

# SLIDE BED TRANSPORTER

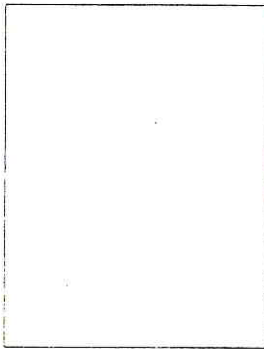


**BONIFACE**

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# SLIDE BED TRANSPORTER

*This Slide Bed Transporter was built by the team led by:*



*Tested by* \_\_\_\_\_

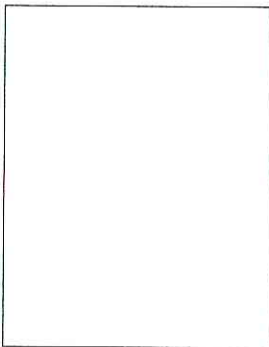
UNIT NUMBER		
DATE OF MANUFACTURE		
BED LOAD		
BED STRUCTURE	ALUMINIUM	STEEL
SECOND CAR LIFT	FITTED	NOT FITTED
SECOND CAR LIFT LOAD		
WINCH DETAIL		
REMOTE WINCH CONTROL		

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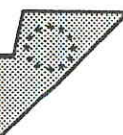
# SLIDE BED TRANSPORTER

UNIT NUMBER	
DATE OF MANUFACTURE	
MOUNTED ON (VEHICLE)	
STEEL/ALUMINIUM	
BED LOAD CAPACITY	
SECOND CAR LIFT	
LIFT CAPACITY	
MAKE OF WINCH	
WINCH CAPACITY	
REMOTE WINCH CONTROL	
OTHER VARIATIONS	

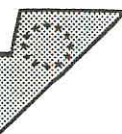


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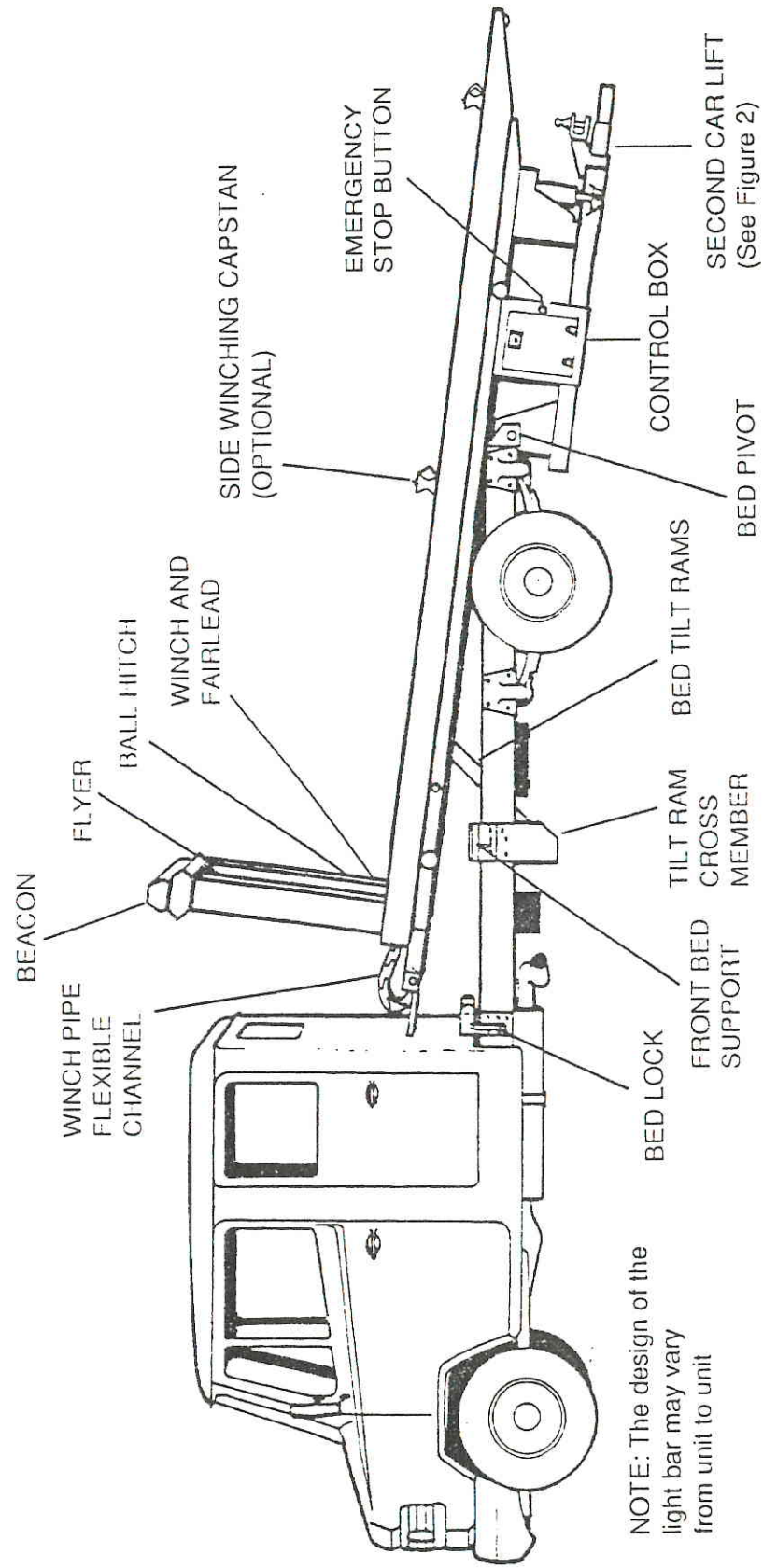


