

**44 002 - AN - 12.2001**

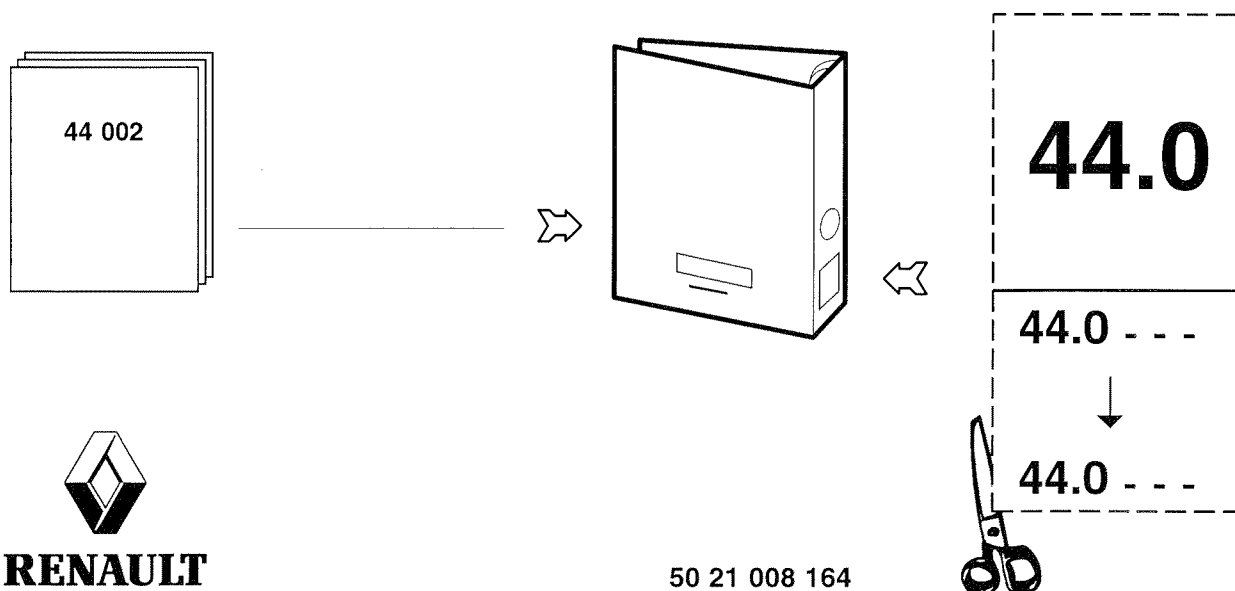
**AXLE "HENDRICKSON"**

AXLE	VEHICLE
MIDLIFT AXLE	MAGNUM PUSHER PREMIUM PUSHER

**NOTE**

The above information may change in the course of time.

Only the "Consult" section of the workshop manuals repertory in standard N°10320 serves as reference.



**AXLE**

## Introduction

Hendrickson products are manufactured to high standards and engineered to give years of dependable service, however regular attention is recommended for continuous efficient running.


Maintenance and service procedures are carefully set out in this booklet to enable the operator to obtain the optimum performance from the equipment. Operators are expected to perform these maintenance procedures as a condition of warranty.

When renewing parts, use only genuine Hendrickson parts. They are correctly designed and manufactured to exacting standards of quality control to ensure optimum performance. The use of non-original Hendrickson parts will nullify all warranty and may substantially reduce service life.

On receipt of this booklet ensure that you can identify your axle type. If in doubt, contact Hendrickson quoting the axle serial number. We will be able to identify your axle for you.

Your axle part number, axle type and serial number information is included on the axle data plate. This will be rivetted to the axle beam. If you find the data plate has been removed, then the axles serial number is stamped into the axle beam in the same area.

When ordering parts, always quote the axle serial number and type designation.

		HENDRICKSON EUROPE LTD SYWELL AIRPORT NORTHAMPTON NN6 0BU TEL:0464-493161 FAX:0464-493985	
AXLE MODEL	<input type="text"/>	PART No	<input type="text"/>
SERIAL No	<input type="text"/>	BRAKE TYPE	<input type="text"/>
EEC BRAKE APPROVAL No	<input type="text"/>		
DESIGN CAPACITY	<input type="text"/> kg	SPEED Km/h	<input type="text"/>
	<input type="text"/> kg	Km/h	<input type="text"/>
TYPE	<input type="text"/>		

1. Maintenance and maintenance schedules
2. Service
  - 2.1 Brake adjustment  
(See Renault Service Information)
  - 2.2 Hub bearing adjustment
  - 2.3 Brakes  
(See Renault Service Information)
  - 2.4 Hub bearings
  - 2.5 Brake Drums  
(See Renault Service Information)
  - 2.6 Wheel studs and nuts
  - 2.7 ABS Sensors  
(See Renault Service Information)
3. Fault diagnosis
4. Working with brake linings
5. Parts Listings

### Note

The policy of Hendrickson Europe is one of continued development. The company reserves the right to alter specifications at any time without notice.

