



Cotton Australia Module Restraint Guide 2012 Edition

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INTRODUCTION

The safe loading and transport of cotton modules is vitally important in preventing injury to module transport operators, other road users and preventing damage to property.

These guidelines provide cotton growers and transport operators with practical information and advice to help meet relevant legal compliance and avoid unnecessary accidents and/or penalties through the safe loading, restraint and transport of cotton modules on Australian roads where flat-top open sided trailers are used.

These guidelines should be read in conjunction with the National Transport Commission's "Load Restraint Guide", 2nd edition 2004, which contains additional information on all aspects of load restraint.


The legal requirements regarding vehicle mass, dimensions and loading are contained in National and State Regulations. In addition, it must be remembered that the common law imposes liability for negligent acts, which cause injury or damage to others, and there are many other legal requirements, which impose a duty of care in the workplace.

As a consequence of further experience and testing of load restraint systems, these guidelines will need to be periodically reviewed and amended. Suggested improvements or additions to the contents are welcomed and should be sent to:

Cotton Australia, Suite 4.01, 247 Coward St, Mascot NSW 2020

CERTIFICATION

I hereby certify that rectangular and round cotton modules that are loaded and restrained strictly in accordance with all requirements outlined in the "Cotton Australia - Module Restraint Guide 2012" will meet the Performance Standards of the Load Restraint Guide.



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Loadsafe Australia, Brighann Ginning, TFS Woods Transport, BMC Partnership, Queensland Cotton, Auscott Ltd, NSW Roads & Maritime Services, NSW Police Service, QLD Department of Transport & Main Roads, and Cotton Australia.

IMPORTANT DISCLAIMER

The information contained within this guide is for guidance purposes only. Whilst all due care has been taken in preparing the information, no responsibility is accepted by Cotton Australia or any of its employees or agents for any omissions that may exist. All liability is expressly disclaimed for any loss or damage which may arise from any person acting on any statement or information contained within this Guide.

COTTON MODULES

Cotton modules (large compressed cotton bales) are carried on open sided flat top semi-trailers. The modules are packed in-field and can be either rectangular or circular cross-section.

The following restraint systems were developed for dry modules on dry trailer decks and do not apply to modules loaded and transported when wet.

All load restraint equipment must comply with the relevant Australian Standards and be in a serviceable condition as specified in the Standards and by the equipment or vehicle manufacturer.

Any rear barrier or deck extension must be certified by a professional engineer to ensure adequate strength and continuing compliance with all load and vehicle regulatory dimension limits.

The trailer, its load and front and rear barrier positions must comply with all load and vehicle regulatory dimension limits, including overhang at the rear, kingpin to rear of trailer dimension and king pin radius at the front. For example, the rear overhang (distance from the centre of the rear axle group to the rear of the extension, barrier or load) must not exceed the lesser of 3700mm or 60% of the wheelbase.

1. RECTANGULAR MODULES

Rectangular modules require a minimum packing density of 125 kilograms per cubic metre to ensure adequate pack integrity for road transport. Therefore the minimum weight of a module 12 metres long, 2.4 metres wide and 2.4 metres high would be 8.6 tonnes. Higher modules, low-density (poorly packed) modules and broken modules require different restraint systems in order to comply with Regulation restraint requirements.

1.1. LOADING REQUIREMENTS

The front of the trailer must be fitted with a rated headboard or braced load rack for loading. A standard load rack can be braced with a single 9 metre long 8mm Transport chain wrapped around each of the gate uprights at a height of 1200 mm above the loading deck and strung across the face of the gate. Alternatively two single chains could be used, attached to the uprights using certified fittings on each side. The chain(s) should be terminated at the tie-rail support points between 450 and 600mm back from the front gate so as not to interfere with unloading. Webbing straps are not suitable and **ropes are not strong enough** for this application and should not be used.

Chains should be clean, plated 8mm Transport Chain with a minimum Lashing Capacity of 3800 kilograms force.

The use of a triangular frame (450mm base, 450mm height) at the front of the load will ensure a more integrated module for unloading (see Figure 1).

The use of a removable rear deck extension is permissible provided that it is certified by a professional engineer and when loaded, the trailer meets all Regulation dimension limits. Extensions may not be permissible on many prime-mover/trailer combinations.

