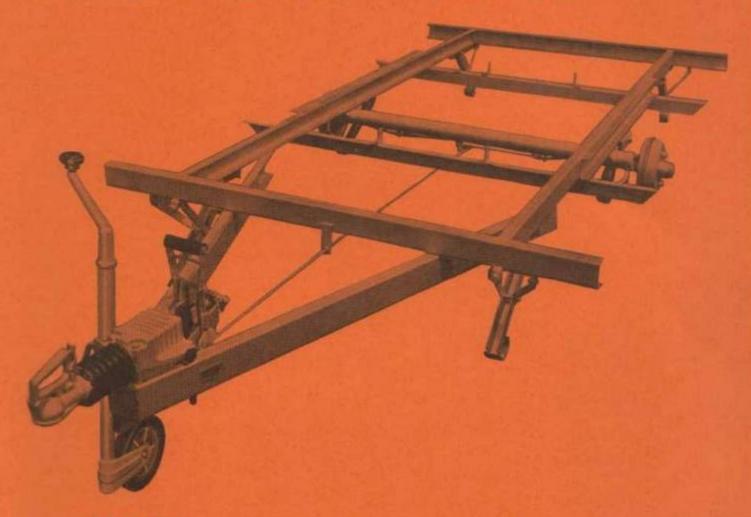
MAINTENANCE INSTRUCTIONS



AXLES - BRAKES - CHASSIS SMOOTHA - HITCH

MANUFACTURED BY

RUBERY OWEN

For CARAVANS, AGRICULTURAL and INDUSTRIAL EQUIPMENT

This handbook is intended to give concise and essential information on the care and maintenance of Rubery Owen light trailer undergear thus assuring continuous satisfactory performance from the equipment.

Compliance with these instructions as to sequence of operations and accuracy of fitting and adjustment will secure the best results.

Rusery Owen (Wresham) Sta WHITEGATE FACTORY WREXHAM LLBONR

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GENERAL INSTRUCTIONS

To ensure satisfactory operation of all working parts the following instructions should be carried out at intervals of 3,000 miles or prior to the trailer remaining stationary for periods exceeding six months unless otherwise stated.

WHEELS

Check tightness of wheel nuts.

Check tyre pressures weekly and maintain the pressures at maker's recommendation. Any unusual pressure loss should be investigated as under-inflation causes rapid tyre wear and may damage the cords of the fabric.

ASSEMBLY OF HUBS FITTED WITH TAPER ROLLER BEARINGS

PREPARATION

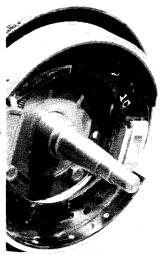
- (a) The hub or the hub portion of a combined brake drum and hub will have the taper roller bearing cups securely and accurately in position.
- (b) The interior of the hubs must be clean before liberally packing with good quality high melting point taper roller bearing grease i.e. Retinax 'A', Nulsec 'L' or equivalent.



HUBS



(c) The operating diameters of the axle must be clean.



Remove hub cap. Check taper roller bearing adjustment by rocking hub. There should be little or no perceptible shake but should be complete freedom to rotate. (For lubrication of taper roller bearings see "Assembly of hubs fitted with taper roller bearings").

(d) The taper roller bearing cones must be greased as (b) ensuring that the grease penetrates inside the roller cage, between the rollers and the cones.

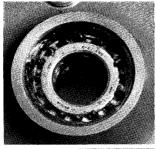


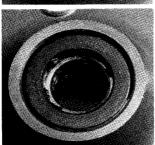
ADJUSTMENT

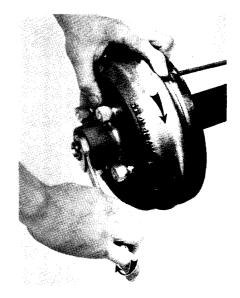
(g) spanner.

FITTING

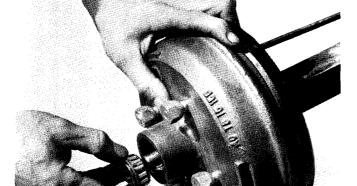
(e) The inner bearing cone must be placed inside the inner bearing cup and the grease seal placed into position inside the hub.







