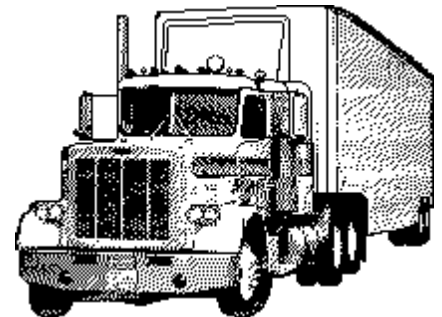
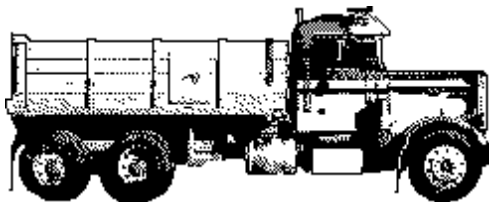


Section D

REAR AXLES



**HEAVY VEHICLE MODIFICATIONS**

1. SCOPE

This Section relates to the fitting of replacement rear axle(s) and differential assemblies to heavy vehicles.

2. ADR's AFFECTED

ADR 18, 18/..; - Instrumentation (where gearing changes affect the speedometer accuracy).

ADR 28, 28A, 28/..; - Noise (where gearing changes result in engine speeds outside the range tested).

ADR 35, 35A, 35/..; - Brakes (where gearing changes increase vehicle maximum speed from below 70 km/h to above 80 km/h or where brakes are changed as part of the axle assembly).

ADR 65/..; - Speed Limiting (where gearing affects the maximum speed of a vehicle which is speed limited by gearing).

3. AFFECTING MODIFICATIONS

The fitment of any rear axle(s) or differential gear set(s) that is not or was not offered as an option by the original manufacturer of the vehicle.

4. GENERAL REQUIREMENTS

The following requirements must be met whenever a rear axle or differential assembly is being replaced:

- The replacement axle(s) must have mass ratings and gear ratio that are suitable for the mass ratings of the vehicle.
- All welding on the axle housings (for spring seats, axle seats, torque rod brackets, etc) must be performed in accordance with the axle manufacturer's recommended procedure.
- The axle(s) must be installed at the axle manufacturer's recommended installation angle.
- The brakes on any replacement axle must be either transferred from the original axle or be identical brakes to those fitted on the original axle.
- Should the modifier choose to use different brakes or install an additional axle, the guidelines in Section G - Brakes of this National Code of Practice should be followed.
- If changes to the rear suspension or tailshaft are required, the manufacturer's recommendations or the appropriate sections of this National Code of Practice should be followed.
- If a change in axle ratio is performed, the modifier should ensure that a suitable ratio is selected for road speed and gradeability, and that speedometer and road speed limiter accuracy is maintained.

5. RECORDING

Attached are Appendices D1 and D2 which:

- Summarise the scope of modification work that may be certified under each of these Modification Codes.

**HEAVY VEHICLE MODIFICATIONS**

- Include lists of Sections of this National Code of Practice covering other areas of the vehicle which may have been affected by the modification and which should be analysed to determine whether they, too, require re-certification.
- Include checklists appropriate to particular Modification Codes that should be completed.

It is suggested that analysis work records, sketches and other vehicle data, together with copies of the Calculation Sheet and completed Check Lists be retained by the Certifying Officer for at least the period specified in Part A of this National Code of Practice.

## HEAVY VEHICLE MODIFICATIONS

## Appendix D1

## Modification Code D1

## REAR AXLE(S) INSTALLATION

Modifications that are covered under this Modification Code are:

1. Fitting of alternative rear axle assembly.
2. Fitting of additional rear axle on load sharing rear suspension.
3. Fitting of suspension brackets to axle housing, providing that welding and installation is in accordance with the axle manufacturer's recommendation.

Modifications that are **not** covered under this Modification Code:

1. Fitting of axle assemblies that are not compatible with the original vehicle's componentry.
2. Modifications to axle housings - other than that allowed by the axle manufacturer for fitment of suspension brackets.

**NOTE: The modified vehicle/modifications must continue to comply with all applicable ADR's, Australian Standards or Regulations/Acts.**

Outlined below are areas of the vehicle that may have been affected by the modifications and that may require recertification, testing and/or data to show compliance for the modified vehicle.

