

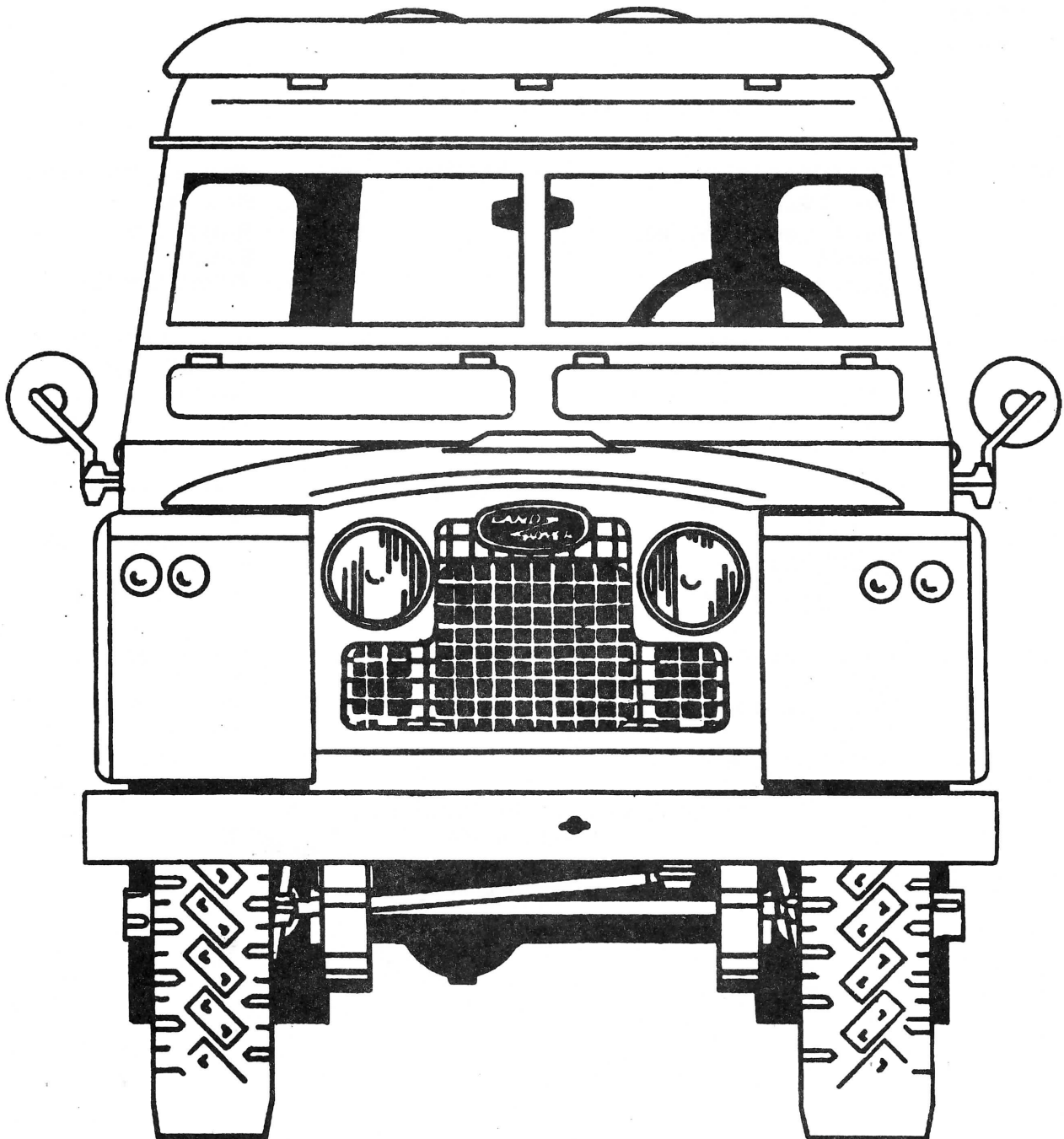


the
**ALUMINUM
WORKHORSE**



THE OFFICIAL PUBLICATION OF THE LAND ROVER OWNERS ASSOCIATION

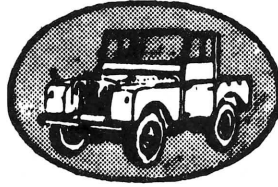
Volume IV, Number II, Summer 1987 - COPYRIGHT 1987 - ALL RIGHTS RESERVED