Figure 1 - The Slide Bed Transporter



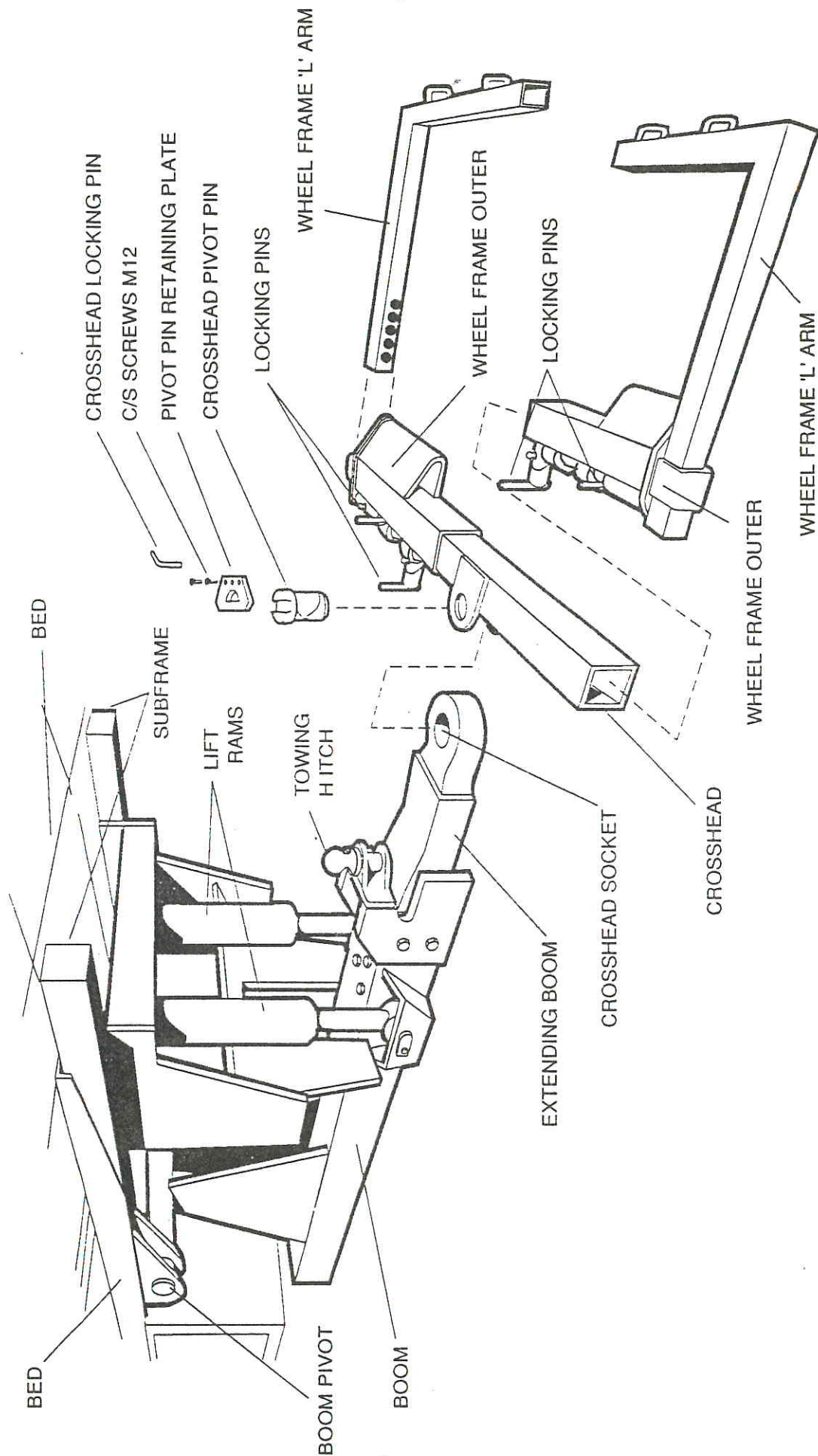


Figure 2 - The Second Car Lift

**PREFACE**

1. This book is written to cover the technical details of the Boniface Slide Bed Recovery Unit, and failure to pay regard to the instructions, suggestions and warnings in it may invalidate the maker's warranty. The book cannot, however be authoritative about the vehicles upon which the unit may be fitted, and so it is essential also to refer to the vehicle manufacturer's handbook.

2. The unit complies with all the requirements of the European Machinery Directive. Appendix 1 of this book quotes the weights and dimensions and other relevant details of the unmounted unit.

3. This recovery unit has been designed for use in all normal vehicle recovery situations, i.e. transporting a vehicle, winch hauling, and suspend towing. There are a number of versions available, carrying loads from 2 tonnes on the bed to 12 tonnes, with two versions of the second car underlift unit (optional) which can lift 2 tonnes or 4 tonnes at full extension. See Figure 4 for further details. In every case the transporter bed must be matched to the host chassis. This is assured if the unit is mounted by Boniface Engineering Ltd, but for a kit-form unit consult the company to verify that the unit and its host vehicle are suitably matched.

4. This book covers the variations of build which may be encountered. In some cases the book covers items which may not be fitted to your particular unit. Please ignore such information. The variations which normally occur are:

- a) Steel bed (max 12 tonnes) or aluminium bed (max 6 tonnes).
- b) Second car underlift unit. (2 tonnes or 4 tonnes)
- c) Hydraulic or electric winch.
- d) Side legs and high level fairleads.
- e) Self-acting tail gate or flaps.
- f) Hand throttle.
- g) Rave-mounted capstans.
- h) Bed-end fairlead.

Boniface Engineering also undertake to fit a number of accessories in the way of fittings, lockers, lamps etc. which will not be covered specifically in this book.

5. The hydraulic power is provided by a pump run from the vehicle's Power Take Off (PTO), and the controls take the form of levers which operate hydraulic valves directly behind the control box. Electrical power is drawn from the host chassis. A remote winch control can be fitted as an option, but in that case a pneumatic system is required, air for which will also be drawn from the host chassis.

**6. PLEASE NOTE: ALWAYS REFER TO THIS HANDBOOK.**

If the instructions or suggestions in this book are ignored, then that could invalidate the maker's warranty. This book is written to cover the technical details of the recovery unit, and cannot be regarded as authoritative about the vehicle upon which it is fitted. If in doubt, refer to the vehicle manufacturer's published information. Nor is this book intended to be a comprehensive guide to recovery operations, although certain recovery operations are described in order to explain how to use the unit. Each recovery operation is a separate problem and should be treated accordingly.



**PREFACE (Continued)**

7. **IMPORTANT NOTE:** The European Machinery Directive covers the design and use of all forms of machinery, and requires all machinery to be safe to use in all normal circumstances. There is also an obligation on the user of the machinery to keep it in good working order. It is therefore a legal requirement for users to maintain their equipment, to use only approved spare parts when effecting a repair, and not to modify the equipment in any way without first checking with the manufacturer.

8. This book applies to a recovery unit which has been properly mounted on a chassis by Boniface Engineering Ltd. When the unit is supplied for self mounting a separate set of instructions for mounting and testing will be supplied.

9. When using this equipment, due regard must be paid to published Codes of Practice, British Standards and legislation affecting recovery operations. Nothing contained in this book is intended to countermand any such regulations.

10. When taking the delivery of a new Slide Bed unit, Boniface Engineering will undertake a comprehensive hand-over which includes a short course of instructions on how to use the unit. However that is not intended to cover all aspects of recovery, and if the intended operator of the unit has not been adequately trained, it is essential that the operator should enrol on a properly approved training course for light vehicle recovery.

**SAFETY PRECAUTIONS.**

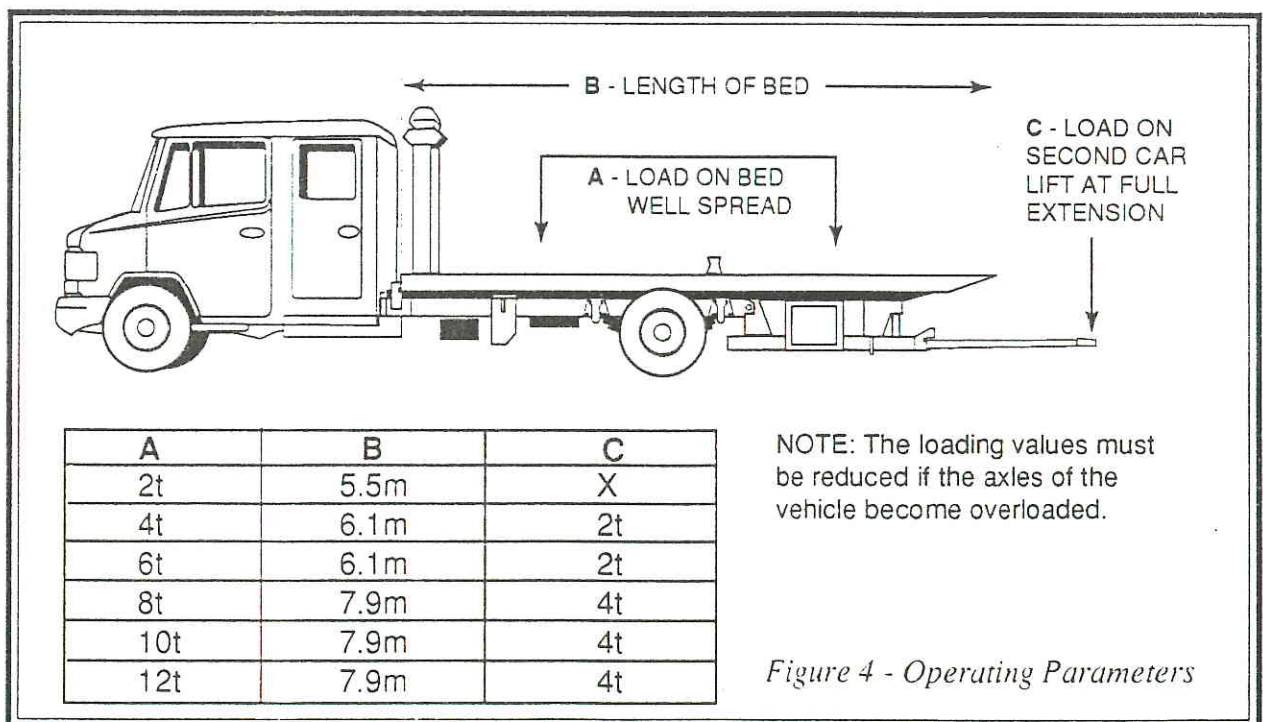
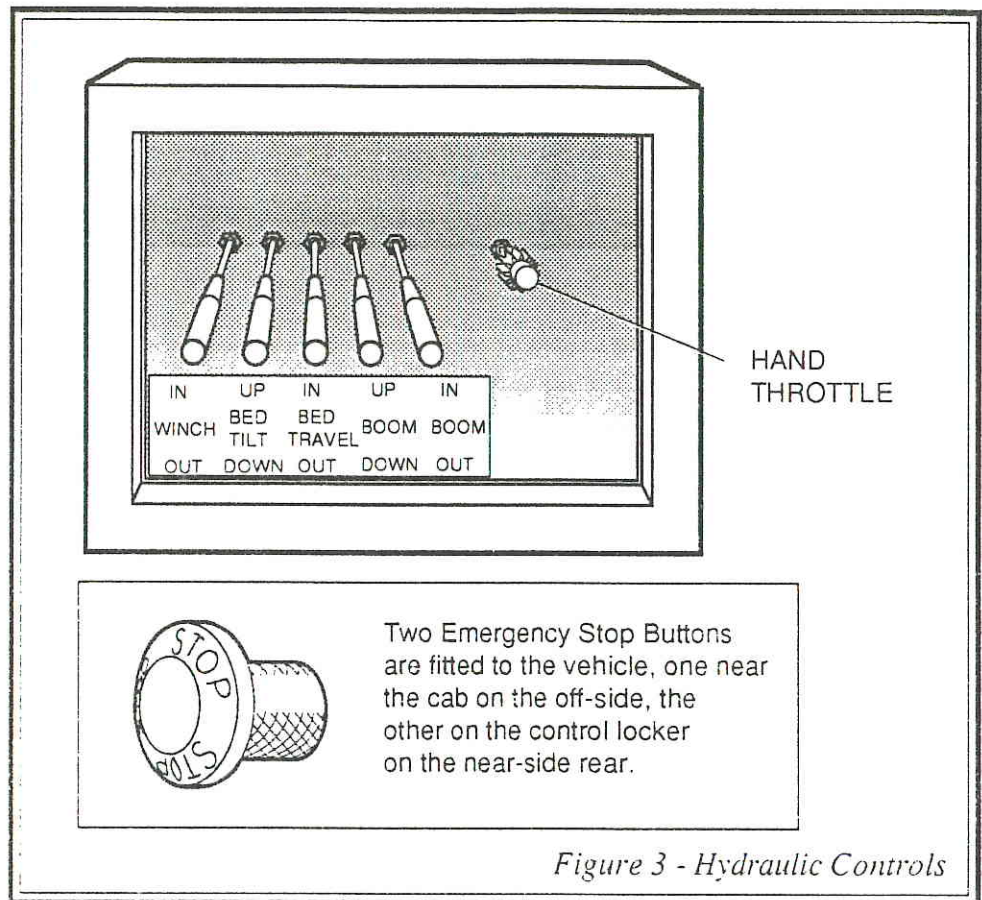
THE PROCEDURES DESCRIBED IN THIS BOOK HAVE BEEN WRITTEN WITH SAFETY IN MIND. ASPECTS OF PERSONAL SAFETY AND USE OF THE MACHINE SO AS NOT TO CAUSE DAMAGE ARE DEALT WITH AT THE RELEVANT PLACE IN THE TEXT.