The slotted nut must then be tightened using a



(f) The hub subassembly must then be carefully positioned on the axle and supported squarely until the outer bearing cone has been placed in position inside its cup, the washer placed against it, and the slotted nut hand tightened against the washer.

If this procedure is not adhered to the grease seal could be damaged.







IMPORTANT:

Whilst this is being done the hub must be rotated by hand until it is locked by the tightening of the nut acuon then slacken off the slotted nut through 120 (i.e. two fiats I or until .003" to .007" end float is attained. Periodic checks must be made to ensure that the end float is maintained,

NOTE! The hubs must not be struck with a mallet

The selection of the appropriate slot to line up with the split pin hole must be made so that the end float is nearer to the .003" where possible. End float must never be less than .003" since too little will pre-load the bearings and result in premature failure.

(h) The split pin must be inserted and the outside leg bent over as shown. The inside leg must be cut short.



(j) The hub cap is placed into position and secured by tapping with a mallet.

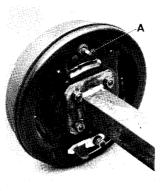


BRAKES

Before attempting brake adjustment lift each wheel clear of the ground with a jack, and slacken off the hitch to brake linkage.

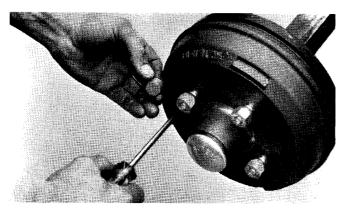
AXLES FITTED WITH GIRLING BRAKES

Adjustment is effected by rotating the adjusting screw (A) at the rear of each brake backplate in a clockwise direction until the shoes are in contact with the drums and preventing rotation of the hub; the screw is then rotated three clicks in an anti-clockwise direction or until free rotation of wheel is obtained; re-set main brake linkage.



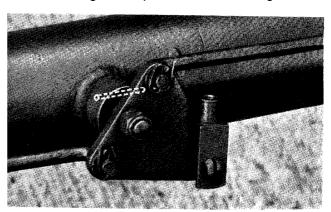
Adjustment is effected by first removing the wheel, revealing

AXLES FITTED WITH LOCKHEED BRAKES



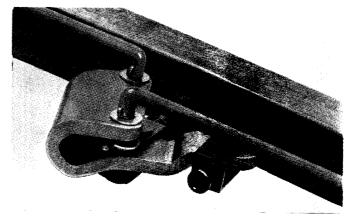
the plastic cap in the brake drum. Remove the cap and rotate the drum until the adjusting screw appears in the hole. Using a screwdriver, rotate screw until shoes contact drum and prevent rotation of hub. Rotate screw in opposite direction for three 'clicks', or until free rotation of the hub is obtained. Replace plastic cap and wheel. Re-set main brake linkage.

Correct setting of compensated brake linkage on torsion



bar axles.

Correct setting of compensated brake linkage on square

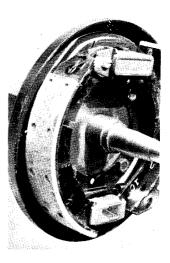


beam axles.

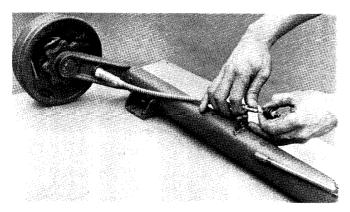
BRAKE LININGS

Inspect the brake linings for wear, If a lining is worn to the rivets it should be replaced. If a lining is badly contaminated with grease, oil etc., it must be replaced, since contamination of type cannot be sanded or dissolved out.

IMPORTANT. Always replace brake linings in sets— on both brakes on the same axle.

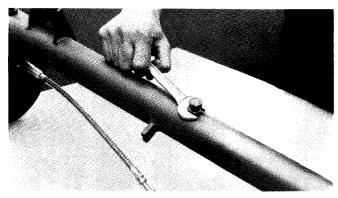


TORSION BAR AXLES



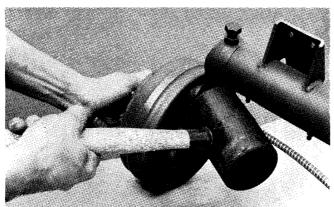
REPLACEMENT

To replace a torsion bar lift the side required with a jack.



