

MULTI-COMBINATION/HEAVY COMBINATION TRAINING COURSE

STUDENT MANUAL



BARKLY DRIVING SCHOOL

A.C.N. 005 578 503

ACCREDITED VIC ROADS PROVIDER OF HEAVY VEHICLE TRAINING &
LICENCING

A Quality Assured Company ISO 9002

55-59 Westwood Drive, Deer Park / Burnside: V IC 3023 Tel (03) 9361 2000 Fax (03) 9361 2011

BARKLY DRIVING SCHOOL

The Evolution of B-doubles

B-Doubles originated in Canada in 1973 and have operated in New Zealand since the late 1970's.

In Australia, they were introduced into Western Australia in 1983 and Queensland in 1984, with New South Wales following almost immediately.

A study by the University of Saskatchewan in Canada proved conclusively that the crash rate of B-Doubles is only 53% of single articulated vehicles. If B-Doubles replaced the conventional single articulated vehicle, and considering the greater payload of B-Doubles, the crash rate can be reduced by 65%. It must also be noted that Canada does not have designated B-Double routes, therefore under Australia's guidelines the crash reduction rate should be even higher.

The first B-Doubles in Victoria were milk tankers operated by Murray Goulburn in the early 1980's. Permits at that stage were \$12,000 with very limited access to roads. This operation proved to be not as efficient as expected for Murray Goulburn, however the trials did prove to be beneficial to the transport industry in certain applications.

The Australian Road Research Board (ARRB) have results from research that indicate *'the B-Double is more stable than a single articulated vehicle through low speed turns such as those encountered in urban intersections.'*

The National Association of Australian State Road Authorities has predicted that 16 lives would be saved and 50 serious accidents would not occur annually if B-Doubles were to replace single articulated vehicles. To date in Australia, B-doubles are achieving a safety record 10 times better than any other road vehicle.

Heavy and Multi Combination Course Notes

Documentation

The driver of a B-Double must carry with them at all times the usual documentation relative to a heavy vehicle.

- Multi Combination Licence
- Log Book
- NHVR Journey Planner User Guide
To obtain the Gazette Notice visit www.nhvr.gov.au and head to the Journey Planner to find approved B-Double Routes Australia wide
- Any permits issued by VicRoads entitling you to use a road or roads listed in the above publications
- Dangerous Goods Licence (if applicable)
- Dangerous Goods Emergency Procedures Guide (if applicable)
- Vehicle must be registered as a B-Double

Permits

Permits are required on approved routes for B-Doubles over 62.5 tonnes unless owners are accredited under Higher Mass Management.

If a B-Double moves off an approved road a permit is required, unless directed by a member of the police force or VicRoads officer. These permits must be obtained from the appropriate council, shire or VicRoads.

When operating interstate, always check for local requirements.

WARNING

Unauthorised use of a non-approved road or failure to comply with any of the requirements in the Information Bulletin will leave the driver and operator liable for prosecution.

Heavy and Multi Combination Course Notes

ABS Braking System

Anti-Lock Braking Systems are required to be fitted to all Prime-mover vehicles in Victoria.

Trailers involved in general freight do not require ABS Braking to be fitted.

Dangerous good vehicles must have ABS Braking fitted to all axles of the prime-mover and all trailers (specifically road tankers).

The approximate stopping distance for a loaded B-Double at 100 km/h in ideal condition is 200 Metres.

Speed Limits for B-Doubles

B-Doubles must be Road Speed limited to maximum of 100 kph.

Therefore, B-Doubles must not exceed 100 kph or the posted speed limit, whichever is the lesser.



Heavy and Multi Combination Course Notes

Signs

Long Vehicle Sign

A warning sign must be affixed in a horizontal position at the rear of the back trailer. The sign must be made of rigid material at least 1020 mm long X 250 mm high with a retro-reflective yellow background with the words 'LONG VEHICLE'.

This sign must be mounted so that no part of it is higher than 1.8 metres or less than 500 mm above the ground.

This sign must be fitted to all B-Double configurations; the 'LONG VEHICLE' sign must be displayed if the vehicle exceeds 22 metres in length.



Portable Warning Signs

Heavy Vehicles over 12 tonnes must carry three portable warning signs.

