



BEARMACH (LONDON) LIMITED

MAINDY ROAD, CARDIFF CF2 4XN

Manufacturers of Landrover Replacement Parts

COUNTRY OF REGISTRATION: UK REGISTERED NUMBER: 603417

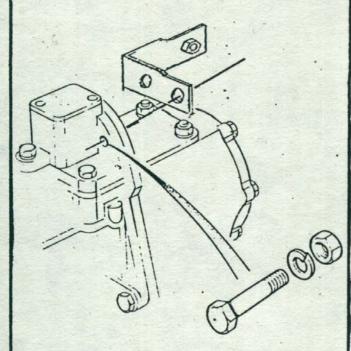
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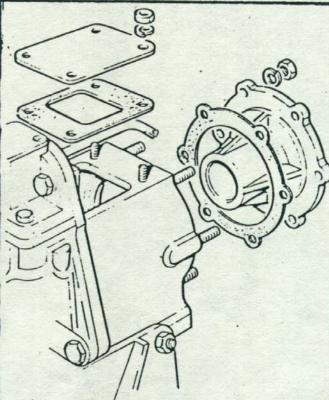
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TORO OVERDRIVE PARTS LIST

Qty.:		Description:	Qty.:	Part No. :	Description:
8 2 2	TRO 01	Member	2	TRO 43	Circlip
2	TRO 02	Split Pin	1	TRO 44	
2	TRO 03	Synchro Ring	1	TRO 45	Circlip
1	TRO 04	Main Shaft	1	TRO 46	Circlip
1	TRO 05	Freewheeling Shaft	1	TRO 47	Oil Seal
1	TRO 06	Outer Member	1		Oil Seal
1	TRO 07	Inner Member	i	TRO 48	Ball Bearing
1	TRO 08	Clutch	i	TRO 49	Distance Sleeve
1 .	TRO 09	Selector Fork	1	TRO 50	Distance Sleeve
2	TRO 10	Bracket	i	TRO 51 TRO 52	Distance Sleeve
1	TRO 11	Shaft (Selector Fork)	1		O-Ring
1	TRO 12	Box, Housing	i	TRO 53	O-Ring
1	.TRO 13	Drain Plug	i	TRO 54	O-Ring
2	TRO 14	Joint Washer	1	TRO 55	Bolt
1	TRO 15	O Ring		TRO 56	Bolt
1	TRO 16	Washer for Plug	3	TRO 57	Needle Roller
1	TRO 17	Gear Lever		TRO 58	Bolt
1	TRO 18	Linkage	1	TRO 59	Nut
1	TRO 19	Knob	1	TRO 60	Nut
1	TRO 20	Yoke	1	TRO 61	Drain Plug
1	TRO 21	Shaft for Yoke		TRO 62	Adjusting Screw
1	TRO 22	Angle Bracket	1	TRO 63	Adjusting Screw
1	TRO 23	Lock Nut		TRO 64	Lock Washer
1	TRO 24	Clevis End	1	TRO 65	Washer
1	TRO 25	*Cover for Housing	1	TRO 66	Oil Plug
1	TRO 26	Loint Washes	1	TRO 67	Clevis Pin
1	TRO 27	Joint Washer	1	TRO 68	Synchro Spring Block
3	TRO 28	Gear (Selector Fork)	1	TRO 69	Mainshaft Gear
1	TRO 29	Spring for Member	1	TRO 70	Layshaft Gear
1	TRO 30	Spring (Selector Fork)	1	TRO 71	Reverse Wheel
3	TRO 31	Steel Ball	1	TRO 72	Spring Washer
1 .	TRO 32	Steel Ball	1	TRO 73	Number Plate
1	TRO 33	Needle Roller Bearing	1	TRO 74	Dust Cover
1	TRO 34	Bearing	4	TRO 75	Cap Screw
2	TOO 0-	Bush	1	TRO 76	Member (Dust Cover)
4	TRO 35		1	TRO 77	Bellows (Dust Cover)
1	TRO 37	Bush	4	TRO 78	Screw
1	TRO 38	Thrust Bearing	4	TRO 79	Nut
4	TRO 39	Thrust Bearing	1	TRO 80	Circlip (Dust Cover)
7	TRO 40	Thrust Bearing	2	TRO 81	Nut
í	TRO 41	Thrust Washer	2	TRO 82	Washer
2	TRO 42	Thrust Washer	1	TRO 83	Support Bracket
-	Thu 42	Washer -		100	
		BR 5002 (Linkage Kit) Ref			BR 5003 (Gasket Kit) Ref
1	TRO 19	Knob	1	TRO 26 '	Joint Washer
1	TRO 17	Gear Lever	1	TRO 52	O-Ring
1	TRO 20	Yoke	1	TRO 53	O-Ring
2 2 1	TRO 81	Nut -	1	TRO 54	O-Ring
2	TRO 82	Washer	2	TRO 17	Plug Washer
1	TRO 21	Shaft for Yoke	1	TRO 14	Joint Washer
1	TRO 72	Spring Washer	1	TRO 15	O-Ring
1	TRO 23	Nut			
1	TRO 22	Angle Bracket			BR 5004 (Bearing Vit) But
1	TRO 18	Linkage	1	TPO 22	BR 5004 (Bearing Kit) Ref
1	TRO 02	Split Pin	3	TRO 32	Roller Bearing
1	TRO 24	Clevis Pin	4	TRO 57	Roller Bearing
1	TRO 77	Bellows	1	TRO 39	Thrust Bearing
1	TRO 76	Member	2	TRO 33 TRO 35	Bearing
1	TRO 80	Circlip .	1	TRO 38	Thrust Bearing
4	TRO 78	Screw	i	TRO 48	Roller Bearing
4	TRO 79	Nut	1	TRO 37	Ball Bearing
				INU 3/	Roller Bearing



