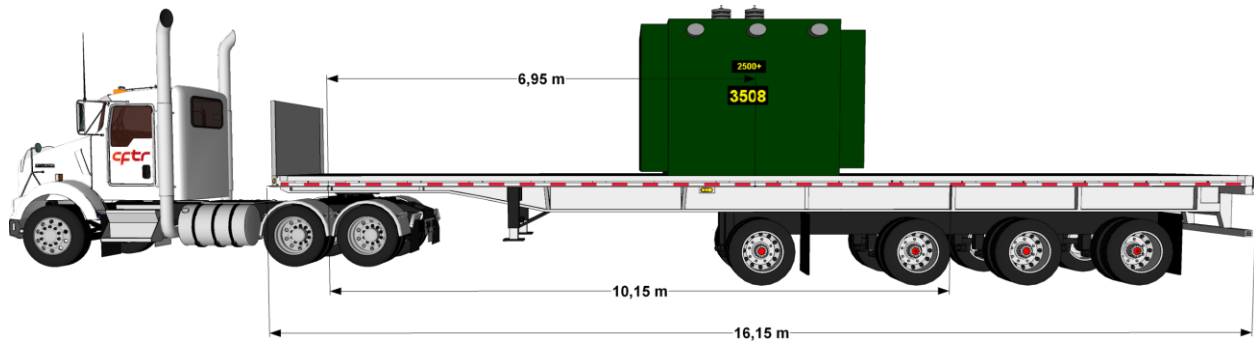
(7.4)

Example 7: load of 1 transformer of 38,500 kg

Wheelbase: 10.15 m



Wheelbase (distance from anchor pin to centre of axle assembly)		10.15	
Fill in the yellow boxes		N_B All data for guidance only Certain factors may influence the data...	
Axial mass permitted by regulation			
B-1= 5500 kg (+ depending on axle capacity)	B-21	B- 45	
5500	18000	34000	
Axial empty weight (on scale)			
4918	5989	6654	
Total allowable weight:			
Allowable payload		axial payload (maximum load weight per axle)	
582	12011	27346	
		Total allowable mass	
		39939	



(7.4)

How will you arrange your load?

Exercise 1

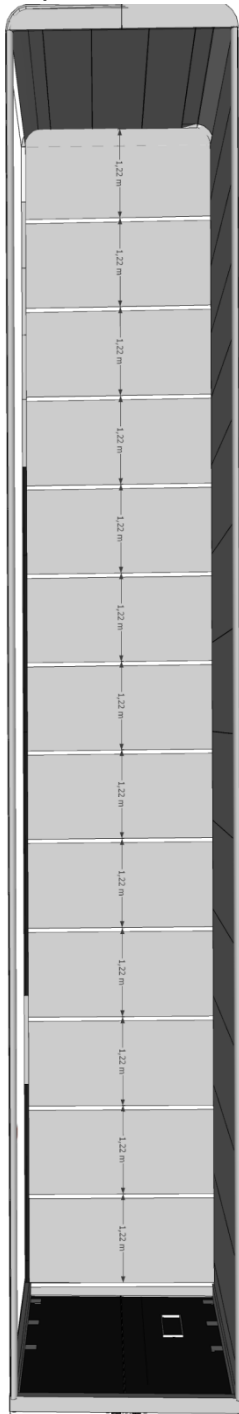
B.1 = 5,200 kg

B.21 = 4,100 kg

B.21 = 4,200 kg

Wheelbase = 12.35 m

Load = 19 pallets of 1,400 kg each



(7.4)

Exercise 2

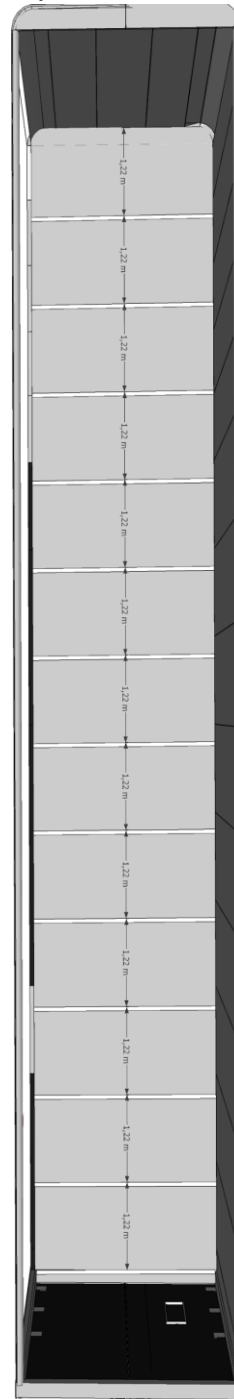
B.1 = 5,300 kg

B.21 = 4,300 kg

B.33 = 5,300 kg

Wheelbase = 12.20 m

Load = 21 pallets of 1,575 kg each





Competency 7

Weighing Techniques

Lesson Objectives:

- Be able to analyze and apply weighing techniques
- Know the procedure for adjusting the axles and the fifth wheel

Usefulness of scales

In the trucking world, scales are used for two purposes. The first is for legal reasons, in order to control the weight of vehicles on the road network. The second is for commercial purposes, i.e. for the sale of products in bulk. Depending on their use, scales differ a little in design from one to the other.

The truck driver must ensure that the weight of their load is legal before getting on the road. Private scales are the best tools to meet this need.

Get the maximum payload

To ensure the maximum payload, the driver must first weigh the vehicle when it is empty. At this point, he must take into account the amount of fuel in the tanks, as there is a big difference in weight between empty and full tanks. Diesel weighs 845 g / litre (7 lbs / US gallon), or about 675 kg for tanks that hold 800 litres of fuel.

Then, the driver simply subtracts the empty weight from the maximum total legal loaded weight and he will know the maximum legal weight of the load he can put in his vehicle (maximum payload).

If a scale is not available prior to loading, the driver will add the weight of the tractor and semi-trailer as recorded on the vehicles' registration certificates. On the other hand, important variations are to be expected, because all the material on board is not accounted for at this time (tools, securement equipment, luggage, groceries, diesel, etc.).

Types of scales

There are several types of scales that truckers have to work with, but overall, there are three different uses for them.

1. Scales for roadside checks

Those scales are there to enforce regulations related to load standards. These types of scales have several platforms on which the vehicles are weighed in axial and total mass, regardless of their configuration. Some weigh stations are equipped to weigh moving trucks and can thus keep trucks moving.