GENERAL SAFETY PRECAUTIONS ARE INCLUDED AS APPENDIX 2 OF THIS BOOK, AND A COPY OF THE RECOVERY INDUSTRY'S CODE OF PRACTISE FOR WORKING AT THE ROADSIDE IS GIVEN IN APPENDIX 3.

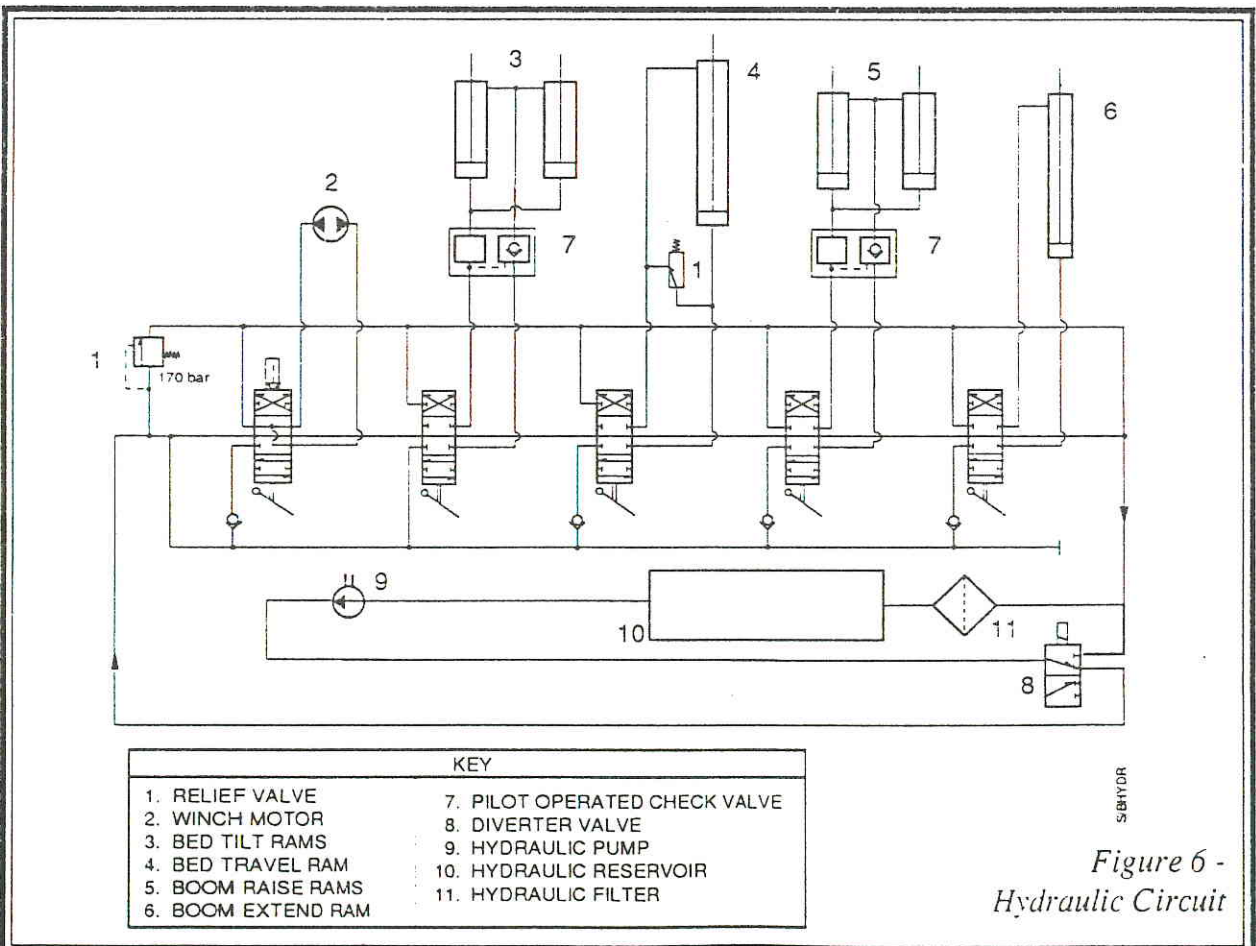
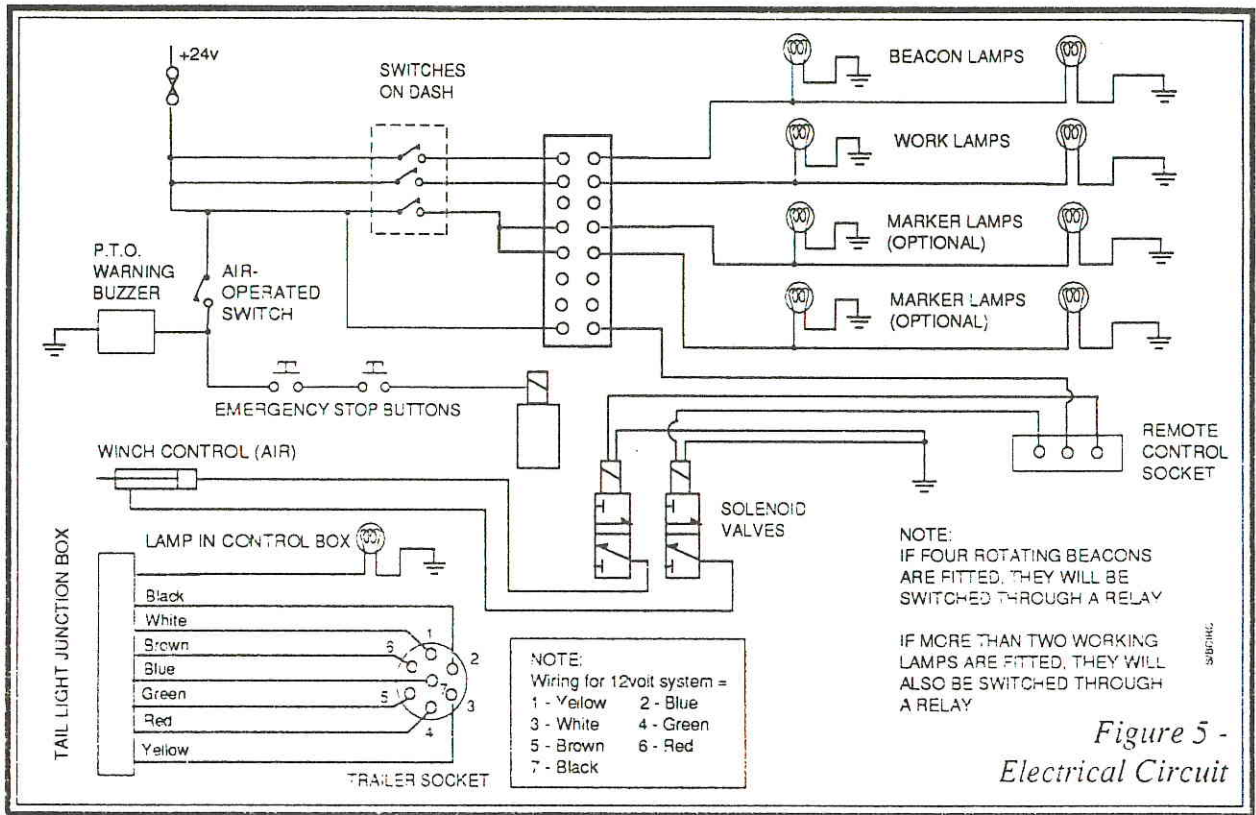
**IT IS IMPERATIVE THAT ALL RECOVERY PERSONNEL SHOULD PAY DUE REGARD TO THAT INFORMATION.**







