

BORCAT TRAILERS PTY LTD

Trustee for Borcat Trailers Unit Trust

477 Victoria Street, Wetherill Park NSW 2164

Ph: (02) 9631-9594 Fax: (02) 9756-5572

ABN: 11 975 478 495 ACN: 131 446 341

www.borcat.com.au



Customer Delivery Information

Version 2: April 2017

THANK YOU FOR PURCHASING A
BORCAT TRAILER

Enclosed are your operating manuals and
warranty information.

We wish to advise that we offer a
COMPLIMENTARY FIRST SERVICE
when the trailer has travelled 2,500 km's.

To arrange your complimentary service,
Contact us on
Phone: 02 9631 9594

All services are carried out at:
477 Victoria Street, Wetherill Park NSW 2164

Please feel free to contact us at any time for
any further information.

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Product Warranty

Borcat Trailers P/L (hereinafter referred to as 'The Company') warrants its manufactured equipment to be free from defects in material and workmanship for a period of 12 months or 130,000 km whichever comes first, provided original ownership has been maintained.

This warranty is only where such equipment has been used in a normal manner, adequately maintained and has not been subjected to misuse, negligence, accident or overload. The warranty does not apply to normal wear and tear.

In the event of any part or parts of equipment manufactured by The Company proving to be defective within the terms of this warranty, The Company will replace or repair at its option such part or parts free of charge during normal hours provided such equipment is returned to The Company's registered address.

Where a failure occurs within the terms of this warranty and because of distance it is not practical to return the equipment to The Company's premises, The Company may authorise local repairs at its expense, providing prior notification has been given to The Company.

Components, equipment or parts thereof manufactured by The Company's suppliers are warranted to no greater extent than the warranty given by such supplier to The Company.

This warranty is in lieu of and excludes all other warranties, guarantees, conditions either expressed or implied by statute or otherwise and no person is authorised to assume or authorise for The Company any obligation outside of this warranty.

BORCAT TRAILERS

Servicing and Maintenance

These instructions are provided by BORCAT TRAILERS for the purpose of assisting with the operation, repair and servicing of your new BORCAT equipment. Operation, repair and servicing of this equipment should only be undertaken by a person who has appropriate professional training and suitable qualifications. You are wholly responsible for ensuring that an appropriately qualified person is engaged to undertake the proposed work in respect of the BORCAT equipment in a safe and diligent manner and with all appropriate equipment.

To the maximum extent permitted by law, BORCAT TRAILERS and its related entities, directors, other officers, employees, advisers and agents will not be liable in any way for any direct, indirect or consequential loss, damage, expense, injury or claim of whatsoever arising from or relating to the application of these instructions.

BORCAT TRAILERS may amend or replace these instructions at any time without notice.

Introduction

This is a general guide for the operation, inspection, service and maintenance procedures for BORCAT TRAILERS equipment.

Components such as suspensions, axles, landing legs, king-pins, hoists and tarp systems are from proprietary suppliers and must be serviced and maintained according to the manufacturer's recommendations. For brand specific maintenance recommendations refer to the relevant supplier website as listed at the rear of this section.

This guide should be used to form the basis of an operator's maintenance programme and should be supplemented with more frequent inspection and maintenance when the operating environment involves:

- Constant short cycle discharging
- Arduous terrain and operating conditions
- Excessive dust, salt, mud or water
- Extreme temperatures
- Corrosive environment or product

This information applies to generic models and options and therefore some information contained may not apply to particular units and some items on particular trailers may not be referenced at all. For information and advice regarding specific units/options, contact BORCAT TRAILERS.

It is the responsibility of the owner and operator of the equipment to ensure that it is maintained and roadworthy at all times.

BORCAT TRAILERS PTY LTD

*Manufacturers of Aluminium or Hi Tensile Steel Tippers
Rigid, Semi-Trailers, B-Doubles, Dog Trailers
Trailer Spare Parts*

Important Safety Information

The health and safety of operators, maintenance personnel and the public must always be a major consideration when operating and maintaining tipping equipment. Accident can result in serious injury or death.

Because of the variety of tasks and applications and often no direct on-site supervision, there is a heavy reliance on the requirement for a driver to:

- Be trained in correct procedures (If in doubt they should ask for assistance)
- Assess the tasks from a safety perspective including checking for:
 - Ground conditions in the tipping area which may affect stability of the vehicle/trailer (i.e. the ground needs to be firm and level)
 - Overhead obstructions or hazards which may be contacted by a raised body (e.g. low wires, overhead structures, trees, etc.)
 - A safe distance from other vehicles whilst loading or tipping
 - BORCAT TRAILERS recommends that semi tippers be operated on ball race or stabilised quick release turntables (i.e. a quick release turntable mounted on a ball race turntable and with a 'block' or 'skid plate locking device' fitted to the trailer skid plate). If tipping a semi-trailer on a non-stabilised quick release turntable, ensure that the prime mover and trailer are in a straight line at all times whilst tipping.
 - At all times when leaving the cabin of the prime mover ensure that the park brakes are applied.
 - Perform all the tasks in accordance with any local/company procedures or instructions
- All company, local site and government requirements are to be observed in respect to height restrictions when climbing on the body.
- Wear appropriate personal protective equipment
- **Do not stand or reach under a raised body without fail safe measures in place to prevent accidental lowering of the body.** For advice regarding appropriate measures (e.g. safety prop) contact BORCAT TRAILERS on 02 9631 9594
- Be aware of pinch points.
- Never attempt to raise the hoist of a semi tipper unless the trailer is securely connected to the prime mover fifth wheel (Turntable).
- Ensure that the tyres on the tipping axle are in good condition and the pressure is equal on each side.
- Always watch the tipping operation to ensure that the tipping body lifts squarely.
- Never modify hydraulic components or circuits.
- Ensure that replacement items are of equivalent specification to original equipment specifications.

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Truck Maintenance Schedule

CHECK / SERVICE	Daily	2,500KM or fortnightly	2,500KM or as required	10,000KM or Monthly	30,000KM or Quarterly	100,000KM or Annually
Check lighting operation.						
Check safety stickers are attached and legible.						
Check hoist and hydraulics for leaks and operation.						
Check tarping system operation wear and tear.						
Check tailgate operation.						
Lubricate all grease points.						
Check all steps and ladders where applicable for security and integrity.						
Check body prop operation and security.						
Inspect hoist foot mount bolts and top mounting bolts for security.						
Check towbar and coupling for wear and tear and bolt security.						
Check body sub frame for cracks and mounting bolt security.						
Check body underside and hoist well for cracks and general condition.						
Check rear marker plates for wear, damage or fading.						
Check body floor thickness for wear and body work for cracking.						
Check body pivots for wear and security.						
Check calibration of weight gauges (where fitted).						
Drain hydraulic tank and replace with new AWH68 Oil.						

