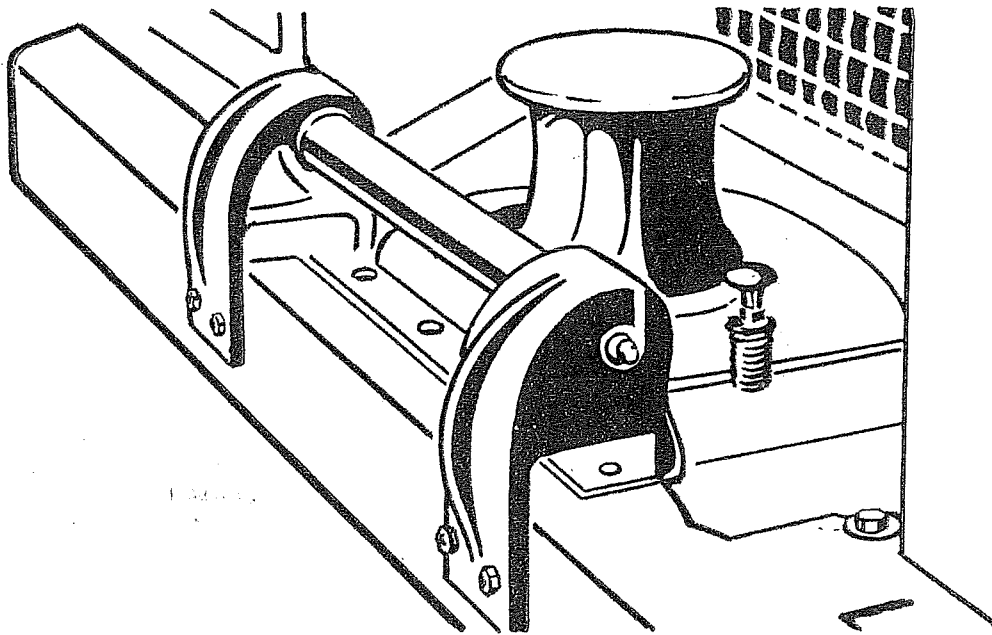


# RECOVERY CAPSTAN WINCH

## FOR USE ON LAND ROVER VEHICLES

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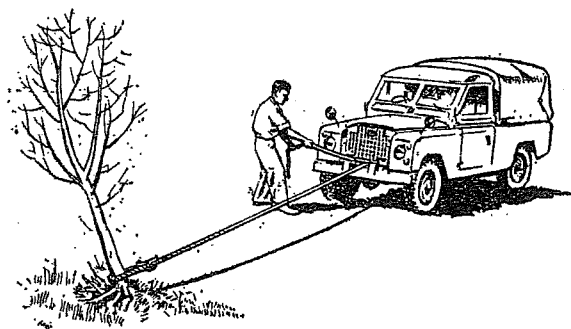
