TLIB2004A Carry out vehicle inspection

Learner Guide

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Contents

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Safe workshop activities

You must learn how to work without hurting yourself or endangering your fellow workers. Your own efforts are important in keeping your workplace safe.

Effects of industrial accidents

Accidents cause losses to everyone. If you have an accident you may:

- Be left with permanent injuries affecting your quality of life
- Suffer loss of earnings for short or long periods
- Have ongoing affects for your family and lifestyle.

Every year in Australia, hundreds of people are killed as a result of industrial accidents and thousands sustain some form of permanent injury. Many other injuries are not serious; however the effects are still felt on you, your family and your employer.

Cause of accidents

An accident often has more than one cause. Removing their cause can prevent accidents. Finding out what causes an accident is important. It can help in planning how to prevent similar accidents.

There are two causes of accidents - Unsafe acts and unsafe conditions. Think about these examples of unsafe acts:

- Using tools or equipment without having proper training in their use
- Using tools or equipment the wrong way
- Failing to use personal protective equipment, such as goggles, gloves, helmets
- Dangerous behavior in risky situations
- Hurrying and taking dangerous short cuts through the workplace
- Distracting others from their work, or allowing you to be distracted.

Consider these examples of unsafe conditions for the worker:

- Lack of instruction in safe methods
- Lack of training
- Unsuitable clothing for the task to be done
- Long hair around rotating machines
- A lack of safety guards on machines.

Avoid unsafe acts

It is your responsibility to avoid unsafe acts. You must for your own sake and that of others, learn to work safely and efficiently. Any foolish act that could cause danger to yourself, or others, is an act of irresponsibility, even if you see other people taking risks.

Eliminate unsafe conditions

Safe working conditions are not only a matter of having good tools, machines and well-designed workshops. They depend on the co-operation of everybody in the workplace.

Think about these examples of unsafe conditions in the workplace:

- Slippery floors
- Bad lighting
- An untidy or dirty workplace
- Defective hand tools
- Unguarded machinery
- Poorly stacked materials

Anything that can cause an accident is a hazard.

Prevent accidents

Eliminating possible causes can prevent accidents. The best people to work with are those who are alert and considerate, careful and responsible. Try to:

- Make your general behaviour safe
- Prevent unsafe conditions developing
- Segregate unsafe areas with barricades
- Know what to do in an emergency.

Report all accidents or damage to equipment, no matter how minor they seem. Minor damage can develop into serious failures if not reported.

Personal protective clothing and equipment

Wear the correct clothing and equipment to protect you from possible serious injury.

Some of the safety equipment you may use:

- Protective clothing
- Reinforced footwear
- Eye protection, safety glasses or goggles
- Protective earmuffs or plugs. Noise is measured in decibels (dB for short).
- Gloves
- Breathing filters and equipment
- Hard hat, safety helmet.

Handling lubricating oil and greases

When changing lubricating oils, ensure that the correct type and grade are used.

Use only those recommended by the vehicle manufacturer. Be careful when draining oil from a hot engine or a hot transmission, to avoid the risks of serious burns.

When handling hydraulic brake fluid, avoid spilling it on your vehicle paintwork. If some is spilt, wipe it off immediately and thoroughly wash the area with water.

Replace the lid on the brake fluid after use to keep out moisture.

Be careful not to mix or substitute gear oils. Refer to manufacturer's specifications.

Manual lifting

Manual lifting and carrying can subject the body to great strain and frequently causes injuries.

These injuries often accumulate over a period of time. To prevent injuries resulting from lifting and carrying objects:

- Use suitable mechanical equipment whenever possible
- Use appropriate protective equipment
- Learn the correct method of lifting and carrying
- Ask others to help you lift or carry large or awkward objects.

Compressed air and air tools

Compressed air is extensively used in workshops to operate air tools, such as:

- Wrenches
- Drills
- Grinders
- Sanders
- Hoists
- Tyre bead breakers
- Air jacks
- Grease guns

It is also used for cleaning parts, for inflating tyres and many other purposes. Care must be taken when handling compressed air tools as they can be extremely dangerous and can cause serious injuries.

Safety tip

It is dangerous to guide high-pressure grease guns onto grease nipples with your fingers. If the grease gun is accidentally discharged, fingers can be injured, even severed.

Importance of vehicle inspections and checks

As a professional driver you need to appreciate that your safety and the safety of others depends on the proper functioning of your vehicle, as well as your care and skill in driving. Your heavy vehicle licence allows you to drive a range of vehicles, including buses. It's important to take into account that vehicle inspection includes the inside of the vehicle too, not just the mechanics of the vehicle. Think about what you might need to do if you were required to drive a bus.

It is your responsibility to ensure that regular inspections are carried out to check that your vehicle is roadworthy and prepared for a day's work or an extended trip.

If, as a result of the inspection you find something that does not seem right, have it checked more thoroughly by a motor mechanic or report the problem to your supervisor.

Record details of all inspections and the action taken to rectify defects. A vehicle log book is often required in workplaces for this purpose.

If you are responsible for your own vehicle maintenance, get your mechanic to check it. If you have any suspicion that your vehicle is unsafe, do not drive the vehicle until it has been thoroughly checked.

General external inspection

When you are carrying out a general vehicle inspection, consider the following:

- Vehicle posture:
  - As you walk around the vehicle check that it sits squarely on the ground.
  - Excessive leaning to one side may mean a flat tyre, a shifted or unbalanced load or some problem with the suspension.