Final edition

★★★★★

LROA



NEWS

Summer 1987 - LROA, BOX 162201, SACRAMENTO, CA 95816

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 - 3 - You will be given 30 seconds to access the file to leave your message.

ATTENTION!! MEMBERS

A reminder from Steve Zedekar, our chief travel agent: there are still a few seats left on out 'Ultimate Trip', scheduled for May 7-16, inclusive, to the U.K. For new members, we are talking of a true Land/Range Rover Owners fantasy - the factory, parts outlets, ancient castles in Wales and of course pubs. Contact Steve as soon as possible at (206) 263-4397.

NEWS OF INTEREST

As you have read by now, we have a new format. Jim Allen is taking a breather as Editor for a while to travel and catch up with his life. I have assumed the task, along with you to continue with the "Workhorse"-our only link. The next two issues will lacking some of the photographic work while I get my feet wet in this new endeavor, so bear with me. As always, your letters, hints, photos and stories are not only welcome but a vital part of the Club's well being.

With recent articles by Jim Allen in national publications and our friends throughout the U.S. selling parts and services, we are fast approaching a paid membership of 400 strong. As usual, pass on our name to those you stumble across that have not gotten the word as it benefits us all.

The long awaited Directory is being finalized and should be going out around the beginning of the new year.

Word from the RCs has been very positive. Steve Z. reported a nice turnout for the Portland British Show, with Tony Starbird placing first, Steve taking second and a non-member Range Rover taking third for Top Show honors. Well done, lads.

Down the coast to Palo Alto, California a large group showed up with Jim 'Scotty' Howat unveling his newly painted 109 and trailer in tow. Southern California checked in with another large turnout of Owners and families. Geoffrey Jackson passed on information from the show regarding a member mounting an expedition into Mexico to recover an old PBK aircraft. If you are interested, contact Steve Hill at (916) 393-3767.

Finally a reminder to keep the last weekend of August, 1990 open on your calendar. Look for more on this subject in upcoming issues of the "Aluminum Workhorse".

BITS AND PIECES

Released recently were two new turbo diesels for the Land/Ranger Rover line. The first unit for the 90 and 110 application is a intensely reworked 2½ litre engine matched with a Garrett AiResearch T2 turbocharger. The Range Rover received a Italian VM four cylinder diesel coupled with a KKK 16 rotary type turbo unit. Road tests a been extremely favorable. However, do not look for the latter to be included in the list of options here in the U.S.

Range Rover sales are reported to be moving briskly and the dealer expansion is already taken place. Newest option for the new models is a sun roof which has now set the price around \$34,000.00. Sales of all models for Land Rover Ltd. have climbed but as usual demand has out stripped supply so again their is consideration being given to selling the 90 and 110 models here.

Land Rover Spares

Here is a list of parts and service establishments to aid your quest for parts. This list is published on a non-partisan basis. If you know of any others, let us know!

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TECH TIPS·by the numbers

LAND-ROVER 88 REAR BRAKE CONVERSION

By Geoffrey Tobin, EIT, C.MFg.T.

Brakes to a Land-Rover owner are usually a question of great significance since the feel is frequently poor to put it mildly. Additionally when it is necessary to replace the wheel cylinders the cost seems to be excessive by comparison to those of the same size for a U.S. designed vehicle. As a result, this conversion to a common U.S. wheel cylinder was undertaken.

