

# SIGMA

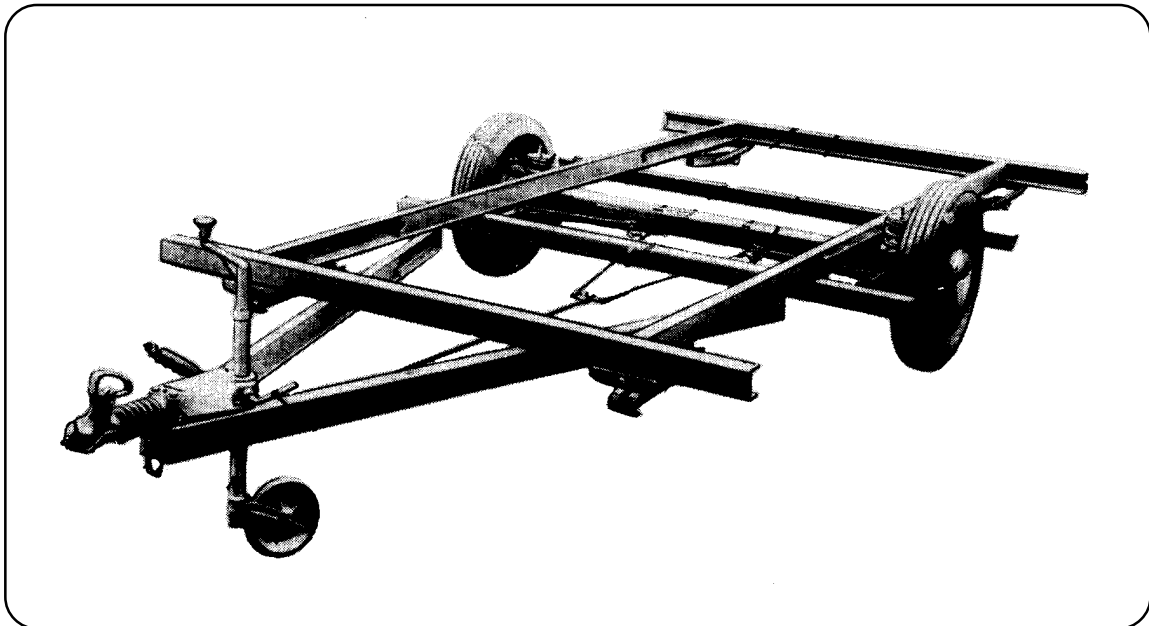
## SERVICE AND MAINTENANCE INSTRUCTIONS

FOR B & B CHASSIS

FITTED WITH

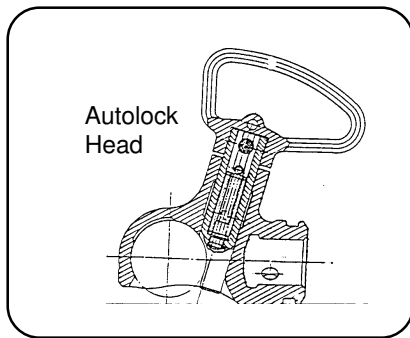
SIGMA BACK-UP BRAKING SYSTEM

AND B & B SUSPENSION EQUIPMENT



*Covering the period 1972 until 1983*

# B & B - Chassis Service Information



**Coupling Head  
(Autolock or Kappa)**

The coupling head is entirely automatic in operation and has been designed to suit the 50mm International Standard Ball recommended by the British Standards Institute, The National Caravan Council and the Society of Motor Manufacturers and Traders.

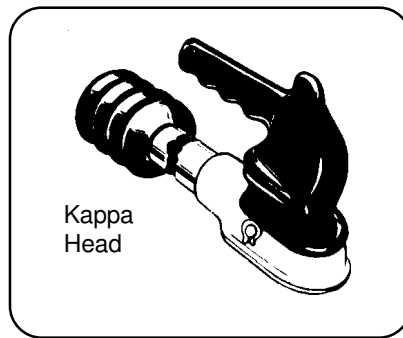
### ***Coupling Up (Autolock)***

Having depressed the safety catch on the side of the socket head, press the coupling down on to the ball. This action will lift the main locking plunger which, when the head is firmly on the ball, will return to the fully down position. The spring loaded safety catch on the side of the coupling head also indicates whether the main plunger is right down to the fully locked position. If the clip does not automatically engage under the lug it means that foreign matter has found its way into the ball housing.

**It is imperative that the coupling head locking handle is in the fully down position before commencing to tow.**

### ***Uncoupling (Autolock)***

Having pressed the safety catch, lift the handle on the coupling head and "roll" the socket head so that the bottom of the coupling head makes contact with the stem of the ball and acts as a simple lever. If a telescopic jockey is fitted, having pulled the coupling handle up, wind the jockey wheel down. This action will lift the socket head clear of the ball.



***Coupling Up (Kappa)***

Having actioned the thumb operated latch into a rearward position, the handle may now be lifted to its fullest extent where it will automatically lock into position. Lower the coupling onto the towing ball by using the jockey wheel. As the ball becomes engaged in the coupling, the handle will automatically be released and therefore effect a lock onto the ball. The safety catch will now be engaged and it should not be possible to fully raise the handle without first operating the thumb latch. The check of the fully locked position should always be carried out before moving off.

Pass the breakaway chain round the towball on the car and connect it back onto the chain by the snap hook. Ensure plenty of slack.

Fully wind up the telescopic jockey wheel. Release the jockey wheel clamp and lift the jockey wheel stem to the highest position.

**(This paragraph also relates to the Autolock)**

### ***Uncoupling (Kappa)***

Remove the breakaway cable and disconnect the 7-pin plugs. Release the jockey wheel clamp and lower jockey wheel to ground. Having actioned the thumb operated latch into a rearward position, lift the handle to its fullest extent and wind down the jockey wheel which will lift the coupling clear of the ball, as the ball is released the handle will lock into the raised position. To release the handle from this position push the thumb latch in a forward motion, this will enable the handle to be lowered to its original position.

### **Reversing**

The B&B SIGMA "Back-Up" braking system eliminates the need for a lock out device or clip when reversing. If the brakes are found to be locking up when reversing, then they are over-adjusted or the collapse mechanism inside the brake is not functioning.

### **Parking - Handbrake Application**

The SIGMA "Back-Up" system is designed to permit easy reversing of the caravan without any special action on the part of the driver to negate the operation of the braking system. The system, however, requires that, when parking, the handbrake is correctly applied, particularly when parking on a reverse slope. Under most normal conditions the handbrake should be applied with a hand load of not less than 40 kgf. If parked on a reverse slope the following procedure will assist in the application of the handbrake and ensure that the caravan is safely parked. Apply the hand brake with a force which will just allow the caravan to roll in a controlled manner. As the caravan rolls, a "click" from each brake may be heard, confirming that the shoes have moved into the reverse position, further apply the handbrake until the caravan is firmly held, by the handbrake, against the effect of the gradient. Check security of the caravan before leaving. (It should be noted that it is good common practice to chock the wheels of the caravan when parking on steep slopes, or under adverse conditions, such as loose or slippery surfaces).

### **Jacking**

Under no circumstances must the corner steadies be used to jack up the unit. If it is necessary to jack up, use a bottle, screw, or scissor type jack. Place the head under the suspension arm as near to the spring as possible if the chassis is fitted with a coil and damper assembly; and under the axle tube as near as possible to the main longitudinal member if the chassis is fitted with a torsion bar assembly.

## Maintenance

### 1 **Adjustment to Brakes**

It is essential in making adjustments to the braking system to adjust firstly the brakes themselves and secondly the coupling.

- (a) Jack up axle raising wheel clear of ground.
- (b) Remove wheel trim if necessary remove road wheel. The road wheel has a hole between two of the stud holes which, when aligned with the hole in the brake drum, allows access to the adjuster without removing the wheel. If necessary, re-position wheel to suit, ensuring that wheel nuts are tight 65 lbs/ft. - in sequence - i.e. North, South, East, West.
- (c) Ensure that the drawshaft is extended and that there is free play in the brake rod.
- (d) **IMPORTANT:**  
During brake/hub adjustment, the drum must **only** be revolved in a forward direction.
- (e) Revolve brake drum until adjustment hole is in line with slot-headed adjustment screw, then with a screwdriver rotate the adjustment screw in a clockwise direction as far as it will go and return it two clicks ensuring at the same time that the brake drum revolves freely. This brake is then correctly adjusted.
- (f) After adjusting at wheel, apply hand-brake once or twice and re-check adjustment.
- (g) Carry out similar procedure on opposite wheel.

### 2 **Adjustment to Sigma Coupling**

Having adjusted the brakes (section 1), ensure that the drawshaft is fully extended i.e. normal towing position. Check that the brake rods are straight and have no kinks or bends and the compensators on the axles are free.