- Leaks:
  - During your inspection, check beneath the vehicle for fresh drops of oil, coolant, brake fluid and fuel. Listen also for air leaks from the brake system and air suspension.

- Load:
  - Make certain the load has not shifted, that the sides, tailgate and lift gate are properly secured and that the tarpaulins (if applicable) and lashings are firm.
  - On cargo vans make sure that the loading bars and straps are in place so that the load is properly secured and the doors are closed and properly fastened.
  - If your vehicle carries shipping containers make sure the 'Twist Locks' are correctly securing the container to the truck.
  - Make sure that all load related items such as loading/unloading aids, dangerous goods signs, safety equipment and emergency procedures information are correctly stowed or installed
  - On a tip-truck make sure that the tailgate is closed and locked.

- Turntable:
  - Check that the turntable release handle is in the locked position if the trailer is connected or open if you are bobtail (without trailer)
  - Check the jaws are properly locked around the kingpin
  - Check that the turntable is greased.

There are two types of vehicle checks you can do

They are daily checks, and weekly or pre-trip checks.

1. Daily checks

These are the checks that every driver must know and be able to carry out. They must be performed each day before driving commences, and on long trips, before restarting driving after a meal or rest break. These checks are for:

- General external inspection:
- Vehicle posture
- Leaks underneath the vehicle
- Load security
- Turntable is it greased and locked (if applicable)
- Wheel, rim and tyre damage, or loose wheel nuts

- Engine compartment general check:
- For visible oil, fuel and water leaks
- Fluid levels
- Belts and pulleys condition and tension
- Loose wires or parts

- Vehicle registration and in-cab inspection:
- Vision and seating/seatbelts
- Communication equipment
- Cab housekeeping:
- Tilt-cab lock security

- Engine start up:
- Gauges and warning lights
- Minor controls

- Systems operation:
  - Lights
  - Reflectors
  - Signs

- Emergency equipment

- Systems operation trailer:
  - Air tanks
  - Brakes
  - On-road check.

2. Weekly or pre-trip check

The weekly check includes all the daily checks and others that need to be performed regularly to ensure the ongoing safety of your vehicle.

To assist you to perform these checks and inspections systematically, they are divided into five groups:

- General external inspection
- Engine compartment inspection
- Inside vehicle inspection
- Systems operations – while the vehicle is stationary
- Systems operations – while the vehicle is moving.

These weekly or pre-trip checks are:

- General external inspection:
  - Vehicle posture
  - Leaks
  - Load
  - Turntable
  - Wheels and rims
  - Tyres
  - Brake system
  - Steering system
  - Suspension system
  - Fuel system
  - Exhaust system
  - Air system (air cleaner)

- Engine compartment inspection and general check:
  - Fluid levels
  - Electrical system
  - Belts and pulleys
  - Air brake compressor
  - Cooling system
  - Bonnet locks

- Inside vehicle inspection and vehicle entry
  - Vehicle registration
  - Emergency and safety equipment
  - Cab housekeeping
  - Tilt cab locks
  - Minor controls

- Systems operations - vehicle stationary:
  - Lights, reflectors and signs
  - Air tanks
  - Air suspension
  - Steering
  - Clutch
  - Pedals
  - Gearshift

- Systems operations - vehicle moving including trailer:
  - Air brakes
  - Complete vehicle
  - Trailer system
  - Adjustment
  - Hydraulic brakes
  - Vacuum assisted system

- Trailer systems operation:
  - Brakes
  - Steering
  - On-road check.

Important

Check your vehicle operating handbook and manufacturer's specifications for detailed information regarding settings, adjustments, etc. and for any other checks which are necessary for your particular vehicle.

Any servicing or repairs needed as a result of these checks must only be carried out by a mechanic or other suitably qualified person.

Wheels, tyres and rims

Check that the wheel rims are not bent or damaged. Check for:

- Excessive rust or corrosion build-up
- Cracks in metal
- Bent flanges
- Deep rim tool marks on rings or gutter areas
- Loose, missing damaged rim drive plates
- Matched rim parts.

If new tyres have been fitted, check that the locking rings have been properly installed.

Check that all wheel nuts and lugs are correctly fitted and properly tightened. Signs of rust around a nut or lug may indicate it is loose.

While checking the tension of the wheel nuts and lugs (check manufacturer's specifications for torque), make sure that the wheel spiders have not spun in the rims. If this happens the tyre valve can be torn out or damaged.

Wheel and rim types

Drop-centre

Tubeless tyres are all mounted on drop-centre rims and wheels. The drop-centre rim or wheel is of single piece construction and is available in both demountable rim and disc wheel configuration. The drop-centre rim or wheel has a 15-degree bead seat for sealing tubeless tyres. The drop-centre rim is available in either aluminium or steel.

Two-piece convertible rims

The two-piece rim consists of a side rim and flat base rim and is available in the demountable rim or disc wheel configuration. The rim has a 5-degree bead seat for tube type tyres.

Three-piece rim

The three-piece rim consists of a lock ring, side ring and flat base type rim. It is available in the demountable rim or disc wheel configuration. The disc wheel is available in aluminium or steel; however, the lock ring and side ring are made of steel in all cases. The rim has a 5-degree bead seat for tube tyre mountings.

