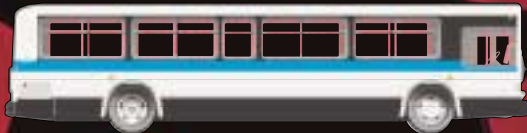
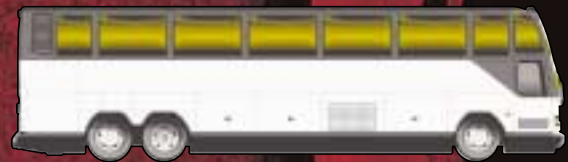
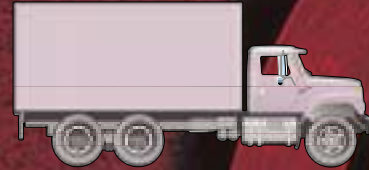


Mechanical Inspection Guide

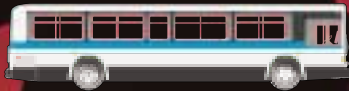
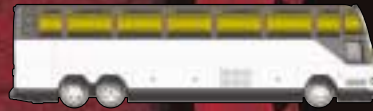


Quebec Safety League
a unit of **AQTR**

NOVEMBER 2002

Mechanical Inspection Guide

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November 2002

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**Société de l'assurance
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FOREWORD

As part of its highway safety mandate, the Société de l'assurance automobile du Québec established a mechanical inspection program for road vehicles.

The present guide sets forth the inspection procedures and standards applicable to most vehicles. Designed as a quick reference tool for mechanics and highway carrier enforcement officers, it describes mechanical inspection procedures as well as the minor and major defects most likely to be encountered.

The contents of this guide are drawn from the Highway Safety Code and the Regulation respecting safety standards for road vehicles. We therefore encourage users to consult the Code and Regulation for all legal questions.

We would like to thank the Direction de la coordination des opérations de contrôle routier and the following associations for their invaluable advice:

- Association du camionage du Québec
- Association des propriétaires d'autobus du Québec
- Association des mandataires en vérification mécanique
- Association du transport écolier du Québec

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KEY

A pictogram in the margin means that this provision applies to this category of vehicle only.

Passenger vehicles and light trucks only:



Trailers and semi-trailers only:



Straight-body trucks only:



Truck tractors only:



School buses and minibuses only:



Motor coaches only:



City buses only:



Dump trucks only:



■ Minor defect



■ Major defect

PRECEDENCE OF MANUFACTURER'S STANDARDS

The inspection procedures and compliance criteria described in this guide may not apply to certain vehicles, in which case the vehicle manufacturer's standards shall take precedence.

UNITS OF MEASUREMENT

Imperial measures are indicated in parentheses for information purposes and have no legal substance.

CONDITIONS FOR MECHANICAL INSPECTION

An inspection agent may refuse to inspect a vehicle where dirt or other obstructing matter (ice, grease, rust, etc.) prevents a complete visual inspection of all vehicle components. The vehicle must be without a load.

The client may clean his vehicle himself and then come back for an inspection or, with the client's permission and at his expense, the agent may clean the dirty or obstructed components before proceeding with the inspection.

SAFETY RULE

To ensure that the vehicle does not move unexpectedly during inspection, wheel chocks should be placed in front of and behind the drive axle on the driver's side of the vehicle or, in the case of a tandem axle, between the axles. Put

the gearshift lever in "N" (Neutral), release the parking brake and turn the ignition switch to the "ON" position. Never go underneath a vehicle with its engine running.

1.1 HEADLIGHTS, LIGHTS AND REFLECTORS

Perform a visual inspection of the following headlights and lights to make sure they are in proper working order. Check each position using the control lever. Make sure the headlights, lights and reflectors are firmly attached to their anchorage by gently pushing them in all directions.

N.B.: Subject to restrictions expressly provided for in the Highway Safety Code, owners may install additional lights or headlights on their vehicle provided those required by the Code are present and of the proper colour (e.g. amber lights at the rear of semi-trailers that remain lit except when flashing).

N.B.: See the drawings at the end of this section for the placement and colour of required lights.

a) Headlights

Make sure the high and low beams are functioning properly. If the vehicle is equipped with retracting headlight bases or headlight shutters, make sure they are working properly as well.

Check headlight alignment using either a screen as described on pages (13 and 14) or specially designed instruments provided with the vehicle (e.g. levels).

General Information:

- The required headlights, lights or reflectors are not present or are not mounted in the locations designed for that purpose. 
- A headlight or light does not function or does not shine with the intensity specified by the manufacturer. 
- A headlight, light, lens or reflector is missing, broken or cracked so as to let water in, or is loose, discoloured, painted over or of the wrong colour. 
- A device or material is mounted on or affixed to the vehicle, a headlight, light or lens so as to hide or dim the light. 

- One of the headlights is not the required colour (white). 
- The high-beam indicator light does not work. 
- Headlight alignment does not comply with standards. 
- A headlight cover or shutter does not open properly, does not completely withdraw to expose the headlights or does not remain in the fully open position when the headlights are on. 
- The vehicle does not have at least one low-beam headlight that works. 

b) Front and rear parking lights and rear reflectors

N.B.: The rear of a trailer or semi-trailer may be fitted with reflective strips, instead of reflectors, as long as they are installed in compliance with section 1.3.

■ The front parking lights are not the required colour (amber or white).

■ The rear parking lights are not the required colour (red).

■ The rear reflectors are not the required colour (red).

■ **The vehicle does not have at least one rear parking light that works.**

c) Brake lights

Check to see whether the lights are working properly by gently depressing the brake pedal.

N.B.: If the vehicle is equipped with a centre stop lamp, it must be checked as well. Centre stop lamps are mandatory in passenger vehicles manufactured after January 1, 1987.

■ The brake lights are not the required colour (red).

■ **The vehicle does not have at least one brake light that works.**

d) Turn-signal lights

N.B.: Tractor semi-trailers are not required to have turn-signal lights at the rear if they are equipped with double-face turn-signal lights on the front.

■ The front lights are not the required colour (amber or white).

■ The rear lights are not the required colour (amber or red).

■ The turn-signal indicator does not function.

e) Side marker lights and reflectors

N.B.: Side marker and clearance lights may be combined on condition that the light used is visible from the side, front or rear, as the case may be.

N.B.: Motor vehicles measuring 9.1 m (30 ft) or more in length must carry side reflectors and marker lights midway between the front and rear side marker lights.

N.B.: The sides of a trailer or semi-trailer may be fitted with reflective strips, instead of reflectors, as long as they are installed in compliance with section 1.3.

■ The side marker lights or reflectors on the front are not the required colour (amber).

■ The side marker lights or reflectors at the rear are not the required colour (red).

■ The lights or reflectors midway between the front and rear side marker lights, if required, are not the required colour (amber).

f) Hazard warning lights

N.B.: Required only where they were installed as part of the original equipment.

■ The indicator light does not function.

g) Clearance lights

N.B.: Where the rear identification lights are mounted at the very top of the vehicle, the clearance lights need not be mounted in the upper right and left extremities. The front and rear clearance lights may be combined with the side marker lights on condition that they are visible from the side, front or rear, as the case may be.

N.B.: Not required at the rear of tractor semi-trailers that do not have a load space.

■ The clearance lights on the front are not the required colour (amber), are not placed at the same height or are more than 15 cm (6 in) from the upper right and left extremities of the vehicle.

■ The clearance lights at the rear are not the required colour (red), are not placed at the same height or are more than 15 cm (6 in) from the upper right and left extremities of the vehicle.

h) Identification lights

N.B.: Not required at the rear of tractor semi-trailers that do not have a load space.

N.B.: Where the rear identification lights are not placed at the very top of the vehicle, they may be allowed in certain closed semi-trailers manufactured this way.

■ The identification lights on the front are not the required colour (amber), are not grouped in a horizontal row at the centre above the windshield, or are not spaced between 15 cm (6 in) and 30 cm (12 in) apart.

■ The identification lights at the rear are not the required colour (red), are not grouped in a horizontal row at the centre as close as possible to the top of the vehicle, or are not spaced between 15 cm (6 in) and 30 cm (12 in) apart.

i) Backup light

N.B.: The backup light does not have to be controlled by the position of the gearshift lever and is not required in trailers and semi-trailers.

■ The backup light is not the required colour (white).

■ Where the light is controlled by the gearshift lever, it does not turn off when the vehicle is no longer in reverse.

■ Where the light is hand-controlled, it does not work.

j) Licence plate light

N.B.: Required only where the licence plate is affixed to the rear of the vehicle.

■ One of the lights does not work.

k) Instrument lights

■ One of the lights does not work.

l) Daytime running lights

N.B.: All vehicles manufactured after December 1 1989 must be equipped with two white or amber daytime running lights on the front. These lights may be alone or combined with the headlights or parking lights.

■ One of the lights is not the required colour.

■ One of the lights does not work.

m) Interior lights

Check the lighting for the centre aisle, the entrance and exit steps and the boarding space.

n) Reflective strips

N.B.: Except for trailers designed exclusively for dwelling or office purposes, all trailers and semi-trailers measuring at least 2.05 m in width and having a net weight in excess of 3,000 kg must be equipped with reflective material in accordance with the Motor Vehicle Safety Act.

N.B.: A series of reflectors may be used instead of reflective strips as long as the reflectors are spaced at no more than 100 mm apart, measured from centre-to-centre.

N.B.: School buses are not required to have reflective strips; however, if they do, the strips must be yellow.

o) Flashing lights on school buses

Visually inspect the flashing lights on the top of the front and rear of the bus and on the retractable stop sign to make sure they work properly.

- One of the lights does not function.

- The reflective strips or their installation do not comply with section 1.3.

- The reflective material is poorly attached, lacking, not visible, seriously damaged or not of the required length.

- A light is not the required colour or does not come on.

- The indicator light does not function.

1.2 ELECTRIC CABLE, PLUG, CONNECTION, SOCKET, BATTERY

Conduct an inspection of all visible parts without disassembling them and with the circuits turned on.

- An electric cable, plug, connection, socket or switch is broken, abraded, cracked, corroded or worn in a way that impedes the good working order of the component connected to it.

- An electric cable that is not grounded is not covered with a protective and insulating sheath.

- There is a short circuit in one of the electric cables.

- The operation of one circuit interferes with the operation of another circuit.

- A battery terminal has extreme corrosion build-up.

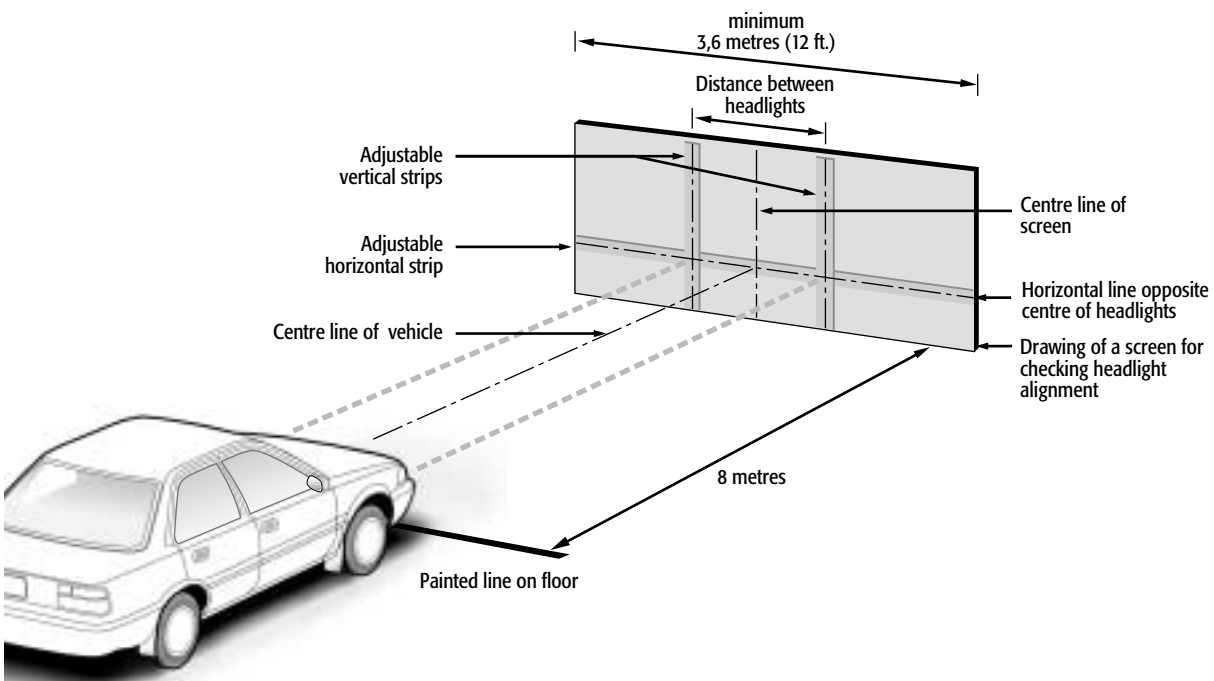
- The battery or battery cover, where part of the original equipment, is not secured properly.

1.3**INSPECTION OF HEADLIGHT ALIGNMENT****1.3.1 Procedure**

Inspect headlight alignment using a screen as indicated below:

Place the vehicle so that it is facing the screen and the headlights are directly above a painted line on the floor.

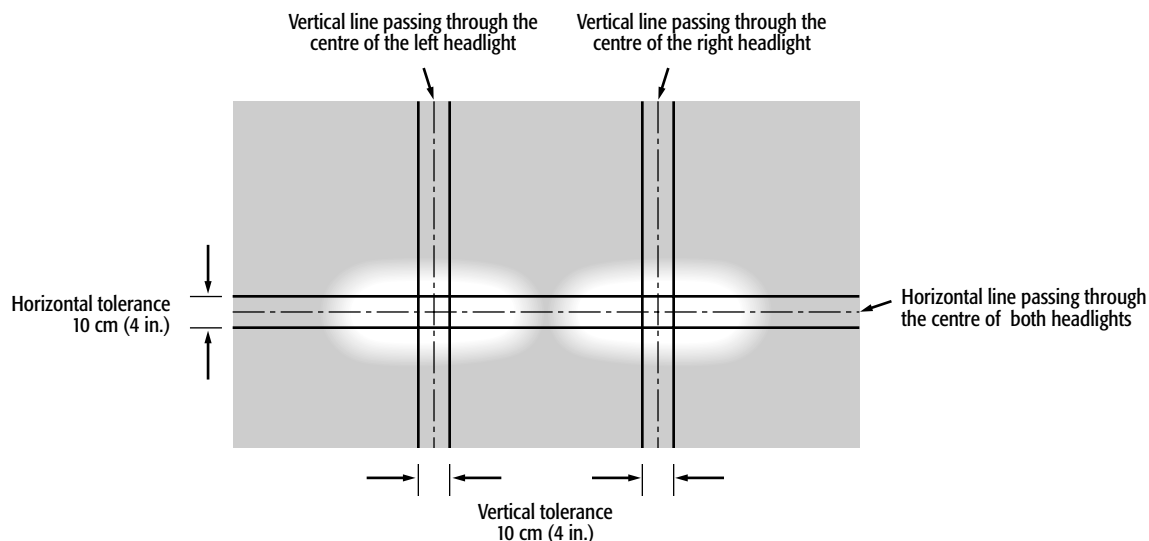
Align the centre of the vehicle with a line drawn down the centre of the screen by looking through the centre of the rear window and over the hood ornament. Ask the driver to adjust the position of the vehicle so that it is in line with these two points. If there is no hood ornament, mark the centre of the windshield and rear window with masking tape and use these two points to place the centre line of the vehicle in direct line with the centre of the screen.



N.B. If a special instrument is used to check headlight alignment, it should be used as directed by the manufacturer.

1.3.2 High beams

With the vehicle correctly positioned, turn the headlights on high beam and check the centre of the high-intensity zone on the screen.



a) Horizontal alignment

- The centre of the high-intensity zone is more than 10 cm (4 in) on the left or right of the vertical line passing through the centre of both headlights.



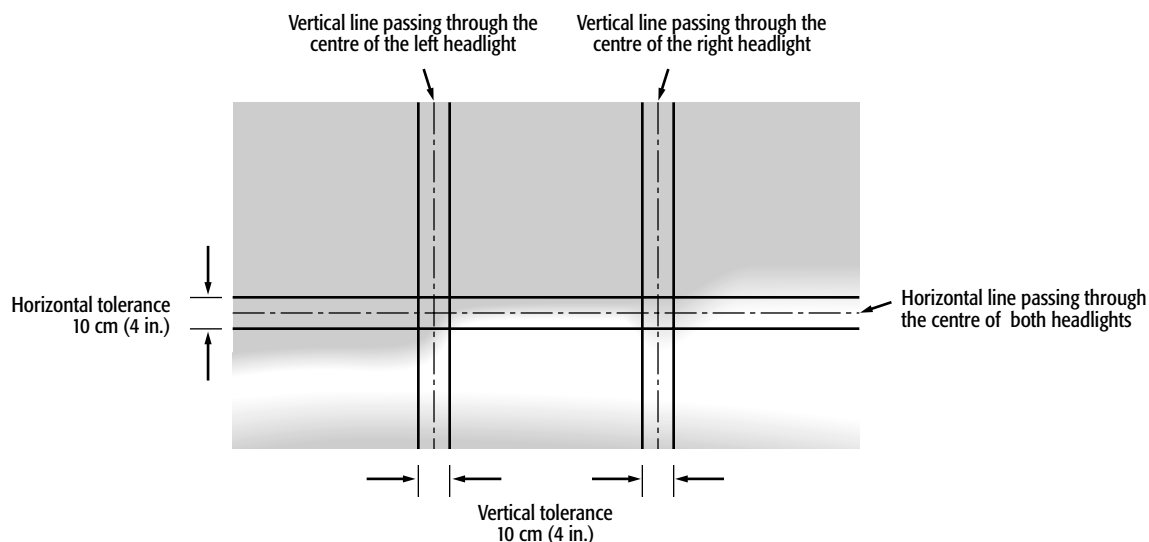
b) Vertical alignment

- The centre of the high-intensity zone is more than 10 cm (4 in) above or below the horizontal line passing through the centre of both headlights.



1.3.3 Low beams

With the vehicle correctly positioned, turn the headlights on low beam and check to see where the left and upper extremities of the high-intensity zone are on the screen.

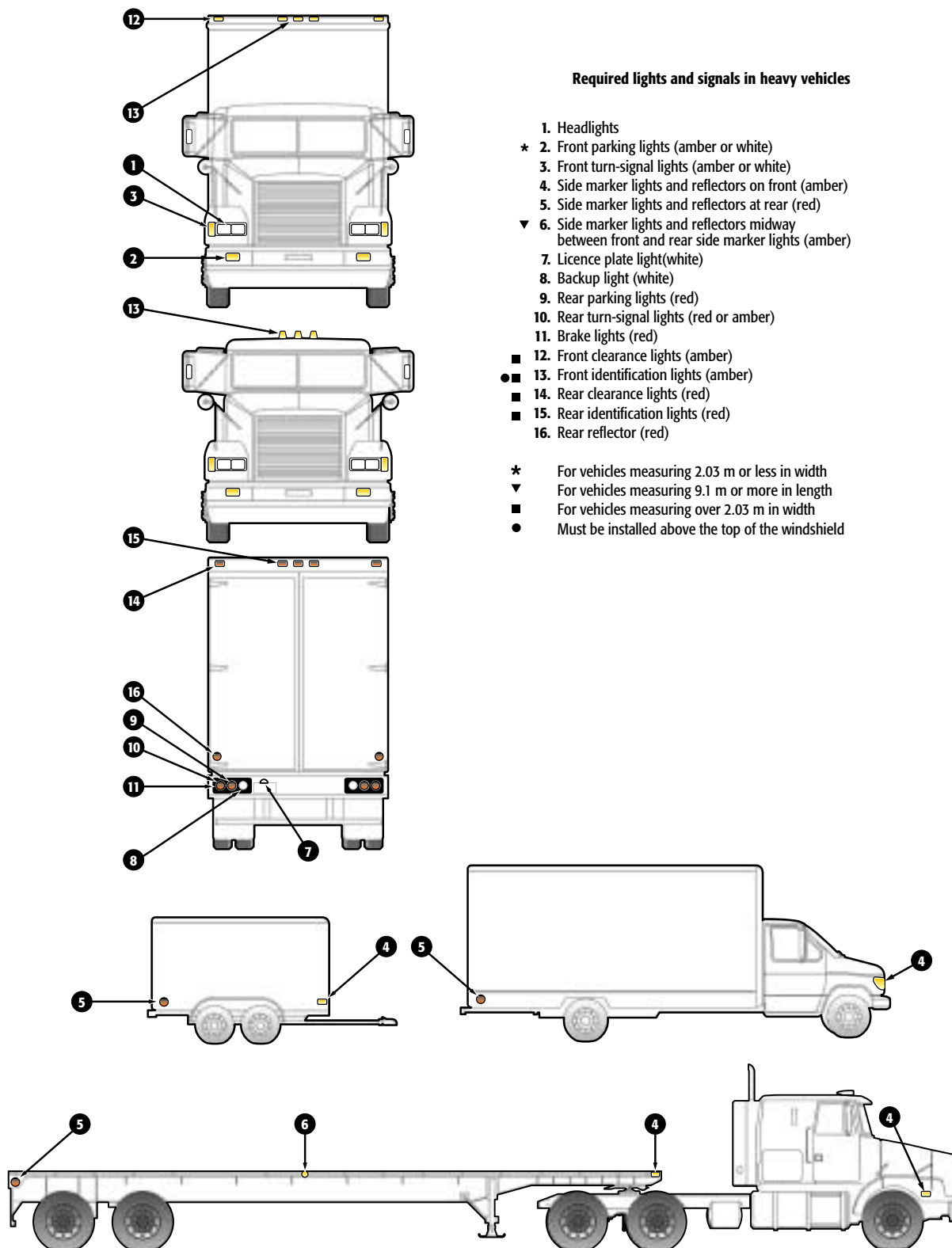


a) Horizontal adjustment

- The left extremity of the high-intensity zone is more than 10 cm (4 in) on the left or right of the vertical line passing through the centre of the headlight.