Land-Rovers as are most British vehicles are equipped with Lucas-Giriling brakes. The components used by Giriling are frequently aluminum castings which with time deteriorate by corrosion which forms pitted areas in the cylinder bores. These pitted areas frequently can not be removed by honing, and thus the the component must be replaced with a new one. Another cause for replacement of components is when a fitting has become frozen into the component as in the case of wheel cylinder bleed valves. Once one does get the bleed valve free the loosening action can shear the threads in the aluminum casting resulting in the need to replace the wheel cylinder. This particular problem is what prompted this rear wheel cylinder conversion procedure. This conversion was done while I was rebuilding my 73' which has been driven about 8 000, trouble free, miles since it has been returned to service.

The complete conversion procedure is listed below, but before proceeding to that section some additional information should be mentioned. During the process while this conversion was being conducted I first used only a single flare on the tubing which split the tubing, and as a result I make the advisement to use only a double flare on the brake line. An observation that a person installing this conversion may make in that the new wheel cylinder casting is about an eighth of an inch shorter than the original one. The steel pistons used in the Land-Rover are longer than those of the U.S. unit and thus the side thrust is approximately the same as the U.S. unit. An additional step that I performed with my conversion was the use of metal reinforced brake cups. These cups apply more pressure to the lip and thus provide a better seal.

TOOLS

Chocks
 Jack
 Jack Stands
 Lug Wrench
 Pliers
 Socket Ratchet
 2BA Socket
 2BA Combination Wrench
 3/8 Flare Nut Wrench
 5/32" Allen Wrench
 Tubing Cutter
 3/16" Double Flareing Tool
 1/2" Socket

PARTS*

QTY.	DISCRIPTION	PT. NO.
1	Safeline Wheel Cylinder	W13387
1	Safeline Wheel Cylinder	W13388
1	Cant-Kink Brake Line	340MR
1	Cant-Kink Brake Line	351MR
2	Weatherhead Tube Nuts	105x3
4	10-32 x 1/2" Socket Head Cap Screw	
8	#10 SAE Flat Washers	
4	10 - 32 Elastic Stop Nuts	
4	5/16" - 18 UNC X 5/8" Grade 5 Hex Head Bolt	
4	5/16" Lock Washer	
A/R	Castrol LMA Brake Fluid	

OPTIONAL PARTS

4	Tru-Torque Wheel Cylinder cups	T1499
A/R	Anti-Seize	
A/R	Grinding Wheel Cylinder Kit	SP 2060

* Note: Part numbers and descriptions listed are to be used as a guide they are not the only source available.

PROCEDURE

1. Park the Land-Rover in a level place.
2. Engage four wheel drive and set the hand brake.
3. Chock the front wheels to prevent any motion.
4. Loosen the lug nuts on the rear axle in preparation of wheel removal.
5. Raise and support the rear axle such that the rear wheels are just clear of the ground.
6. Remove the lug nuts and wheel from one side.
7. Remove the brake drum.
8. Free the brake shoes from contact with the wheel cylinder.

This is best done by removing both springs and the unrestrained shoe and allowing the other to hang.

9. Inspect all brake parts for their condition and renew as required.

NOTE: Check the size of the brake drum for if the drum is over the maximum size (10.06 in. for an 88) the brakes will not adjust properly and will always feel mushy.

10. Clean the area around the wheel cylinder and the brake line on the rear axle.
11. Unscrew the brake line fitting from the back of the wheel cylinder.

NOTE: Most of the brake fluid will drain out of the vehicle once the brake line is removed.

