

Welcome To Shift Training Online Study

Course Outline

TLIC4006 Drive multi-combination vehicle

This Session: Theory

- Road Rules
- B Double Routes
- Legislation Requirements
- Fatigue, COR and Load Restraint
- Work Health and Safety Requirements
- Driver attitude and professional behavior



Course Outline

TLIC4006 Drive multi-combination vehicle

Theory assessment

In line with TMR guidelines there will be a closed book assessment at the completion of todays training.

You may take notes during training however you must not refer to these during assessment.

You must be deemed competent on the theory prior to undertaking the practical assessment.

Course Outline

TLIC4006 Drive multi-combination vehicle

Next Session: Practical training and assessment

- Load Restraint
- Vehicle inspection
- Reversing 80 mts
- Un–couple and Re–couple of trailers
- Safely Drive a multi-combination vehicle on a pre-determined route

National Heavy Vehicle Regulator

The **National Heavy Vehicle Regulator** or **(NHVR)** is responsible for administering all regulatory services for heavy vehicles including:

- Permits oversize and route
- Heavy Vehicle National Law Act 2012
- Mass, Dimension and Loading Regulation
- Fatigue Management Legislation
- And plenty more...

As a professional driver you need to know and follow all relevant legislation and guidelines — the NHVR is a great place to start.

Working with others



As a professional driver you will be working with and communicating with people from a range of backgrounds and cultures.

Under the Anti Discrimination Act 1991 you are required to resect cultural diversity within the workplace.

Shift Training does not tolerate or endorse any form of discrimination on any of its business practices.

Workplace Health & Safety

As a professional driver and a person in the workplace there are some OH&S obligations that you must meet.

On your practical day ensure that you...





Workplace Health & Safety

- Take reasonable care for your own health & safety
- Tell your trainer about potential hazards
- Follow any safety guidelines as instructed
- Take reasonable care not to affect the health and safety of others by your acts or omissions
- Report any injury immediately to your trainer





Workplace Health & Safety

Make sure that you have the correct licence for the class of truck, or load shifting equipment (forklift etc.)

Always carry your drivers licence when you are driving!



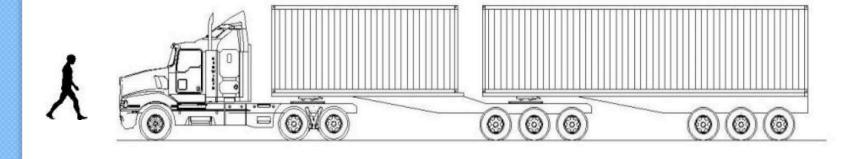
PPE and Safety Advice

- PPE will be required for all mine sites, transport yards, construction sites and as a multi combination driver.
- You will be able to find safety requirements in the OH&S manual and in company policies



Walking Direction

- When inspecting or checking the road side of your vehicle or trailers always walk towards the traffic.
- Approach cab door from the front of the vehicle



Entering and exiting the vehicle

Ensure three points of proper contact

- Grasp the door handle or other handle provided
- Use foot steps provided
- Do not use the steering wheel for support





Drugs and Alcohol

As a Multi - Combination driver it is important to maintain a **professional**, **safe** and **legal** work environment for yourself and other road users.

- Zero alcohol limit 0.00
- Zero tolerance for drugs



What is a B Double?

A **B-Double** is a prime-mover towing two semi-trailers. The first trailer is a lead semi-trailer (A trailer), the second is a conventional semi-trailer (B trailer).

The lead semi-trailer (A trailer) has a turntable at its rear, which means another semi-trailer can connect without the use of a converter dolly.



Heavy Vehicle Mass Limits

- I. General mass limits applies to all heavy vehicles
- 2. Concessional mass limits accredited under the NHVAS
- 3. Higher mass limits accredited under the Mass Management Module of the NHVAS

COMMON B-DO	JBLE COMBINATIONS - CLASS 2				
20	7 Axle B-double	≤ 19.0	55.5	57.0	57.0
21	8 Axle B-double	≤ 26.0	59.0	61.0	62.5
22	8 Axle B-double	≤ 26.0	59.0	61.0	62.5
23	9 Axle B-double	≤ 26.0	62.5	64.5	68.0

What is a Road Train?

A **Road Train** is a combination, except a B-Double, consisting of a prime mover towing at least two trailers and a converter dolly.



Heavy Vehicle mass Limits

General mass limits - applies to all heavy vehicles

Concessional mass limits – accredited under the NHVAS

Higher mass limits – accredited under the Mass Management Module of the NHVAS

37	60; 165t 200; 200; 200; 200; 200; 200;	18 Axle BAB-Quad	≤ 53.5	122.5	124.5	135.5
38	60x 16.5x 20.0x 16.5x 20.0x 20.0x 20.0x	17 Axle ABB-Quad	≤ 53.5	119.0	121.0	130.0
39	60 165 200 200 200 200 200 200	18 Axle ABB-Quad	≤ 53.5	122.5	124.5	135.5



