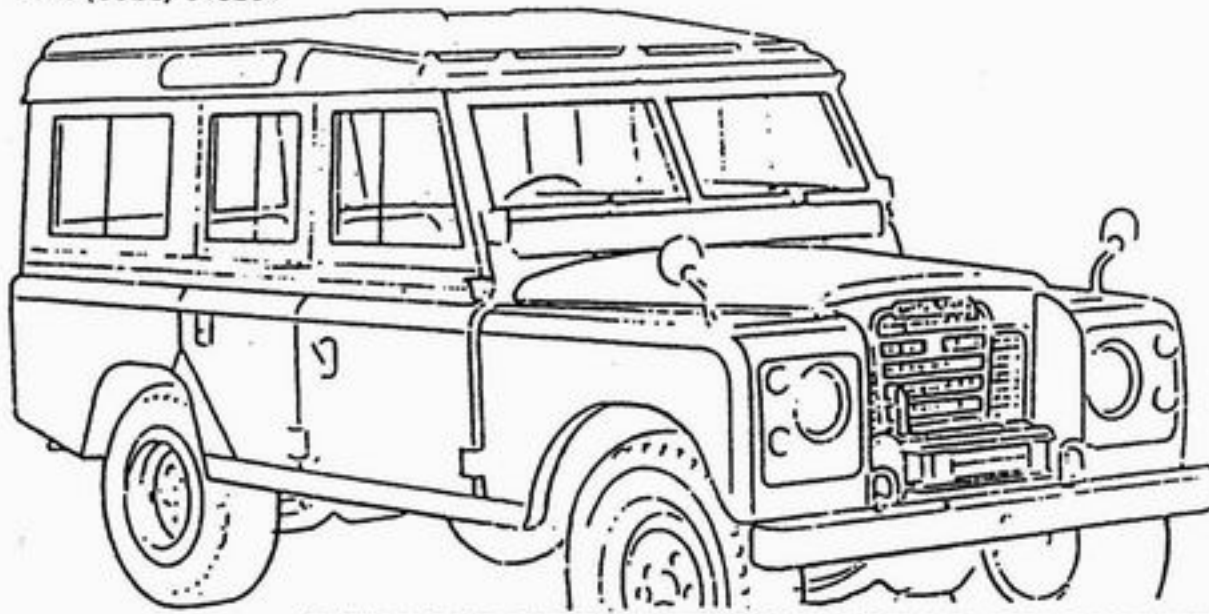


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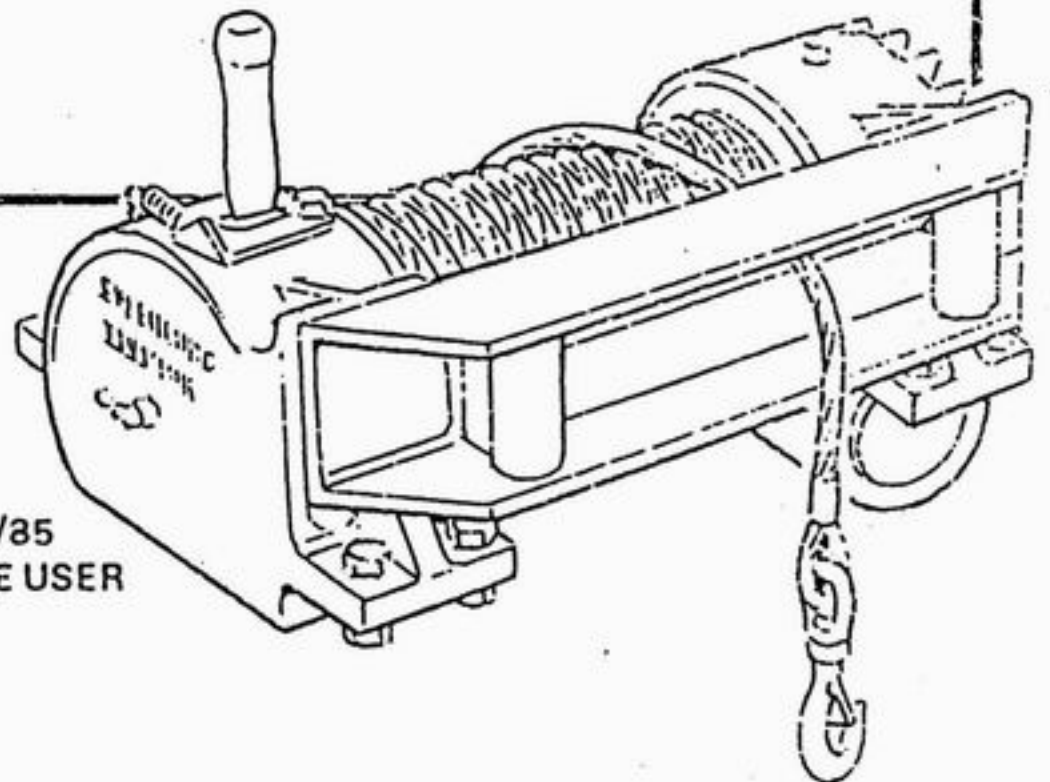


LAND ROVER

Series III (88&109)

DRUM WINCH

KIT No. 6920



FITTING INSTRUCTIONS Issue 9/85

PLEASE PASS ON THESE INSTRUCTIONS TO VEHICLE USER

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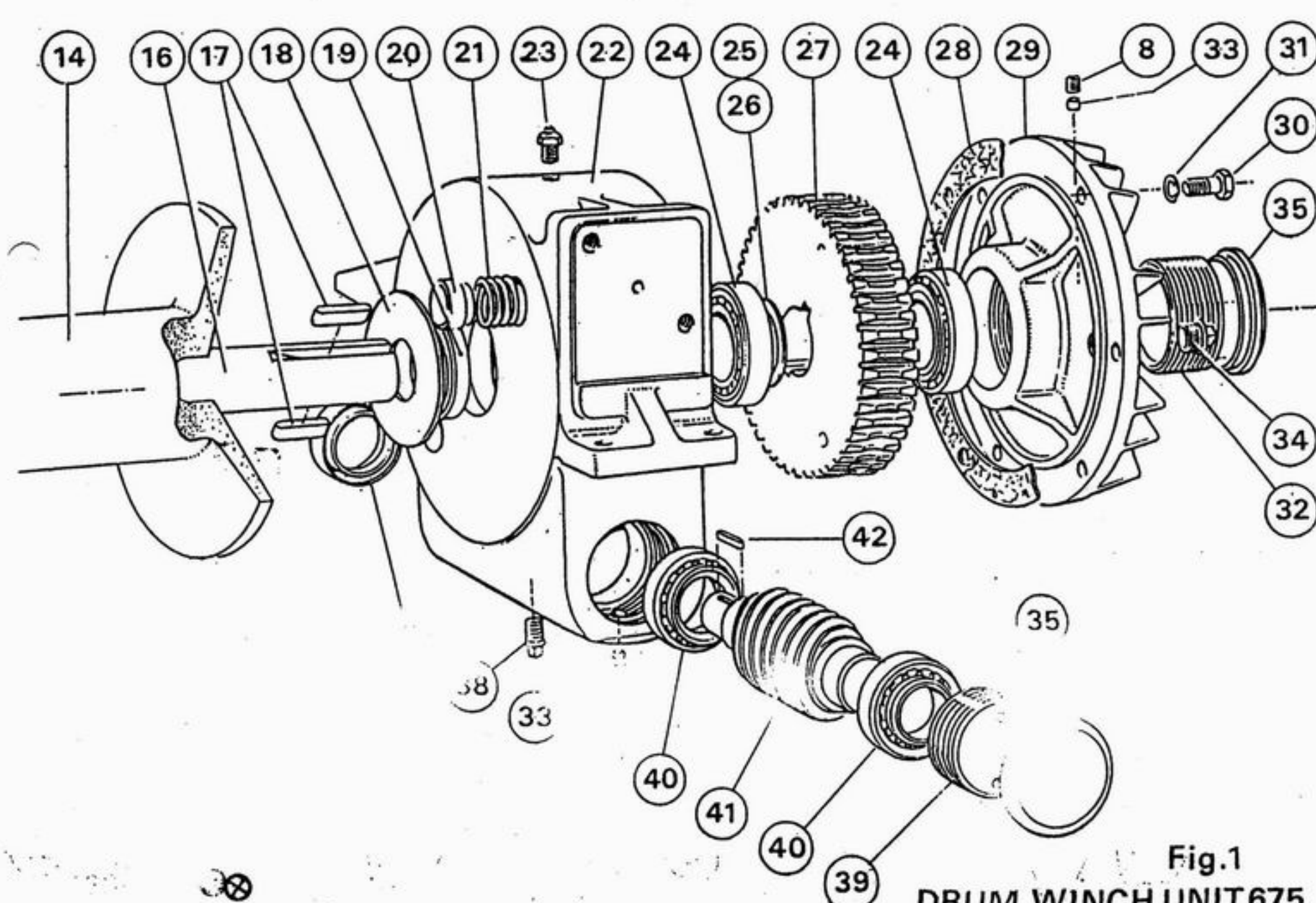
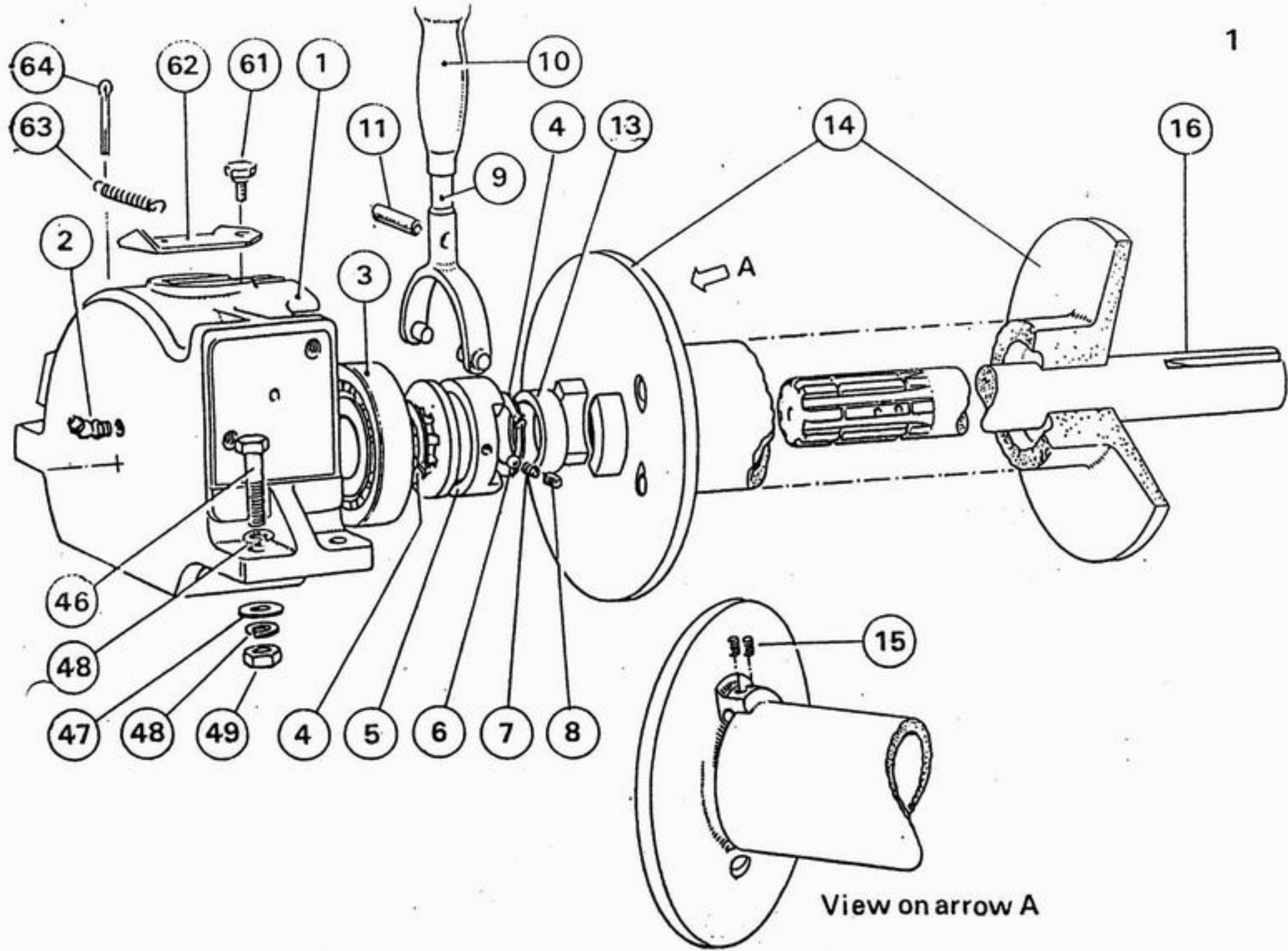