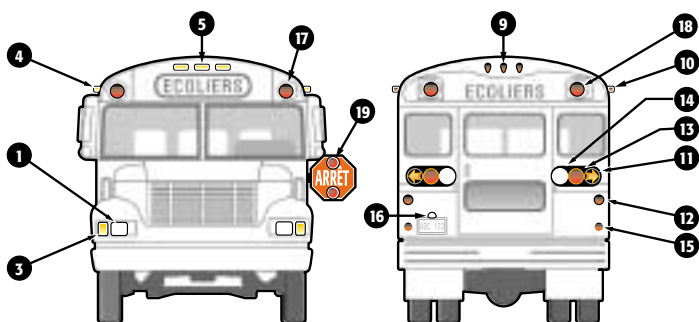
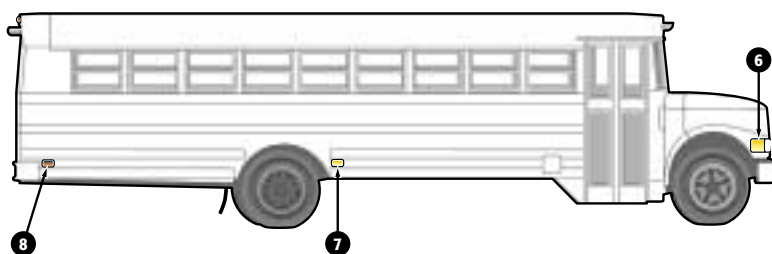
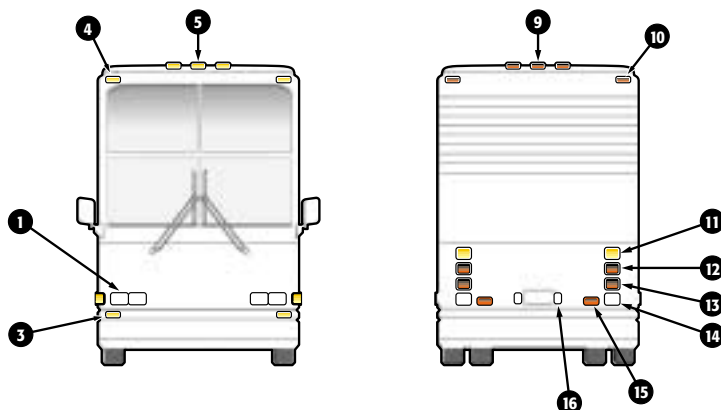
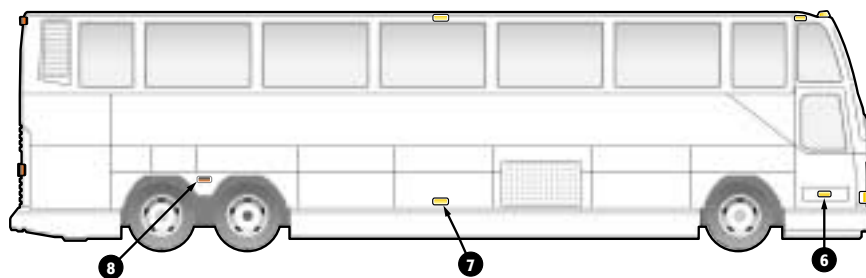
b) Vertical adjustment

- The upper extremity of the high-intensity zone is more than 10 cm (4 in) above or below the horizontal line passing through the centre of both headlights.



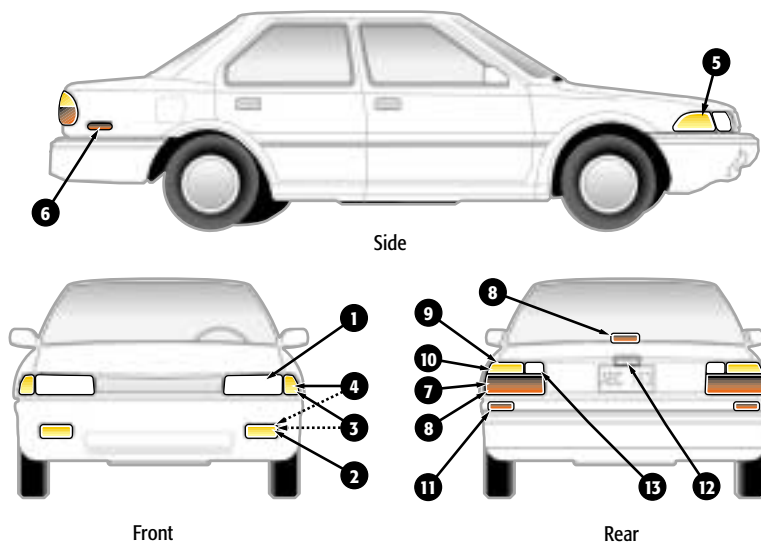
Required lights and signals in heavy vehicles

- Headlights
 - ★ Front parking lights (amber or white)
 - ★ Front turn-signal lights (amber or white)
 - ★ Side marker lights and reflectors on front (amber)
 - ★ Side marker lights and reflectors at rear (red)
 - ▼ Side marker lights and reflectors midway between front and rear side marker lights (amber)
 - Licence plate light(white)
 - Backup light (white)
 - Rear parking lights (red)
 - Rear turn-signal lights (red or amber)
 - Brake lights (red)
 - Front clearance lights (amber)
 - Front identification lights (amber)
 - Rear clearance lights (red)
 - Rear identification lights (red)
 - Rear reflector (red)
- ★ For vehicles measuring 2.03 m or less in width
 ▼ For vehicles measuring 9.1 m or more in length
 ■ For vehicles measuring over 2.03 m in width
 ● Must be installed above the top of the windshield

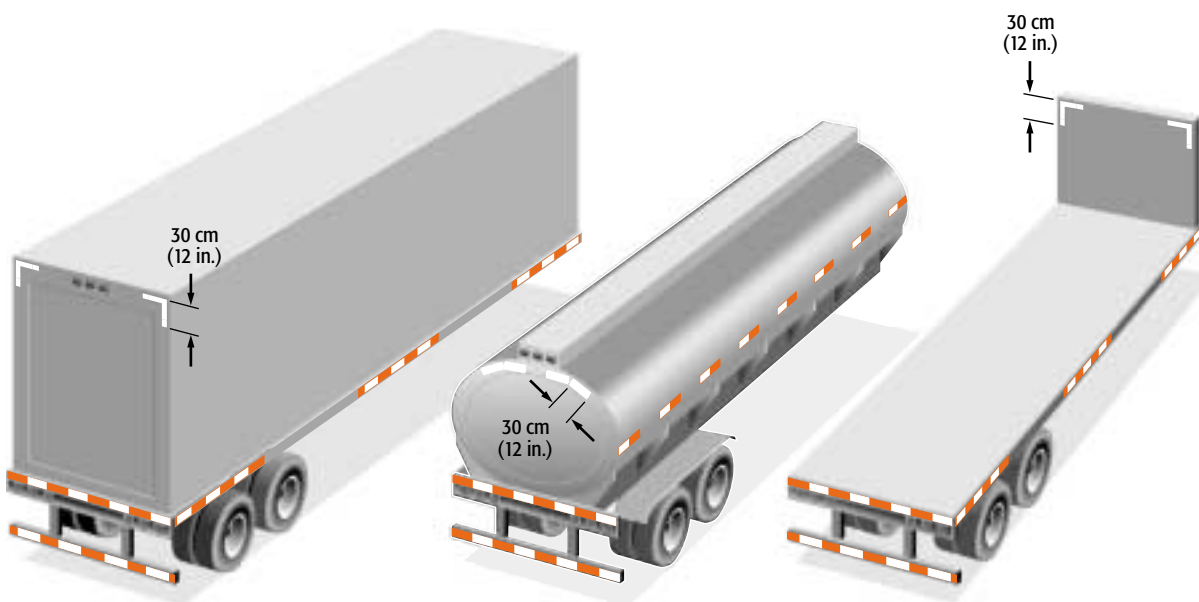


1. Headlights
- ★ 2. Front parking lights (amber or white)
3. Front turn-signal lights (amber or white)
- 4. Front clearance lights (amber)
- 5. Front identification lights (amber)
6. Side marker lights and reflectors on front (amber)
- ▼ 7. Side marker lights and reflectors midway between front and rear side marker lights (amber)
8. Side marker lights and reflectors at rear (red)
- 9. Identification lights (red)
- 10. Rear clearance lights (red)
11. Rear turn-signal lights (red or amber)
12. Rear parking lights (red)
13. Brake lights (red)
14. Backup light (white)
15. Rear reflectors (red)
16. Licence plate light
17. Two (2) flashing red lights on the front, visible from a distance of 500 ft at all times, indicating that children are getting on or off the school bus
18. Two (2) flashing red lights at the rear indicating that children are getting on or off the school bus
- ◆ 19. Flashing red lights on the stop sign

- ★ For vehicles measuring 2.03 m or less in width
- ▼ For vehicles measuring 9.10 m or more in length
- For vehicles measuring over 2.03 m in width
- Must be installed above the top of the windshield
- ◆ For school buses with a chassis manufactured after July 1, 1997



1. Headlights
2. Front parking lights (amber or white)
3. Front turn-signal lights (amber or white)
4. Front hazard warning lights
5. Side marker lights on front (amber)
6. Side marker lights at rear (red)
7. Rear parking lights (red)
8. Brake lights (red)
9. Rear turn-signal lights (red or amber)
10. Rear hazard warning lights (red)
11. Rear reflectors (red)
12. Licence plate light
13. Backup lights (white)



Location of reflector strips	Height	Colour
Upper rear-facing corner	At the top	White
Horizontal surface of rear bumper bar, on its entire width, facing the rear	No requirement	Alternating red and white sections
On trailer's entire width, facing the rear	As horizontal as practicable and as close as practicable, between 375 mm and 1525 mm from the ground	Alternating red and white sections, or solid white, solid yellow or alternation white and yellow
On each side, facing sideward, over at least 50% of vehicle length, starting and ending at extremities	As horizontal as practicable and as close as practicable, between 375 mm and 1525 mm from the ground	Alternating red and white sections, or solid white, solid yellow or alternation white and yellow



GENERAL INFORMATION

Visually and manually inspect the steering components.

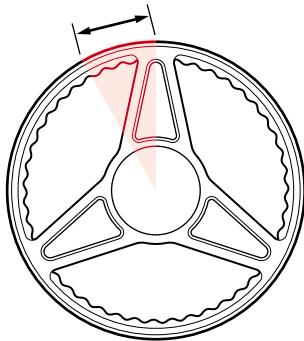
■ A component of the steering system is displaced, bent, modified, worn, damaged or used to the point of hampering the handling of the vehicle.

■ The front wheels are visibly out of alignment.

2.1

STEERING WHEEL

a) Maximum play



- ◆ If the vehicle has power steering, the engine should be running, the fluid in the reservoir at the level recommended by the manufacturer and the belt tight enough so that it does not slip.
- ◆ Place the front wheels in the straight-ahead position.
- ◆ Turn the steering wheel from left to right until the wheels move.
- ◆ Align a reference point on the circumference of the steering wheel with a ruler.
- ◆ Turn the steering wheel in the opposite direction until the front wheels move.
- ◆ Measure how far the reference point has moved.

For a vehicle whose net weight is 3,000 kg or less:

■ 51 mm (2 in) for power steering.

■ 75 mm (3 in) for standard steering.

■ 10 mm (3/8 in) for rack-and-pinion steering, power or not.

■ 60 mm (2 3/8 in) for power steering.

■ 87 mm (3 1/2 in) for standard steering.

■ 15 mm (5/8 in) for rack-and-pinion steering.

For a vehicle whose net weight is greater than 3,000 kg:

Power or standard steering:

■ 90 mm (3 1/2 in) where the diameter of the steering wheel is 500 mm (20 in) or less.

■ 100 mm (4 in) where the diameter of the steering wheel is greater than 500 mm (20 in).

Power steering:

■ 180 mm (7 1/8 in) where the diameter of the steering wheel is 500 mm (20 in) or less.

■ 200 mm (8 in) where the diameter of the steering wheel is greater than 500 mm (20 in).

Standard steering:

■ 133 mm (5 1/4 in) where the diameter of the steering wheel is 500 mm (20 in) or less.

■ 200 mm (8 in) where the diameter of the steering wheel is greater than 500 mm (20 in).

b) Mounting and anchorage of steering wheel

Perform a visual and manual inspection by pulling and pushing on the steering wheel in all directions. If the vehicle is equipped with an adjustable steering wheel, make sure the adjustment mechanism is functioning properly.

■ The steering wheel is not firmly attached to the steering column. 

■ The steering wheel does not remain in the desired position (in the case of an adjustable steering wheel). 

■ **The steering wheel does not remain in its normal position and there is a risk of separation.** 

c) Condition

Visually inspect the condition of the steering wheel

■ The steering wheel is warped, cracked, broken, damaged or modified. 

■ The original steering wheel has been replaced with a steering wheel that has an outside diameter of less than 30 cm (12 in) or an uneven surface. 

2.2**STEERING COLUMN AND SLIP JOINT****a) Mounting and anchorage of steering column**

Perform a visual and manual inspection by pulling and pushing on the steering wheel and column in all directions to make sure the column is securely anchored.

■ The steering column is not securely anchored. 

■ A bolt is loose. 

■ **A mounting component is missing, cracked or broken and there is a risk of separation.** 

■ **The steering column has moved from its normal position and there is a risk of separation.** 

b) Column bearing

Check the column bearings and joints according to the following procedure:

- ◆ Turn the steering wheel 1/4 turn to the left and right;
- ◆ Pull and push on the steering wheel in the direction of the column.

■ A bearing rattles, is jammed or obstructed, or the amount of play is outside the specifications. 

c) Joints and slip joint

Check the amount of play in joints, the slip joint and couplings by gently turning the steering wheel from left to right so that the wheels move.

■ A joint or coupling is damaged, slack, repaired by means of welding, jammed, obstructed or has a free play outside the specifications.

■ A slip joint has a rotation play of more than 1.2 mm (0.05 in) between the splines, or a vertical play of more than 6.4 mm (1/4 in) in the shaft.

■ **A slip joint or cross and roller universal joint of the steering column is in imminent danger of breaking.**

■ **A joint in the steering column is in imminent danger of breaking.**

2.3

STEERING BOX OR RACK AND PINION

If the vehicle is equipped with power steering, the engine should be running, the fluid in the reservoir at the level recommended by the manufacturer and the belt tight enough so that it does not slip.

- ◆ Turn the steering wheel from left to right until there is resistance.
- ◆ Visually inspect the steering box or rack and pinion to make sure they are securely mounted.
- ◆ Count the number of turns required to bring the steering wheel from the centre to as far left and right as possible.
- ◆ Check the clearance between the tires and frame or body in every position.

N.B.: Where possible, straight-body trucks should not be loaded during this inspection; otherwise, the inspection should be performed with the front of the vehicle partially lifted or while driving ahead very slowly in an open area.

■ The steering box, auxiliary box or rack and pinion is not securely attached to the vehicle.

■ There is a major oil leak.

■ A mounting component is slack or has been repaired by means of welding.

■ When turned, the steering wheel sticks or becomes blocked.

■ There is a difference of more than one-half turn between the number of turns required to bring the steering wheel from the centre to as far left or right as possible.

■ The clearance between the tire and the chassis frame or body when the steering wheel is turned is less than 25 mm (1 in).

■ **The steering box or auxiliary steering box has moved from its normal position and there is a risk of separation.**

2.4

STEERING LINKAGE

Inspect the steering linkage with the wheels on the ground. If the vehicle is equipped with power steering, the engine should be running, the fluid in the reservoir at the level recommended by the manufacturer and the belt tight enough so that it does not slip.

- ◆ Place the wheels in the straight-ahead position.
- ◆ Turn the steering wheel from left to right until the wheels move.
- ◆ Visually inspect all components and check the amount of play in the direction of the movement or the force applied on the couplings or joints.

Never go underneath a vehicle with its engine running.

■ A mounting component is bent out of shape or has been repaired by means of welding.

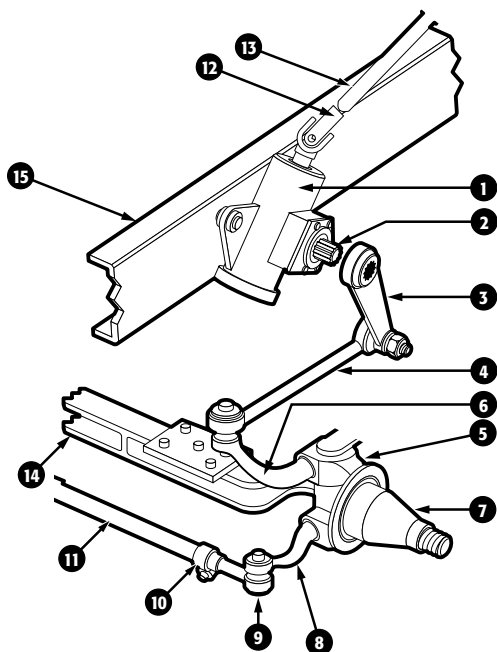
■ A component of the steering linkage is bent out of shape or damaged.

■ There is excessive play in a coupling or joint.

■ **A component of the steering linkage is cracked, broken, not securely mounted, repaired with welds or so damaged as to affect the parallelism of the wheels.**

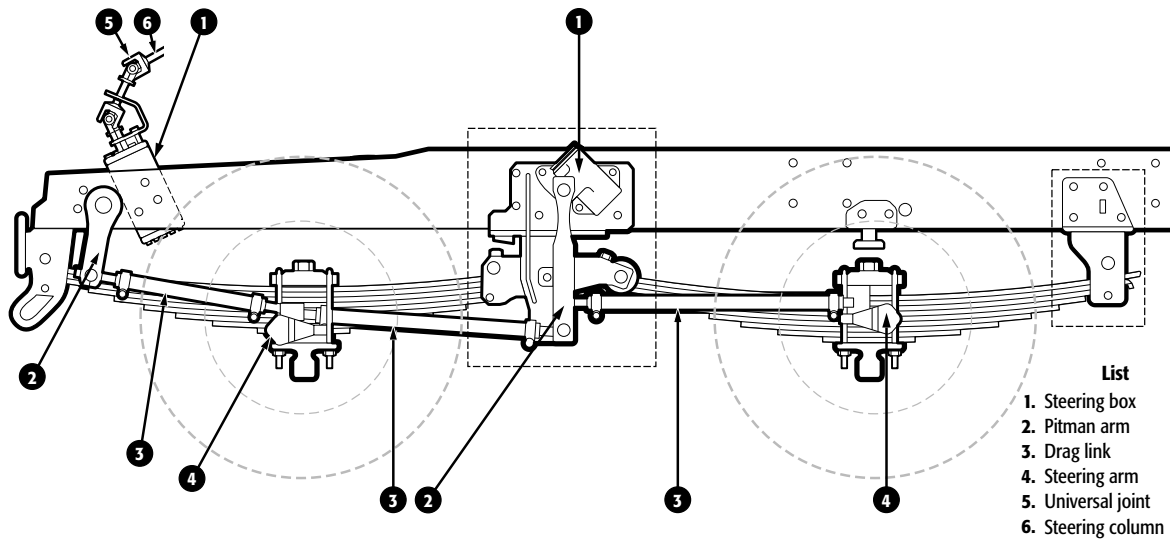
■ **A ball joint of the steering linkage has play exceeding 3.2 mm (1/8 in) in the direction of the movement or the applied force.**

Single-axle steering system

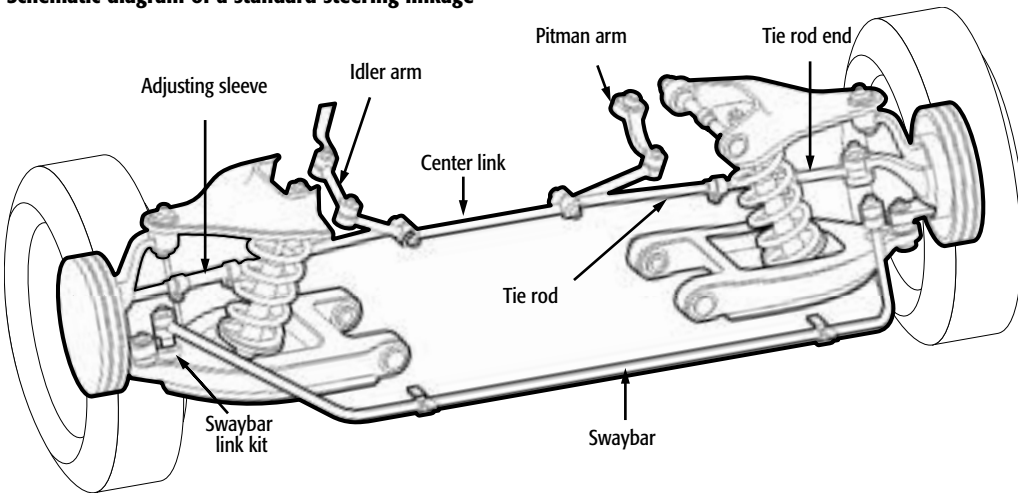


1. Steering box
2. Sector shaft
3. Pitman arm
4. Drag link
5. King pin
6. Steering arm
7. Spindle
8. Knuckle arm
9. Tie rod end
10. Adjusting sleeve
11. Cross tube
12. Universal joint
13. Steering column
14. Front axle
15. Rail

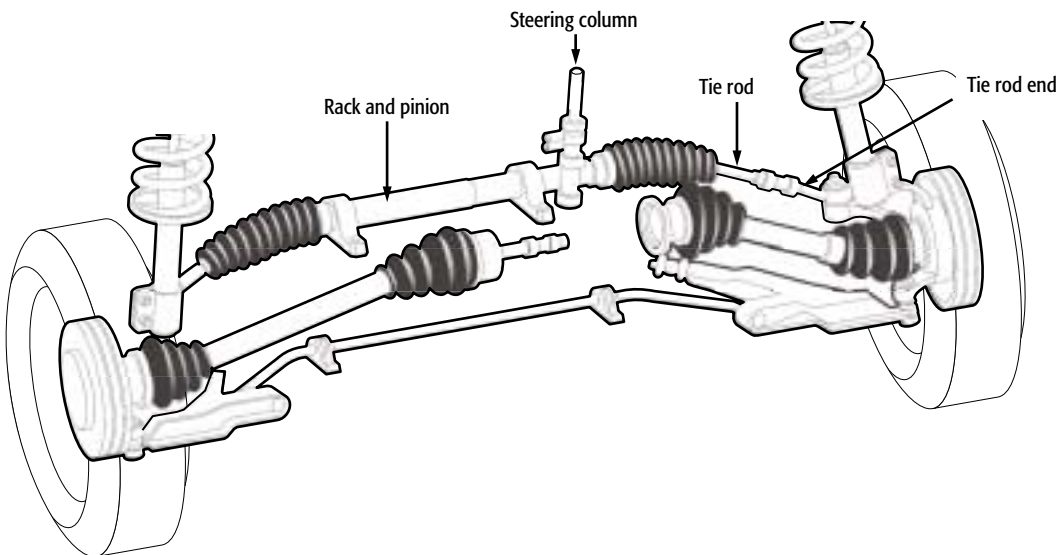
Schematic diagram of a two-axe steering system



Schematic diagram of a standard steering linkage



Schematic diagram of a rank-and-pinion steering system



2.5

POWER STEERING

Visually or manually inspect the following components.
The engine should be off.

a) Fluid level

- The fluid in the reservoir is not at the level recommended by the manufacturer.

b) Belt

- The belt of the pump is not at the tension determined by the manufacturer, slips when the steering wheel is turned, or has a cut in it.

- **The belt has cuts and is in imminent danger of breaking.**

c) Connections and couplings

- A connection or coupling is cracked, damaged or poorly attached.

- A connection is leaking (more than a slight seepage).

- **A connection has a cut and is in imminent danger of breaking.**

d) Pump

- The pump is poorly mounted or leaks other than slight seepage.

- **The pump is poorly mounted and there is a danger of breaking.**

e) Auxiliary cylinder

- The auxiliary cylinder is not firmly attached to the vehicle or leaks other than slight seepage.

- **The auxiliary cylinder is not firmly attached and there is a danger of breaking.**

f) Working order

- ◆ Turn the engine on.
- ◆ Turn the steering wheel to the left and

- The power steering does not function properly.

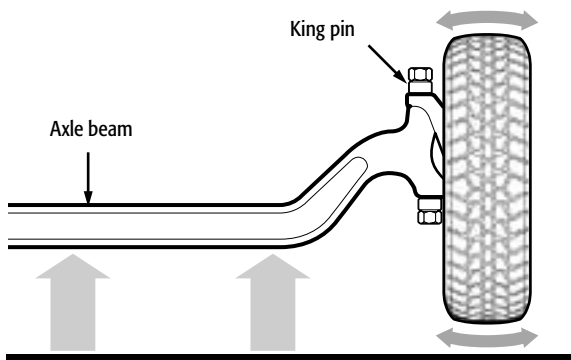
- **The power steering does not function at all.**

NOTE : Where possible, straight-body trucks should not be loaded during this inspection; otherwise the inspection should be performed while slowly advancing the truck a few metres.