## GENERAL





**OPERATION****1. INTRODUCTION**

Assuming that the recovery vehicle is in its normal travelling position, i.e. the bed is flat on the chassis and locked fully forward, and the second car lift boom is fully retracted. Park the recovery vehicle directly in front or directly behind the casualty (as suitable), no closer than 13 feet (6.1m), from the vehicle, (more if a self-acting tail gate is fitted). Ensure that the hand brake of the recovery vehicle is on.

**2. LOADING A CASUALTY ON FLAT GROUND**

a. Depress the clutch, engage the Power Take-Off (PTO) and release the clutch. NOTE: The engine revs should be just above idle, at about 800 rpm.

a. Using the 'BED TRAVEL' control lever, move the bed out of the bed lock. This is achieved when the indicator arrow on the bed is in line with the arrow on the control locker.

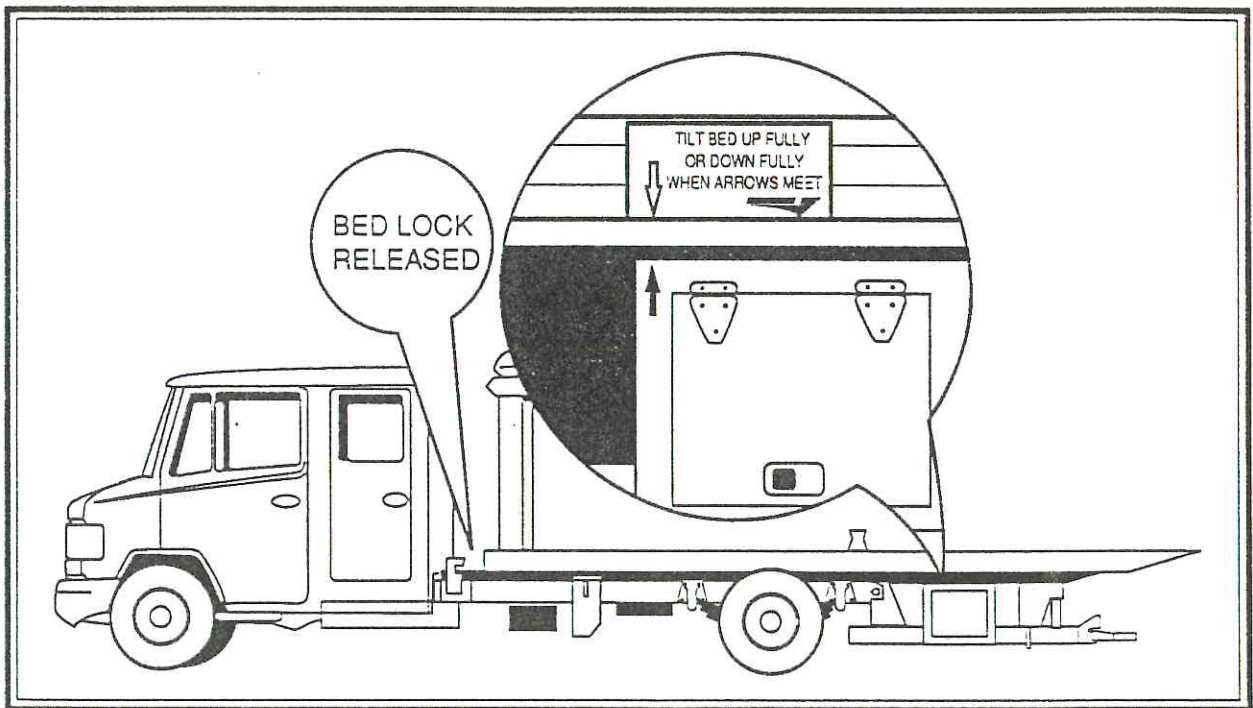


Figure 7 - Releasing The Bed Lock

b. Using the 'BED TILT' control lever, raise the bed fully.

c. Using the 'BED TRAVEL' lever slide the bed out to its fullest extent where the tail wheels of the bed should touch the ground. At this point the support foot, or the foot of the second car lift should be just clear of the ground. If the tail wheels do not ground at or just short of full extension, proceed as described in Para 3. **LOADING ON SLOPING OR ROUGH GROUND.**

**WARNING 1:** Ensure everyone is clear of the bed as this operation takes place. Hands, feet or clothing could get caught up in the mechanism as it moves.

**WARNING 2:** When moving the bed in or out, ensure that the winch hoses in their flexible track are able to pay out freely, and no loose gear like ropes or covers etc. hinder the travel.

d. Unhook the winch cable and with the winch clutch disengaged, pay out the cable until it can reach the casualty. Alternatively the cable can be run out under power as long as there is someone to keep some tension on it as it pays out. When using the optional remote control the operator may be able to do this alone.



## OPERATION

2. LOADING A CASUALTY ON FLAT GROUND (Continued)

e. Attach the winch cable to a suitable towing point on the casualty vehicle.

WARNING: It has been known for towing eyes to come off during winching and towing operations. Approved training bodies recommend using chains or webbing straps around an axle or strong part of the suspension for hauling on.

f. Partially release the hand-brake of the casualty, otherwise even on gently sloping ground the casualty might roll unexpectedly.

g. Winch the casualty carefully aboard the slide bed unit, ensuring that it sits centrally on the bed, and as far forward as is practicable.

h. Fully apply the hand-brake, and if there is any suggestion that the handbrake is unreliable, chock the wheels of the casualty against movement forwards and backwards with blocks of wood.

i. Lash the casualty to the bed using the four ratchet straps provided- one on each corner of the vehicle (See Figure 8). The wooden chocks (if used) can now be stowed away.

j. Using the 'BED TRAVEL' control lever, draw the bed in until the arrow on the bed lines up with the arrow on the control box.