Tyres

Check tyre pressures using an accurate gauge. Low Pressure on the front wheels can cause heavy steering. Low Pressure on rear wheels and trailer wheels is more difficult to detect while driving, particularly with dual tyre assemblies. Inflate to manufacturer's recommendations.

Badly worn or bald tyres are more likely to puncture or blow out. Lack of tread reduces grip on slippery surfaces and can lead to braking skids, poor steering response and jack knifing. Hydroplaning (skimming on the top of the wet road surface) can also occur on wet roads leading to loss of steering and braking control.

- Check the:
  - Side walls and treads for cuts, bulges, and signs of wear caused by contact with other parts of the vehicle
  - Tread is not separating from the casing. Remove any stones, nails, glass or other objects that have become wedged in the tread that could puncture or damage the tyre
  - Valve-stems are not damaged or fouling other parts.

You should remove any rocks or other objects that have become wedged between the dual tyres or between the wheel and brake drum. Objects wedged between tyres can cause serious tyre damage or failure. If pressure is low in either or both dual tyres and they are touching, the tyres may overheat and catch fire.

WEAR PATTERN		CAUSE	SOLUTION
	CENTER WEAR	OVER INFLATION	Adjust pressure to particular load per tire catalog.
	EDGE WEAR	UNDER INFLATION	Adjust pressure to particular load per tire catalog.
	SIDE WEAR	LOSS OF CAMBER OR OVERLOADING	Make sure load doesn't exceed axle rating. Correction is 3/4 - 1 degree positive camber (top of wheel rim 3/16" further out than bottom.
	TOE WEAR	INCORRECT TOE-IN	Correct toe-in is 0 - 1/2 degree.
	CUPPING	OUT-OF-BALANCE	Check bearing adjustment and balance tires.
	FLAT SPOTS	WHEEL LOCKUP & TIRE SKIDDING	Avoid sudden stops when possible and adjust brakes.

Braking systems

Brake drums

- Check them for signs of overheating, cracks or damage
- Check mechanical brake linkage for wear (grease if necessary).

Air systems

- Check that brake chambers and other parts are securely attached, the linkage and hoses are properly connected and showing no sign of contact with other parts
- Drain water from wet tank daily.

Hydraulic systems

- Check that the hydraulic hoses are not touching other parts or leaking.
- Look for visible signs of fluid leakage. On some vehicles (particularly Tilt Cabs) some of these brake checks may be carried out more easily as part of the engine compartment inspection.

Steering system

Check the following:

- Steering gear box for oil leaks, the steering gear box mounting bolts and steering arm for signs of looseness
- Parts of the steering linkage are properly attached also check for signs of wear or damage due to contact with other parts
- Power steering hoses and other power steering parts these parts should be checked for signs of leakage, wear or damage due to contact with other parts.

Suspension

Check the:

- Suspension linkage, spring brackets and spring pins for loose connections
- U-bolts and torque arms for looseness, cracks, bends or missing parts
- Frame for cracks around the attachment points
- Rubber bushing for wear or damage
- Frame for signs of wear or damage due to contact between suspension parts and the body
- Leaf springs for leaves which are broken, missing or have shifted (missing spring cups will allow leaves to twist out from their proper position)
- Air suspension bellows and air lines for signs of contact with other parts or damage (leaks will be checked after starting the engine)
- Adjustable axles make sure that the locking pins are all properly in place and are correctly secured by safety clamps
- Shock absorbers for leaks or damage. Check mountings for looseness and the rubber bushes for wear.

Fuel systems

- Check the fuel tanks to make sure these are properly secured and not damaged or leaking:
  - Tank caps are properly fitted
  - Fuel levels are topped up
- Fuel lines and filters to make sure they:
  - Are secure
  - Are not leaking
  - Are correctly positioned away from the hot exhaust and danger of entanglement with other objects
  - That fuel filters do not have excessive water or wax present.

Exhaust systems

Check that the muffler and exhaust pipes are properly supported and not leaking, and that all hoses and other attached parts are secure and in good condition. Make sure fuel lines, electrical cables, or any combustible materials are not close enough to the exhaust system to cause any risk of fire or damage.

Engine compartment inspection

In most vehicles an engine compartment inspection will involve lifting the bonnet.

However, in some forward control vehicles, access to the engine compartment is gained by tilting the cab forward.

General check

After opening the engine compartment, you should carry out the following checks for damage or missing parts and signs of improper servicing:

- Leaks:
  - Check for signs of oil, coolant, fuel or hydraulic fluid leaks
  - Check around the manifold and exhaust system for signs of exhaust gas leaks

- Check and top up if necessary the fluid and oil levels in the:
  - Engine
  - Automatic transmission
  - Power steering
  - Air compressor
  - Fuel injection pumps (if not lubricated by the engine system).

Electrical system

Check the:

- Battery to make sure it is properly secured and that the terminals are tight and free of corrosion
- Distilled water in battery, top up if necessary to the recommended level
- Wiring to make sure that all cables and wiring are properly secured and that all terminals are firmly connected. If the vehicle has spark plugs, pay particular attention to the high-tension wiring and parts. They should be kept clean and dry.

