

## SPREADLEVER BRAKES

**⚠️ PRIOR TO CARRYING OUT THESE TASKS PLEASE REFER TO PRECAUTIONS ⚠️**

### REPLACING BRAKE ASSEMBLY COMPLETE

It is recommended that the brake assemblies are replaced in axle sets.

1. Follow the procedure for Replacing Brake Shoes items (1) to (7) inclusive taking due note of the introductory warnings.
2. The brake assemblies are handed, check the new assembly against the one fitted noting the position of the brake cable attachment. Remove the four bolts securing the backplate to the axle, remove the old assembly and fit the new one in accordance with the torque figures specified in the trailer manufacturer's handbook.
3. Continue with the procedure for Replacing Brake Shoes commencing at item (18).
4. Follow the Adjustment procedure below.

### REPLACING BRAKE SHOES

Place the trailer on stands with all wheels free.

**WARNING!** The handbrake should be released and the handbrake locking bolt fitted. See Fig. D. Some couplings do not have provision for the locking bolt. In this case or if a bolt cannot be used the handbrake lever should be secured in the off position to prevent the handbrake lever operating. It is recommended that the brake shoes are replaced in axle sets.

1. Remove the wheels.
2. Remove the hub cap.
3. Slacken off the brake adjuster bolt until free. Some brake assemblies have a ratchet accessible through an aperture in the backplate instead of the bolt.
4. Remove the axle nut, this may be a castellated nut retained with a split pin or alternatively it may be a locknut.
5. Remove the brake drum (hub puller may be required) taking care not to displace the bearings. **WARNING!** Avoid inhaling brake dust. Don't use an airline to clean the drum. Carefully remove the dust using a small brush.

Fig. D

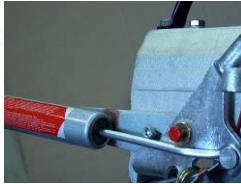
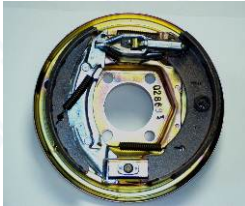


Fig. E



Fig. F



6. Check the condition of the brake drum, replace the drum if deep score-marks are visible.
7. Undo the locknut on the brake rod (front to rear) adjacent to the compensator. Slacken the second nut on the brake rod. Remove the half shell from the backplate and detach brake cable.
8. **NOTE.** Record the orientation of the brake shoes and springs on the backplate to ensure that the new shoes and springs are replaced in the same position as the old. See Fig. E (left hand) and F (right hand) for reference to Knott 200x50 brake (others similar).
9. With care and using a suitable lever, lift sliding shoe carrier away from expander. Extract expander and retain. **NOTE.** Auto adjust assemblies are supplied complete.
10. Remove brake shoe retaining spring taking care to retain the spring. Keep plate or pin at the rear of the backplate where fitted.
11. Lift off whole brake shoe assembly from backplate. Take care not to lose the two adjuster wedges.
12. Examine the components and springs, replace any damaged parts. Clean the mechanism and ensure that all parts are free to move. **NOTE.** Do not lubricate.
13. Re-fit springs to new shoes.
14. Locate shoes onto the backplate and position onto the adjuster wedges or cam block.
15. Re-fit retaining springs.

16. Locate expander into position on fixed shoe.
17. With care, and using a suitable lever, position the expander between the shoes and release the lever.
18. Attach brake cable and refit the half shell. **NOTE.** Always replace the brake cables if they show sign of wear, stiffness, damage or fraying.
19. Re-fit the drum and bearing. **CAUTION!** Refer to the axle manufacturer or trailer manufacturer's instruction. Replace the split pin or lock nut dependent on which type of nut is used. Generally speaking if a split pin and castellated nut is fitted the axle nut must be adjusted to allow the correct bearing clearance. When the locknut is used it is normally tightened to a pre-determined torque.
20. Refit the hub cap.
21. Repeat the procedure on the other drum(s).
22. Replace wheels securing wheel nuts, as specified in the trailer manufacturer's handbook.
23. Follow the adjustment procedure below.

### ADJUSTMENT

**NOTE.** When adjusting the brake drum only turn the wheel in the direction of forward rotation.

This procedure applies to the initial setting of both manual and auto adjust brakes and to regular adjustment of manual adjust brakes.

Ensure that the coupling drawtube is fully extended and that there is no tension in the brake rod or cables. Ensure free movement of the overrun lever (brake rod clevis).