Fig.1
DRUM WINCH UNIT 675

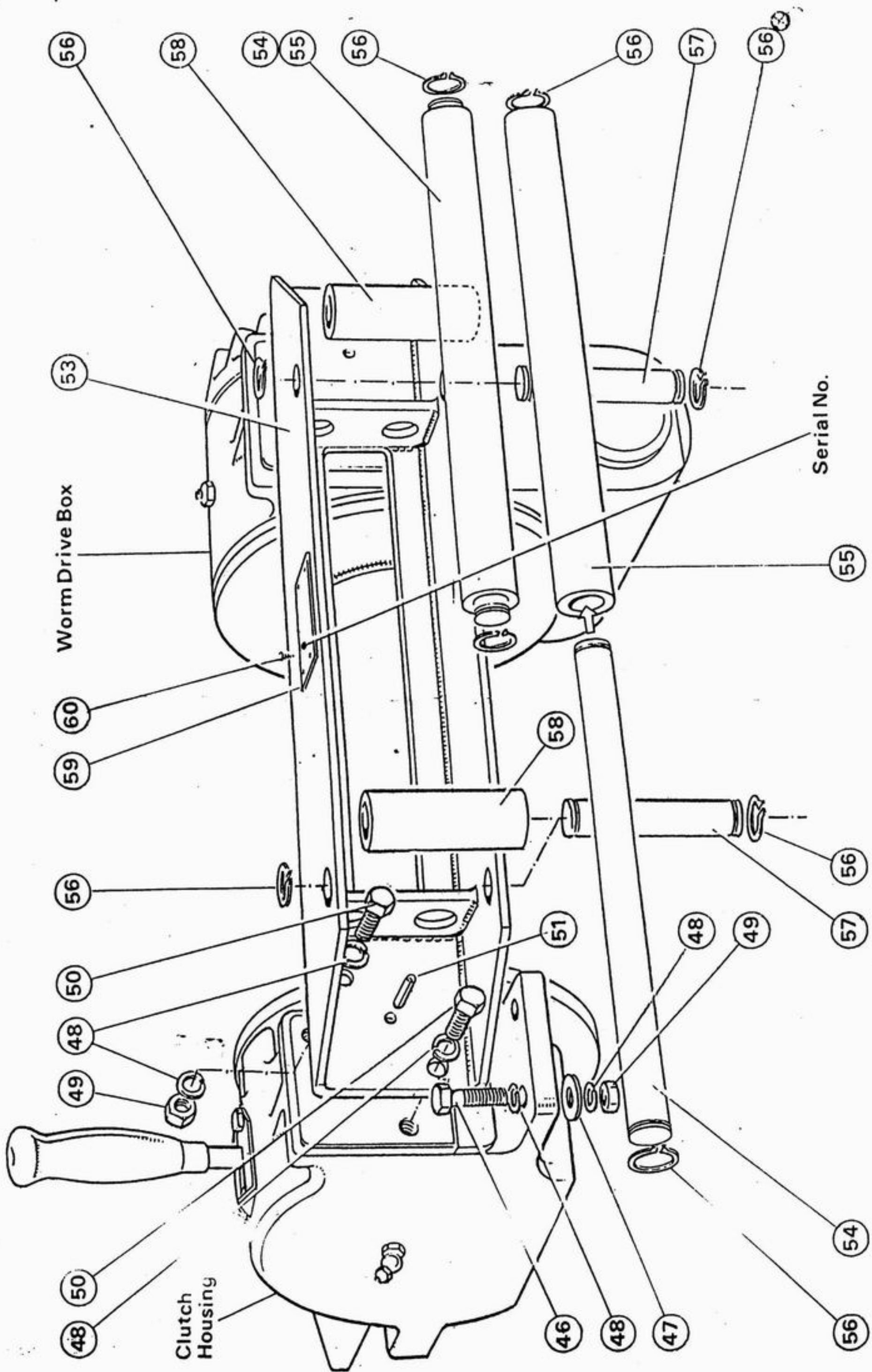


Fig.2

DRUM WINCH UNIT 675

<u>Item Ref.</u>	<u>Description</u>	<u>FWL Part No.</u>	<u>Quantity</u>
1.	Clutch Housing	677	1
2.	Grease Nipple	303	1
3.	Ball Bearing	4-18-3895233	1
4.	Circlip	4-24-3848173	2
5.	Clutch Dog	535	1
6.	Ball	370	2
7.	Spring	4-31-0612086603	2
8.	Socket Head Set Screw M8x8 lg.	4-40-080803	4
9.	Selector Fork	503	1
10.	Grip	6841	1
11.	Roll Pin 10 x 52 lg.	4-56-104523	1
13.	Spacer	536	1
14.	Drum	537	1
15.	Socket Head Set Screw	4-40-081603	2
16.	Drum Shaft	534	1
17.	Key	557	2
18.	Spacer	533	1
19.	Oil Seal	4-22-3857083	1
20.	Brake Shoe	317	2
21.	Brake Spring	320	2
22.	Worm Box	676	1
23.	Relief Valve	324	1
24.	Bearing	4-15-3865183	2
25.	Shim .05 mm thick	4-01-3850053	As req.
26.	Shim .13 mm thick	4-01-3850133	As req.
27.	Worm Wheel	502	1
28.	Gasket	529	1
29.	Worm Box Cover	528	1
30.	Bolt M8 x 30 lg.	4-33-0803012	8
31.	Washer, Spring M8	4-51-0813	8
32.	Bearing Adjusting Screw	531	1
33.	Plug	140	2
34.	Filler Level Plug	327	1
35.	Cover	6709	2
38.	Drain Plug	327	1
39.	Bearing Adjustment Screw	530	1
40.	Bearing	4-15-3259173	2
41.	Worm Shaft	501	1
42.	Key	128	1
43.	Oil Seal	4-22-3150093	1
46.	Bolt M10 x 45 lg.	4-33-1004512	4
47.	Washer, Plain M10	4-50-1013	4
48.	Washer, Spr	4-51-1013	12
49.	Nut M10	4-51-1013	6
50.	Bolt M10 x	4-33-1003512	4
51.	Roll Pin 6	4-56-602013	2
53.	Roller Supp	538	1
54.	Horizontal er Pin	541	2

FIG. 1

FI

<u>Item Ref.</u>	<u>Description</u>	<u>FWL Part No.</u>	<u>Quantity</u>
55.	Horizontal Roller	539	2
56.	Circlip	4-24-1825123	8
57.	Vertical Roller Pin	542	2
58.	Vertical Roller	540	2
59.	F.W. Label	562	1
60.	Drive Screw	498	4
61.	Shoulder Screw	7273-A4	1
62.	Safety Latch	7274-A3	1
63.	Tension Spring	4-30-64356623	1
64.	Split Pin	4-63-322523	1