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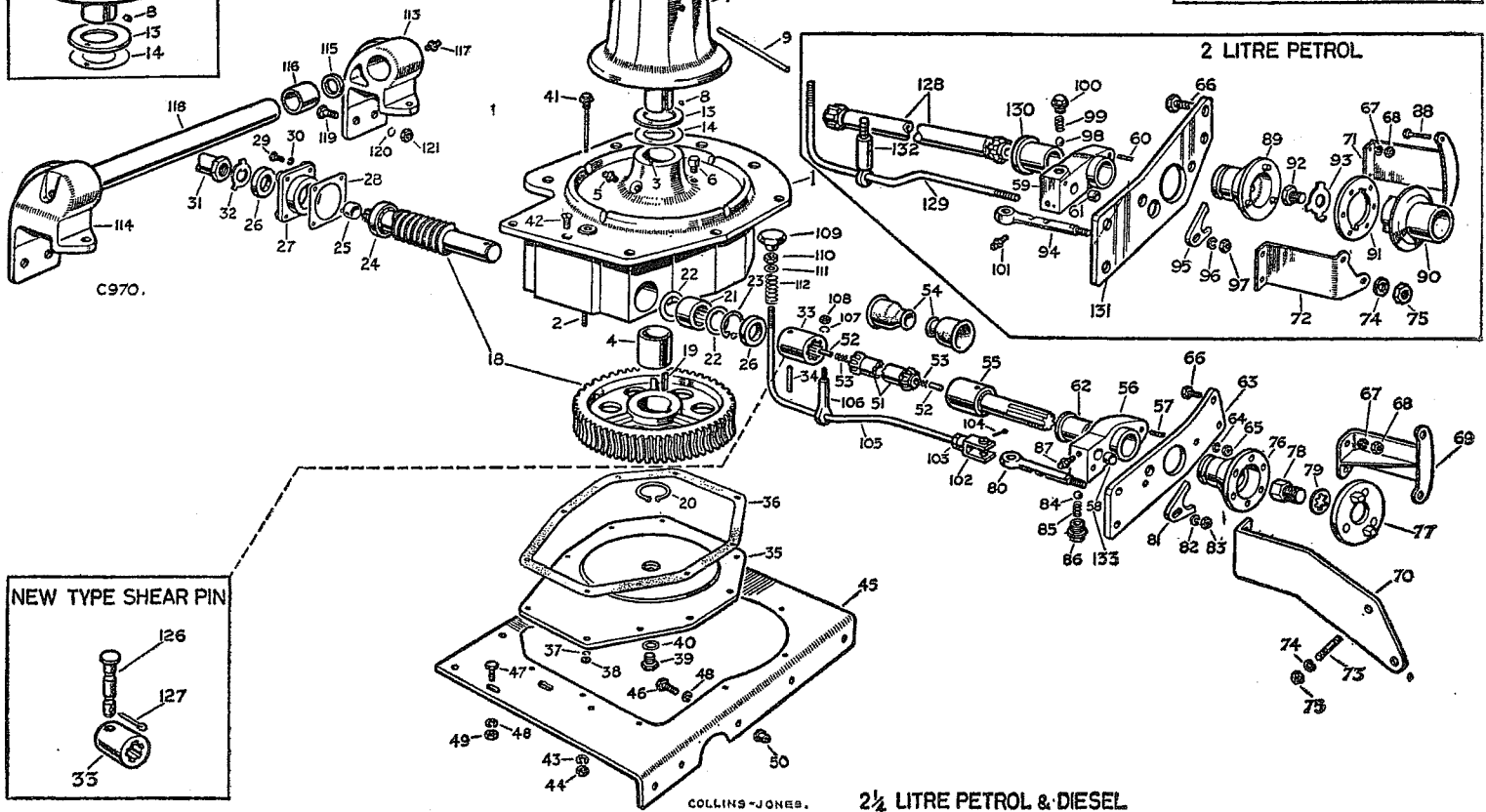
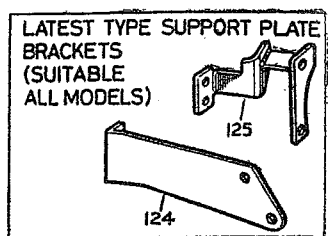
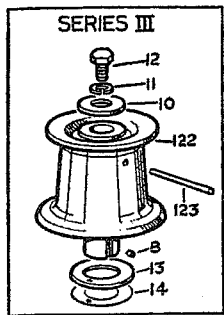
**AEROPARTS ENGINEERING COMPANY LIMITED**