1. Turn each wheel in the direction of forward rotation. Turn the brake adjuster bolt clockwise until some resistance is felt as the brake shoes begin to grip the drum, then slowly turn the brake adjuster bolt anticlockwise until the wheel begins to rotate freely again. Alternatively advance the adjuster using a screwdriver through the backplate hole until resistance is felt, then turn back by a few clicks until the wheel begins to rotate freely again.
2. Turn the nut on the brake rod until the nut is in contact with the compensator. **CAUTION!** Do not over-tighten as this will cause the brakes to drag and overheat.
3. **WARNING!** Double check that everything has been re-assembled with all fasteners secure. Remove the handbrake locking bolt and operate the handbrake several times to ensure that the compensators are seated. Check the travel of the individual brake cables. This should be 2-5mm. If not re-adjust the brake as appropriate.
4. With the handbrake engaged, turn each wheel in the reverse direction. They should turn a little and then lock as the auto-reverse mechanism operates. **NOTE.** As each wheel is turned there will be a rearward movement of the handbrake lever as the energy store operates. This action should occur once on the rearward turn of each wheel. If any wheel fails to lock there is too much slack in the system. Observe free movement of the handbrake lever.
5. Check the compensators are at 90° to the brake rod with the brakes applied in forward and reverse. Misalignment can be corrected through adjustment of the cable locking nuts. This is particularly important if a new cable has been fitted.
6. Operate handbrake and leave on. Lower the trailer to the floor and recheck the torque of the wheel nuts.
7. Please note the brakes will not be 100% effective until the new linings have bedded in.
8. The brake adjustment should be rechecked after a short journey. **WARNING!** The drums may be hot.

## PROP STAND / JOCKEY BRACKET

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### REPLACING BRACKET

Support the trailer adjacent to the stand bracket leaving a clear working area around the bracket mounting.

1. Remove the jockey wheel or prop-stand from the bracket and inspect it for damage.
2. Remove the fasteners securing the bracket, noting the orientation of the clamping mechanism. See Figs. G & H.
3. Fit the new bracket with the correct bolts.
4. Trial fit the jockey wheel or prop-stand to ensure that it clamps securely. **WARNING!** Do not allow any weight to be placed on the support until adjustment is completed and you are confident that the parts clamp properly.

### ADJUSTMENT

**Split Clamp Only:-** Adjust the locking nut so that there is the same clearance at both sides of the clamp body when the clamp handle is tightened. **WARNING!** If the two halves of the body touch the assembly will not support the weight when tightened.

Fig. G



Fig. H



## BOWDEN CABLE

**⚠️ PRIOR TO CARRYING OUT THESE TASKS PLEASE REFER TO PRECAUTIONS ⚠️**

### REMOVAL & REPLACEMENT OF BOWDEN CABLE

Place the trailer on stands with all wheels free.

**WARNING!** The handbrake should be released and the handbrake locking bolt fitted. See Fig. D. Some couplings do not have provision for the locking bolt. In this case or if a bolt cannot be used the handbrake lever should be secured in the off position to prevent the handbrake lever operating.

1. Undo the locknut on the brake rod (front to rear) adjacent to the compensator. Slacken the second nut on the brake rod.
2. Remove the nut from the cable inner and the nut retaining the outer to the bracket. Take note of any washers and orientation of domed nuts. Remove the half shell from the backplate and detach brake cable. Withdraw the cable assembly.
3. Attach the new brake cable to the expander in the hub and refit the half shell.
4. Thread the new cable into position, secure the outer with its nut and thread the nut on the inner to approximately the position noted on the old cable.

**NOTE.** This procedure covers just the Bowden cable replacement, we would always recommend that a full brake adjustment is carried out including hub adjustment.

5. Follow the adjustment procedure under SPREADLEVER BRAKES starting at item 2.

## BREAKAWAY CABLE

**⚠️ PRIOR TO CARRYING OUT THESE TASKS PLEASE REFER TO PRECAUTIONS ⚠️**

### REMOVAL

It is important to ensure that the handbrake lever is prevented from operating. **WARNING!** The handbrake should be released and the handbrake locking bolt fitted. See Fig. D. Some couplings do not have provision for the locking bolt. In this case or if a bolt cannot be used the handbrake lever should be secured in the off position to prevent the handbrake lever operating.

1. Remove the existing cable from any guides taking note of the route.
2. Where a coil fitting is used on the handbrake use pliers and screwdriver to prise the coils of the retention ring apart and remove the ring from the handbrake lever. See Fig. I.
3. Where a clevis and pin fitting is used on the handbrake remove the split pin and withdraw the clevis pin. See Fig. I.