12. Remove the two nuts that hold the wheel cylinder to the backing plate, and remove the wheel cylinder.
13. Disassemble the old wheel cylinder and clean dust boots and

- pistons.
14. Disassemble the new wheel cylinder and replace the pistons and dust boots with thoes from the Girling unit. If the old dust boots are damaged new units must be acquired from a wheel cylinder kit.
 15. Reassemble the new wheel cylinder with the exchanged parts. When reassembling the wheel cylinder coat all rubber pieces with girling rubber grease.
 16. Remove the old brake line by removing the two bolts that hold the brake line to the spring at the axle, and unscrew the tubing nut at the tee. Be careful when removing the metal band on the left side of the axle.
 17. Transfer the two retaining clips to the new brake line.
 18. Using the old brake line as a guide start bending the brake line starting at the tee. Once the brake line can be attached to the tee do so, and continue bending.
 19. Once the general shape of the new brake line has been made to match the old use the new wheel cylinder to determine the correct length to cut the tubing. NOTE: This may take several tries.
 20. Remove the Rover type tubing nut and replace it with the U.S. style nut.
 21. Flare the brake line using a flaring tool (double flare strongly recommended!)
 22. Connect the new wheel cylinder to the brake line and bolt the wheel cylinder to the backing plate using the 5/16 bolts and lock washers. (Anti-Seize recommended for these bolts)
 23. Tighten both brake line fittings.
 24. Reattach the brake shoes and springs to their proper operating position.

25. Remount the brake drum and adjust that brake. (place some Anti-Size on the flat head screw the holds the drum to the hub)

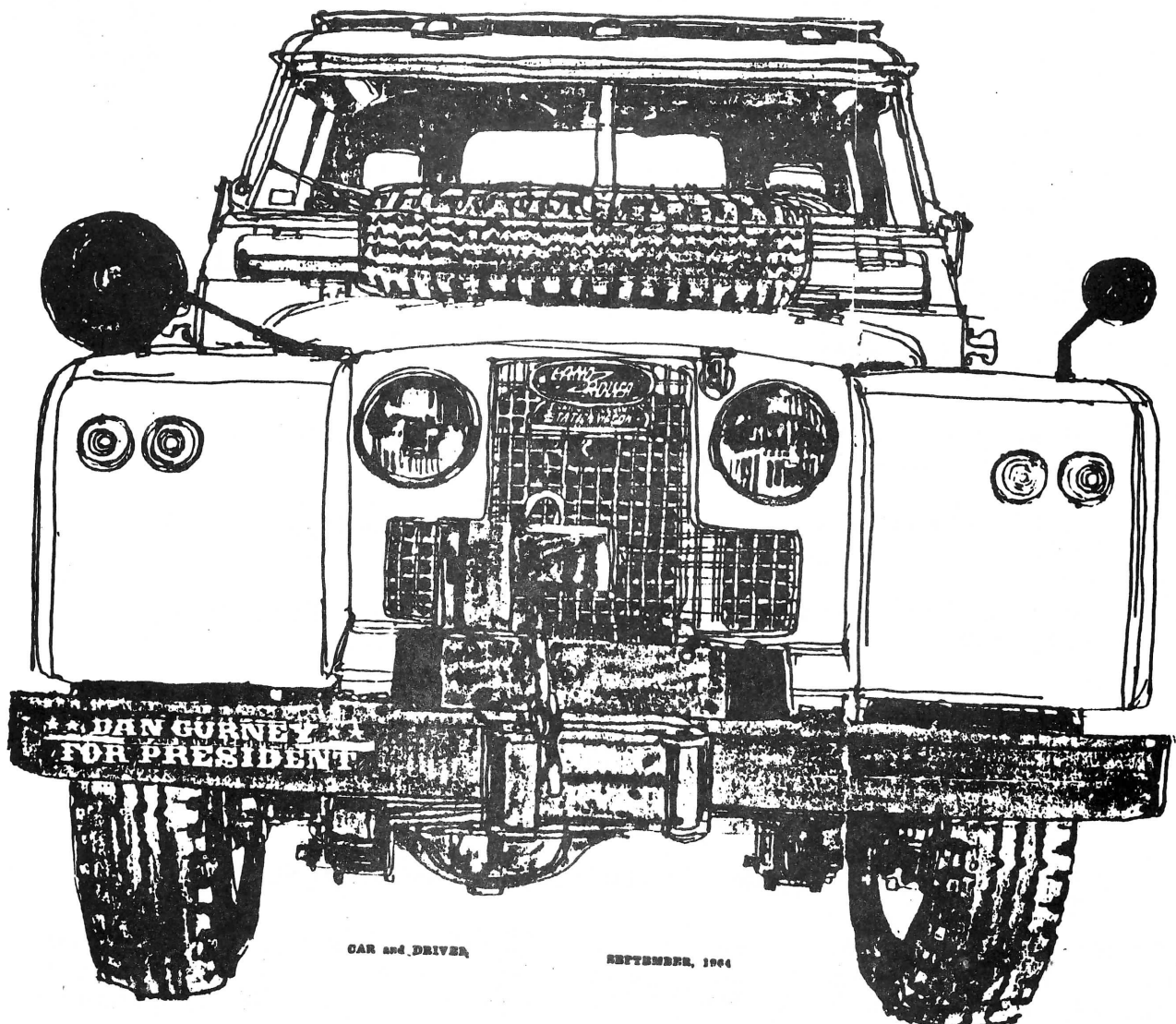
26. Repeat procedures 6 through 25 on the other side of the rear axle.