**DETAIL****REQUIREMENTS**

Brakes

The complete Brake System should be in accordance with an ADR 35/.. certified system for an equivalent or greater GVM rating.

Code G4 for ADR 35/..; – Recertification may be required.

Suspension

Modification Code F1

Re-rating of GVM/GCM

Modification Code S1

Change of differential ratio

Modification Code D2

Tailshaft alteration

Modification Code C1

HEAVY VEHICLE MODIFICATIONS

Checklist D1

REAR AXLE(S) INSTALLATION

(Y=Yes N=No)
Delete if not applicable

1.0 General

- 1.1 Does the replacement or additional rear axles have mass ratings and gear ratios that are suitable for the mass ratings of the vehicle?
1.2 Is all welding on the axle housings (for spring seats, axle seats, torque rod brackets, etc.) performed in accordance with the axle manufacturer's recommended procedure?
1.3 Is the replacement or additional rear axle(s) installed at the axle manufacturer's recommended installation angle?
1.4 Are the brakes on any replacement or additional rear axle either transferred from the original axle or identical brakes to those fitted on the original axle?
1.5 If the modifier has chosen to use different brakes or installed an additional axle, have the guidelines in Section G - Brakes of this National Code of Practice been followed?
1.6 If changes to the rear suspension or tailshaft are required, have the manufacturer's recommendations or the appropriate sections of the National Code of Practice been followed?
1.7 If a change in axle ratio has been performed, has the modifier ensured that a suitable ratio is selected for road speed and gradeability, and that speedometer and road speed limiter accuracy is maintained?
1.8 Is the quality of workmanship to a satisfactory standard?

NOTE: If the answer to any relevant question is "NO", the modification is not acceptable.

Vehicle Chassis No/VIN: .....

Vehicle Modifier:.....

Examined by:.....

Company (if applicable):.....

Certifying Officer No:..... Modification Certificate No:.....

Modification Plate No:.....

Signed:..... Date:.....

**HEAVY VEHICLE MODIFICATIONS****Appendix D2****Modification Code D2****DIFFERENTIAL SUBSTITUTION**

The limitations of modifications that are covered under this Modification Code are:

1. Fitting of alternative differential(s) in existing axle housing(s).
2. Fitting of alternative differential ratio.
3. Fitting of traction control device.

Modifications that are **not** covered under this Modification Code are:

1. Modifications to the differential, axles or axle housings to allow installation of different or differential components.

**NOTE: The modified vehicle/modifications must continue to comply with all applicable ADR's, Australian Standards or Regulations/Acts.**

Outlined below are areas of the vehicle that may have been affected by the modifications and that may require recertification, testing and/or data to show compliance for the modified vehicle.

**DETAIL****REQUIREMENTS**

Change in differential ratio

ADR 35, 35A, 35/.. (This only applies where the vehicle's maximum speed is increased from below 70km/h to above 80km/h)

ADR 28, 28A, 28/..

National Code of Practice - Vehicle Startability- Maximum Road Speed

Speedo and Speed Limiter Accuracy

Change speedo ratio to obtain accurate speedo reading

HEAVY VEHICLE MODIFICATIONS

ChecklistD2

DIFFERENTIAL SUBSTITUTION

(Y=Yes N=No)
Delete if not applicable

1.0 General

- 1.1 Does the replacement differential/s have a mass rating/s and gear ratio/s that are suitable for the mass ratings of the vehicle?
1.2 If applicable, has all welding on the axle housing(s) been performed in accordance with the axle manufacturer's recommended procedure?
1.3 If changes to the tailshaft are required, have the manufacturer's recommendations or the appropriate sections of this National Code of Practice been followed?
1.4 If a change in axle ratio has been performed, has the modifier ensured that a suitable ratio is selected for road speed and gradeability, and that speedometer and road speed limiter accuracy is maintained?
1.5 Is the quality of workmanship to a satisfactory standard?

NOTE: If the answer to any relevant question is "NO", the modification is not acceptable.

Vehicle Chassis No/VIN: .....

Vehicle Modifier:.....

Examined by:.....

Company (if applicable):.....

Certifying Officer No:..... Modification Certificate No:.....

Modification Plate No:.....

Signed:..... Date: .....