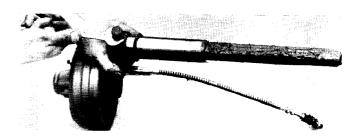
Remove the wheel. Remove brake cable end fitting from abutments on underside of axle tube.

On the required side and near the centre front, slacken



the locknut on the axle tube. Remove the cone screw and locknut.

Remove swing arm sub-assembly and torsion bar by tapping with mallet the inside face of swing arm close to the tube.



Remove swing arm cone screw and locknut. Remove bar from the swing arm sub-assembly. Taking care to place dimple for screw location in the torsion bar adjacent to screw hole, fit new torsion bar and replace locknut and screw, tightening both to torque of 55-60 lb ft. Refit swing arm sub-assembly and replace locknut and screw, applying 55-60 lb. ft. torque. Reconnect brake end fitting and adjust as necessary. Replace wheel.

MAINTENANCE

Remove swing arm sub-assembly on each side as outlined above.

The following are necessary as an anti-corrosive measure. Grease torsion bar and ground sleeve attached to swing arm. The recommended lubricants for all applications are Retinax 'A', Nulsec 'L' or equivalent.

BOAT TRAILER AXLES

Special attention should be given to boat trailer axles which are subjected to immersion during boat launchings To ensure the satisfactory operation of all working parts the following instructions should be carried out at intervals of six months or before trailer is stored.

- 1. Carry out normal torsion bar and square beam axle maintenance as previously stated
- 2. Remove wheels. Remove plastic and wash out brake drums with clean fresh water. Refit plastic caps and wheels. A short run after this operation using the brakes as much as possible will ensure thorough drying out for storage.
- 3.Remove hub caps. Inspect internal fittings for corrosion. Repack with grease if required. Replace hub cap.
- 4. SPECIAL NOTE FOR CONTINUED SUBMERSION IN SEA WATER.

Where there has been submersion in the sea water for periods of more than one hour washing out of brakes after each submersion as outlined in (2) is essential for continued satisfactory operation.

ELECTRIC BRAKE AXLES

INITIAL ADJUSTMENT

For controllers fitted with hydraulic plunger adjustment.

Before road use the controller lever should be turned to set the adjustment in the mean position.

During initial road tests adjust the hydraulic plunger if necessary to give the optimum performance. Slight variations may be carried out by rotation of the controller ever during towing to suit requirements.

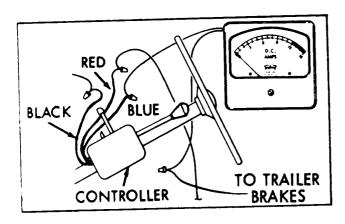
CHECKING THE ELECTRICAL CIRCUIT TEST INSTRUMENT

In order to check the electrical circuit and components, a D. C. ammeter should be used (0-15 amps for 2 to 4 brakes). However, in an emergency an automotive lamp may be used as a test bulb. Be sure to use an automotive test bulb of the same voltage (6 volt or 12 volt) as the trailer brakes.

TESTING THE CIRCUIT

First check the continuity of the system. To do this connect the trailer to the towing vehicle, then place the ammeter or test bulb in the circuit as shown in diagram.

NOTE: Whenever connecting the ammeter, you can avoid possible damage to the ammeter by connecting one lead then just touching the other lead quickly. If the needle goes over the wrong way the polarity is reversed. To correct, simply reverse the leads, then complete the connection. Now operate the controller slowly. The cutin lowest current should read from 1 to 1¾ amp. The reading will vary, depending on the voltage and the number of brakes in the system. For 8" and 9" dia. 2 braked axles the amperage reading should be 5-6 for 12



volt towing systems. If the ammeter registers the correct high and low readings and shows smooth current modulation you may assume that the controller is functioning properly. If you do not show the correct high and low or the modulation is poor, check the following electrical circuit problems.

If you are using a test light instead of an ammeter, the bulb should be 'out' when the controller is 'off', burn dimly as controller application starts, and gradually burn more brightly as the controller handle is moved toward 'on'. In full 'on' position the bulb should burn with maximum brightness.