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Trailer Spare Parts

Trailer Maintenance Schedule

ITEM	1 st Service 5000KM	Daily	Weekly	10,000KM or Monthly (Note 1)	30,000KM or Quarterly (Note 1)	100,000KM or Annually (Note 1)
Check						
All lights are operational						
Drain moisture from air reservoirs						
Check service brakes are operational						
Check emergency brakes are operational						
Check tailgate operation / security						
Check that trailer coupling is fully engaged						
Check for oil leaks and damaged hoses						
Check tyre condition and pressures, particularly on tipping axles						
Wheel nut tension	Within 50km of removal or replacement of wheel					
Air lines and fittings for leaks						
Airbags condition and leaks						
Air suspension ride heights		VISUAL				
Brake adjustment						
Drawbar pivot bushes for wear						
Drawbar arms, pivot bars, hoist feet and pins for wear						
Tension of hoist feet bolts and top clevis bolts						
Tension of all tow coupling and turntable fasteners and pivot bar fasteners						
Tension of all Tip Over Axle (TOA) Suspension Sub frame bolts						
Tension of all other fasteners on trailer						
Inspect/rectify body, chassis, drawbar and sub frame for damage and wear. (Remove covers over drawbar eye for proper inspection)						
Check king pin bolt torque	Refer - Supplier Servicing Guide					
Check king pin wear limits						
Check turn table wear						
Check drum brakes,/ rotors, linings, pads						

Note 1: Whichever occurs first.

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Trailer Maintenance Schedule – continued

ITEM	1 st Service 5000KM	Daily	Weekly	10,000KM or Monthly (Note 1)	30,000KM or Quarterly (Note 1)	100,000KM or Annually (Note 1)
Proprietary items maintenance						
Check wheel bearing adjustment						Refer Supplier Servicing Guide
Check suspension bushes, bolts, shock absorbers, springs, airbags, ride heights						Refer Supplier Servicing Guide
Check axle alignment	VISUAL					
Check landing legs and support brackets						
Grease						
All trailer pivot points (front and rear or draw arms or rear pivot bars, as applicable)						
Upper and lower hoist pivots						
King pin and skid plate						
Landing legs						
Ball race turntable						
Axle and suspension components						
Brake camshafts and slack adjusters						Refer Supplier Servicing Guide

Note 1: Whichever occurs first.

Trailer – Truck Brake Balance

It is the responsibility of the owner or operator to ensure that the braking systems of the trailer and prime mover are compatible. BORCAT TRAILERS recommends that both the trailer and the prime mover be checked by a qualified service centre and adjusted as necessary.

Towing Equipment

Towing equipment includes kingpins, turntables, tow couplings, drawbar eyes and ball coupling assemblies. Regular inspection, maintenance and replacement of these items are essential.

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Lubricant Guide

BORCAT TRAILERS does not specifically endorse any particular brand of lubricants. The recommended viscosity of hydraulic oil is ISO grade 68 or equivalent.

Refer to proprietary component supplier (manufacturers) recommendations where applicable.

Recommended Torque - Fasteners

Refer to the proprietary component supplier information for recommended tightening torques.

Tyre Maintenance

Operators should consult with their tyre supplier to establish the correct pressures and procedures for their particular application.

Trailing equipment is aligned prior to delivery. It is recommended that alignment be checked annually or sooner if tyre wear should become evident.

Repairs to hydraulic system components, air system components, body and/or chassis and sub-frames

These should only be undertaken by BORCAT TRAILERS, proprietary supplier agents, or other appropriately qualified repairers.

Paint Maintenance

During the first **two** months after application, new paint finishes should be washed only with plenty of water containing cleaning agents. No high pressure washer.

At times when high pressure cleaners or steam jet cleaners are used, the distance between the spray nozzle and the vehicle should be at least 30cm.

Vehicles that are to be cleaned in washing lines with rotating brushes should always be sprayed with water before washing.

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Brand Specific Service Information

Visit the website's below to view brand specific information.

Hendrickson	www.hendrickson.com.au
Jost	www.jostaustralia.com.au
Air Brake Corporation	www.airbrakecorp.com.au
BPW Transpec / Edbro	www.bpwtranspec.com.au
SAF Holland	www.safholland.com.au
Powertarps	www.powertarps.com.au
Mega Pacific	www.megapacific.com.au
Air Tarps Australia	www.airtarps.com.au

Disclaimer









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BORCAT TRAILERS may amend or replace these instructions at any time without notice.

 Gloves <input checked="" type="checkbox"/>	 Face Masks <input type="checkbox"/>	 Eye Protection <input checked="" type="checkbox"/>	 Hearing Protection <input type="checkbox"/>	 Appropriate Footwear <input checked="" type="checkbox"/>	 High Vis Clothing <input checked="" type="checkbox"/>	 Hard Hat <input checked="" type="checkbox"/>	 Protective Clothing <input checked="" type="checkbox"/>
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KEY STEPS	HAZARDS	L	C	RR	CONTROLS
Prepare Ringfeder	<ul style="list-style-type: none"> • Strains from leaning over draw bar. • Jammed fingers. 	B	3	M	<ul style="list-style-type: none"> • Disconnect locking pin from the same side that it is mounted. • Ensure that fingers are kept well away from Ringfeder
Reversing truck.	<ul style="list-style-type: none"> • Truck not aligned straight on. • Sun glare in side mirrors. • Truck hitting Trailer • Pedestrians and other vehicles 	B	4	M	<ul style="list-style-type: none"> • Ensure that correct driving techniques are utilized when reversing. • Wear correct sun glasses to reduce sun glare • Ensure that correct driving techniques are utilized when reversing. • Check reversing alarm functioning
Check height and alignment of the Ringfeder	<ul style="list-style-type: none"> • Uneven or slippery ground, muddy steps, steel rods sticking up, trenches, formwork, protruding equipment and other traffic. 	B	2	H	<ul style="list-style-type: none"> • Visually assess ground conditions. Use three points of contact to exit backwoods from vehicle DO NOT JUMP! • Check traffic conditions
Reverse truck slowly to effect connection.	<ul style="list-style-type: none"> • Truck not aligned straight on. • Sun glare in side mirrors. • Truck hitting Trailer 	B	4	M	<ul style="list-style-type: none"> • Ensure that correct driving techniques are utilized when reversing. • Wear correct sun glasses to reduce sun glare • Ensure that correct driving techniques are utilized when reversing. • Stop truck short of trailer, to check height and alignment for connection.
Visual check connection.	<ul style="list-style-type: none"> • Uneven or slippery ground, muddy steps, steel rods sticking up, trenches, formwork, protruding equipment and other traffic. 	B	2	H	<ul style="list-style-type: none"> • Visually assess ground conditions. Use three points of contact to exit backwoods from vehicle and Check traffic conditions. • Ensure that towing pin is engaged and in the locked position
Perform the "tug test"	<ul style="list-style-type: none"> • Trailer not connected correctly 	C	1	H	<ul style="list-style-type: none"> • Repeat above procedures • Ensure that towing pin is engaged and in the locked position
Connect air, hoses and leads.	<ul style="list-style-type: none"> • Pressurised airlines blowing free. • Strains from leaning over draw bar. • Tripping over draw bar. 	C	2	M	<ul style="list-style-type: none"> • Ensure that combination-braking system is applied. (Relieves all air pressure) • Connect air hoses from the same side that they are mounted. • Walk around the truck. NEVER ATTEMPT TO CLIMB OVER DRAW BAR.
Raise the draw bar support leg.	<ul style="list-style-type: none"> • Fingers being caught in support leg pivot point. 	B	2	H	<ul style="list-style-type: none"> • Ensure that fingers are kept well away from the pivot point when raising support leg.
Conduct a walk round inspection.	<ul style="list-style-type: none"> • Uneven or slippery ground, muddy steps, steel rods sticking up, trenches, formwork, protruding equipment and other traffic. 	B	2	H	<ul style="list-style-type: none"> • Visually assess ground conditions. Use three points of contact to exit backwoods from vehicle DO NOT JUMP! • Check traffic conditions. • Ensure that towing pin is engaged and in the locked position
Perform the "tug test"	<ul style="list-style-type: none"> • Trailer not connected correctly 	C	1	H	<ul style="list-style-type: none"> • Repeat above procedures • Ensure that towing pin is engaged and in the locked position • Perform tug test with trailer hand piece to ensure connections are attached correctly.