These checkpoints are installed at strategic locations. Bypassing these posts is prohibited.

Several provinces and states also use mobile scales with which makeshift checkpoints can be set up.

2. Public scales

These scales are most often used to ensure the conformity of the load distribution on the axles. There is a user fee attached to them. These expenses are reimbursed by the employer.

3. Company scales

For the trucker, these scales have the same utility as public scales, but without the user fee. For companies, these scales are used to control incoming and outgoing material. Thus, the incoming truck is weighed empty on entry and will be weighed upon exit.



(7.5)

Different procedures for passing over the scales

The approach to a scale.

1. Scales for roadside checks

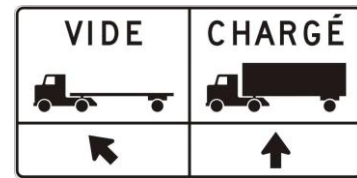
Procedure:

1. Upon seeing this sign, heavy vehicles must proceed to the checkpoint if the lights are flashing.



2. Upon arrival at the checkpoint, the driver must select the lane depending on whether the vehicle is loaded or empty.

No matter how much cargo there is, as soon as there is a load, the vehicle must take the loaded vehicle lane.



All unloaded vehicles or bob tails must pass on the EMPTY side.

3. The choice of lanes.

A. Loaded truck:



- a. Before getting on the scale, the driver must come to a complete stop and wait for the previous vehicle to be completely off the scale, and then proceed with the weighing.
- b. When getting on the scale, the driver pay attention to the light signals. It is advisable to roll down the window a little and listen to any instructions that may be given. The maneuver should be done slowly and the brakes should be applied gently. Once the truck is stopped, you must release the brakes while keeping your foot above the pedal.
Since the scale is equipped with several platforms, the axial and total weighing will be done at the same time.
- c. The driver must conform to the light signals, that is, stop while the light is red, move forward or backward according to the arrows, or park their vehicle on the side and go see the controller. The green light indicates that the driver may proceed.

B. Empty truck (bob tail):



(7.5)

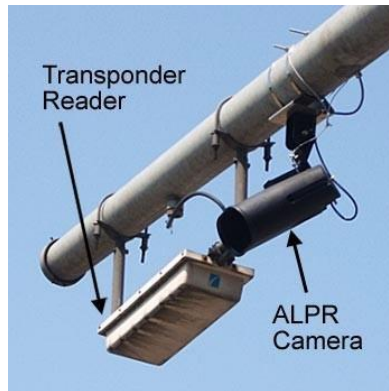


- a. Take the empty truck lane, make a complete stop and go. Even in the empty truck lane, it is recommended that you remain aware of any instructions that may be given to you, as the driver.

Commercial Vehicle Information Systems and Networks (CVISN)

The Commercial Vehicle Information Systems and Networks (CVISN) program was created to address the common need to move freight safely, legally and economically.

With the help of weigh-in-motion, automatic vehicle identification and automated license plate readers, commercial vehicles are electronically monitored approximately 800 meters from the weigh station. Trucks' weight, size, registration and safety record are checked in milliseconds. Then, a signal to bypass the weigh station or report to that station is sent to the vehicle. If a vehicle cannot be identified by a transponder or with its license plate, a message warns the driver to report to the weigh station.



That system is widely used in weigh stations throughout the United States highway system. In Canada, the system has been implemented in several provinces, and Quebec is currently exploring its implementation.



(7.5)

2. Public scales

1. The driver places their entire vehicle on the scale and stops in front of the microphone. They will then be asked for their name, company name and unit numbers.

The entire vehicle will be weighed at once. Normally, that type of scale has several platforms.

2. The driver must go and see the clerk. Once the fee is paid, the clerk will give back the weigh-in ticket.
3. If necessary, the driver will make adjustments to the axles and repeat the weighing process. There is no additional cost for the second passage.

3. Company scales

1. These scales are made up of a single platform, whose purpose is to measure the total mass of the vehicle. However, there is a way to measure the axial mass.
 - A. Load the steering axle and enter its weight.



- B. Load the driving axles, enter their weight and subtract the weight of the steering axle. The result is the weight of the driving axles.



(7.5)

- C. Load the axles of the semi-trailer and subtract the weight of the driving and steering axles. The result is the weight of the semi-trailer's axles.



NB. The brakes must be released in each weighing session, otherwise the results could be inaccurate.

- 2. There are also short platform scales, like the one at the CFTR. With such a scale, each group of axles is weighed one after the other, and the scale adds them up to get the total legal loaded weight.

4. The dials



Although optional, the suspension air pressure dial is very useful when used judiciously. The greater the load on the suspension, the greater the pressure in the suspension. The driver must make connections between the dial reading and the scale reading when they weigh their truck.

For example, the driver loads the driving axles on the scale. The latter reads 18,000 kg and the dial reads 72 psi. That last reading tells the driver that they should not exceed this pressure, as they would risk being overloaded. Be careful, as the reading of this dial is an indication only and it can vary from one truck to another.



(7.5)

OUVERT
QUAND
LES FEUX
CLIGNOTENT

5. On-board scales

On-board scales are scales installed directly on the vehicle. They are used extensively with trucks transporting bulk materials. Since this type of load is estimated during loading, the vehicle may find itself overloaded. With on-board scales, the driver is able to

know the precise weight of their vehicle on each of its axles.



Axle and fifth wheel adjustments

The fifth wheel

On some tractors, it is possible to adjust the position of the fifth wheel to change the weight distribution. Sliding the fifth wheel will change the weight distribution exclusively between the steering and driving axles. Sliding the fifth wheel will not have any effect on trailer tandems. By sliding the fifth wheel forward, the weight increases on the steering axle and takes the weight off the driving axles. Moving the fifth wheel to the rear of the tractor has the opposite effect. Certain factors influence the weight shift when moving the fifth wheel. However, we can say that there is a displacement of + or - 100 kg per hole of the sliding beam (at 4 inches / 10 cm approximately).

Adjust it and forget about it!

Unlike what trailer tandems require, moving the fifth wheel is something you will rarely do. The reason is simple: there is an ideal place to position the fifth wheel on the tractor. Once properly adjusted, the fifth wheel does not necessarily need to be moved.