Belts and pulleys

Check the:

- Condition of belts on the following equipment to make sure they are all in place and in good working order:
  - Alternator (or generator)
  - Water pump
  - Air compressor
  - Power steering pump
  - Conditioner (Note some parts use twin belts)
  - Any belts showing signs of cracking or fraying should be replaced

- And the tension of all belts is correct.

Cooling system

Check:

- The radiator is not blocked by insects or grass seeds and that the radiator shroud is secure and undamaged
- The radiator shutters (if fitted) are not damaged or seized
- The fan for damaged, bent or loose blades and worn bearings. Make sure all other parts are clear of the blades.
- All coolant hoses for cracks or weakness and for leaks at the connections.
- And top up radiator with coolant, if required

Safety tip

Extreme care must be taken when checking radiators. The modern engine cooling system operates at a pressure ranging from 40 to 100 kPa. Sudden release of the pressure from an engine at near operating temperature causes the coolant to immediately boil, spraying steam and boiling coolant over the person releasing the pressure. This can cause severe scalding to the face, hands and body.

Bonnet locks

Check that the bonnet locks are properly secured and the bonnet safety catches work

Inside vehicle inspection

In this part of your vehicle inspection, check:

- The controls for correct operation and settings
- The vehicle for safe, uncluttered visibility
- The emergency equipment required in the vehicle

Vehicle entry

If you have a ladder or step, check that grab handles or rails are secure. Check that the doors close properly and latch securely.

Vehicle registration

Check that the vehicle registration has not expired.

Emergency equipment

Check that you have all the necessary emergency and safety equipment required by legislation and company policy, and that it is in good condition. Your equipment should include the following:

- Emergency reflectors and lamps:
  - Check that you have at least three emergency triangles. If you have emergency lamps, check their condition
- First aid kit:
  - If a first aid kit is provided, check that it is clean, fully stocked and correctly stowed
- Spares and tools:
  - Check that you have spare fuses, light globes and tools such as a jack and wheel wrench
  - Snow chains (if applicable)
- Fire extinguishers:
  - Ensure you have the required number and correct type for your particular cargo, and they are fully charged

Type of extinguisher	Type of fuel
Water	Wood, paper, textiles, rubbish etc.
Foam	Wood, paper, textiles, rubbish etc. Flammable liquids Cooking oils and fats
Wet chemicals	Wood, paper, textiles, rubbish etc. Flammable liquids Cooking oils and fats Live electrical equipment
Carbon dioxide	Wood, paper, textiles, rubbish etc. Flammable liquids Cooking oils and fats Live electrical equipment
Powder	Wood, paper, textiles, rubbish etc. Flammable liquids Cooking oils and fats Live electrical equipment
Vaporising liquid	Wood, paper, textiles, rubbish etc. Flammable liquids Live electrical equipment

- If you carry dangerous goods make certain you have the right equipment required by any legislation.

Vision and seating

Clean all windows and mirrors, while cleaning, check them for cracks, scratches or pitting. As you clean the windscreen clean the wiper blades and check their condition. With the windscreen wet, you can check wiper operation. Adjust the seat and the driving mirrors to suit your driving position, and then check the seat belt.

Engine start up

Check that the parking brake is on and the transmission is in neutral. Pressing the clutch pedal down eases the load on the starter.

Start the engine and allow it to idle until correct oil pressure is registered by the oil pressure gauge. If the oil pressure does not register within 5 seconds switch off the engine and try to determine the fault.

Do not over rev the engine on start up or while cold, it takes some time for the oil to reach all parts and for those parts to warm up to their proper working temperature.

With the engine running, check that all instruments and gauges are working and that the readings are within normal limits. That is:

- Oil pressure gauge should begin to register within 5 seconds of starting the engine and then rise to normal pressure
- Voltmeter should show a gradual increase from initial starting voltage to normal operating voltage
- Coolant and oil temperature gauges should gradually rise to normal range
- Oil, coolant and charge working lights should switch off within the first few seconds of start up
- If the vehicle is fitted with air brakes, they should also be checked.

Having allowed the engine to run during the preceding checks, it may now be shut down. To prevent damage to turbo charger bearings due to oil starvation do not shut down a turbo charged engine until it has been running for at least 5 minutes after a cold start. Make sure the parking brake is applied.

Note the air pressure reading when the engine is switched off. This pressure should be checked again after the vehicle has been standing for about ten minutes. Do not operate the brakes during this time. Pressure loss after ten minutes should not be more than ten kPa. Listen for air leaks as you move around the vehicle completing other checks.

Vehicle housekeeping

Remove any rubbish from inside the vehicle. Make sure all equipment is properly stowed. Remove papers and books from the top of the dashboard.

Tilt cab locks

Check that the tilt cab locks are properly secured and the tilt cab safety locks work.

Minor controls

Check the following controls:

- Switches and warning lights for correct settings and to make sure they are all working
- Windscreen wipers and washers, make sure windscreen is wet when testing wipers
- Horn
- Turn indicators; check switch operation, warning light and buzzer
- Head and parking lights, check switch operation and high beam indicator light
- Heater, demister, air conditioner, check operation of controls and units
- Other warning lights not already checked (e.g. oil pressure).

On-board vehicle monitoring and communication systems

Many vehicles are equipped with on-board vehicle monitoring systems. These systems may be used for monitoring and measuring vehicle performance; and vehicle tracking (using GPS systems) for efficiency and security purposes.

