

Queensland Code of Practice: Vehicle Modifications (QCOP)

Code S13: Bus Life Vehicle Rating

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CODE S13

Bus Life Vehicle Rating

1.0 Scope

This section outlines the minimum standard required for the inspection and issue of a life extension for a heavy bus.

As an alternative to the replacement of an aging bus, owners may wish to consider refurbishing it. Three options are available. However, each will require a commercial decision by the owner to determine if the bus should be replaced, or to upgrade, refurbish and extend its life.

The definition of a heavy bus is a passenger vehicle with a GVM exceeding 5,000 kg (5 tonnes) and having more than 9 seating positions, including the driver.

2.0 General requirements

- The guidelines contained in this code apply to all heavy buses used for public passenger services. These guidelines, referred to in Schedule 2 of the *Transport Operations (Passenger Transport) Standard 2010*, are also contained in Department of Transport and Main Roads (TMR) information bulletins.
- This code and the information bulletins outline the requirements for either refurbishing a heavy bus to meet the Age Zero requirements, or for carrying out a partial refurbishment to achieve a five year extension to the 15 or 25 year maximum age standards.
- Five Year Life Extension for Open Classification Buses (Age 10) - Requires refurbishment of the bus, including engineer's certification of the structural integrity and serviceability of chassis, body, suspension, steering and brake components and certification that it complies at the time of approval with all Australian Design Rules (ADRs) applicable five years after the bus was first registered. A five year life extension can only be performed once in the life of any bus.
- Five Year Life Extension for Regional Classification Buses (Age 20) - Requires refurbishment of the bus, including the engineer's certification of the structural integrity and serviceability of chassis, body, suspension, steering and brake components and certification that it complies at the time of approval with all ADRs applicable five years after it was first registered. A five year life extension can only be performed once in the life of any bus.
- Age Zero - Requires a new body and the complete refurbishment of the bus including an engineer's certification of structural integrity and serviceability of chassis, body, suspension, steering and brake components and certification that it complies, when completed, with all ADR's applicable to a new bus at that time.
- Any certification work that would amount to a 'Professional Engineering Service' (as defined in *Professional Engineers Act 2002*) must only be provided by a person who is;
 - Registered as a Registered Professional Engineer Queensland (RPEQ); or
 - Under the direct supervision of an RPEQ who is registered in that area of engineering and responsible for the service being certified.

- Vehicle systems and components, which have been recently refurbished or replaced, will not be required to be dismantled or refurbished provided documentary evidence or proof of replacement or refurbishment is made available to the certifying engineer.
- All modifications completed as part of the refurbishment process, or those which have been done in the past, must be in accordance with the standards prescribed in *Vehicle Standards Bulletin 6 (VSB-6): National Code of Practice Heavy Vehicle Modifications*, and must be certified by an Approved Person.
- Each bus, prior to reintroduction into service, must undergo a full evaluation and rating by an Approved Person under the requirements of the Queensland Code of Practice: Vehicle Modifications (QCOP) heavy codes S4 or S5, and S6 to validate the passenger carrying capacity and compliance with TMR safety standards.
- For the purposes of this code, bus age is calculated from the date of first registration. If this information is not available, the date of manufacture of the original body is to be used.
- On completion of the refurbishment to the required standard, a modification plate must be attached to the plate in a position adjacent to the original manufacturer's plate or compliance plate. The plate must be marked as follows:
 - Five Year Extension- S13/5/ * / **** (where *=month and ****=year of withdrawal from service) ie. An extension of 5 years in November 2001 for a November 1976 vehicle would be displayed as S135/11/2006).
 - Age Zero- S13/0/* / **** (where *=month and ****=year of withdrawal from service) ie. An age zero extension in November 2001 would be displayed as S13/0/11/2026).

3.0 Specific requirements – Five year life extension

- A heavy bus may have its service life extended an extra five years subject to the vehicle undergoing a basic refurbishment, ADR upgrade and certification by the Approved Person, in a number of key areas.
- It should be noted that this five year life extension is not considered a complete refurbishment. The bus will retain its original year of manufacture for the purposes of registration.

Open, Regional or Local classification buses that have a five year life extension between 18 years of age and before turning 25 year of age may continue in the open, regional and local classification use, as applicable until it turns 30 years of age.

3.1. Conditions of refurbishment

3.1.1. ADRs

The bus must be upgraded to comply with the ADRs applicable five years after the bus was first registered.

The only ADRs which are exempted from this requirement are those related to control of exhaust emissions. Therefore, an engine does not require upgrading to a later exhaust emissions ADR.