FIG. 2

FIG. 1

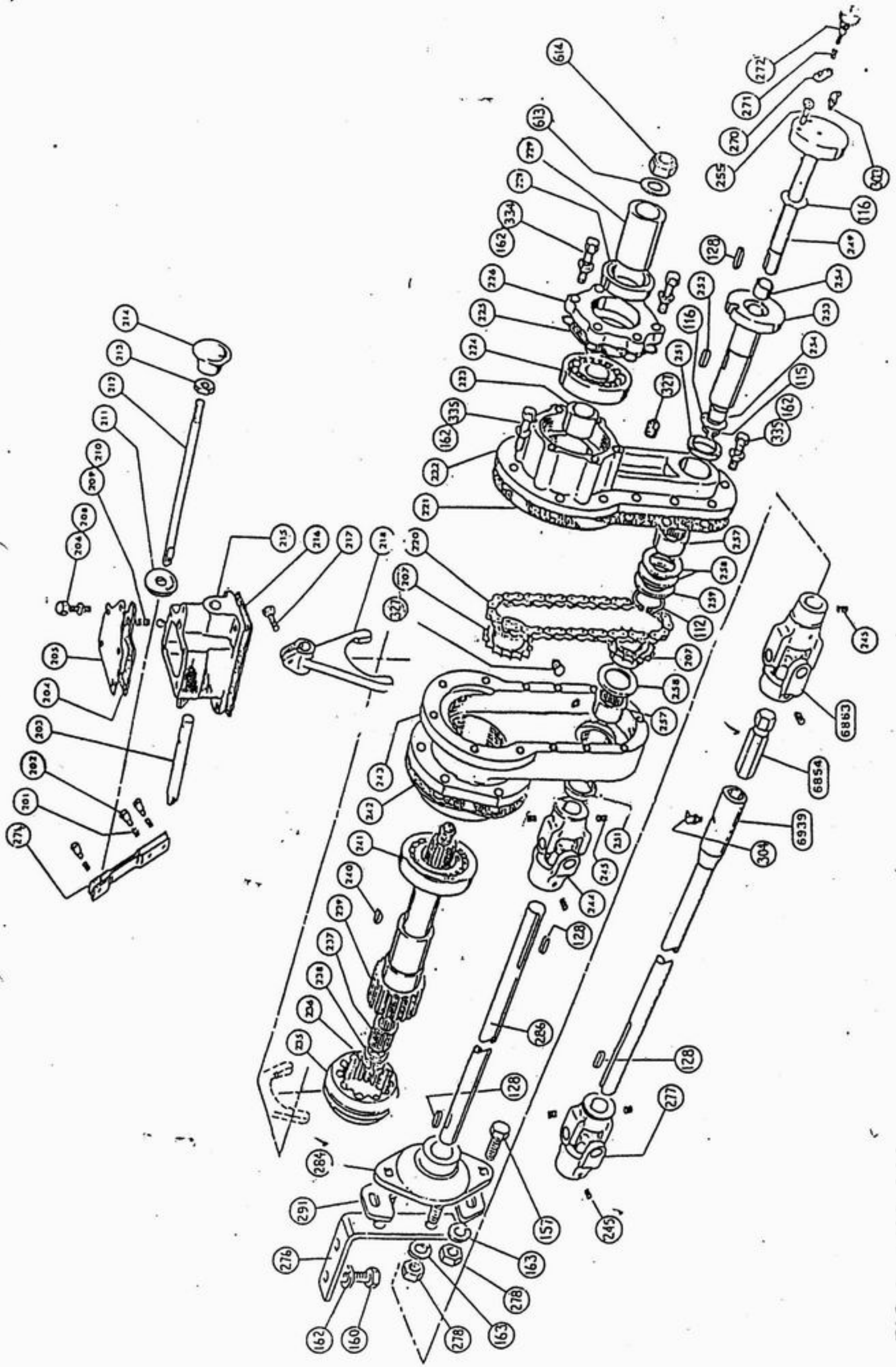


FIG.3 P.T.O.299

JL Part No (Item Ref)	Description	No. Off	FWL Part No (Item Ref)	Description	No. Off
12	Circlip	1	244	Universal Joint	2
	Circlip (External)	1	245	Grub Screw $\frac{1}{4}$ " BSF	9
16	Thrust Washer	2	6854	Hexagon Stub Shaft	1
28	Key $\frac{3}{16}$ " sq	4	249	Inner Shaft	1
37	Bolt $\frac{5}{16}$ " BSF x 1"	4	251	Oil Seal	2
30	Bolt $\frac{5}{16}$ " UNF x $1\frac{1}{4}$ "	2	252	Key $\frac{1}{4}$ " sq	1
32	Spring Washer $\frac{5}{16}$ " I/D	20	253	Outer Shaft	1
33	Washer $\frac{5}{16}$ " ID	4	254	Bush	2
31	Spring	3	255/A	Shear Pin (.160")	1
32	Pivot Screw	3	255/B	Shear Pin (.185")	1 As
33	Selector Shaft	1	255/C	Shear Pin (.200")	1 Req'd
34	Gasket	1	255/D	Shear Pin (.130")	1
35	Cover Plate	1	257	Roller Bearing	2
36	Set screw $\frac{1}{4}$ " BSW x $\frac{3}{8}$ " lg	5	258	Spacer	3
37	Sprocket	2	259	Spacer (Recessed)	1
38	Spring Washer $\frac{1}{4}$ " I/D	15	6863	Universal Joint	1
39	Spring	1	270	Shear Pin Clip	1
40	Ball	1	271	Spring	1
41	Grommet	1	272	Shoulder Screw	1
42	Link Rod	1	274	Operating Lever	1
43	Locknut	1	276	Bearing Bracket	1
	Control Knob	1	277	Universal Joint	1
45	Selector Housing	1	278	Nyloc Nut $\frac{5}{16}$ " BSF	4
46	Gasket	1	284	Press Steel Flange	1
47	Setscrew $\frac{5}{16}$ " BSF x 1" lg	1	286	Bearing	
48	Selector Fork	1	6939	Rear Shaft	1
49	Chain (Endless)	1	291	Front Shaft	1
	Gasket	1	303	Bearing Bracket	1
50	Chain Case Cover	1	304	Grease Nipple (Angled)	1
51	Spacer	1	327	Grease Nipple	1
52	Ball Bearing	1	334	Plug	2
53	Gasket	1	335	Linread Setscrew $\frac{5}{16}$ " BSW x $1\frac{1}{4}$ " lg.	6
54	Cover Plate	1		Linread Setscrew $\frac{5}{16}$ " BSW x $\frac{1}{4}$ " lg.	12
55	Oil Seal	1	613	Washer	1
56	Collar	1	614	Nyloc Nut M.16	1
57	Dog Clutch	1			
58	Circlip (Internal)	1			
59	Roller Bearing	1			
60	Retaining Plate	1			
61	P.T.O. Shaft	1			
62	Woodruff Key	1			
63	Ball Bearing	1			
64	Gasket	1			
65	Chain Case	1			

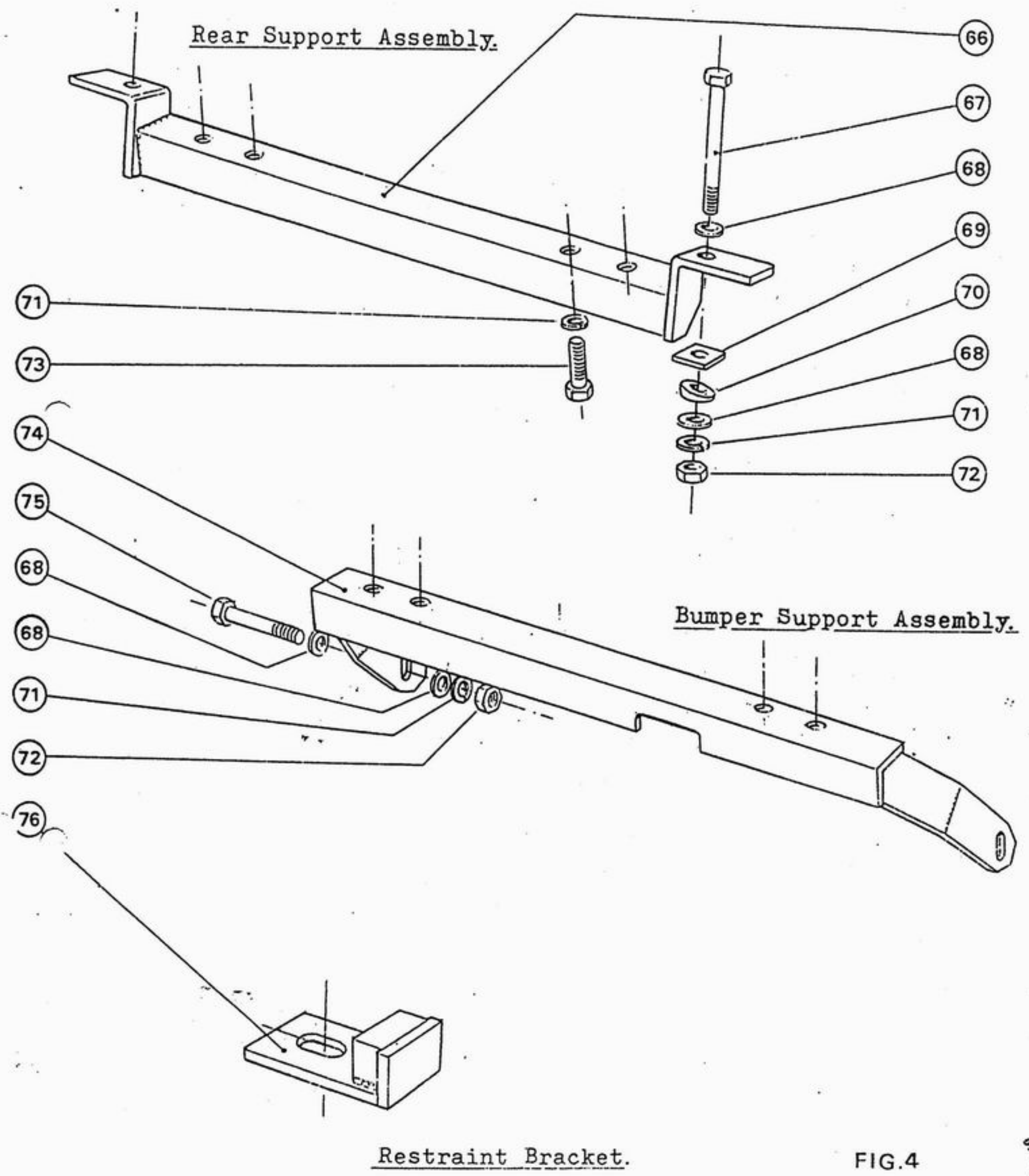


FIG.4



SERIES III LAND ROVER/675 DRUM WINCH FIXING KIT.