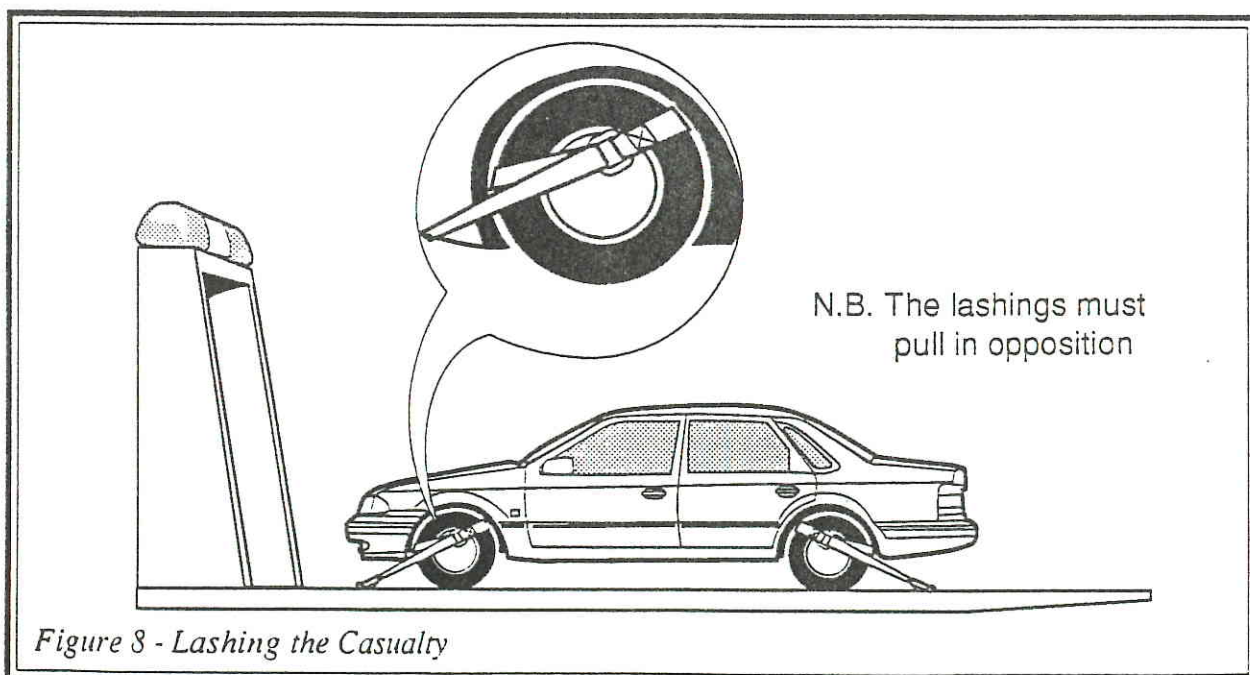
k. Lower the bed fully.

l. Draw the bed finally in so that the bed lock engages.

NOTE 1. Lashings can work loose with vibration. After travelling about half a mile, the operator should stop and check the lashing straps. Tighten if necessary.

NOTE 2. The straps must be in a serviceable condition. If they are worn, frayed or contaminated with hydraulic oil or battery acid they must be replaced.

WARNING: Never rely on two lashings at the rear and only the winch rope as a forward lashing. Winches can creep and so the rope will come loose. Secure lashings fore and aft are required.



## OPERATION

3. LOADING A CASUALTY ON SLOPING OR ROUGH GROUND

The procedure for loading a casualty when the ground is uneven or not level is the same as previously described, with additional points to note:

A. Use of the handbrake (or chocks in front of the wheels - See Operation 2.h) is more important when working on a slope. The winch rope *should* prevent the casualty from running back, but as the bed is lowered it could run forwards and hit the flyer or crash bar.

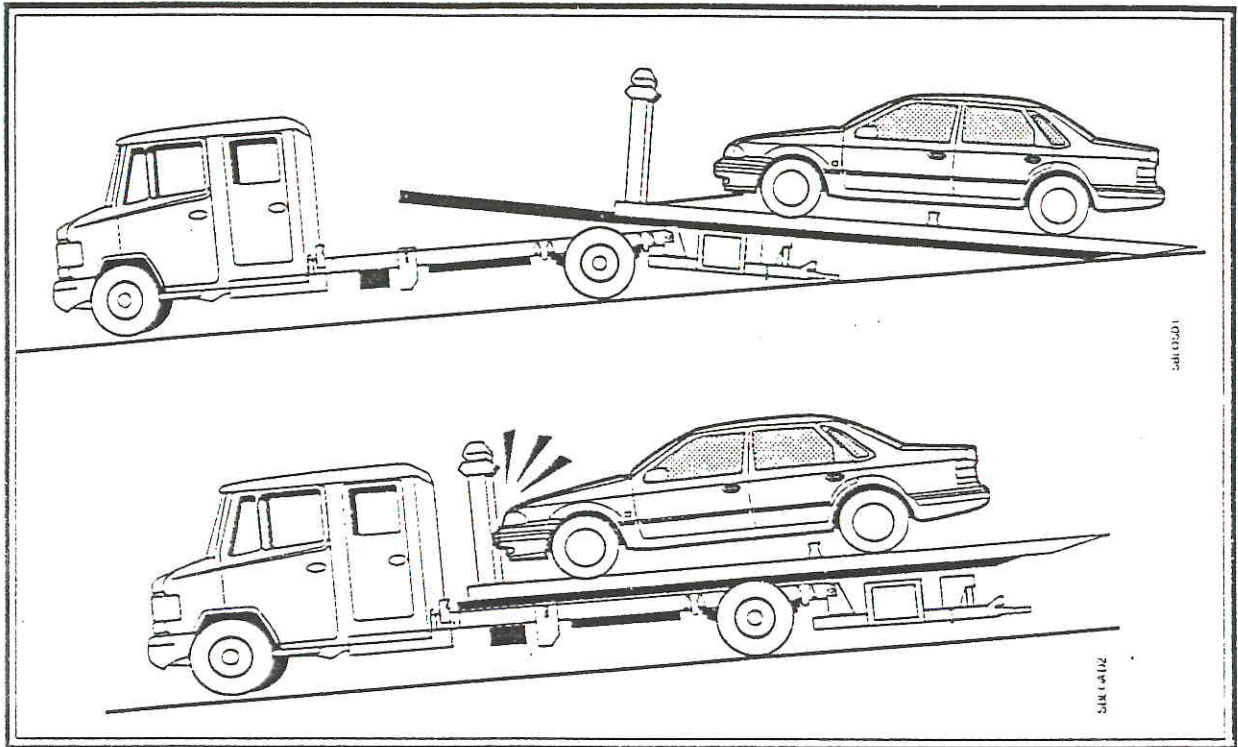


Figure 9 - Apply the Handbrake!

B. If the recovery vehicle is at the bottom of a slope, as the bed is extended the tail could touch the ground when it is not fully extended. By lowering the bed a short way with the 'TILT' control, it will be possible to extend the bed further. The best loading angle is when the bed is extended fully, and that will be achieved by using the 'TILT' and 'EXTEND' controls in combination.

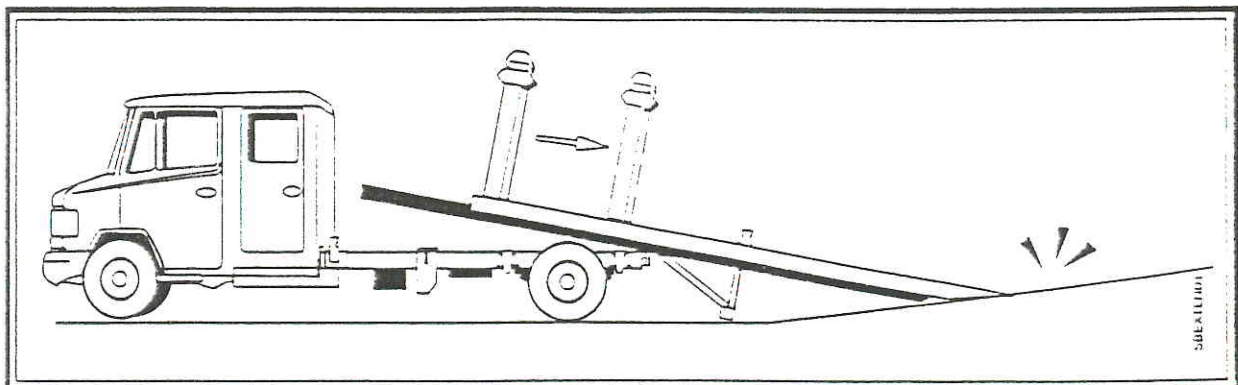


Figure 10 - On Rising Ground



### 3. LOADING A CASUALTY ON SLOPING OR ROUGH GROUND (Continued)

D. If the recovery vehicle is on the crest of a hill, it is possible that the bed will not touch the ground at all. The only solution is to move the recovery vehicle to a more suitable position.