2.6

KING PIN

a) Horizontal play



- ◆ Lift the wheels off the ground.
- ◆ As needed, apply the service brakes to eliminate bearing play.
- ◆ Place your hands on the top and bottom of the wheel and swing it back and forth from the inside to outside.

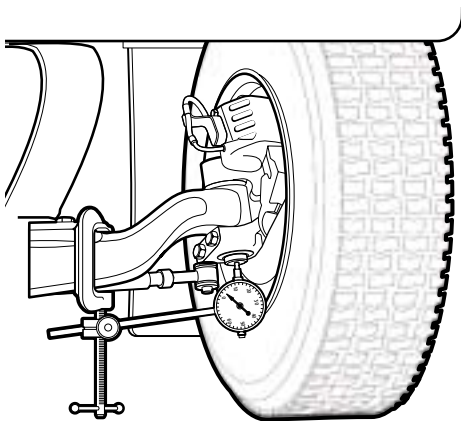
Note : You can also use a pry bar. Insert it in the wheel rim or under the tire.

- ◆ Measure the amount of play in the king pin. If needed, use a micrometer.

- The horizontal play measured at the outside circumference of the tire is greater than:
 - 3.2 mm (1/8 in) where the diameter of the lower rim is 51 cm (20 in);
 - 4.8 mm (3/16 in) where the diameter of the rim is 51 cm (20 in) or more.

- The king pin is seized up.

b) Vertical play



- ◆ Lift the wheels off the ground.
- ◆ Place a pry bar under the wheel and press down.
- ◆ Measure the amount of vertical play between the axle and the bracket of the king pin. If needed, use a micrometer.

- The vertical play measured between the bracket of the king pin and the axle is greater than 2.5 mm (3/32 in).

2.7

BALL JOINTS



- ◆ Depending on the type of suspension system, lift the front of the vehicle so as to unlock the joint to be checked.
- ◆ If necessary, install a micrometer on the suspension arm so as to measure the vertical and horizontal play between the ball joint and its housing.

- Horizontal play

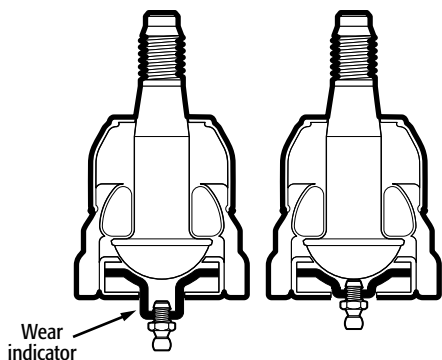
Place your hands on the top and bottom of the tire and try to swing it back and forth.

NOTE : Do not measure the horizontal play where not indicated by the manufacturer.

- Vertical play

Place a pry bar under the tire and lift it enough to offset the weight of the wheel and tire.

N.B.: Where the joints have a wear indicator, perform the inspection with the wheels on the ground.

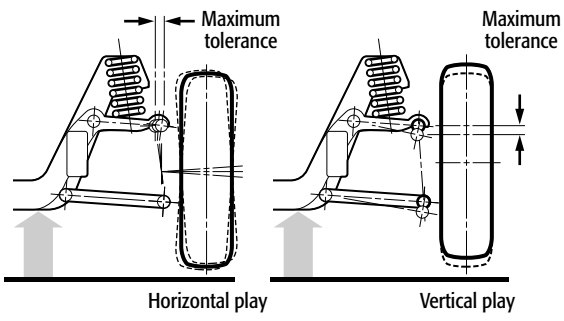


- **A ball joint connected to a suspension arm has 50% more play than the manufacturer's standard or could come out of its housing if knocked.**

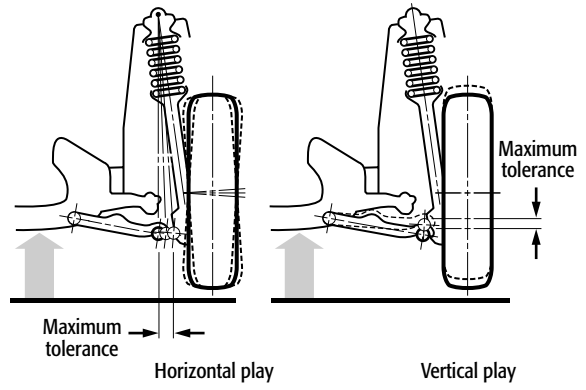
- The vertical or horizontal play measured is greater than that determined by the manufacturer.

- Where a joint has a wear indicator, the position of the indicator is not within the limits determined by the manufacturer.

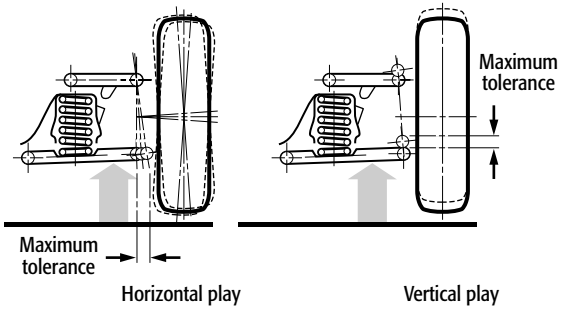
Spring suspension on upper arm



MacPherson strut suspension



Spring or torsion bar suspension on lower arm





3.1

FRAME AND UNDERBODY

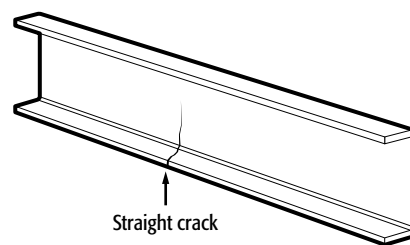
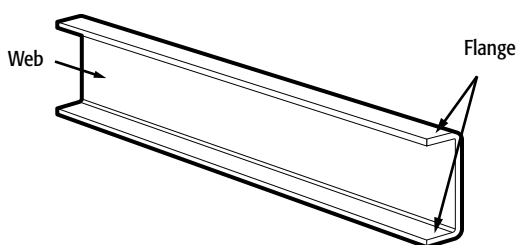
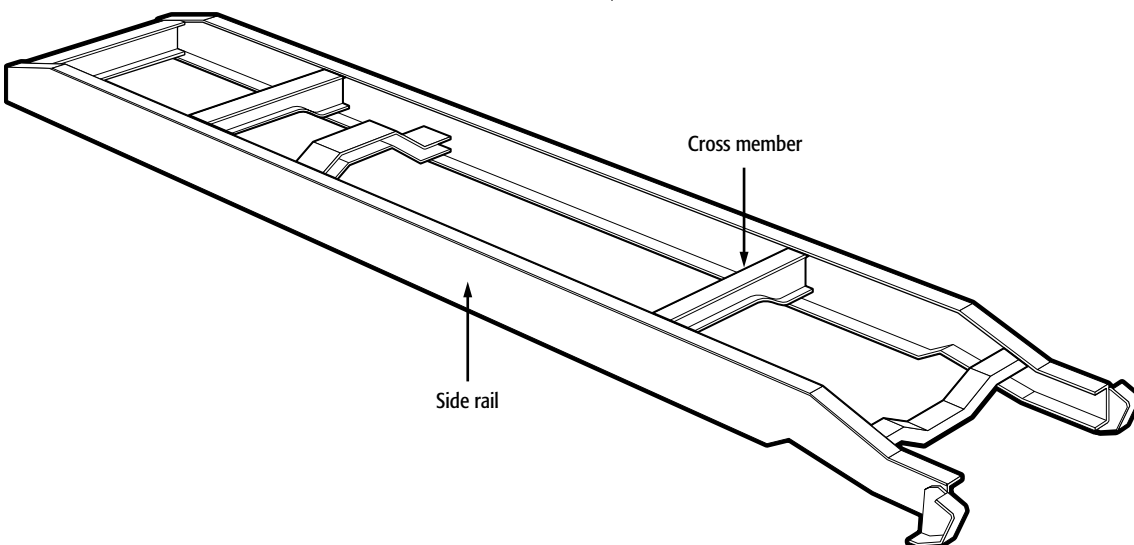
Visually inspect the following components:

a) Side rails

Note: These requirements apply to all types of side rails (single and double channel).

General Information

- A component of the chassis frame is broken, cracked or sags in a way that makes a mobile part and the body touch. 
- A component of the frame is so cracked or broken that it hampers the good working order or reduces the solidity of a steering, suspension, coupling, engine or transmission component. 
- A side rail is broken in a place where there is no stress, cracked, misshapen or perforated by rust. 
- A side rail is in imminent danger of breaking. 
- There is a crack of 37 mm (1 1/2 in) or more in the vertical part of the side rail (web) or a crack of 25 mm (1 in) or more in the horizontal lower part of the side rail (flange). 
- There is a crack beginning in the horizontal lower part of the side rail and extending into the vertical part. 



b) **Cross members**

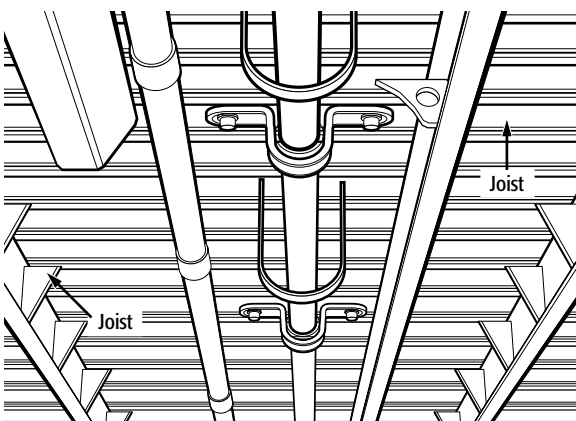
c) **Engine, gearbox, cab supports**

To check the engine supports:

- ◆ Set the parking brake;
- ◆ Put the vehicle in drive or reverse gear;
- ◆ Gently rev the engine.

d) **Parts of the frame used to secure the body, load, load space, suspension and steering**

e) **Floor joists**



■ A cross member is missing, cracked, bent, perforated by rust or not securely mounted.

■ A support is missing, cracked, damaged, broken, bent or not securely mounted.

■ A component is missing, out of order, not securely mounted, damaged, cracked, broken or bent.

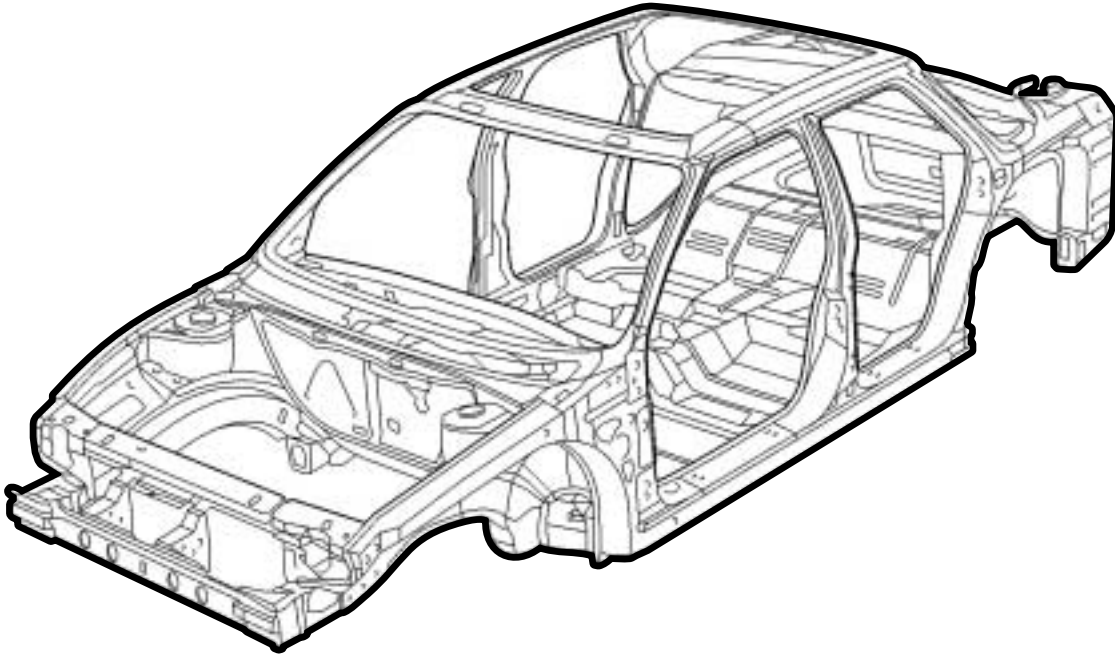
■ A joist is missing, damaged, cracked, broken, bent or not securely mounted.

f) Underbody

Check the structural members of the body, particularly the side rails and profiled-sheet cross members.

N.B.: Monocoque bodies have profiled-sheet cross members instead of the conventional side rails.

- A structural member is missing, cracked, broken, bent, perforated by rust, not securely mounted or not assembled in accordance with the manufacturer's standards.

**3.2****LOAD SPACE**

Visually inspect the following components:

- **Panels, side rails, platform**
- **Fasteners, stoppers**

- A panel, side rail, platform or other element delimiting the load space is not securely mounted.
- The platform or one of the panels is not strong enough to support the maximum loads determined by regulation.
- A bracket, clamp, fastener or stopper is missing, cracked, broken or loose, or worn or corroded to the point that its capacity is reduced.

3.3**LANDING GEAR**

Check the condition and working order of the landing gear by performing a visual and manual inspection.

- A component of the landing gear is blocked, seized up, warped, cracked or not properly mounted.
- The hold-down mechanism does not function.

3.4

SLIDING BOGIE

Check the following components:

a) Side rails of sliding bogie

- A side rail is cracked, broken or seized up. 
- A side rail is in imminent danger of breaking. 
- There is a crack of 37 mm (1 1/2 in) or more in the vertical part of the side rail (web) or a crack of 25 mm (1 in) or more in the horizontal lower part of the side rail (flange). 
- There is a crack beginning in the horizontal lower part of the side rail and extending into the vertical part. 

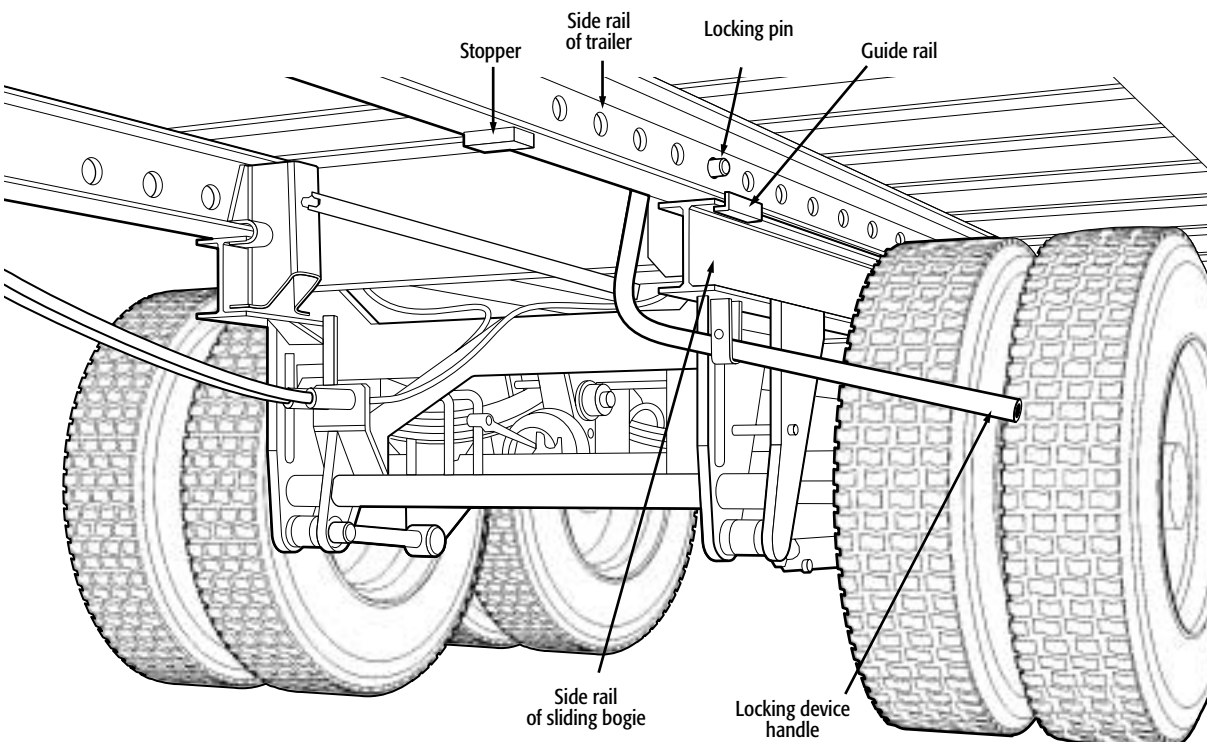
b) Locking and hold-down device

Activate the device

- The locking and hold-down device is missing, out of order, damaged, cracked, broken or seized up. 
- More than 25% of the locking pins in the sliding bogie are missing or not engaged. 

c) Stoppers

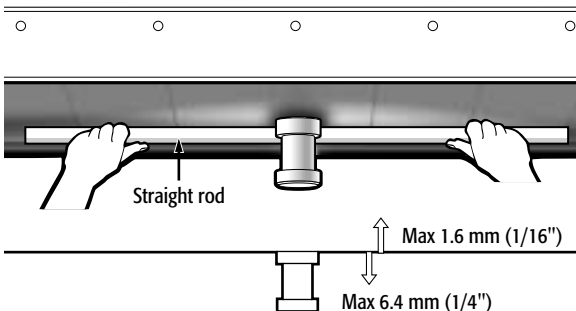
- A stopper is missing, cracked or broken. 



3.5

UPPER COUPLER

Visually inspect the mounting of the upper coupler or plate and measure the curve of the upper coupler using a straight rod at least one metre long and a slide caliper.



■ The upper coupler is curved downwards more than 6.4 mm (1/4 in), or more than 1.6 mm (1/16 in) upwards within a radius of 483 mm (19 in) measured from the king pin.

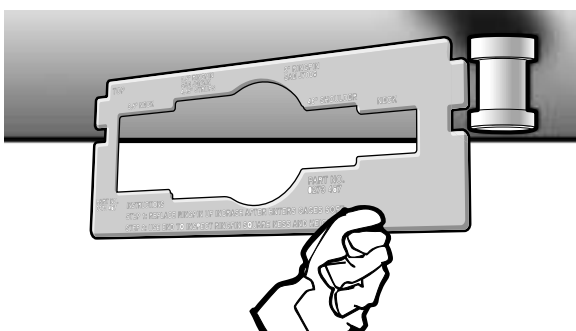
■ The upper coupler is corroded to the point of weakening its resistance or the solidity of its mounting to the vehicle.

■ The upper coupler is cracked, not securely mounted, or warped to the point of adversely affecting the coupling.

3.6

KING PIN

Visually inspect the mounting and condition of the king pin, measure its wear with an appropriate tool and check the angle using a square that is longer than 40 cm (16 in) on one side.

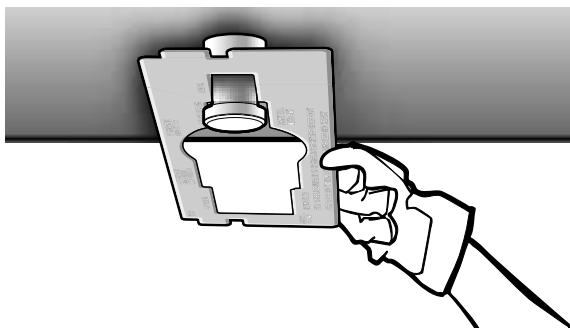


■ The king pin and upper coupler are not at a right angle respectively in all directions.

■ The king pin has been repaired by means of welding.

■ The king pin is worn such that the diameter in a given spot is reduced by more than 3.2 mm (1/8 in).

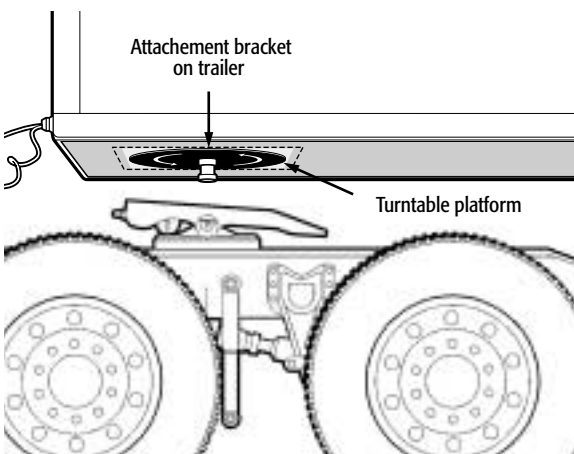
■ The king pin is cracked, not securely mounted, or warped to the point of adversely affecting the coupling.



3.7

TURNTABLE PLATFORM

If the upper coupler and king pin are mounted on a turntable platform, visually inspect the safety, working order and vertical play of the mounting using a micrometer.



- The platform is not securely mounted, the bearings are seized up or there is a vertical play of more than 6.4 mm (1/4 in).



3.8

FIFTH WHEEL

Visually inspect the following components:

General Information

- A component of the coupling device is not firmly attached to the towing vehicle, is cracked, broken, bent, missing, worn or so poorly adjusted that it might break or rupture.
- More than 20% of the fasteners on the coupling device are missing or ineffective.

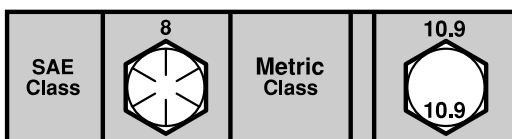


In the case of a tractor coupled with a semi-trailer:

- The king pin is not properly engaged.
- There is movement between a fastener of the coupling device and the frame of the tractor or semi-trailer.
- The horizontal play between the king pin and the jaws exceeds 12.8 mm (1/2 in).



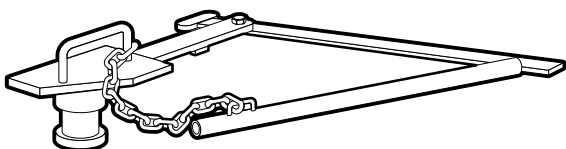
a) Supports



- A support is broken, cracked, bent, has been repaired by means of welding or is not firmly attached to the vehicle, or a bolt is loose, missing or of a class lower than SAE Class 8 (or 10.9 mm).



b) Jaws and locking device



For tractors not coupled with a semi-trailer, the jaws and locking device are checked using a tool attached to a king pin.

For a combination of road vehicles, the play between the jaws and the king pin is measured as follows:

- ◆ Apply the trailer brake;
- ◆ Back the trailer up;
- ◆ Put a mark on both parts of the coupling device;
- ◆ Drive the tractor forward and apply the service brake;
- ◆ Measure the space between the two marks.

c) Jaw tow pins

d) Coupling plate

e) Pins of coupling plate

- In the case of a combination of vehicles or using an appropriate tool, the horizontal play between the jaw and kingpin exceeds 6.4 mm (1/4 in).

- **The jaw or locking device is seized up, not properly adjusted, cracked, broken or has been repaired by means of welding.**

- A tow pin is loose.