Owners should carefully consider the potential cost of ADR upgrading before committing to a bus life extension, particularly with regard to ADRs for roll over strength and seat belts as they become applicable. No exemptions will be given from safety related ADRs.

Note: While upgrading to later ADRs for exhaust emissions (eg ADR 30/.. Smoke Emission Control for Diesel Vehicles) is not required, the vehicle must continue to comply with in-service regulations. Therefore, the engine must continue to comply with the ADR for exhaust emissions it was originally built to and must not emit smoke for 10 seconds or more. Refer to *Transport Operations (Road Use Management—Vehicle Standards and Safety) Regulation 2021*.

3.1.2. Body

- The body must be in good structural condition.
- If the body shows signs of structural damage, or rusting of the frame (e.g. rust stains, loose rivets, loose, or rusted panels), or if the bus has not passed a frame inspection within the previous five years, a full panel removal and frame inspection is required. For more information, see the information bulletin titled “*Guidelines for the structural inspection and repair of buses*” for the requirements for a frame inspection, available on the TMR website at: <https://www.tmr.qld.gov.au/Licensing/Passenger-transport-driver-authorisation/Information-bulletins/Vehicle-related>.
- All interior trim material must be free from damage and in good serviceable condition.
- All side facing seats must be removed and replaced with forward or rearward facing seats on buses in the Regional Classification. Open Classification buses must have forward or rearward facing, coach style, high back seats.
- Exposed handrails, seats, and partitions must be padded where specified in “*Standards for Safety Padding for Bus Handrails, Seats and Partitions*”, available on the TMR website at: <https://www.tmr.qld.gov.au/Licensing/Passenger-transport-driver-authorisation/Information-bulletins/Vehicle-related>.
- All interior or damaged floor coverings must be replaced with approved non-slip style material.
- Windows and window seating must be in good condition.
- Paintwork must be in good condition.

3.1.3. Chassis and Suspension

All components to be cleaned, inspected and crack tested where necessary, to ensure they are rust free, structurally sound and within service wear limits.

3.1.4. Steering

- Power steering components must be free of leaks. Cracked or oil affected hydraulic hoses must be replaced.

- Stub axles and all steering arms (including pitman arms and drag links) are to be crack tested. Defective components must be replaced. No repairs using heating or welding processes are considered acceptable.

3.1.5. Brakes

- Complete overhaul and refurbishment of the braking system must be carried out.
- Replacement of flexible air or hydraulic lines, valve seals, diaphragms etc is required. All components must comply with acceptable national or SAE standards.
- Physical testing of vehicle braking performance to meet the *Transport Operations (Road Use Management—Vehicle Standards and Safety) Regulation 2021* performance requirements for both service and parking brakes is required. (Minimum service brake efficiency 50%, parking brake to hold on a 12% gradient).

3.1.6. Electrical

- All electrical fittings, lights, reflectors, lenses and wiring must be in serviceable condition.
- Light and reflector lenses must be free from cracks and have serviceable and reflective surfaces. Discoloured or cracked lenses must be replaced.
- All electrical wiring and electrical conduit must be secure, shielded from the effects of excessive heat, and in serviceable condition.
- Voltage under load with the engine running at each lamp must not be more than 10% below nominal voltage, e.g. 10.8 volts for a 12 volt system.

3.1.7. Engine and Driveline

- All components will require visual and physical inspection and may require dismantling, if necessary, to ensure reliability and mechanical integrity.
- The engine must have adequate power output.
- All components must be free of oil, water, air and vacuum leaks.
- The vehicle shall be free of exhaust leakage, excessive noise and smoke emission (Vehicle should be operated under load and not emit visible smoke continuously for more than 10 seconds).
- Transmission and driveline components must be secure. All components must be free of oil leaks, excessive wear or backlash in the drive line.
- Rubber mounts and dampers are to be free of oil impregnation, cracking and deterioration.
- All axle hub assemblies must be removed, dismantled and inspected. All hub oil seals and gaskets must be replaced. Replace wheel bearings where necessary.

4.0 Specific requirements – Age zero refurbishment

A service bus may have its service life returned to age zero subject to the vehicle undergoing a complete refurbishment, ADR upgrade and certification by the Approved Person, in a number of key areas.

Age Zero refurbishment is the complete refurbishment of the rolling chassis, the fitting of a new body and the upgrading of the bus to meet the safety and emission standards applicable to a new heavy bus at the time of refurbishment.