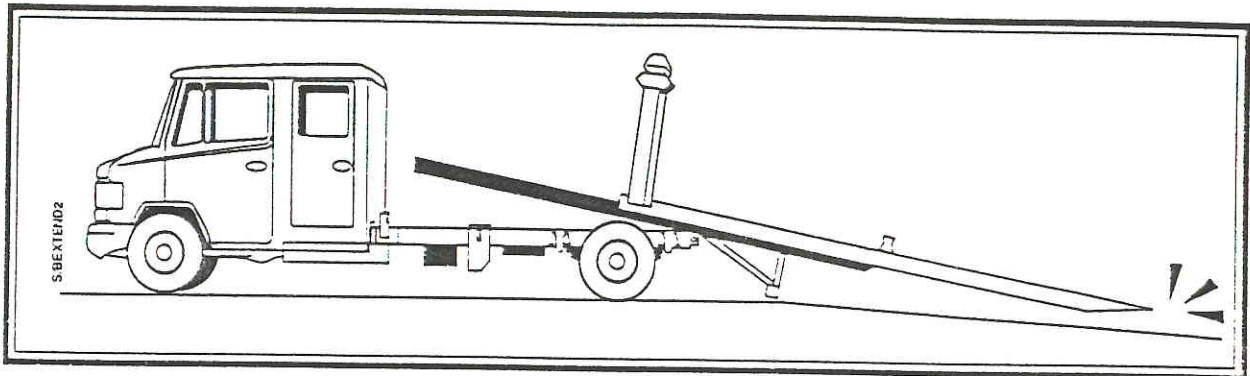


Figure 11 - On Falling Ground

C. When extending the bed on uneven ground, it is possible for the second car lift or the support foot (whichever is fitted) to hit the ground before the bed does. If so stop the bed, and do not drive the second car lift or support leg into the surface. In this case the solution is to move the recovery vehicle a few metres to find a more suitable position.

E. Whenever the bed is extended, make sure that both tail end rollers are touching the ground. If on uneven ground one corner of the tail of the bed is in the air, the bed or its mountings could be distorted when a load is applied. Find another position for the recovery vehicle.

F. On a hill, beware of tilting the bed so hard that the rear wheels of the recovery vehicle are lifted. If they are the brakes wheels, then the whole thing can go skating off down the hill!

NOTE: Moving the recovery vehicle with the bed extended and tilted is not recommended.

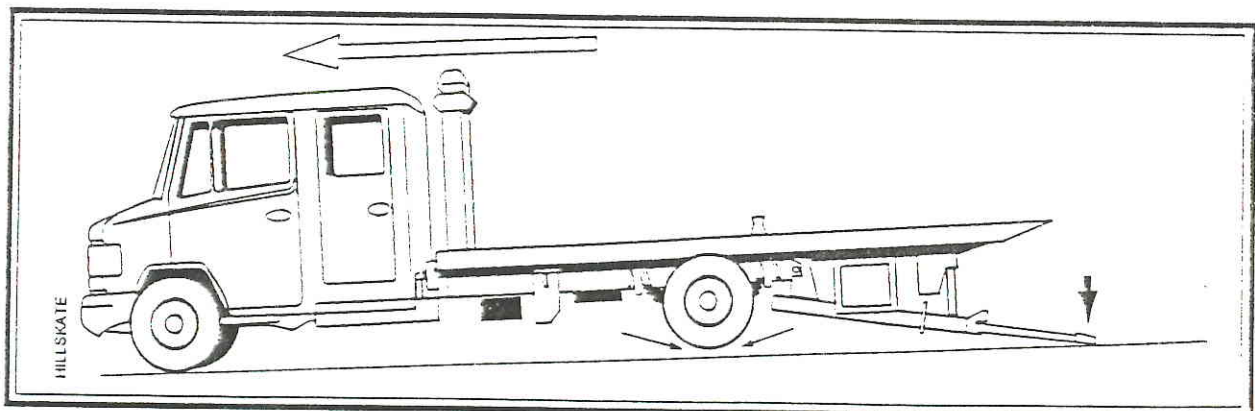


Figure 12 - Do Not Lift the Braked Wheels off the Ground



### 4. UNLOADING

- a. To unload, the procedure is more or less the reverse of the loading sequence, and it assumes that any vehicle which was towed by the second car lift has been disconnected, and the second car lift boom is fully retracted.
- b. Ensure that there is enough room behind the recovery vehicle for the unloading operation, i.e. the distance of travel of the bed plus the length of the casualty.

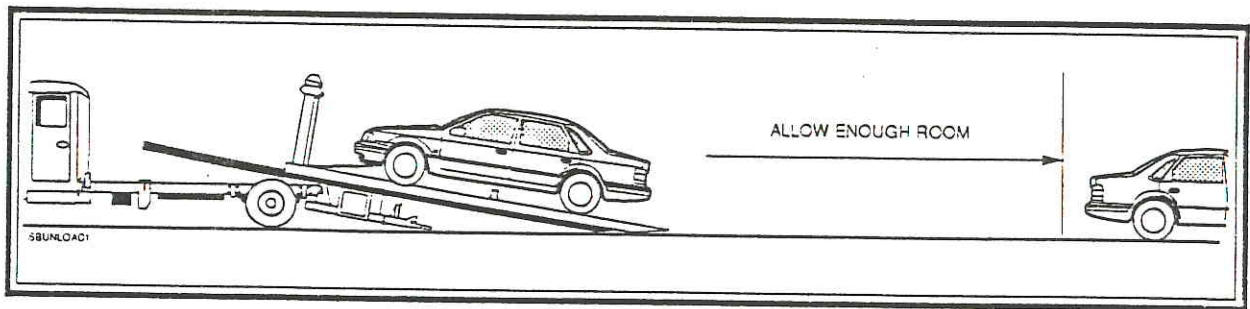


Figure 13 - Room to Unload

- c. Confirm that the casualty vehicle hand-brake is on and ensure that the winch rope is properly connected.
- d. Move the slide bed back enough to unlock the bed.
- e. Tilt the bed fully.
- f. Slide the bed out to its fullest extent, or until the tail rollers touch the ground. On ground which is not level, the considerations detailed in Operations 2 and 3 still apply.
- g. Remove the lashings and partially release the hand-brake.
- h. Run the casualty off the bed under the control of the winch cable.
- i. Park the casualty in a safe and suitable place, with the handbrake on.
- j. Retract and lower the bed, and stow all loose gear which may have been used for the recovery.

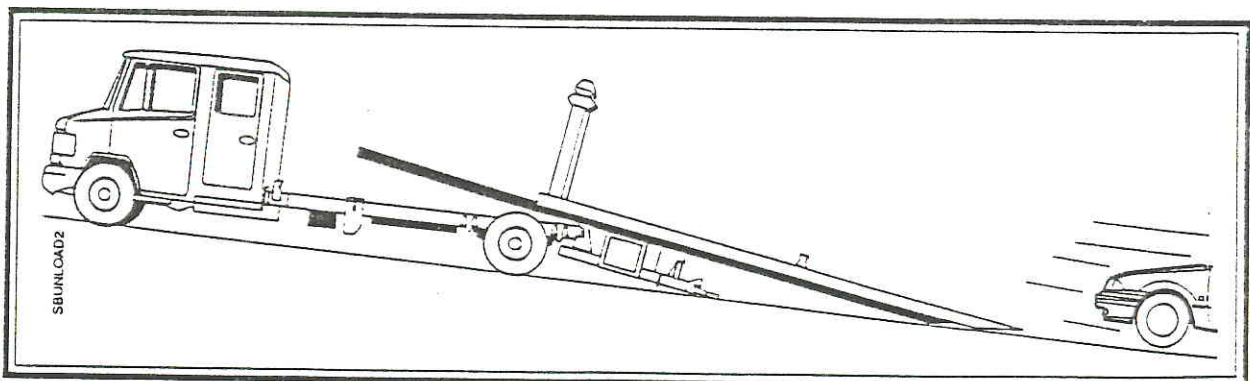


Figure 14 - Don't Forget the Handbrake!