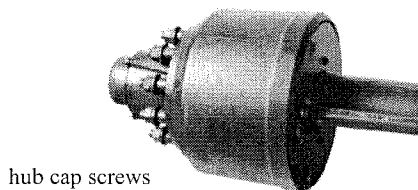
### Warranty

Hendrickson Europe undertakes to repair or replace at the company's discretion any part\* that becomes defective as to material or workmanship within 3 years or 320,000km. \*with the exception of brake linings, brake drums, brake return springs

## SECTION 1

### MAINTENANCE AND MAINTENANCE SCHEDULES

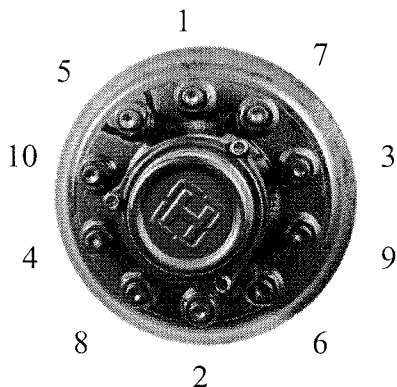
#### 1.1 Torque settings



hub cap screws  
25Nm

#### 1.2 On initial receipt and daily for first week (where applicable):

- 1.2.1** Torque wheel nuts, using sequence shown. The use of power tools for torque settings is not recommended. M22 ISO wheel nuts should be lightly oiled on threads (engine oil S.A.E. 20/50). Keep oil away from wheel nut chamfer and stud hole (other wheel nut types should be torqued dry). Note: This initial check is also relevant after wheel changes.



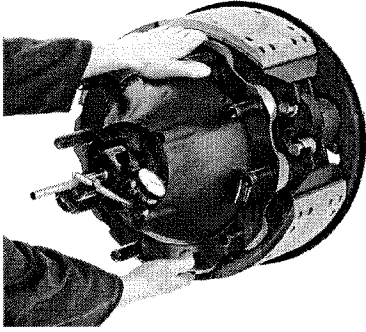
- 1.2.2** Torque settings for differing wheel security types are as shown. Metric wheels and wheels to BSF U.K. standard must not be interchanged or mixed in any combination.

TYPE	TORQUE	
	Nm	lb/ft
M22 ISO M24 ISO	680-750 785-850	500-550 580-620
22mm DIN	510-540	380-400
7/8" BSF 1" BSF (LH & RH)	470-540 610-680	350-400 450-500

#### 1.3 After 500km

- 1.3.1** Check torque on all wheel nuts (see 1.2.1 and 1.2.2 for torque details).
- 1.3.2** Check hub bearings for end float. Raise axle using two jacks, positioned as close as possible to the spring seats. Support by means of trestle. Release the brakes. Apply a lever between tyre and ground to check play, then hold wheel each side and push and pull. In the event of perceivable play, remove hubcap and attach a magnetic dial gauge as shown. Push and pull hub and note indicator reading. The end float should be 0.08-0.2mm (3-8 thou).





If adjustment is necessary, see section 2.2 for endplay adjustment details.

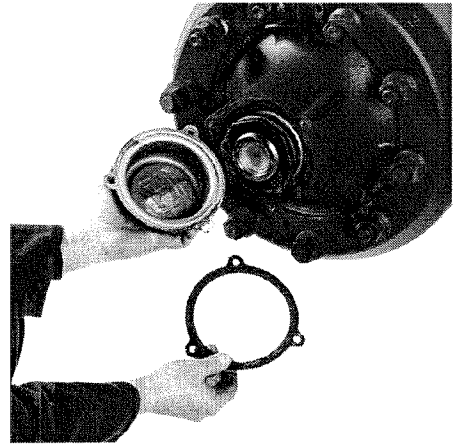
- 1.4 After 5000km. Also prior to initial operation after a long idle period.**
- 1.4.1** Check torque on all wheel nuts (see 1.2.1 and 1.2.2 for torque details).
- 1.5 Every six months or 50,000km whichever occurs sooner**
- 1.5.1** Check torque on all wheel nuts (see 1.2.1 and 1.2.2 for torque details).
- 1.6 Every twelve months or 100,000km whichever occurs sooner.**
- 1.6.1** Check hub bearings for end float. See 1.3.2 for details.
- 1.7 Every thirty six months or 300,000km whichever occurs sooner.**
- 1.7.1** Remove, clean, inspect and lubricate the hub bearings. Clean hub and renew grease, see section 2.4 for details.
- 1.7.2** Fit new grease / oil seal. See section 2.4 for details.