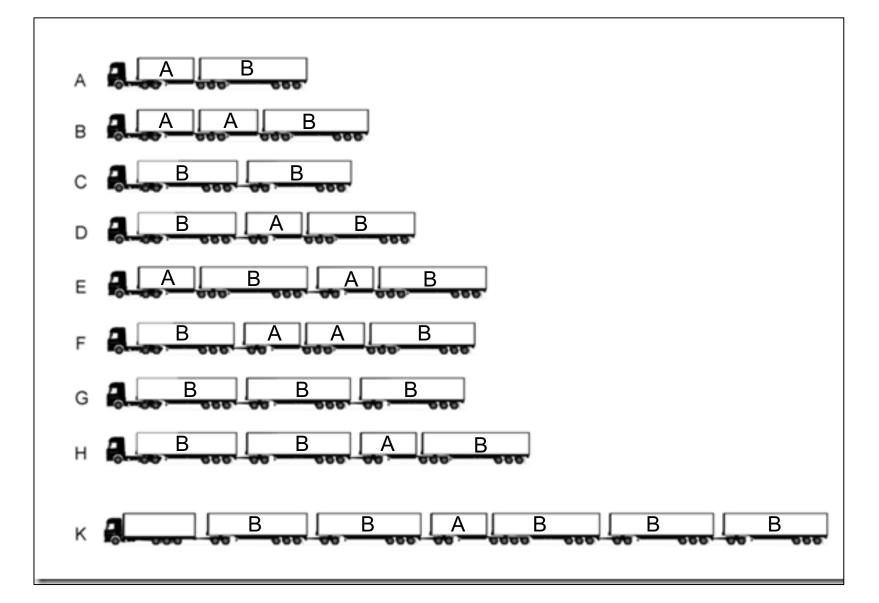












What is a Converter Dolly?

A dolly is a mechanical vehicle which is coupled to a truck or trailer by using a "ring feeder".

They usually have either two or three axles with a turntable to which the semi-trailer is attached.

Dolly trailers have electrical, air and sometimes hydraulic connectors which require connection to the truck's receptor to enable the its lights, brakes and hydraulics to function.



Environmental hazards you may encounter while driving

Whilst driving you should consider hazards that may effect you ability to drive safely

- Dust
- Animals
- Sun Glare
- Poor visibility
- Flooded roads
- Windy conditions
- Overhanging trees or branches



Environmental hazards you may encounter while driving











Legislation

As a heavy vehicle driver you need to be aware of **some** of the following laws that apply to you:

- Transport Operations (Road Use Management) Act 1995
- Transport Operations (Road Use Management—Road Rules) Regulation 2009
- Heavy Vehicle (Fatigue Management) National Regulation 2016



Legislation cont.'

As a heavy vehicle driver you need to be aware of **some** of the following laws that apply to you:

- Heavy Vehicle (Mass, Dimension and Loading) National Regulation
- Load Restraint Guidelines 2018 (NTC)

Be aware that this is only a sample of laws and legislations that you need to be aware of.



Do I need a Permit?

Common types of permits that you may be required to obtain are:

- Route permit
- Dangerous Goods
- Oversize / Over mass





Refer to NHVR or TMR for more information



Licence classes / gearbox

Common types of permits that you may be required to obtain are:

- MC (a) automatic transmission
- MC (b) synchromesh gearbox
- MC non synchromesh gearbox

The difference between a synchromesh gearbox and non synchromesh is simply doubling de clutch



Speed Limits

A speed of 90km/h for:



- a road train or
- a B-triple fitted with mechanical suspension on any trailer axle.

A speed of 100km/h for:

- a B-double or
- a B-triple combination fitted with air suspension on all trailers axles or a prime mover/semitrailer combination towing one converter doll



Speed Limits



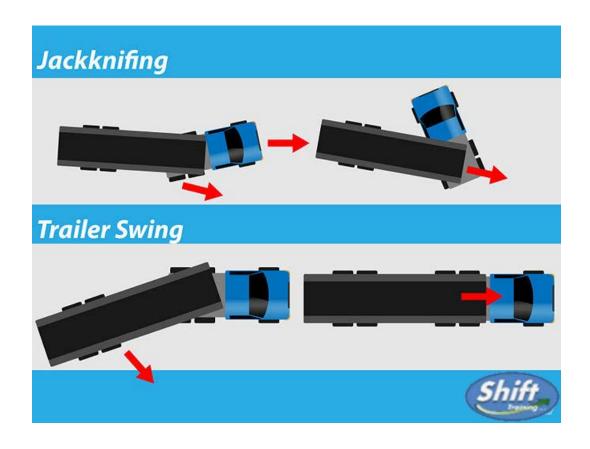
A speed of 50km/h for:

- a built up area where it is not signposted otherwise, and
- an area of road that has a system of street lighting



What causes jackknifing?

Jackknifing can be caused by sudden braking, mechanical defect or loss of air supply to the trailers

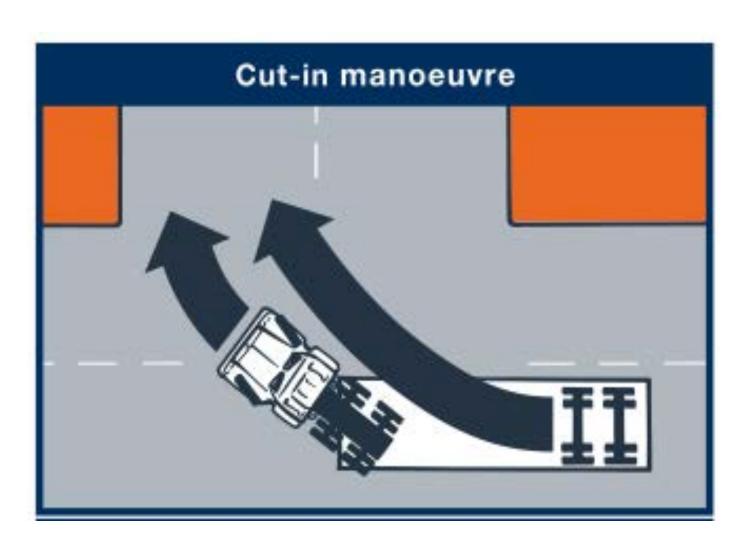


Cut In or Swept Path

When any vehicle goes around a curve or turn, the rear wheels usually follow a shorter path than the front ones, the rear wheels will track inside those of the prime mover.