Communication equipment may also be installed within vehicles. These systems allow the driver to monitor traffic conditions (updated via head office systems), to receive updates regarding delivery or pickup points, or to communicate using radios or telephones.

Systems should be operated in accordance with company policy and manufacturer's operating instructions. You may need to ask for support and training to understand how the systems operate.

Check the electrical system

Lights, reflectors and signs on your vehicle should be:

- Clean
- Securely attached
- Clearly visible
- Check the following:
  - Red and yellow marker plates (if required)
  - Dangerous goods labels correctly displayed and readable

- Check that the following lights are all in good order:
  - Headlights
  - Parking lights
  - Taillights
  - Number plate light
  - Brake lights and warning buzzer
  - Turning lights and warning buzzer
  - Hazard warning lights
  - Running lights.
- Remember to turn the ignition key and all switches 'OFF' afterwards.

Air and hydraulic brakes

Check your vehicle systems while the vehicle is stationary, and then again when the vehicle is moving.

Air brakes-complete vehicle

Pressures and times quoted in this section are intended as typical examples only.

Check your vehicle-operating manual, or ask your supervisor what the figures should be for your vehicle.

The following is a step-by-step procedure that will enable you to carry out a complete weekly or pre-trip inspection of your air brake system. If your vehicle is a combination vehicle, steps 1 to 11 should be carried out with the trailer brakes connected.

1. Immobilise the vehicle
Park vehicle on firm level ground and apply parking brakes. All wheels on at least one drive axle should be securely chocked, front and rear. During this inspection all brakes will be released. Do not perform this air brake inspection if these conditions cannot be met.

2. Drain all air (wet) each day
Empty all air from the tanks by opening the drain valves. This is done in order to remove condensed moisture (water) from the tanks and to allow checking of other parts in the system.

Water in the system causes corrosion and decreases brake component life. Watch for signs of oil in the drained water. If any oil is present, the compressor may need servicing. Close all drain cocks after the system has been drained.

Brake system manufacturers recommend that air tanks are drained daily.

3. Start Engine
Turn the ignition key on. The low pressure warning buzzer and/or light should begin operating continuously. Start the engine and run at fast idle (approximately 1000 rpm) to build up pressure in the reservoirs. While pressure is building, take careful note of the items mentioned in steps 4, 5 and 6.

4. Low pressure warning cut off
The low-pressure warning device should continue operating until the air pressure reaches at least 410 kPa.

5. Rate of pressure build up
Check the time taken for the pressure to increase from 350 kPa to 600 kPa. This time will vary from one vehicle to another depending on the tank capacities, type of compressor, and engine speed used. You should record the actual time taken and watch for any change each time you repeat the test (always using the same speed). Have the system checked if:

- The time varies by more than one minute
- On the first time you do this test the time exceeds five minutes. (Five minutes may be a satisfactory time if tank capacity is large or the engine speed is set low, but have it checked to be sure).

If service and reserve tanks are fed through individual check valves, pressure build-up should be steady and equal on both gauges. In other systems where the reserve tank is fed from the service tank through a charging valve, the service gauge will reach a predetermined pressure before the reserve tank begins to build up.

6. Maximum cut-off pressure
Check the pressure at which the unloader valve operates and no further pressure build-up occurs. This should be at least 690 kPa. If outside this range, have it checked.

7. Release parking or spring brakes
Check that the vehicle is on firm level ground and the wheels are chocked (as in step 1). Release the parking brake; make sure the tractor protection valve is in the 'normal' position. This ensures that all brakes are released including the spring brake, if fitted.

8. Pressure loss with system standing
Run the engine until maximum pressure has been reached and then shut it down. While the vehicle stands for five minutes note any drop in pressure (it may help to lightly tap the pressure gauge if it appears to be sticking). If the pressure drop in five minutes exceeds 35 kPa the system should be checked.

Where time permits, allowing the vehicle to stand for ten minutes and watch for a pressure drop of no more than 70 kPa can perform this check more accurately.

9. Apply the brakes
Apply the brakes fully by pressing the brake pedal to the floor and holding it there. The pressure drop should not be more than 85 kPa.

Excessive pressure drop as the brakes are applied can be due to a fault in the system or may indicate that the brakes need adjusting. Continue to hold the brakes on for one, or if possible, two minutes. Any further pressure drop should not be faster than 15 kPa per minute for rigid vehicles, or 20 kPa per minute for combination vehicles. If the above limits are exceeded, have the system checked.

10. Loss of pressure protection
With the engine switched OFF, reduce air pressure in the tanks by repeatedly pumping the brake pedal. The low Air Pressure warning device should begin operating within the range of 280 kPa to 410 kPa and the tractor protector valve should switch from 'normal' to 'emergency' position within the range 140 kPa to 310 kPa.

11. Apply the parking brakes
Re-apply the parking brakes and start the engine to build up full pressure before continuing with your inspection.

12. Air brakes trailer system
If your vehicle is a combination vehicle, steps 1 to 11 should have been carried out with the trailer brakes connected. The following additional steps should also be carried out with these vehicles.

13. Break away application.
After ensuring that:

- The vehicle is on firm ground with the wheels chocked (step 1)
- Air tanks are fully pressurised
- The tractor protection valve is in the 'down release' position
- The trailer brakes are fully released
- The air hoses between the prime mover and trailer are connected.

