

PBS Quad-axle Mass exception Limits (QML)

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The *Heavy Vehicle (Mass, Dimension and Loading) National Regulation (MDL)* allows quad-axle groups to operate at mass higher than 20.0t and up to 27.0t if a combination is PBS-approved. This mass is referred to as Quad-axle Mass Limit or (QML).

Full mass – 27.0t is the maximum full QML mass on a quad-axle group approved under PBS.

For a vehicle to be eligible for 27.0t on the quad-axle group, the following requirements are stated in the MDL:

- all axles in the quad-axle group are fitted with dual tyres; and
- PBS vehicle approval is in force for the vehicle that permits a mass of up to 27.0t on the quad-axle group; and
- the vehicle complies with PBS Standards and with the conditions of the PBS vehicle approval.

QML mass tables

Below is an example of a typical mass table for a prime mover and quad-axle semitrailer:

Mass limits	Level 1	
	GML	43.0t
QML 1	44.0t	N/A
QML 2	N/A	48.5t
QML 3	N/A	50.5t
Bridge assessment	Tier 1	Tier 2/3

Axle group masses	Level 1			
	GML	QML 1	QML 2	QML 3
Steer	6.5t	6.5t	6.5t	6.5t
Drive	16.5t	17.0t	17.0t	17.0t
Trailer	20.0t	21.0t	22.5t	27.0t

QML masses are numbered, where:

- QML 1 - a mass equivalent to tri-axle CML at 21.0t.

- QML 2 - a mass equivalent to tri-axle HML at 22.5t.
- QML 3 - full QML mass at 27.0t.

Note: It is possible that there are a higher number of QML masses. For example, QML 5 with the QML 5 mass being the full mass at 27.0t.

QML 1

QML 1 will typically equal (but may not always be the case) to tri-axle CML, which is 20.0t at GML + 1t = 21.0t.

QML 1 Total Mass

The sum of individual axle group masses on the right-hand side of the mass table does not add up to the total QML1 mass shown on the left-hand side of the mass table. In this example – the total QML1 mass is 44.0t, instead of 44.5t (6.5+17+21=44.5).

Total QML1 mass is capped at 1t extra on top of GML which is consistent with the CML rules. Total CML increase is capped at:

- GML+1t if GML < 55t
- GML+2t if GML ≥ 55t

QML 1 Bridge assessment

Because of CML equivalency to a tri-axle group and the mass being distributed between a greater number of axles – four instead of three, a Tier 1 bridge assessment requirement is assigned to QML 1.

QML 2

QML 2 will typically equal (but may not always be the case) tri-axle HML, which is 22.5t. A Tier 2/3 bridge assessment requirement is assigned to masses above 21t on the quad-axle group.

QML 3

QML3, or the highest QML number on the VA, will typically have (but may not always be the case) full QML mass at 27.0t. A Tier 2/3 bridge assessment requirement is assigned to full QML mass.

PBS Operating Conditions

Heavy Vehicle (General) National Regulation requires certain operating conditions be stated on the PBS

Vehicle Approval for vehicles with quad-axle groups:

1. The axles in the quad-axle group must relate to each other through a load-sharing suspension system.
2. If the quad-axle group is fitted with a retractable axle, the retractable axle must comply with ADR 43/04. The transition mass is 18t.
3. The quad-axle group must be fitted with either:
 - a steerable axle with no less than 12° steering articulation and an effective automatic centering mechanism;
 - or another steering mechanism proven to be effective in mitigating the impacts of road scrubbing by tyres.
4. A National Heavy Vehicle Accreditation Scheme (NHVAS) - Maintenance Management accreditation of the vehicle must be in force for the operator of the vehicle.
5. Quad-axle Mass Limits (QML) requirements for the operation with mass exceeding 20t on the quad-axle group:
 - the quad-axle group must be fitted with a road-friendly suspension system that is certified for tri-axle groups in accordance with the requirements of VSB 11; and
 - all axles in the quad-axle group must be fitted with dual tyres; and
 - a National Heavy Vehicle Accreditation Scheme (NHVAS) - Mass Management accreditation of the vehicle must be in force for the operator of the vehicle.

Bridge assessment condition

In addition to the above operating conditions, the NHVR imposes a bridge assessment condition (Operating Condition 3 on the Vehicle Approval):

A Tier 2 or 3 bridge assessment is required when operating above 21.0t on the quad-axle group. Some road managers may require Tier 2 or Tier 3 bridge assessment at GML or QML masses.

Revision history	
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