CHECK WITHOUT TRAILER

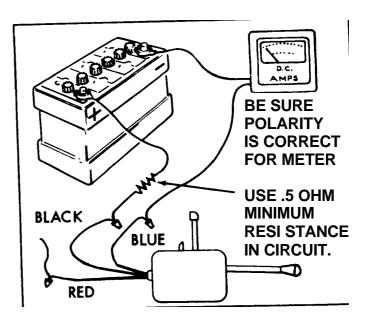
If trailer is not available a quick check of the towing vehicle circuit may be made by inserting the test bulb at the towing vehicle connector socket. Operate the controller slowly. If, as the controller handle is moved toward 'on' the light goes from dim to bright or the ammeter shows a gradual rise, the towing vehicle circuit is probably alright.

CHECKING THE ELECTRICAL COMPONENTS

When, after checking the circuit the trouble is located in a specific component (such as the controller or a brake magnet) it is advisable to remove this component and check it on the bench.

1 AUTOMATIC CONTROLLER BENCH CHECK

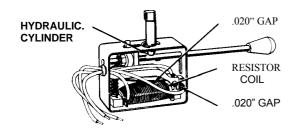
To bench check the controller, connect to ammeter or test light as shown in diagram.

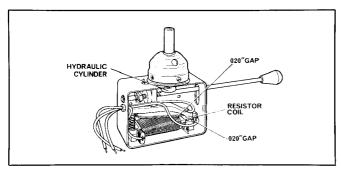


The ammeter or test light should vary smoothly from 'off' to 'on'. If it does not vary smoothly or shows no current when the controller is at full 'on', remove the controller cover and inspect the resistor coil. If the coil is burned out, it must be replaced. A burned out coil can be detected by visual inspection.

CAUTION. The resistor coil should last indefinitely under normal operating conditions. If the coil is burned out, carefully check the entire electrical system for a short circuited condition. A short circuit can damage any electric brake controller.

After replacing the coil be sure there is at least .020" clearance between the contactor strip and the coil when the controller handle is unapplied.





2 STOP LIGHT SWITCH

All K.H. controllers are now equipped with a separate stop light switch which allows full current supply to the trailer stop lights throughout brake application. It should This gap can be adjusted by loosening one screw through an access hole in the bottom of the controller case.

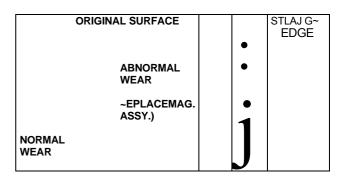
3 HYDRAULIC CYLINDER LEAKAGE

When checking the electrical circuit of the controller it is advisable to check its hydraulic cylinder at the same time, to be sure it is tight and free Of leakage.

If leakage does occur it is recommended that the complete hydraulic cylinder assembly be replaced, When reconnecting the controller into the hydraulic system of the towing vehicle, bleed and check connections.

4 MAGNET ASSEMBLY

Without removing the magnet assembly from the brake, inspect the magnet for wear and flatness. If the magnet rubbing surface is flat it need not be replaced until the friction element shows signs of wearing through. To check the wearing surface for flatness lay a straight edge on the magnet.

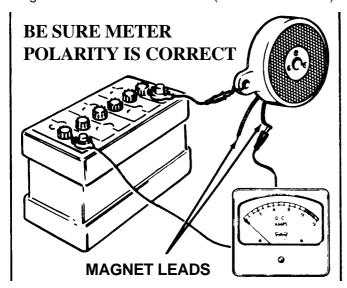


Before replacing with a new magnet determine the cause of the improper wear. First check the magnet lever pivot. A worn pivot bushing can cause the magnet lever to cock,. thus allowing the magnet to tip against the armature plate.

If this condition exists the lever assembly should be replaced. When reinstalling magnets, be sure to install the loom (lead wires) properly, avoiding kinks and allowing ample clearance for the lever to move through its full travel. Operate the lever in both directions to be sure the loom moves properly without binding, kinking, or interfering with lever movement.