1. Remove centre seat panel. Fit the 'L' shaped bracket to the vertical bolting flange of the transfer box using the replacement fixings.



2. Remove rear bearing housing and top cover plate from transfer box.

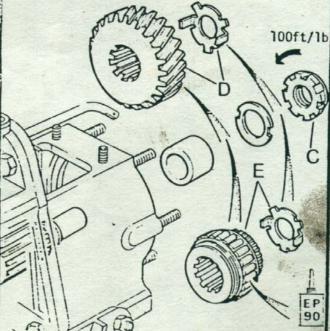
3. N.O.T.E.

On some Land Rovers six extra long studs have been fitted into the back of the transfer box, where the overdrive is fitted.

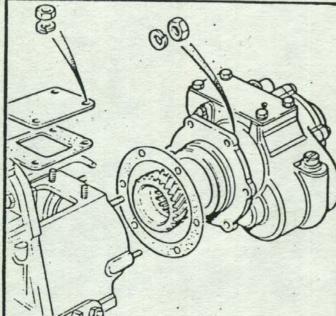
If these long studs are fitted, two of them may interfere with the boss, just behind the mounting flange, on the overdrive.

Before tightening the six nuts - securing the overdrive to the transfer box, check that the length of the two relevant study is not greater than 24mm.

If the two studs are too long - hacksaw them to the correct length.



4. Using special spanner 600300, remove mainshaft nut C. Withdraw lockwasher and gear D. Fit clutch sleeve and NEW lockwasher E, ensure that the distance piece and shim (if fitted) are re-assembled in the order shown. Tighten mainshaft nut and lock with washer. Cut surplus tabs off lock washer



5. Smear grease on both sides of gasket and fit to transfer box studs. On no account must the anti-scuff paste be wiped from the inside of the overdrive mainshaft. Offer overdrive into transfer gearbox (see special notes 11). Ensure the studs do not foul the overdrive casing and secure with original fixings. Refit cover and gasket to top of transfer box.

6. SPECIAL NOTES

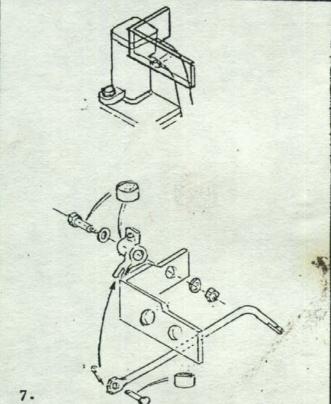
If difficulty is experienced in engaging the overdrive unit with the vehicle gearbox, the following procedures should be adopted.