Likelihood (L)	Level
A	Certain
B	Likely
C	Moderate
D	Unlikely
E	Rare

Consequence (C)	Level
1	Fatality
2	Permanent Injury
3	Perm/Temp Injury
4	Temporary
5	Minor Injury

Risk Rating (RR)	1	2	3	4	5
A	HIGH	HIGH	HIGH	MED	MED
B	HIGH	HIGH	MED	MED	LOW
C	HIGH	MED	MED	LOW	LOW
D	MED	MED	LOW	LOW	LOW
E	MED	LOW	LOW	LOW	LOW

Signed: _____

Date: _____

Revision No: **3**

BORCAT TRAILERS PTY LTD ABN: 11 975 478 495 ACN: 131 446 341 Job Safety Assessment	Job Safety Assessment: Uncoupling – Truck & Trailer (Manual) BCT-JSA-0024
Issue Date: September 2015 Review Date: September 2018 Authorised By: John Thompson	

Gloves	Face Masks	Eye Protection	Hearing Protection	Appropriate Footwear	High Vis Clothing	Hard Hat	Protective Clothing
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

KEY STEPS	HAZARDS	L	C	RR	CONTROLS
Park Truck	<ul style="list-style-type: none"> Ground not level Parking area not legal Truck roll away 				<ul style="list-style-type: none"> Ensure truck parked on level ground Check that parking site is legal Apply all brakes to truck
Exit Truck and ensure tailgate is in locked position.	<ul style="list-style-type: none"> Uneven or slippery ground, muddy steps, steel rods sticking up, trenches, formwork, protruding equipment and other traffic. 	B	2	H	<ul style="list-style-type: none"> Visually assess ground conditions. Use three points of contact to exit backwoods from vehicle DO NOT JUMP! Check traffic conditions
Lower draw bar support leg.	<ul style="list-style-type: none"> Fingers being caught in support leg pivot point. 	B	2	H	<ul style="list-style-type: none"> Ensure that fingers are kept well away from the pivot point when lowering support leg.
Disconnect and secure all hoses and cables.	<ul style="list-style-type: none"> Pressurised airlines blowing free. Strains from leaning over draw bar. Tripping over draw bar. Oil Contamination 	C	2	M	<ul style="list-style-type: none"> Ensure that combination-braking system is applied. (Relieves all air pressure) Disconnect air hoses from the same side that they are mounted. Walk around the truck. NEVER ATTEMPT TO CLIMB OVER DRAW BAR. Wipe off oil from hose ends <p>REMINDER – “AIR LINES OUT FIRST, IN LAST”</p>
Raise and lock towing pin.	<ul style="list-style-type: none"> Strains from leaning over draw bar. Run away trailer. Jammed fingers. 	B	3	M	<ul style="list-style-type: none"> Disconnect locking pin from the same side that it is mounted. Ensure that combination-braking system is applied. Ensure that fingers are kept well away from Ringfeder
Drive slowly forward.	<ul style="list-style-type: none"> Traffic, equipment not secured, pedestrians 	C	2	M	<ul style="list-style-type: none"> Visual check for traffic, vehicle equipment, pedestrians.
Check mirrors to confirm disconnection.	<ul style="list-style-type: none"> Sun Glare 	C	1	H	<ul style="list-style-type: none"> Wear correct sun glasses to reduce sun glare









Likelihood (L)	Level	Consequence (C)	Level	Risk Rating (RR)	1	2	3	4	5
A	Certain	1	Fatality	A	HIGH	HIGH	HIGH	MED	MED
B	Likely	2	Permanent Injury	B	HIGH	HIGH	MED	MED	LOW
C	Moderate	3	Perm/Temp Injury	C	HIGH	MED	MED	LOW	LOW
D	Unlikely	4	Temporary	D	MED	MED	LOW	LOW	LOW
E	Rare	5	Minor Injury	E	MED	LOW	LOW	LOW	LOW

Signed:_____

Date:_____

Revision No: 3

<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">  <p>BORCAT TRAILERS PTY LTD <small>ABN: 11 975 478 495 ACN: 131 446 341</small> Job Safety Assessment</p> </div> <div style="text-align: center;">  </div> </div> <div style="display: flex; justify-content: space-between; align-items: center; margin-top: 5px;"> Issue Date: September 2015 Review Date: September 2018 Authorised By: John Thompson </div>	<p>Job Safety Assessment: Safe Site Deliveries BCT-JSA-0035</p>
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Gloves	Face Masks	Eye Protection	Hearing Protection	Appropriate Footwear	High Vis Clothing	Hard Hat	Protective Clothing
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

KEY STEPS	HAZARDS	L	C	RR	CONTROLS
Arrive on site/ Exit Vehicle	<ul style="list-style-type: none"> Other Vehicles / equipment. 	B	2	H	<ul style="list-style-type: none"> Check traffic conditions and use three points of contact to exit backwards from vehicle. DO NOT JUMP!
Check Tipping area.	<ul style="list-style-type: none"> Uneven or slippery ground, muddy steps, steel rods sticking up, trenches, formwork, protruding equipment and other traffic. 	C	1	H	<ul style="list-style-type: none"> Perform Take 5 when arriving to a site for the first time Where there is not designated access (i.e. walkway) provided do not walk on grizzlies (ground bin grates) at concrete plants. Use alternative means of cleaning tailgates drawbars etc.
Look for overhead obstructions	<ul style="list-style-type: none"> Awnings, power lines, overhead obstructions. 	B	2	H	<ul style="list-style-type: none"> Assess the site before entering, walk the tipping area and check for people working in tipping area.
Check tyres	<ul style="list-style-type: none"> Tyre blowing out as load is raised. 	C	2	M	<ul style="list-style-type: none"> Flat or damaged tyres must be repaired before tipping.
Open tail gate	<ul style="list-style-type: none"> Material falling from trailer and gate swinging out, cuts, sprains and strains Material caught in rubber seal around edge of truck body & tailgate. 	C	5	L	<ul style="list-style-type: none"> Always stand clear when opening, be aware of sharp edges and use proper manual handling techniques.
		A	5	H	
From the driver's seat apply trailer brakes, engage PTO and activate hoist	<ul style="list-style-type: none"> Trailer brakes not applied or adjusted correctly and uneven ground 	C	2	M	<ul style="list-style-type: none"> Keep brakes adjusted as required and check ground conditions
Continually check as hoist is raised for any body lean	<ul style="list-style-type: none"> Unit roll-over, people or vehicles nearby 	C	1	H	<ul style="list-style-type: none"> Be observant at all times and ensure no people come within danger area
At the completion of tip disengage PTO, move carefully forward away from material and allow hoist to lower	<ul style="list-style-type: none"> Damage to hoist, roll over and hitting overhead wires from driving with hoist up 	C	1	H	<ul style="list-style-type: none"> Don't move away under heavy acceleration or braking, check ground conditions and never leave site with hoist up. (ENSURE HOIST UP ALARM OPERATIONAL)
Apply brakes, check for material stuck in body, check tyres, clean off tail gate and secure tail gate locks	<ul style="list-style-type: none"> Climbing on body, damaged tyre during tip, loose material damaging other vehicles and tail gate swing open while travelling 	C	1	H	<ul style="list-style-type: none"> Follow good work practices and house keeping. Only driver to clean tailgate area and operate controls. Where it is safe to do so, move vehicle off grid rails prior to cleaning.
Leaving the site	<ul style="list-style-type: none"> Traffic, equipment not secured pedestrians and hoist up. 	C	1	M	<ul style="list-style-type: none"> Visual check for traffic, vehicle equipment, pedestrians and ensure hoist is completely lowered.