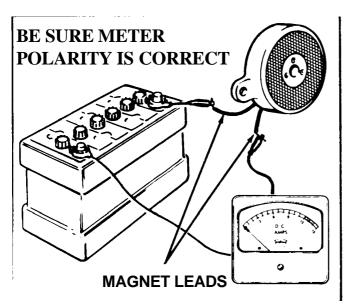
5 MAGNET BENCH CHECK

To check electrically remove the magnet for bench test. To check for a possible coil-to-case short, connect the magnet in series with the ammeter (or suitable test bulb)



as shown. Since the short may be intermittent, move the leads and rap the magnet while checking. If the ammeter shows current or the test bulb lights, a short is present. Replace with a new magnet assembly.

To check for possible shorts within the magnet coil, connect as shown.



Check current, which should be 2½ to 3 amps. If the current value does not register on the ammeter, the magnet should be replaced.

CHECKING THE MECHANICAL COMPONENTS

1 BEARINGS AND SEALS

Remove the hub, drum and armature plate assembly. The procedure for doing this and reassembling is outlined earlier. Inspect the bearing cups and cones for wear and damage. If damaged replace with new bearing cups and cones. ALWAYS replace cups and cones in sets. Inspect seals for damage; replace if necessary.

2 ARMATURE PLATES

Inspect the armature plates. Under normal conditions the armature plate should last indefinitely However, if an armature plate shows excessive surface damage due to severe contamination (mud, small stones etc.) it can easily be replaced. If only one plate is damaged, only the damaged plate needs to be replaced.

BRAKE LINING

See General Instructions, page 4.

3 BRAKE ADJUSTMENT

The brake adjusting screw is at the bottom of the brake and is accessible through an opening in the back plate, which is sealed with a plug. After removing the plug the adjusting screw may be turned in either direction with the blade of a screwdriver. While spinning the wheel, turn the adjusting screw until the wheel has a heavy drag, then back off until the wheel turns freely. Replace the plug to keep out dirt and moisture.

BOAT TRAILER ELECTRIC BRAKES

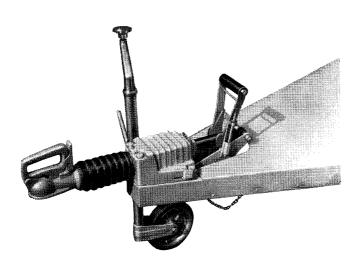
Special attention should be given to boat trailer brakes which are subjected to immersion during boat launchings. The General Instructions for torsion bar axles covering boat trailer operation are applicable.

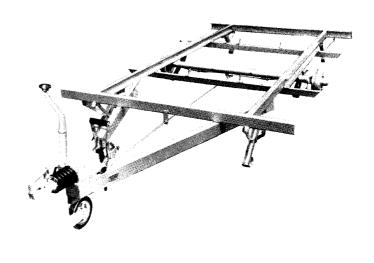
Before storing trailer, it is advisable to remove the brake drums and inspect the brake assembly. It is essential that all parts are dry and free from corrosion. If necessary, disassemble the brake, clean the shoes, back plate etc., then lightly lubricate the anchor, magnet pivot, shoe contact joints on the back plates, and the adjuster assembly.

Inspect bearings and bearing seals; replace if necessary. Repack bearings and re-assemble drum and wheel assembly, (see page 2).

CHASSIS

SMOOTHA HITCH





The design of the hitch is such that the maintenance required is kept to a minimum.

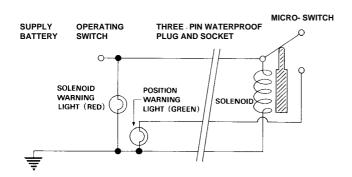
It is only necessary to lubricate all the pivot points, grease through both grease nipples, and ensure that the socket of the coupling head is well lubricated. The recommended lubricant is Retinax 'A', Nulsec 'L' or equivalent.

ELECTRICALLY OPERATED REVERSING MECHANISM

The general maintenance is the same as for the manual Smootha Hitch.

NOTE: It is essential that the reverse lever inside the hitchbox and the top of the hitch base plate are kept clean and free from grease. If this is not done, there is the possibility of the reverse lever sticking to the base plate so making the reverse mechanism of the hitch inoperative.