R.T.Z. - PILLAR GROUP

COMMERCIAL ROAD - HEREFORD - ENGLAND Telephone: Hereford 3068/9

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PART No.	DESCRIPTION	No. off			REMARK
		2 Litre	2 1/2 Litre	Series III	
1	268698 Casing Assy, for Front Winch				
2	212104 Stud for Bottom Cover	10	10	10	Sub-Assembly Supplied Complete for Spares
3	09561 Dowel for Thrust Washer				
4	219161 Bush for Bollard Shaft	2	2	2	
5	219696 Grease Nipple for Shaft				
6	543688 Breather Cup for Housing				
7	234370 Bollard and Shaft Assembly			NR	Alternatives, Check Order Diajeter Before Ordering
8	09561 Dowel Pin for Shaft			NR	
9	506287 Safety Pin for Bollard 0,328 Dia. 237006 Safety Pin for Bollard 0,265 Dia.			NR	
10	8060 Plain Washer				
11	3078 Spring Washer				
12	215767 Set Bolt (1/2" B.S.F.)				
13	219089 Thrust Washer				
14	233324 Shim	As Req'd	As Req'd	As Req'd	
15	219115 Bollard Cap				
16	219742 Set Bolt	3	3	NR	For Fixing Bollard Cap
17	3076 Spring Washer	3	3	NR	
18	234807 Worm and Wheel Assembly				
19	219125 Key For Worm Wheel				
20	219691 Circlip Fixing Worm Wheel				
21	235646 Roller Bearing for Worm				
22	235648 Washer for the above	2	2	2	
23	235647 Circlip for Worm Shaft				
24	219088 Bearing for Worm Shaft				
25	219113 Distance Piece for Worm Shaft				
26	219624 Oil Seal for Worm Shaft	2	2	2	
27	219062 Oil Seal Retainer				
28	219119 Joint Washer for Retainer				
29	215001 Set Bolts 2BA: Fixing Retainer	4	4	4	
30	3073 Spring Washer for above	4	4	4	
31	219087 Starter Dog				
32	219118 Lock Washer for Dog				
33	219083 U. J. Sleeve				
34	250362 Mills Pins				See Plate Ref. Nos. 126 & 127 & Note A
35	219117 Bottom Cover				
36	219116 Joint Washer for Cover				
37	3074 Spring Washer for Cover	10	10	10	
38	2323 Nut Washer for Cover	10	10	10	
39	536577 Drain Plug				
40	230507 Joint Washer for Plug				
41	219179 Dip Stick Assembly				
42	252120 Special Bolt	9	9	9	Fixing Front Winch to support plate
43	3075 Spring Washer	9	9	9	
44	254811 Nut 1/8"	9	9	9	