Adjust the nuts on the front end of the brake operating rod to give clearance of 5-10mm between the handbrake and the overrun lever when the lever is held back to take up all the free movement in the brake linkage.

Check the clearance between the overrun lever and the drawshaft. If this is less than 13mm, increase it to 13mm.

Extreme care must be taken not to over-adjust the brake rod, otherwise the back-up action of the brakes will be affected.

Check that the brakes are functioning correctly. Apply handbrake fully and then push caravan in reverse. As the caravan rolls, a "click" from each brake may be heard and then the brake should hold the caravan from further movement. If, however, the brakes do not hold the caravan in reverse, then further adjustment is required of the brake rod at the coupling until it will hold the caravan in reverse. Check now that there is not brake drag in the forward direction.

### 3 **Tyre Maintenance**

In order to equalise tyre wear, it is suggested that the wheels be balanced and changed round from time to time. Always use a socket and wrench when tightening wheel nuts to our recommended torque of 65lbs/ft.

### 4 **Steel Torsion Bar Suspension System (Early 1980's)**

The suspension system of the solid round steel torsion bar type has been designed and developed to suit all types of road conditions and for easy maintenance lubrication points are installed on the axles. These consist of grease nipples sited at each end of the main suspension tube. Servicing at this point should take place at least once every year with a liberal amount of grease to ensure that both inner and outer bearing in the main tube receive lubricant. The hydraulic dampers are of the sealed non-adjustable type and require no service, damper also incorporates bump and rebound stops, therefore never tow the caravan with the dampers removed. The torsion springs and dampers have been selected to suit the unladen weight of the caravan plus an additional amount for personal effects.

#### Recommended tyre pressures:

Cross Ply:	4 ply rating	30psi
	6 ply rating	36psi
Radial:	155 SR - 13	35 psi (2.4Bar)
	155 SR - 13 Reinforced	42 psi (2.9 Bar)
	175 SR - 13	36 psi (2.5 Bar)
	175 R - 13C 6 ply	54 psi (3.75 Bar)
	185 SR - 13	36 psi (2.5 Bar)
	185 SR - 13 Reinforced	45 psi (3.1 Bar)

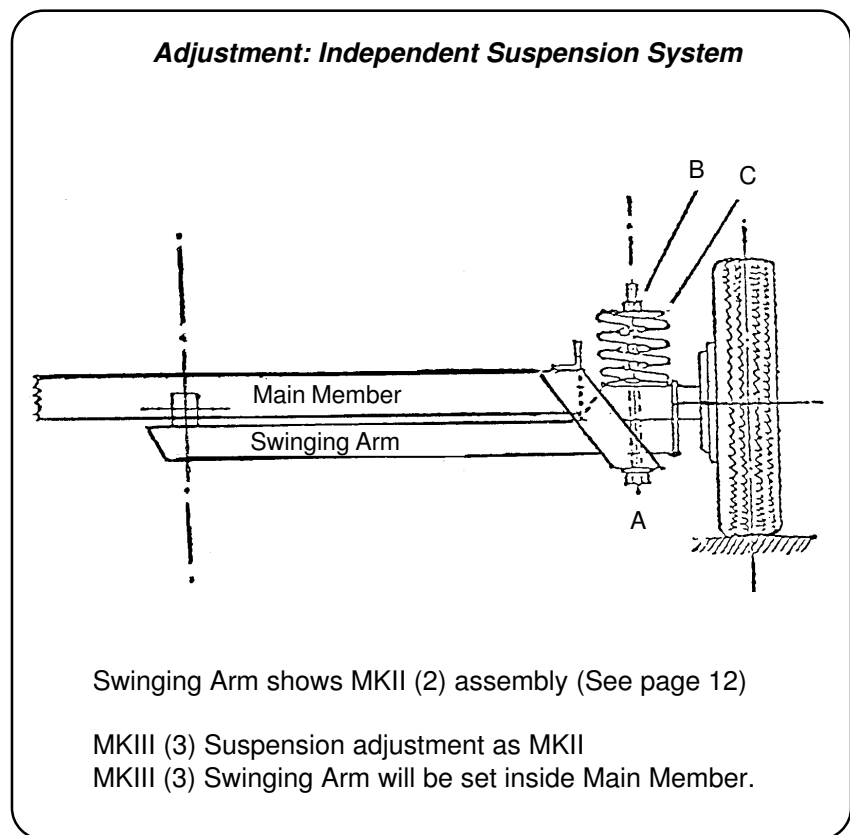
Note: It is customary for tyre manufacturers to mark the tyres with load and inflation data. It is important to understand that this information relates only to the use of the tyre on cars.

## B & B - Chassis Service Information

### 5 **Independent Suspension System**

The suspension system is of the coil and hydraulic damper type also designed and developed to suit all types of road conditions, and for easy maintenance only the hubs and brakes will require further attention. The swinging arm assembly is mounted in nylon bushes which will not require further lubrication. The hydraulic dampers are of the sealed non-adjustable type and will not require attention. The springs and dampers have been selected to suit the unladen weight of the caravan, plus an additional amount for personal effects.

The independent suspension can be adjusted whether to level the caravan or compensate for load. The correct position of the swinging arm is parallel to the main suspension member when the caravan is **laden** for touring. The suspension can be adjusted as follows: Undo locknut B and then adjust by rotating bolt head A. (Note: Top plate C is threaded). Finally retighten locknut. (As per diagram).



### 6 **Lubrication - Brake Drum/Hub Assembly**

The brake hubs are packed with grease to the correct level before leaving our works and should be repacked at approximately 3000 mile intervals. To remove the "press-in" grease retaining cap, tap lightly round the periphery. Note: It is as important not to over pack the hubs with grease as it is to allow the bearings to run dry.

When refitting the hub nuts should be tightened to 65 lbs/ft. and then slackened off 1 to 1 1/2 flats and a **new** split pin inserted. Finally check that the hubs rotate freely.

#### **Lubrication - Sigma Hydraulic Coupling**

It is important that regular attention is given to the two grease nipples serving the coupling shaft bearings and the grease nipple on the overrun lever.

The coupling plunger housing is packed with grease on the assembly, but will require periodic oiling.

The Kappa coupling head mechanism is lubricated on assembly. The only service lubrication necessary is to occasionally oil the pivot pins sparingly.

The brake lever fulcrum and spring loaded ratchet should be oiled regularly. Grease should also be applied to the surface of the hand-brake that is in contact with the overrun lever.

#### **Lubrication - Telescopic Jockey Wheel**

The operating mechanism is packed with grease on assembly. Subsequent oiling is to be made through the small hole in the operating handle. The wheel itself should be oiled from time to time, also the clamp handle threads.

#### **Lubrication - Corner Legs**

The screw, nut and linkage points should be lubricated from time to time.

#### **Lubrication - Brake Linkage**

All moving parts should be lubricated periodically to ensure satisfactory operation.

NOTE: When lubricating with grease "Mobilgrease MP" or its equivalent should be used.

For further information contact Richard Miller-Mead at AL-KO Kober Ltd.

Telephone: (0926) 452828

Service Information 02/90

## BRAKE FAULT FINDING CHART

SYMPTOM	POSSIBLE CAUSE	REMEDY
Handbrake does not hold caravan either forward or reverse.	1 Shoes incorrectly adjusted (carrier out of position).	Adjust brakes to correct schedule.
	2 Handbrake incorrectly adjusted.	Adjust at brake rod to correct schedule.
	3 Handbrake lever travel restricted.	Ensure maximum number of notches are obtainable.
Handbrake holds in forward direction but not in reverse.	1 Shoes incorrectly adjusted.	Adjust brakes to correct schedule.
Brakes on caravan ineffective/give little retardation.	1 Brakes incorrectly adjusted.	Adjust brakes to correct schedule. Ensure all brake rod pivots are free.
	2 Linings not bedded-in.	Continue using brakes until linings are fully bedded. Re-adjust.
	3 Incorrect lining material fitted.	Check manufacturers spec. and replace with correct type.
	4 Lining contaminated with grease.	Rectify grease leak (fit new seal). Clean brake drum, fit new shoe/lining assemblies.
	5 Glazed brake lining surface.	Clean off glaze with dampened smooth emery paper.
	6 Coupling shaft seized/bent.	Examine, free off and regrease. Replace if bent.
Caravan braking uneven/pulls to one side.	1 Brakes incorrectly, adjusted on one side.	Adjust brakes to correct schedule.
	2 Lining contaminated with grease.	Rectify as above.
	3 Brake rods bent.	Straighten rods.
	4 Compensator pivots seized.	Ensure all pivots are free, oil clevis pins, grease compensators.
	5 Odd linings side to side.	Check spec. and rectify.
	6 Brake drum cracked/distorted.	Replace drum.
	7 Brake backplate loose.	Check Fixings.
	8 Odd tyres side to side/pressures unequal.	Fit similar tyres/check pressures.
	9 Pull off spring/brake rod stop broken/incorrectly set.	Replace / reset (pull off spring tensioned to 6").