This is especially true for a multi combination vehicle with multiple articulation points.

Cut In or Swept Path

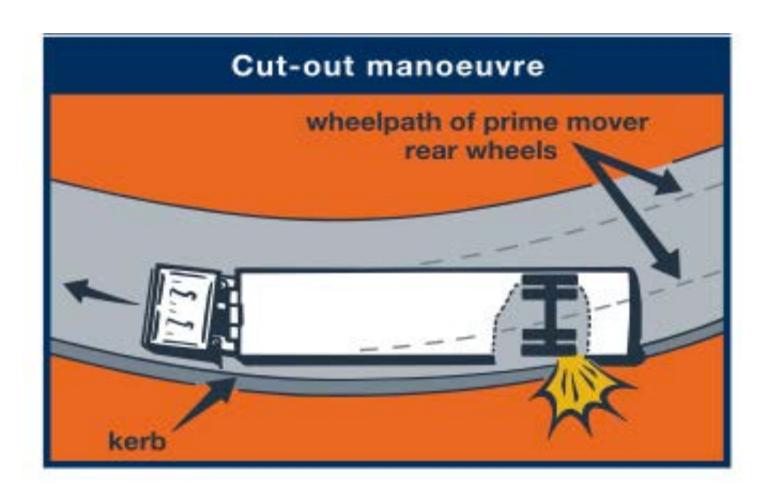


Cut Out

At high speeds, the rear wheels can track outwards.

Where the bend has a kerb, the rear wheels may strike the kerb, causing the vehicle to roll over.

Cut Out

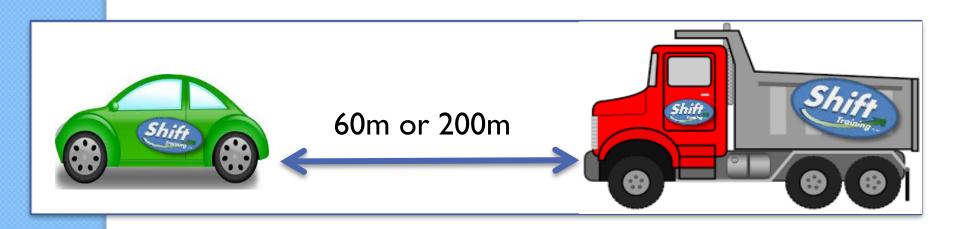




Following Distance

Keep it safe and legal – when following another vehicle ensure you maintain a safe following distance.

- 60 metres for a B Double
- 200 metres for a Road Train





Following Distance





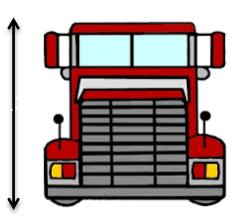




Heavy Vehicle Dimensions

The height limit is **4.3 metres** unless it is a:

- 4.6 metres Vehicle built to carry cattle, horses, pigs or sheep on two decks.
- 4.6 metres Vehicle built with at least 2 decks for carrying vehicles.
- 4.4 Double decker bus.





Heavy Vehicle Dimensions

The legal width not including mirrors and signaling devices:

2.5 metres.





Heavy Vehicle Signage

If the driver of a truck or bus and is over 4.5 tonnes GVM is driving on a length of road to which a trucks and buses low gear sign applies, the driver must drive the truck or bus in a gear that is low enough to limit the speed of the truck or bus without the use of a primary brake.





Brake fade

Brake fade is caused by overheating of the brake pad and any vehicle which uses the action of a brake pad rubbing on a brake rotor to convert the vehicle's kinetic energy into heat has the potential to develop brake fade.

To help reduce brake fade, shift into a lower gear before starting down a hill and use auxiliary brakes or "retarders".

Ensure that you do not continuously ride the brake for extended periods of time.

Using Engine Brakes

The use of Engine braking is not restricted however drivers should be considerate of local residents when they see these type of signs.

Signs that display:

"Do Not Use Engine brakes" must be obeyed.





Vehicle Signage

Warning signs must be fitted to all road trains and B-doubles over **22m long**, in accordance with:

Transport Operations (Road Use Management – Vehicle Standards and Safety) Regulation 2010

LONG VEHICLE ROAD TRAIN

Warning signs **must not** be displayed on vehicle combinations that are not longer than 19m



B Double Rated

Modification plates may show the following codes:

- S9 B Double
- SII Road Train



The registration label will also display if the vehicle is capable of being B Double rated based on the GCM.



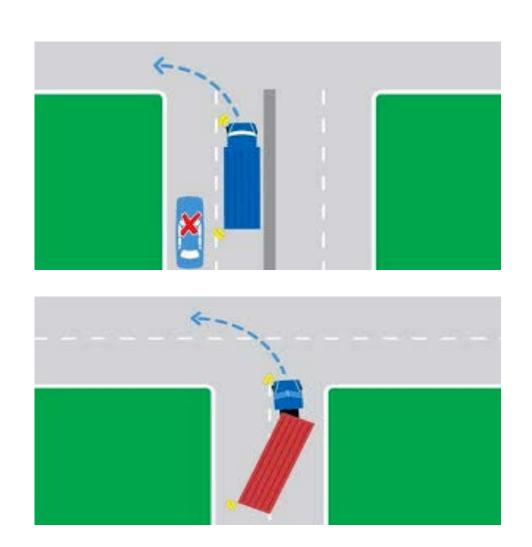
Do not overtake turning vehicles

A vehicle may display a "do not overtake turning vehicle" sign only if the vehicle, together with any load or projection, is 7.5m long, or longer.