<u>Item</u> <u>Ref.</u>	<u>Description</u>	<u>FWL Part No.</u>	<u>Quantity</u>
66.	Rear Support Assembly	6837	1
67.	Bolt M10 x 140	4-33-1014012	2
68.	Washer (Plain)	4-50-1013	12
69.	Washer (Plate)	466	4
70.	Washer (Angle)	465	2
71.	Washer (Spring)	4-51-1013	8
72.	Nut M10	4-47-1013	8
73.	Bolt M10 x 25	4-33-1002512	4
74.	Bumper Support Assembly	6834	1
75.	Bolt M10 x 120	4-33-1012012	2
76	Restraint Bracket	280	1

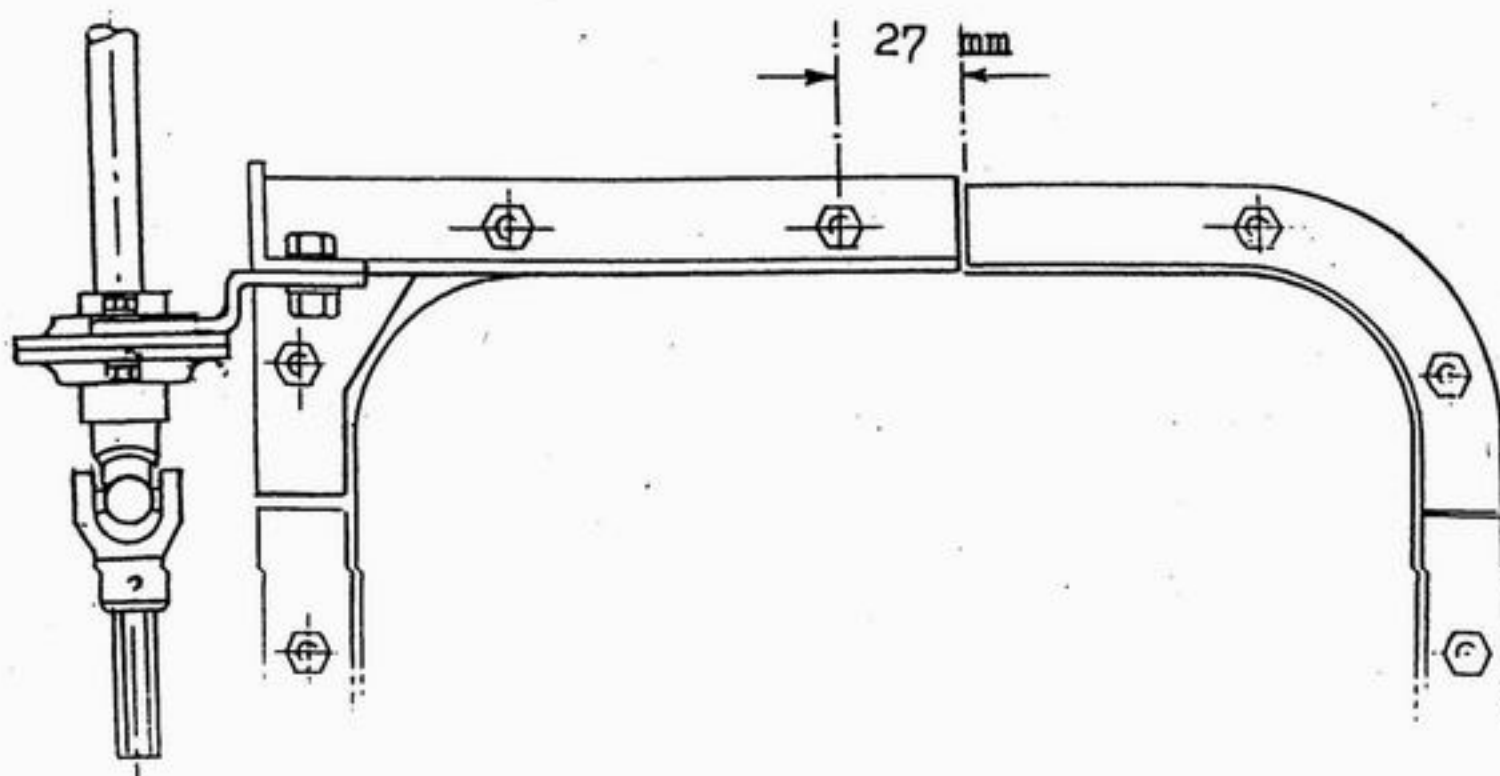
WHEN FITTING TO DIESEL LAND ROVER

Please Note on some diesel Land Rovers a noise reduction package (British Leyland Part No. E6670) is fitted.

If this winch was not ordered to fit a diesel Land Rover with the noise reduction package fitted, a bracket part number 5090-A2 will be required. Return bracket part No. 276 from kit and we will supply new bracket part number 5090-A2 Free of Charge.

FITTING INSTRUCTIONS

1. Remove nuts securing rear Keep Plate in position and remove Keep Plate.
2. Fit the bearing bracket in position using existing nuts. Do Not damage rubber joint washer. Tighten nuts 10 14 Nm (10 lb ft) torque.
3. Fit the bearing carrier bracket in position, ensuring adequate working clearances for the winch drive shaft at the gearbox, exhaust, chassis frame and front of the engine sump. Adjusting the bracket as necessary.
4. Cut the Keep Plate as in the sketch shown and refit using the existing fittings.



Sketch of Sump, viewed from below

675 WINCH AND 299 PTO FITTING INSTRUCTIONS

Mark out Bumper and drill 4 holes 12 mm dia, in top face only, as shown.

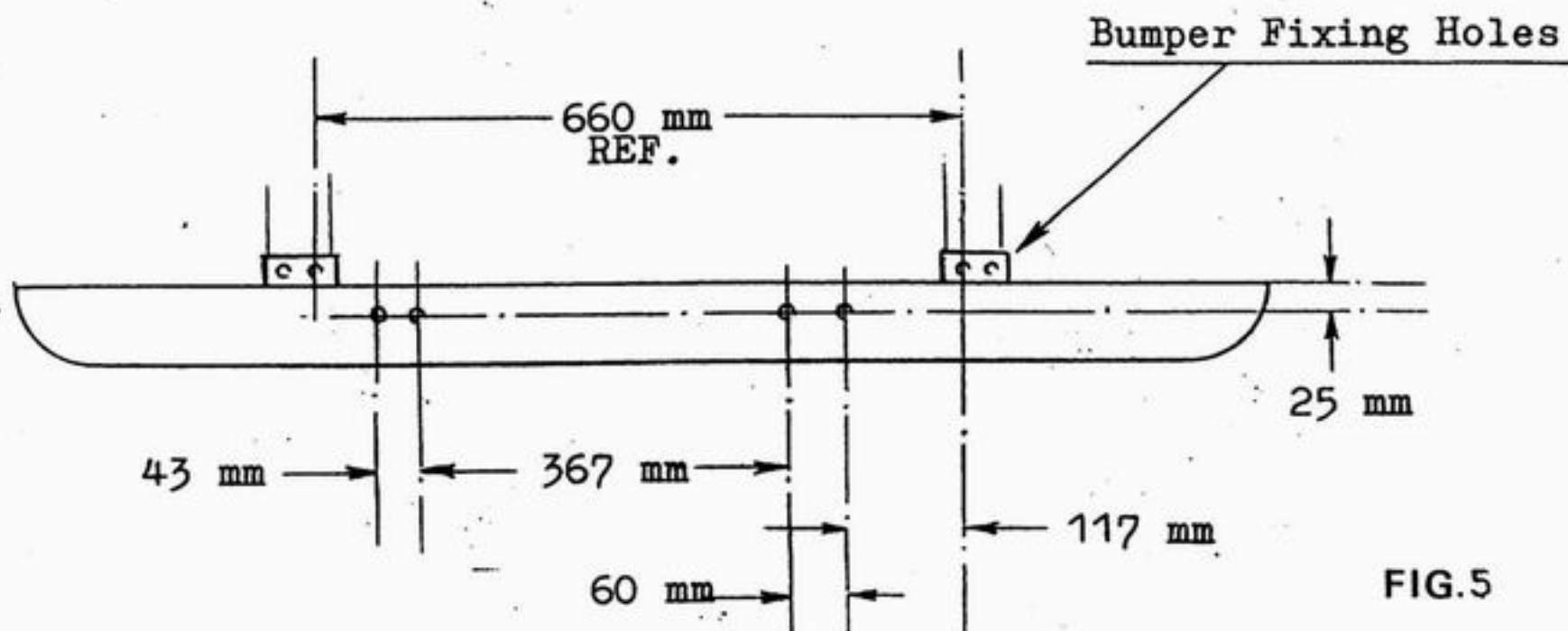


FIG.5

Remove Front Apron Panel if fitted.
Remove Nuts and Washers from Winch Front Mounting Bolts if fitted. Position Winch Assembly (with Rear Support Assembly fitted) as shown.