Buses which are completely refurbished in accordance with the following conditions will be considered by TMR to qualify as Age Zero, for the purposes of the *Transport Operations (Passenger Transport) Standard 2010*.

It should be noted that these buses will retain their original year of manufacture for the purpose of registration.

4.1. Conditions of refurbishment

4.1.1. ADRs

The refurbished bus must comply with all ADRs applicable at the date of completion of remanufacture. Buses intended for Open or Regional Classifications must comply with all ADR's applicable to Non Route Service Buses.

4.1.2. Body

A completely new body (including all interior and exterior fittings and equipment) is required.

4.1.3. Chassis and Suspension

Structural components (chassis, spring hangers etc.) must be dismantled, visually inspected and crack tested if necessary. All components must then be replaced or refurbished as necessary.

4.1.4. Mechanical

All mechanical components (engine, gearbox, steering, suspension and axles etc.) must be rebuilt, including the replacement of all seals, gaskets, bearings and wearing components.

4.1.5. Brakes

The complete braking system must be fully rebuilt including replacement or refurbishment of all wearing components, Replacement of all flexible air or hydraulic lines, valve seals, diaphragms, springs etc. All components must comply with the appropriate national or SAE standards.

Checklist s13a

CODE S13: Bus Life Vehicle Rating - 5 Year Life Extension

Form No: S13a

Provide an answer to each of the following (Y=Yes, N=No)

Modification Certificate Number:		
1	ADRs	
1.1	Has the bus been upgraded to comply with all ADRs applicable (except exhaust emissions) five years after it was first registered (or manufactured if registration details are not available)?	<input type="checkbox"/> Y <input type="checkbox"/> N
2	Body	
2.1	Is the body in good structural condition?	<input type="checkbox"/> Y <input type="checkbox"/> N
2.2	Is the body free of structural damage, rusting, loose rivets, rusted panels etc?	<input type="checkbox"/> Y <input type="checkbox"/> N
2.3	Has the bus passed a full frame inspection within the previous five years (a copy of the TMR frame inspection certificate must be sighted) or has a full frame inspection been carried out?	<input type="checkbox"/> Y <input type="checkbox"/> N
2.4	Is all interior trim free from damage and in good serviceable condition?	<input type="checkbox"/> Y <input type="checkbox"/> N
2.5	Are all floor coverings approved non-slip type material and in good condition?	<input type="checkbox"/> Y <input type="checkbox"/> N
2.6	Are all window seals and windows in good condition?	<input type="checkbox"/> Y <input type="checkbox"/> N
2.7	Is all paintwork in good condition	<input type="checkbox"/> Y <input type="checkbox"/> N
2.8	Are all applicable areas padded as required in information bulletin "Guidelines for safety padding for bus handrails, seats and partitions"?	<input type="checkbox"/> Y <input type="checkbox"/> N
2.9	If the bus is to be operated under Regional Classification, are all seats forward or rear facing, coach style, high back seats?	<input type="checkbox"/> Y <input type="checkbox"/> N
2.10	If the bus is to be operated in Open Classification, are all seats forward or rear facing, coach style, high back seats?	<input type="checkbox"/> Y <input type="checkbox"/> N

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3	Chassis and Suspension	
3.1	Have all components been cleaned, inspected and crack tested, if necessary, to ensure they are rust free, structurally sound and within serviceable wear limits?	<input type="checkbox"/> Y <input type="checkbox"/> N
4	Steering	
4.1	Are all power steering components free from leaks, and have all oil affected hoses been replaced?	<input type="checkbox"/> Y <input type="checkbox"/> N
4.2	Have all stub axles, steering arms, pitman arms and drag links been crack tested? Note: <i>All defective components must be replaced. Repairs using heat or welding processes are NOT acceptable.</i>	<input type="checkbox"/> Y <input type="checkbox"/> N
5	Brakes	
5.1	Has the complete braking system been fully overhauled and refurbished?	<input type="checkbox"/> Y <input type="checkbox"/> N
5.2	Have all flexible air or hydraulic lines, valve seals, diaphragms, wheel cylinder seals etc been replaced? Note: <i>All components must comply with acceptable national or SAE standards.</i>	<input type="checkbox"/> Y <input type="checkbox"/> N
5.3	Has the service brake been tested to show an efficiency not less than 50%?	<input type="checkbox"/> Y <input type="checkbox"/> N
5.4	Has the parking brake been tested to hold the vehicle on a gradient of at least 12%	<input type="checkbox"/> Y <input type="checkbox"/> N
6	Electrical	
6.1	Are all electrical fittings, lights, reflectors, lenses and wiring in a serviceable condition?	<input type="checkbox"/> Y <input type="checkbox"/> N
6.2	Are all lenses free from cracks and have serviceable reflective surfaces?	<input type="checkbox"/> Y <input type="checkbox"/> N
6.3	Is all electrical wiring secure, shielded from the effects of excessive heat, and in a serviceable condition?	<input type="checkbox"/> Y <input type="checkbox"/> N
6.4	Is the voltage under load at each lamp not more than 10% below nominal system voltage?	<input type="checkbox"/> Y <input type="checkbox"/> N