On roads with a speed limit less than 80km/h, if vehicle is not visible for 200 metres in all directions:

- If your vehicle breaks down, you must place one sign to the rear and one sign to the front of the vehicle, between 50 and 150 metres from the vehicle.
- The third sign must be placed at the side of the vehicle nearest the centre of the road.

On roads with a speed limit of 80km/h or more, if the vehicle is not visible for 300 metres in all directions:

- One triangle must be placed 200-250 metres behind and one triangle in front of the vehicle or fallen load.
- One triangle must be placed by the side of the vehicle or its fallen load.

NOTE: If you have broken down in the right hand lane of a multi lane carriageway, the third sign should be to the left of the vehicle.

Heavy and Multi Combination Course Notes

Signs cont.

Do Not Overtake Turning Vehicle Signs

This sign allows a long vehicle (over 7.5 metres) to occupy space outside an assigned lane when turning as long as:



- The vehicle is within 50 metres from a corner.
- The move can be made safely.
- Wherever possible you should set the back of your vehicle so that the traffic behind you cannot overtake your vehicle on the side you are turning to.

List of bridges that you are not permitted to cross in a B-Double are listed in the VicRoads B-Double & Higher Mass Trucks

Over-Dimensional Signs

O.D. signs show approved routes for 'Over-Dimensional' vehicles (**B-Doubles are not Over-Dimensional vehicles**).



Heavy and Multi Combination Course Notes

Following Distance for B-Doubles

Drivers must keep a sufficient distance between the vehicle travelling in front in order to stop safely and avoid a collision. Vehicles must not unreasonably obstruct the path of another vehicle.

Any vehicle longer than 7.5 metres (long vehicle) must keep the required minimum distance from other long vehicles, unless on a multi-lane road or any length of a road in a built-up area or overtaking.

The minimum distances are:

- For a long vehicle travelling in an area in which Road Trains are permitted to operate, unless driving on a multi-lane road, in a built up area or overtaking, the distance is **200 metres**.
- For a long vehicle travelling on either an approved B-Double route, driving on a multi-lane road, in a built-up area or when overtaking, the distance is **60 metres**.



Heavy and Multi Combination Course Notes

Handling Characteristics

Off Tracking

The maximum allowable off tracking is not to exceed 100mm either side of the hauling unit, while travelling in a straight line on a level, smooth surface.

Note: When entering or leaving land abutting a highway, B-Doubles must be driven forwards only.

Cut In

Cut-In for a 25 metre B-double generally fall inside that of a 19 metre semi trailer.

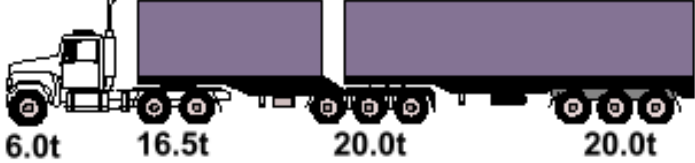
Factors Affecting Handling Characteristics

- Uneven or change of surface (roundabouts / intersections)
- Incorrect loading of trailers.
- Overtaking/passing. You must be careful not to drop off the shoulder due to the camber of the road.
- Over braking on one wheel or trailer (incorrect brake adjustment or poorly maintained brakes).
- Trailer whip (ring feeder versus turntable).

Heavy and Multi Combination Course Notes

B-Double/HC Dimensions

	Dimension in Metres	Weight in Tonnes	Trailer Configuration
MC/ LENGTH	25.00	62.5 TON	All B-Doubles
WIDTH MC/HC	2.5		
HEIGHT MC/HC	4.3 4.6		General, including load Livestock, car carriers & cubic
HC/ LENGTH	19 M	42.5TON	

Vehicle Type	General Mass Limits (tonnes)
 <p>19m long B-Double 6.0t 16.5t 16.5t 16.5t</p>	55.5
 <p>25m long B-Double 6.0t 16.5t 16.5t 16.5t</p>	55.5
 <p>6.0t 16.5t 16.5t 20.0t</p>	59.0
 <p>6.0t 16.5t 20.0t 20.0t</p>	62.5