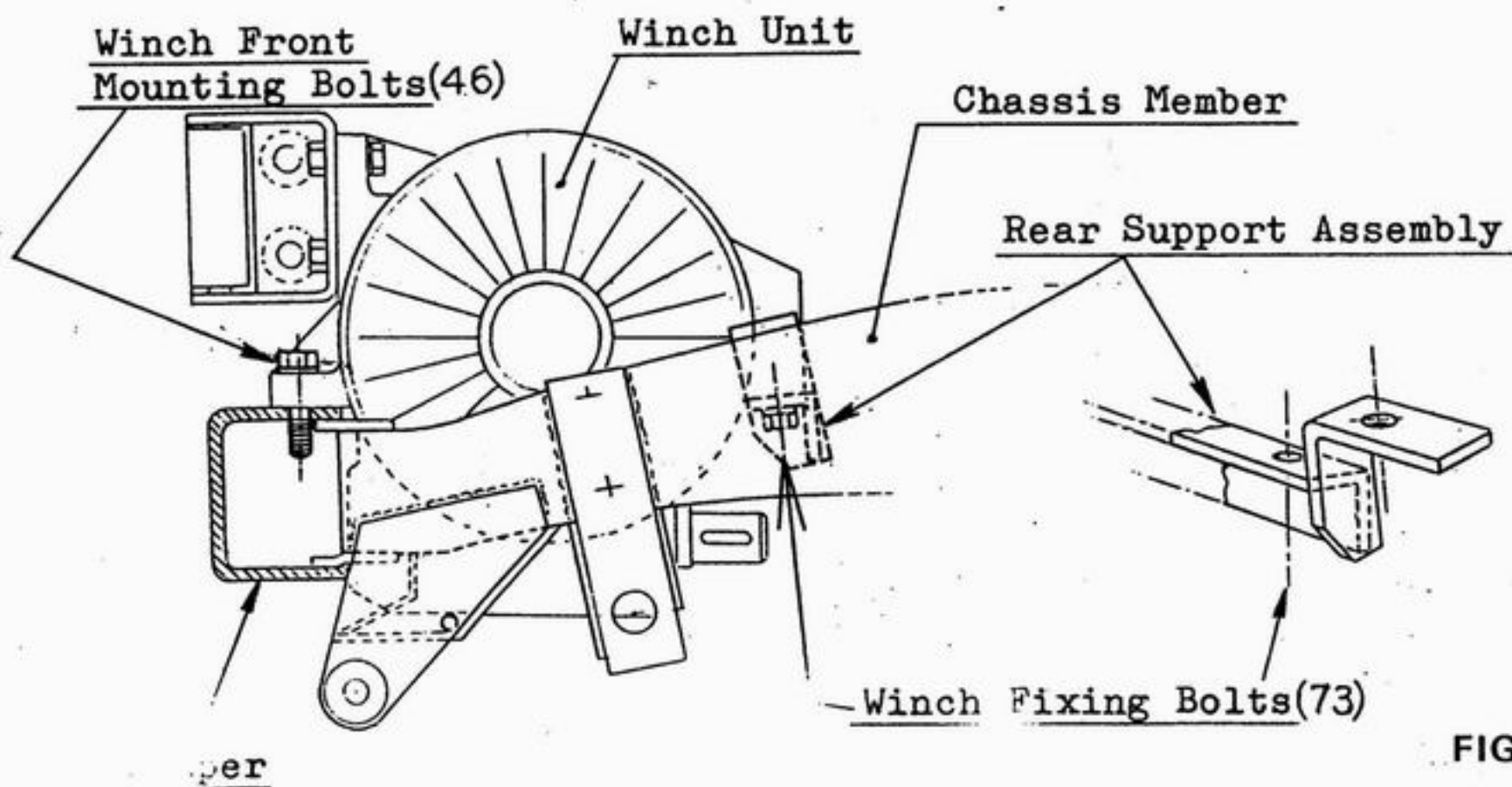
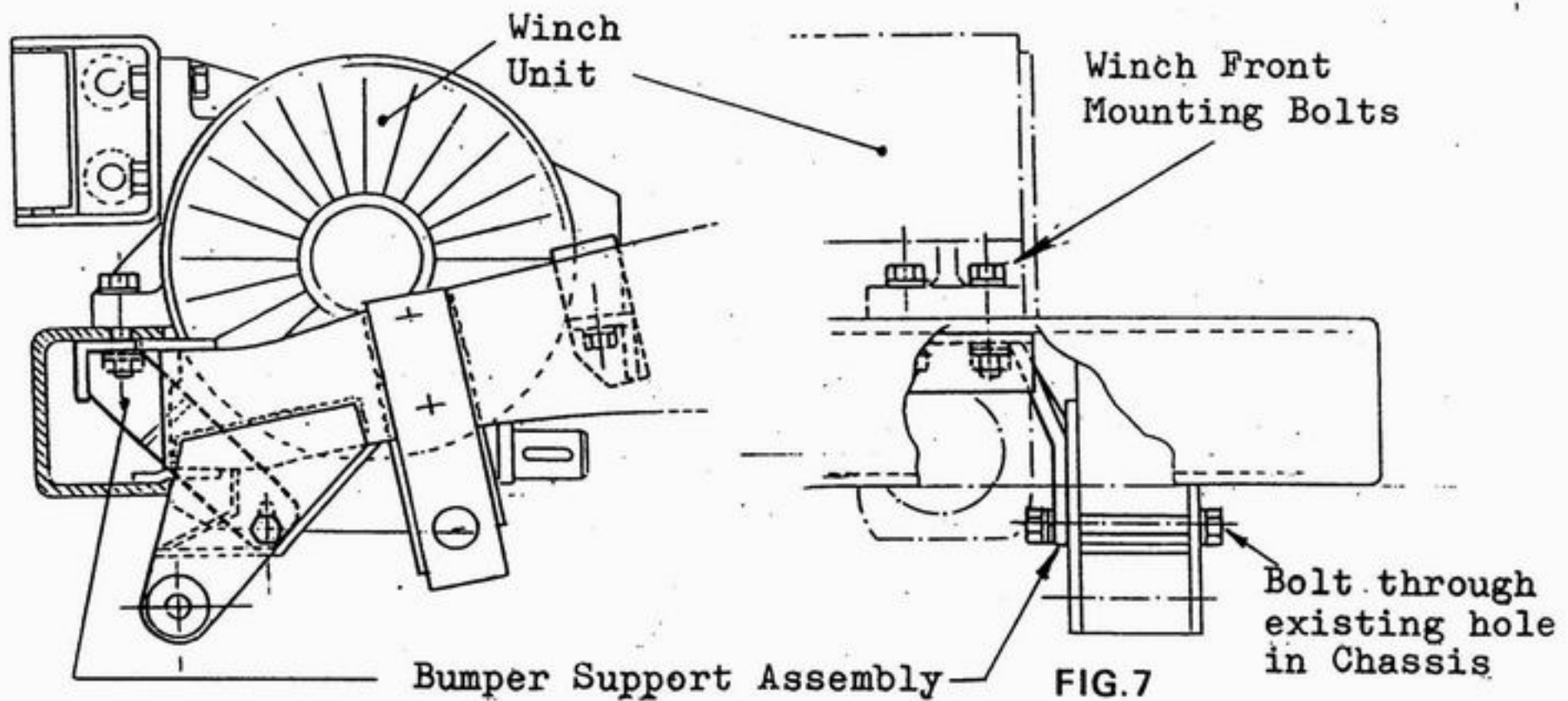
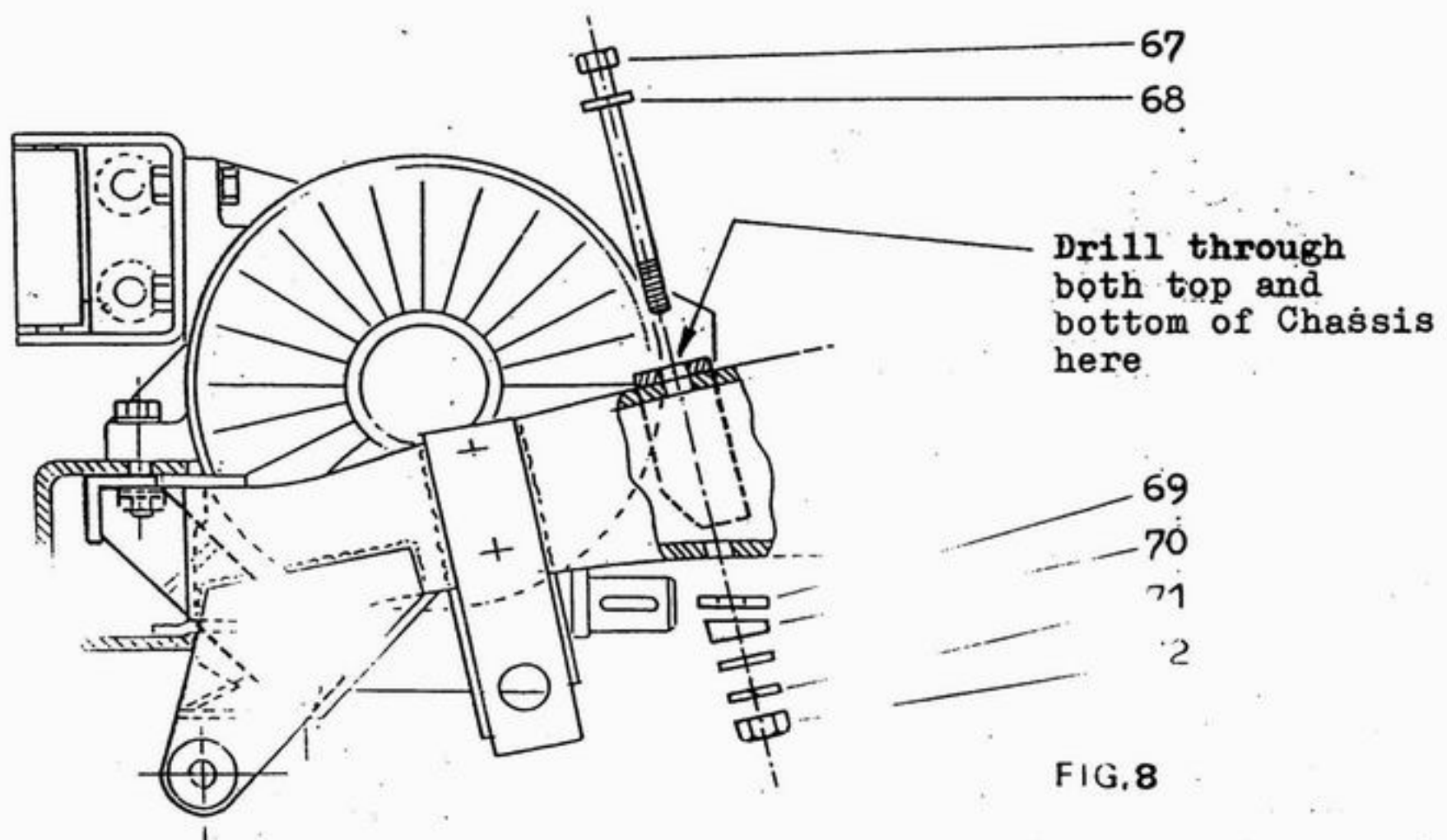