## SECTION 2 SERVICE

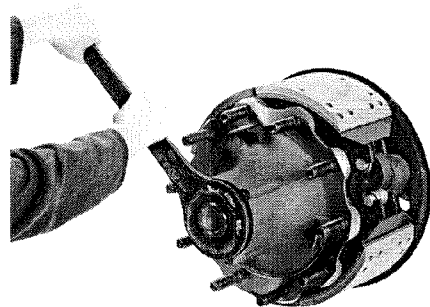
### 2.1 Brake Adjustment (SEE RENAULT SERVICE INSTRUCTIONS)

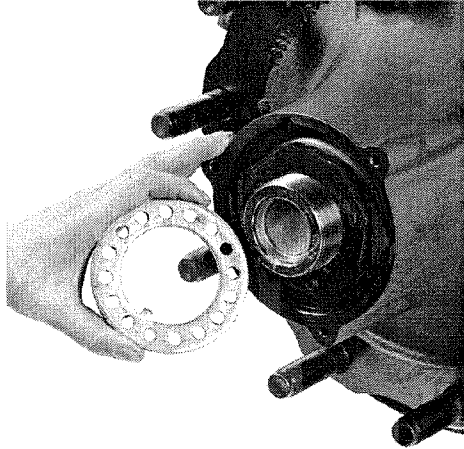
### 2.2 Hub bearing adjustment

- 2.2.1** Raise axle, using 2 jacks positioned as close as possible to spring seats. Support by means of a trestle. Make sure that hub revolves freely and if necessary temporarily slacken off brake adjuster to ensure complete freedom from brake binding (see section 2.1).



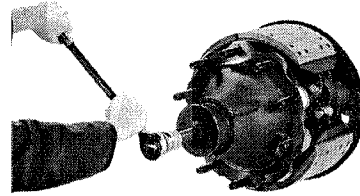
- 2.2.2** Once brakes are slackened off and are not binding on drum, remove hubcap and hubcap gasket.
- 2.2.3** Remove the bearing locknut, and lockwasher,





using box spanner (50 00 26 2658).

- 2.2.4 Rotate the hub in both directions at the same time tightening the bearing adjuster nut. Continue until a binding is felt and a torque setting of 70Nm (50lb.ft) is reached.
- 2.2.5 Using the lockwasher as a guide, slacken the adjusting nut by 7 holes and fit the lockwasher. Take care that the adjustment is not disturbed. Fit and tighten locknut to 340-390Nm (250-300lb.ft) torque. Check that hub and drum rotate freely.
- 2.2.6 Check endplay is between 0.08 — 0.2mm (3 — 8 thou). A magnetic dial gauge should be used to make the final check (See section 1.3.2).
- 2.2.7 Fit a new hub cap gasket. Re-fit hubcap.
- 2.3 **Brakes**  
(See Renault Service Information)
- 2.4 **Hub Bearings**
- 2.4.1 For access to the hub bearings, the hub and drum complete with wheel/tyre will need to be removed see section 2.3.6).



- 2.4.2 Ensure the outer bearing cone does not fall out of the hub.
- 2.4.3 To recover the inner bearing, the seal retaining the bearing must be removed (and subsequently replaced).
- 2.4.4 When removed, mark the de-mounted wheel hubs and bearing races so that their identity is not mistaken when re-assembled.
- 2.4.5 It is advisable to wash the bearing cones thoroughly immediately after removal, using the following procedure:  
Immerse in a washing fluid such as clean white spirit or good quality paraffin (DO NOT USE PETROL). The washing fluid must not attack the bearing components. After soaking, swirl each separate bearing around in the fluid, using a basket or other container if convenient. A clean fibre brush may be used, care being taken that no bristles lodge in the bearing. Occasional slow oscillations of the bearing rings will help dislodge dried out grease and other matter. Never spin a dry bearing which could cause the rollers to skid, thus damaging the highly finished internal surfaces of the bearing. When clean, thoroughly drain and dry in an oven or on a hot plate; a temperature of 65-80... should be adequate.
- 2.4.6. Ensure bearing cones for each hub do not become mixed.
- 2.4.7 To inspect the bearing, hold it against the light. Look between the rollers in order to see the raceway or outer surface. Hold the cage and slowly rotate the cone to check for wear or damage over the entire surface.