# B & B - Chassis Service Information

## BRAKE FAULT FINDING CHART

SYMPTOM	POSSIBLE CAUSE	REMEDY
Caravan brakes lock on whilst reversing.	1 Brakes over-adjusted.	Adjust brakes to correct schedule.
	2 Brakes adjusted with trailing shoes in reverse position.	Adjust brakes to correct schedule (rotating wheel forwards).
Brake snatch causing shunting of caravan/brake judder.	1 Brakes incorrectly adjusted.	Adjust brakes to correct schedule.
	2 Faulty/damaged overrun damper.	Fit replacement damper.
	3 Incorrect damper fitted.	Fit correct spec. damper.
	4 Brake drums distorted/rusty.	Replace drum/clean up surface with emery paper.  (NB do not store caravan for long periods with handbrake on).
	5 Coupling shaft semi-seized/bent.	Regrease. Replace if bent.
	6 Towbar/bracket on towing vehicle flexible/loose.	Ensure all fixings are tight. Check flexibility by attaching vehicle to caravan, applying caravan handbrake and gently pulling away with an observer checking any flexing.
	7 Lining rivets loose/cracked lining.	Reinforce/replace towbar if necessary.

### BRAKE JUDDER

1. Ensure brake drums do not contain excessive dust.
2. File off leading edge of leading brake shoe with a very gentle slope back 3/4 inch.
3. If the above fails to cure the "judder", obtain from your dealer or wholesaler a "107 SPRING KIT".

N.B. When this kit is fitted the handbrake must always be engaged fully.

## BRAKE FAULT FINDING CHART

SYMPTOM	POSSIBLE CAUSE	REMEDY
Brakes tend to bind/drag/lock/on/overheat.  (Note: Caravan brakes will rarely run cold. A warm hub/drum is normal).	1 Brakes over-adjusted.	Adjust brakes to correct procedure.
	2 Brake shoe pull of springs broken/stretched/loose.	Examine all springs, replace if broken/loose. Particular attention should be paid to spring adjacent to expander box.
	3 Brake shoe pull of springs fitted in wrong position or wrong type used.	Examine and rectify if necessary.
	4 Brake rod pull of spring broken/stretched/loose.	Replace/reset spring.
	5 Brake rod stop incorrectly set.	Release tension from pull off spring. Reset stop with brake fully off. Re-tension spring to 6" (152 mm).
	6 Expander assembly binding or seizing.	Dismantle expander, lubricate sparingly and rebuild. Ensure expander is free to slide in back plate slot.
	7 Wheel bearings over tight.	Re-adjust hub nut.

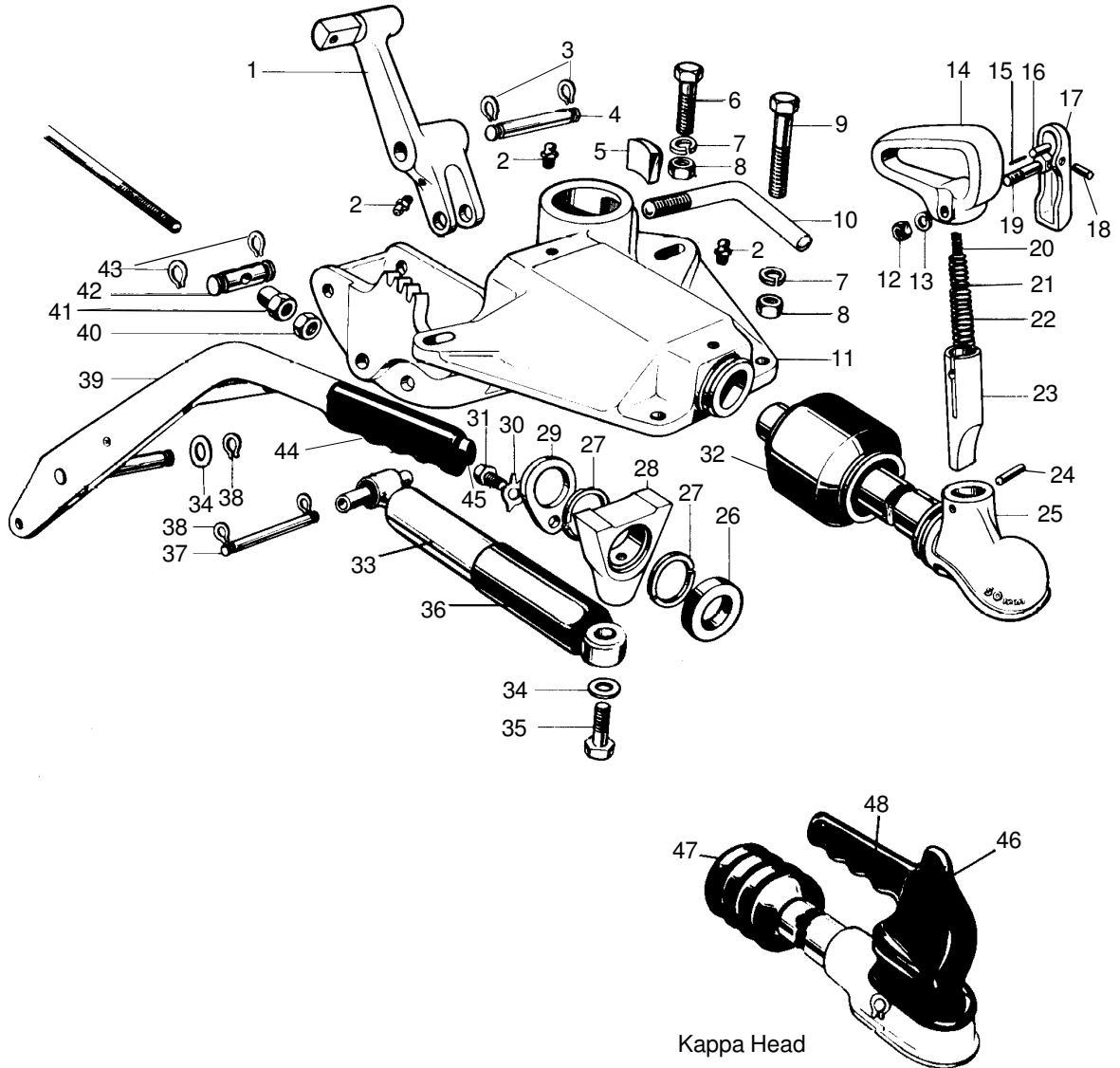
### WARNING

A proportion of the dust found in used brake and clutch parts/mechanism will be fine asbestos fibres and when removing friction dust from parts/mechanisms the following precautions should be taken:-

1. **Never** use a brush or blow out with an air line.
2. **Always** remove with a vacuum cleaner or wipe clean with a damp cloth.
3. Place dust and used wet cloths in a plastic waste bag **immediately** after use.

# B & B - Chassis Service Information

## EEC SIGMA MK II HYDRAULIC OVERRUN ASSEMBLY CC3600



NOTE : Head and shaft assemblies **will**  
be supplied with an **AL-KO** head.



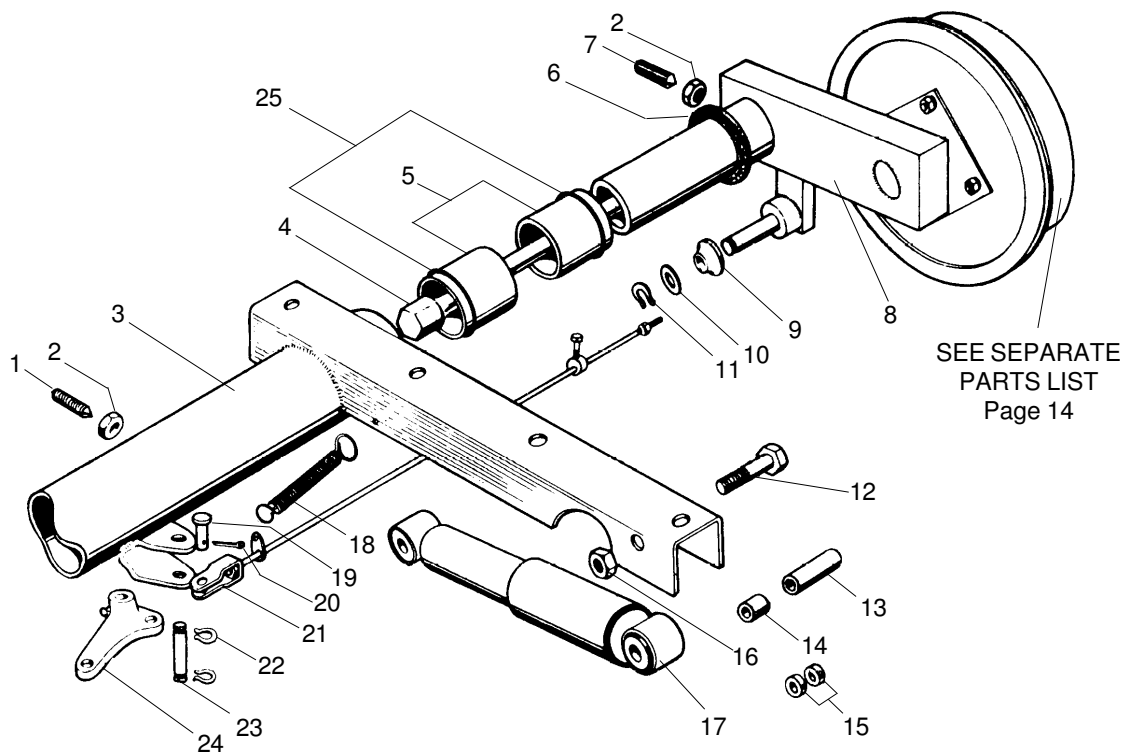
**EEC SIGMA MK II HYDRAULIC OVERRUN ASSEMBLY CC3600**