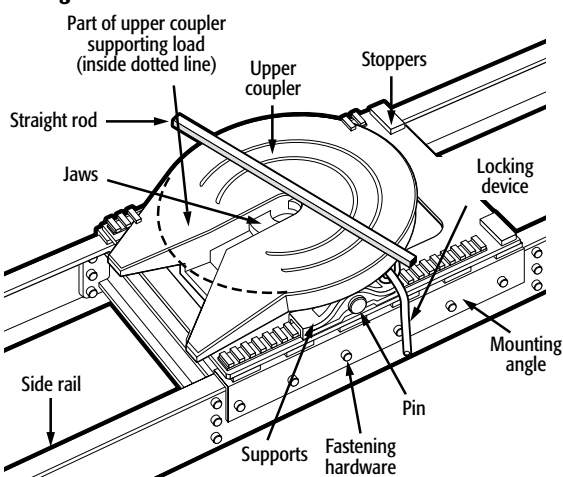
- The plate is cracked, broken, bent or has been repaired by means of welding.

- **There is a crack, weld or break in a part of the coupling plate that bears a load or is subject to tension or shear stress.**

- The horizontal play between the pins exceeds 9.5 mm (3/8 in).

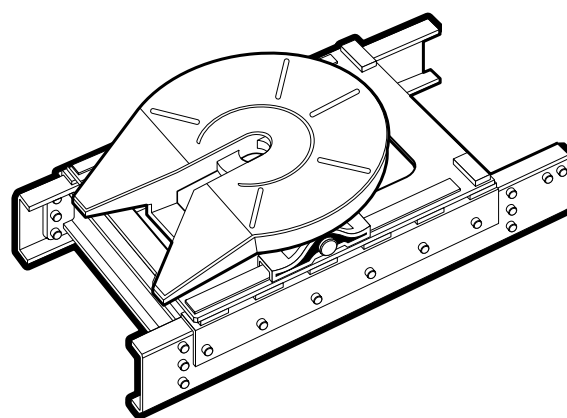
f) Slide supports and stoppers in sliding king pins

Sliding fifth wheel



- A front or rear stopper is missing or not firmly attached. 
- A sliding support is cracked or worn. 
- The side, vertical or lengthwise movement of the sliding support is greater than 6.4 mm (1/4 in) in locked position. 
- More than 25% of the locking pins on either side of the king pin are missing or not working. 
- The lengthwise play in the locking mechanisms of the slides exceeds 9.5 mm (3/8 in). 

Stationary fifth wheel

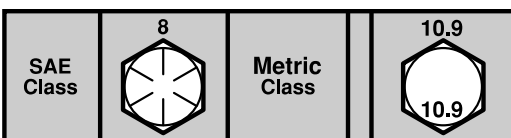


3.9

OTHER COUPLING DEVICES

Visually inspect the following components:

a) Supports



General Information:

- The coupling device is not securely mounted or a component is cracked, broken, bent, missing, seized up or so worn that it hampers the smooth operation. 
- A cast or forged part shows signs of welded repairs. 
- More than 20% of the fasteners on a component of the coupling device are missing or ineffective. 
- A component of the coupling device is not securely mounted, is cracked, broken, bent, missing, worn or so poorly adjusted that it might rupture or fall off. 
- There is a crack, weld or break in the part of the coupling device that bears a load or is subject to tension or shear stress. 
- A support is not securely mounted. A bolt is loose, missing or a lower class than Class 8 or the size determined by the manufacturer for tow trailers of a net weight greater than 3,000 kg. 

b) Locking device

- The locking device is inadequate, poorly suited, seized up, worn, has too much play, does not engage or is not equipped with a double safety catch.

c) Pintle hook and eye of drawbar

- The pintle hook or eye of the drawbar is cracked, broken, has been repaired by means of welding, or shows sign of wear in excess of 4.8 mm (3/16 in) at the point of contact with the other component.
- Where the hook has an air-play compensating device, there is an air leak in the system.
- The wear on the pintle hook or eye at their point of contact exceeds 9.5 mm (3/8 in).**

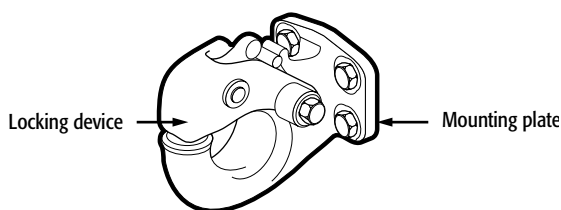
d) Drawbar

- The drawbar is bent, broken or cracked, or one of its parts is missing, not firmly attached or so worn that it no longer has the required mechanical resistance.

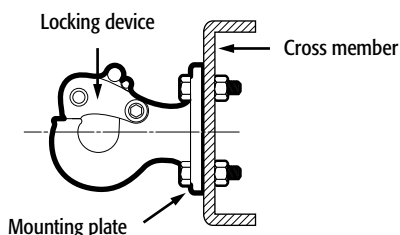
e) Safety fasteners and coupling components
(steel cables, chains, hooks, coupling sleeves, shackles, etc.)

- A safety fastener or coupling component is missing, worn, abraded, cracked, broken, loose, corroded or not securely fastened.

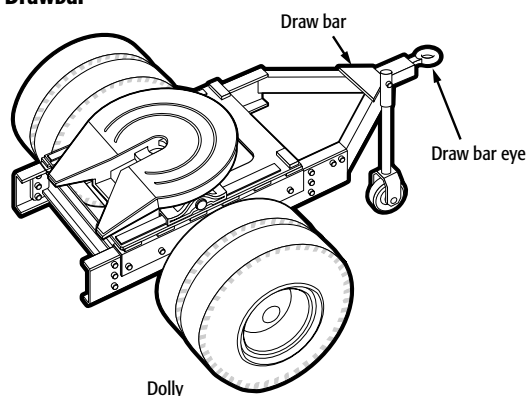
Pintle hook



Pintle hook



Drawbar





GENERAL INFORMATION

Visually and manually inspect the suspension system to make sure it is in good condition and proper working order. If necessary, partially lift the vehicle by the frame so as to release the tension on the springs and check the following components.

■ A component is missing, warped, damaged, inadequate, not securely fastened or has been repaired by means of welding when it could have been replaced.

■ A component for mounting or positioning the axle or wheel to the road vehicle is cracked, broken, not firmly attached, out of place, warped, missing or welded.

■ the level that existed when the vehicle was manufactured.

■ An axle is warped, has welded repairs, is not properly aligned or is not centred.

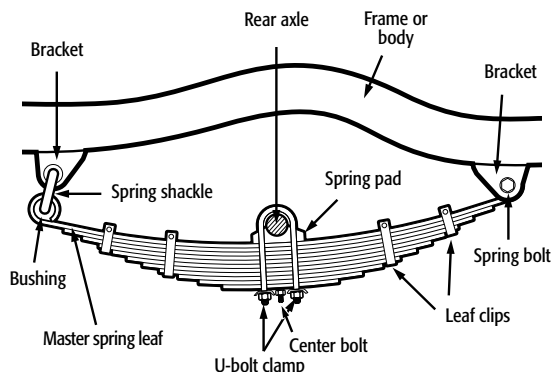
■ The suspension allows a tire to touch the body or frame under normal conditions of use.

■ **A component for mounting or positioning the axle or wheel to the vehicle is missing, not securely attached, broken, damaged in a way that affects the parallelism of the wheels or that lets the axle or wheel move out of its normal position.**

■ **An axle or equalizing beam is cracked or broken.**

a) Springs

- Leaf spring
- Coil spring
- Torsion bar spring

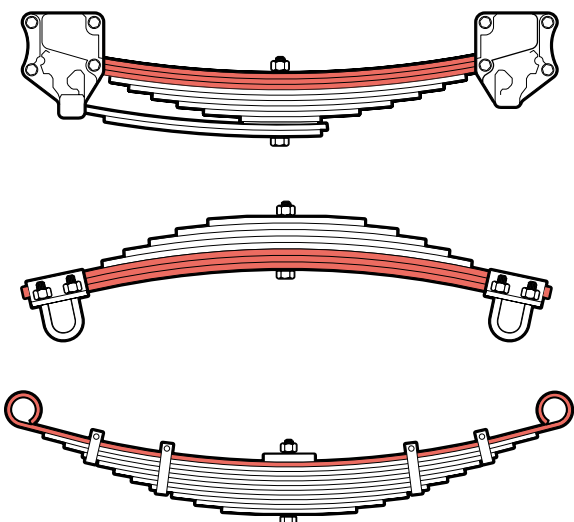


N.B.: Requirements apply regardless of the number of master spring leaves.

N.B.: "Master spring leaf" means any leaf in a leaf assembly of which one end touches or extends beyond:

- The contact surface of the leaf support or equalizing beam (see diagram below).
- The spring eye (see diagram below).

Below are some examples of master spring leaves.



■ A spring leaf is broken, missing, cracked, not firmly attached, out of alignment, or has a welded repair.

■ A coil spring is broken, not firmly attached, or spacer has been installed between the spirals.

■ A spring is so subsided that one side of the vehicle is more than 50 mm (2 in) lower than the other side or there is contact with a rubber bumper.

■ A torsion bar is not securely attached or has been repaired by means of welding.

■ A torsion bar is in poor working order.

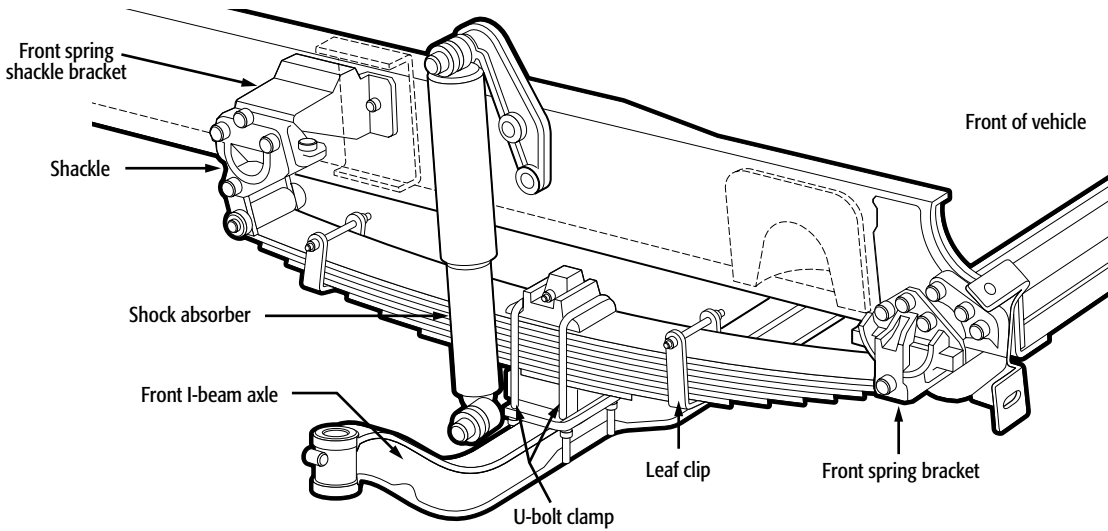
■ **A torsion bar is broken or cracked.**

■ **A coil spring or torsion bar is so cracked or broken that the vehicle is completely sagged.**

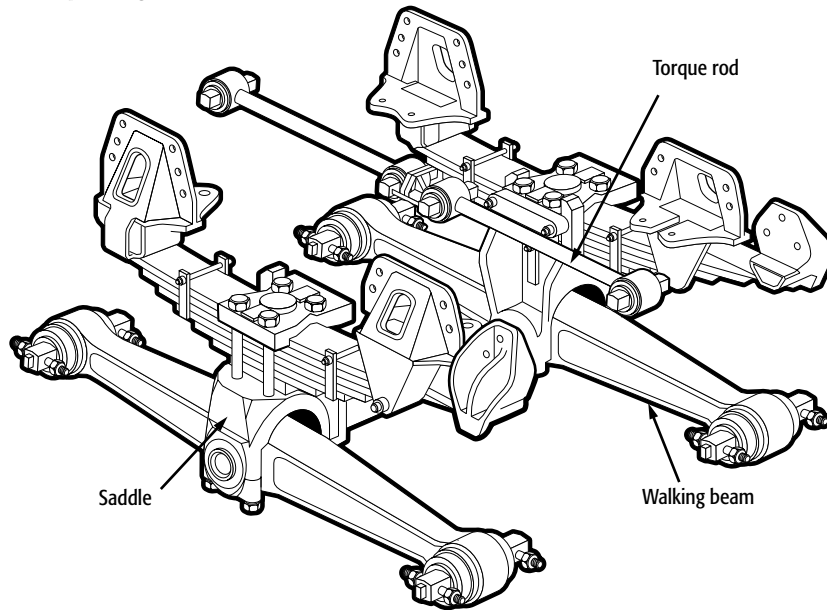
■ **A leaf or coil spring is so out of place that it touches a rotating part.**

■ **A master leaf or 25% or more of the leaf springs of the assembly are broken or missing.**

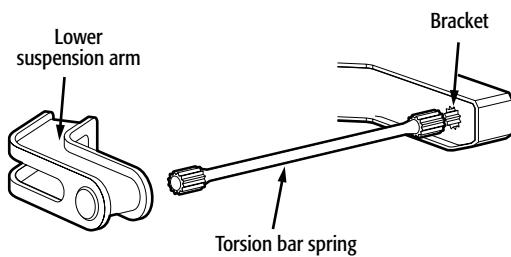
Front spring suspension



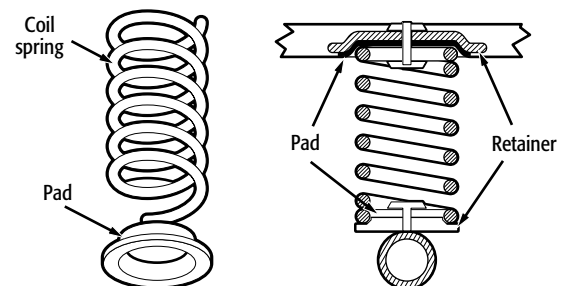
Spring suspension and equalizing beam



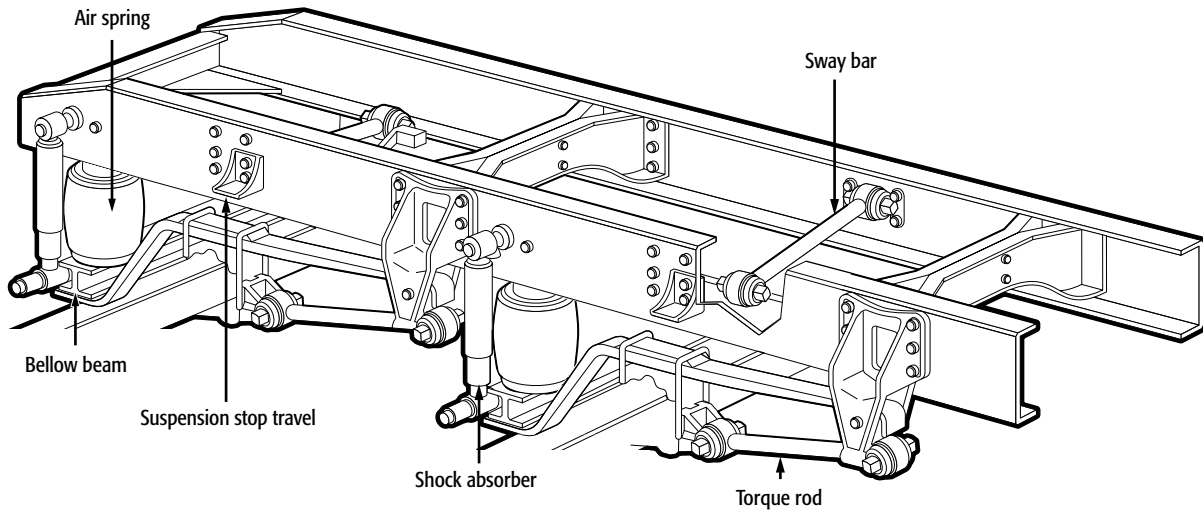
Torsion bar spring



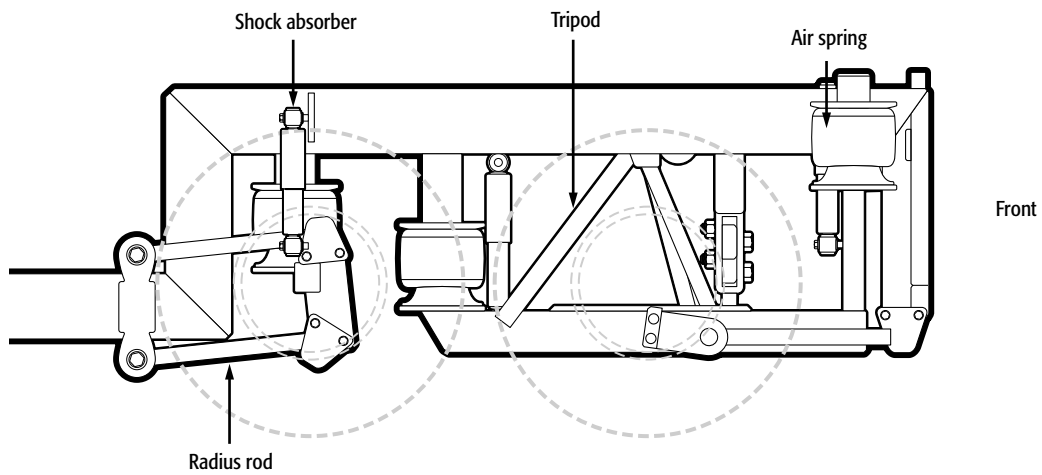
Coil springs



Air suspension



Air suspension (inter-city buses)



b) Clips

- A clip is not properly installed.

c) U-bolt clamp

- A U-bolt clamp is cracked, not properly installed or has been repaired by means of welding.

d) Centre bolt

- A centre bolt is missing or broken.

e) Leaf support and brackets

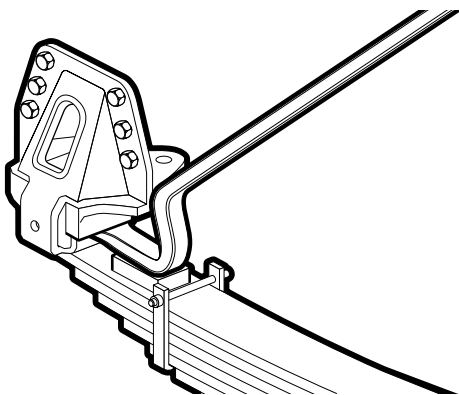
N.B.: Wear plates may be installed.

- A component supporting a leaf spring is not securely fastened, has a welded repair, or is cracked, broken, missing or worn more than 3.2 mm (1/8 in) for a vehicle with a net weight of less than 5,500 kg and more than 6.4 mm (1/4 in) for any other vehicle.

- A bracket is not securely installed, is cracked or broken, or a cast or forged part bolted in place has been repaired by means of welding.

f) Shackles, bushing and axis

A pry bar may be required to check the amount of play between the bushing and axis.



- A shackle is not securely installed, is warped or cracked.

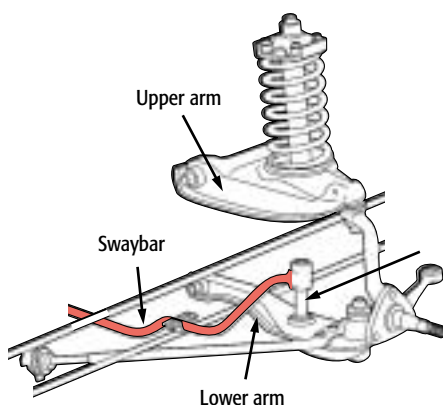
- The bushing is missing or severely damaged (the flexible material from which the bushing is made has several deep cuts that could hamper its performance).

- The play between the bushing and the axis exceeds 2 mm (3/32 in) where the diameter of the axis is 24 mm (1 in) or less, or 3.2 (1/8 in) where the diameter is over 24 mm (1 in).

g) Suspension arm

- The suspension arm is warped, damaged, cracked, perforated by corrosion, not securely mounted or has been repaired by means of welding.

h) Stabilizer bar and stabilizer bar link kit

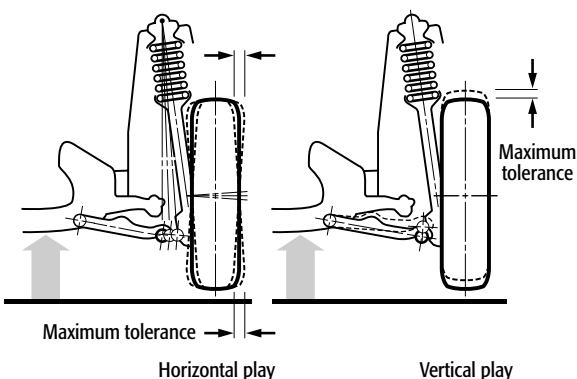


■ The stabilizer bar or stabilizer bar link kit is missing, warped, cracked, broken, not securely installed, or has been repaired by means of welding.

■ A pad is missing or damaged to the point that there is too much play in the stabilizer bar.

i) MacPherson struts

- ◆ Lift the vehicle until there is no weight on the suspension system.
- ◆ Place your hands on the top and bottom of the tire and swing it back and forth (see section 2.7, page 26, for horizontal play).
- ◆ Check the horizontal play at the outside circumference of the tire.



■ The strut is damaged or shows wear exceeding the manufacturer's standards.

■ The horizontal play is 5 mm (7/32 in) or more.

■ A strut or one of its brackets is cracked or broken.

■ A strut fastener has too much play.

j) Travel stopper

■ The travel stopper is missing, not securely fastened or seriously damaged.

k) Equalizing beam

N.B.: Welded repairs to cast or forged equalizing beams or saddles are prohibited.

The amount of play in the centre bushing of the equalizing beam can be checked by turning the wheels sharply or by observing whether turning the wheels leaves tire marks on the frame.

■ The play in the centre bushing of the equalizing beam exceeds 6.4 mm (1/4 in) or results in over 8 cm (3.2 in) side movement of an axle or contact between the tire and frame during turning.

■ The equalizing beam is warped, damaged, not securely mounted or has been repaired by means of welding.

l) Shock absorber

Visually and manually inspect the shock absorbers, supports, bolts and rubber pads. For vehicles whose net weight is less than 3,000 kg, check the efficiency of the shock absorbers by pushing down and quickly releasing each corner of the vehicle and observing the spring.

■ A shock absorber is missing, poorly installed, cracked, broken, damaged or not functioning.

■ A shock absorber has a major leak.

■ A corner of the vehicle springs up and down more than twice.

■ A support is cracked, broken or not firmly attached.

m) Air spring and air supply system

In vehicles with air suspension systems, check the air spring and air supply system.

■ An air spring leaks, is not securely mounted on the structure or is so cut or cracked that the cord is exposed.

■ A line, valve or connection has an air leak.

■ Air is supplied to the system before the air pressure in the braking circuit reaches 450 kPa (65 psi)

■ The air pressure adjustment valve is inadequate.

■ **There is an air leak in the suspension system that cannot be offset by the compressor when the engine is idling.**

n) Torque rod

Check the play in the torque rod by placing a pry bar under each extremity and then pressing down.

N.B.: Welding of a torque rod is allowed where required to adjust the length of a replacement beam supplied in two pieces.

■ The torque rod is not securely mounted, is damaged, cracked, broken or has been repaired by means of welding.

■ The bearing, ring or sleeve is damaged or shows significant play in the axle.