It may be necessary to move the fifth wheel for the following reasons:

- Spread the load;
- Reduce the wheel base;
- Improve aerodynamics;
- Increase the weight on the steering axle to improve driving (winter);
- Avoid damage to the tractor bed (slopes at loading docks);
- Avoid damage to the trailer landing gear;
- Avoid damaging the fenders.



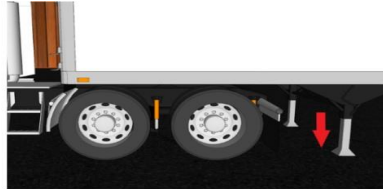
(7.5)

Procedures and method of adjusting the fifth wheel

Put the following steps (elements) in the correct order



Applying brakes



Descendre les béquilles



Lock or unlock pins (x2)



Forward or reverse



Check unlocked pins



Check locked pins



Deflate the suspension



Removing the tractor brakes



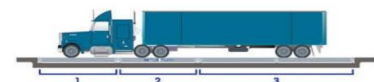
Inflate the suspension



Align the truck



Pull up the crutches



Check on the scale



(7.5)

OUVERT QUAND LES FEUX CLIGNOTENT

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

11.

12.

13.



(7.5)

Axle adjustment

Put the following steps (elements) in the correct order



Remove tractor brakes



Forward or reverse



Apply brakes (2x)



Check locking pins



Unlock the locking pins axles



Inflate the suspension



Locking bar or reference point



Deflate the suspension



Check hoses



Check locked pins



Check unlocked pins



Align the truck



Check on the scale



(7.5)

OUVERT QUAND LES FEUX CLIGNOTENT

1.

2.

3.

4.

5.

6.

7.

8.

9.

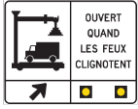
10.

11.

12.



(7.5)



Competency 7

Loading Standards

Lesson Objectives:

- Take charge of the goods
- Arrange the goods in the vehicle in accordance with load and size regulations

Take charge of the goods

Validate the information

Make corrections

It is possible for the quantities on the bill of lading not to reflect reality or for the mass of the goods to be higher than the payload of the vehicle combination. It is therefore important to make the necessary corrections on the bill of lading.

The arrangement of the goods on the semi-trailer

Axle arrangement of the semi-trailer



Competency 7

Securing the Goods

Lesson Objectives:

- Recognize the hazards associated with loading and unloading
- Applying securement standards

Hazards

Most workplace accidents involving truck drivers occur during the loading or unloading of their vehicles. Depending on the type of transport, the associated risks are more or less great.

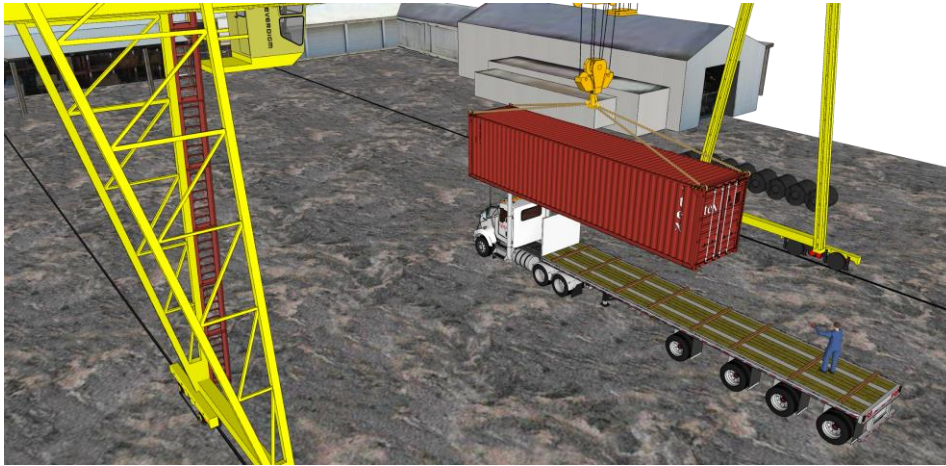
Identify hazards and risks in loading and unloading flatbed transport.

Side loading: **Find the error.**



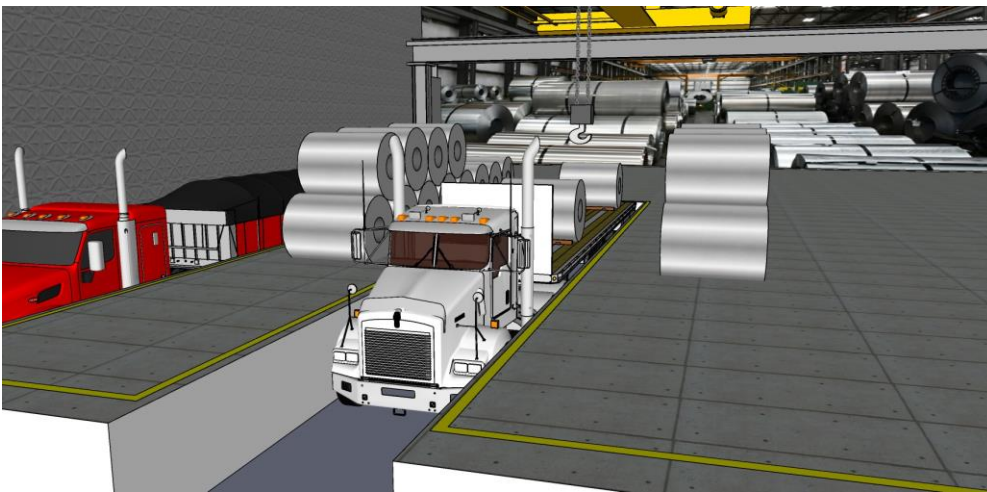
Hazards and risks:

Overhead loading: **Find the error.**



Hazards and risks:

Loading in a bay:

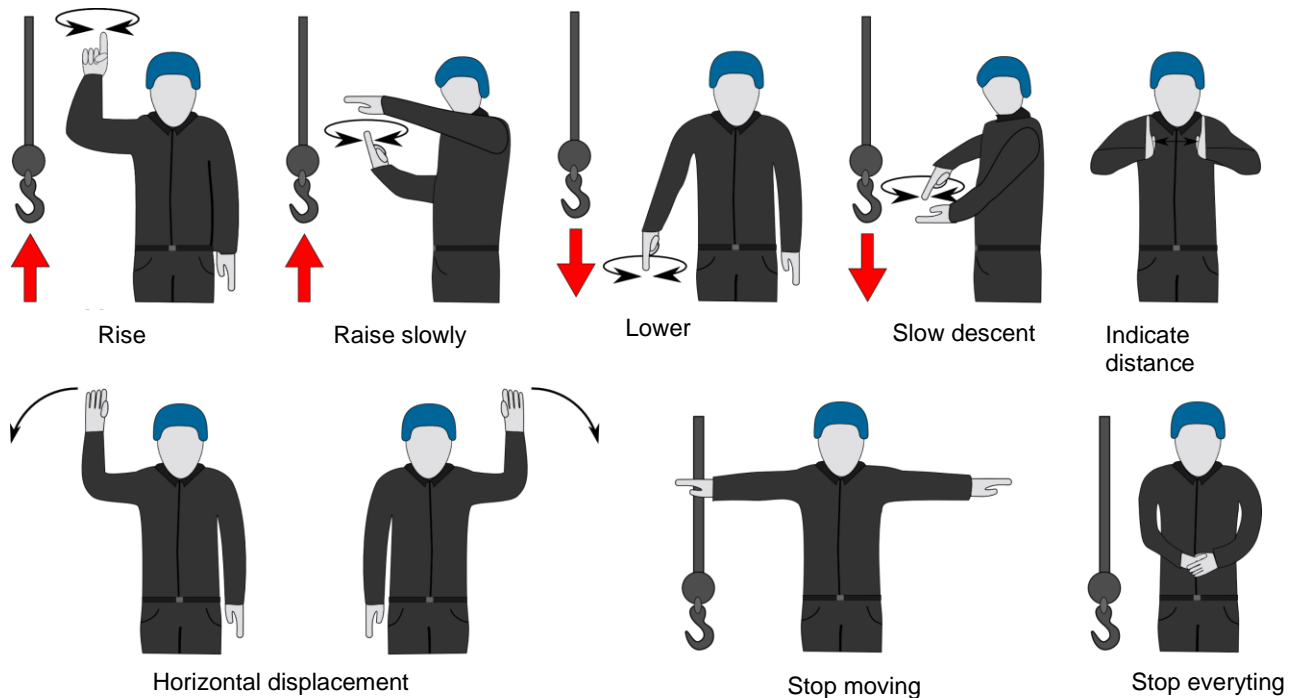


Hazards and risks:



(7.7)

Common gestures of communication with the crane operator.



Crane operator's sound signals

Made with the horn, sound signals are used to alert and warn people in the vicinity of the crane. You can listen to the sounds by clicking on the green square.

The way to use the sound signal is represented by dots or dashes. Explanations are given each time.



1 short horn blast.
The crane operator has received the order given to him.



2 short horn blasts.
The crane operator did not understand or did not hear the order given to him, and he asks to be told again.



(7.7)



Long, rushed signals (to be continued as long as the danger is present). The crane operator honks the horn in this way to warn others of a danger.

For example:

- when a person is about to pass under the load.
- when the crane operator sees an anomaly (poorly tied load...)



Continuous signal.

The crane operator keeps pressing the button to warn that they are in trouble.

For example, the wind is too strong and the crane operator has a hard time holding their boom.



Isolated and spaced signals.

Is done throughout the travelling when a crane is mounted on a travel track. Used to warn that the crane is moving.

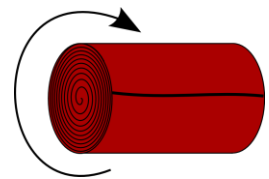
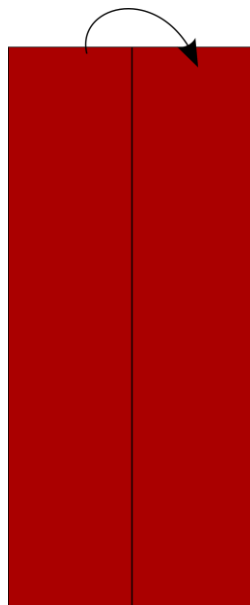
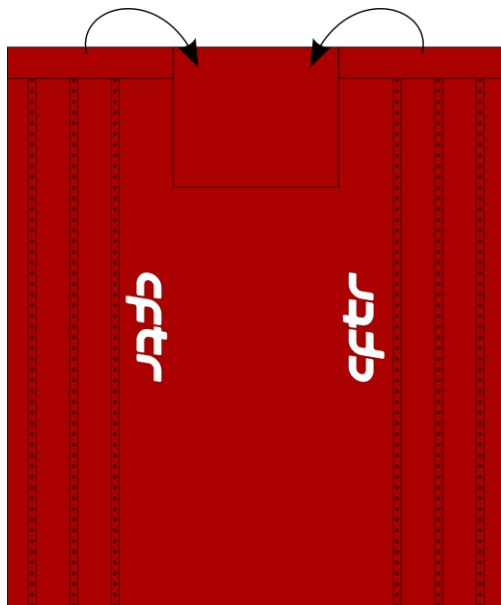
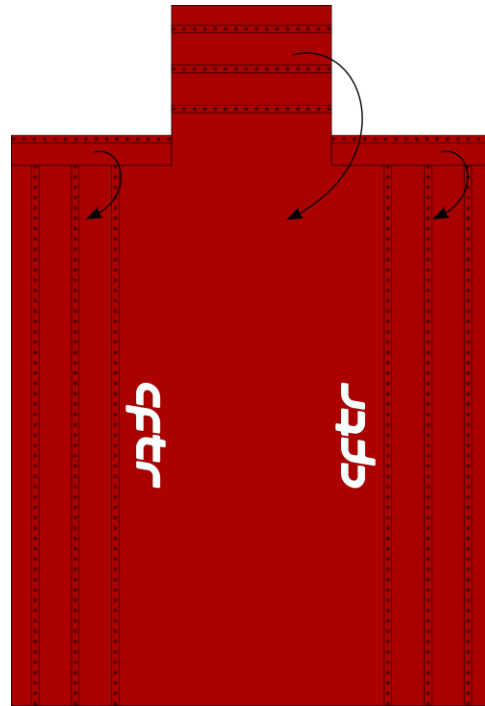
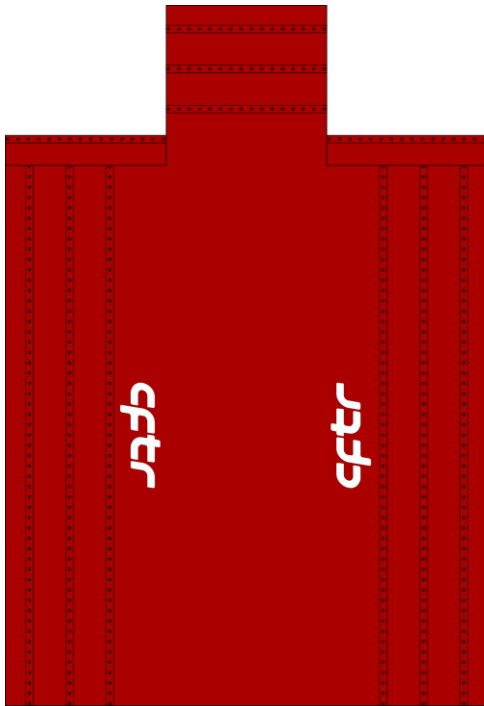