### 2.4.8 Bearing defects

#### Identification of wear or damage

1. Dull appearance, roughness or pitting of rollers & raceways.

#### Possible Causes

Abrasive dirt causing premature bearing failure.

#### Identification of wear or damage

2. Excessive wear on large end of roller.

#### Possible Causes

Over tightening.

#### Identification of wear or damage

3. Flaking on small end of rollers, cup and cone rolling surfaces

#### Possible Causes

Loose adjustment.

#### Identification of wear or damage

4. Fracture or fine hairline cracks across the cup or cone.

#### Possible Causes

Forcing a cone assembly on an oversize spindle, or forcing a cone assembly on to a spindle out of square; or by forcing a cup into a warped hub bore.

#### Identification of wear or damage

5. Series of indentations or lines on the raceways.

#### Possible Causes

Improper mounting or sudden excessive shock loads.

#### Identification of wear or damage

6. Corrosion.

#### Possible Causes

Ingress of water or use of incorrect lubricant. Check seals.

#### Identification of wear or damage

7. Blue or blue/brown discolouration.

#### Possible Causes

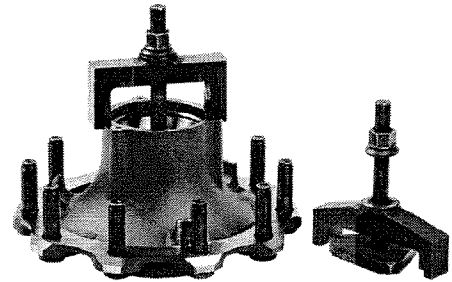
Indicates overheating. Possible causes are over tightening, lack of lubricant or ingress of foreign material.

- 2.4.9 Always renew any bearing which does not, without any doubt or hesitation, pass inspection. The danger and cost of bearing failure in service is many times the replacement value of any bearing. If replacements are needed it will be necessary to remove cups from hubs.

- 2.4.10 Check the bearing cups in the hubs. Both inner and outer bearing cups must be a tight press fit into the hub. Any sign of looseness means replacement of hub.

- 2.4.11 The bearing cups must be removed from the hub if they are worn and replacements sought. If difficulty is encountered, special tool Y507424 is available for extracting the inner (90mm) bearing cup and Y507492 for extracting the outer (65mm) cup.

- 2.4.12 The bearing cones should be a sliding fit on the spindle. They should not be loose enough to spin.



- 2.4.13 After checking for signs of wear or damage, lubricate the bearing immediately and re-fit. Alternatively, completely coat all parts with a rust preventative oil, working it well into the internal parts of the bearing then wrap in greaseproof paper and box until required for re-fitting, when the bearing will require re-lubrication. Oil filled hub bearings should not be greased but dipped in century 85W-140 oil after inspection and prior to fitting.

- 2.4.14 Re-assembly.

- 2.4.15 Wash out all the old grease from the hub using white spirit or good quality paraffin (DO NOT USE PETROL) and allow to dry.

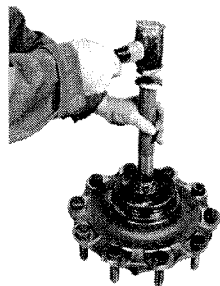
- 2.4.16 If replacement bearings are to be fitted, the bearing cups need to be pressed firmly into the hub against the shoulders. Take care to ensure the cups are seated squarely. Thoroughly coat both cups with

Fuchs Lupex M2 grease prior to installation (grease filled hubs only).

**2.4.17** Half fill the hub between the two bearing cups with grease. This cavity should not be filled with grease, since, in use pressure could build up forcing grease through the seal.

**2.4.18** Pressure grease or re-pack cones thoroughly working grease between rollers, ensuring grease reaches inner raceway.

**2.4.19** Load the inner bearing cone into the hub whilst in vertical position. Locate a new seal squarely in the hub bore and tap into position using a seal drift as shown. Do not strike



hard or damage will be caused to either seal or bearing. Light taps will drive in the seal until it touches the bearing when resistance will be felt. Ensure seal is correct way round by noting the marking given on seal for this. The sealing lip faces the bearing.