PART	PART No	DESCRIPTION OF PART	QTY
1	CC 3599	Overrun Lever	1*
2	SP 553	Grease Nipple	3
3	CC 603	Iron Clip	2
4	CC 3601	Overrun Pivot Pin 12mm	1
5	CC 715	Pressure Pad	1
6	or ref 9	Rear Bolt, Fixing M.12 x 30	2
7	2505 SC	Washer	4
8		Binx Nut M.12	4
9		Front Fixing Bolt M.12 x 120	4
10	CC 3506M	Jockey Wheel Clamp Handle (Metric)	1
11	CC 3606	Body Casting	1*
12		Full Nut M.10	2
13		Single Coil Washer M.10 SC	1*
14	CC 2108	Handle	1*
15	CC 1472A	Spring	1
16	CC 1471A	Plunger Nylon	1
17	CC 1470A	Safety Catch Assembly	1
18		M.S. Pin	
19		Safety Catch Bolt M.10 x 50	
20	CC 1653	Inner Spring	1
21	CC 1266A	Middle Spring	1
22	CC 1265A	Outer Spring	1
23	CC 1261D	Plunger 50mm	1
24	CC 1454	Mills Pin	1
25	CC 3613	50mm Head & Shaft Assembly	1
26	CC 3448	Bump Rubber	1
27	CC 3610	Split Ring	2
28	CC 3597	Damper Bracket	1
29	CC 3611	Retaining Washer	1
30	CC 3233	Tab Washer	1
31		Bolt M.6 x 12	1
32	CC 3706	Gaiter	1
33	04-22-070-103	Damper (Stabilus)	
34		Plain Washer M.13	2
35		Locking Bolt M.10 x 50	1
36	CC 4147	Damper Dirt Shroud (Stabilus)	1
37	CC 3491A	Damper Rear Fixing Pin	1
38	CC 602	Iron Clip	3
39	CC 3898	Hand Brake Sub-Assembly	1
40	2008	Binx Lock Nut 5/16" UNF	1
41	CC 3633	Reach Nut 5/16" UNF	1
42	CC 3602	Brake Rod Swivel Pin	1
43	CC 604	Iron Clip	1
44	CC 3927	Hand Brake Plastic Grip	1
45	CC 3921	Hand Brake Release Button	1
46	CC 4899A	Cover	1
47	CC 2760	Bellows	1
48	CC 6068	Hand Grip	1

\* Check for availability

# B & B - Chassis Service Information

## TORSION BAR SUSPENSION 7", 8" OR 9" BRAKE



ABOVE SHOWS RIGHT HAND SIDE ONLY

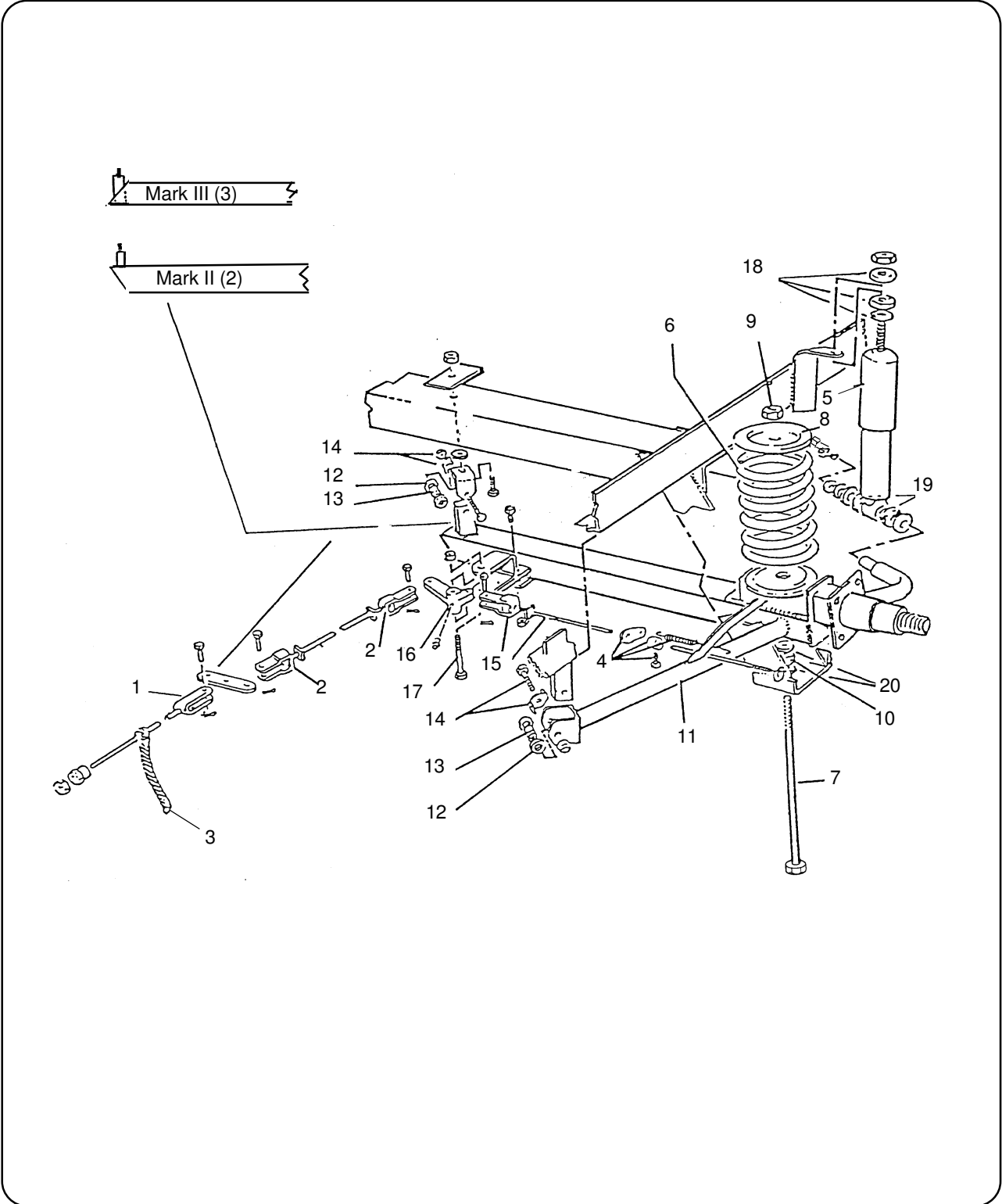
**TORSION BAR SUSPENSION 7", 8" OR 9" BRAKE**

PART	PART No	DESCRIPTION OF PART	QTY
1	CC 3801	M12 Socket Screw x 30mm	2
2	M12 L	Locknut	2
3	CC 3787	Tube Housing N.L.A.	1
4		Torsion Bar	
	CC 3555	O/A Length 630mm (24.8")	2*
	CC 3554	O/A Length 578mm (22.75")	2*
5	CC 4669	Bush	2
6	CC 3254	Felt Washer	2
7	CC 3802	M12 Socket Screw x 45mm	2*
8	CC 3719L or R	Drop Arm Sub Assembly (Left or right Hand)	2*
9	CC 3779	Damper Retaining Washer	2*
10		1/2" Washer	2
11	CC 603	Soft Iron Clip	2
12	M12	110mm Bolt	2
13	CC 3778	Long Spacer	2
14	CC 3807	Short Spacer	2
15	CC 977A	Spacing Washer	4
16	M12	Nut	2
17	HO 8008	Damper (Was CC 2644)	2
18	CC 1759	Pull Off Spring	2
19	CC 3429	Clevis Pin	2
20	SP 137	Split Pin	2
21	CC 3786	Brake Rod Sub Assembly	2
22	CC 602	Soft Iron Clip	4
23	CC 3795	Compensator Pivot Pin	2
24	CC 3529	Compensator N.L.A.	2
25	CC 4646	"O" Ring	2