Heavy and Multi Combination Course Notes

Table 1 - Local Road Access Status

General Mass Limits			Higher Mass Limits (Road Friendly Suspension)		
Vehicle Type	Mass limit (tonnes)	Local Road Access	Vehicle Type	Mass limit (tonnes)	Local Road Access
Column 1	Column 2	Column 3	Column 1	Column 2	Column 3
 6.0t 9.0t	15.0	Yes	 6.0t 10.0t	16.0	Yes
 6.0t 16.5t	22.5	Yes	 6.0t 17.0t	23.0	Yes
 6.0t 9.0t 16.5t	31.5	Yes	 6.0t 10.0t 17.0t	33.0	Yes
 6.0t 16.5t 16.5t	39.0	Yes	 6.0t 17.0t 17.0t	40.0	Yes
 6.0t 16.5t 20.0t	42.5	Yes	 6.0t 17.0t 22.5t	45.5	Approved routes
 6.0t 16.5t 16.5t 16.5t 19m long B-double	50.0	Yes	 6.0t 17.0t 17.0t 17.0t 19m long B-double	57.0	Approved routes
 6.0t 16.5t 16.5t 16.5t 26m long B-double	55.5	Approved routes	 6.0t 17.0t 17.0t 17.0t 26m long B-double	57.0	Approved routes
 6.0t 16.5t 16.5t 20.0t	59.0	Approved routes	 6.0t 17.0t 17.0t 22.5t	62.5	Approved routes
 6.0t 16.5t 20.0t 20.0t	62.5	Approved routes	 6.0t 17.0t 22.5t 22.5t	68.0	Approved routes

- Note: 1) This publication is not applicable to buses. Contact VicRoads for information on routes that may be used by buses.
 2) The information in this bulletin does not apply to truck/trailer combinations, including pig, tag and dog trailers.
 3) Vehicles in the unshaded area are permitted to travel throughout Victoria.

Heavy and Multi Combination Course Notes

Road Train Information

Length of Combinations

- 2 Trailers - 36.5 metres (WA, SA, QLD, NT, NSW)
- 3 Trailers - 53.5 metres (WA, SA, QLD, NT)

NOTE: Trailers must not differ more than **3 metres** in length from each other.

The maximum allowable off tracking is not to exceed 100mm either side of the hauling unit, while travelling in a straight line on a level, smooth surface.

Weights

- 2 Trailers - 79 tonne all states (except Victoria)
- 3 Trailers - 115.5 tonne all states, unless special permission is granted by a permit (Except Victoria & NSW).

	Dimensions in Meters	Weight in Tonnes	Trailer Configuration
LENGTH	36.5		2 Trailers (WA,SA,NSW,QLD,NT)
	53.5		3 Trailers (WA,SA,QLD,NT)
WIDTH	2.5		
HEIGHT	4.3		General Stock, Car Carriers & Cubic
	4.6		
WEIGHT		79	2 Trailers Tri-Tri
		115.5	3 Trailers Tri-Tri

Converter Dollies

- The converter dolly towing eye is to be permanently marked to be legal.
- Length of lead between the towing eye and the pivot point of the axles on the converter dolly is: **Minimum of 3 metres**
Maximum of 5 metres
- The towing 'A' frame angle must not differ more than **5 degrees** from Dolly to Ring feeder.
- It is important to check the bushes at the end of 'A' frame of the converter dolly for wear and movement.
- Before coupling ensure the turntable is clean (free from sand etc).

Heavy and Multi Combination Course Notes

Road Train Information cont.

Ring feeder

- The Ring feeder is to have a 'D' rated pin AS 2213-1984
- The Ring feeder must be 50mm diameter and this must be matched with a 50mm ring. (A 40mm pin is not allowed in a 50mm eye).
- Sizing collars are no longer permissible.
- There is to be no more than 4mm wear between the ring and the pin.
- The Ring feeder must have a safety locking pin and this pin must be visible in the locked position.

Converter Dollies: Brakes

When towing a trailer with a converter dolly attached, only connect the supply line to release the maxi-brakes (spring brakes), **do not** connect the control line as this may cause the brakes to lock up, even under normal braking.