**2.4.20** It is important that the seal is fitted into the hub after the inner bearing cone using tool Y507763.

**2.4.21** Ensure there is ample grease between inner bearing and seal.

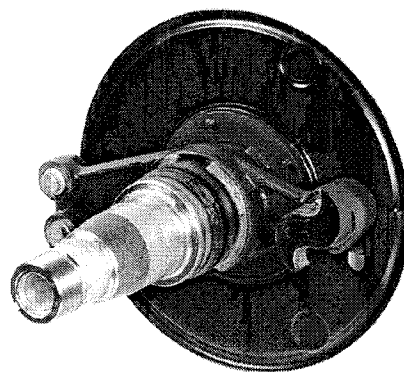
**2.4.22** Place outer cone into hub and replace thrust washer and circlip (earlier models without washer and circlip will need the outer bearing cone installed once the hub is mounted on the spindle).

**2.4.23** Before replacing the hub, inspect the spindle journals for excessive wear. The lower limits for journal sizes are

Inner bearing = 89.94mm

Outer bearing = 64.95mm

Lightly grease spindle bearing faces (Fuchs Lupex M2).



**2.4.24** Carefully feed hub and drum assembly onto spindle at slight angle and with a slight rotary movement to seat the grease seal, check the grease seal is in place and undamaged.

**2.4.25** Fit outer bearing cone (earlier models). Fit bearing adjuster nut and adjust bearing end float as detailed (section 2.2).

**2.4.26** Although there should be adequate grease around the outer bearing it is not necessary to pack the hubcap with grease. Fit new hubcap gasket, re-fit grease-smearred hubcap.

**2.5 Brake Drums**  
(See Renault Service Information)

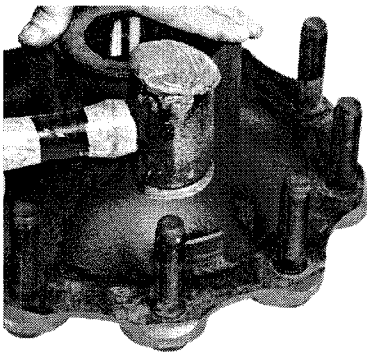
## 2.6 Wheel Stud Removal

**2.6.1** It is important to ensure that wheel nuts and collars match the wheel to be fitted, ie BSF conical wheel nuts and collars should be matched with UK standard wheels having conical seating. Metric DIN standard wheels have spherical seating to match metric wheel nuts and collars. When fitting twin wheels, ensure that the inner wheel is fitted correctly on the seating and does not bear directly on to the hub face. Single centre nave wheels do bear directly on to the hub face. Note: Twin and single ISO 4107 spigot mounted wheels do also bear directly on to the hub face.

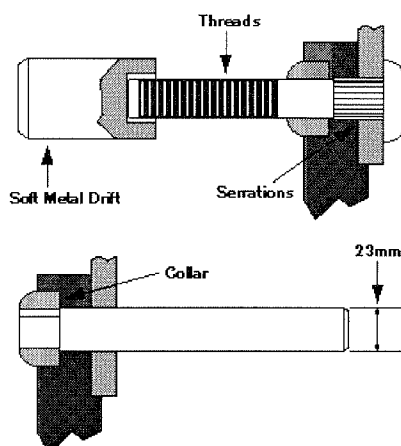
**2.6.2** Metric wheels and wheels to UK standard must not be interchanged or mixed in any combination.



- 2.6.3** It is essential when mounting wheels on the vehicle that they should all be centred correctly to avoid overstrained or fractured studs, distortion of wheels, hub flanges and brake drums, loose wheels and elongated stud holes.
- 2.6.4** For wheel security type identification and correct torque details see section 1.2.2.
- 2.6.5** Examination of wheel fixings. Raise trailer using two jacks as close as possible to spring seats, support by means of a trestle and remove road wheels.
- 2.6.6** Check and replace any studs which show the slightest sign of wear. Wheel studs can be pressed out using a hydraulic press (preferred method) or driven out using a soft metal hollow drift.



- 2.6.7** First remove hub and drum assembly (see section 2.3.6), then press out wheel studs as shown. Drive out collars using a steel drift 23mm diameter (160 or 800 series only).