### OPERATION

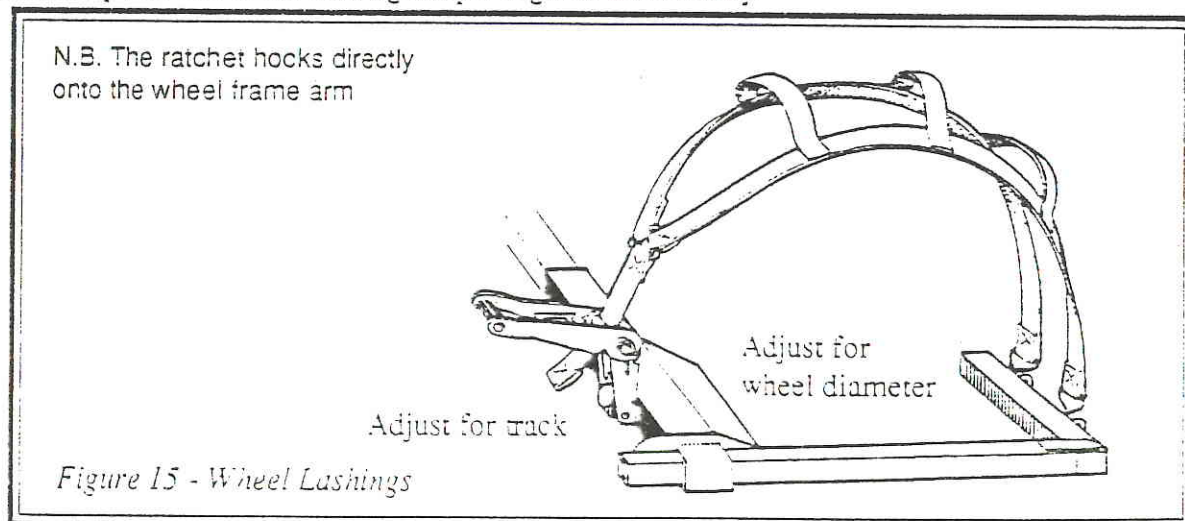
#### 5. OPERATING THE SECOND CAR LIFT.

- Reverse the recovery vehicle to within about one metre from the casualty.
- Using the 'BOOM' hydraulic controls, extend the boom fully out and down until the crosshead complete with wheel frames just touches the front tyres of the casualty. Adjust for wheel track and wheel diameter as necessary, and ensure that the locks are fully engaged. (See Figure 15).
- Fit the wheel frame arms snugly around the front wheels.
- Using ratchets and straps firmly lash the wheels of the casualty to the wheel frames.
- Release the hand-brake of the casualty vehicle.
- Raise the boom to a comfortable towing position and retract the boom as far as possible, remembering to allow enough swing for cornering.
- Before driving away, ensure that all the current requirements of the law concerning lighting, signals, etc. are complied with.

**WARNING:** Never operate the 'BED TILT' or 'TRAVEL' controls while the boom is extended, you could damage your Slide-bed.

**NOTE 1.** This sequence holds also for a rear-axle lift, but in that case the casualty steering wheel must be firmly lashed to hold the steering fore-and-aft. Do not rely on the steering lock, mostly they are held in alloy castings which can shatter if the towed vehicle hits a kerb or pothole.

**NOTE 2.** Lashings can work loose with vibration. After travelling about half a mile, the operator should stop and check the lashing straps. Tighten if necessary.



#### 6. UNLOADING

This sequence is more or less the reverse of the loading procedure.

- Apply the casualty hand-brake.
- Undo the wheel lashings.
- Lower the boom and wheel frames to the ground.
- Remove the wheel frame arms.
- Fully retract and raise the extending boom.
- Refit the wheel frame arms and stow all loose gear before driving away.

**NOTE:** Care should be taken on sloping ground that the casualty is not allowed to run away.

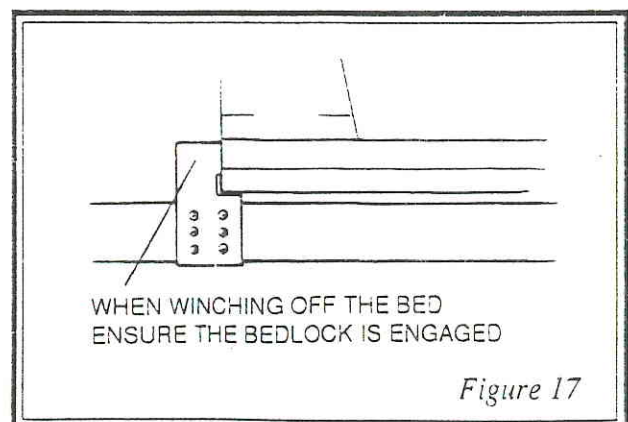
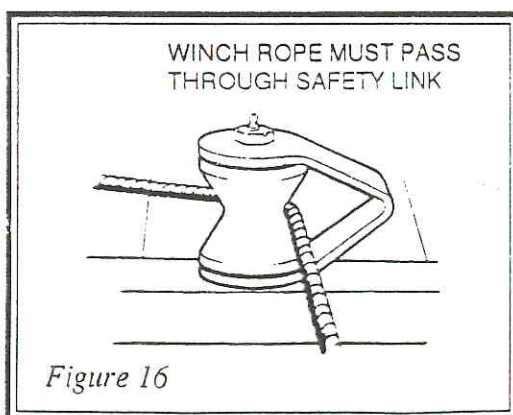


## OPERATION

7. USE OF THE WINCH.

NOTE: The winch manufacturer's Handbook is supplied with the Slide Bed information package. Nothing written here is intended to countermand anything contained in that book.

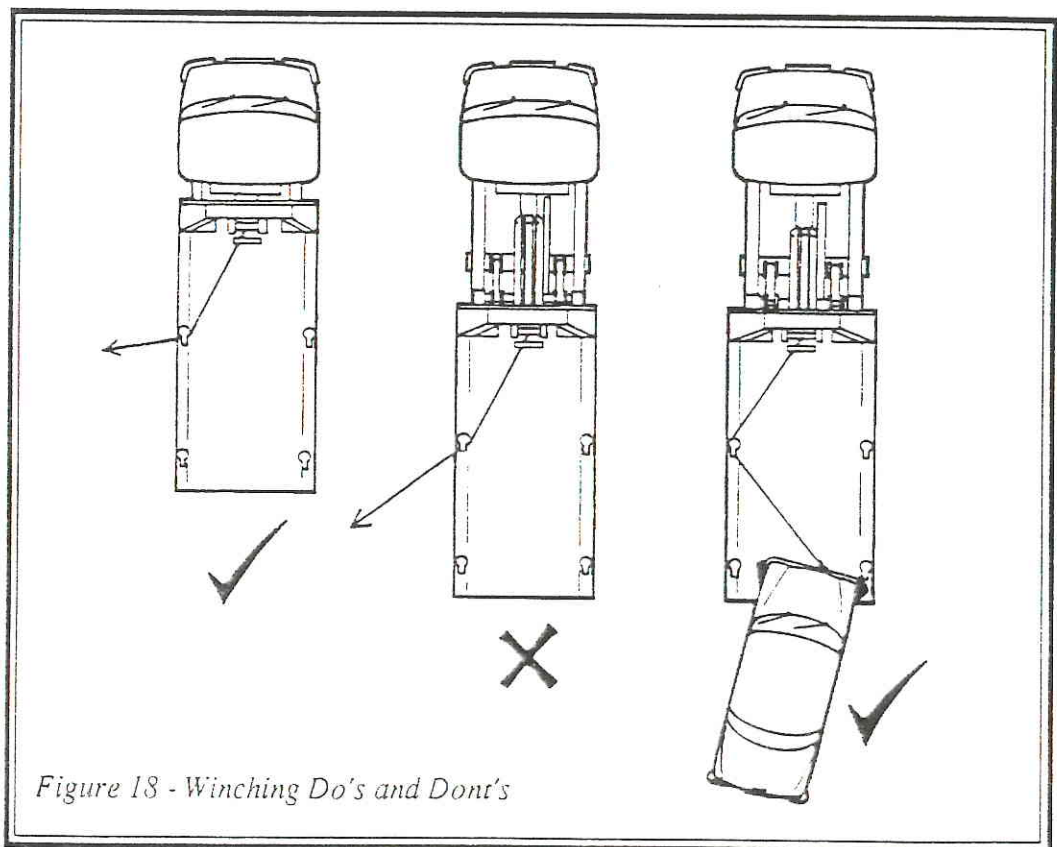
- A. When engaging the winch clutch make sure it is fully home and when disengaging, that it is fully out. When putting the clutch in, it may be necessary to move the drum by hand slightly to get the gears to mesh.
- B. The mechanism incorporates a drag brake, which should stop the drum from overrunning when paying out the cable. Never attempt a winching operation without at least four turns of cable on the drum.
- C. The cable can be paid out by free-wheeling or under power. A man pulling will be enough, but if a cable is paid out under power without a small load or a man pulling, it will get badly tangled.
- D. When winching in, always keep the cable feeding straight onto the drum, and this will help to prevent the cable building up at one end or the other. That will reduce the effective range of pull, and if on the drum a large coil falls down onto a smaller diameter coil, it will lock up when being fed out again.
- E. Always have a load on the cable when winching in.
- F. Never try to disengage the clutch when the winch is under load.
- G. Use protective gloves when handling the cable, a loose strand can cause nasty injuries.
- H. Some versions of this unit have side-winching capstans fitted to enable side winching to be carried out. The diameter of the capstan barrels is rather small for heavily loaded winch rope to pass around, and therefore we rate them for intermittent use only.
- I. Please note the following important points:
  - i) The cable must on all occasions be passed through the safety link. (See Fig 16)
  - ii) For loads off the bed, the bed must be fully retracted into the locked position. Using the capstans like this when the bed is extended will strain the bed sideways, causing serious damage. (See Fig 18)