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C	HIGH	MED	MED	LOW	LOW
D	MED	MED	LOW	LOW	LOW
E	MED	LOW	LOW	LOW	LOW

Signed:_____

Date:_____

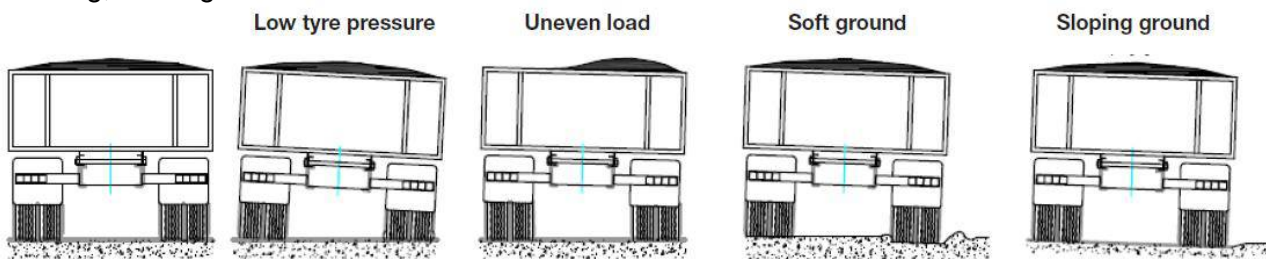
Revision No: 3

Safe Loading and Outward Journey

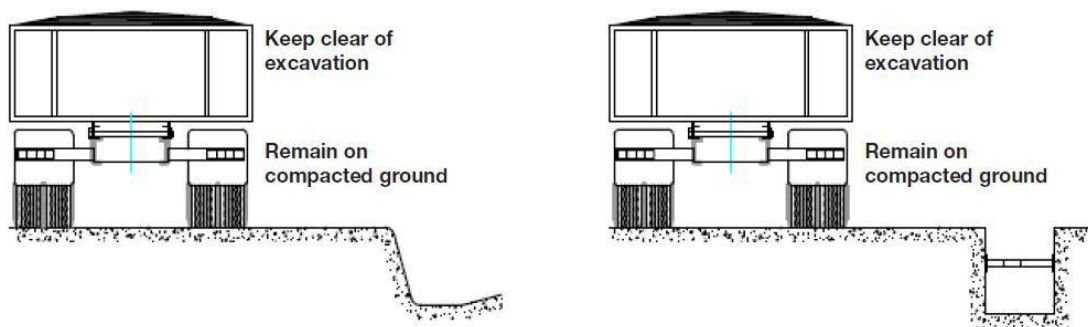
Due to the loading methods employed and site conditions at the point of loading, it is important drivers understand their responsibilities regarding the vehicle and load which is to be taken onto the public roads. Many sites are run in a very professional manner with highly trained loading operatives using weighbridges and, if appropriate, washing facilities. However, some do not have these and as such additional responsibility is placed on the driver.

The type of material being transported and its flow capabilities must be considered before loading. Some loads, especially those that are wet, sticky or solid, can have a tendency to move at different rates during the tipping operation, which can create a dangerous situation. Should the load at the rear or one side move unexpectedly, this could lead to the creation of an unbalanced vehicle and contribute to a roll-over accident, as well as a potential axle overload situation.

The load should be evenly distributed along the length and across the width of the body. (Legal axle weights to be adhered to). Failure to do this may result in an unstable vehicle which may be dangerous to drive and have axle and tyre overloads, which would render the vehicle illegal. It also has the potential to create a severe hazard during the tipping process. Many tippers have a high centre of gravity, therefore any uneven weight distribution is likely to increase problems encountered particularly when cornering, braking and on roads with excessive camber.



Dangerous tipping situations that can contribute to a vehicle roll over.



The driver is responsible for ensuring the vehicle does not exceed the gross plated weight or individual axle weights. As such, drivers must not proceed if there is any doubt regarding compliance with legislation. It should be remembered the density of individual loads can differ significantly and many tipper bodies will accommodate more load than they can legally carry in weight. Therefore, it is important drivers are provided with training to identify the different types of materials they are expected to transport and the weight of an individual load is known and documented.

When a vehicle has been loaded under off-road conditions, the driver should inspect all securing devices and locks, the tyres and any low mounted equipment for damage before leaving site.

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*Safe Loading and outward journey – **cont'd***

An appropriate tarping system to retain the load and any debris should be used and adequately secured. N.B. Local planning regulations may make the use of tarp systems compulsory.

Unfortunately, some tipper operators do not have a particularly good image with the public at large due to the mud and clay deposits left behind on the road by some operators when leaving site. There is also a perception tippers are more likely to cause damage from flying stones and other loose material. Therefore, it is the driver's responsibility to ensure excess debris is removed and any rocks/stones removed from between dual tyres off drawbars and tops of tailgates.

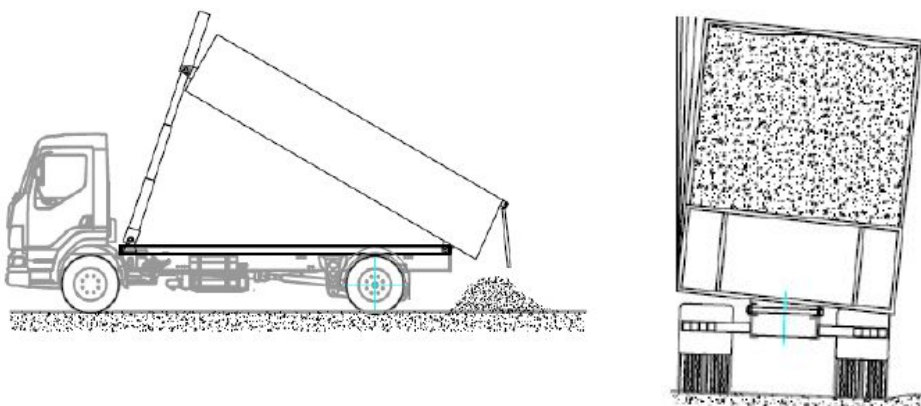
The driver should always check the condition of the lamps, reflective marker plates and number plates before leaving site - as depending on the ground conditions, they may have become obscured by mud and grime.