Identify the hazards and risks in loading and unloading of canvas-bound transport.



(7.7)

How to fold canvas

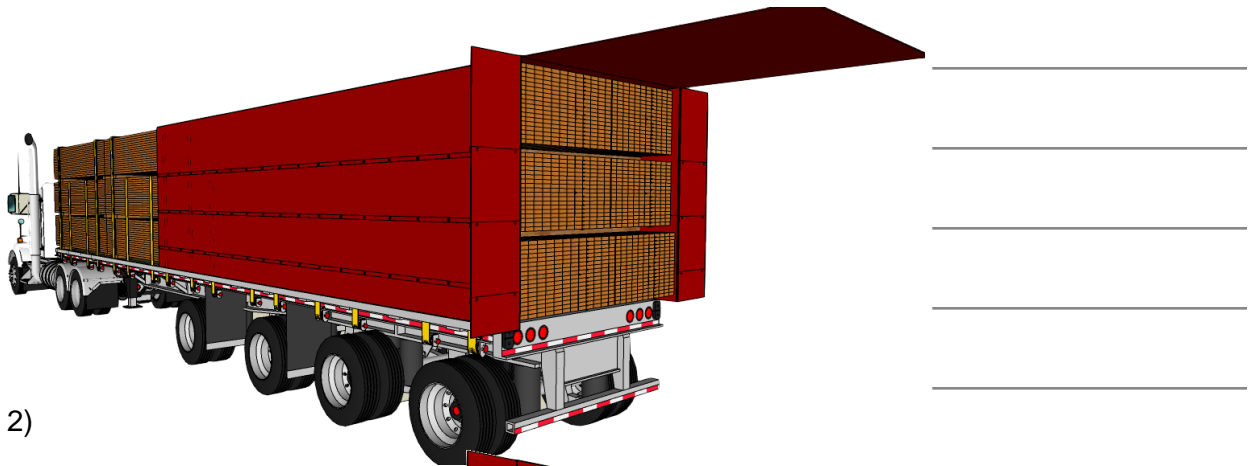


Installation de toiles

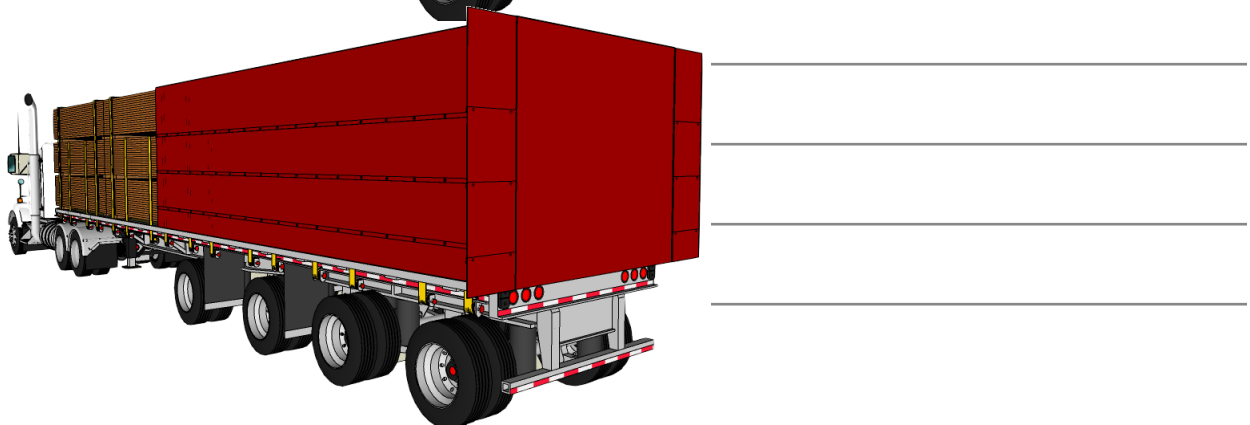


(7.7)

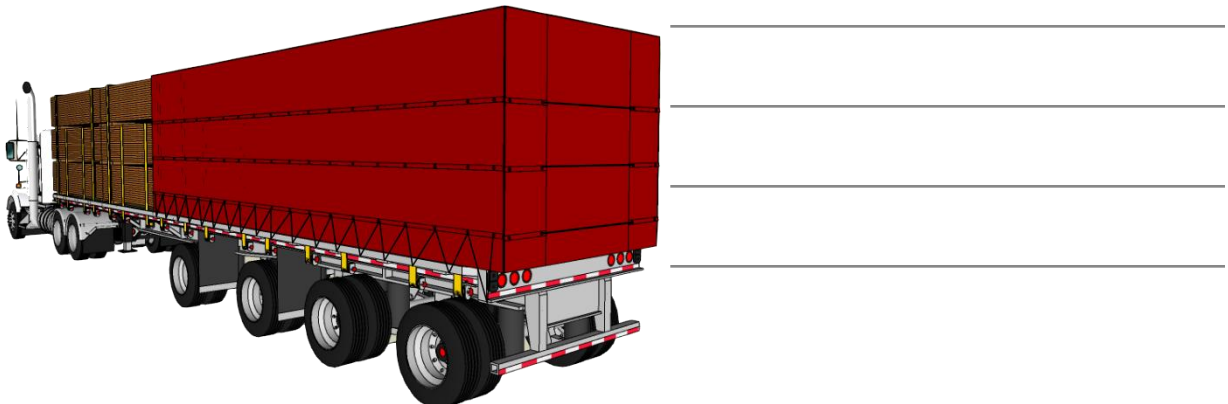
How to install canvases 1)