GENERAL INFORMATION

N.B.: Where a heavy vehicle was manufactured with service brakes on the front axle, the brakes must be present and adequate.

N.B.: Every truck tractor manufactured after May 7, 1993 must be equipped with service brakes on the front axle.

N.B.: The internal components of the service brakes can be inspected through the inspection holes provided for this purpose.

- 

■ The brake pedal is not non-slip, not firmly attached, not properly aligned or is crimped.
- 

■ **There is no braking or there is a significant reduction in the braking capacity due to the absence or inadequate operation of a component of the braking system:**
 - On one wheel or a dual wheel assembly in the case of a road vehicle with one or two axles;
 - or
 - On two single wheels or two dual wheel assemblies in the case of a vehicle with three axles or more.
- 

■ **There is no braking on a wheel of the single steering axle where the manufacturer equipped that axle with a braking system.**
- 

■ **One of the components of the braking system is not securely mounted, is missing, seized up, damaged, deteriorated or worn in a way that considerably reduces the good working order of the brakes.**

5.1

PARKING BRAKE

Inspect the parking brake according to the following procedure:

- ◆ Park the vehicle on a flat, level surface;
- ◆ Set and release the parking brake to make sure the cables and linkages work properly;
- ◆ Fully set the parking brake while the engine is idling;
- ◆ Place the gearshift lever in the "Drive" position in the case of an automatic transmission or, in the case of a manual transmission, in the highest gear that will allow a normal forward start;
- ◆ Gently attempt to drive the vehicle forward.

PARTS AND PROCEDURES	DESCRIPTION OF DEFECT
a) Working order	- The brake does not prevent the vehicle from moving.  - The brake cannot be fully engaged or disengaged. 
b) Mechanism	- The application mechanism does not maintain the parking brake in the desired position.  - The mechanism becomes stuck or does not function. 
c) Brake linings (if they are separate from the service brake linings in the case of trucks and buses equipped with hydraulic brakes).	The linings have come unbound from their support, are broken, contaminated by oil or grease, cracked more deeply than half the remaining thickness, not securely attached to the support, worn in an extremely uneven way or are less than 1.6 mm (1/16 in) thick at the thinnest point excluding the bevelled part. 
d) Brake system warning light (where applicable)	The warning light does not come on. 
e) Cables (where applicable)	A cable is frayed, seized up, missing, broken, not connected or not securely attached. 

5.2 HYDRAULIC BRAKING SYSTEM

5.2.1 Fluid power circuit

Visually inspect the following components:

a) Rigid or flexible tubing

General Information

■ **When the service brake is engaged, brake fluid leaks (other than weeping) along the system.** 

■ Tubing is cut, crushed, crimped, welded, worn, not securely attached, excessively corroded, so cracked that the rib is exposed, does not comply with the manufacturer's standards for its application, or shows signs of weeping. 

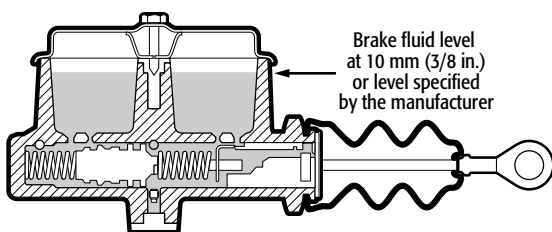
■ **A flexible tube bulges when under pressure.** 

b) Fittings

- A fitting is welded, extremely corroded, does not comply with the manufacturer's standards for its application, or shows signs of weeping.

c) Master cylinder

- ◆ Visually inspect the master cylinder and its fasteners and fittings.
- ◆ Check the fluid level.



- The master cylinder is not securely mounted, shows signs of seepage, or the cover is missing or loose, the brake fluid level is below the level specified by the manufacturer or, where no level is specified, is over 10 mm (3/8 in) below the edge of the filler opening.

- **The level of the brake fluid in the master cylinder is lower than one quarter of the normal full level.**

d) Brake system warning light

Turn the ignition switch to the "ON" position with the engine turned off, or to the "START" position and check to see if the light comes on.

Start the engine and depress the brake pedal with approximately 550 Newton (125 lb) of force, or 265 Newton (60 lb) in the case of hydraulic power brakes, and check to see if the light comes on.

N.B.: Make sure the parking brake is disengaged if it shares the same warning light.

- The light does not come on when the ignition switch is turned to the "ON" position when the engine is off, or to the "START" position.

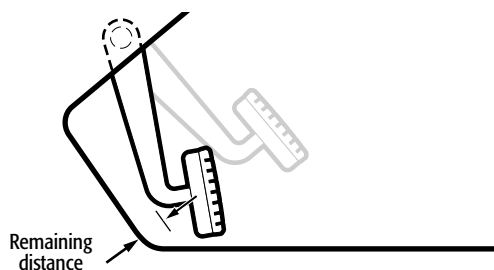
- The light stays on once the engine has started.

- The light comes on when the brake pedal is depressed with a heavy force.

5.2.2 Hydraulic brake pedal

Check the travel of the brake pedal according to the following procedure:

- ◆ start the engine;
- ◆ measure the distance between the brake pedal and the floor wall;
- ◆ depress the pedal with approximately 550 Newton (125 lb) of force, or 265 Newton (60 lb) in the case of hydraulic power brakes;
- ◆ measure the remaining distance between the pedal and floor.



- The surface of the brake pedal is not non-slip.

- The pedal drops when force is applied.

- The travel of the pedal exceeds 65% of the total possible travel.

- **The pedal has to be depressed several times in order to pressurize the circuit.**

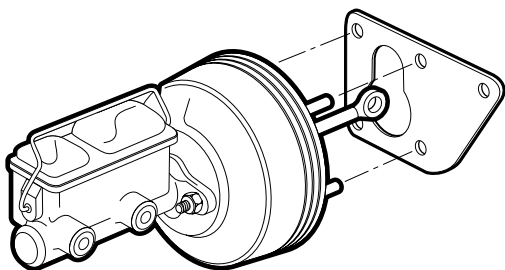
- **The brake pedal reaches the floor in less than 10 seconds.**

- **The travel of the pedal exceeds 80% of the total possible travel.**

5.2.3 Power brake

(Hydraulic braking system)

Turn the engine off, depress the brake pedal several times to eliminate pressure in the accumulator and then depress it again with approximately 90 Newton (20 lb) of force. Start the engine and check the movement of the pedal.

a) Vacuum brake booster

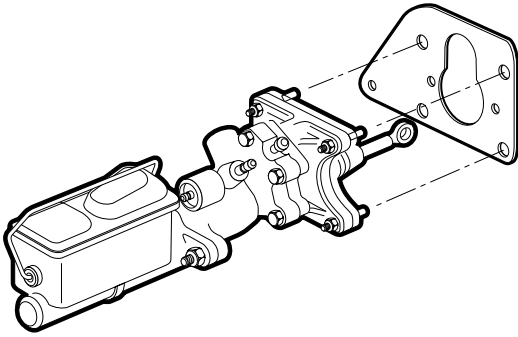
Perform a manual inspection of the following components:

- Vacuum-operated rigid and flexible tubing.
- Power reserve and warning light or buzzer:
 - Start the engine;
 - Wait until the vacuum is established;
 - Turn the engine off;
 - Depress the brake pedal three times.
- Pump

Depress the brake pedal so as to remove any vacuum. If the system also uses vacuum from the engine, disconnect this source. Rev the engine to around 1200 rpm.
- Compressor belt
- Reservoir
- Pressure gauge
- Filter

- The compressor belt is cut, extremely worn or loose.
- **The belt has a cut that will likely lead to a breakdown.**
- The pedal does not drop slightly.
- The power brake is of no help to the driver when the brakes are applied with the engine off.
- The power brake does not work.

- A tube is cut, crushed, crimped, cracked, broken, worn or not attached properly.
- There is not enough power in reserve for three assisted service brake applications.
- Where the warning buzzer functions, there is not enough power in reserve for one assisted service brake application.
- The pump is unable to provide or maintain a minimum vacuum of 4.5 kPa (18 psi).
- The pump is not securely mounted.
- The reservoir is missing, damaged, not securely mounted, or leaks.
- The pressure gauge is in poor working order.
- The filter is so clogged that performance of the brake system is reduced.

b) **Hydraulic power brake**

- Electric pump
- Belt
- Reservoir

c) **Pneumatic power brake**

See Section 5.5 for inspection procedure.

5.2.4 Brake cylinders and calipers

(Hydraulic braking system)

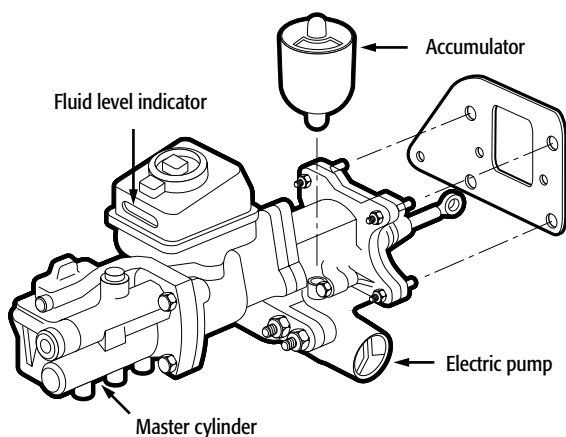
Visually inspect the above components.

- The reservoir of the pump is not securely mounted or shows visible signs of leakage, or the fluid level is below the level recommended by the manufacturer. 
- The pump is not securely mounted or leaks. 
- **The pump (electric) does not function when the engine is turned off.** 

- A cylinder shows signs of weeping, or the piston is seized up. 
- A caliper is seized up or shows signs of weeping. 

5.3

ANTI-LOCK BRAKING SYSTEM



Start the engine and check the brake system warning light.

N.B.: In certain types of heavy vehicle, the vehicle must drive at a speed of over 10 km/h for the warning light to go off.

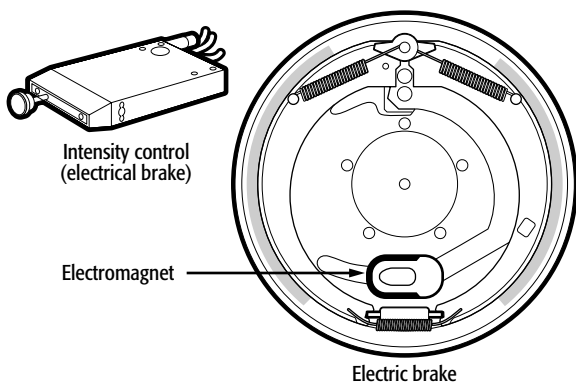
- The brake system warning light does not go on during the built-in test cycle, or it remains lit.



5.4

ELECTROMAGNETIC BRAKING SYSTEM

In addition to the common components of all braking systems (fasteners, drums, linings, etc.), check the electromagnets and wiring.



- An electromagnet is missing, out of order or not solidly attached.
- An electric cable, plug or coupling is missing, short-circuited, broken, frayed, corroded, damaged or not securely attached to the appropriate fastener or connection.
- The electric brake circuit is not independent of another circuit.
- The circuit is grounded on the hitch.



5.5

AIR BRAKING SYSTEM AND COMPONENTS

Visually inspect the following components:

a) **Rigid and flexible tubing**

- A tube is cut, crushed, crimped, welded, worn, not attached properly, extremely corroded, so cracked that the cord is exposed, does not comply with the manufacturer's standards for its application, or shows signs of leakage. 
- **A flexible tube bulges when under pressure.** 

b) **Couplings or glad hands**

- A coupling or glad hand is damaged, cracked, corroded, not securely attached, leaking, or the gasket is damaged. 
- **A coupling does not comply with the manufacturer's standards for its application.** 

c) **Air reservoirs**

- Mounting brackets and straps
- Drain cocks (automatic or manual)

- The reservoir is not securely mounted, is cracked, extremely corroded, welded (excluding welds done by the manufacturer) or shows visible signs of leakage. 
- A mounting bracket is cracked, broken or missing. 
- A replacement part (e.g. chain) is not suited to the purpose. 
- A drain cock is missing, not installed properly or not working. 

d) **Air compressor and mounting bracket**

N.B.: the engine should be turned off

- Belts
- Air filter
- Pressure gauge
- Pulley

- The air filter is missing or clogged to the point of restricting air passage. 
- The pressure gauge is missing or out of order, or malfunctions. 
- **The air compressor is not securely mounted.** 
- The belt has a cut, is extremely worn or is loose (maximum pressure cannot be maintained). 
- **The driving belt of the air compressor has a cut that will very likely lead to a breakdown.** 
- **The pulley is cracked or broken.** 

5.6

WORKING ORDER OF AIR BRAKING SYSTEM

a) Compressor performance

Reduce the air pressure to below 350 kPa (50 psi). Rev the engine to 1200 rpm and note how long it takes to raise the pressure to 350-620 kPa (50-90 psi).

- It takes longer than 3 minutes.

- **The compressor is unable to reach or maintain a minimum pressure of 620 kPa (90 psi) when the engine is idling and the service brake is fully applied.**

b) Pressure regulator

Check the following while the engine is running:

- ◆ Pressure at which compressor is stopped

Note the reading on the pressure gauge when the regulator cuts the pressure.

- ◆ Pressure at which compressor starts

Place chocks under the wheels and disengage the parking brake. Quickly depress the service brakes several times to reduce the air pressure and take the reading on the pressure gauge when the regulator starts the compressor.

- The air pressure is not between 805 and 945 Kpa (115 and 135 psi) when the regulator stops the compressor.

- The air pressure is below 550 kPa (80 psi) when the regulator starts the compressor.

c) Low-pressure warning light or buzzer

Reduce the air pressure in the system to below 380 kPa (55 psi) and check to see if the warning light or buzzer goes on or sounds.

- The low-pressure warning light or buzzer is missing or does not activate when the air pressure in the system is less than 380 kPa (55 psi).

d) Air pressure

- ◆ Check the air pressure while applying the service brake

With the air pressure at its maximum, the parking brake disengaged and the engine turned off, depress the service brake as far as possible for one minute and then read the pressure loss on the pressure gauge.

- The air pressure loss after the service brake has been applied for one minute exceeds:
 - single-unit road vehicle: 20 kPa (3 psi)
 - 2 vehicles: 28 kPa (4 psi)
 - 3 vehicles: 35 kPa (5 psi).

- **The air pressure loss after the service brake has been applied for one minute exceeds:**
 - single-unit road vehicle: 40 kPa (6 psi)
 - 2 vehicles: 48 kPa (7 psi)
 - 3 vehicles: 62 kPa (9 psi).

e) Pressure loss through service brake activation

With the air pressure at its maximum, the parking brake disengaged and the engine turned off, fully apply the service brake for one minute and then read the pressure loss on the pressure gauge after a single application.

- The pressure loss exceeds 130 kPa (19 psi), or 20% in the case of a combination of vehicles.

**f) Check valve of air brake reservoirs**

With the air pressure at its maximum, open the drain cock of the supply reservoir. The check valve should close and retain air in the service reservoirs.

- The valve is missing or does not close.

**g) Relay valves**

Release the spring brakes, apply the service brakes and check the brake chambers supplied by the relay valve. Release the brakes.

- When the brakes are released, the holes in the relay valve do not let air out quickly.



- The relay valve is not securely installed.

**h) Protection valve of truck tractors**

- ◆ Disconnect the air hoses from the semi-trailer
- ◆ Raise the air pressure to at least 700 kPa (100 psi)
- ◆ Turn the engine off, press the trailer air supply valve button and check for the expulsion of compressed air from the air hose.

- The protection valve of the truck tractor does not maintain a minimum air pressure of 140 kPa (20 psi) in the system.



- The protection valve of the truck tractor is not working.



5.7 WORKING ORDER OF MECHANICAL COMPONENTS OF AIR BRAKING SYSTEM

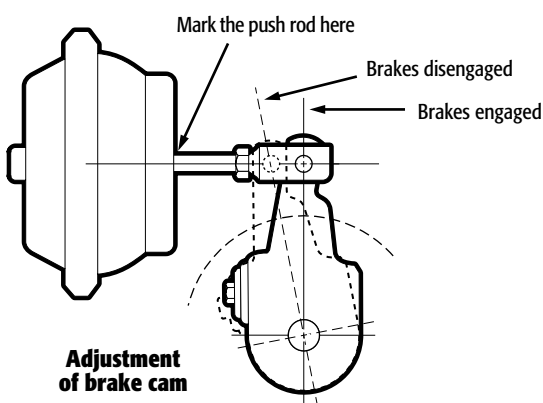
a) Brake camshaft

Place chocks under the wheels, release the spring and service brakes and, using a micrometer, measure the play between the bushings and brake camshaft.

- The radial stroke between the camshaft and its bushings exceeds 2.1 mm (3/32 in).

b) Brake chamber push rod (S-cam brakes)

Make a mark on the push rod when the brakes are disengaged. Apply the brakes so that the air pressure in the brake chamber is around 620 kPa (90 psi) and measure the stroke of the push rod.



- The stroke of the push rods on a single axle varies more than 6.5 mm (1/4 in).

- The stroke of the push rod exceeds the maximum specified in the table on the following page.

- The stroke of the push rod of a brake chamber in a vehicle with one or two axles, or of two brake chambers in a vehicle with three axles or more, exceeds the maximum adjustment value provided by the manufacturer by 6.5 mm or more.

CLAMP TYPE CHAMBERS

STANDARD STROKE

SIZE	OUTSIDE DIAMETER		MAXIMUM TRAVEL BEFORE READJUSTMENT	
6	115 mm	(4 1/2 in)	32 mm	(1 1/4 in)
9	133 mm	(5 1/4 in)	35 mm	(1 3/8 in)
12	144 mm	(5 11/16 in)	35 mm	(1 3/8 in)
16	162 mm	(6 3/8 in)	45 mm	(1 3/4 in)
20	172 mm	(6 25/32 in)	45 mm	(1 3/4 in)
24	183 mm	(7 7/32 in)	45 mm	(1 3/4 in)
30	205 mm	(8 3/32 in)	51 mm	(2 in)
36	228 mm	(9 in)	57 mm	(2 1/4 in)

LONG STROKE

SIZE	OUTSIDE DIAMETER		MAXIMUM TRAVEL BEFORE READJUSTMENT	
16	162 mm	(6 3/8 in)	51 mm	(2 in)
20	172 mm	(6 25/32 in)	51 mm	(2 in)
24	183 mm	(7 7/32 in)	51 mm	(2 in)
24 ¹	183 mm	(7 7/32 in)	64 mm	(2 1/2 in)
30	205 mm	(8 3/32 in)	64 mm	(2 1/2 in)

PISTON STYLE BRAKE CHAMBER (LONG STROKE)

SIZE	OUTSIDE DIAMETER		MAXIMUM TRAVEL BEFORE READJUSTMENT	
30 (DD3) ²	165 mm	(6 1/2 in)	64 mm	(2 1/2 in)

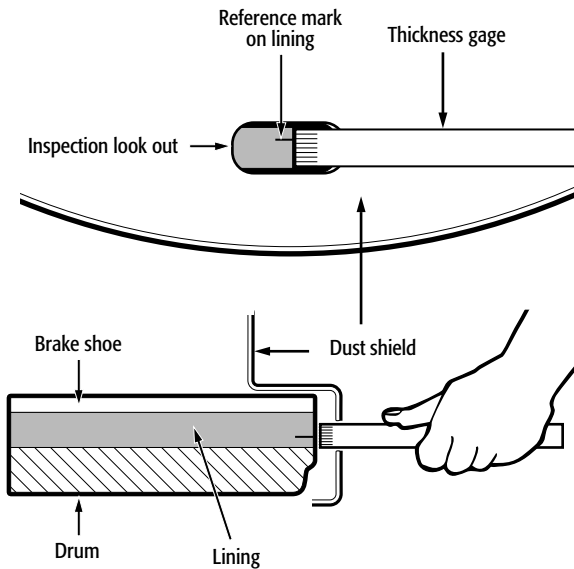
1. Size 24, having a maximum travel of 3 inches

2. DD3 is found on some intercity buses/coaches

Note: Features of brake chambers with long stroke push rod travel are shown on page 58.

c) Adjustment of wedge brakes

Using a feeler gauge, measure the displacement of the brake linings with around 620 kPa (90 psi) of air pressure applied to the brakes. Raise and spin the wheel.



d) Brake chambers

In accordance with TMC (The Maintenance Council RP-635) recommendations, all brake chambers equipped with long stroke (LS) push rods should be identified as follows:

The air intakes where flexible tubes are connected to the brake chamber are located in a square section and raised approximately 1/2 in.

A trapezoidal tag (standard SAE J1817) is attached to the chamber support clip, or the identification is inscribed by the manufacturer in the centre or on the end of the brake chamber.

- The lining moves more than 1.6 mm (1/16 in).



- The brake chambers installed on a single axle are not the same size or type.



- **The brake chambers installed on a single steering axle are not the same size or type.**

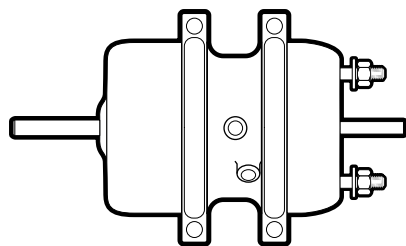


- A brake chamber is not securely mounted.

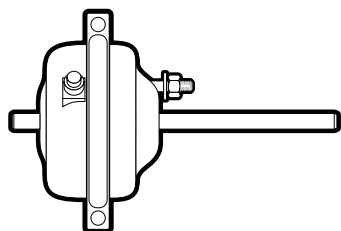


- A component or related part is missing, damaged, cracked, broken, extremely corroded, worn or of a capacity or quality below that prescribed by the manufacturer.



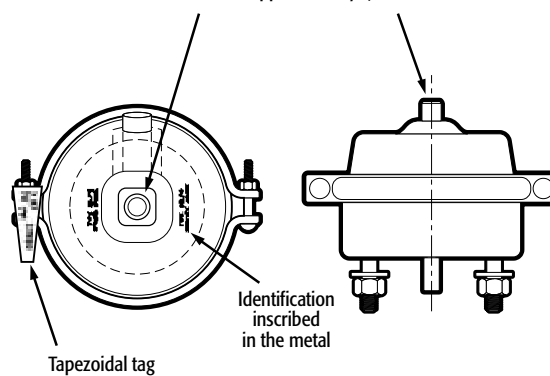


Dual-purpose chamber
(parking and
emergency brakes)



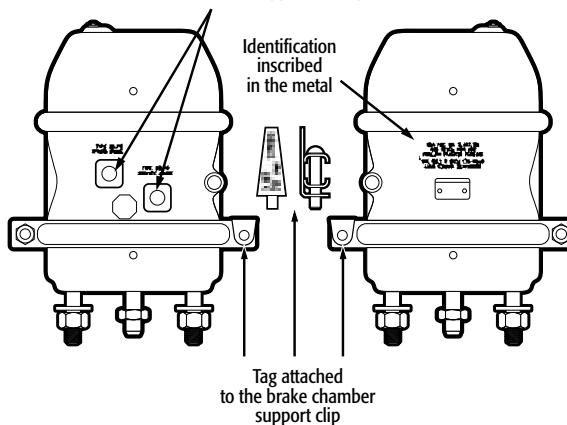
Flanged chamber

The air intakes where flexible tubes are connected to the brake chamber are located in a square section and raised approximately 1/2 in.