Safety tip

Take care when disconnecting air couplings under pressure. Protect your eyes from release of compressed air and hold the coupling parts firmly to prevent them flying apart.

The trailer brakes should immediately and automatically apply. This can be verified by checking for movement of the trailer brakes linkage. This emergency application of the brakes should be capable of holding the vehicle for at least 15 minutes.

14. Check Tractor Protection Valve
When the trailer hoses were disconnected, the tractor protection valve should have switched from the 'down release' position to the 'emergency' position and sealed off the prime mover system so no air could escape through the trailer hoses. Some vehicles are fitted with cut off valves on the air couplings that also prevent air loss. If these are fitted, the tractor protection valve may not operate.

Fully apply the foot brake and hold the pedal down. Pressure losses should be no more than those obtained in 9.

15. Return system to normal

Re-connect the trailer hoses making sure the air couplings are properly locked. Start the engine and recharge the air tanks. Reset the tractor protection valve to 'normal' and apply the parking brakes.

Hydraulic brakes

If the parking brake is not mounted on the transmission it will need to be released for this check, so chock the wheels.

With the engine running, release the parking brake and apply the foot brake normally.

If the pedal moves more than halfway down, adjustment or bleeding of the system is required. The need to bleed the air from the system may be indicated if the pedal feels soft or 'spongy' rather than firm. Re-apply the parking brake after this check.

Pedal travel firmness

Slow application check; apply the foot brake very slowly taking about 15 seconds to achieve full pedal travel. If the pedal goes all the way to the floor or noticeably further than usual, hydraulic seals in the system may be leaking. Have the system checked.

Maximising pressure check, with the engine running, rapidly pump the pedal three times, then apply brakes with the maximum force possible and hold the application for about five seconds. If the pedal moves further down during this time, service is required.

The previous two checks do not apply to all over hydraulic systems.

Vacuum assisted system

For vacuum assisted brakes, first inspect the brakes as explained in the previous section, 'Hydraulic brakes,' then carry out the following additional checks of the vacuum system:

- Run the engine until maximum vacuum is reached in the vacuum reservoir
- Vacuum loss brakes are applied with the engine switched off, fully apply the brakes and note the rate of vacuum loss (tap the gauge if the needle is sticking). If the vacuum is lost at a rate of more than 12 mm per minute the system should be checked
- With the engine switched off, pump the brakes until the low vacuum, warning signal operates. If the signal does not operate before the pressure drops below 200 mm, the system should be checked
- Check that all hoses are properly secured and in good condition. Check that the air filter on the vacuum assistance unit is not blocked and is correctly fitted.

System operation-vehicle moving

In this final part of your vehicle inspection the vehicle will need to be driven. Before starting you should apply the parking brake, remove the wheel chocks, (if in place), and check that the surrounding area is clear of traffic and other obstructions.

Trailer (if attached)

Release all brakes on the vehicle and gently drive the vehicle forwards about one metre. Stop the vehicle, apply the trailer brake only and try to move off again. The vehicle should not move. If it does, check that the air-lines are all connected correctly, and repeat the test. If the trailer brakes still do not work, do not drive the vehicle until the fault is repaired.

Parking brakes

With all brakes released, gently drive the vehicle forward about one metre. Stop the vehicle, firmly apply the parking brakes and gently try to move off again. The vehicle should not move. If it does, the parking brake should be checked before the vehicle is driven.

Service brakes

Drive the vehicle forward in first gear at about 5 km/h (walking pace) and then apply the foot brakes as hard as you would in an emergency. If the brakes pull to one side, respond sluggishly or feel unusual in any way they should be checked before driving the vehicle.

Air suspension

After the air pressure has built up, check that the bellows are supporting the vehicle and your vehicle is level. Make sure that the bellows are not in contact with other parts, and are not damaged. Listen for air leaks in the system.

Steering

With the front wheels in a straight ahead position, check the free play by turning the steering one way and then the other way, checking for loose play.

If the vehicle is equipped with power steering, these checks may be carried out with the engine running provided the parking brake is applied and the rear wheels are chocked.

While carrying out these checks, listen for any unusual noise from the power steering pump. Drive vehicle forward slowly at no more than 5km/h, turn steering wheel to right full lock then left full lock. Check for anything unusual, particularly any strange noises, scrapes or knocks.

Clutch

Check the free play of your clutch by pushing in the pedal until a slight resistance is felt. Normal free play is between 5 cm and 25 cm.

Transmission

With the engine running and the clutch pedal held down, check that the gear lever and other transmission controls operate properly.

Pedals

Check that the rubber pads are properly fitted and in good order. In particular make sure to press the accelerator firmly to the floor (with the engine switched OFF) checking that it shows no sign of sticking or jamming.

Turntable coupling

Check by gently driving forward and then gently reversing, if there seems to be any abnormal movement in the coupling find out why, and have the fault corrected.

On road check

After driving the first 50 kilometres of a trip, stop in a safe place away from traffic flow and briefly check around the vehicle. For example, you should check the temperature of the tyres, hubs and brake drums. A high temperature could indicate an under inflated tyre, a binding brake or faulty wheel bearing. Check for oil, water or other leaks. Make sure the load is still secure.

Complete documentation

Once a vehicle inspection is carried out, any damage or faults must be reported. In most companies, a record of defects or faults will be in place. It is your responsibility to ensure that you are aware of any company policies relating to recording and reporting faults, and that you follow the procedures required. An example of a vehicle inspection checklist can be found over the page.