\*Check for availability  
 N.L.A. - No Longer available

# B & B - Chassis Service Information

## INDEPENDENT SUSPENSION



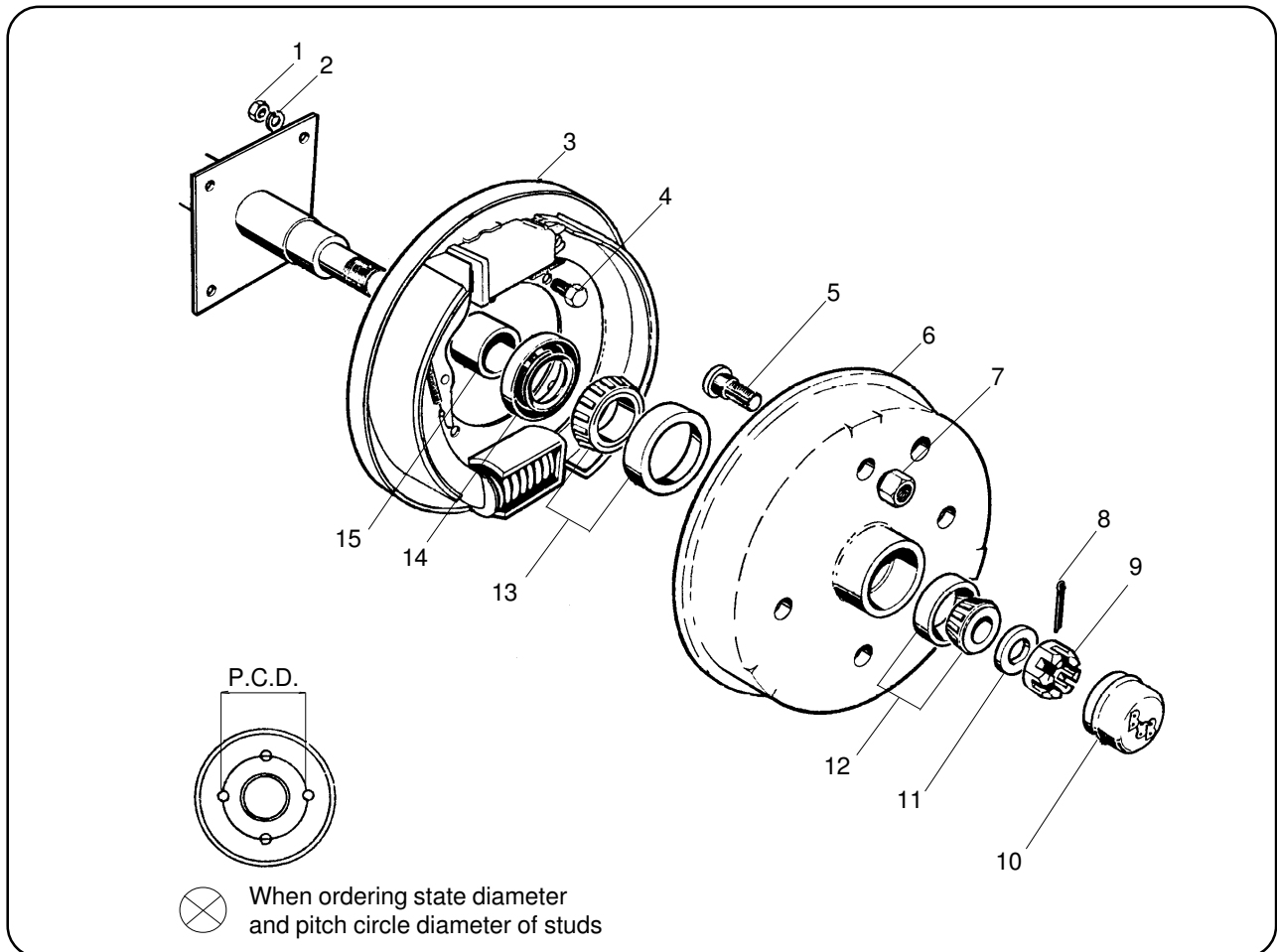
## INDEPENDENT SUSPENSION

PART	PART No	DESCRIPTION OF PART	QTY
1	CC2782	Brake Rod - 3/8" M.S.	1*
2	Fork End		
3	CC 2884	Rod/Fork Assembly Brake Rod Support Strap	2 1*
4	CC 1787	{ Brake Return Spring Tab Brake Rod Stop/Bolt Assembly }	2
5	356 159	Damper Assembly (was SP 3608)	2
6	Suspension Spring:		2
	CC 1857	5" (BLUE)	
	CC 1746	6" (BLACK)	
	CC 1747	6" (RED)	
	CC 1927	6" (BROWN)	
	CC 2970	6" (PURPLE)	
7	CC 2660	Spring Compression Bolt 5/8" BSF	2
8	356 193	Spring Plate (was CC 1779)	2
9		Nut 5/8" BSF	2
10	CC 3887	Rebound Stop 5" Spring	2
	356 162	Rebound Stop 6" Spring (was CC 3857)	2
11	CC 2843L	Swinging Arm Assembly MK III LH	1
	CC 2843R	Swinging Arm Assembly MKIII RH	1
	CC 2835L	Swinging Arm Assembly MKII LH	1
	CC 2835R	Swinging Arm Assembly MKII RH	1
12	356 157	Nylon Bush (was CC 2326)	8
13	356 158	Sleeve (was CC 2376)	4
14	CC 2882	Bolt, Nut, Nyloc Nut /Washer	4*
15	CC 2883	Brake Rod/Fork Assembly	2
16	CC 3529	Compensator c/w Grease Nipple	2*
17	701 535	Compensator Pivot Bolt c/w Nut	2
18	377 433	Damper - Top Rubbers / Washer	2
19	377 434	Damper - Bottom Rubbers	2
20	556 295	Heavy Duty Washer	2*

\* Check for availability

# B & B - Chassis Service Information

## 8" 'BACK-UP' BRAKE/HUB ASSEMBLY



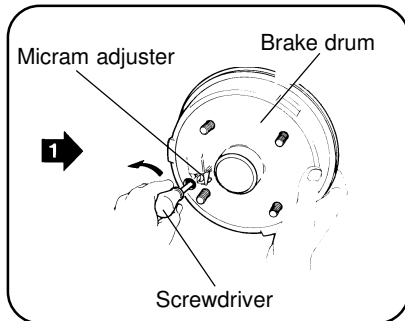
PART	PART No	DESCRIPTION OF PART	QTY
1	300 UNF	3/8" UNF Nut	8
2	2303 SC	3/8" dia. Spring Washer	8
3	Lockheed Backplates	(See page 18/19).	1
4	305 UNF SS	3/8" UNF x 3/4" Set Screw	8
5	356 111	Wheel Stud M.12 x 115 (was CC 3394)	8
6	CC 3300	Brake Drum	2
7	356 106	Wheel Nut M.12 (was CC 3395)	8
8	SP 533	Split Pin	2
9	CC 3327	Slotted Nut	2
10	CC 3334	Grease Cap	2
11	CC 3328	"D" Washer	2
12	702 099/100	Outer Bearing (was CC 3326)	2
13	702 101/102	Inner Bearing (was CC 1015)	2
14	CC 3324	Oil Seal	2
15	CC 3331	Spacer	2

# AP LOCKHEED

## REVERSING BRAKE FOR CARAVANS & TRAILERS

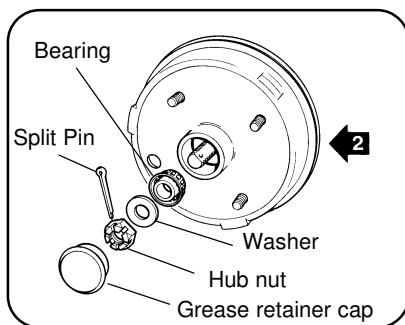
### Brake shoe removal

Securely block the caravan wheels, loosen the wheel nuts on the appropriate side and jack up the wheel. Lower the levelling jacks to steady the caravan. Fully release handbrake and remove road wheel. Line up the hole in the brake drum with the slotted head of the micram adjuster. Back off all brake adjustment with a suitable screwdriver by turning the micram fully anti-clockwise.