Signs

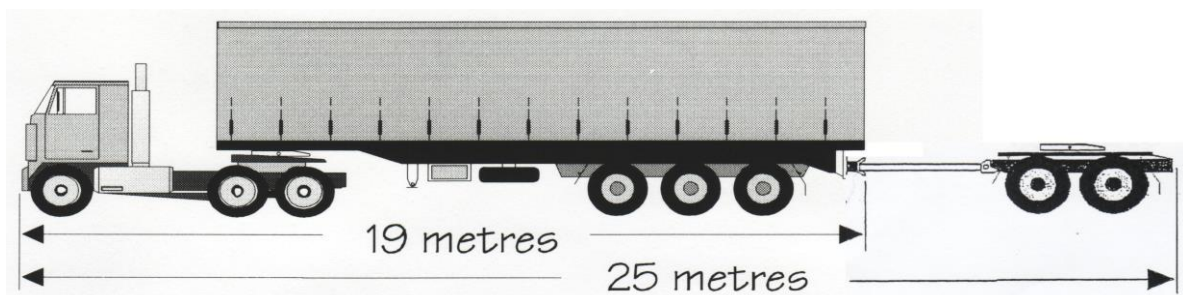
Where the overall vehicle length is more than 22 metres, the converter dolly must have a LONG VEHICLE sign fitted to the rear of the dolly.

Licence Requirements

The driver of a prime mover and semi trailer combination which tows an unladen converter dolly, must hold a Multi-Combination licence.

NOTE: the converter dolly must not carry a load whilst in Victoria.

Refer to VicRoads information Bulletin: Towing an Unladen Converter Dolly behind a Semi-Trailer.



Heavy and Multi Combination Course Notes

Road Train Information cont.

Coupling and Inspection of Trailers

- Ensure that you check all requirements with the State authority in which you intend to operate for the coupling of trailers.
- Trailers must not vary in length more than **3 metres**.
- The **lightest** trailer must be at the rear.
- Always check as to whether a yearly roadworthy is required.

Speed Limits

- 2 Trailers - 90kph unless otherwise stipulated on the gazette or permit.
- 3 Trailers – The truck must be gear and speed limited to 90kph

Road Train Sign

- A warning sign shall be affixed in a horizontal position to the front of the hauling unit and to the rear of the back trailer of all road trains.
- The sign shall consist of retro-reflective yellow background not less than 1200mm wide by 250mm high with the legend '**ROAD TRAIN**' in black letters 180mm high.
- The front warning sign must be fixed in such a way that it is not below the bumper bar of the hauling unit.
- The rearmost warning sign is to be no more than 3 metres above ground level and no less than 1.8 metre.
- No reflector sign other than the '**ROAD TRAIN**' warning sign, except as permitted by law, must be affixed to the front of any road train.
- The warning sign must not obscure any light, registration plate or other safety device.
- A '**ROAD TRAIN**' warning sign must not be displayed on any vehicle unless such vehicle is operating as a road train.

Heavy and Multi Combination Course Notes

Important Information

Brakes

If brakes are **hydraulic**, check the master cylinder fluid level. If it is low, check for leaks around the master cylinder and from each wheel cylinder.

If brakes are **air brakes**, check that the air intake filter is not clogged. Open the air tank taps and check for oil in the air that comes out. Do not forget to close the taps afterwards. **These checks should be done every day.**

Medical Eligibility

It is advised that prior to undertaking training or testing you should seek clarification from VicRoads. If you have any medical condition, it is in your interest to ensure that it is appropriate for you to apply for the category of vehicle in which you are interested. There is a legal obligation for all drivers to notify VicRoads if they develop a medical condition that may impact on their ability to drive safely.

Work Diary

A work diary must be obtained from VicRoads Customer Service Centre. When getting a work diary you must show your current drivers licence and take your old diary with you, if you have one.

Filling In Your Work Diary

This must be filled every day on a daily sheet in your work diary.

Work time in your heavy vehicle work diary includes:

- Any time you spend on tasks related to the operation of regulated heavy vehicle.
This includes driving the vehicle, loading or unloading the vehicle, inspecting, servicing or repairing the vehicle, performing marketing tasks in relation to the operation of the vehicle, helping with or supervising an activity mentioned above, recording information or completing a document, being in the driver's seat or a heavy vehicle while the engine is running, instructing or supervising the driver of a heavy vehicle.

Heavy and Multi Combination Course Notes

Avoid Medicines

Some medicines may cause drowsiness. Those that can cause drowsiness have labels on them warning against operating vehicles or machinery. Common medicines that may cause drowsiness include cold tablets, hay fever and allergy medicines.