Periodically check that wiring and the electrical connections are in good condition.



For maintenance of the hitch and axle units look under the appropriate headings.

It is essential that the brake linkage is kept free from dirt and rust, and is lubricated regularly at the pivot points. This will ensure that the braking system functions efficiently.

The brake linkage adjustment is at the hitch and on the main brake rod.

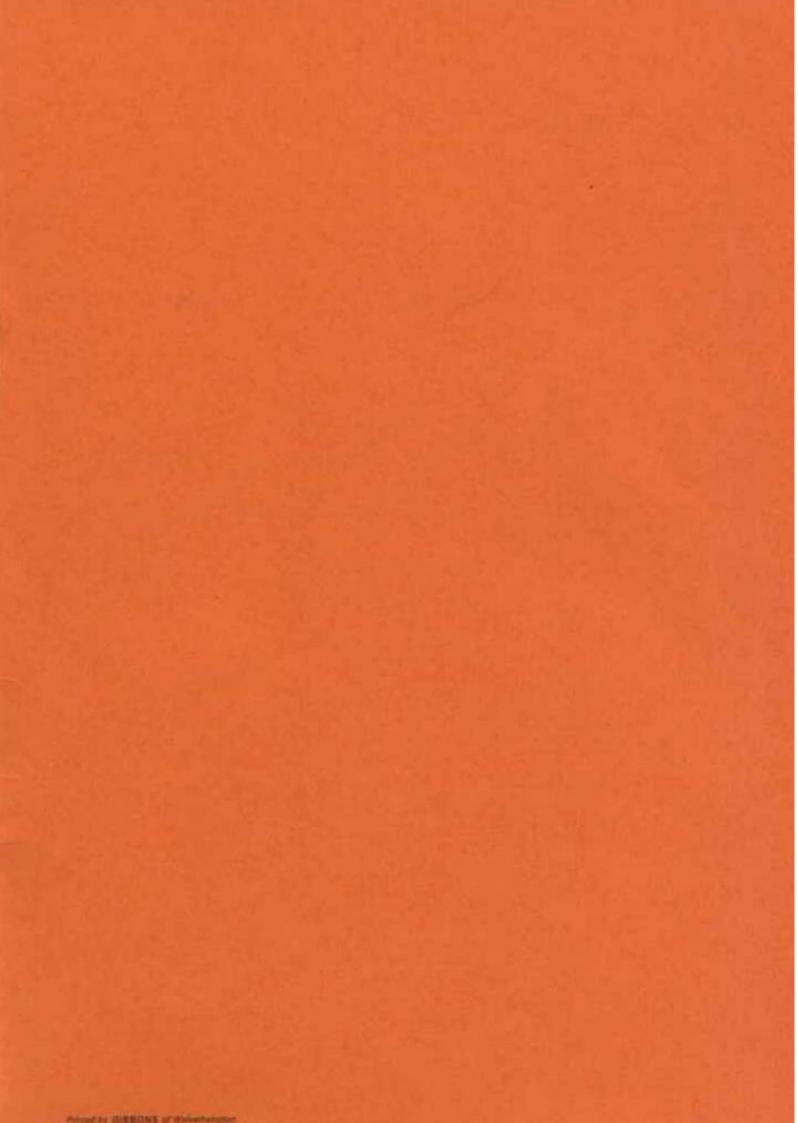
Lubricate 'jack leg' pivot points, and grease main threads. Occasionally make visual checks for damage to jack legs and chassis members.

	NOSE WEIGHTS	
	1973	1974
M 2	103 lbs	101 lbs
G 2	83 lbs	77 lbs
G 4	92 lbs	91 lbs
GN	110 lbs	100 lbs
GD	114 lbs	110 lbs
GG	149 lbs	135 lbs
GM	114 lbs	103 lbs
GA	119 lbs	106 lbs
GE	169 lbs	157 lbs
С	103 lbs	99 lbs

N.B. The actual nose weight of each caravan does not necessarily correspond to the recommended nose weight whilst on tow.

<u>V12</u> M 2 G4 G2 GD GN 90 - 100lbs

C GG GA GM GE 110 - 120 lbs



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