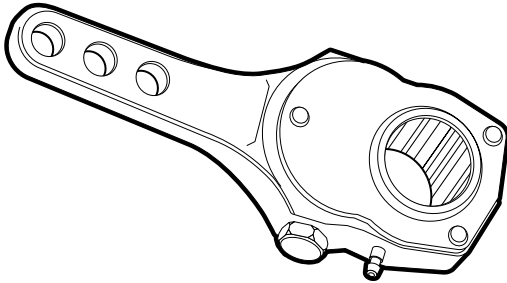
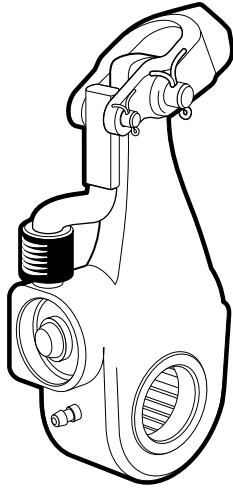


Single, long-stroke chamber

The air intakes where flexible tubes are connected to the brake chamber are located in a square section and raised approximately 1/2 in.



Dual, long-stroke chamber

e) **Slack adjusters** (manual or automatic)**Manual slack adjuster****Automatic slack adjuster**

N.B.: Semi-trailers measuring between 15.5 and 16.2 m in length and all heavy vehicles built after May 31, 1996 must be equipped with self-adjusting brake levers operating on each wheel.

■ The slack adjuster is damaged, worn, seized up or not functioning, or the position of the push rods on the adjusters differs.

■ The slack adjusters installed on a single axle are not the same size or type.

■ The slack adjuster is not securely attached or not functioning, or is missing, seized up, damaged or so worn as to affect the good working order of the brake.

■ A semi-trailer measuring between 15.5 and 16.2 m in length is not equipped with self-adjusting brake levers operating on each wheel.

■ A heavy vehicle built after May 31, 1996 is not equipped with self-adjusting brake levers operating on each wheel.

■ **The slack adjusters installed on a single steering axle are not the same size or type.**

5.8**DISK BRAKES****HYDRAULIC OR AIR BRAKING SYSTEM**a) **Discs**

Check the condition of the surface of the discs through the holes and of the inside.

■ The friction surface is rusted or contaminated by oil or grease.

■ **A crack reaches the outer edge of the friction surface or any other part of the disc (excluding superficial cracks caused by heat).**

b) Calipers

Place the wheel so that the caliper is easily accessible and then check the fastener and condition of the caliper from the inside.

c) Brake linings (pads)

Perform a visual inspection.

N.B.: Brake linings must be measured at the thinnest point, excluding the bevelled part.

- The caliper is seized up, cracked, broken, not securely or properly installed or leaks. 

- Riveted brake pads are less than 4.8 mm (3/16 in) thick on the steering axle or 1 mm above the rivets. 

- Riveted brake pads are less than 8 mm (5/16 in) thick on the other axles or 1 mm above the rivets. 

- Bonded brake linings are less than 1.6 mm (1/16 in) thick. 

- The linings have come unbound from or are not securely attached to their support or are broken, contaminated by oil or grease, or cracked more deeply than half the remaining thickness. 

- The wear indicator touches the disc. 

- **When the brakes are applied, a support or rivet of the brake lining touches the friction surface of the drum or disc.** 

d) Working order

- ◆ Have someone gently depress the brake pedal.
- ◆ Check the application and release of the service brake on each wheel.

- There is no rotation resistance on a wheel when the service brake pedal is applied. 

- The wheel does not turn freely when the brake is released. 

- **There is no braking or there is a significant reduction in the braking capacity on one wheel or a wheel assembly in the case of a road vehicle with two axles or, in the case of a vehicle with three axles or more, on two single wheels or two wheel assemblies, due to the absence or inadequate operation of a component of the braking system.** 

- **There is no braking on a wheel of the single steering axle where the manufacturer equipped that axle with a braking system.** 

5.9

DRUM BRAKES

HYDRAULIC OR AIR BRAKING SYSTEM

a) Brake linings and shoes

Perform a visual inspection without removing the dust shield or throwing the brakes out of adjustment.

N.B.: Brake linings must be measured at the thinnest point, excluding the bevelled part.

- Bolted linings are less than 8 mm (5/16 in) or 1 mm above the fittings. 
- Riveted brake pads are less than 4.8 mm (3/16 in) thick on the steering axle or 1 mm above the rivets. 
- Riveted brake pads are less than 8 mm (5/16 in) thick on the other axles or 1 mm above the rivets. 
- Bonded brake linings are less than 1.6 mm (1/16 in) thick. 
- The linings have come unbound from or are not securely attached to their support or are broken, contaminated by oil or grease or cracked more deeply than half the remaining thickness. 
- A shoe is missing or worn at the fastening point. 
- **When the brakes are applied, a support or rivet of the brake lining touches the friction surface of the drum or disc.** 

b) Drums

Check the condition of the brake drums.

- A brake drum shows signs of overheating on the friction surface. 
- The friction surface is uneven, rusted or contaminated by oil or grease. 
- **A crack other than a superficial crack caused by heat is present and reaches the outer edge of the friction surface of the drum.** 

c) Working order

- ◆ Lift the wheel off the ground and spin it.
- ◆ Check the application and release of the service brake on each wheel by having someone gently depress the brake pedal.

- There is no rotation resistance on a wheel when the service-brake pedal is applied. 
- The wheel does not turn freely when the brake is released. 
- **There is no braking or there is a significant reduction in the braking capacity on one wheel or a wheel assembly in the case of a road vehicle with two axles or, in the case of a vehicle with three axles or more, on two single wheels or two wheel assemblies, due to the absence or inadequate operation of a component of the braking system.** 
- **There is no braking on a wheel of the single steering axle where the manufacturer equipped that axle with a braking system.** 

6.1

FUEL SYSTEM

Visually inspect the following components:

- a) **Fuel tank**
(gasoline, diesel, propane or natural gas engines)

General Information:

- In the case of a gasoline or diesel engine, there is weeping along the fuel system. 
- There is a fuel leak other than weeping along the fuel supply system. 

- The filler hose is leaking or not securely installed. 
- The tank is weeping, cracked or not securely mounted. 
- A retaining strap is missing, cracked, cut or loose, or does not comply with the manufacturer's standards (e.g. chain). 
- A bracket or support holding the tank is cracked, broken or not firmly attached, or a bolt is loose or missing. 
- The filler cap is not hermetic. 
- **The tank leaks, excluding weeping.** 
- **The tank is so poorly mounted that it could break loose.** 
- **In the case of a gasoline or diesel engine, the tank does not have a filler cap.** 

b) Rigid or flexible fuel line and fittings

N.B.: For the required clearance between a fuel line and a component of the exhaust system, see section 7 ("Installation").

c) Fuel gauge

d) Sticker

(Expiry date)			Québec
(Month)	(Year)		
1	2002		
2	2003		
3	2004		
4	2005		
5	2006		
6	2007		
7	2008		
8	2009		
9	2010		
10	2011		
11	2012		
12	2013		

(Installer certificate no.)

(Expiry date)			xxx \W
(Month)	(Year)		
1	2002		
2	2003		
3	2004		
4	2005		
5	2006		
6	2007		
7	2008		
8	2009		
9	2010		
10	2011		
11	2012		
12	2013		

(Registration number)

(Regulatory authority)

■ A line is cut, crushed, crimped, extremely corroded, so cracked or worn that the cord is exposed, not fastened at the designated locations or tight enough to prevent the lines from vibrating or rubbing against adjacent parts.

■ A line, fitting or clamp is not adequate for the purpose.

■ In the case of a gasoline or diesel engine, fuel is weeping through a fitting.

■ In the case of a pressurized fuel system, (compressed natural gas or propane gas), the fuel line or fitting is not of the approved type.

■ The fuel gauge is missing or does not function.

■ The fuel gauge is not visible from the driver's seat (except in LPG systems).

■ The sticker does not comply with the regulations, is missing or is not valid.

6.2

ENGINE CONTROL SYSTEM

The engine control system should be inspected when the vehicle is stationary, with the engine running and the gearshift lever in "N" (Neutral). Make sure the vehicle is properly parked. Gently press and then gradually release the accelerator pedal to make sure it is not seized up.

Visually inspect the following components:

a) Accelerator pedal

b) Accelerator linkage and springs

Check the accelerator linkage and springs with the engine turned off. Push the accelerator pedal down fully to check that its movement is free and that it returns when released.

c) Shutdown system for diesel engines

Activate the shutdown system while the engine is idling.

General Information:

■ The engine does not accelerate or does not idle quickly.

■ The engine does not idle when the accelerator pedal is released.

■ The accelerator pedal is missing, bent out of shape or loose.

■ The pedal support is damaged or loose.

■ The linkage is worn, seized up, damaged, not securely mounted or so poorly adjusted that the accelerator pedal does not function properly.

■ A spring is missing, broken, worn or inadequate.

■ A defect in the engine support prevents the accelerator linkage from functioning properly.

■ The engine does not shut down when it is idling and the shutdown system is activated.

EXHAUST SYSTEM

Check the exhaust system with the engine running, paying special attention to gas leaks. If the inspection is being performed indoors, make sure the area is properly ventilated.

a) Muffler and resonator

N.B.: Disregard holes made by the manufacturer to release condensation.

General Information:

- Flammable material is leaking on a component of the exhaust system.

- Exhaust gases from a gasoline or gaseous fuel engine are leaking:**
 - underneath the passenger compartment where there are holes in the floor; or
 - in the engine compartment.

- The muffler or resonator is missing or not securely mounted to its anchorage.

- There is a gas leak in the muffler or resonator.

- There is an inadequate or a temporary repair in the muffler or resonator.

b) Exhaust pipe

N.B.: Disregard holes made by the manufacturer to release condensation.

- The pipe is leaking.

- There is an inadequate or a temporary repair in the exhaust pipe.

- The exhaust pipe crosses the passenger compartment.

- The outlet of the exhaust pipe is located within the space occupied by the passengers or luggage.

- The outlet of the exhaust pipe is located under or in front of a side window that opens.

- The end of the exhaust pipe extends more than 15 cm (6 in) horizontally from the road vehicle. In the case of a school bus, the exhaust pipe may not extend more than 2 cm (1 in) from the bumper.

- Gas is leaking through a coupling.

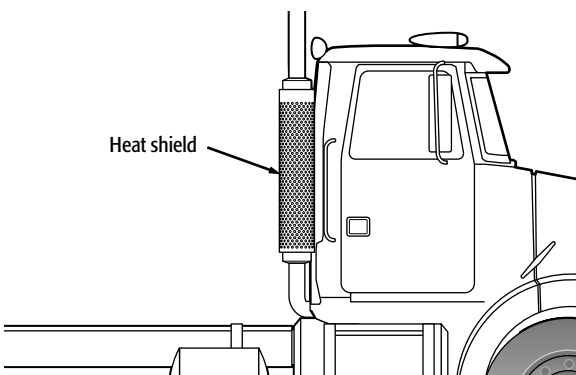
- A pipe is missing or not securely or properly installed.

c) Brackets and clamps

- A fastener is missing, cracked, broken, inadequate or not firmly attached to its anchorage.

**d) Heat shield**

N.B.: Required where a component of the exhaust system is located near a cab door and persons using the door risk being burned.



- The heat shield is missing, inadequate or not securely mounted.

**e) Installation**

- A component of the exhaust system, excluding brackets or clamps, is closer than 50 mm (2 in) from a part made of combustible materials, an electric wire, a fuel or brake line or the fuel tank and is not protected by an appropriate heat shield. Note that pressurized fuel lines of the CNG and LPG types must be at least 150 mm (6 in) from the above components unless they are protected by an appropriate heat shield.

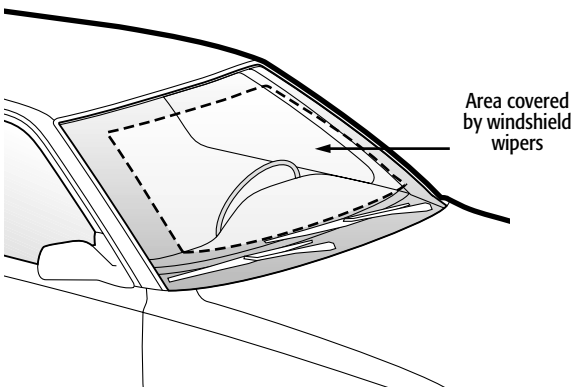


8.1

WINDOWS

Visually inspect the following components:

a) Windshield



General Information:

- The windshield or a window is not made of safety glass and does not bear the appropriate information, i.e. AS 1 in the case of the windshield and AS 2 in the case of other windows (see Appendix 3 for exceptions). 
- A window is missing, incorrectly installed or has a sharp edge. 
- Mirror-like material has been affixed to or sprayed on a window of the vehicle. 

The windshield is:

- Missing. 
- Tarnished, cloudy or broken in a way that reduces the driver's vision of the road or road signs. 
- An object or sticker that could reduce visibility is hung in or affixed to the windshield. 
- The windshield has cracks or missing flakes more than 12 mm (1/2 in) in diameter that meet on the area covered by the wipers, excluding the area under the inside mirror and a strip of 75 mm (3 in) in the upper and lower parts of the windshield. 
- There is a loss of transparency in the area of the windshield covered by the wipers that exceeds 10% of the total surface of the windshield. 
- Material that darkens glass has been affixed to or sprayed on the windshield (a strip no more than 150 mm (6 in) in width is permitted in the upper part of the windshield). 
- **The windshield is so damaged that the driver's vision of the road and road signs is considerably reduced.** 

b) Side windows and rear window

N.B.: The rear window may be blocked if the vehicle is equipped with an outside rearview mirror on the passenger side.

■ A side window on either side of the driver's compartment is tarnished, cloudy, cracked, broken or blocked in a way that reduces the driver's vision of the road or road signs.

■ The side window on the left side of the driver's compartment cannot be easily opened to allow the driver to signal his manoeuvres with his arm.

■ The rear window is tarnished, cloudy, cracked, broken or blocked in a way that reduces the driver's vision of the road.

In the case of a school bus:

■ A side window located immediately behind the driver's compartment is tarnished, cloudy, cracked, broken or blocked in a way that reduces the driver's vision of the road or road signs;

In the case of a school bus with a total weight, once loaded, of over 4,536 kg:

■ A side window located immediately behind the driver's compartment is tarnished, cloudy, cracked, broken or blocked in a way that reduces the driver's vision of the road or road signs;

■ One of the first two windows on either side of the school bus is not made of double insulating glass (thermopane, quality AS 2).

8.2

REARVIEW MIRROR

Make sure the rearview mirrors are present and check their condition and viewing angle.

Manually inspect the rearview mirror to make sure it is solidly attached and the adjustment mechanism is working.

N.B.: In accordance with the Highway Safety Code, every motor vehicle must be equipped with at least two rearview mirrors: one solidly attached to the interior of the vehicle at the centre of the upper part of the windshield, and the other, to the exterior of the vehicle on the left side. When the interior rearview mirror cannot be used, another rearview mirror must be attached to the exterior of the vehicle on the right side.

N.B.: In heavy vehicles, the line of sight in rearview mirrors is blocked by the screws holding the mirrors in place.

N.B.: Buses used to transport schoolchildren must be equipped with at least one convex rearview mirror attached to the exterior of the front of the bus. Buses built after July 1, 1997 must have at least one convex rearview mirror on each side.

■ A rearview mirror is missing.

■ The frame of a rearview mirror is not securely attached to the vehicle.

■ The rearview mirror has a sharp edge or is broken, cracked or tarnished.

■ The silvering of a mirror is unbound on more than 10% of the periphery of the reflecting surface (the silvering must not be unbound in any way in the case of a school bus).

■ A rearview mirror is not adjustable and does not remain in the desired position.

9.1

SUN VISOR

Make sure the sun visor on the driver's side is present, efficient and not damaged.

- The sun visor on the driver's side is missing.
- It is not effective.
- It does not remain in the desired position.



9.2

HORN

Make sure the horn is solidly attached and working properly, and its control is easy to reach. It may be electric or air-powered.

- The horn is not firmly attached.
- Its control is not easy to reach, identifiable or firmly attached.
- The horn does not sound or is not audible at a distance of around 60 m (200 ft).



9.3

WINDSHIELD WIPERS AND WASHER FLUID

Inspect the windshield wipers to make sure they work properly and are not damaged by placing the function lever in each of the operating positions after activating the washer lever and making sure the wipers will not damage the vehicle.

- The windshield washer fluid does not spray or the spray is not adjusted properly or is inadequate.
- A wiper blade is missing, worn, poorly adjusted or damaged in a way that renders it ineffective.
- A wiper blade does not make even contact with the windshield.
- The wiper blades do not sweep the area specified by the manufacturer.
- A wiper arm is missing, worn, damaged or not securely attached.
- The wiper blades sweep at a frequency of less than 20 strokes per minute at low speed and less than 45 strokes per minute at top speed.
- The difference between the two operating speeds is less than 15 strokes per minute.
- **The windshield wiper on the driver's side is inoperative or missing.**



9.4

HEATER SYSTEM AND DEFROSTER

Check each of the functions of the heater and defrost system, making sure the temperature and circulation of air at each of the defroster outlets complies with the manufacturer's standards. An auxiliary fan may be used.

If part of the heating-liquid piping is visible, check to make sure it is not damaged.

- The ventilation is not working.

- The amount of air blown onto the windshield where intended by the manufacturer or onto the side windows (if the vehicle has outlets for that purpose) is insufficient, or there is no heat.

- Heating-liquid piping that crosses inside the cab is cut, cracked or leaks.

9.5

ENGINE START OUT OF GEAR

**N.B.: PERFORM THIS INSPECTION
WITH THE BRAKE PEDAL DEPRESSED**

For vehicles with an automatic transmission, see if the engine will start with the gearshift lever in any position other than "P" (Park) or "N" (Neutral).

- The engine starts with the gearshift lever in a position other than "P" (Park) or "N" (Neutral).

9.6

SPEEDOMETER AND ODOMETER

Check these accessories only if you have reason to believe that they are defective, in which case a road test will be required.

- The speedometer or odometer does not function.

9.7

INDICATOR LIGHTS OR GAUGES IN SCHOOL BUSES

If part of the original equipment, the following indicators should be checked to make sure they are present and work properly:

- engine coolant temperature gauge
- oil pressure light
- voltmeter
- fuel gauge
- vacuum or air pressure gauge of the brake system.

- An indicator light or gauge is missing or does not function.



9.8

RETRACTABLE STOP SIGN ON SCHOOL BUSES



Operate the stop sign to make sure it extends and retracts and remains in the desired position.

N.B.: In certain vehicles, the engine may have to be running in order to perform this inspection.

- The panel is missing or does not extend or retract when activated.

- The panel does not remain in the desired position.

9.9

CLUTCH CONTROL

To inspect the clutch control, put the gearshift lever in "N" (Neutral), start the engine, fully engage the clutch and try and change gears.

N.B.: As far as possible, the clutch control should be checked in a clear area outdoors and with the parking brake fully set.

- The clutch pedal is not non-slip.

- A component is missing or worn in a way that prevents it from working properly.

- The clutch does not interrupt the transmission of engine torque to the gearbox shaft.

9.10

FIRST-AID KIT AND CHEMICAL FIRE EXTINGUISHER IN SCHOOL BUSES



Make sure this equipment is present, securely attached, within easy reach and in proper working order.

- The first-aid kit is missing, not securely attached or hard to reach.

- The chemical fire extinguisher is missing, not securely attached, hard to reach or damaged.

- The extinguisher is not equipped with a pressure gauge, or the gauge indicates "refill" or "zero".

9.11

CROSSING CONTROL ARM ON SCHOOL BUSES



Make sure the arm is functioning properly.

- The arm does not extend at a right angle to the bus.

- The arm extends in less than 2 seconds.

9.12

DRIVE SHAFT

Visually and manually inspect the following components:

- **Universal joints**
- **Centre bearing and its support** (two-piece drive shaft)
- **Shaft guard** (where part of the original equipment, mandatory in school buses with front engine)

- The drive shaft is warped or bent.

- A universal joint is loose or not firmly attached.

- The centre bearing is worn or not securely mounted, or its rubber support is damaged.

- The shaft guard is missing, damaged or not firmly attached.

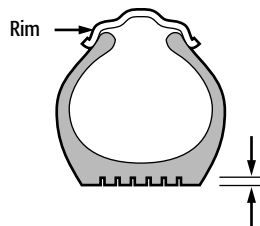


10.1

TIRES

a) Depth of tread

Using a depth gauge, or by performing a visual inspection, measure the minimum depth of the tread in a main groove or tread design (not at the wear indicator) on all tires.


Vehicles whose net weight is 3,000 kg or more:

- The depth of the tread is less than 3.2 mm (4/32 in) on a front tire. 
- The depth of the tread is less than 1.6 mm (2/32 in) on a rear tire. 

All other vehicles:

- The depth of the tread is less than 1.6 mm (2/32 in) on any tire. 
- A wear indicator touches the road. 
- A single tire or dual tires in the same wheel assembly has or have two adjacent grooves less than 0.8 mm (1/32 in) in depth, or less than 1.6 mm (2/32 in) for a front tire of a vehicle whose net weight is over 3,000 kg. 

b) Tire condition

Inspect the tires to make sure they are in good condition, paying special attention to the tread and sidewalls. Check for cuts, misshapen sidewalls indicating a defect in the carcass, or any other anomaly reducing tire safety.

N.B.: The tread may be separated from the carcass in a retreaded tire provided the separation is no wider than 6 mm (1/4 in).

N.B.: When comparing the air pressure in the tire with the pressure indicated on the sidewall or the value determined by the manufacturer, the tire must not have been driven for more than one hour. However, the difference in air pressure in tires of the same axle may be measured at any time. In the case of vehicles whose net weight is less than 3,000 kg, the air pressure recommended by the manufacturer may be printed on the inside of the lid of the glove box or on the post or frame of a door.

N.B.: The air pressure should be checked only if the tire shows signs that the pressure is not correct.

One of the dual tires in the same wheel assembly is cracked or so cut or worn that the rib or steel belt is exposed.

A tire is abnormally bulged or misshapen.

Foreign material is embedded in the tread or sidewall of a dual tire and could cause a puncture.

The tread or rubber compound of the sidewall is separated from the carcass of the tire (see the note regarding retreaded tires beside this description).

A tire has not been repaired properly.

The tire valve is worn down, damaged, scraped, gashed or does not allow for easy inflation of the tire or pressure reading.

The air pressure in the tires of a same axle differs by more than 10%.

The air pressure exceeds the maximum pressure printed on the sidewall or is lower than the value determined by the vehicle or tire manufacturer (see note beside this description).

A tire has been retreaded deeper than the original grooves where the manufacturer has not indicated on the tire that it is regroovable.

A single tire or dual tires in the same wheel assembly are so cut or worn that the rib or steel belt is exposed, or are bulged due to a defect in the carcass.

A tire other than a spare tire has an audible air leak or needs air.

A single tire on a motor vehicle has foreign material embedded in the tread or sidewall that could cause a puncture.

c) Tire wear

N.B.: For the purposes of this guide,

- “**size**” means: the width and diameter indicated on the tire.
- “**construction**” means: radial or bias-ply (standard construction).
- “**series**” means: ratio between the height of the sidewall and the width of the tire (series 50, 60, 70 or 80). Example: a series 60 tire means that the height of the tire rim from the ground equals 60% of the width of the tread.

N.B.: You can tell whether a tire touches the body or any other rigid component by checking for tire marks.