This sign allows you to make a left or right turn from any part of, or using two lanes if it is required to do so and from a point no further than 50 mts from the intersection.



Do not overtake turning vehicles

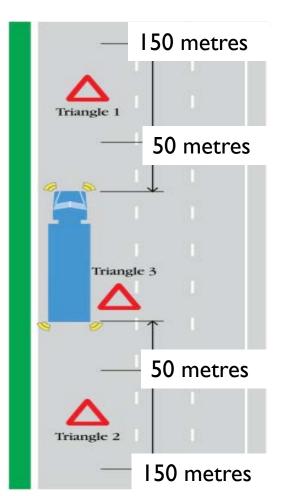




In the event of a breakdown

Warning triangles must be displayed

Where the speed limit is **less** than **80km/h** and the vehicle is not visible at any time for at least 200m in all directions **Warning Triangles** must be placed at the required distances.

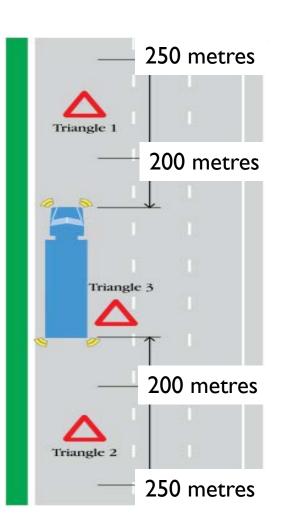




In the event of a breakdown

Warning triangles must be displayed

Where the speed limit is **more** than **80km/h** and the vehicle is not visible at any time for at least 300m in all directions **Warning Triangles** must be placed at the required distances.





Transport Officers



An authorised officer may direct the driver or operator of a heavy vehicle that is stationary or has been stopped under the "Transport Operations, Road Use Management Act 1995" section 33, to move the vehicle, or cause it to be moved, to a stated reasonable place within a 30km radius from:

- (a) where the vehicle was stationary or stopped; or
- (b) if the direction is given within the course of the vehicle's journey, any point along the forward route of the journey.



Parking



Under local council law, a heavy vehicle must not stop on a length of road in a built up area or in a public place for longer than one hour, unless it is dropping off or picking up goods for the total time when the vehicle is stopped; or unless it is permitted to do so in certain streets or areas or by an official traffic sign.

- Parking may be permitted in designated parking bays, rest areas, at your depot or truck stops.
- Under the "Transport Operations, Road Use Management Act 1995" Local Government will regulate parking for a heavy vehicle.



Road Conditions

Road conditions and travel information may be accessed through:



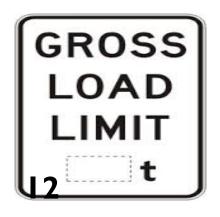


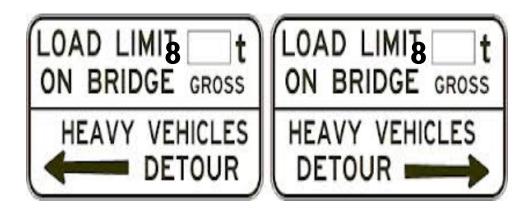




Load Limits

You must not drive past a bridge load limit sign, or a gross mass limit sign, if the gross mass of the vehicle is greater than that stated on the sign







High and heavy loads

When you are transporting a heavy and high load you may have to go across and, or go under bridges.

The best place to access a safe route to travel will be the NHVR.



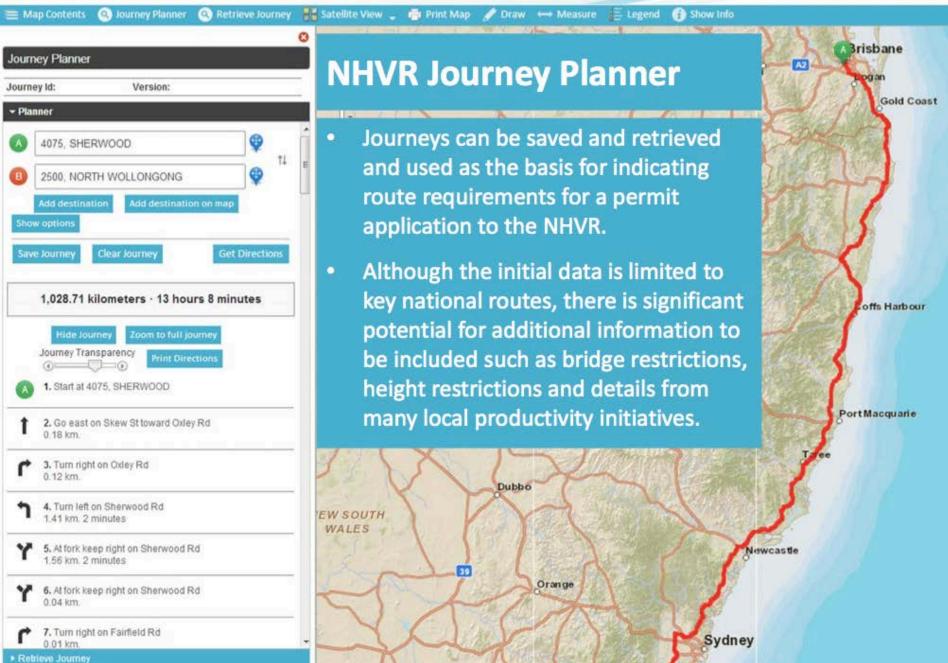
B Double Routes / Route Permit

B-doubles must only drive on roads that are on approved routes.