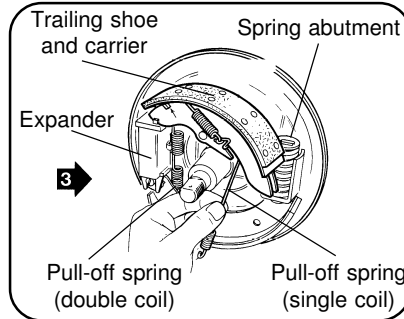


Prise off the hub grease retainer cap and remove split pin, hub nut, washer and bearing. Withdraw the brake drum from the stub axle.

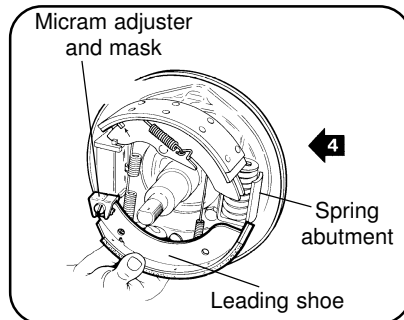
**Take careful note of the spring and shoe positions.**



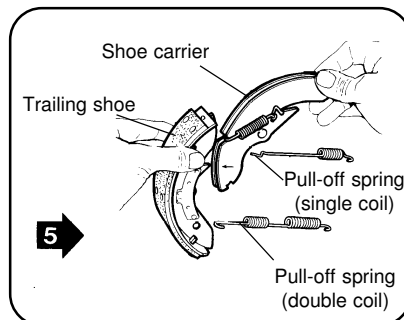
Release the pull-off spring (**double coil**) from behind the hook on the backplate, adjacent to the expander. At the opposite end lift the carrier and shoe away from the spring abutment and disconnect the pull-off spring (**single coil**) from the leading shoe web. This spring is identified, **red** for L.H. brake assembly and **black** for R.H. brake assembly.



Lift the leading shoe from the spring abutment and slide the adjuster and mask off the expander body. Remove both shoes from the backplate. Slide the carrier assembly from the trailing shoe to expose both pull-off springs.



**Note their positions and remove them.** The double coil spring is not interchangeable with the one on the opposite brake.



### Expander removal

Disconnect pullrod and remove rubber boot. Withdraw the expander assembly from the backplate, push out the pivot pin and extract pullrod sub-assembly from the expander body. Remove all dust and deposits from the backplate. **Do not blow out with an air line, it could be harmful to inhale the dust**, but remove with a vacuum cleaner or wipe clean with a damp cloth. **Do not use petrol or paraffin**, if a solvent is necessary methylated spirit should be used.

### Inspection of parts

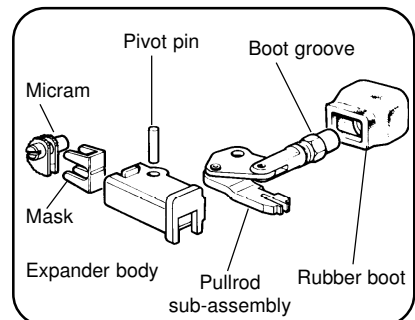
Carefully examine all component parts as detailed under "**Routine Maintenance**" - 3,000 miles or 12 months, servicing instructions 1-4.

**The brake shoe service operated by Lockheed Brakes Division is the best way of obtaining replacement Lockheed shoes to the correct specification. To ensure balanced performance, it is necessary to replace the shoes on both brake assemblies of an axle.**

### Expander replacement

Lubricate the pullrod sub-assembly with **Lockheed Expander Lubricant (Part No. LPK 103)**, fit into the expander body and insert the pivot pin.

Fit the expander assembly onto the backplate and check that it slides freely in the slot. Pack the rubber boot with **Lockheed Rubberlube (Part No. LPK 102)**, and slide over the pullrod up to the backplate. Ensure that the boot lips locate correctly over the backplate tabs, and also seat into the pullrod boot groove.



# B & B - Chassis Service Information

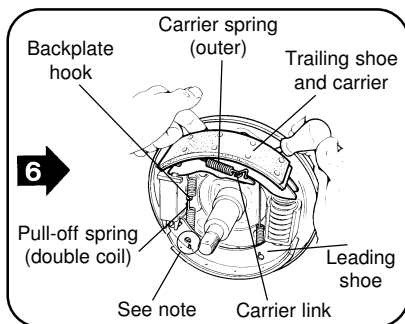
## REVERSING BRAKE FOR CARAVANS & TRAILERS

### Brake shoe replacement

Using **Lockheed Anti-Seize Copper Grease (Part No. LPK 104)** lightly smear all metal to metal contact points such as brake shoe and carrier tips, the abutment faces, the areas of the backplate against which the shoe webs rest, also the surface of the carrier roller. Avoid contact of grease with shoe linings, rubber parts and the friction surface of the brake drum.

Assemble the new shoes, carrier and springs by reversing the removal procedure. Ensure the carrier link locates onto the spur on the trailing shoe web. Set micram to minimum adjustment. After shoe replacement ensure that the carrier springs are correctly located. The outer spring is easily seen, but the shoe and carrier should be eased away from the backplate so that the inner spring can be felt to confirm correct positioning.

**Note** - the pull-off spring hook (**double coil**) is located into the slotted hole adjacent to the leading shoe platform, also

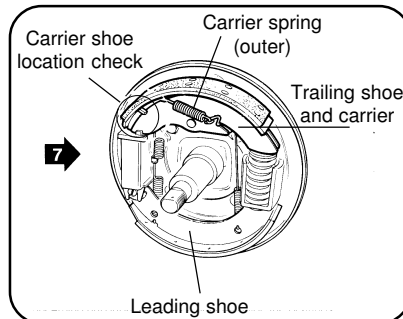


ensure that the spring is behind the hook on the backplate.

### Carrier shoe location check

Near the heel on the trailing shoe web will be seen a metal tab. Stamped into the carrier in this area is an arrow marking. The shoe is correctly located in the carrier when these two line up exactly. Check the shoe action in the carrier by pushing the shoe against the carrier springs, when released the shoe should freely spring back to the marked position.

**The tab and arrow position must always be checked through the hole in the**



**drum before brake adjustment is carried out.**

Ideally follow the caravan manufacturers instructions concerning hub lubrication. As a general guide the bearing should be liberally coated with a good quality hub grease.

**Do not over pack the hub as this could lead to contamination of the brake linings.**

Refit the drum, bearing, washer and hub nut. Tighten nut to the torque recommended by the caravan manufacturer. Fit a new split pin and bend the ends over against the nut. Replace the hub grease retainer cap.

Carry out the "**Brake Shoe Adjustment**" procedure, but remember to turn the drum in the forward direction only.

### Brake shoe adjustment

Before adjustment the caravan should be braked moving in a forward direction to ensure that the carrier and trailing shoe are correctly positioned. (**see operation 2**).

- 1 Securely block the caravan wheels, loosen wheel nuts on the appropriate side and jack up wheel. Lower the levelling jacks to steady the caravan, fully release handbrake and remove road wheel.
- 2 Check for correct shoe position in the carrier through the hole in the brake drum, ideally using a torch or inspection lamp. The arrow stamped on the carrier must align with the metal tab on the shoe platform.

- 3 Align the hole with the micram adjuster, then using a screwdriver turn the slotted head fully clockwise until the drum will not turn. Slowly back off the micram until the drum just revolves freely. Turn the drum in the **forward direction only** during brake adjustment.
- 4 **Important** - Should the amount of adjustment necessary seem excessive, recheck to ensure that the carrier shoe is in the correct position, (**see operation 2**).
- 5 Replace the road wheel, tighten wheel nuts, release jacks and lower the vehicle to the ground. Repeat sequence for the opposite brake, then check for correct operation of the handbrake.
- 6 Adjust handbrake or overrun coupling pullrod if necessary, as detailed by the caravan manufacturer.

### Correct use of handbrake

#### Important.

Should the caravan be driven forwards up a slope and then require to be parked, the following technique should be observed to offer maximum security.

After applying the caravan handbrake firmly, reverse the vehicle gently until the caravan has moved backward slightly. A click from each brake may be heard, confirming that the shoes have moved into the reverse position. If the handbrake was not fully applied initially, further movement of the handbrake will now be possible and further application should be made.

If it is found that no further movement of the handbrake is possible, or that the caravan will not move backwards, this would confirm that the handbrake had been adequately applied in the first place.



# AP LOCKHEED



## REVERSING BRAKE FOR CARAVANS & TRAILERS

### *Routine maintenance*

Owing to the varied use to which caravans are subjected it is difficult to specify routine maintenance intervals. Some caravans will be used weekly while others will be moved perhaps two or three times a year. Therefore it is advisable to check the functioning of the brakes, i.e. handbrake operation or reversing etc., before every journey on caravans which cover a low annual mileage. It is recommended that where a caravan does not achieve the 3,000 miles period then this service check **must** be carried out at least annually, ideally before the beginning of the holiday season.