As the majority of tipper bodies are not water tight, the driver should allow excess water from a wet load to drain from the body prior to leaving site.

At Point of Delivery

On arrival at site, the driver must moderate the vehicle's speed to suit the conditions. If travelling off the public road, the driver must be mindful of the surface conditions, stay on compacted roadways, keep well clear of any excavations and look for overhead cables and other obstructions.

Prior to discharging the load, the driver must position the vehicle on flat firm ground. If a slope cannot be avoided then it should run from end to end of the vehicle, not across the width as this creates instability. If the vehicle is articulated, the truck and trailer must be in a straight line otherwise another unstable condition is produced.



If the body is not straight do not tip, but lower in a controlled manner

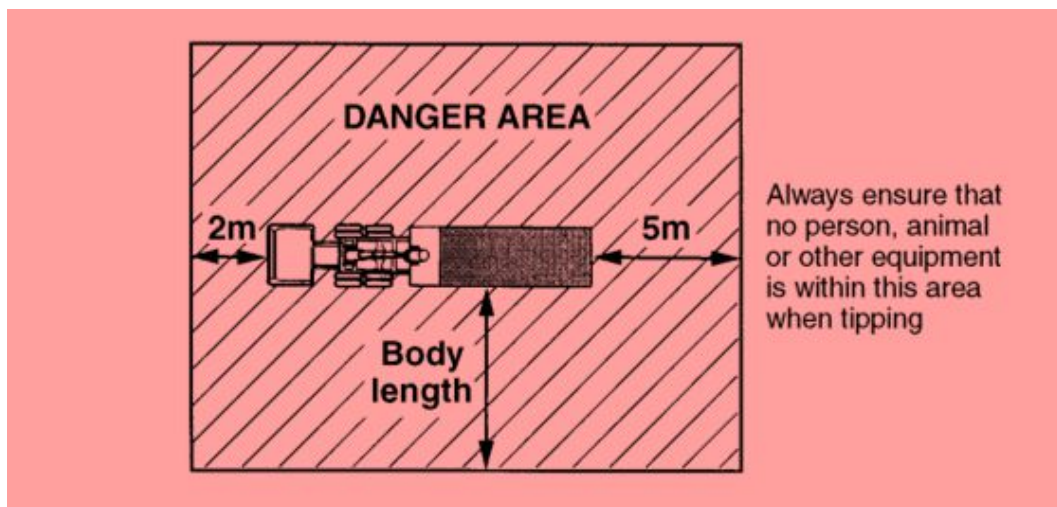
BORCAT TRAILERS PTY LTD

*Manufacturers of Aluminium or Hi Tensile Steel Tippers
Rigid, Semi-Trailers, B-Doubles, Dog Trailers
Trailer Spare Parts*

*At point of delivery - **cont'd***

In many instances, it is beneficial for the vehicle to be equipped with a rearward facing camera to provide the operator with a clear view of the area immediately behind the vehicle, whilst it is reversing or the driver operating the tipper. This equipment is now mandatory when working on many sites.

Before discharging the load, the driver must check the area in which the load is to be deposited is clear of personnel and obstructions. The driver should not leave the cab unless suitably equipped with Personal Protection Equipment (PPE) and the park brake applied.



If the body is equipped with a manual locking system, to secure the tailgate the driver must take care that the pressure of the load against the tailgate does not place them or others in danger.

Do not allow any person to stand adjacent to the vehicle whilst tipping as this is a place of danger. An accident involving a person standing adjacent to a tipper is most likely to be caused by one of three things, all of which can have fatal consequences.

A swinging tailgate is liable to cause injury if someone is standing behind it when tipping takes place or between it and the body when lowering. A load that moves suddenly, or is discharged at speed, can also cause injury to persons standing at the rear of the vehicle and even those standing at the sides, as the load spills outwards. Standing at the side of a tipper is often considered a safe place by the uninitiated. This is not the case.

Should a tipper roll over, it is unlikely that people standing at the side will recognise the warning signs and be able to run clear quickly enough to avoid potentially fatal injury. The driver has a responsibility of safety to ensure his actions do not endanger others and should maintain an exclusion zone around the vehicle whilst tipping.

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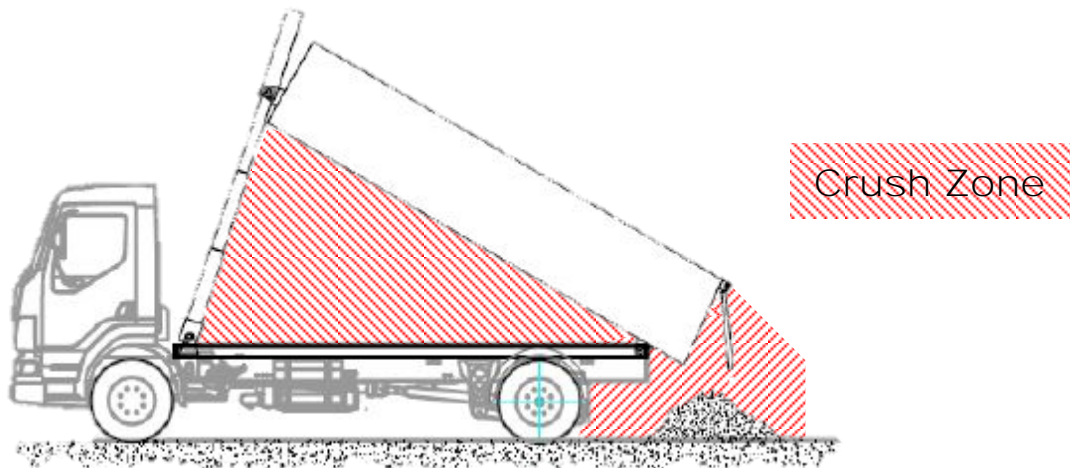
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*At point of delivery - **cont'd***

To ensure control of the load is maintained during tipping, the flow rate properties of the material being carried should be considered beforehand. The body should be tipped in an appropriate manner to suit the materials being discharged, maintaining a smooth operation and avoiding sudden shocks caused by rapid tipping and lowering or sudden stops.

Care should be taken to ensure a free flowing load does not exit with excessive speed, and wet or sticky loads do not create a dangerous situation if they do not move. The higher the angle of tip, the more unstable the vehicle becomes. Depending on the design of the body, if appropriate the tailgate should be periodically checked to ensure it is not likely to hit an obstruction or become buried in the load.

Drivers should remain in the cab at all times during the tipping process and look to the rear of the vehicle using the mirrors to monitor and adjust the rate of discharge. If the driver has any concerns regarding the safety of the tipping process, whether they are ground or site conditions, the load itself, the vehicle and ancillary equipment or the proximity to people, tipping should immediately stop and the body slowly lowered until the risk has been removed.