2)



3)



(7.7)

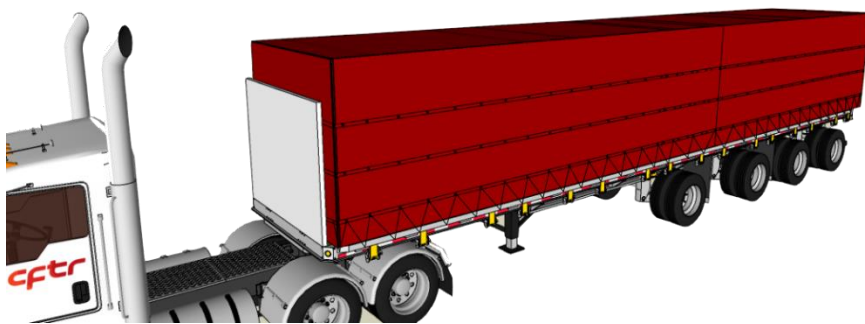
4)



5)



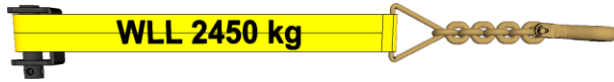
6)





(7.7)

Return exercises



As you draw lines, place the necessary tie-down straps to secure subsequent loads.

CARGO ANCHORING / ANCRAGE DE CHARGEMENT		
Cargo anchoring devices installed by Manac have been tested and are certified for the CMVSS 405 requirement. (Working load limit - Minimum 5000 lbs)		Les ancrages de chargement installés par Manac ont été testés et certifiés pour être conformes à la réglementation CMVSS 405. (Limite minimale de 5000 lbs de charge de travail)
ANCHOR TYPE	WLL / LCT	TYPE D'ANCRAGE
Winch binder installation	5500 lbs	Installation des treuils
Floor tie-down chains	5500 lbs	Chaînes d'attaches dans le plancher
Floor chains	5500 lbs	Chaînes d'attaches dans un dalot
Floor D-rings (3/4" dia)	5500 lbs	Anneaux en "D" (3/4" dia) sur plancher
D-rings (1" dia)	12000 lbs	Anneaux en "D" (1" dia)
Rub rail spacers	5500 lbs	Espaceurs de bande de frottement
Stake pockets	5500 lbs	Pochettes latérales
J-hooks on side rail	5500 lbs	Crochet en "J" sur longeron de côté
Cargo hands	5500 lbs	Mains d'attaches
Bar attached	5500 lbs	Barre d'attache

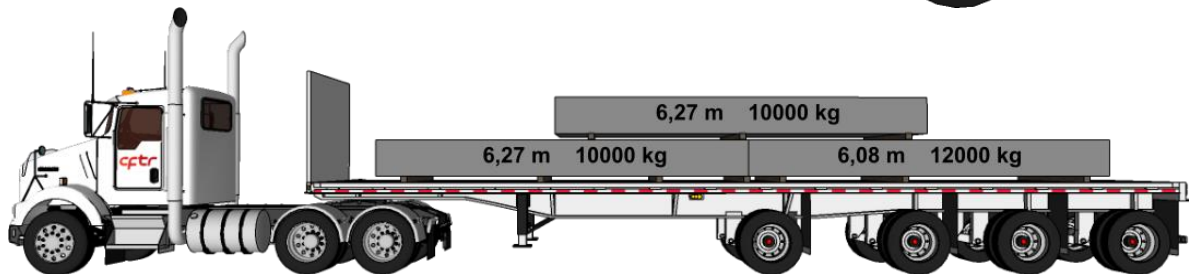
Web belts and chains are not certified by Manac.
Les courroies et les chaînes ne sont pas certifiées par Manac.

manac 30380371 (REV.06/12)

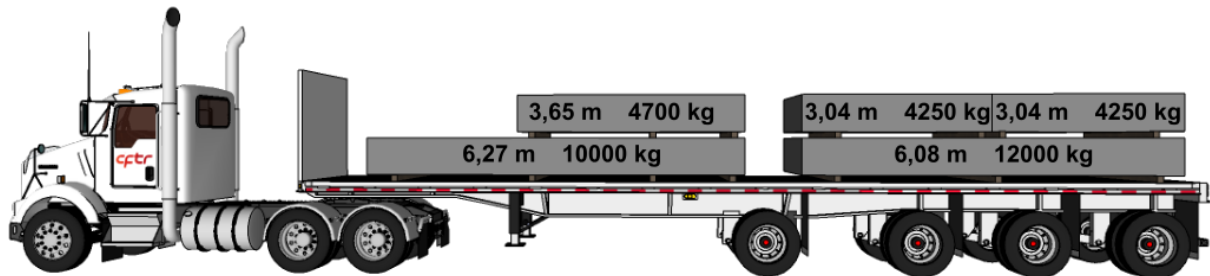
1)



2)



3)



(7.7)

You can chose among the following devices; which ones would you use to perform the securement in the scenarios on the following pages?



1)



2)



3)



4)





(7.7)

5)



6)



7)



8)





(7.7)











(7.7)

13)



Would you know how to tell if your securement material was in bad shape?

Except in specific situations, the securement of the goods will be done with either straps or chains. Steel wire ropes are also used for some loads.

All of the securement devices must be thoroughly inspected before use. Unless otherwise specified, any alteration seen in a given device will result in the removal of that device. Otherwise, fines may be imposed on the driver and operator.

The following are examples of defective

devices. Straps



Decommissioning criteria:



(7.7)

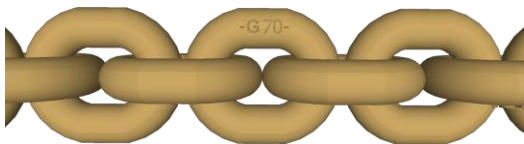
Chains



Decommissioning criteria:

Look for stretched, nicked, bent or worn links, as well as for components (including hooks) that may have an open groove, a crack or a deformation. If a component is damaged, decommission the device.

Grade 70 chain or conveyor chain



The grade 70 chain is designed to work with securement devices. Its strength to weight ratio is greater than that of an ordinary round chain. It meets the standards of the DOT (Department of Transport). It is usually golden in color. Its capacity is permanently stamped, on one of every ten links. You will see the indication of its "WLL" or one of the following numbers: 7, 70 or 700.