1.2. RESTRAINING THE LOAD

The restraint of a rectangular cotton module requires the use of a tarpaulin to fully enclose the load. The tarpaulin should completely cover the module and be attached to ensure that no cotton can become dislodged from the vehicle.

Webbing straps, each with a minimum 2000kg Lashing Capacity are required over the tarpaulin and module. The straps must be continuous over the module, but may pass through the locating pockets in the tarpaulin, or may be attached to the tarpaulin.

Five straps are required for modules up to 15 tonnes, six straps for over 15 tonnes and up to 18 tonnes, seven straps for over 18 tonnes and up to 21 tonnes. One additional strap is required for additional weight up to 3 tonnes.

The webbing straps should be pre-tensioned to an average of at least 300 kg, using hand ratchet winches and/or truck-mounted winches.

The straps should be re-tensioned where appropriate, to ensure that adequate pre-tension is maintained during a journey.

Ropes should not be used for tie-down of modules or for tensioning webbing straps.

A rated headboard or braced load rack is required at the front of the load. A rear load rack is not necessary, however two tail straps (see Figure 1) are required to stabilise the rear section of the module.

A front rack braced as described in 1.1 above is adequate for forward restraint of rectangular modules only. Alternatively, the use of either one or two 8mm Transport chains supported by or attached to the rack at a height of 1200mm above the loading deck and tied to the tie-rail support points at least 2 metres behind the rack will give a much greater load restraint capacity in the forward direction (see Figure 2).

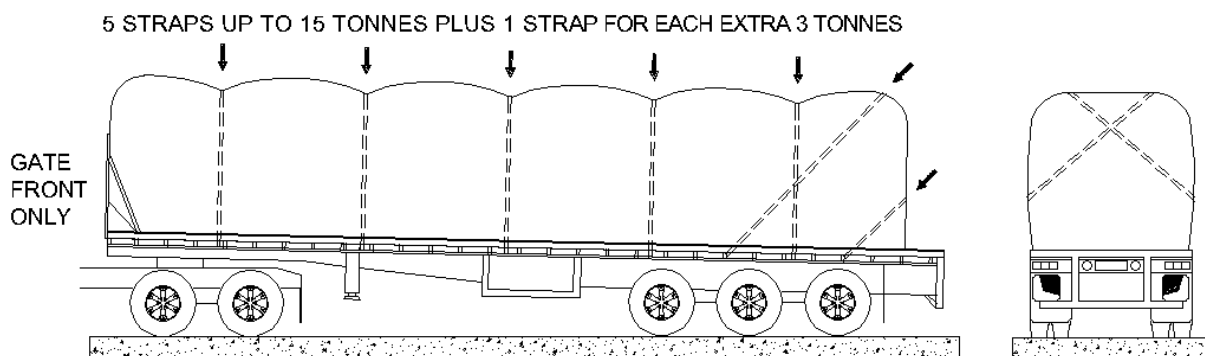


Figure 1 - Rectangular Module

2. ROUND MODULES

Round modules comprise cotton unitised on the cotton harvester into a cylindrical pack with a synthetic plastic wrapping. They each weigh approximately 2,500kg.

2.1. LOADING REQUIREMENTS

The modules must be loaded evenly and aligned straight along the trailer to prevent them protruding beyond the trailer sides.

The front of the trailer must be fitted with a rated headboard or braced front load rack with a capacity equal to 30% of the weight of the load at 1.1 metres above the deck (see Figs 2 & 3).

The rear of the trailer can be fitted with a load rack, braced forward with 8mm Transport chain, to provide rearward restraint (see Figs 2 & 3).