	PART No.	DESCRIPTION	2-Litre	2½ Litre	Series III	REMARKS
45	504246	Support Plate for Winch	1	1	1	
46	250704	Bolt ⅝"	5	5	5	
47	255226	Bolt ⅝"	5	5	5	
48	3075	Spring Washer	10	10	10	
49	254811	Hut	5	5	5	
50	268703	Riv-Nuts	5	5	5	
51	278056	Prop Shaft	—	1	1	
52	219093	Plunger for Shaft	2	2	2	
53	55742	Plunger Spring	2	2	2	
54	219080	Dust Cover	2	2	2	
55	269162	Driving Shaft	1	1	1	
56	504248	Winch Shaft Housing-Assembly	NR	1	1	Supplied as Sub-Assejby
57	212104	Stud for above	NR	2	2	For Spares (2½ Litre
58	219103	Bush for above	NR	1	1	and Series III only)
59	217793	Shaft Housing-Assejby	1	HR	NR	Supplied as Sub-Assejby
60	212104	Stud for Housing	2	HR	NR	For Spares, (for
61	219103	Bush for Housing	2	HR	NR	2 Litre only)
62	504250	Bush for Shaft Housing	NR	1	1	
63	268910	Support Plate	NR	1	1	
64	3074	Spring Washer	NR	2	2	
65	2823	Nut	NR	2	2	
66	255227	Bolts	4	4	4	
67	3075	Spring Washer	4	4	4	
68	254811	Nut ⅝"	4	4	4	
	279068	Shim	NR	as requd	as requd	
69	268907	Bracket R.H.	NR	1	1	Replaced by 543170 plate ref. (125)
70	268905	Bracket L.H.	NR	1	1	Replaced by 550771 plate ref. (124)
71	219074	Bracket R.H.	1	NR	NR	Replaced by 543170 plate ref. (124)
72	236510	Bracket L.H.	1	NR	NR	Replaced by 550771 plate ref. (124)
73	252511	Stud	NR	4	4	
74	3075	Spring Washer	4	4	4	
75	254811	Nut ⅝"	4	4	4	
76	268903	Winch Driving Flange	NR	1	1	
77	268900	Winch Driving Plate	NR	1	1	
78	269461	Special Bolt	NR	1	1	
79	78193	Shake Proof Washer	NR	1	1	
80	504263	Control Shaft	NR	1	1	
81	219562	Selector Fork for Shaft	NR	1	1	
82	3074	Spring Washer	NR	1	1	
83	2823	Nut ½"	NR	1	1	
84	3050	Steel Ball	NR	1	1	
85	211382	Spring	NR	1	1	
86	219101	Plug	NR	1	1	
87	219696	Grease Nipple: for Control Shaft	NR	1	1	
88	250530	Bolt ⅝" 65F x 2" Fixing Bracket	4	NR	NR	
89	263356	Driving Flange	1	NR	NR	
90	218653	Driving Flange for Fan Pulley	1	NR	NR	
91	218549	Winch Driving Plate	1	NR	NR	
92	218584	Special Plug	1	NR	NR	
93	218605	Lock Washer	1	NR	NR	
94	219561	Control Shaft	1	NR	NR	
95	219562	Selector Fork	1	NR	NR	
96	3074	Spring Washer	1	NR	NR	
97	2823	Nut	1	NR	NR	
98	3050	Steel Ball	1	NR	NR	
99	211382	Spring	1	NR	NR	
100	219101	Plug	1	NR	NR	
101	249696	Grease Nipple	1	NR	NR	
102	215809	Clevis Assembly	1	1	1	
103	2828	Lock Nut ⅝"	1	1	1	
104	2392	Split Pin	1	1	1	
105	278054	Control Rod	NR	1	1	
106	269197	Eye Bolt for Control Rod	NR	1	1	
107	3074	Spring Washer	1	1	1	
108	2823	Nut ½"	1	1	1	
109	219558	Knob for Control Rod	1	1	1	
110	2827	Lock Nut for Control Rod	1	1	1	
111	2251	Plain Washer for Control Rod	2	2	2	
112	212943	Spring for Control Rod	1	1	1	
113	219577	Rope Guide Bracket R.H. Assembly	1	1	1	Either Hand Supplied
114	219576	Rope Guide Bracket L.H. Assembly	1	1	1	as Sub-Assejby for
115	219241	Thrust Washer	2	2	2	Spares
116	219237	Bush for Guide Bar	2	2	2	
117	219696	Grease Nipple for Bush	2	2	2	
118	219214	Rope Guide Bar	1	1	1	
119	255248	Bolt ⅝" UNF x 1½"	4	4	4	
	255247	Bolt ⅝" UNF x 1"	2	2	2	
120	3076	Spring Washer	6	6	6	
121	254812	Nut ½"	6	6	6	
	234402	Starting Handle	1	1	1	Not Illustrated
	237255	Wrench for Bollard	1	1	1	Not Illustrated
122	582221	Bollard & Shaft Assembly	NR	NR	1	
123	582222	Safety Pin	NR	NR	1	
124	550771	Bracket L.H.	1	1	1	
125	543170	Bracket R.H.	1	1	1	
126	581937	Shear Pin Brass	1	1	1	Replacing Mills Pins
127	2394	Split Pin ½"	1	1	1	
128	278061	Prob Shaft	1	NR	NR	
129	278059	Control Rod	1	NR	NR	
130	219104	Bush for Control Shaft Housing	1	NR	NR	
131	236511	Support Plate	1	NR	NR	
132	219559	Eye-Bolt	1	NR	NR	
133	504252	Bush for Housing	NR	1	1	

NR - Not Required

NOTES:

- A From November 1971 Mills Pin 250362 (Plate Ref. No. 34) will be replaced. By Shear Pin 581937 (Plate Ref. No. 126) designed to Shear at 3000 lbs. Pull.

# Fitting Instructions for Capstan Winches

SERIES 2, 2A and 3 L/R 88 inch and 109 inch (FOR PETROL ENGINES FIT HAND THROTTLE).