- A retreaded tire is installed on the front axle of an emergency vehicle, a minibus or a vehicle whose net weight exceeds 3,000 kg, except where the vehicle is equipped with two front steering axles. 
- Tires differing in size, type, construction or series are installed on a same axle or a combination of axles (e.g. dual axle). 
- Except where the vehicle has dual rear wheels, radial tires are mounted on the front and bias-ply tires on the rear. 
- The front wheels of a vehicle whose net weight is 3,000 kg or less are of a smaller series or have a tread wider than the rear tires. 
- The diameter of tires in a dual tire set, measured at the tread, differs by more than 13 mm (1/2 in), or a tire touches another in the case of dual tires. 
- A tire is a smaller size than the minimum dimension indicated by the vehicle manufacturer. 
- A tire touches the body or another component of the vehicle in every position of the suspension or steering (see note beside this description). 
- A tire bears marks or wording to indicate that it is for restricted use or not suited for use on public roads, unless it is mounted on a truck specially adapted for agricultural purposes. 
- A unidirectional tire is not mounted according to the tire manufacturer's standards. 
- **A tire touches a fixed part of the vehicle.** 
- **A single tire or dual tires in the same wheel assembly are designed for off-road driving unless they are mounted on a truck specially designed for agricultural purposes.** 

10.2

WHEELS

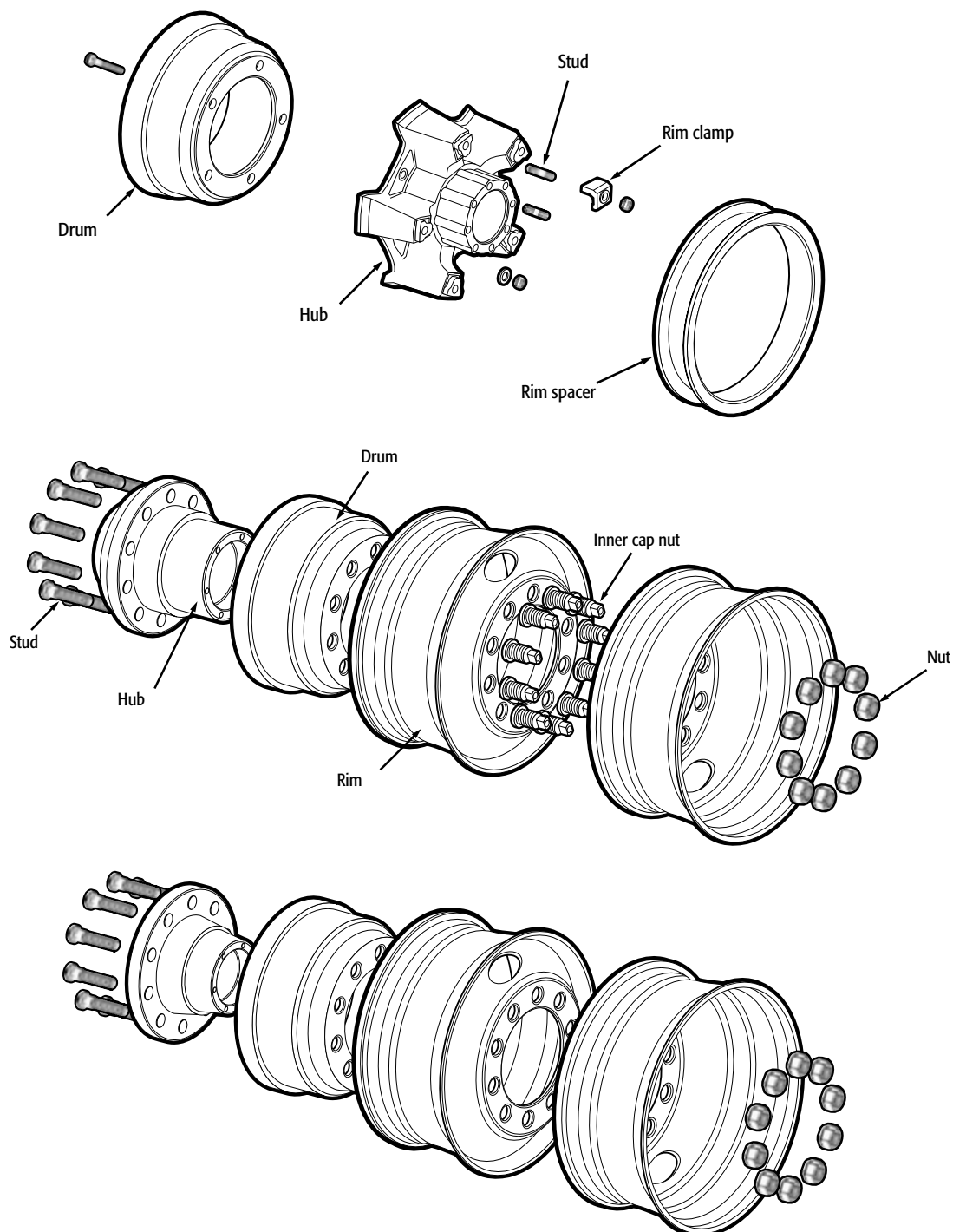
a) Installation

Inspect the wheel fasteners, either visually or using a torque wrench, to make sure they are solidly attached.

■ A stud, nut, bolt or other fastener is damaged or the wrong size.

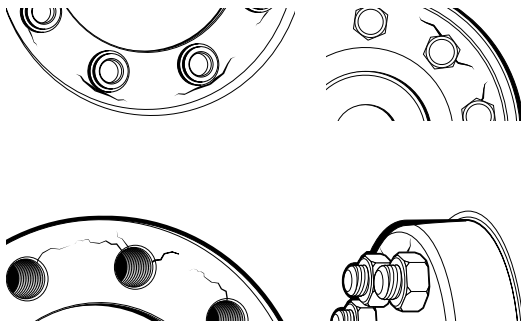
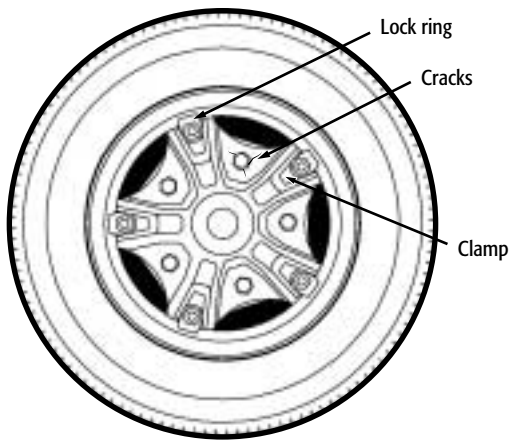
■ Bolts extend less than one and a half thread grooves beyond fastener nuts, except where otherwise indicated by the vehicle manufacturer.

■ A wheel fastener is missing, cracked, broken or not solidly attached.



b) Condition

Visually inspect the wheels to make sure they are in good condition, paying special attention to cracks.



■ A wheel is cracked, warped, damaged, extremely corroded or not properly aligned.

■ The wheel has welds other than the manufacturer's original welds or, in the case of a spoked wheel, force bands have been installed.

■ Where the wheel is composed of two or three parts, there is less than 3 mm clearance at the ends of the lock ring.

■ A cast wheel is worn in the clamp area.

■ A spoke in the wheel of a passenger vehicle is missing, broken, bent or slack.

■ The rim spacer between dual wheels is damaged, missing, warped, cracked or broken.

■ **A lock ring in a multipiece wheel is warped, cracked, bent, broken, not firmly attached, welded or not suited for the rim on which it is mounted.**

■ **Except for a force band in the case of a spoked wheel, a wheel has a crack, a breach, an elongated bolt hole or has been repaired by means of welding.**

PARTS AND PROCEDURES	DESCRIPTION OF DEFECT
c) Wheel bearing ◆ Ajustement The play in the bearings is measured by installing a micrometer on the suspension arm. • Lift the vehicle so that the wheels are off the ground. • Take the wheel by the top and bottom. • Swing the wheel back and forth from the inside to outside to see if it moves in relation to the steering knuckle. N.B.: You can also perform this inspection using a pry bar placed under the tire. This measurement must not be confused with the ball joints or king pins. ◆ Working order With the wheels off the ground, spin the wheel and listen for noise from the bearings.	■ The play in the wheel bearing exceeds the manufacturer's standard.  ■ Where there is no manufacturer's standard, there is a discernible play in the wheel bearing.  ■ There is an abnormal sound in the bearings. 
d) Spare wheel N.B.: Where there is a spare wheel, it should comply with the Regulation respecting safety standards for road vehicles.	■ The tire support or mounting holding the spare wheel is not securely attached so that the wheel is held firmly in position.  ■ The spare wheel and tire are not ready for mounting. 

GENERAL INFORMATION

Check to make sure that no part of the vehicle is missing or has sharp edges or protrusions that could cause injury.

N.B.: The bottom edge of the mudguards must not be more than 35 cm from the ground when the vehicle is not loaded.

■ A part of the vehicle has sharp edges or protrusions that could cause injury.

■ A fixed component of the body (fender, hood, roof, etc.), an accessory or a piece of auxiliary equipment provided by the manufacturer (e.g. mudguards) is missing, in poor working condition or not securely mounted.

■ **A part of the body, a piece of equipment or an accessory is not securely mounted and could sever from the vehicle.**

11.1

ENGINE HOOD

Visually or manually inspect the following components:

- **Locking device**
- **Safety cables**
- **Hinges**
- **Safety hook** (if installed by manufacturer)

■ The locking device is seized up, not working or not securely mounted.

■ A safety cable is broken, missing or not firmly attached to its anchorage.

■ A hinge is missing, cracked, broken or not securely mounted on the vehicle.

■ The safety hook is broken, missing or not functional.

■ **The front hood does not latch properly when closed.**

11.2**CAB**

Visually inspect the following components:

- **Main locking or safety device**
- **Hold-down device**
- **Hinges**
- **Air suspension of cab**

■ The locking device is broken, missing, seized up, not functioning or not securely mounted.

■ The hold-down device is broken, cracked, missing or not firmly attached.

■ A hinge is cracked, broken, missing or not firmly attached to the vehicle.

■ There is an air leak.

■ The cab is not level.

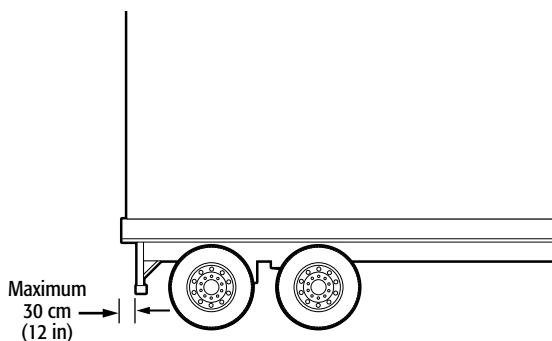
■ A shock absorber is missing, not installed properly or has a leak, other than weeping, that affects its performance.

11.3**BUMPERS**

Make sure the bumpers are present, solidly attached to the part of the vehicle designed for that purpose and in good condition.

N.B.: The front bumper of a heavy vehicle (over 5,500 kg) does not have to extend the full width of the vehicle. A rear bumper is required only if it was part of the original equipment installed by the manufacturer.

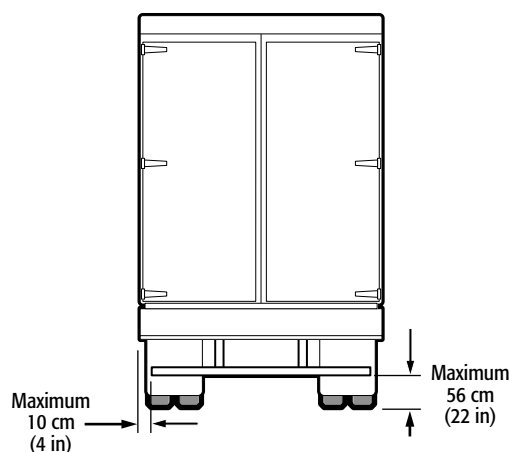
Semi-trailers longer than 15.5 m manufactured after March 2, 1994 must be equipped with a rear bumper that conforms to the following standard:



N.B.: A drop bumper is not compulsory if the distance between the tires on the rear axle and the rear end of the semi-trailer is less than 30 cm (12 in) or if the bottom of the structure at the rear of the semi-trailer is less than 0.56 cm (22 in) from the ground.

■ The bumper is missing, not solidly attached or made of a material other than that intended by the manufacturer (e.g. wooden bumpers, except in tow trucks).

■ The bumpers do not conform to standards.



11.4**CAB DOOR**

Visually and manually inspect all cab doors, including emergency doors, to make sure they open and close and latch properly from both the inside and outside.

N.B.: Certain passenger vehicles are equipped with a child lock system to prevent unwanted opening of the rear doors from inside the vehicle.

- A door is not securely mounted.

- A door does not open (see note beside this description) or does not open easily from the inside or outside.

- A hinge is missing, cracked, broken or seized up.

- **A door does not close completely.**

**11.5****DOOR OR COVER OF LOAD SPACE**

Visually and manually inspect all doors or covers providing access to a load space, including the rear door of a dump body, to make sure they work properly and are not damaged.

- A door or cover is not securely mounted to the vehicle or does not close properly.

- The device preventing the door or cover from opening accidentally is missing or in poor working order.

- If part of the original equipment, the hold-down device is missing or does not function.

**11.6****CAB FLOOR**

Visually inspect the cab floor to make sure it is not damaged.

- The floor is warped, cracked or perforated.

- **The cab floor is so perforated that it constitutes a hazard for passengers by reason of a lack of solidity.**

**11.7****LOAD SPACE**

Visually inspect the load space to make sure it is not damaged.

- The floor or sides of the load space are not solidly attached and the load could fall out.



11.8**AIR BAG AND SEAT BELT**

To check the air bag, start the engine and make sure the indicator light comes on and then turns off after a few seconds.

Visually and manually inspect all seat belts in the vehicle to make sure they work properly and are not damaged.

N.B.: Some seat belts are equipped with hypertension indicators. If such an indicator is visible, the seat belt must be replaced.

- The air bag is missing.

- The air bag indicator light does not come on or does not go off after a few seconds.

- The seat belt is missing or is not securely anchored to the vehicle.

- The webbing is damaged.

- The buckle does not work properly.

- The retractor or latch plate is damaged or does not work properly.

11.9**SEATS AND BENCH SEATS**

Visually and manually inspect the seats and bench seats.

- A seat or bench seat is not securely attached.

- Where they are adjustable, a seat or bench seat is not movable or does not lock in the desired position.

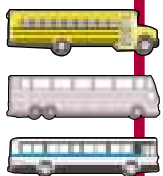
- The frame is broken.

- The cushion or backrest is missing or not securely anchored.

- The headrest, if included in the original equipment, is missing, damaged or not securely attached.

11.10

SERVICE AND EXIT DOORS



Inspect the following components:

- **Warning light or buzzer**
- **Flexible seals**
- **Remote control system**
- **Manual or automatic door-opening system (exit door)**

Visually or manually inspect the system to make sure it works properly.

- **Safety system**
(remote-controlled exit door)

- The warning light or buzzer does not work. 

- A seal is missing, torn, loose or not made of flexible material. 

- The system is blocked or jammed, or the disabling mechanism does not work properly. 

- The door-opening system does not work properly. 

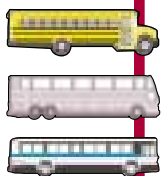
- When the system is in the “closed” position, the exit door opens with a moderate push and the warning light or buzzer does not go on or sound. 

- When the system is in the “open” position, the brake or accelerator interlock mechanisms do not work. 

- **The safety system protecting against the accidental opening of doors is out of order (for a bus equipped with automatic doors).** 

11.11

EMERGENCY EXIT



Check the following:

- **Working order**

Manually inspect all emergency exits to make sure they are operational.

- **Warning light or buzzer**

Turn the ignition key to “ON” open the emergency exit and, where the exit is equipped with one, check to see that the warning light or buzzer goes on or sounds.

- **Signs**

Make sure the required signs are present and legible.

N.B.: If the vehicle is equipped with wheelchair locking devices, the passageway to the emergency exits must be over 81.2 cm (32 in) wide.

- The emergency exit cannot be easily opened or closed from inside or, if so designed, from the outside (approximately 180 Newton, or 40 lb, of force). 

- Some or all of the signs are missing. 

- The warning light or buzzer for emergency exits, except doors, does not work. 

- **The warning light or buzzer of an emergency exit door does not work.** 

- **An emergency exit is blocked, inadequate or does not open.** 

11.12**INTERIOR EQUIPMENT**

Visually or manually inspect the following components:

- **Floor and stepwell covering**
- **Stanchions, horizontal bars, grab handles, guard panels, seatbacks**
- **Cab and luggage rack**

■ The floor and stepwell covering is so cracked, loose or worn that there is a danger of tripping.

■ A component is not securely mounted to its anchorage.

■ The shock-absorbant material provided by the manufacturer is missing or damaged.

■ The cab has a protrusion that could injure a passenger.

■ The luggage rack is not securely mounted, or one of its parts is missing, broken or damaged.

11.13**EQUIPMENT FOR TRANSPORTING PERSONS WITH DISABILITIES**

Visually or manually inspect the following components:

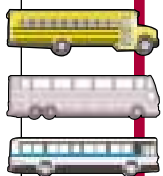
- **Wheelchair tie-down device**
- **Wheelchair lift**
Operate the control system.
- **Wheelchair ramp**

■ The tie-down device is not firmly anchored or does not work properly.

■ The lift does not react adequately to the commands of the control system and jerks when operating.

■ The lift is not securely anchored to the vehicle.

■ The wheelchair ramp is damaged or is not securely anchored to the vehicle.



Appendix 1 Pressure Conversion Table

psi	kPa	psi	kPa	psi	kPa	psi	kPa
1.00	6.90	41.00	282.90	81.00	558.90	121.00	834.90
2.00	13.80	42.00	289.80	82.00	565.80	122.00	841.80
3.00	20.70	43.00	296.70	83.00	572.70	123.00	848.70
4.00	27.60	44.00	303.60	84.00	579.60	124.00	855.60
5.00	34.50	45.00	310.50	85.00	586.50	125.00	862.50
6.00	41.40	46.00	317.40	86.00	593.40	126.00	869.40
7.00	48.30	47.00	324.30	87.00	600.30	127.00	876.30
8.00	55.20	48.00	331.20	88.00	607.20	128.00	883.20
9.00	62.10	49.00	338.10	89.00	614.10	129.00	890.10
10.00	69.00	50.00	345.00	90.00	621.00	130.00	897.00
11.00	75.90	51.00	351.90	91.00	627.90	131.00	903.90
12.00	82.80	52.00	358.80	92.00	634.80	132.00	910.80
13.00	89.70	53.00	365.70	93.00	641.70	133.00	917.70
14.00	96.60	54.00	372.60	94.00	648.60	134.00	924.60
15.00	103.50	55.00	379.50	95.00	655.50	135.00	931.50
16.00	110.40	56.00	386.40	96.00	662.40	136.00	938.40
17.00	117.30	57.00	393.30	97.00	669.30	137.00	945.30
18.00	124.20	58.00	400.20	98.00	676.20	138.00	952.20
19.00	131.10	59.00	407.10	99.00	683.10	139.00	959.10
20.00	138.00	60.00	414.00	100.00	690.00	140.00	966.00
21.00	144.90	61.00	420.90	101.00	696.90	141.00	972.90
22.00	151.80	62.00	427.80	102.00	703.80	142.00	979.80
23.00	158.70	63.00	434.70	103.00	710.70	143.00	986.70
24.00	165.60	64.00	441.60	104.00	717.60	144.00	993.60
25.00	172.50	65.00	448.50	105.00	724.50	145.00	1000.50
26.00	179.40	66.00	455.40	106.00	731.40	146.00	1007.40
27.00	186.30	67.00	462.30	107.00	738.30	147.00	1014.30
28.00	193.20	68.00	469.20	108.00	745.20	148.00	1021.20
29.00	200.10	69.00	476.10	109.00	752.10	149.00	1028.10
30.00	207.00	70.00	483.00	110.00	759.00	150.00	1035.00
31.00	213.90	71.00	489.90	111.00	765.90	151.00	1041.90
32.00	220.80	72.00	496.80	112.00	772.80	152.00	1048.80
33.00	227.70	73.00	503.70	113.00	779.70	153.00	1055.70
34.00	234.60	74.00	510.60	114.00	786.60	154.00	1062.60
35.00	241.50	75.00	517.50	115.00	793.50	155.00	1069.50
36.00	248.40	76.00	524.40	116.00	800.40	156.00	1076.40
37.00	255.30	77.00	531.30	117.00	807.30	157.00	1083.30
38.00	262.20	78.00	538.20	118.00	814.20	158.00	1090.20
39.00	269.10	79.00	545.10	119.00	821.10	159.00	1097.10
40.00	276.00	80.00	552.00	120.00	828.00	160.00	1104.00

Conversion factor: 1 psi = 6.9 kPa

Appendix 2 Length Conversion Table

IMPERIAL SYSTEM (INCHES)			METRIC SYSTEM (MILLIMETRES)			
Fraction		Thousandths of in	0-1 in	1-2 in	2-3 in	3-4 in
1/32	1/64	0.015	0.397	25.40	50.80	76.20
		0.031	0.794	25.80	51.20	76.60
				26.19	51.59	76.99
	3/64	0.046	1.191	26.59	51.99	77.39
1/16		0.062	1.588	26.99	52.39	77.79
	5/64	0.078	1.984	27.38	52.78	78.18
	3/32	0.093	2.381	27.78	53.18	78.58
	7/64	0.109	2.778	28.18	53.58	78.98
1/8		0.125	3.175	28.58	53.98	79.38
	9/64	0.140	3.572	28.97	54.37	79.77
	5/32	0.156	3.969	29.37	54.77	80.17
	11/64	0.171	4.366	29.77	55.17	80.57
3/16		0.187	4.763	30.16	55.56	80.96
	13/64	0.203	5.159	30.56	55.96	81.36
	7/32	0.218	5.556	30.96	56.36	81.76
	15/64	0.234	5.953	31.35	56.75	82.15
1/4		0.250	6.350	31.75	57.15	82.55
	17/64	0.265	6.747	32.15	57.55	82.85
	9/32	0.281	7.144	32.54	57.94	83.34
	19/64	0.296	7.541	32.94	58.34	83.74
5/16		0.312	7.938	33.34	58.74	84.14
	21/64	0.328	8.334	33.73	59.13	84.53
	11/32	0.343	8.731	34.13	59.53	84.93
	23/64	0.359	9.128	34.53	59.93	85.33
3/8		0.375	9.525	34.93	60.33	85.73
	25/64	0.390	9.922	35.52	60.72	86.12
	13/32	0.406	10.319	35.72	61.12	86.52
	27/64	0.421	10.716	36.12	61.52	86.92
7/16		0.437	11.113	36.51	61.91	87.31
	29/64	0.453	11.509	36.91	62.31	87.71
	15/32	0.468	11.906	37.31	62.71	88.11
	31/64	0.484	12.303	37.70	63.10	88.50
1/2		0.500	12.700	38.10	63.50	88.90
	33/64	0.515	13.097	38.50	63.90	89.30
	17/32	0.531	13.494	38.89	64.29	89.69
	35/64	0.546	13.891	39.29	64.69	90.09
9/16		0.562	14.288	39.69	65.09	90.49
	37/64	0.578	14.684	40.08	65.48	90.88
	19/32	0.593	15.081	40.48	65.88	91.28
	39/64	0.609	15.478	40.88	66.28	91.68
5/8		0.625	15.875	41.28	66.68	92.08
	41/64	0.640	16.272	41.67	67.07	92.47
	21/32	0.656	16.669	42.07	67.47	92.87
	43/64	0.671	17.066	42.47	67.87	93.27
11/16		0.687	17.463	42.86	68.26	93.66
	45/64	0.703	17.859	43.26	68.66	94.06
	23/32	0.718	18.256	43.66	69.06	94.46
	47/64	0.734	18.653	44.05	69.45	94.85
3/4		0.750	19.050	44.45	69.85	95.25
	49/64	0.765	19.447	44.85	70.25	95.65
	25/32	0.781	19.844	45.24	70.64	96.04
	51/64	0.796	20.241	45.64	71.04	96.44
13/16		0.812	20.638	46.04	71.44	96.84
	53/64	0.828	21.034	46.43	71.83	97.23
	27/32	0.843	21.431	46.83	72.23	97.63
	55/64	0.859	21.828	47.23	72.63	98.03
7/8		0.875	22.225	47.63	73.03	98.43
	57/64	0.890	22.622	48.02	73.42	98.82
	29/32	0.906	23.019	48.42	73.82	99.22
	59/64	0.921	23.416	48.82	74.22	99.62
15/16		0.937	23.813	49.21	74.61	100.01
	61/64	0.953	24.209	49.61	75.01	100.41
	31/32	0.968	24.606	50.01	75.41	100.81
	63/64	0.984	25.003	50.40	75.80	101.20

Window Codes

The figure to the left of the following paragraphs indicates the code after the letters AS, which should appear in the indicated position on vehicle windows. These codes correspond to American National Standards Institute (ANSI) Glazing Standards Z26.1 and their meaning is as follows:

- 1 Safety glass suitable for all motor vehicle windows.
- 2 Safety glass suitable for all motor vehicle windows, except the windshield.
- 3 Safety glass suitable for motor vehicle windows, except the windshield and specified areas.
- 4 Safety glass suitable for specific areas of motor vehicle windows.
- 5 Safety glass suitable for specific areas of motor vehicle windows where the driver's vision is not in question.
- 6 Safety glass suitable for windows of motor homes or trailers, the rear window of convertibles, the windshield of motorcycles, mobile blinds or removable windows, or fans used in combination with removable windows.
- 7 Safety glass suitable for windows of motor homes or trailers and, at heights where the driver's vision is not in question, for the rear window of convertibles, the windshield of motorcycles, mobile blinds or removable windows, or fans used in combination with removable windows.