27. Bleed the brakes starting with the left rear (the farthest away from the master cylinder).

NOTE: The brake system still requires the use of Castrol LMA brake fluid due to the front brakes and the master cylinder.

28. Check for any fluid leaks at any of the fittings. Correct as required.

29. Remount the wheels and tyres and return the vehicle to the ground and appropriate drive configuration.



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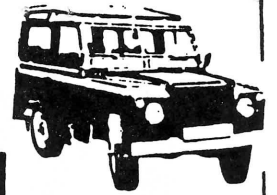
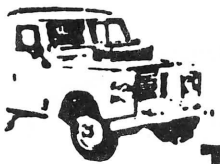
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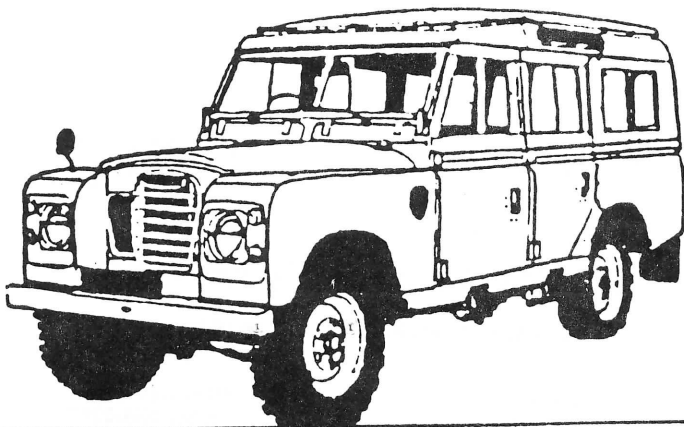
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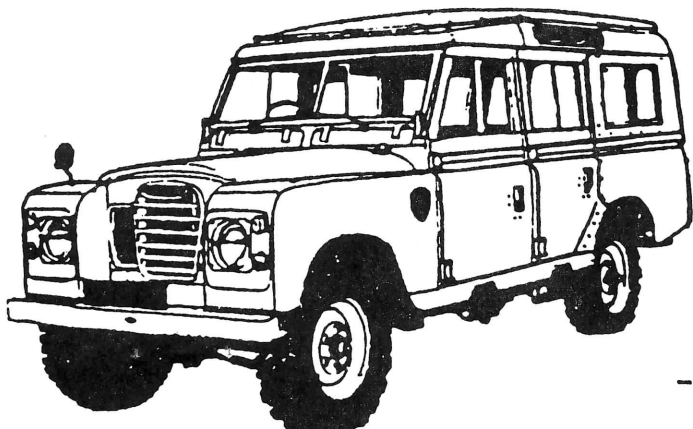
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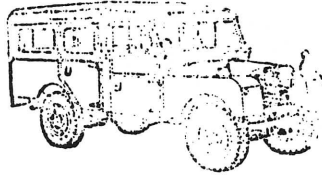
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