## PROCEDURE:

1. Remove the grille, grille panel, radiator block and cowl (shown detailed in Section 'L' of the Workshop Manual if available). Remove the fan by removing four set bolts and spring washers. Remove front apron panel.
2. Mark off a point on the front face of chassis second cross member 3-9/32" (83 mm) from the top face and mid-way between the side-members. Use a pilot drill first, then drill the front face only of the cross member to 27/64" (10.7 mm) diameter.
3. Fit a nut and plain washer to a 5/16" BSF set bolt having a threaded length not less than 1 1/2" 38 mm). Drill or file the thread of a 3/8" BSF nut clear, and slide it onto the set bolt, then screw on a Riv-nut, (details section 'T' Workshop Manual). Adjust so that 1/8" (3 mm) of the set bolt extends beyond the Riv-nut and then lock the assembly.  
Insert the Riv-nut into the hole in second cross member and then, keeping the set bolt and distance nut stationary, turn the 5/16" BSF nut—clockwise 2 1/4 turns.
4. Assemble the winch support plate temporarily to the cross member, securing with a set bolt and spring washer.  
Using the support plate as a template, mark off the other four holes in the cross member, and the five 5/16" (8 mm) clearance holes in the front bumper. Remove the plate and the front bumper by removing eight bolts, plain washers and nuts. Fix the other four new nuts to second cross member.
5. Prise up the tabs on the starting dog lock washers and remove the dog and washer.  
Fit new driving plate with special plug and shakeproof washer.
6. Secure the two shaft plate brackets, R.H. and L.H., to the engine front cover, with four studs, spring washers and nuts.
7. Secure the shaft housing to the shaft support plate by means of two spring washers and nuts.  
Grease the driving shaft and insert it in the housing, sliding the driving flange on to its spline. Insert the control shaft in the housing and secure the selector fork to the control shaft and in the groove of the flange by means of a spring washer and nut. Push the steel ball into the hole, holding it in position by the spring and the plug. Fit the grease nipple in the shaft housing.
8. Bolt the housing and support plate to the brackets, using four bolts (5/16" x 3/4" long); spring washers and nuts.
9. Slide two rubber dust covers on to the propeller shaft and fit a spring and plunger into each end of the shaft; insert one end of the shaft into the driving shaft held in the shaft housing, and slide the dust cover over the joint.
10. Secure the winch support plate to the front bumper, using five bolts (5/16" UNF x 3/4" long), spring washers and nuts. Fit the winch to the support plate, using nine special bolts, spring washers and nuts. Offer the winch, support plate and bumper into position; engage the propeller shaft with the universal joint sleeve on the winch, then secure support plate to second cross member, using five set bolts (5/16" BSF x 3/4" long) and spring washers.

NOTE: The universal joint (item 33) should be pinned to winch shaft with new type brass shear pin (items 126/127).

11. Slide the eyebolt on to the control rod and fit locknut (5/16" BSF) and clevis to the end of the rod.  
Pass the rod through the hole in the cross member, and secure it to the support plate with a spring washer and nut (1/2" BSF) on the eyebolt.  
Fit spring between two plain washers on the other end of the control rod and secure with locknut (3/8" BSF) and a knob.  
Fit the clevis to the control shaft in the shaft housing, and adjust the clevis so that the driving flange is engaged correctly when the rod is moved in its slot.
12. Mount the rope guide brackets, R.H. and L.H., with the guide bar inserted in each bearing on the support plate, using two bolts (3/8" UNF x 1" long), spring washers and nuts. Making sure the bar turns freely, drill four holes 3/8" (9.5 mm) through the brackets into the bumper, and secure the brackets by means of four bolts (3/8" UNF x 1 1/8" long), spring washers and nuts.
13. Fill the winch to the mark on the dipstick with an S.A.E. 40 oil; grease all moving parts and use a grease gun at the nipples on the rope guide brackets, on the shaft housing, and on the winch casing, which can be found by turning the bollard.
14. Replace the fan blade and the radiator in accordance with the Workshop Manual, Section 'L'.  
When refitting the radiator and grille panel assembly to chassis frame cross member mountings, it may be found necessary to use extra rubber buffers, Part No. 306465 (obtainable from The Rover Co. Ltd.) to ensure clearance between the bottom of radiator block and winch propeller shaft.

NOTE: The starting dog on the winch may be found to be loose, this must be tightened and locked by the lock washer. The Engine may be started through the winch (using the starting handle supplied) provided that the brass shear pin is temporarily replaced with a 5/16" dia. steel bolt (not supplied).

## OPERATING INSTRUCTIONS

The winch must only be engaged or disengaged when the engine is stationary and the winch must be operated at 600 r.p.m., i.e. a fast idling speed.