FIG.6

Fit Bumper Support Assembly to inside of Bumper and fit Nuts, Washers and Spring Washers to Winch Front Mounting Bolts. Fit M10 x 120 Bolts to Bumper Support Assembly Arms, through existing holes in Chassis and secure with Plate Washers 466, Plain Washers, Spring Washers and Nuts.



Drill 2 holes through both sides of Chassis Sides Member. 10.5 mm dia, square with the top face of Chassis Side Members making sure not to foul any welded Brackets etc on the underside of Chassis Members, using holes in Rear Support Assembly as Template. Fit 2 Bolts M10 x 140 through Rear Support Assembly and secure using Plate Washer, Angle Washer, Plain Washer, Spring Washer and Nut on both sides.



POWER TAKE OFF

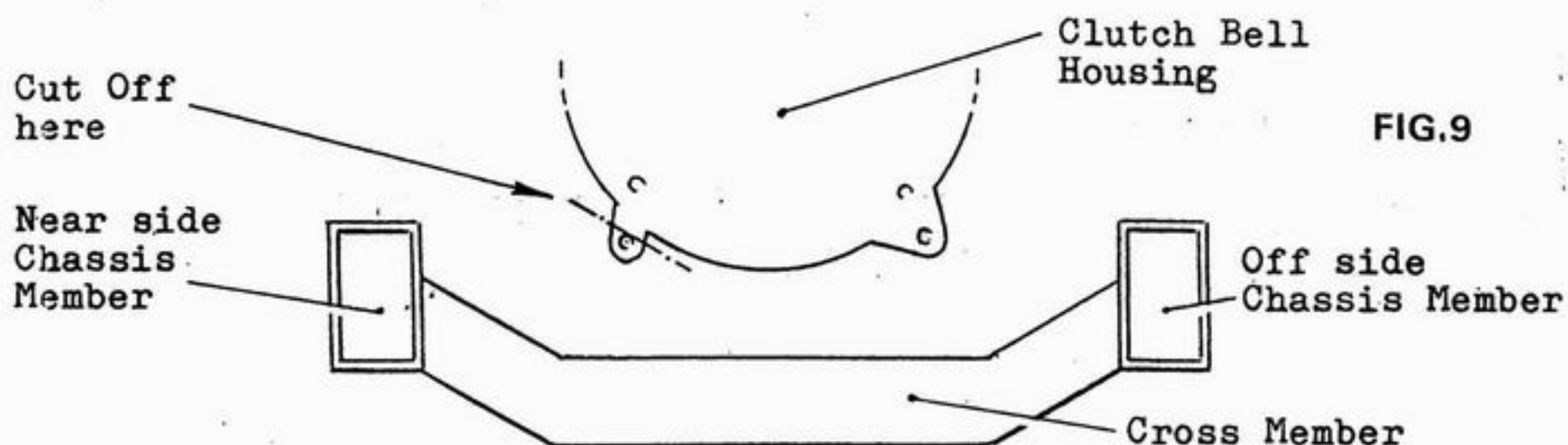
Rear mainshaft housing assembly (Rover part No. 230696) must be removed from the gearbox transfer case, retain nuts and spring washers. In the housing assembly are three components which must be transferred to the new PTO shaft (239) in sequence as shown in the exploded view, these are bearing 237 (Rover part No. 217478) retaining plate outer 238 (Rover part No. 217523) and circlip 236 (Rover Part No. 217525).

On your new Power Take Off chaincase (243) (already factory assembled) check that the dog clutch (235) is fitted with the relieved teeth outwards. Do not fit gasket (242) at this stage.

Locate PTO chaincase assembly (243) on to the six transfer case studs making sure that flat portion on the casting flange is line up with the top of the Rover transfer box casing, hold in position with one nut and tighten temporarily.

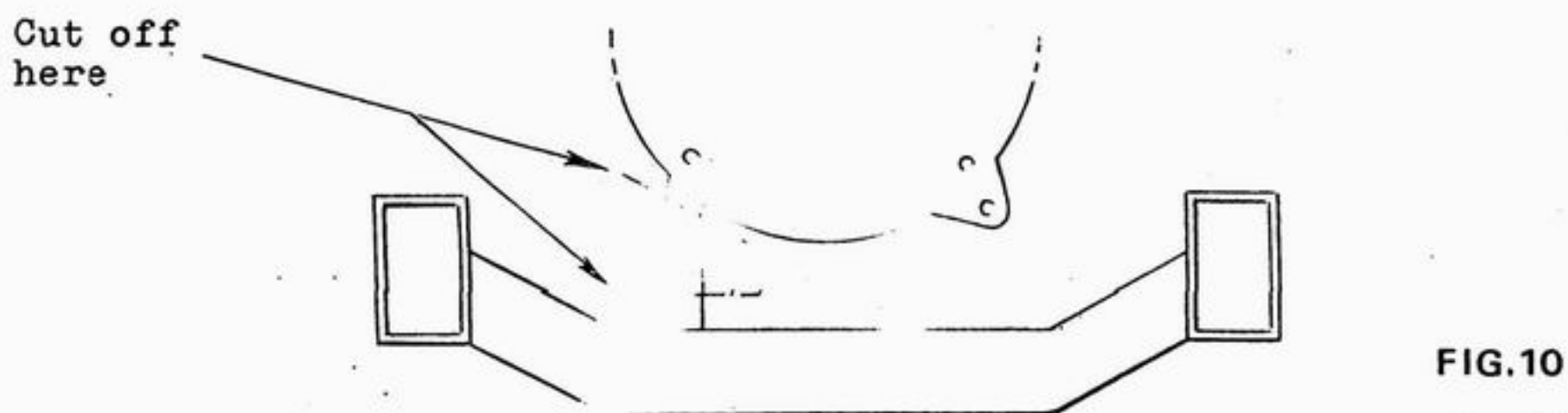
DRIVE SHAFT ASSEMBLY

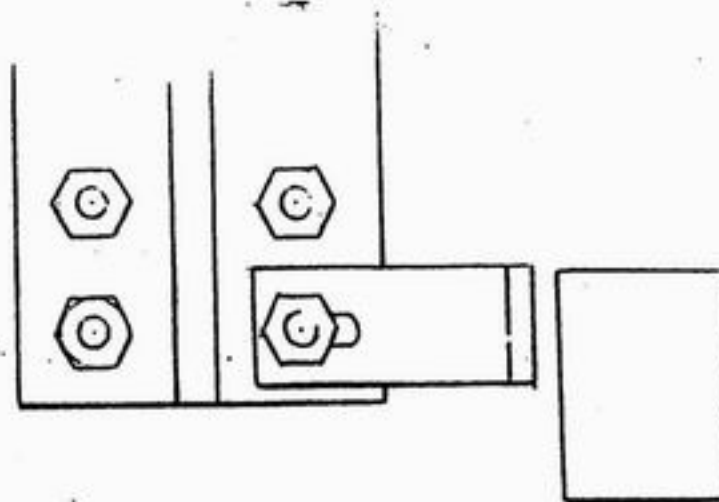
Cut off the lug on the rear of the clutch Bellhousing, this gives clearance for the PTO shafting.