Fig. I



### REFITTING

**WARNING!** Always use the correct replacement from the manufacturer as an incompatible cable will fail to operate the handbrake mechanism correctly.

Note that the two different styles are interchangeable providing that the complete cable and fittings are changed.

1. For the coil fitting use pliers and screwdriver to prise the coils apart and fit the ring to the handbrake lever. Check that the cable is free to move on the ring.
2. For the clevis fitting insert the clevis pin and retain it with the split pin provided.
3. In all cases thread the cable through the guides.

### OPERATION

1. Ensure that the cable passes through the guides provided. This is important to ensure that the cable operates under the widest range of circumstances.
2. Check that there is no damage or fraying prior to use.
3. Secure the cable to a suitable point on the tow vehicle, refer to the vehicle or tow bar manufacturers specifications for the location.
4. Ensure that the cable is not pulled tight during articulation of the trailer and remains clear of the ground.

## COUPLING HEADS / TOWING EYES / BELLOWS

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### REPLACING COUPLING HEADS / TOWING EYES

Prior to proceeding it is essential to confirm the condition of the damper. Carry out a damper reaction test. Pull the handbrake lever on as far as possible. Push the ball coupling as far back into the overrunning hitch as it will go. This requires force to compress and should extend smoothly when released. If the draw tube is impossible to compress, compresses with just spring force and no damping resistance, or the extension is very rapid the damper must be replaced by carefully following the DAMPERS instructions. If completely satisfied that the damper is in good condition proceed as follows:

- Follow the procedure for DAMPERS up to and including point (4).
- If you have been able to remove the coupling head / eye as instructed in DAMPERS point (4) go straight to instruction (5) below, otherwise continue.
- The damper will now be retained between the front coupling / eye bolt and the rear damper bracket. It is now necessary to remove the damper without destroying it. **WARNING!** Proceed with extreme caution. The most efficient method is to remove the rear damper mounting bracket but depending upon the coupling there may still be tension in the damper.
- Place a lever against the rear damper in such a manner that once the mounting bracket bolts are removed the tension can be released slowly. Take the tension and remove the mounting bracket bolts, release the tension in the damper.
- Inspect the shaft for damage, dress burrs and clean any dirt as the new coupling will be a close fit on the shaft.
- If a new bellows is to be fitted cut the tie-wrap and discard the old one, fit the new and secure with a tie-wrap.
- Trial fit the new coupling, it should slide into place without any undue force. DO NOT hammer the coupling into place, this can damage the coupling itself or the over-run mechanism. If it proves to be tight remove it, and thoroughly clean the shaft, inspecting for burrs.
- Fit the bolts, washers and secure with NEW locking nuts. DO NOT re-use the old nuts as this is safety critical. Torque to the figure in the table below. Fit the plastic nut covers. Where the damper has been removed ensure that the coupling head rear bolt passes through the hole in the damper body. **NOTE.** If you have any doubts about the condition of the damper a new one must be fitted.
- If the damper has been released the rear mounting bracket will need to be re-fitted. This means that the damper needs to be compressed such that the bolts can be located. **WARNING!** Proceed with extreme caution. Compress the damper with the lever and secure the mounting bracket bolts, as shown in Fig. C.
- Re-fit the bellows with the coupling / eye horizontal taking care not to tear or damage the material.

Fig. C



Where the replacement coupling / eye is a different part to the original:

- Always ensure that the corresponding length bolts are used.
- Always ensure that the compatible bellows is used.
- Always ensure that the hole sizes in the coupling and draw-bar tube match and that the correct sized bolts are employed.

### ADJUSTMENT

It is not necessary to make any adjustments, simply rotate the coupling / eye to its limits to ensure that the natural position of the bellows is with the head horizontal.

### TORQUE SETTINGS

M12 grade	10.9 bolt	100Nm			
M12 grade	8.8 bolt	70Nm	M14 grade	10.9 bolt	125Nm

## DAMPERS

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### SAFE REMOVAL AND DISPOSAL OF DAMPERS

The dampers assembled within overrun couplings are pressurised. During assembly the damper is preloaded and compressed in order that the coupling operates correctly. Care must therefore also be exercised when working on, handling and disposing of the coupling / damper. This is especially important if any damage or misuse of the coupling has occurred. This procedure will ensure that the damper is removed and disposed of safely.