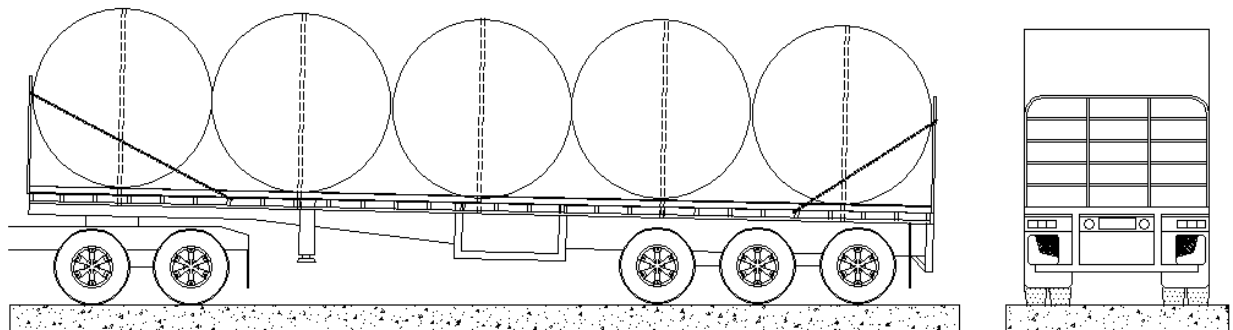


Figure 2 - Round Modules – Braced Load Racks

A standard front load rack, braced with one 9 metre long, 8mm Transport chain, looped around the rack at a height of 1200 mm above the deck and tied to the tie-rail support points 2 metres back from the front rack has a forward restraint capacity of approximately 4.8 tonnes (see Fig. 3).

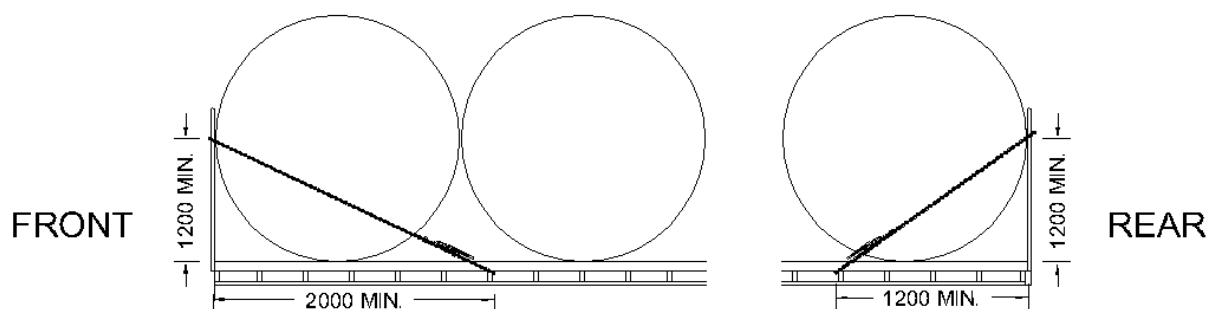


Figure 3 - Round Modules – Load Rack Bracing Requirements

The use of a removable rear deck extension or a specially fabricated rear barrier (see Fig. 4) is permissible, provided that it is certified for the application by a professional engineer and when loaded, the trailer meets all Regulation dimension limits.

2.2. RESTRAINING THE MODULES FORWARDS AND REARWARDS

The modules can be blocked to provide forward and rearward restraint and tied down to provide sideways restraint.

The load must be blocked in the forward direction using a rated headboard or load rack braced with 8mm Transport chain or equivalent.

The load must be blocked in a rearward direction using a rated and certified rear barrier, a braced load rack, or two webbing straps angled at 30° or less to the trailer deck, restraining the load from rearward movement (see Figs. 4 & 5).

The trailer, its load and front and rear barrier positions must comply with all load and vehicle regulatory dimension limits