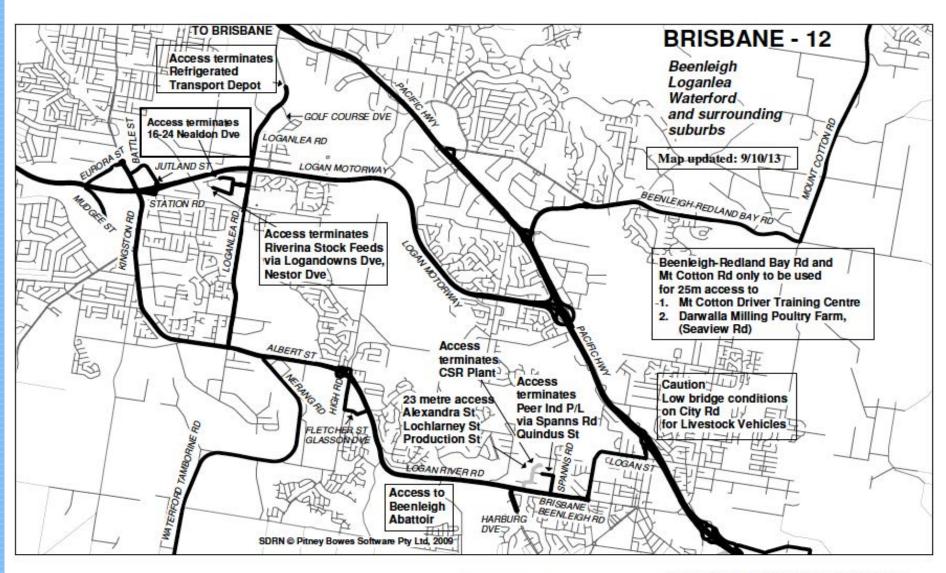
A B-double permit is required for travel on a road outside of the approved B-double network.

The **NHVR** processes ALL class 2 B-double permit applications except for travel within the Northern Territory and Western Australia.





MULTI-COMBINATION ROUTES IN QUEENSLAND



B-DOUBLES

23 metre routes 23 & 25 metre routes ROAD TRAINS

→ Type 1 routes

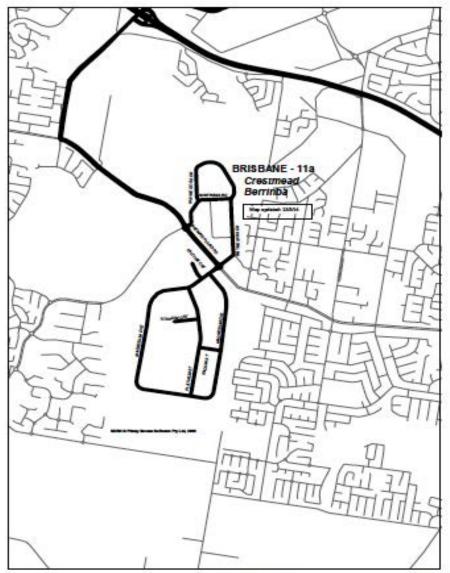
→ Type 1 & 2 routes

NO ROAD TRAINS or B-DOUBLES REFER TO LEGEND FOR DETAILS OF OPERATIONS IN THE SHADED AREAS

Note: 23 & 25 metre B-doubles can access Type 1 & 2 road train routes

MULTI-COMBINATION ROUTES IN QUEENSLAND





B-DOUBLES

23 metre routes 23 & 25 metre routes ROAD TRAINS

Type 1 routes
Type 1 & 2 routes

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B Double Route Planning

When planning a route for a multi combination vehicle ensure that you consider the following:

- What are the risks?
- Do you have enough fuel?
- Is access permitted on that road?



Do you have enough hours in the log book?



B Double Route Planning

If you are unable to continue to your destination as planned you may need to:

- Inform your supervisor, and or
- Find an alternative route, and or
- Split the trailers and run as a single and return to retrieve the second trailer

About fatigue management

Driver fatigue is a safety hazard for the road transport industry.

National heavy vehicle driver fatigue laws apply to fatigue regulated heavy vehicles.



About fatigue management

The laws cover all aspects of work and rest relating to heavy vehicles including:

- work and rest hours
- recording work and rest times
- fatigue management exemptions
- Chain of responsibility obligations

At the heart of the laws for fatigue management is a primary duty - a driver must not drive a fatigue-regulated heavy vehicle on a road while impaired by fatigue.

Drivers may be impaired by fatigue even when complying with work and rest limits.



About fatigue management

A fatigue-regulated heavy vehicle is:

- a vehicle with a Gross Vehicle Mass (GVM) of over 12t
- a combination when the total of the GVM is over
 12t
- buses with a GVM over 4.5t fitted to carry more than 12 adults (including the driver)
- a truck, or a combination including a truck, with a GVM of over 12t with a machine or implement attached.