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7	Engine and Driveline	
7.1	Have all components been physically inspected and dismantled, where necessary, to ensure mechanical integrity and reliability?	<input type="checkbox"/> Y <input type="checkbox"/> N
7.2	Does the engine have adequate power output?	<input type="checkbox"/> Y <input type="checkbox"/> N
7.3	Is the vehicle free from oil, water, air and vacuum leaks?	<input type="checkbox"/> Y <input type="checkbox"/> N
7.4	Is the vehicle free from exhaust leakage, excessive noise and smoke emission? Note: <i>Vehicle should be operated under load and not emit smoke continuously for 10 seconds or more.</i>	<input type="checkbox"/> Y <input type="checkbox"/> N
7.5	Is the transmission and driveline secure, free of leaks, excessive wear and backlash?	<input type="checkbox"/> Y <input type="checkbox"/> N
7.6	Are all rubber mounts and dampers free of oil impregnation and cracking?	<input type="checkbox"/> Y <input type="checkbox"/> N
7.7	Have all hub and axle assemblies been dismantled, cleaned and have all seals and defective bearings been replaced?	<input type="checkbox"/> Y <input type="checkbox"/> N
8	Vehicle Life Details	
8.1	Date of first Registration (Month and Year)	_____
8.2	Life extension current up to and including (Month and Year)	_____
9	General	
9.1	Has the vehicle undergone a full evaluation and rating under the requirements of QCOP heavy codes S4 or S5, and S6 to validate the passenger carrying capacity and compliance with TMR safety requirements?	<input type="checkbox"/> Y <input type="checkbox"/> N

Note: If the answer to any question is **N (No)**, the five year life extension will not be granted.

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Checklist s13b

CODE S13 - Bus Life Vehicle Rating - Age Zero Refurbishment

Form No: S13b

Provide an answer to each of the following (Y=Yes, N=No)

Modification Certificate Number:		
1	ADRs	
1.1	Does the refurbished bus comply with all ADRs applicable at the date of completion of remanufacture?	<input type="checkbox"/> Y <input type="checkbox"/> N
1.2	Has the vehicle been upgraded to meet the safety and emission standards applicable to a heavy bus at the date of completion of remanufacture?	<input type="checkbox"/> Y <input type="checkbox"/> N
1.3	If the bus is intended for Open or Regional Classification, does it comply with all ADRs applicable to Non Route Service Buses?	<input type="checkbox"/> Y <input type="checkbox"/> N
2	Body	
2.1	Has a new body been fitted (including all interior and exterior fittings and equipment)?	<input type="checkbox"/> Y <input type="checkbox"/> N
3	Chassis	
3.1	Has a complete refurbishment of the rolling chassis been carried out?	<input type="checkbox"/> Y <input type="checkbox"/> N
3.2	Have all structural components (chassis, spring hangers etc.) been dismantled, visually inspected, crack tested, replaced or refurbished as necessary?	<input type="checkbox"/> Y <input type="checkbox"/> N
4	Mechanical	
4.1	Have all mechanical components (engine, gearbox, steering, suspension and axles etc.) been rebuilt, including the replacement of all seats, gaskets, bearings and wearing components?	<input type="checkbox"/> Y <input type="checkbox"/> N
5	Brakes	
5.1	Has the complete braking system been fully rebuilt including replacement or refurbishment of all wearing components, replacement of all flexible or hydraulic lines, valve seals, diaphragms, springs etc?	<input type="checkbox"/> Y <input type="checkbox"/> N

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6	Vehicle Life Details	
6.1	Date of first Registration (Month and Year)	_____
6.2	Life extension current up to and including (Month and Year)	_____
7	General	
6.1	Has the vehicle undergone a full evaluation and rating under the requirements of the QCOP heavy codes S4 or S5, and S6 to validate the passenger carrying capacity and compliance with TMR safety requirements?	<input type="checkbox"/> Y <input type="checkbox"/> N

Note: If the answer to any question is **N (No)**, the five year life extension will not be granted.