If you have to drive while you have a cold, it is much safer to drive with the symptoms than to take medication.

Load Distribution and Arrangement

The first priority when loading a vehicle is to keep within load limits for the vehicle and its wheel, axle and axle group load limits.

Always place heavy items at the bottom, and spread the load close to the centre line of the vehicle

High loads have poor stability so there is a greater chance of overturning when cornering.

High loads should be carried on low platform vehicles with multiple axle groups.

Coupling and Un-Coupling the Trailer

Inspect the area and secure the semi-trailer. Make sure the area is clear of obstacles and people. Check the front and back of the semi-trailer wheels on both sides.

Inspect or check coupling devices for damage and to see that they will fit together correctly. The turntable should be tilted back with the jaws open (The turntable is mounted on the back of the prime mover and connects the primer and trailer).

Drive the prime mover so that it is positioned squarely in front of the semi-trailer. Use the right mirror to line up the outside edge of the right rear prime mover wheel with the right edge of the semi-trailer. Get out and check that the **prime mover and semi-trailer are lined up accurately**. Back the prime mover under the skid plate and disengage the clutch pedal when you feel and hear the turntable engage the king pin.

Check the trailer height. The prime mover should lift the trailer slightly as it hooks up. The plate should be just lower than the prime mover's turntable.

Heavy and Multi Combination Course Notes

Traffic Speed and Following Distance

The safest speed to drive in heavy traffic is the same speed as other vehicles, so long as this is within the speed limits. Vehicles going in the same direction at the same speed do not often run into each other.

At night you should leave a longer gap behind the vehicle in front. The maximum speed limit for any Heavy Vehicle including HC or MC is 100Kph.

System of Vehicle Control

Always slow or stop the vehicle using the brakes and then select the appropriate gear to continue.

Parking

Unless a parking sign says that a long vehicles are allowed to park in an area, you must not park in a built-up area for more than one hour if your vehicle has a GVM over 4.5 tonnes or is 7.5 metres long or more, unless permitted by the local Council, or if you are engaged in dropping off or picking up goods. You must not double park at any time.

Head Lights Range

You should drive at the speed that will let you stop within the distance that you can see ahead of you.

For instance, at night on low beam, you can probably see ahead 80 metres. When driving at night with your high beams on, you must dip your head lights within 200 metres of the vehicle ahead of you or an oncoming one.

Travelling Next To Other People or Vehicles on a Two Lane Freeway

When you are driving on a two lane freeway in an 80km/zone, you should always stay in the left lane unless overtaking.

Alcohol

You must have a **zero Blood Alcohol Concentration (BAC)** at all times if you are the driver of:

- Any bus.
- Any rigid or articulated truck over 15 tonnes GVM.
- A heavy vehicle with 'Driver under Instruction' plates because you are learning.

Heavy and Multi Combination Course Notes

Heavy Combination/Multi-Combination Questionnaire

1. What is the maximum allowable width of a Prime Mover and Semi-trailer combination?

Answer:

2. What is the Blood Alcohol Content (BAC) for a Heavy Vehicle over 15 tonnes?

Answer:

3. What is the maximum allowable length of a Heavy Articulated Vehicle including its load?

Answer:

4. When you are driving on a two-lane freeway in an 80kph or more zone, which lane should you choose?

Answer:

5. When should you fill out and update your Work Diary/ Log Book?

Answer:

6. What is the best method to slow or stop your vehicle?

Answer:

7. What is the maximum allowable speed for a B-Double?

Answer:

Heavy and Multi Combination Course Notes

B-Double Retention Questionnaire

8. What is the maximum weight allowable on a green gazetted road for a 25m B-Double without the need to obtain a permit?
- a. 42.5 tonnes b. 62.5 tonnes c. 65 tonnes
9. What is the maximum allowable off-tracking for a B-Double?
- a. 150mm b. 100mm c. 200mm
10. What is the maximum length of a B-Double in Victoria without a permit?
- a. 23 metres b. 26 metres c. 25 metres
11. A long vehicle sign must be fitted to a B-Double over what length?
- a. 19 metres b. 22 metres c. 25 metres
12. What is the maximum heights of a Single Deck Vehicle (not including livestock or car carriers)?
- a. 4.1 metres b. 4.3 metres c. 4.6 metres