Whether you are an employee of a company or you are self-employed, it is worthwhile to read manufacturer's operating manuals. These manuals contain detailed information on the correct operation of the vehicle (and any ancillary equipment), as well as troubleshooting information.

Every vehicle needs regular maintenance.

There are two types of routine maintenance:

- Preventative servicing or maintenance
- Breakdown repairs or maintenance

Unexpected breakdowns can be costly for everyone concerned. The impacts of unexpected breakdowns range from expensive repair bills, lost time for workers, hiring replacement vehicles and most importantly, customer orders will not be delivered on time.

Breakdowns can be prevented by regular planned maintenance. Being proactive about identifying and repairing potential problems minimizes the risk of breakdown and the unexpected costs associated with them.

DAILY VEHICLE INSPECTION CHECKLIST

Vehicle registration number: _____WMZ 192_____
Vehicle odometer reading: _____189057_____
Vehicle make/type: _____Isuzu _____
Driver: _____John Citizen_____

When completing this checklist, please mark each item as follows:
✓ = satisfactory/available × = defective/missing **N/A** = Not Applicable

	External Vehicle condition		**Fluids**
✓	Condition of vehicle bodywork, windscreen, windows, lights	✓	Engine oil level
✓	Condition of windscreen wiper blades	×	Coolant level
✓	Cleanliness of windscreen, windows, mirrors, lights, numberplate	✓	Windscreen washer level
✓	Security of load, trailer	✓	Brake/clutch fluid
✓	Condition of tyres, tyre pressure, tyre wear and condition	✓	Power steering fluid
✓	Availability of spare wheel and jack	✓	Condition of battery
✓	Vehicle posture	✓	Oil or water leaks

	Vehicle interior/equipment		**Function checks before starting the journey**
✓	Condition and function of seatbelts	✓	Warning lights/alarms
✓	Seat adjustment	✓	All lights
✓	Head restraint adjustment	✓	Horn
✓	Mirror adjustment	✓	Washers and wipers
✓	Registration label	✓	Brakes
✓	First aid kit	✓	Fuel
×	Fire extinguisher	✓	Gauges
✓	Torch		
✓	Warning triangles		
✓	Cleanliness of interior		
✓	Vehicle handbook		
✓	Vehicle defect reports		

Description of vehicle defects/damage identified:
Fire extinguisher is missing from the vehicle. Coolant level is low, could be a leaky radiator. Should be inspected by mechanic and repaired ASAP. Vehicle was not taken. Checklist was given to Operations Manager and repairs discussed.

Defects reported to:_Operations Manager Date: ____20 January 2014___

Driver name: _____John Citizen_____ Signature: __J. Citizen_____

Clean your vehicle/trailer

Why is it important to have a clean vehicle/trailer?

Having a clean vehicle/trailer is important for many reasons ranging from vehicle/trailer safety to a better public image. A clean vehicle/trailer will:

- Improve company's image and your own image as the owner of that vehicle/trailer.
- Promotes company/owner image because it allows the public/client to clearly see the company/owner name on the vehicle/trailer
- Improves safety because the vehicle is free from rubbish, dirt and obstructions.
- Increases the life and improves the condition of the vehicle/trailer.

Legislative requirements for cleaning area

By law, companies must have a special area where vehicles/trailers are cleaned, so that pollutants do not flow into storm-water drains.

The area for cleaning vehicles/trailers must:

- Have a roof to stop storm water flooding the separator pit
- Be surrounded by a concrete border high enough to prevent spilling of contaminated water
- Have a separator pit for separating:
  - Oil
  - Petrol
  - Diesel
  - Detergent
  - Other pollutants
- Have a power supply for the use of cleaning equipment such as:
  - Vacuum cleaners
  - Steam cleaners
  - High-pressure cleaners
- Have a water supply that may consist of hot and cold water
- Be safely located so that the cleaning of vehicle/trailer does not get in the way of other company operations.

Equipment and materials used in vehicle/trailer cleaning

A wide range of equipment and materials can be used to assist with the task of vehicle/trailer cleaning. Some examples are:

- Protective clothing
- Bucket, brooms, brushes and squeegee
- Chamois rags and dusters
- Steam cleaning/pressure cleaner
- Ladder and steps
- Vacuum cleaner and power source
- Water hose and water source
- Various cleaning agents that are recommended by the manufacturer of your vehicle/trailer that will not damage or harm the vehicle/trailer's surfaces.

Storage of cleaning equipment and materials

Cleaning equipment and materials should be stored in a clearly marked area. This is necessary so that:

- Everybody knows where they can be found
- Cleaning equipment and materials do not become physical hazards
- Cleaning agents, chemicals and sharp instruments are kept out of the way.

The area should be safe to move around in so that removing and returning cleaning equipment and materials is safe and easy. Storage areas should be made safe by the use of:

- Tool racks
- Cabinets
- Sheds
- Indoor and outdoor areas for easy access.

Storage areas should include operating manuals for all cleaning materials and machinery/equipment held in the store.

Documents to record the use of cleaning materials and any spare parts should be filled in and checked each time you use the equipment in that area. The safe and proper storage of equipment and the use of materials storage facilities are referred to as "good housekeeping".