### **Every 1,000 miles.**

Check braking system operation, adjust as necessary.

### **Every 3,000 miles or 12 months (whichever is the sooner).**

Completely dismantle both brake assemblies and carry out examination as follows.

- 1 Check thickness of the brake shoe linings which **must never** be allowed to wear down to the rivet heads. Replace shoes that are approaching this condition, otherwise the rivet heads may damage the brake drum. Look for damaged, scored or cracked linings, also for any tendency for the linings to lift away from the shoe platform. Renewal is also necessary if the linings are contaminated with hub lubricant irrespective of their state of wear. **To ensure balanced braking it is important to renew the shoes on both brake assemblies.**
- 2 Examine the fit and condition of the rubber boots on the expander pullrods. If perished, split, damaged or in a doubtful condition they are best replaced. To vastly increase protection liberally apply **Lockheed Rubberlube (Part No. LPK 102)** to the inside surface of the rubber boots.

- 3 Check all components in the expander assembly for wear or damage, rectify as necessary. When the expander is re-assembled smear the metal parts with **Lockheed Expander Lubricant (Part No. LPK 103)** and ensure that it is free to slide in the backplate slot.
- 4 Thoroughly clean the drum with methylated spirit or other recognised cleaning agents, then carefully examine the friction surface. If severely scored or rusty replace the drum, otherwise light rusting can be removed with fine emery paper.

### *Lockheed brake lubricants*

In order to maintain a high standard of efficiency and reliability it is recommended that only genuine Lockheed lubricants are used with Lockheed brake equipment. The lubricants listed below are available from Lockheed stockists.

- Rubberlube Expander Lubricant**  
**Anti-Seize Copper Grease**  
**10 gram sachet - LPK 102**  
**10 gram sachet - LPK 103**  
**10 gram sachet - LPK 104**  
**454 gram tin - LPK 94**  
**454 gram tin - LPK 93**

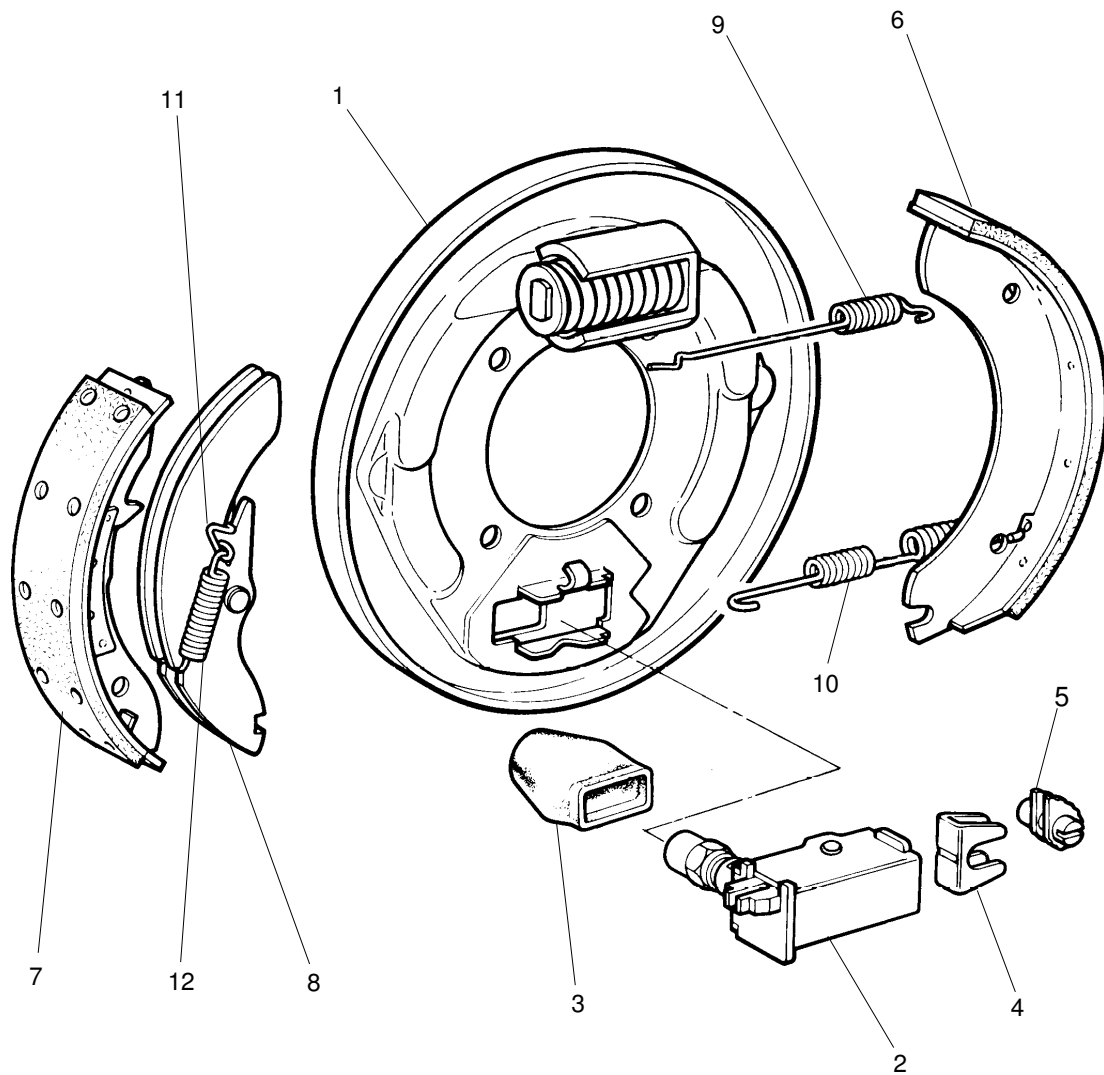
**BRAKE ASSEMBLY COMPLETE R.H.  
LG 15050 L.H. LG 15051**

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# B & B - Chassis Service Information

## REVERSING BRAKE FOR CARAVANS & TRAILERS

### SERVICE REPAIR KITS AND THEIR CONTENTS



DESCRIPTION	KIT PART No	No	KIT CONTENTS	QTY
Backplate R.H.	LPP 113	1	Backplate R.H.	1
Backplate L.H.	LPP 112	1	Backplate L.H.	1
Expander Assembly R.H.	LQ 15649	2	Expander R.H.	1
		3	Rubber Boot	1
Expander Assembly L.H.	LQ 15650	2	Expander L.H.	1
		3	Rubber Boot	1
Rubber Boot	LPP 114	3	Rubber Boot	2
Micram Adjuster	LK 17053	4	Mask	1
		5	Micram	1
Brake Shoes (Axle set)	LS 1263	6	Leading Shoe	2
		7	Trailing Shoe	2
Trailing Shoe Carrier	LPP 115	8	Trailing Shoe Carrier	1
Spring Kit (Axle set)	LK 17054	9	Pull-off (Black) Single Coil R.H.	1
		9	Pull-off (Red) Single Coil L.H.	1
		10	Pull-off Spring Double Coil R.H.	1
		10	Pull-off Spring Double Coil L.H.	1
		11	Carrier Link	2
		12	Carrier Spring	4

**IMPORTANT NOTE:**

Pages 15, 16, 17, 18 and 19 refer to Lockheed Backplates and Components. These were never B & B parts.

All spares should be obtained from A P Lockheed or their agents.