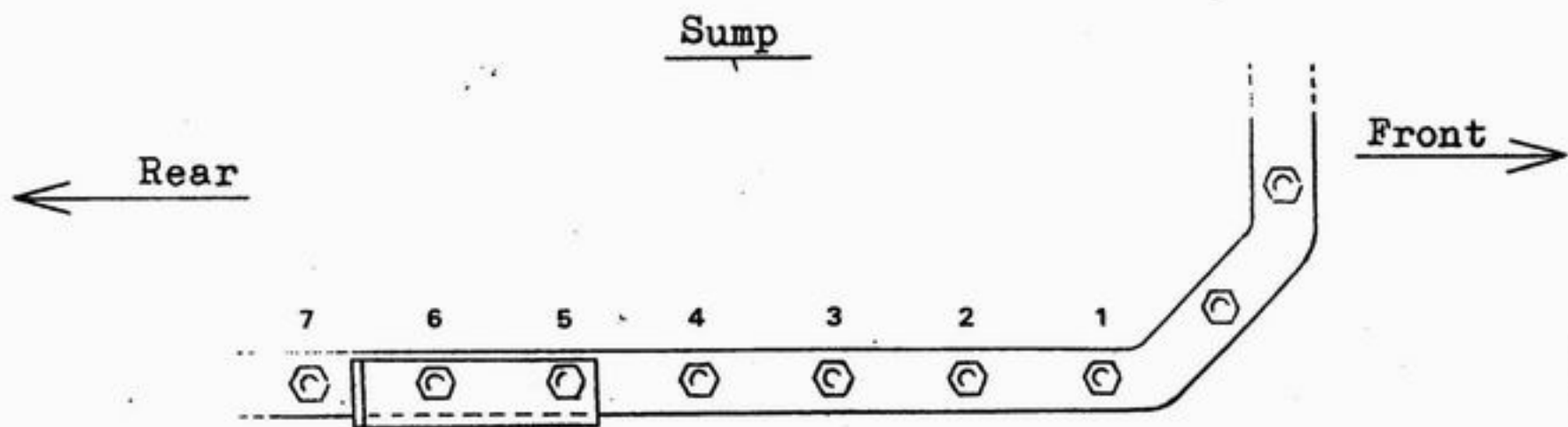
6-CYLINDER VEHICLE AND LATER MODEL LAND ROVERS

Your vehicle is fitted with a restraint tie rod; remove this and cut off both lugs supporting it. It is important that once the restraint tie rod has been removed, the Engine Restraint Bracket (280) is fitted immediately.



Engine BracketCross MemberNew Restraint Bracket

Remove sump bolts 5 & 6 on the nearside, also loosen the studs on the exhaust manifold flange, enabling you to move exhaust outwards for better working clearance. Position your bracket (276) on sump bolts 5 & 6 with bearing (284) and rearshaft (286) already assembled, passing shaft between cross member and clutch housing. Offer rear end of shaft to universal joint (244) on PTO box, allowing 1" depth of engagement. Cut shaft to length and reassemble by fitting rear end of shaft into universal joint (244). Secure bracket and bearing assembly using two $1\frac{1}{4}$ " long setscrews and washers supplied (160-162) in place of sump bolts 5 & 6.

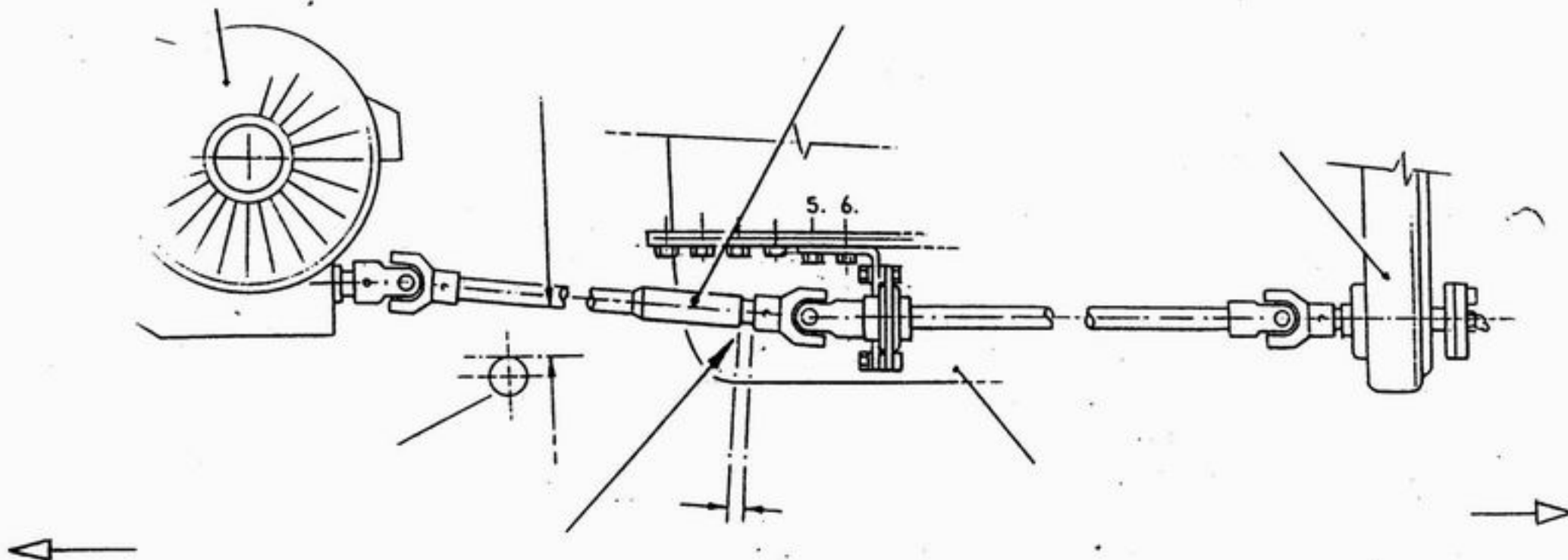
BracketViewed from below.

Now engage the female hexagon socket on front shaft (6939) onto the hexagon stub shaft (6854) (factory fitted to centre universal joint (6863)) until female socket is within approx $\frac{1}{2}$ " of universal joint (6863).

Maintain this position and offer end of shaft to universal joint (244) on winch assembly. Mark off to allow approx 1" depth to universal joint. Cut shaft to length.

NOTE: When fitting shafts to universal joints, make sure the shaft does not protrude too far beyond the joint centre. (Approx 1" engagement into U.J.)

Now remove the nut temporarily holding the PTO and remove PTO. Remove centre universal joint bracket from sump. Insert front shaft into Winch universal joint (277) with keys (128 and engage hexagon. Note: It is important that the universal joint yokes (244), (6863) and (277) are in line as shown. Rebolt centre universal joint bracket on sump and tighten.



Smear gasket (242) with grease and place on transfer-box.

Refit PTO - simultaneously engage rear shaft into universal joint (244) with keys (128, tighten all studs.)

The centre universal joint can now be adjusted in two directions for maximum clearance of shafting between the crossmember, clutch housing, rear and front engine-mounting. Also make sure to have at least $2\frac{3}{4}$ " of clearance between front axle and shaft.

Tighten all grub screws (245) in universal joints.

Drill one $\frac{1}{4}$ " dia. (19 mm.) hole through heelboard. Fit grommet (211) to hole. Remove cover plate on transfer box (Rover Part No. 217970) and joint (Rover Part No. 230140) - replace cork gasket with Part (216) supplied. Retain the cover plate for future use if you wish.

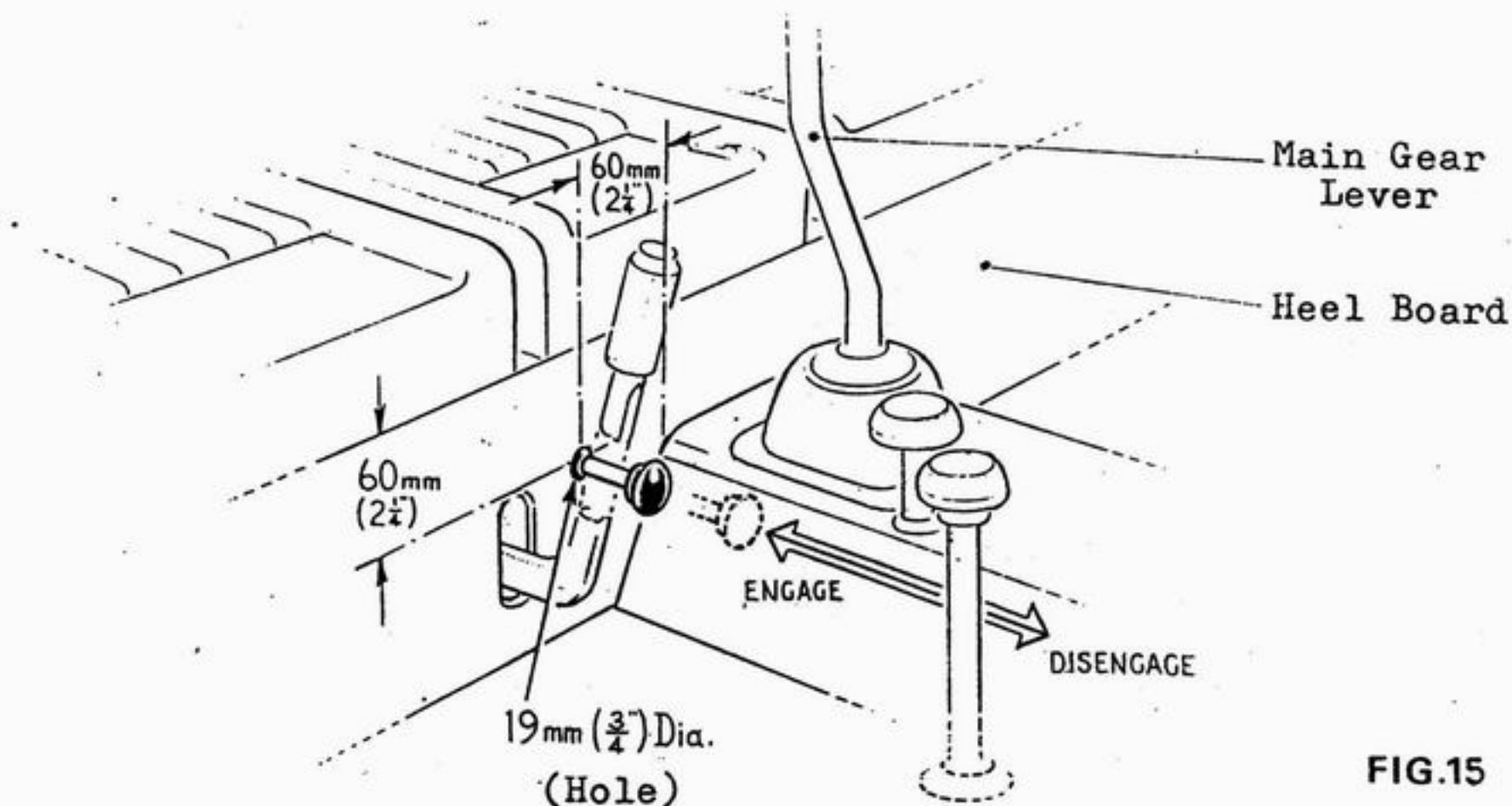


FIG.15

SELECTOR

To install selector assembly part (215) to the top of the vehicle transfer case. Engage dog-clutch (235) in transfer box by pushing forward towards engine. Push selector fork in selector housing (215) into "engage" position. Push link rod (212) through grommet (211) and place selector assembly on transfer box, making sure that selector fork (218) engages in dog-clutch groove (235). Tighten nuts on selector assembly. Screw-nut (213) and control knob (214) onto link-rod (212) and tighten.