A If the unit protrudes by 25.4mm (lin). Fit the slotted end of the link rod over the selector shaft of the unit and engage the clevis pin.

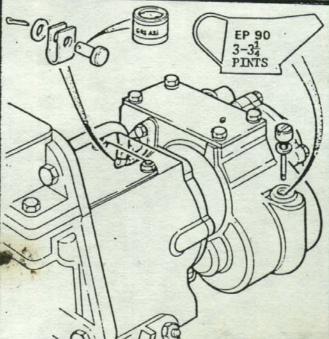
Taking suitable safety precautions, release the hand brake and rock the vehicle backwards and forwards by turning the transmission brake drum, simultaneously pulling the overdrive lever back to slide the unit forward.

B If the unit protrudes by 9.5mm(0.375in) Fit the link rod as detailed in A. Engage first gear. Shift the high-low lever (red knob) to neutral.

Simultaneously pull the overdrive lever back and spin the engine a few times using the starter motor until the unit slides completely forward.



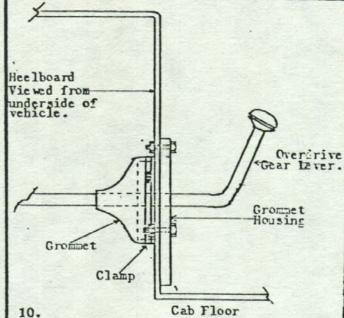
Assemble the link rod to the operating pivot and place in position. Refit the 'L' shaped bracket to the transfer box, and secure the operating pivot to the bracket.



8. Connect link rod to selector shaft. Fill unit with oil. Dipstick reading should be obtained by screwing fully into place. Refit centre seat panel, affix clutch warning label. Adjust the operating lever to a suitable position and road test operation of unit.

9. INSTRUCTIONS FOR FITTING OVERDRIVE GEAR LEVER GROWMET HOUSING.

Fit overdrive and selector cam. Engage overdrive into neutral position. Using top hole on cam, slide long rod through it and mark kick plate - using this as center, mark grommet plate either side and cut out.



SIDE VIEW OF GEAR LEVER AND GRONNET ASSEMBLY INSTALLED.

DPORTANT: Please note that the position shown here is only approximate, since variation is likely to occur in the linkage entry position, due to factors such as wear on mountings etc.

11. SPECIAL NOTE:

- (1) It has been noticed that Bearmach Overdrive owners have a tendancy to overfill the sump with the EP.90 gear oil. Thus creating overflow when operating.
- (2) If the quantity we state in this instruction manual, from 3 to $3\frac{1}{4}$ pints is strictly adherred to, this problem will be eliminated.
- (3) The oil level mark on the dipstick varies from vehicle to vehicle so is unreliable as a true reading of oil level.

NOTE:

ON LATER MODELS THE DIPSTICK HAS BEEN ELIMINATED. OIL FILLER PLUG HOLE IS NOW SITUATED AT REAR OF SUMP AND IS NOW THE OIL LEVEL INDICATOR.
FILL TO LEVEL HOLE, REPLACE PLUG, THEN ADD

1 PINT OF OIL.

TECHNICAL DATA

Overdrive ratio .782:1

See tables for comparisons - figures in brackets are without overdrive.

	TOP GEAR - HIGH RATIO				
	ES" FITTED WITH 600 x 16 TYRES	38" and 109" FITTED 1:1TH 750 x 16 TYRES			
MPH/1000 RPI:	19.17 (15)	21.1 (16.5)			
KPH /1000 RPM	30.8 (24.1)	34 (26.6)			

	TOP GEAR - LOW RATIO			
	88" FITTED WITH 600 x 16 TYRES	88" and 109" FITTED LITH 750 x 16 TYRES		
MFH/1000 RPM	9.2 . (7.2)	10.2 (8)		
KPH/1000 RPM	14.8 (11.6)	16.5 (12.9)		

OPERATING INSTRUCTIONS

The overdrive unit is fitted with a sychromesh gearchange unit and should be treated as an extra gearbox.