Housekeeping can be identified as the process used by organisations to maintain a safe, clean and tidy workplace. Poor performance in this area can result in inefficiencies leading to poor productivity and safety concerns.

This function is directly linked to Occupational Health and Safety (OH&S) Regulations that must be followed under Federal and State law.

Safe handling of cleaning equipment and materials

Some of the materials used in cleaning are dangerous if they are not handled or used properly. In some cases specific training may be needed before you can operate the mechanical equipment or use hazardous cleaning substances.

CLEANING MACHINERY/EQUIPMENT

To safely use or operate cleaning machinery/equipment you should:

- Read the instructions on how to use the cleaning machinery/equipment
- Check the equipment to make sure it is in good condition
- Make sure the electrical switches are not broken or damaged
- Check that electrical cords are not frayed, guards are fitted, etc.
- Ask your supervisor to show you how to use the equipment if you have never used it before
- Obey all safety signs in your work area.

Cleaning products

To safely use cleaning products you should:

- Read the warning labels and instructions for use
- Know what to do if an accident happens
- Ask your supervisor to show you how to use cleaning products if you have never used them before (if applicable)
- Obey all safety signs in the work area.

Maintenance of cleaning equipment

Electrical equipment needs regular servicing to keep it in good working order.
Equipment used in cleaning such as steam cleaners, vacuum cleaners etc., can be dangerous if they are not maintained in good condition, and serviced regularly.

Manufacturers of electrical equipment will have a suggested maintenance schedule for the equipment they make.

Cleaning your vehicle and trailer

When you are cleaning your vehicle/trailer it is a good idea to do it in a logical and systematic order. The most effective and time saving way to clean your vehicle/trailer is in the following order:

- Clean the inside of the vehicle
- Clean the outside of the vehicle
- Clean trailer
- Check vehicle/trailer

Clean the inside of your vehicle in the following order:

- Check prior to opening vehicle doors
- Remove rubbish and dispose of appropriately
- Stow all equipment such as:
    - Passenger reading material
    - Safety information
    - Invoice books and other stationery
    - Breakdown equipment
    - First aid kits, dangerous goods
    - Safety equipment required by law
    - Videos, music cassettes and CDs.
- Sweep/vacuum and dispose of waste
- Check and clean passenger facilities
- Clean seats, dashboard, steering wheel, instrument panel, mats, operating levers, pedals (with a cleaning agent) and replace seat protectors (where applicable)
- Clean all interior glass surfaces with approved cleaning agent
- Close all windows, door and air vents to prevent dust and water from entering the clean interior
- Fill water containers for passenger requirements
- Replace soap, hand towels and toilet rolls in bus rest rooms
- Check that pillows and blankets are clean and stowed correctly

Clean the outside of the vehicle

Wash exterior with hose in order to remove excess dirt, dust, and mud pockets. Paint surfaces can be severely marked by grit particles.

Wash exterior with hose and brush/broom to remove road grime. Apply cleansing agent to water i.e.: detergent, car wash liquid; according to company policy and manufacturer's recommendation.

Hose exterior of vehicle to remove detergent and chemicals. Chamois dry exterior of vehicle to give a smear free finish. Clean glass and chrome with approved cleaning agent.

Clean trailer

Prior to cleaning trailer you should check that all lashing equipment and tools are properly stowed. Trailer should be first tidied by:

- Removing rubbish from trailer.
- Disposing of rubbish in appropriate place
- Sweeping trailer.

Clean trailer systematically:

- Hose off trailer (top, sides and underneath)
- Clean with broom and brush
- Apply cleansing agent to water and wash trailer (top, sides and underneath)
- Hose off trailer and dry.

Check vehicle/trailer

Examine vehicle and re-check the following:

- Mirror placement for vision
- Windscreen
- Washers and wipers
- Safety check that brakes are working. If you do not know how to do this ask your supervisor to show you how. You should always check the vehicles brakes after cleaning the vehicle.

Maintaining vehicle/trailer cleaning area.

It is important that you maintain a clean safe working area. The tasks you need to attend to are:

- Clean area of responsibility
- Waste removal
- Scheduling
- Equipment maintenance
- Returning and storage of equipment and material
- Continuous monitoring to maintain workplace standards
- Regular inspection.

Waste removal

When considering waste removal, the important things you need to consider are:

- Risk from chemical spills
- Contamination
- Removal of materials used to absorb spillage's etc. these need to be treated under the same rules as the original product

To manage waste you need to apply the following principles:

- Reduce
- Re-use
- Recover
- Segregate
- Specialised removal
- Application of hazardous waste removal regulations and code of practice.

Chemicals in the workplace

More than 2,000 people die each year in Australia because of exposure to chemicals in the workplace. We use chemicals everywhere in our homes as well as at work.

Chemicals can be in the form of solids, liquids or gases. The only way to work with them safely is to know the right way to use them.

With many chemicals the damage to health doesn't happen straight away, but over time. The effects of the chemical build up in your body can cause illness.

Safety tip

The only safe way to use chemicals is to know what the dangers are with each chemical and follow the procedures or rules for safe handling every time you use them.

Cleaning rags and dusters that can be re-used should be separated from polluted rags. Polluted rags should be separated to avoid any possibility of reaction from other chemically polluted rags. These should be stored in appropriate waste containers. You should arrange for specialised removal in accordance with company and regulatory requirements.