NOTE:

"Engage" Position - You should not be able to turn PTO shaft collar (229) by hand. (Selector mates correctly with dog-clutch groove).

"Disengage" position - Shaft collar (229) can be moved by hand.

To fit Shear-Pin

Line up hole in inner shaft (249) with slot in Outer Shaft (252) push in shear-pin and retain with clip.

Fill Winch and PTO units with oil - see page

It is now advisable to run the power take off and shafting to check for correct functioning. But first disengage the Winch Operating Lever by pushing towards centre of vehicle - this disconnects the drum from the "input" drive.

NOTE:

Normally the Winch Operating Lever is left in the "engage" position to prevent accidental spillage of rope when winching on.

LUBRICATION

Fill winch wormbox to level plug with Esso GX90/140 or equivalent. Fill PTO to level plug with EP90 Oil. Lubricate Grease Nipples using Lithium Based EP Grease.

SERVICING

Change the oil in the worm box every 100 hours winching or annually whichever is the sooner. Drain and refill the PTO whenever the Transfer Box oil is changed or annually whichever is the sooner.

Lubricate Grease Nipples every 20 hours winching or 3 monthly whichever is the sooner.

IMPORTANT

RUNNING IN PROCEDURE

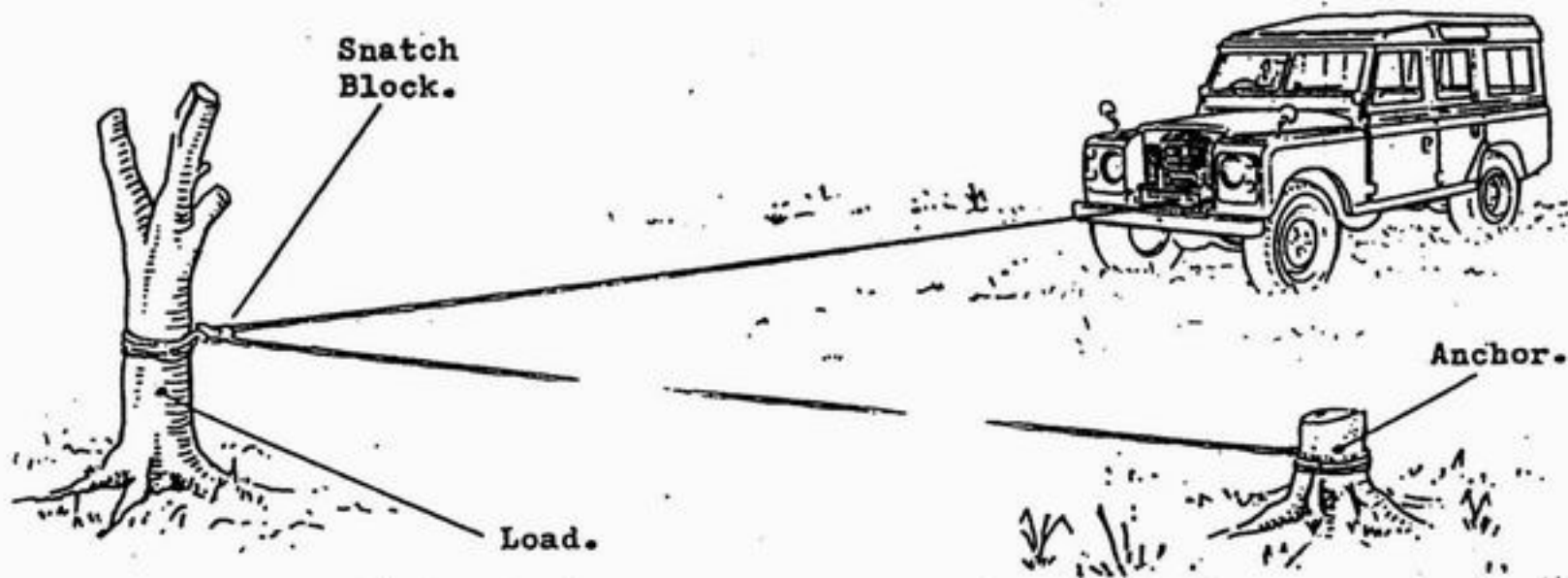
The Drum Winch is fitted with a precision worm and worm wheel set. Extra time spent on running in is well repaid by a more efficient and reliable winch.

Your Drum winch must NEVER be used to pull heavy loads until it has been run in as below.

Run the winch with no load or very light load for 1 - 2 hours

GRADUALLY increase load up to maximum over a period of 2-4 hours. (The longer the better.) Drain worm box and refill with fresh oil.

NOTE: Should you require greater pulling than the winch rating, this can be obtained with the use of a snatch block. Fix the snatch block to the load, pass winch rope through the snatch block pulley and preferably fix the end of rope to a tree or some similar good anchor.



OPERATING INSTRUCTIONS:

The winch is operated from the driver's seat through the normal vehicle controls. It can be used either for vehicle self-recovery or, suitably anchored, for most forms of hauling. The self recovery function is carried out by following the instruction given below with the exception of anchorage procedure.

VEHICLE POSITIONING FOR HAULING:

Depending on the load being pulled, the vehicle's static position can be maintained by use of one or a combination of hand and foot brake and ground anchors. Also, when positioning the vehicle for hauling, use should be made of kerbs, ground depressions etc., to restrict forward movement. As far as possible point the vehicle directly at the load; this will allow the cable to pay on evenly. When using Ground Anchors these should be adjusted to suit the ground conditions and placed up to the front wheels, the vehicle is then run on and the anti-rotation chains linked over the bumper adjacent to the chassis. Check the anchors are biting evenly when applying initial load.

WINCH ENGAGEMENT:

The cable is normally stowed by hooking into Winch frame or bumper and it is therefore important to remember, before running the Winch, that the drive must be in reverse to free the hook.

Put main and transfer box gear lever (red knob) into neutral position.

Check Shear-Pin is engaged (see shear-pin instructions below).

Engaging Power Take-Off Drive:

The Black PTO knob should be pushed in towards the heelboard.

Winch drive is now available by using clutch, main gear lever and throttle in normal manner. Engage REVERSE and free hook, RE-engage neutral.

Move to front of vehicle and "disengage".

To enable the rope to be freely pulled off the Drum, move the Winch Operating Lever on the Winch towards the centre of the vehicle into the "disengage" position. The rope can now be pulled out to the load.

Secure cable to load.

Engage Winch Operating Lever.

If lever does not engage, turn drum by hand whilst pushing lever in the engaged direction, this will line-up the clutch dog.

CONCLUSION

For normal purposes top gear should be used, speed control being obtained by the throttle. If Anchors are not used, reasonable load can be sustained on the foot and hand brake, it is of considerable advantage in these circumstances to have

a standard Rover hand throttle fitted to allow normal clutch and foot brake operation. Lower gears and reverse can be used for inching purposes and easing off. The clutch can be used to control hauling. The worm gearing is fully self-sustaining and the load is retained with clutch pedal depressed.

OVERLOAD PROTECTION and USE OF PTO WITHOUT WINCH:

Shear-pins are supplied to suit cable sizes. In the event of overload this will shear, the load already applied will be sustained. To replace Shear-pins PUT MAIN GEAR LEVER INTO NEUTRAL, remove the centre seat base to obtain access to the PTO clutch assembly, lift and turn Shear-pin retainer and remove broken part of Shear-pin from flange. Turn inside flange by hand to line up Shear-pin hole and slot, insert new Shear-pin and replace retainer. The load should then be let off in reverse before attempting to take up afresh.

SHEAR-PIN SIZES:-

Rope dia.	Recommended Shear Pin dia.	Max line pull (Bottom Layer)	Max length of Rope on Drum
11 mm. (7/16")	0.185"	7,400 lbf	45 m. (150 ft)
9 mm. (3/8")	0.160"	6,000 lbf	75 m. (250 ft)
8 mm (5/16")	0.130"	3,800 lbf	100 m. (330 ft)

When Rear PTO facility is required, the Winch is disengaged by withdrawing the Shear-pin.

PROCEDURE AFTER WINCHING:

When winching is completed, run the cable back on to drum, and when about two feet only remain, engage bottom gear and carefully stow hook into lug on Winch frame or into back of bumper. Lightly tighten up to ensure it does not slip free when on the move. Then, IMPORTANT -

Pull the PTO control knob OUT,

Remove Shear-pin,

Engage the transfer gear required.

MAINTENANCE:

Correct lubrication of the worm gearing is vitally important for trouble-free operation. (See paragraph on lubrication).

In the event of spares being required you must quote Winch serial number, and part numbers from attached part sheet.

FW Engineering Limited
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