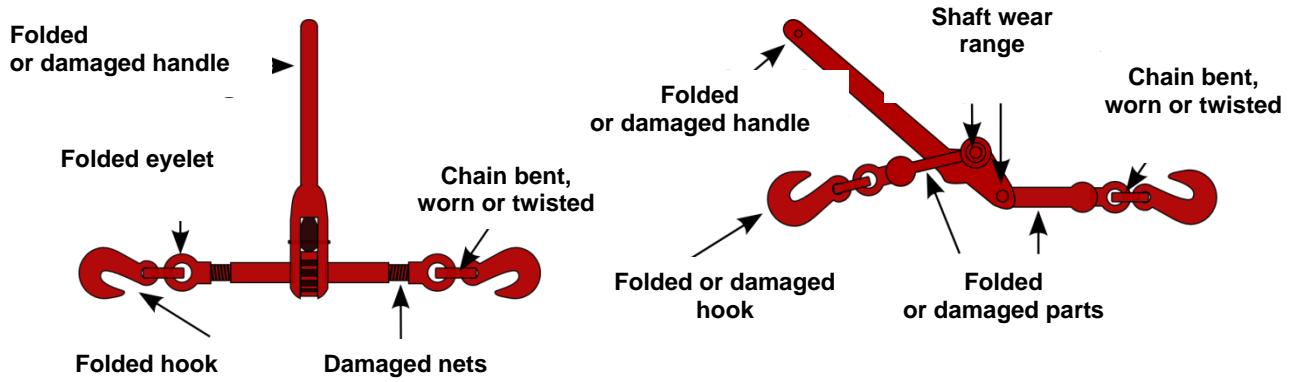
This chain is not designed for overhead lifting.



(7.7)

Tensioners

Decommissioning criteria:

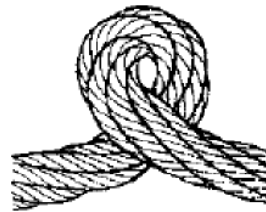


Steel wire ropes

Decommissioning criteria:



Check for cracks on the ring



Twisted cable



Flattened cable



Warped or rusty cable



Crushed cable



Broken strands

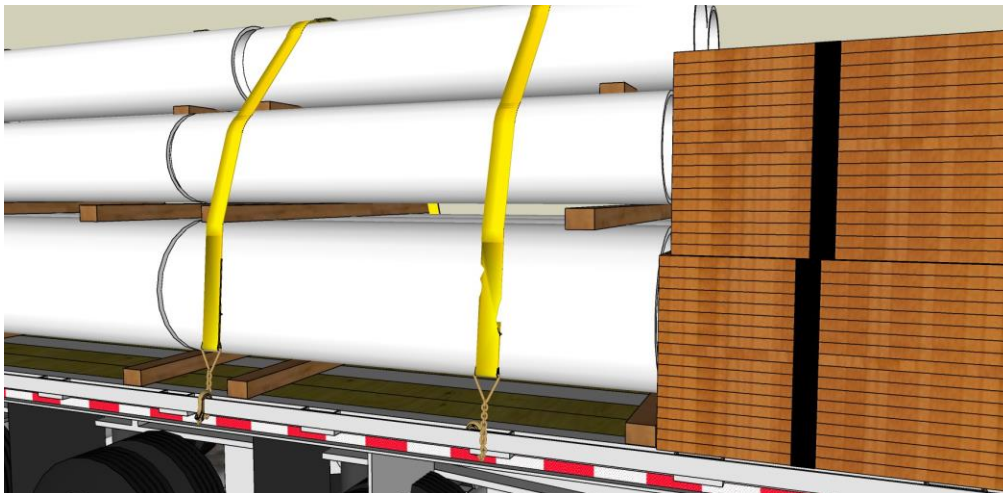


(7.7)

Arrangement of the goods on a flatbed semi-trailer.



Find the error.



Find the error.



(7.7)

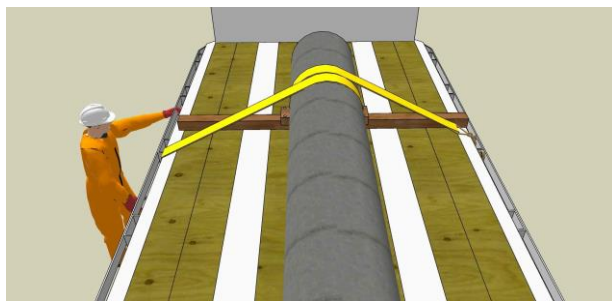


Find the error.

Tips from a pro

Cylindrical parts

It is not easy to secure this type of cargo, since it is difficult to achieve the optimal value of the pressure force exerted on it. One way to increase the friction on the object is to make a magnifying glass with the straps around it. This magnifying glass acts as a bottleneck if there is forward movement.



(7.7)

Separating the tiers

According to the regulations, when lumber bundles are transported on a flatbed semi-trailer and there are more than two tiers, tie-down straps must be placed over the middle tier of bundles for each stack of bundles over 1.85 meters high.



Applying the same technique to other types of cargo can only increase the strength of the securement.



(7.7)



Blocking at the front with securement

For various reasons, it is sometimes impossible to block the cargo at the front. However, it is possible to provide for blocking with the help of tie-down straps.



(7.7)



Competency 7

Plan Cargo Securement Operations

Lesson Objectives:

- Make the required calculations in accordance with the regulations
- Select devices according to the goods to be secured, the manufacturer's standards and the regulations
- Verify compliance

Refresher on the concepts of securement

In the context of Competency 3, *Regulations*, the various calculations to be performed in order to determine the minimum number of devices required by Standard 10 were discussed. The reference document is the *Cargo Securement Guide*.

There are three elements to consider:

- The mass of the goods
- The length
- If it is a special case

For the following exercises, determine the minimum number of devices required to secure the various goods and plot these where the layout would be most appropriate.