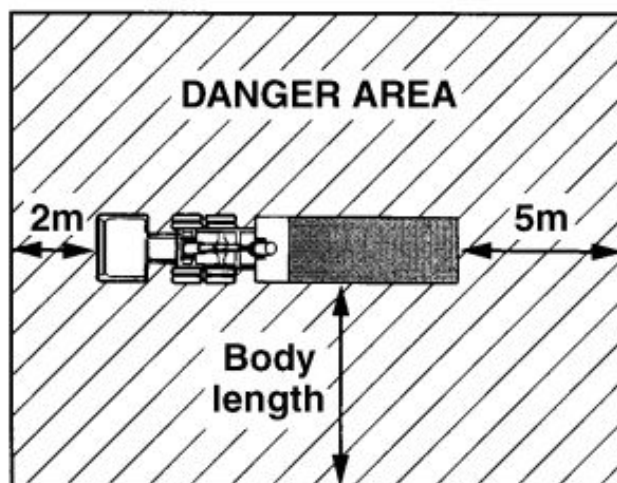
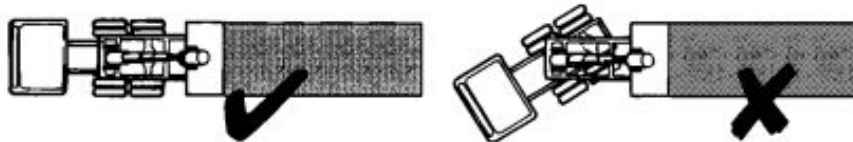
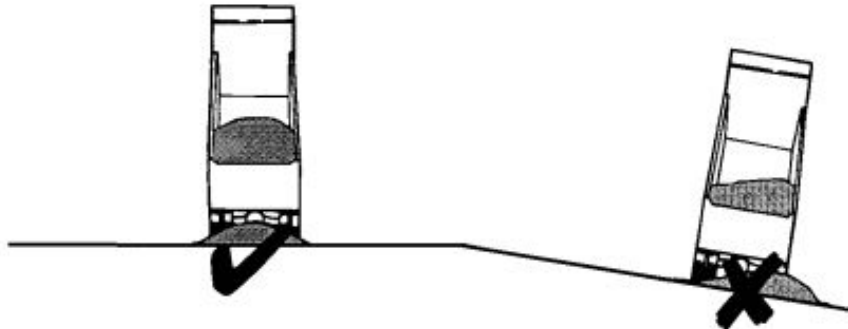
If load discharge is restricted by previously tipped material, it is permissible to slowly move the vehicle forward. Before moving, the driver must consider if it is safe to do so with the body at its current tipping angle and, if appropriate, either partially or fully lower the body before moving.

All movements must be carried out smoothly, in a slow controlled manner. If the vehicle is fitted with an air suspension, the release of the brakes can cause a sudden movement and result in instability. Therefore, the body must be lowered prior to releasing the brakes. Having moved, the driver should then reassess the situation before recommencing tipping.

When the load is fully discharged, lower the body to approximately 10° and slowly pull the vehicle clear of the load to a safe area. At this point, the driver should clear the rear bearer and tailgate of debris to allow the tailgate to close correctly. Fully lower the body and secure the tailgate.

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Always ensure that
no person, animal
or other equipment
is within this area
when tipping

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Digital Load Weight Gauge

(Gauge – Digital 111, 112, 211, 212)

*** IMPORTANT ***

THE GAUGE MUST BE CALIBRATED TO THE TRUCK OR TRAILER IT IS BEING USED ON WITH THE MAXIMUM LEGAL LIMIT LOAD

THE GAUGE MUST BE INSTALLED IN A DRY PROTECTED AREA. THE GAUGE IS NOT WATER PROOF

IF THE GAUGE IS USED ON A TRAILER, THE GAUGE MUST BE INSTALLED IN A WATER TIGHT ENCLOSURE.

Calibrate

1. Start with a load near the Legal Limit. (E.g. 15.4kg)
2. Go to a certified scale and get a weight slip
3. Press & Hold the kg / PSI switch for 10 seconds. The display will alternatively flash between a kg reading and a PSI reading. When the display locks onto a reading. Example 12.0kg, remove your finger from the switch
4. To raise the number TAP the kg / PSI button until the display reads 15.4, this equals 15.4kg of weight on your Scale Slip. If you need to lower the number, TAP the left button (Delay) and the number will decrease.
5. After you have entered your weight and removed your finger, in 10 sec the gauge will go back to normal operation and will be calibrated to your air bags.

For best accuracy calibrate on level ground

Changing the Display Update Rate

This adjustment changes how often the gauge takes a sample of pressure. The adjustment is selected with the left button on the front of the gauge. By pressing the DELAY button, you can select 1 Sec or 60 Sec sample rate.

The sample rate should always be set in the 1 sec mode while loading your truck. If left in the 1 sec mode when driving down the highway, the gauge will jump around due to road conditions. If you select the 60 sec mode, the gauge will change only every 1 minute. Leaving the gauge in the 1 sec mode while driving **WILL NOT DAMAGE** the gauge.



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Digital Load Weight Gauge

(Gauge – Digital 111, 112, 211, 212)

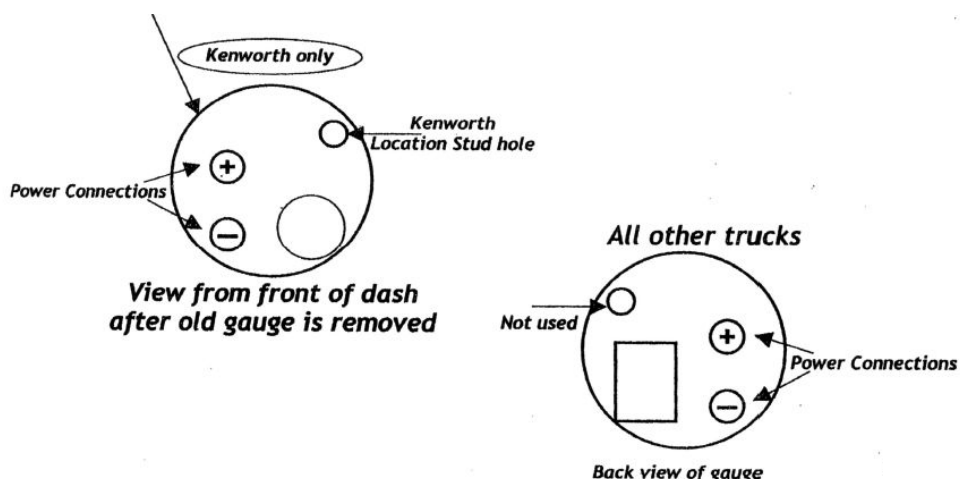
Installation

Run air lines to the back of the dash. Adapt Air Line to connect to PSI sensor. Remove plastic mounting bracket and install gauge through dash. Re-install bracket to gauge & connect power.