- 2.6.8** Ensure holes in hub are clean and undamaged. Examine stud holes in wheels for wear on spherical seat and for damage to the wheel studs threads at base of collar.
- 2.6.9** Wheel studs should be pressed firmly into place, taking care to ensure that the studs remain square with the hub face, seats flat against inside face of drum and serrations are aligned.
- 2.7** **ABS Sensors**  
(See Renault Service Information)

## SECTION 3

### FAULT DIAGNOSIS

- 3.1** **Fault**  
Damaged wheel studs.  
**Possible cause**
1. Wheel nut not tightened to recommended torque.
  2. Care not taken when fitting wheel studs.
  3. Incorrect wheels fitted.
- 3.2** **Fault**  
Hub overheating.  
**Possible cause**
1. Bearings incorrectly adjusted.
  2. Bearings under greased or unsuitable grease used causing dry running.
  3. Bearings over tightened.
  4. Ingress of foreign material into bearing.
  5. Brakes binding.
  6. Bearing cups loose in hubs.
  7. Bearings worn.
- 3.3** **Fault**  
Excess tyre wear.  
**Possible cause**
1. Incorrect tyre pressures.
  2. Axle misaligned.
  3. Bearings incorrectly adjusted. Excessive endplay.
  4. Tyre sizes unmatched.
  5. Bent axle beam.
  6. U bolt nuts loose.

- 3.4**
- Fault**  
Premature bearing failure.
- Possible cause**
1. Bearing adjustment incorrect.
  2. Condensation in bearings.
  3. Dirt, foreign matter in grease.
  4. Bearings loose in hub.

- 3.5**
- Fault**  
Loose wheels.
- Possible cause**
1. Incorrect torque.
  2. Worn bolts.
  3. Mismatched wheels and fasteners.
  4. Damaged wheels, mounting face not flat.
  5. Excessive paint on hub / wheel mounting face

- 3.6**
- Fault**  
Broken or bent axle beam.
- Possible cause**
1. Welding across high stress zone.
  2. Excessive shock loadings.
  3. Overloading.
  4. Reworked axle brackets.

- 3.7**
- Fault**  
Grease or oil leaks.
- Possible cause**
1. Incorrect assembly of seal.
  2. Seal damaged.
  3. Damaged/worn hubcap gasket.
  4. Hubodometer stem leaks.

## SECTION 4

### WORKING WITH BRAKE LININGS

- 4.1** Don't blow dust out of brake drums with an air line.
- 4.2** Do use properly designed drum cleaning equipment which prevents dust escaping, or use clean wet rags to clean out drums. Put used rags in a plastic waste bag while still wet.
- 4.3** Don't grind or drill linings unless the machine has exhaust ventilation or there is a ventilated booth to do the work in.
- 4.4** Don't use brushes to sweep up the dust.
- 4.5** Do use a special vacuum cleaner to remove dust.
- 4.6** Do wet dust thoroughly and scrape it up if you haven't got a vacuum.
- 4.7** Do wear the protective clothing, such as overalls, provided by your employer.
- 4.8** Don't take the protective clothing home. It should be cleaned by your employer.
- 4.9** Don't use equipment if it is not maintained and checked. Ask to see the examination reports of ventilation systems.
- 4.10** Wear Indicator Linings — a large number of lining references are now supplied with wear indicator to assist maintenance procedures, reduce drum damage and maintain brake efficiency. The indicator is in the form of a step ground along the lining edge and is convenient, as it is visible at any point where inspection holes in the dust cover occur. The position of the step is intended to indicate the approximate level of the top of the rivets without the need to remove the brake drum. It is not intended to indicate the point to which the lining can be allowed to wear. We would also like to point out that the step will only indicate the degree of wear at the point which it can be viewed through the dust cover. Allowances must be made for uneven wear which occurs through brake design and characteristics, worn drums or other components, extremes of duty or temperature, incorrect/ poor maintenance or any other reason. However, once unusual wear characteristics have been recognised and providing that they remain consistent, the wear step can still be used with experience to assess the overall wear of the lining. In instances where lining wear is inconsistent the wear guide can be ignored. Remember — it is only intended to indicate where the tops of the rivets are.

**SUSPENSION**



## 1. INTRODUCTION

This publication is to acquaint and assist maintenance personnel in preventative maintenance and rebuild of all Mid-Lift Air Suspensions and Axles.

## 2. IMPORTANT SAFETY NOTICE

Proper service and repair is important to the safe and reliable operation of the Mid-Lift Air Suspension Axle. The service procedures recommended by Hendrickson and described in this technical publication are effective methods of performing maintenance. Some of these operations may require the use of shop made tools for the removal and installation of bushings.

There are various warnings and cautions that should be read carefully to minimise the risk of personal injury and to assure that proper methods are used. Improper servicing may damage the vehicle or render it unsafe in operation.