- 8 Safety glass suitable solely for folding doors, the top windows of a bus, windows of motor homes or trailers, the window behind the driver's compartment in a truck or tractor trailer and rear windows of buses.
- 9 Safety glass suitable solely for windows of motor homes or trailers, the top windows of buses and, where the driver's vision is not in question, for folding doors, the window behind the driver's compartment in a truck or tractor-trailer and rear windows of buses.
- 10 Impact safety glass for use anywhere in a motor vehicle.
- 11 Impact safety glass for use anywhere in a motor vehicle, except the windshield.

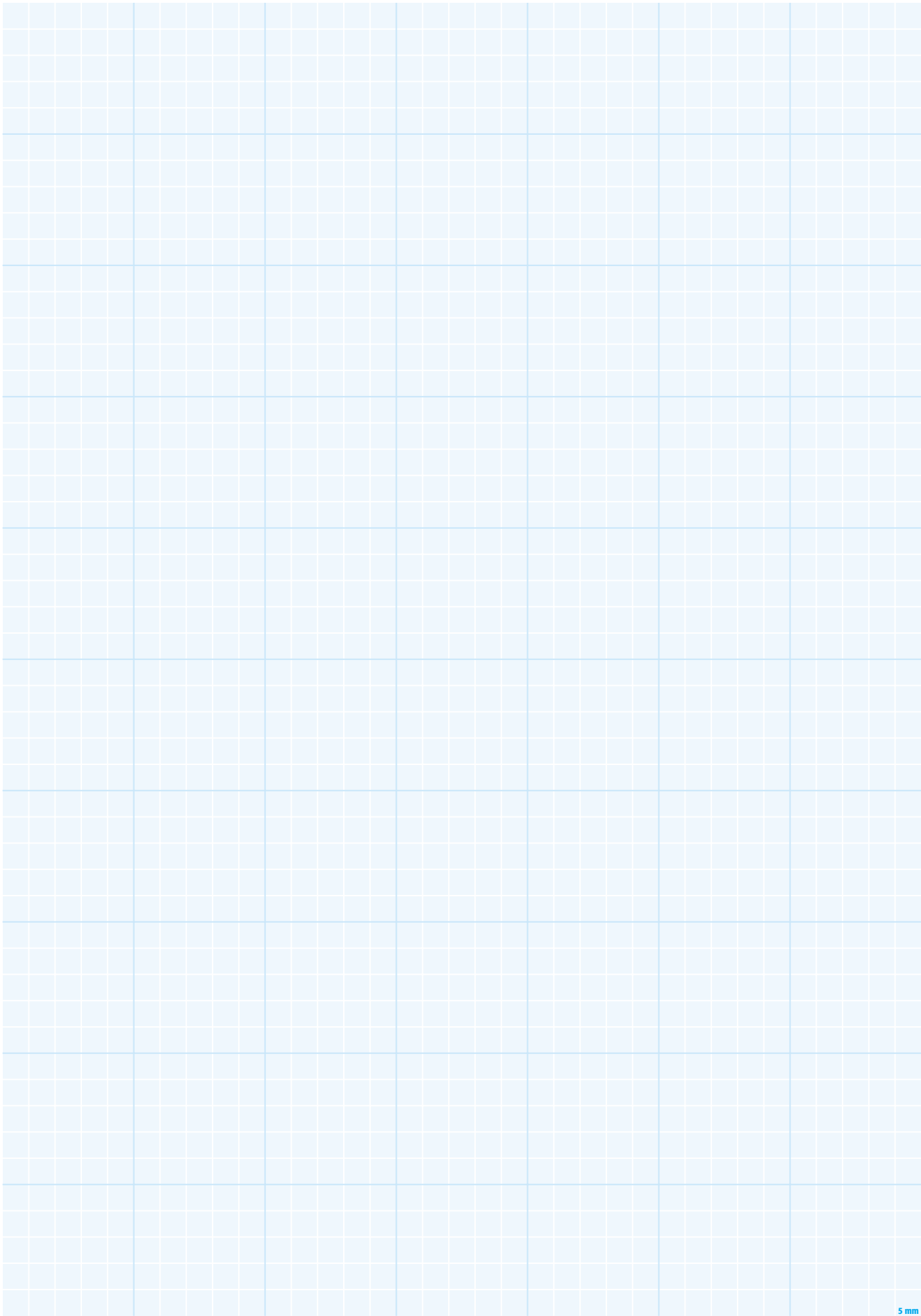
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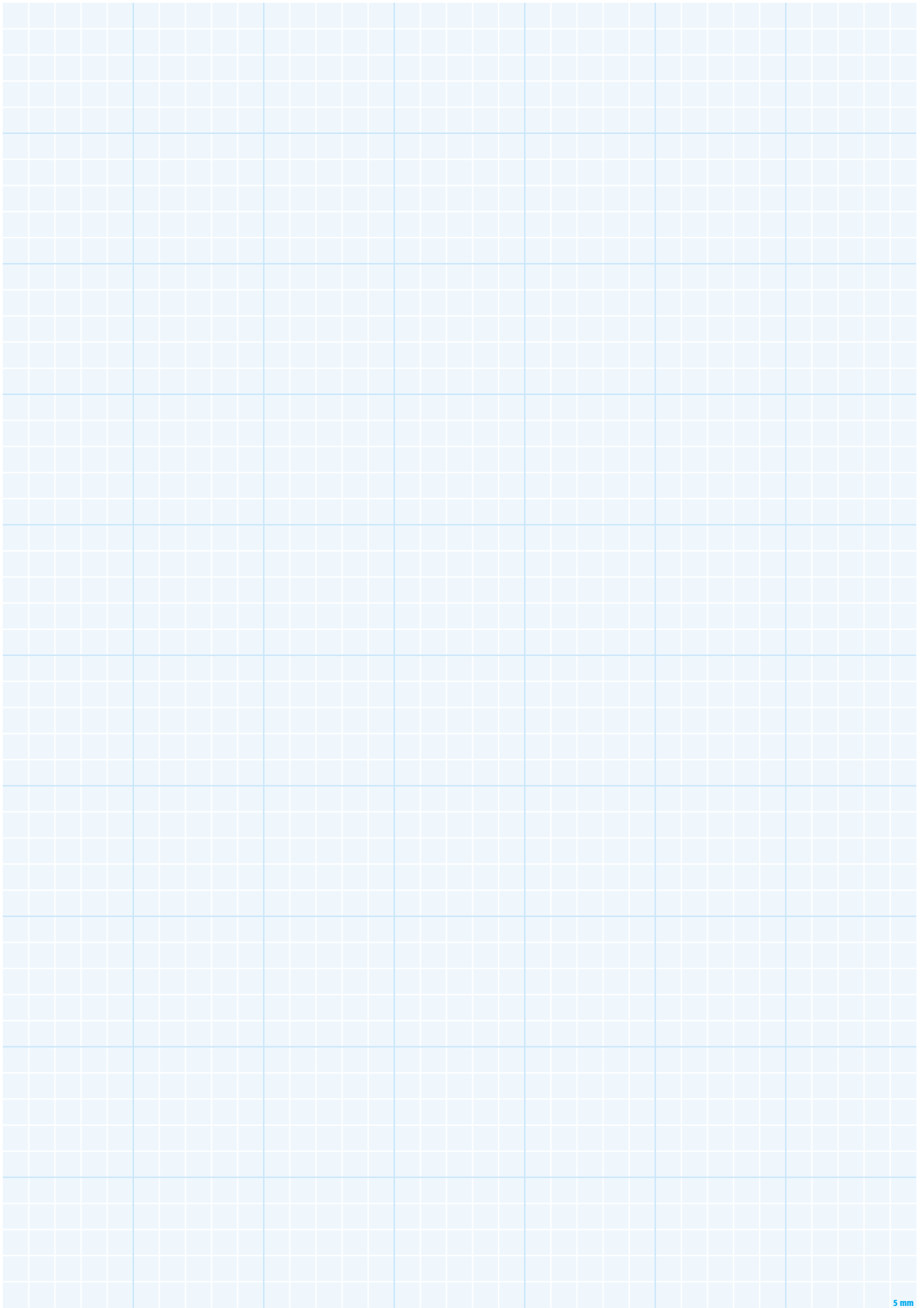
Adjusting sleeve	Manchon et collets de serrage	Nut	Écrou
Air spring	Ballon de suspension	Pintle eye	Anneau d'attelage
Axle	Essieu	Pintle hook	Crochet d'attelage
Ball joint	Rotule	Pitman arm	Levier de commande
Bellow beam	Poutrelle de support de ballon	Rack and pinion	Direction à pignon et crémaillère
Brake booster	Cylindre de frein	Radius rod	Bielle de réaction
Brake booster	Récepteur de freinage	Rail	Longeron
Brake shoe	Segment de frein	Rim	Jante
Caliper	Étrier de frein	Rim clamp	Crapaud
Center link	Bielle d'accouplement	Rim spacer	Entretoise
Chassis	Châssis	Rim spacer	Espaceur
Clutch	Embrayage	Saddle	Chaise de suspension
Cross member	Traverse	Sector shaft	Axe du secteur
Cross tube	Barre d'accouplement	Shackle bracket	Support de jumelle
Dolly	Diabolo (chariot de conversion)	Shackle	Jumelle
Drag link	Bielle d'accouplement	Shock absorber	Amortisseur
Draw bar	Timon d'attelage	Side rail	Longeron
Draw bar eye	Anneau d'attelage	Slack adjuster	Régleur de jeu
Drive shaft	Arbre de transmission	Sliding bogie	Train coulissant
Drum	Tambour	Spindle	Fusée
Dust shield	Pare-poussière	Spring bracket	Ancrage de ressort
Equalizer beam	Balancier	Stabilizer	Barre stabilisatrice / Biellette de raccordement
Feeler gauge	Calibre d'épaisseur	Steering arm	Levier de direction
Fifth wheel	Sellette d'attelage	Steering column	Colonne de direction
Flange	Semelle	Steering box	Boîtier de direction
Frame	Châssis	Steering column	Colonne de direction
Hub	Moyeu	Stud	Goujon
Idle arm	Bras de renvoi	Suspension stop travel	Butée de débattement
Inner cap nut	Écrou interne	Sway bar	Bielle de réaction
Inspection look out	Fenêtre d'inspection	Sway bar	Barre stabilisatrice
King pin	Axe de fusée	Swaybar link kit	Biellette de raccordement
King pin	Cheville ouvrière	Thickness gage	Calibre d'épaisseur
King pin	Pivot d'attelage	Tie rod	Embout
King pin	Pivot de fusée	Torque rod	Bielle de réaction
Knuckle arm	Levier de fusée	U-bolt clamp	Brides de fixation
Lock	Verrou	Universal joint	Joint universel de colonne
Leaf clip	Étrier	Upper arm	Bras de suspension supérieur
Lining	Garniture	Walking beam	Balancier
Locking device	Dispositif de verrouillage	Web	Âme
Lower arm	Bras de suspension inférieur		
Mounting plate	Plaque de fixation		

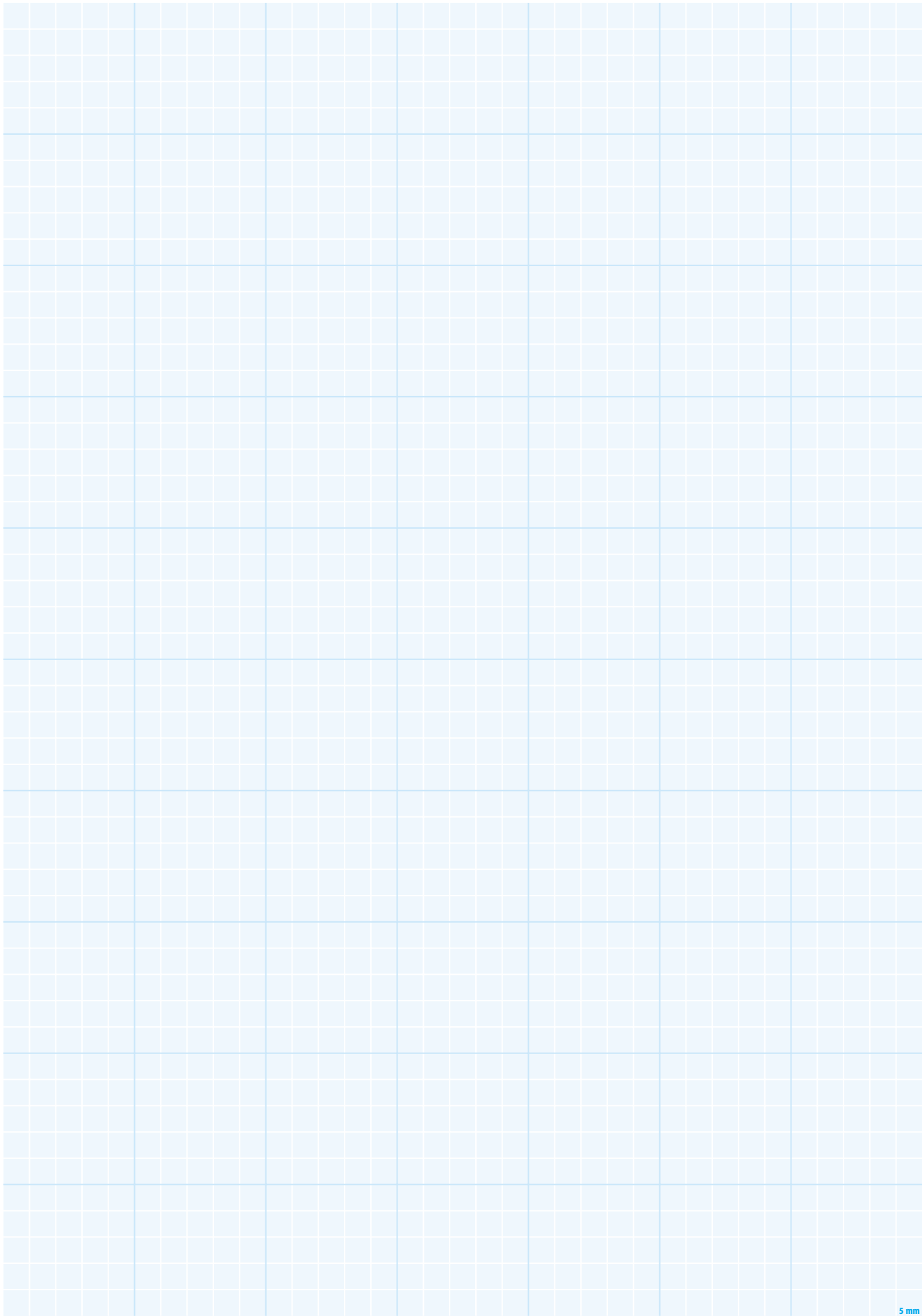
French / English Glossary

Âme	Web	Garniture	Lining
Amortisseur	Shock absorber	Goujon	Stud
Ancrage de ressort	Spring bracket		
Anneau d'attelage	Draw bar eye / Pintle eye	Jante	Rim
Arbre de transmission	Drive shaft	Joint universel de colonne	Universal joint
Axe de fusée	King pin	Jumelle	Shackle
Axe du secteur	Sector shaft		
Balancier	Equalizer beam / Walking beam	Levier de commande	Pitman arm
Ballon de suspension	Air spring	Levier de direction	Steering arm
Barre d'accouplement	Cross tube	Levier de fusée	Knuckle arm
Barre stabilisatrice	Stabilizer / Sway bar	Longeron	Rail
Bielle d'accouplement	Center link	Longeron	Side rail
Bielle d'accouplement	Drag link		
Bielle de réaction	Radius rod	Manchon et collets de serrage	Adjusting sleeve
Bielle de réaction	Torsion bar	Moyeu	Hub
Bielle de réaction	Torque rod		
Biellette de raccordement	Stabilizer / Swaybar link kit	Pare-poussière	Dust shield
Boîtier de direction	Steering box	Pivot d'attelage	King pin
Bras de renvoi	Idler arm	Pivot de fusée	King pin
Bras de suspension inférieur	Lower arm	Plaque de fixation	Mounting plate
Bras de suspension supérieur	Upper arm	Poutrelle de support de ballon	Bellow beam
Bride de fixation	U bolt clamp		
Buté de débattement	Suspension stop travel	Récepteur de freinage	Brake booster
		Régleur de jeu	Slack adjuster
		Rotule	Ball joint
Calibre d'épaisseur	Feeler gauge / Thickness gauge	Segment de frein	Brake shoe
Chaise de suspension	Saddle	Sellette d'attelage	Fifth wheel
Châssis	Frame / Chassis	Semelle	Flange
Cheville ouvrière	King pin	Support de jumelle	Shackle bracket
Colonne de direction	Steering column		
Crapaud	Rim clamp	Tambour	Drum
Crochet d'attelage	Pintle hook	Timon d'attelage	Draw bar
Cylindre de frein	Brake cylinder	Train coulissant	Sliding bogie
		Traverse	Cross member
Diabolo (chariot de conversion)	Dolly	Verrou	Lock
Direction à pignon et crémaillère	Rack and pinion		
Dispositif de verrouillage	Locking device		
Écrou	Nut		
Écrou interne	Inner cap nut		
Embout	Tie rod		
Embrayage	Clutch		
Entretoise	Rim spacer		
Espaceur	Rim spacer		
Essieu	Axle		
Étrier	Leaf clip		
Étrier de frein	Caliper		
Fenêtre d'inspection	Inspection hole		
Fusée	Spindle		

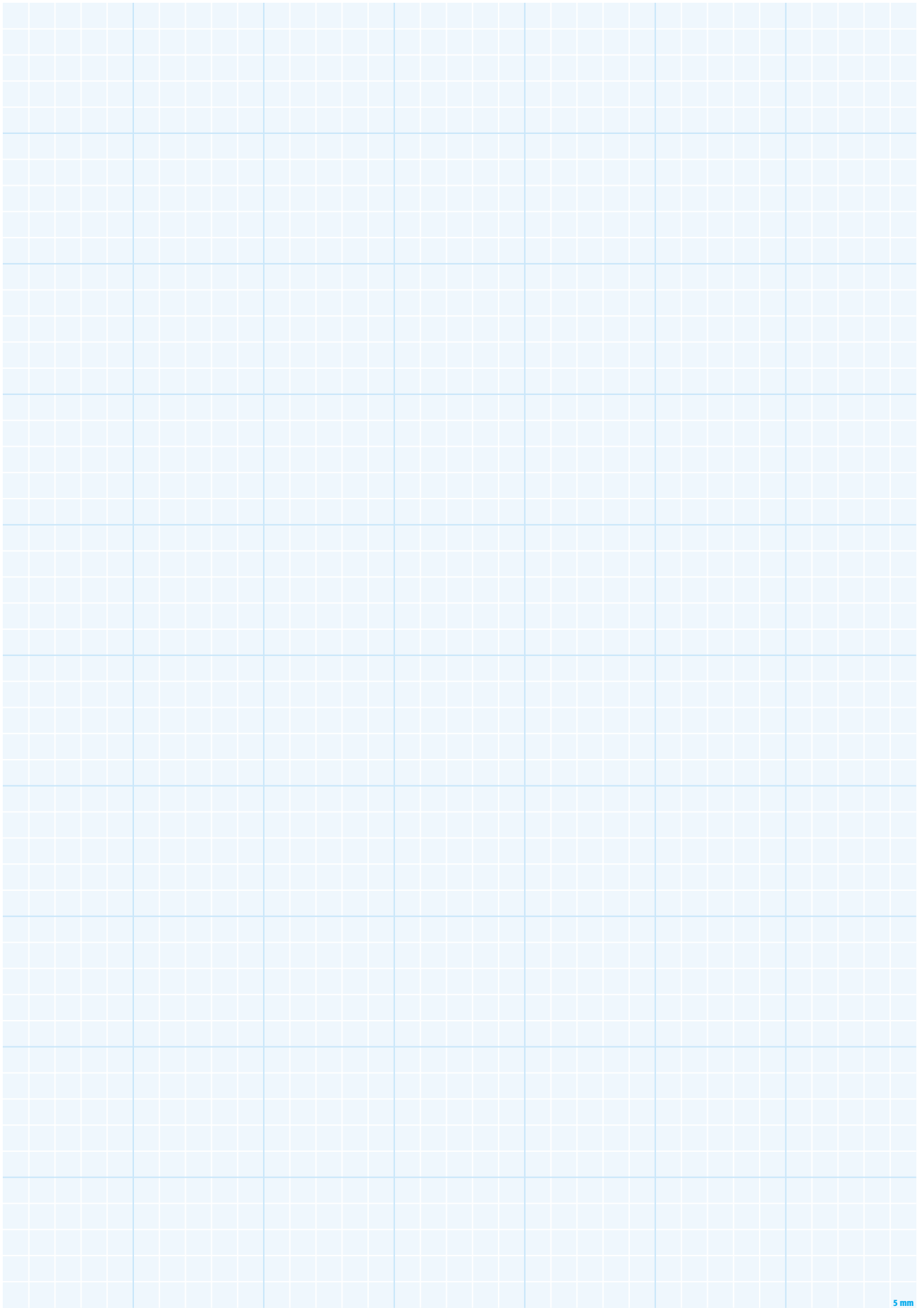


5 mm





5 mm





FULLER