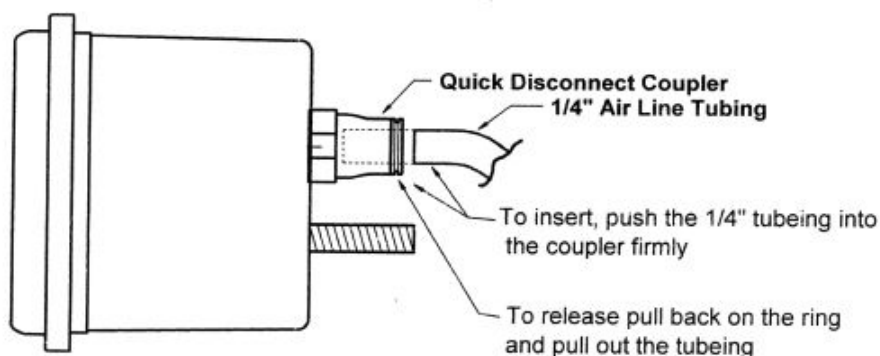
IMPORTANT: To avoid air leaks, ensure air line is cut clean and straight. Don't cut at an angle. Best to use a PVC type cutter

Kenworth Truck Installation

Remove plastic mounting bracket & discard. Remove a gauge blank or unwanted gauge from the dash. Look into the gauge panel & you will see a large hole in the lower right of the plug in panel (see illustration below). Our Quick Disconnect Coupler will fit through the hole. The gauge will work when power is turned on.



Power Requirements 9 to 15 Volts



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NOTE: ONLY FOR CUSTOMERS WHO HAVE HAD AN AIR TARPS AUSTRALIA TARP SYSTEM INSTALLED



Pull Out Tarp

Pull Out Tarp Operation

To operate a Pull-out tarp system correctly, the following steps are to be taken.

1. Take the guide rope which is either resting in the bin or secured near the headboard, and walk the rope to the rear of the body.
2. Centre the rope on the tailgate & smoothly pull the tarp towards the rear of the body.
3. Continue pulling until the rear anchor tube sits within the shark fins at the rear of the body.
4. Keeping constant tension on the rope & secure it either through looping it around a second set of shark fins, or tying off at a point on the tailgate.
5. Then release tension to complete the operation.

Pull Out Tarp Safety Precautions

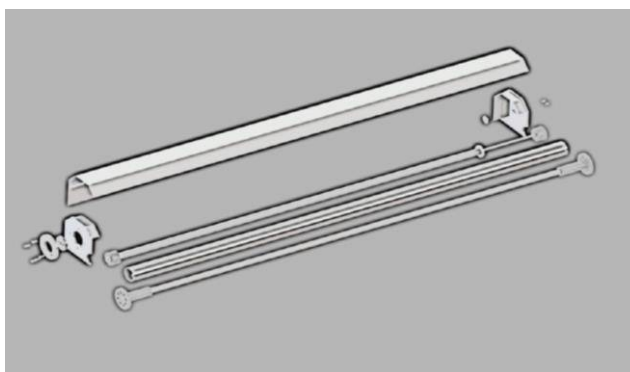
When operating a Pull-out style system, the following precautions are required:

- Always operate the system from the rear of the body.
- Refrain from jerking / sudden movements to pull anchor free of the shark fins.
- Only use the rope to control the return to the housing, not the pull tube.
- Stand well clear of the sides of the body when the unit is retracting.
- Apply constant tension on the rope will the tarp fully retracts.
- Be aware of the unit's high level of pretension (18 turns clockwise)
- Use the proprietary tool when adjusting spring tension.

Failure to comply with these precautions can result in injury and / or damage to the pull out assembly.

For further information on operating & installation procedures, contact Air Tarps Australia at

sales@airtarps.com.au or call 02 4729 0222.



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Electric Tarp System

Operational Guide

Your truck has been fitted with Retractable Tarps latest electric tarp motor & DC Motor Controller. Retractable Tarps' **DC Motor Controller (DMC)** and **Roll-Rite® Motor** combination is the latest advancement in automatic tarp systems. Before you get started you should familiarise yourself with its automatic one touch operation and advanced motor overload protection.

Automatic One Touch Operation

To activate the tarp all that is required is one press of the in cab tarp switch.

Close

To close the tarp, press *Close (Button 1)* momentarily and the tarp will automatically come in & stop without the need to hold on to and then release the button

Open

To open the tarp, press *Open (Button 2)* momentarily and the tarp will automatically come in & stop without the need to hold on to and then release the button

Emergency Stop

If the tarp is required to be stopped whilst automatically moving, wither press *Close* or *Open* and the tarp motor will come to a stop. Once stopped, pressing *Close/Open* will operate the tarp as described above.

Advanced Motor Overload Protection

Because of the Roll-Rite® Hollowshaft motor is so powerful we can incorporated motor overload protection. This is important to you, because you need to know how this can affect the electric tarping system. An overload condition is when there is too much resistance against the tarp system for the motor to "bulldoze" through. This condition is experienced when the tarp is fully opened & fully closed. Under normal operating conditions this would be the only time the DMC should overload. After the DMC overloads (fully opened, fully closed) there is a 5 second cooldown period before the motor can be activated again

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*Electric Tarp System – Operational Guide – **cont'd***

DMC – Troubleshooting

LED Indicators

At start-up the DMC indicates its pre-programmed Amperage cut out by flashing a combination of LED's. The different applications, the L.E.D table below lists the appropriate colours to amperage and application.

L.E.D	Current Limit	Application
Yellow Only	20A	24V Systems
Green Only	40A	12V Systems on a truck body or mesh trailer
Yellow & Green	50A	12V Systems with PVC tarps
Red & Yellow	70A	12V Rollover tarp systems

After this the DMC performs a self-test and flashes the three L.E.D's in sequence whilst initialised, the indicators are as follows:-

POWER L.E.D. — GREEN		
No Light	Not Activated	No Power Supplied To Motor
Solid Green	Activated — Normal	Power Supplied To Motor
Slow Flashing Green	Activated — Low Voltage	Power Supplied To Motor
Fast Flashing Green	Activated — Under Voltage	No Power Supplied To Motor

O/LOAD L.E.D. — RED		
Solid Red	Activated — Overload	No Power Supplied To Motor
Slow Flashing Red	Activated — Input Error	No Power Supplied To Motor
2 Flashes, pause, 2 Flashes	Motor Terminal Connected To Ground	No Power Supplied To Motor
3 Flashes, pause, 3 Flashes	Voltage Applied To Motor Terminal	No Power Supplied To Motor
4 Flashes, pause, 4 Flashes	No Motor Connected	No Power Supplied To Motor

O/ TEMP L.E.D AMBER		
Flashing Amber	Over Temperature	No Power Supplied To Motor

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*DMC – Troubleshooting – **Cont'd***

Low Voltage – (DMC is being supplied with 9.5V – 11.5V)

- Ensure that the correct size cable is used. (Refer to wiring diagram)
- Check connectors and terminals for corrosion and that they are crimped and tightened correctly

Under Voltage – (DMC is being supplied with less than 9.5V)

- Check battery voltage.
- Ensure that the correct size cable is used. (Refer to wiring diagram)
- Check connectors and terminals for corrosion and that they are crimped and tightened correctly.

Overload – (DMC is tripped out because of overdraw of current)

- It is normal for the DMC to overload at tarp close/open position. (approx. 5 sec)
- If DMC trips out prematurely, inspect tarping system for damage and ensure that nothing is preventing the tarp from functioning as per normal operation.