Since the overdrive gearchange is mechanical, the clutch must be used when changing into or out of overdrive just the same as when changing gear in the gearbox. There are three lever positions, overdrive in, neutral, and overdrive out.

To engage

Simultaneously press the clutch and release the accelerator pedal. Move the overdrive operating lever forward. Simultaneously release the clutch and press the accelerator.

To disengage

Simultaneously press the clutch and release the accelerator pedal. Move the overdrive operating lever backward. Simultaneously release the clutch and press the accelerator.

Running in

To allow the overdrive unit to bed in correctly, it is most important that for the first 500 miles, the Land Rover should be driven conservatively. Do not be disturbed if you feel that the unit is noisy, as the unit will quieten down after approx! 2,000 miles.

MAINTENANCE INSTRUCTIONS.

LUBRICATION:

After the first 250 miles, drain the oil from the overdrive unit and refill with the same grade of hypoid oil as used in the gearbox. Thenceforth change the oil every 250 miles for a total of 1000 miles and every 3000 miles thereafter.

IMPORTANT: DO NOT OVERFILL OR UNDERFILL.

The overdrive lubrication system is completely separate from the Landrover gear -box and transfer box. It is therefore extremely important that the oil level in the overdrive is checked once per week. Also it is important to ensure that the overdrive is not overfilled. To achieve correct oil level, run the unit for some time (until hot) and drain off any excess oil from the filler plug.

TITLE ATT. TOTTOR A STORE

TROUBLE SHOOTIKE.

- PROBLEM 1). OVERDRIVE DOES NOT GO ALL THE WAY HOME BUT STICKS OUT 17.
 - CHECE 12). TAKE OVERERIVE OUT COMPLETELY AND ENSURE SURPLYS TARS ON LOCK WASHER ARE REMOVED.

 ONCE THIS IS DONE-
 - 12) IF THE UNIT VILL STILL NOT SLIDE FULLY FORWARD, ADOPT THE FOLLOWING PROCEDURE.
 - 1b) CONTINUE. PUSHENG THE OVERDRIVE INTO POSITION.
 - 1c) ENGAGE FIRST GEAR IN THE MAIN GEARBOY.
 - 1d) SHIFT THE HIGH LOW RATIO LEVER TO NEUTRAL.
 - 1e) SPIN THE ENGINE A FEW TIMES UNTIL THE OVERDRIVE SLIDES INTO POSITION.
- PROBLEM 2) OIL COMES OUT OF THE BREATHER HOLE.
 - CHECK 22a) TOO MUCH OIL IN OVERDRIVE (LATER MODELS WITH FILLER PLUG IN LIEU OF TO DIPSTICK) OBSERVE INSTRUCTIONS ON PAGE 5.
 - 2b) COVER PLATE (TRO 25) PLACED WRONG WAT ROUND (LATER MODELS WITH LOCATING PEG.).
 - 2c) COVER PLATE DISTORTED ALLOWING AIR TO ENTER AND PRESSURISE THE UNIT. THEREFORE ENLARGE TO FINTHE BREATHER HOLE AND DRILL THROUGH THE BAFFLE ALSO. ALTERNATIVELY SEND THE COVER PLATE BACK TO US FOR MODIFICATION.
- PROBLEM 3) DIFFICULTY ENGAGING GEAR.
 - CHECK 3a) SELECTOR FORE IS IN THE NEUTRAL POSITION ON SELECTOR ROD WITH OVERDRIVE IN NEUTRAL. CAN HE CHECKED BY SLACKING OFF PINCH BOLTS AND MOVING FORE UNTIL SYNCHRO RINGS CAN HE SEEN EQUAL DISTANCE EITHER SIDE OF SYNCHRO HUB.

IF FURTHER PROBLEMS ARE EXPERIENCED, EXFORE RETURNING ENTI TO SUPPLIED, PLEASE HAVE NO HESITATIONS IN TELEPHONING OUR SERVICE