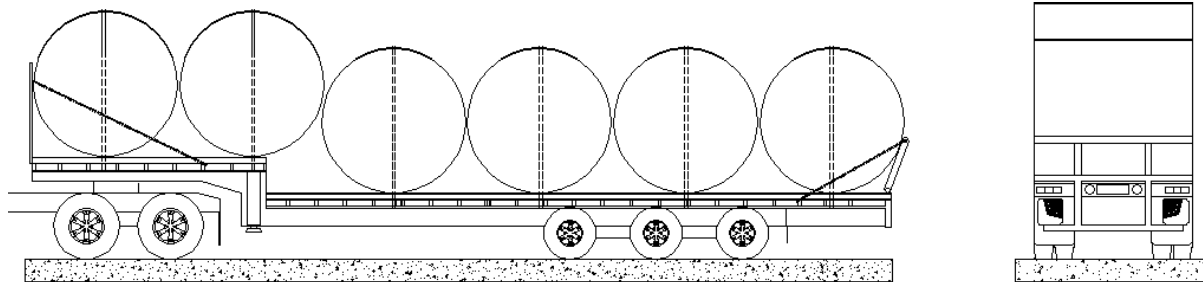


Figure 4 - Round Modules – Rear Barrier

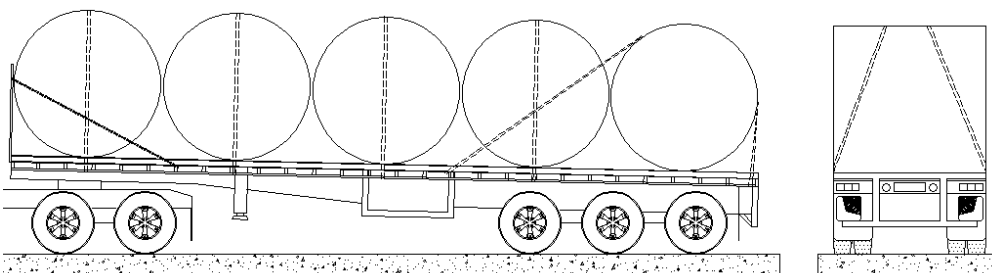


Figure 5 - Round Modules – Angled Rear Straps

Two 2,500kg Lashing Capacity angled webbing straps attached to the tie-rails using rated shackles attached approximately 4.0 metres from the rear of the load are sufficient for rearward restraint of a 15 tonne load of round modules (see Figs. 5 & 6).



Figure 6 - Round Modules – Angled Rear Strap Attachment

2.3. RESTRAINING THE MODULES SIDEWAYS

One tie-down strap (Lashing Capacity 2500kg min.) is required over every 2,500kg module to prevent sideways movement. The webbing straps should be pre-tensioned to an average of at least 300 kg, using hand ratchet winches and/or truck-mounted winches (See Figs. 4 & 5).

Heavier modules require two straps per module or the use of “pull-down” hand ratchet tensioners to give the required extra pre-tension.

The angled rear straps (see Fig. 5) provide sideways restraint for the rearmost module only.

The straps should be re-tensioned where appropriate, to ensure that adequate pre-tension is maintained during a journey.

Because the modules are not wrapped at each end, there may be a risk that cotton will dislodge from the vehicle once it is moving, caused by the effects of air flow and other load restraint forces. Where there is likelihood that part of the round cotton module load will dislodge, tarpaulins, nets or other control measures should be used in conjunction with the above load restraint system.

LEGAL REQUIREMENTS

The following is a plain English summary of legal responsibilities for module transport:

- It is the responsibility of the owner, the driver and the person in charge of loading, to ensure that the vehicle's load restraint structure, attachments and load restraint equipment are suitable for the application and are serviceable and functional.
- It is the responsibility of the person in charge of loading and the driver, to ensure that a load is properly restrained by the vehicle load restraint structure, attachments and load restraint equipment using safe operating procedures.
- It is the responsibility of the person in charge of unloading and the driver, to ensure that load restraint equipment is released and removed using safe operating procedures and that the load is removed safely from the vehicle.

WHO'S RESPONSIBLE?

Under the 'Chain of Responsibility' ('COR') provisions within the regulations each party involved in the loading, restraint and transport of cotton modules from farms to a cotton gin share the responsibility for transporting cotton modules in a safe and compliant manner. The individual responsibility is greater for those matters more directly under your control.

In practical terms for the grower this means ensuring that all cotton modules are constructed consistent with current industry best practices, including;

- Harvested cotton adequately compacted into rectangle or round modules so as to avoid loose modules that may be inclined to break during loading, transport or unloading at gin site;
- Modules not too heavy that they may create an over-weight load for trucks;
- Modules built to dimensions that enable transport within regulatory dimensional limits.
- Modules properly tarped or wrapped;
- Modules constructed and/or presented on even pads to facilitate loading, including correct alignment onto trailer decks for transport; and
- Checking all modules adequately restrained on trailers prior to leaving the farm (including monitoring the practices of your transport contractor).