National Work Diary

You must use a Work Diary if you are:



- a driver of fatigue-regulated heavy vehicle who drives more than 100km from their home base, or
- operating under Basic Fatigue Management (BFM) or Advanced Fatigue Management (AFM) you must complete a work diary to record your work and rest times unless you have a work diary exemption

See NHVR Work Diary for more Information

ORIGINAL to remain in the back)

NATIONAL DRIVER WORK DIARY DAILY SHEET

WORK DIARY NO.

0-350									2-5000		DRIV	ER IDE	NTIFE	CATION			200	-			15-11	2000	
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J Smith						Two-up Driver's Work Diary & Page No: QAJ381203 36					No: Ty	Two-up Driver's Licence issued:						Two up Driver's Signature.					
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 12 adults (including the driver)
- A truck, or a combination including a truck, with a GVM of over 12t with a machine or implement attached.

For more information contact the NHVR



Standard Hours – what are they?

 Maximum 12 hours work time in any 24 hour period driving a fatigue regulated heavy vehicle



See NHVR for more information

Time	Work	Rest
In any period of	A driver must not work for more than a maximum of	And must have the rest of that period off work with at least a minimum rest break of
5 ½ hours	5 ¼ hours work time	15 continuous minutes rest time
8 hours	7 ½ hours work time	30 minutes rest time in blocks of 15 continuous minutes
11 hours	10 hours work time	60 minutes rest time in blocks of 15 continuous minutes
24 hours	12 hours work time	7 continuous hours stationary rest time*
7 days	72 hours work time	24 continuous hours stationary rest time
14 days	144 hours work time	2 x night rest breaks [#] and 2 x night rest breaks taken on consecutive days

Basic Fatigue Management (BFM)

• Operators with Basic Fatigue Management (BFM) accreditation can operate under more flexible work and rest hours, allowing for work of up to 14 hours in a 24-hour period.

Provided that the driver is working for a company that has BFM accreditation issued through TMR and the driver has a BFM certificate and has been inducted into the companies BFM program.

See NHVR for more information



Causes that increase fatigue related accidents

- Alcohol
- Loading
- Little rest
- Poor health
- Long driving hours
- Poor eating habits
- No sleep or disturbed sleep patterns
- Working in hot or uncomfortable conditions





Possible effects of a fatigue related accident

- Injury
- Loss of life
- Legal implications
- No or little income
- Company loses income
- Trauma Stress on your family and others





Good Fatigue Management Strategies

- Rest
- Exercise
- Drink water
- In cabin exercise
- Know your limitations
- Eat well (low fat and low calorie)
- Ask your family to respect your need for rest





Factors that may contribute to an accident when driving an MC vehicle

- **Speed** too fast for the situation
- Mechanical problems tyre blowouts
- **Inattention** distracted by phone or radio
- Drug and alcohol use impaired judgment
- Fatigue drowsy or nodding off, sleep debt
- **Poor road conditions** pot holes, gravel, slippery





Stress Management – Road Rage

Stress can play a major part in your fatigue management strategy.

It can add to road rage incidents and impact on your health.

Five principles of stress management

- Remain calm
- 2. Think before acting
- 3. Take care of yourself
- 4. Don't rush or be in a hurry
- 5. Have a realistic work schedule





In an accident

If your involved in an accident you should follow the following procedures.

- I. Check for injury yourself and others
- 2. Secure the scene put triangles out
- 3. Assist where possible and to the level of your training
- 4. Notify authorities call emergency services
- 5. Swap driver details
- 6. Wait on scene for emergency service
- 7. Report the accident to your workplace





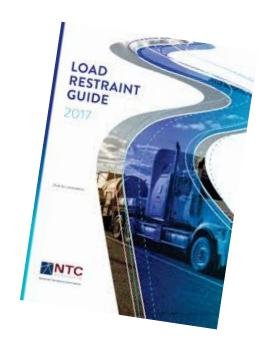
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The load restraint guide is produced by the National Transport commission – current edition 2018.

Available to purchase here.





The load restraint guide ensures the safe loading and carriage of loads on road vehicles preventing injury to people and damage to property

- The correct load restraint system must be used to prevent loads moving and to stop loads falling from the vehicle.
- The centre of mass of the load should be just forward of the rear axel group to provide even weight distribution across all axels to ensure traction and stability.

See Load Restraint Guide For More Information

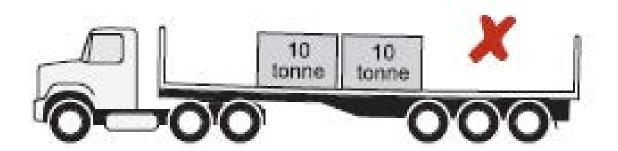
Arranging Loads

The centre of mass of the load should be in front of the rear axle of a semi trailer to provide enough weight on drive axles of the prime mover for traction and stability.



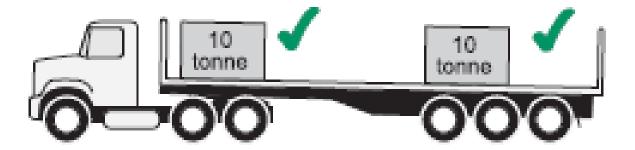
Arranging Loads

Heavy objects should be loaded first and positioned to provide even loading across the deck and shared between axles.