### WARNING:

**HENDRICKSON REMINDS USERS TO ADHERE TO THE PUBLISHED CAPACITY RATINGS FOR THE SUSPENSIONS AND AXLES.**

**DO NOT MODIFY OR REWORK PARTS. DO NOT USE SUBSTITUTE PARTS. USE OF A MODIFIED OR SUBSTITUTE PART IS NOT RECOMMENDED BECAUSE THE PART MAY NOT MEET HENDRICKSON S SPECIFICATIONS, WHICH COULDD RESULT IN FAILURE OF THE PART, LOSS OF VEHICLE CONTROL, AND POSSIBLE PERSONAL INJURY OR PROPERTY DAMAGE.**

**A MECHANIC USING A SERVICE PROCEDURE OR TOOL WHICH HAS**

**NOT BEEN RECOMMENDED BY HENDRICKSON MUST SATISFY HIMSELF THAT NEITHER HIS OR THE VEHICLE S SAFETY WILL BE JEOPARDIZED BY THE METHOD OR TOOL SELECTED.**

**DO NOT USE CUTTING TORCH TO REMOVE ANY ATTACHING FASTENERS. THE USE OF HEAT ON SUSPENSION COMPONENTS WILL ADVERSLEY AFFECT THE STRENGTH OF THESE PARTS. A COMPONENT DAMAGED IN THIS MANNER MAY RESULT IN THE LOSS OF VEHICLE CONTROL AND POSSIBLE PESONAL INJURY OR PROPERTY DAMAGE.**

**EXERCISE EXTREME CARE WHEN HANDLING OR PERFORMING MAINTENANCE IN THE AREA OF THE TRAILING ARM SPRINGS. DO NOT CONNECT ARC WELDING GROUND LINE TO THE TRAILING ARM SPRINGS. DO NOT STRIKE AN ARC WITH THE ELECTRODE ON THE TRAILING ARM SPRINGS. DO NOT USE HEAT NEAR THE TRAILING ARM SPRINGS. DO NOT NICK OR GOUGE THE TRAILING ARM SPRINGS. A TRAILING ARM SPRING THAT HAS BENE SUBJECTED TO ANY OF THESE CONDITIONS MAY FAIL, CAUSING LOSS OF VEHICLE CONTROL AND POSSIBLE PESONAL INJURY OR PROPERTY DAMAGE.**

### 3. DESCRIPTION

The Mid-Lift Air Suspension and Axle can be installed on a vehicle with either an Air or Steel sprung drive axle. It is of a trailing arm type construction, fitted forward of the vehicles drive axle, and uses rolling lobe type air springs.

Enabling an increase in load carrying capacity but with the facility to lift clear of the ground, achieved via two double convolute air bellows, when part laden or unladen thus creating a saving on tyre wear. A load transfer facility is normally incorporated into the control system to overcome traction and maneuverability problems.

The axle is of tubular construction with a dropped centre section to clear the vehicle's drive shaft when lifted clear of the ground. It can also be fitted with spindles manufactured to enable fitment of Hubs, Bearings and Brakes to match the other equipment on the vehicle or fitted with standard Hendrickson S cam Brake and Hub equipment.

Equalisation is achieved via mechanical load apportioning valve connected to the drive axle if Steel suspension is fitted on the drive axle or direct from the drive axle's air piping when Air suspension on the drive axle.

Control of the suspension can be either via Hendrickson automatic unit, which is an electro-pneumatic device incorporating:

- a) Automatic lift when vehicle is unladen or part laden and the ignition is switched on.
- b) Automatic drop when the drive axle reaches its rated load.

- c) Automatic lift when the vehicle is unloaded below approximately 60% of the drive axles rated load.
- d) Manual switch to lift the axle for 90 seconds to overcome traction problems when the vehicle is laden

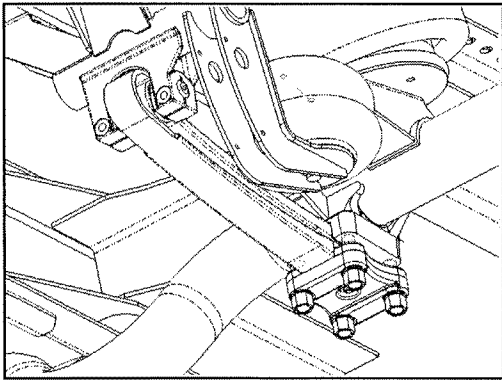
Or via the vehicle builders own system.

### 4. AXLE ALIGNMENT

The following procedure should be performed if the springs have been removed from the axle or the spring hangers removed from the chassis and after all repairs are completed and all fasteners are tightened to specified torque values.