Input Error – (Switch wires are being activated at the same time or incorrectly)

- Check manual switch for faults, inspect switching wires and terminals.

Motor Terminal Connected to Ground

- Check to ensure correct wiring of DMC
- Check cables for shorting to body

Voltage Applied to Motor Terminal

- Check to ensure correct wiring of DMC
- Ensure that power is not rerouted directly to motor with DMC still wired in circuit

No Motor Connected – (DMC is tripped out because of overdraw of current)

- Check to ensure correct wiring of DMC
- Check that electrical cables are connected to motor

Over Temperature — (Operating in excess of 80 degrees C)

- Inspect complete tarping system for damage
- Inspect complete wiring for faults.

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ROLL-RITE® HOLLOWSHAFT
MOTOR AND GEARBOX - 1025/1026

- PLEASE NOTE:-**
1. SUPPLIED CIRCUIT BREAKER MUST BE FITTED BETWEEN TRUCK BATTERY AND DC MOTOR CONTROLLER AS CLOSE TO BATTERY AS POSSIBLE
 2. CONNECTING THE POWER CABLES INCORRECTLY TO DC MOTOR CONTROLLER MAY CAUSE PERMANENT DAMAGE TO UNIT
 3. SYSTEM MUST BE WIRED AS PER DIAGRAM
 4. IF USING A CONNECTOR, ONLY A 175A ANDERSON CONNECTOR PLUG IS TO BE USED
 5. CORRECT CABLE SIZE MUST BE USED AS PER Fig A.
 6. CORRECT APPROVED MANUAL RESETTABLE CIRCUIT BREAKER SIZE MUST BE USED AS PER Fig B.

ANY FAILURE TO COMPLY WITH THESE CONDITIONS WILL RESULT IN WARRANTY BECOMING NULL AND VOID. IF UNSURE, PLEASE CONTACT OUR OFFICE ON (07)38899611.

CORRECT CIRCUIT BREAKER SIZE (Fig B):-

40AMP - 12V SYSTEMS
20AMP - 24V SYSTEMS

CORRECT CABLE SIZE (Fig A):-

0m to 15.0m (RED)* - 6 B&S TO BE USED
0m to 15.0m (BLACK)* - 6 B&S TO BE USED

16m to 30.0m (RED)* - 3 B&S TO BE USED
16m to 30.0m (BLACK)* - 3 B&S TO BE USED

*Cable size may need to be increased if the tarp motor is used in a high load situation, e.g. Waterproof System, Electric Roll-Over System.

CORRECT CABLE SIZE

Cable Size	Rm(Q/M)
6mm Auto	4.1
8 B&S	2.4
6 B&S	1.4
4 B&S	0.9
3 B&S	0.7
2 B&S	0.6
1 B&S	0.5
0 B&S	0.4
00 B&S	0.3

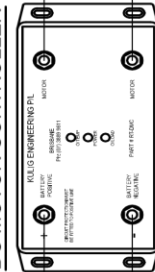
Formula:

$$V = (L \times R \times A) / 1000$$

V = Voltage drop
L = Total cable length in metres
R = Cable resistance per metre
A = Current in Amps

It is good engineering practice to maintain system voltage drop below 1.0 volt.

DC MOTOR CONTROLLER



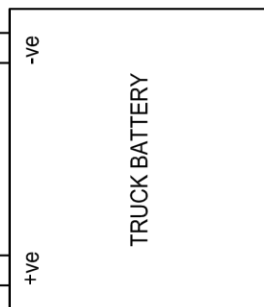
WHITE WIRE - CLOSE / COVER

RED WIRE - SWITCH SIGNAL **

YELLOW WIRE - OPEN / UNCOVER

ROCKER SWITCH

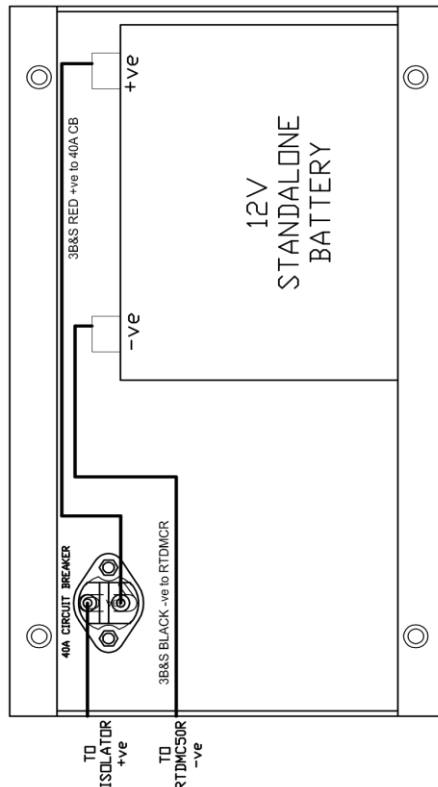
**All three switch wires must be wired directly from the DC Motor Control to the Rocker Switch



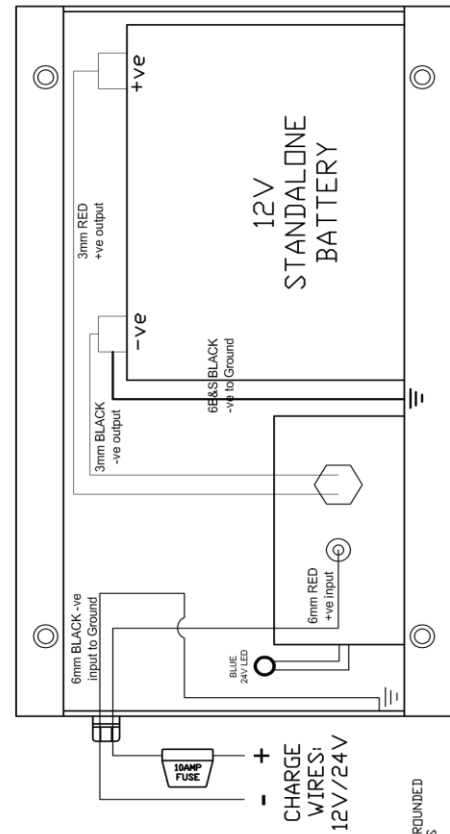
NOTE: ONLY FOR CUSTOMERS WHO HAVE HAD AN AIR TARPS AUSTRALIA TARP SYSTEM INSTALLED



BATTERY BOX SUPPLY CIRCUIT



BATTERY BOX CHARGING CIRCUIT



PLEASE NOTE:-

1. RTDNCR IS A ONE TOUCH REMOTE CONTROL. IT IS EXTREMELY IMPORTANT TO MAKE SURE THAT BUTTON# 1 - CLOSSES, BUTTON# 2 - OPENS.
 2. 10AMP FUSE MUST BE FITTED AS CLOSE TO TRUCK BATTERY AS POSSIBLE.
 3. ALL CABLE FROM STANDALONE BATTERY THROUGH TO MOTOR MUST BE 3 B&S OR THICKER.
- ANY FAILURE TO COMPLY WITH THESE CONDITIONS WILL RESULT IN WARRANTY BECOMING NULL AND VOID.

12V HOLLOWSHAFT MOTOR