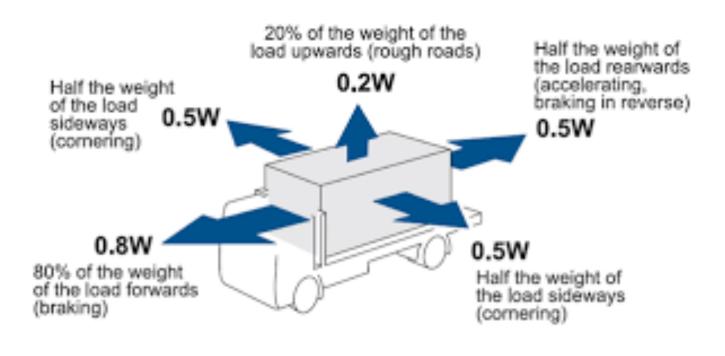


Arranging Loads

Correct weight distribution.



Load restraints must be able to secure loads as described below.

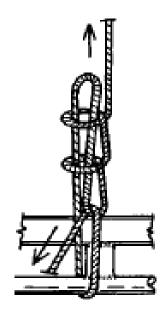


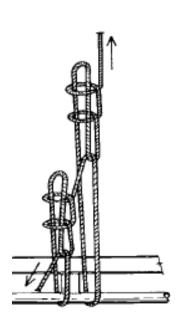
(W = Weight of the load)

Rope – Under "CoR" ropes are not banned however the NTC has clear guidelines on how it should be used.

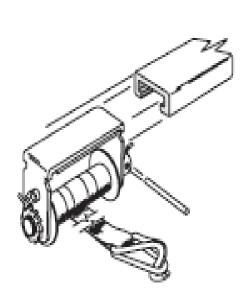
See the Load Restraint Guide for more information.

Truckies Hitch

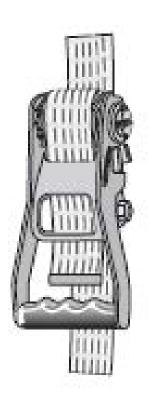


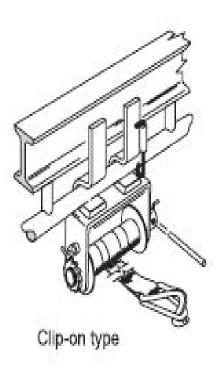


Webbing Straps

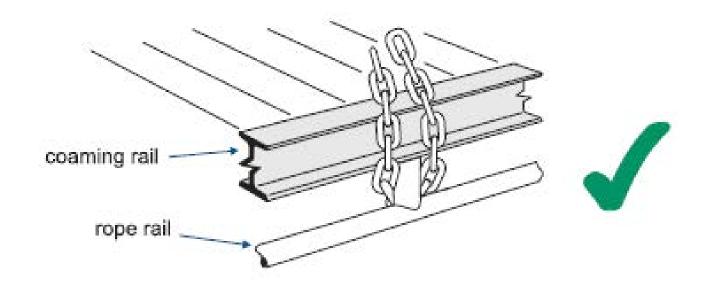


Slide type





Chain – secured around the "dropper".





5 key driving techniques when loaded

- 1. Stability check to load
- 2. Braking brake early, slowly
- 3. Hazard observation look well ahead
- 4. Steering or cornering slow and steady
- 5. Following distance maintain a 4 second minimum between vehicles

Observation and Scanning

Most road crashes with other vehicles occur because one or both of the drivers involved did not see the other vehicle in time to take appropriate action.

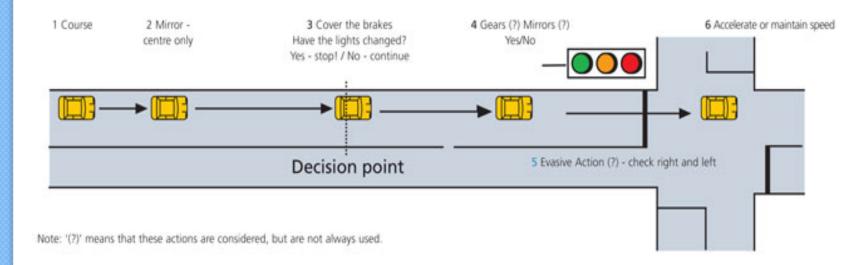
There are five rules for using your eyes more effectively and efficiently.

Rules of Observation (for looking)

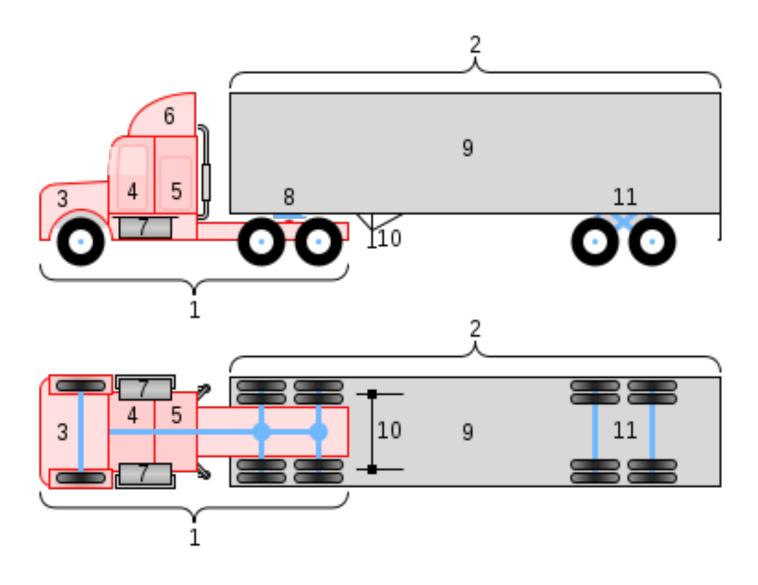
- I.Aim High in Steering
- 2. Keep Your Eyes Moving
- 3. Get the Big Picture
- 4. Leave yourself an 'out'
- 5. Make Sure Other Drivers See You

Traffic Lights

Stop if safe...