Refer to this table to know the working load limit (WLL) of the chains

Dimension mm (in)	Grade 3 proof coil	Grade 43 High test	Grade 70 Transportation	Grade 80 Alloy	Grade 100 Alloy
7 mm (1/4 in)	580 kg (1,300 lbs)	1,180 kg (2,600 lbs)	1,430 kg (3,150 lbs)	1,570 kg (3,500 lbs)	1,950 kg (4,300 lbs)
8 mm (5/16 in)	860 kg (1,900 lbs)	1,770 kg (3,900 lbs)	2,130 kg (4,700 lbs)	2,000 kg (4,500 lbs)	2,600 kg (5,700 lbs)
10 mm (3/8 in)	1,200 kg (2,650 lbs)	2,450 kg (5,400 lbs)	2,990 kg (6,600 lbs)	3,200 kg (7,100 lbs)	4,000 kg (8,800 lbs)
11 mm (7/16 in)	1,680 kg (3,700 lbs)	3,270 kg (7,200 lbs)	3,970 kg (8,750 lbs)	-	-
13 mm (1/2 in)	2,030 kg (4,500 lbs)	4,170 kg (9,200 lbs)	5,130 kg (11,300 lbs)	5,400 kg (12,000 lbs)	6,800 kg (15,000 lbs)
16 mm (5/8 in)	3,130 kg (6,900 lbs)	5,910 kg (13,000 lbs)	7,170 kg (15,800 lbs)	8,200 kg (18,100 lbs)	10,300 kg (22,600 lbs)
Chain brands	3 30 300	4 43 430	7 70 700	8 80 800	10 100 1000

1. cargo NOT blocked nor IMMOBILIZED forward
Answer: 4 belts



2. cargo NOT blocked nor IMMOBILIZED forward
Answer: 4 chains



7.9)

3.

8 meters



4.



7.9)

5.

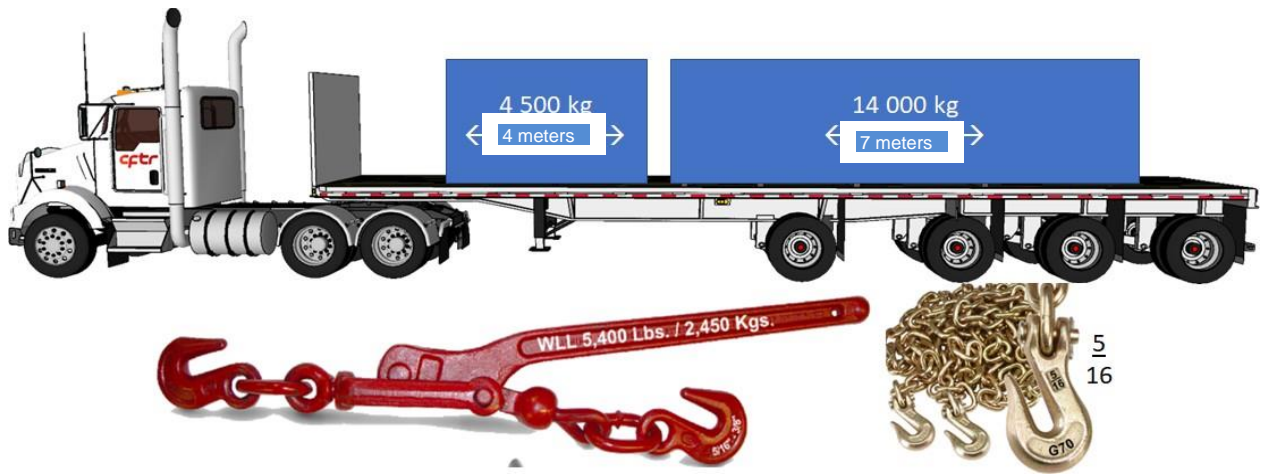


6.



7.9)

7.



8.



7.9)

9.



10.



7.9)

11.



12.



7.9)

For the following exercises, you must take into account the information on the nameplate of the semi-trailer.

CARGO ANCHORING / ANCRAGE DE CHARGEMENT		
<small>Cargo anchoring devices installed by Manac have been tested and are certified for the CMVSS 905 requirement. (Working load limit : Minimum 5000 lbs)</small>		<small>Les ancrages de chargement installés par Manac ont été testés et certifiés pour être conforme à la réglementation CMVSS 905. (Limite minimale de 5000 lbs de charge de travail)</small>
ANCHOR TYPE	WLL / LCT	TYPE D'ANCRAGE
Winch binder installation	5500 lbs	Installation des treuils
Floor tie-down chains	5500 lbs	Chaînes d'attaches dans le plancher
Floor chains	5500 lbs	Chaînes d'attaches dans un dalot
Floor D-rings (3/4" dia)	5500 lbs	Anneaux en "D"(3/4"dia) sur plancher
D-rings (1" dia)	12000 lbs	Anneaux en "D" (1"dia)
Rub rail spacers	5500 lbs	Espaceurs de bande de frottement
Stake pockets	5500 lbs	Pochettes latérales
J-hooks on side rail	5500 lbs	Crochet en "J" sur longeron de côté
Cargo hands	5500 lbs	Mains d'attaches
Bar attached	5500 lbs	Barre d'attache

Web belts and chains are not certified by Manac. Les courroies et les chaînes ne sont pas certifiées par Manac.
30380371 (REV.06/12)

13.



14.



7.9)

Merchandise Details:

- 6 bundles of wood 2 X 6 X 8 ft. 1500 kg each and height greater than 1.85 m
- 1 steel coil 29,500 lb loaded sideways "suicide"
- 1 steel coil 31,500 lb loaded lengthwise "shot gun"
- 1 forklift 4975 kg



15.



7.9)

16.



7.9)



You must attach a farm tractor with a mass of 7,634 kg to this lowboy trailer.

Which of the following accessories and securing devices will you need and how many would you need (write it on the line to the right)?

- Logistic bars _____
- Metal corners _____
- Plastic corners _____
- Belts with a WLL of 5,400 kg _____
- Grade 70 chains with a diameter of 8 mm _____
- Grade 70 chains with a diameter of 11 mm _____
- J-hooks on side rail _____
- D-rings with a diameter of 1 inch _____



7.9)



Competency 7

Recovery of the Competency

Lesson Objective:

- Recover specific and deficient competency elements with the struggling student(s)

This period will be used to recovery elements that were shown as not being well understood during the assessment.

The teacher will have analyzed your assessment to identify problem areas.

Depending on your individual needs, the teacher will provide you with the necessary materials (exercises, scenarios, etc.).

If you have passed the assessment, the teacher will provide you with supplementary exercises.