- 1) Check the dimensions between axle hub ends to the drive axle hub ends on both sides of the vehicle, the dimensions should be equal within 3mm. If not, adjustment is necessary to reduce load on bearings and reduce tyre wear.
- 2) Adjustment is carried out by the following procedure.
  - 2.1) Slacken the axle seat to spring clamping nuts, on one side only.
  - 2.2) Move the axle/seat on the spring forward or rearward to correct the misalignment.
  - 2.3) If insufficient adjustment is obtained, repeat the procedure on the opposite side of the vehicle.
  - 2.4) Re-tighten the spring seat clamp nuts to the specified torque.

Note: It will be necessary to use a lever of a suitable size to move the axle/seat on the spring.



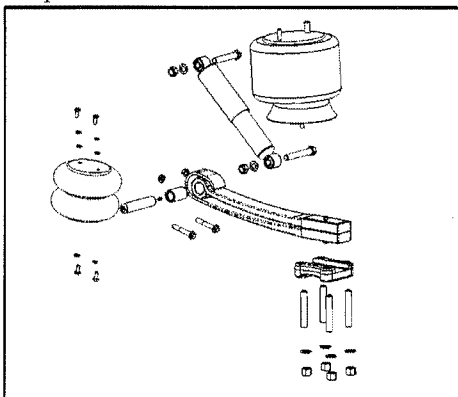
## 5. COMPONENT REPLACEMENT

### a) Spring Eye Bushes

- i) Chock wheels
- ii) Remove pinch bolts from both sides of the vehicle.
- iii) Remove spring eye pins from both springs.
- iv) Lever down the spring eye clear of the frame hangers.
- v) Drift out the old bushes.
- vi) Replace with new bushes, (a simple tool may be required to pull bushes into springs ie nut and bolt with large washers).
- vii) Jack springs back into frame hangers.
- viii) Refit pins or replace if worn excessively.

**IMPORTANT:** Liberally coat pins with grease before installing.

- ix) Fit new pinch bolts and nuts. Tighten to specified torque.
- x) Grease spring eye pin, using grease nipple in the end of the pin.

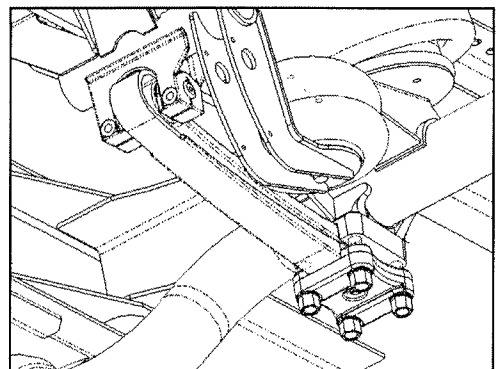


### b) 2 Leaf Suspension Springs

- i) Chock wheels
- ii) Remove pinch bolts from spring eye connection.
- iii) Remove spring eye pin.
- iv) Remove 4 nuts from axle clamp connection.
- v) Remove spring from axle seat, (may require lever or drift to remove spring from seat).
- vi) Replace with new spring, (ensure dimension from spring eye to axle is the same as on the opposite side for the vehicle).
- vii) Refit clamp plate using 4 new nuts and washers.
- viii) Align spring eye bush with front hanger.
- ix) Refit spring eye pin (replace with new if excessively worn).

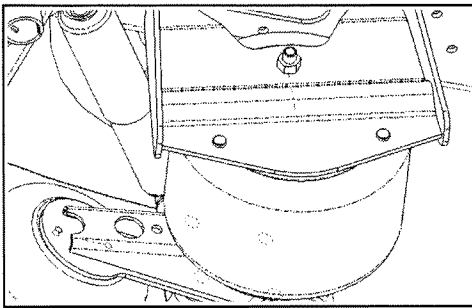
**IMPORTANT:** Liberally coat pin with grease before installing.

- x) Fit new pinch bolts and tighten to specified torque.
- xi) Grease spring eye pin using grease nipple in the end of the pin.
- xii) Check the alignment of the axle (refer to section 4 above).
- xiii) Tighten the 4 nuts on the axle clamp plate to specified torque.



**c) Main Air Springs**

- i) Drain the air from the suspension system.
- ii) Disconnect the air feed pipe to the air spring.
- iii) Remove the upper air spring fixings.
- iv) Remove the lower air spring fixings.
- v) Replace the air spring.
- vi) Refitting is the reverse of removal.
- vii) Tighten fixings to specified torque.

**d) Lift Air Springs**

- i) Ensure that lift air springs are not inflated.
- ii) Disconnect the air supply pipe from the air spring.
- iii) Remove fixings from air spring (two bolts in the top and two bolts in the bottom).
- iv) Replace the air spring.
- v) Refitting is the reverse of removal.
- vi) Tighten fixings to the specified torque.