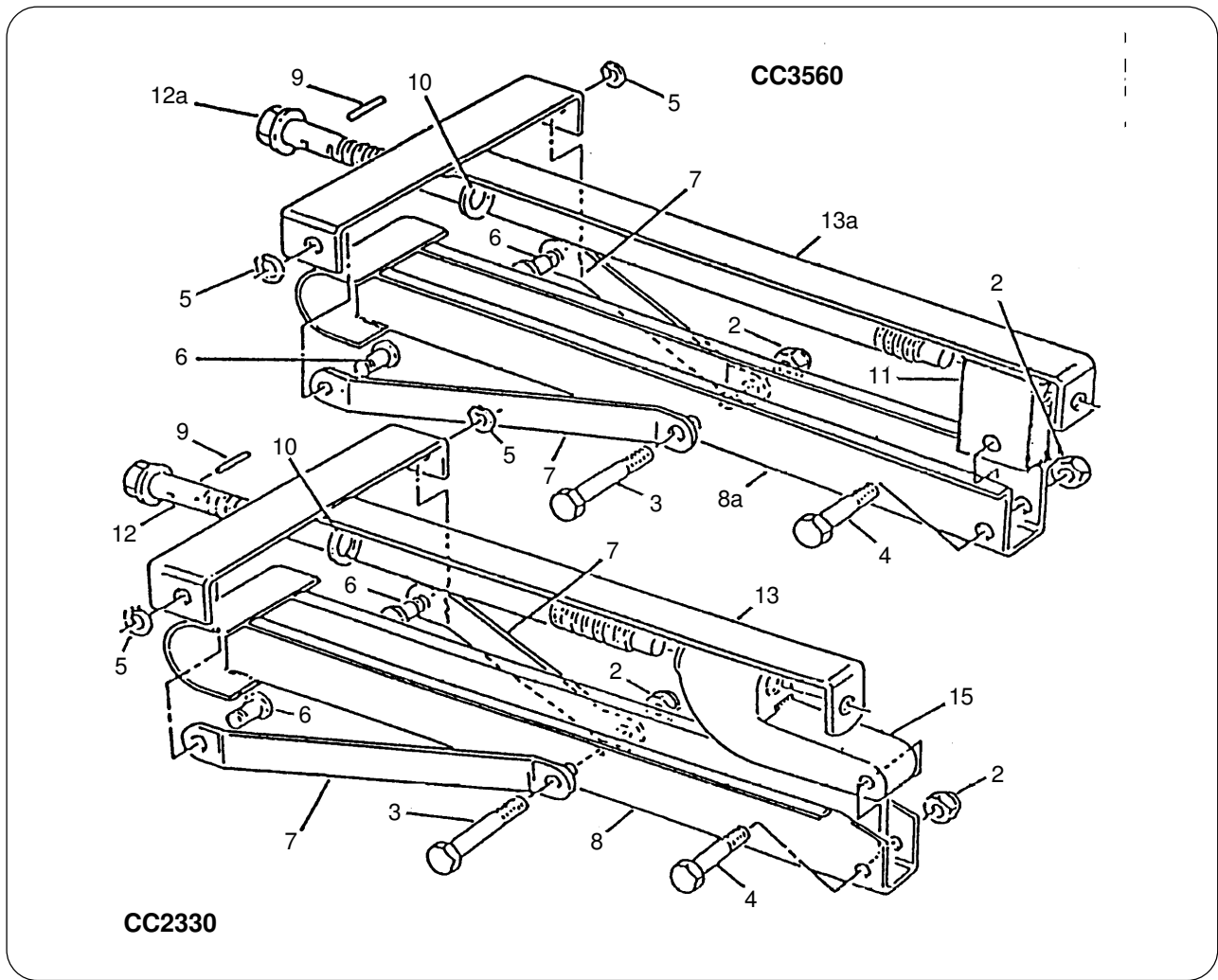
**USE ONLY GENUINE LOCKHEED REPLACEMENT PARTS DURING OVERHAUL.**

If in doubt contact:-

Automotive Products plc., Lockheed Brakes Division, Tachbrook Road,  
Leamington Spa, Warks. CV31 3ER. England.  
Tel:(0926) 470000 Telex: 311571 AP PLCG Facsimile:(0926) 472000  
A BBA Group Company.

# B & B - Chassis Service Information

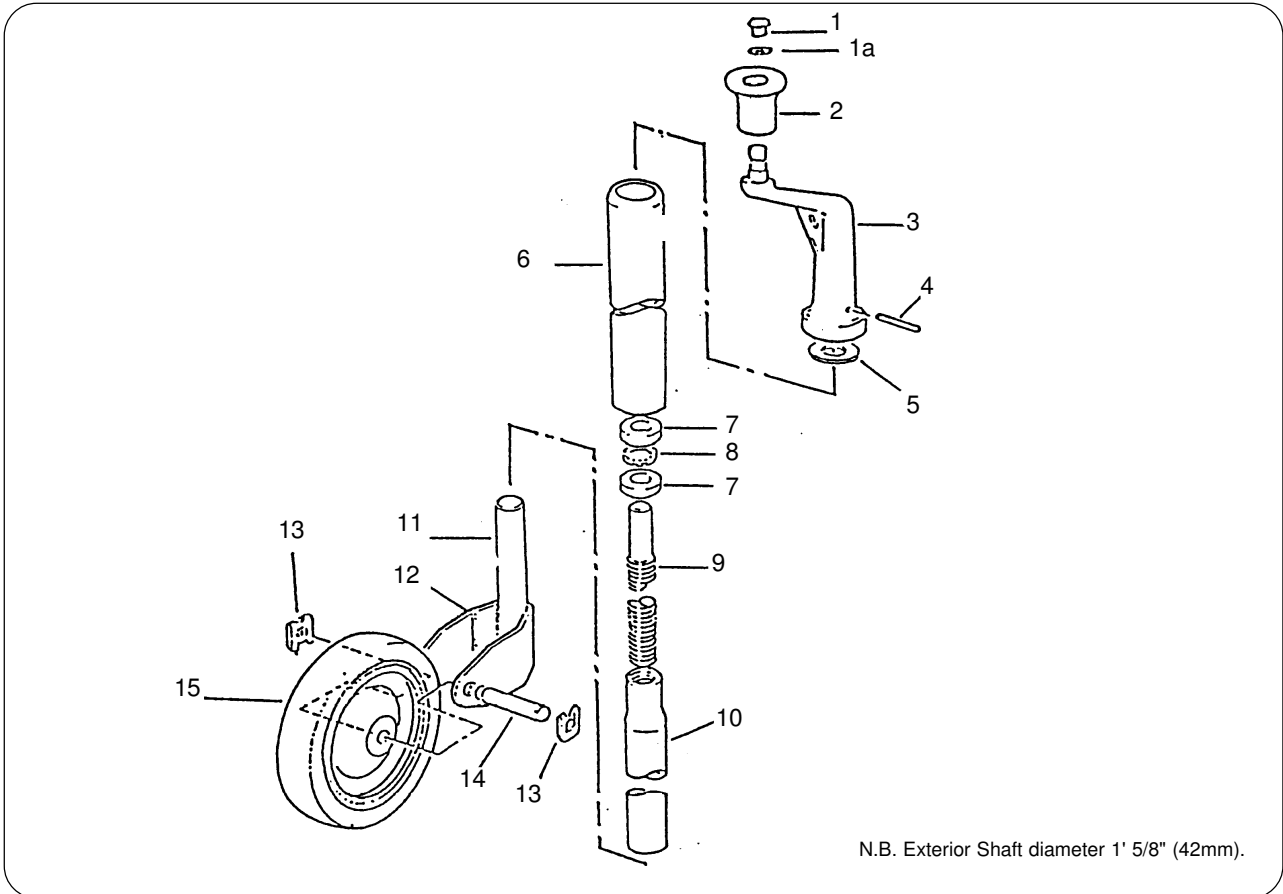
## CORNER LEGS (STEADIES)



PART	PART NO.	DESCRIPTION OF PART	QTY
2/3	319 UNF/300B	2 1/2" x 3/8" UNF Bolt and Binx Nut	1
2/4	315 UNF/300B	2" x 3/8" UNF Bolt and Binx Nut	1
5/6	CC 602/CC 2762	Circlip and Pivot Pin	1
7	CC 2335	Side Arm	1
8	CC 2333	Leg (2330 Corner Steady)	1*
8a	CC 2337	Leg (CC 3560 Corner Steady)	1
9	CC 591	Mills Pin	1
10	CC 185	Washer	1
11	CC 4693	Nut	1
12	CC 2332	Screw (length 15 1/2") (CC 2330 Corner Steady)	1
12a	CC 651	Screw (length 17 3/4") (CC 3560 Corner Steady)	1
13	CC 2331	Base Plate (CC 2330 Corner Steady)	-*
13a	CC 3893	Base Plate (CC 3560 Corner Steady)	-*
15	CC 2338	Wing Nut	1*

\* Check for availability

**HEAVY TELESCOPIC JOCKEY WHEEL CC 3850**



PART	PART NO.	DESCRIPTION OF PART	QTY
1	356 650	Insert Cap	1
1a	356 649	Starloc Washer	1
2	356 651	Rubber Knob	1
3	CC 926A	Handle	1*
4	CC 589	Grooved Pin	1
5	700 625	Washer (was CC 692)	1
6	CC 2191	Outer Tube	1*
7	CC 977A	Thrust Washer	2
8	356646	Ball Race (Was CC826)	1
9	CC 627	Screw	1*
10	-	-	-
11 } 12 }	CC 3404	Fork Assembly	1
13	CC 3198	Wheel Clip	2
14	CC 3196	Spindle	1
15	CC 3197	7" Wheel	1
16	356 813	Pressure Pad (See Page 8 , item 5)	1
17	CC 3506M	Jockey Wheel Clamp Handle (See Page 8, item 10)	1
18	CC 632A	Heavy Duty Cast Clamp (Not Shown)	1

\* Check for availability

N.B. The "light" telescopic jockey wheel assembly (CC 1073) exterior shaft diameter 1' 3/8" (36mm) is no longer available but used the same 7" wheel (CC 3197) spindle and clips.