Truck and Trailer Parts



Coupling trailers

Pin - Air / Electrics - Legs



Coupling trailers



- I. Park on flat ground
- 2. Hazards on
- 3. Reverse to trailer
- 4. Park brake on
- 5. Visually check pin and height with turntable
- 6. Reverse under skid plate
- 7. Visually check alignment pin and turntable
- 8. Wind legs 50mm of the ground
- 9. Reverse back until locked on
- 10. Perform a "tug test"



Coupling trailers



- II. Visually check handle, jaws and pin
- 12. Connect air and electrics
- 13. Lift legs and secure
- 14. Check all lights
- 15. Check air pressure
- 16. Drive forward slowly
- 17. Complete a "trailer brake test"
- 18. Drive away look and listen for anything unusual with trailers.



Tug test

The "tug test" is a must to ensure that the jaws have locked around the pin.

Failure to do this test may result n the trailer/s falling off.



Un Coupling trailers

Cones – Legs - Air / Electrics - Pin



Un Coupling trailers



- I. Park vehicle on flat ground
- 2. Engage park brake (maxi brakes)
- 3. Turn on hazard lights
- 4. Lower landing legs (ensure they are high enough you can pull away from trailer)
- 5. Disconnect air and electrical lines don't forget turn off the taps
- 6. Pull handle to release turntable jaws
- 7. Drive forward slowly to ensure the trailer is disconnected correctly

Don't forget to put your cones out!



Completing Pre Start

You must complete a pre start inspection or vehicle inspection daily to ensure the safe operation of your vehicle.

To ensure that you comply with *CoR* and in accordance with manufacturer's specifications, operating procedures and company policy / procedures.

Reversing

Reversing - possibly the most difficult task in B Double or road train. Minimum requirement of **80 metres.**

Steps to help will include:

- Keep calm
- Listen to your trainer
- Use both your mirrors
- Keep calm
- Listen to your trainer
- Use your hazard lights
- Keep your speed to minimum
- Use small turns try not to over steer
- Keep calm



Completing Pre Start







Completing Pre Start

If you discover a defect on your vehicle during your inspection you must:

- Record and report
- Repair the fault if possible
- Tag the vehicle out if unable to repair





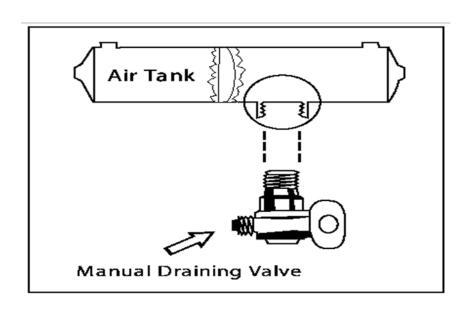
Difference between air and hydraulic brakes

- Hydraulic brakes use brake fluid to transmit force to the brakes when the brakes are applied.
- Compressed air is released from air tanks and the pressure decreases, pressing the brakes against a brake drum / disk, slowing the truck down.



Draining Air Tanks

Use the taps to release a build up of water and or moisture in the air tanks – if you fail to do this it will reduce the amount of air being held in the tanks and rust will form.





Speed limiters

Heavy vehicles required to be fitted with a speed limiter can have the speed limiter set to no higher than a maximum speed of 100 km/h.

This prohibits the driver being able to accelerate over the regulated speed.





Using the UHF



The main channel is 40 or 29

When using the UHF radio there are some rules you need to follow:

- Do not swear
- Only use as intended
- Keep chatter to a minimum
- Channel 5 and 35 is for emergency use only



Missing a gear

If you miss a gear and cant select your chosen gear you should:

- Change to a higher gear or
- Go back to previous gear

If safe you could always pull over and stop and start again!



Oncoming traffic

If you notice that a vehicle is coming onto your side of the road you should:

- Come off accelerator
- Flash your lights
- Sound horn
- Veer slowly to the left
- Look for an escape route



Drive to suit the conditions

If you are driving in bad weather conditions and the camber of the road is changing you should:

- Ease off the accelerator
- Consider your lane position
- Drive at a speed to suit the conditions



Losing front wheel traction

If you are driving and you lose front wheel traction you should:

- Ease off the accelerator / or brakes
- Straighten front wheels

Once you have regained traction ease back onto the accelerator or brakes.



Using exhaust / engine brakes

You are permitted to use your auxiliary brakes at anytime:

Unless signed otherwise

Be considerate of residential areas if you have a noisy braking system.



When scanning for hazards

Whilst driving you should always maintain a 12 second lead time, that is:

Scan 12 seconds of of where you are

By scanning ahead you will be able to identify hazards, traffic build up and have enough time to slow and stop if required.



Spotting a hazard

When you spot a hazard you should do the following:

- Identify hazard moving or fixed
- Predict hazard movement
- Decide on a plan of action
- Act on that decision

Always consider other road users when acting on hazard avoidance.



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Factors that can effect handling

The following may effect the handling of your MC vehicle:

- I. Uneven surfaces
- 2. Incorrect loading of trailers
- 3. Overtaking / passing
- 4. Over braking
- 5. Trailer whip

This is only a sample, there are many other factors to consider when driving a multi combination.



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Give way to buses

You must give way to buses if the road is not more the 70km/h and the bus is signalling its intention to move from the bus stop.

Give Way To Buses



Practice Assessment Time