**WARNING!** Do not position anything or stand immediately to the front or rear of the coupling assembly in case a damper fails during the process.

### REMOVAL

- Pull back the bellows from the coupling / eye to expose the two securing bolts, see Fig. A.
- Undo the self locking nut from the rear bolt of the coupling / eye, as shown in Fig. A.
- Remove the rear bolt - force may be required as the damper may still be preloaded. Raise the coupling / eye operating handle in order to fully remove the bolt if needed.
- When the rear bolt is removed the damper will move forward to rest upon the front bolt. **NOTE.** In some instances a retaining pin is fitted, (located between the bolt holes). This pin will hold the damper in its original position and will therefore need to be removed in the following manner: Undo the self locking nut from the front bolt, extract the bolt and remove the head. Replace both bolts in drawtube and finger-tighten the nuts. Knock out the retaining pin and remove the rear bolt, this will allow the damper to move forward and contact the front bolt. This position is shown in Fig. B. on the cut away photograph.
- From underneath, through the bolt hole in the drawtube, drill a 3mm diameter hole into damper body to a depth of 8mm. **WARNING!** 1. Observe normal safety procedures for the use of hand tools. 2. Wear safety glasses. 3. Do not lie immediately underneath the bolt hole when drilling. 4. When the drill penetrates the damper body gas will be allowed to escape.
- The pressure in the damper should now have been discharged. Remove the self locking nut on the front bolt of the coupling head. Remove the bolt and the coupling head. If the bolt is difficult to remove it indicates that there is still residual force in the damper and so section (5) above should be repeated.
- Remove the rear damper bracket retaining bolts. Also remove the nuts and spring washer from the rear of the damper, as shown in Fig. C. on the cut away photograph.
- The de-pressurised damper can now be removed by sliding the damper forward through the drawtube and be disposed of as per the DISPOSAL instructions below.

Fig. A



Fig. B



### REPLACEMENT

- Fit the rear damper mounting to the new damper, see Fig. C. and slide the damper loosely into position.
- Follow the procedure for COUPLING HEADS / TOWING EYES / BELLOWS, section (5) onwards.

### DISPOSAL

**WARNING!** This operation should only be carried out if the gas pressure has been discharged. Prior to disposing of the damper it is recommended that the oil remaining in the damper is drained away and disposed of in an appropriate manner. This can be achieved by drilling a 3mm hole in the damper body 60mm from the rod end of the damper.

## MAINTENANCE & SERVICING INFORMATION

(SEE ALSO KF089 FOR ADDITIONAL PROCEDURES)

### **For Coupling Heads / Towing Eyes, Dampers, Spreadlever Brakes, Prop Stand / Jockey Bracket, Bowden Cable, & Breakaway Cable**

### PRECAUTIONS

The correct assembly and adjustment of all equipment is critical to the safe operation of the trailer. Therefore the procedures must only be carried out by competent persons. If you have any doubts about your ability to complete the procedure, we recommend this task is performed by your local service centre. You are advised to wear suitable protective equipment such as safety glasses, gloves and face mask. In addition be aware of the hazards associated with handling workshop materials such as chemicals, oils and greases which may be flammable and can prove to be irritants.

It is recommended that the opportunity is taken to inspect associated items for wear or damage and replace if necessary, they can be obtained through your local stockist.

All procedures should be carried out with the trailer on level ground with either the parking brake applied or wheel chocks front and rear. In addition the drawbar should be supported with the trailer horizontal. Where required consult your trailer handbook for the recommended jacking points and positions for stands.

The components are used in a wide variety of trailers and reference to the trailer manufacturer's manual must always be made for procedures and data relevant to the particular unit.

The instructions relate to:

- ALL Knott-Avonride Ltd overrun couplings including KFG 13, 20, 27, 30, 35, KF 7.5, 13, 17, 20, 27, and KRV 7.5, 13, 17, 20, 27, 30.
- Spreadlever brakes 160 x 35, 200 x 50, 203.2 x 40, 250 x 40, 300 x 60
- Prop stand brackets Ø35, Ø42 and Ø48.

We have used "Plain English" descriptions throughout this text. If you are unsure of the meaning, if the procedure is unclear or you require any further information please use the following contact details:-

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### **IF IN DOUBT ASK**

### **USE ONLY KNOTT ORIGINAL REPLACEMENT PARTS**

The text includes guidance to assist in the safe execution of the procedures:

**WARNING!** Risk of Injury.  
**CAUTION!** Risk of damage to equipment.  
**NOTE.** Safety requirement.

KF088G