#### 7. USE OF THE WINCH. (Continued)

- I
  - iii) Always keep well clear of the winch rope. Use of the optional remote control handset will enable you to do that.
  - iv) Use of the capstans will upset the natural lay of the cable on the winch drum. After use it is advisable to pay out the cable again and rewind onto the drum normally.
- J. Side winching a load which is on the bed, e.g. aligning a car which has one pair of wheels firmly on the bed, is very effective. (See Fig 18)
- K. If you need to carry out a lot of heavy side winching, we suggest you use a bed-end fair-lead, which was designed for that purpose, and is available from Boniface Engineering, Thetford.



## 7. USE OF THE WINCH. (Continued)

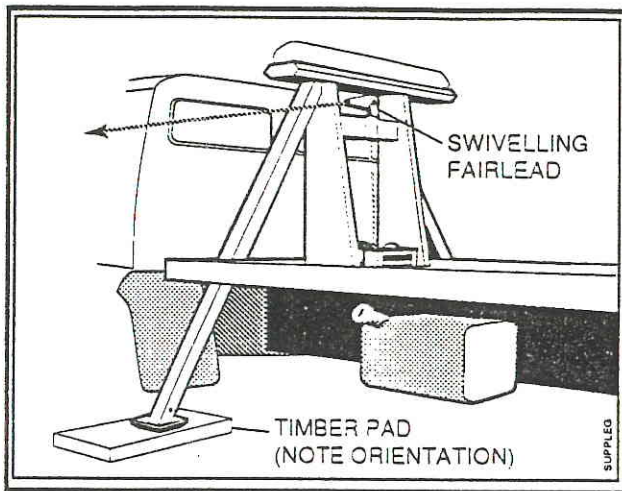


Figure 19 - Side Support Leg

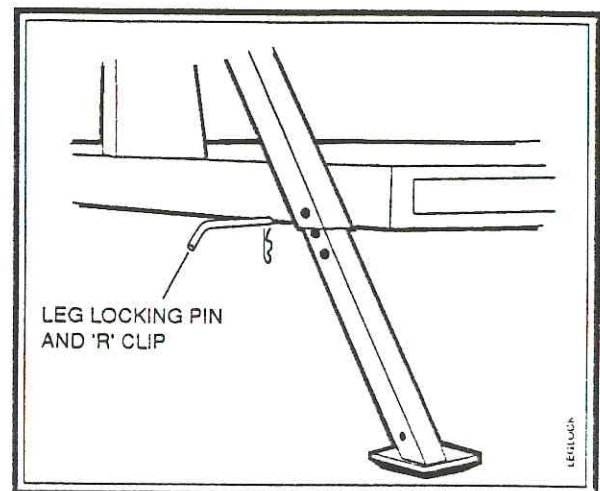


Figure 20 - Leg Lock

L. For heavy side-winch, a high level winch fairlead and side legs is an option. Figure 19 shows a typical arrangement. To operate, undo the leg locking pin and manually lower the leg to the ground, ensuring that the locking pin engages in a suitable hole. On soft surfaces or on made surfaces, paving slabs, concrete, asphalt etc, it is wise to lay down a timber pad to spread the load. Before deploying the leg ensure that the bed lock is engaged.

**WARNING:** The leg will slide out under its own weight, so MIND YOUR FEET!

The purpose of the support leg is to take up the extra load imposed by the winching operation. It is therefore not important that the leg should take any load before the winching operation starts, but it should prevent the suspension from deflecting unduly when the load is applied. Usually it will not be necessary to lower the leg on the far side, that will not achieve anything.

Never use the support legs when winching a casualty aboard the transporter. The extra load could make it impossible to withdraw the leg locking pins and retract the legs.

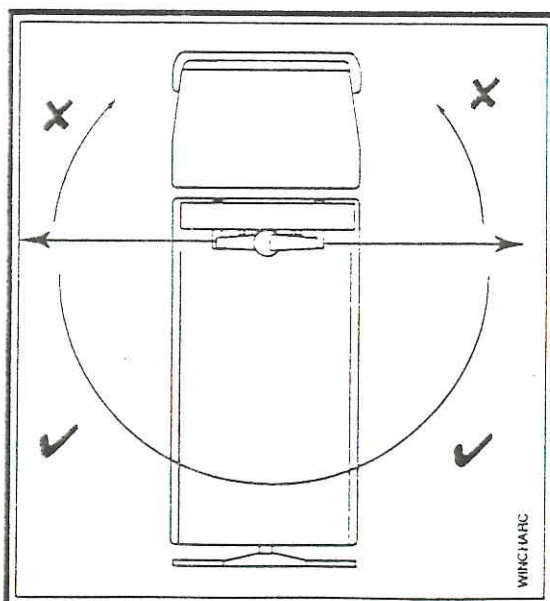


Figure 21 - Range of Direction for Using the High Fairlead



**MAINTENANCE****1. GENERAL**

a. In order to ensure correct, efficient operation, the Slide Bed Unit should be properly lubricated and serviced. The working conditions under which the recovery unit operates will determine the frequency of the servicing and maintenance.

b. At regular intervals a detailed inspection should be carried out to ensure that there are no signs of chafed hydraulic pipes and hoses, no obvious signs of wear, loose or missing bolts or cracked welds. The frequency of inspections depends upon usage, but once per week for normal use is suggested.

**c. USE ONLY GENUINE SPARE PARTS**

For safe and reliable operation, use only genuine spare parts. Before any modifications are carried out on the unit, contact the manufacturer for technical advice and approval. This is a requirement of the Machinery (Safety) Regulations.

**2. EMERGENCY STOP BUTTONS**

This unit is fitted with two emergency stop buttons, and it is the user's responsibility to ensure that they remain in working order. It is necessary that each one should be operated regularly to verify that they both remain functional.

**3. THE HYDRAULIC SYSTEM.**

a. As with all hydraulic systems, strict cleanliness is essential for continued efficiency. Before dismantling parts, ensure the surrounding area is scrupulously clean. The hydraulic oil should be checked regularly to make certain that the level in the reservoir is correct. The procedure for checking the reservoir is as follows:

- i) Stand the unit on level ground with the bed fully retracted and the second car lift boom fully in.
- ii) Remove the hydraulic filler cap and check that the oil level is up to the bottom of the plastic baffle.
- iii) Top up as necessary.
- iv) Replace the cap.

b. The filter element should be changed one month after commissioning the equipment, or after a major hydraulic repair, and thereafter every six months. If the filter element is heavily contaminated, the hydraulic oil should be replaced. We recommend oil to specification Shell Tellus 32, or a direct equivalent.

c. Oil seepage from the hydraulic rams may indicate that the seals are worn. If so new seals should be fitted as soon as possible. Further use with worn seals might ruin the ram. Boniface Engineering can arrange for rams to be refurbished if required.

**4. ELECTRICS**

Electrical wiring should be inspected regularly for signs of chafing, and to ensure that the cleats are still intact. Lamp fittings should be checked for signs of moisture inside, and the seals repositioned or renewed if necessary. If a remote control handset is used, the plug should be inspected for signs of the pins getting out of alignment. A touch of non-tracking lubricant should be used.

**5. THE WINCH**

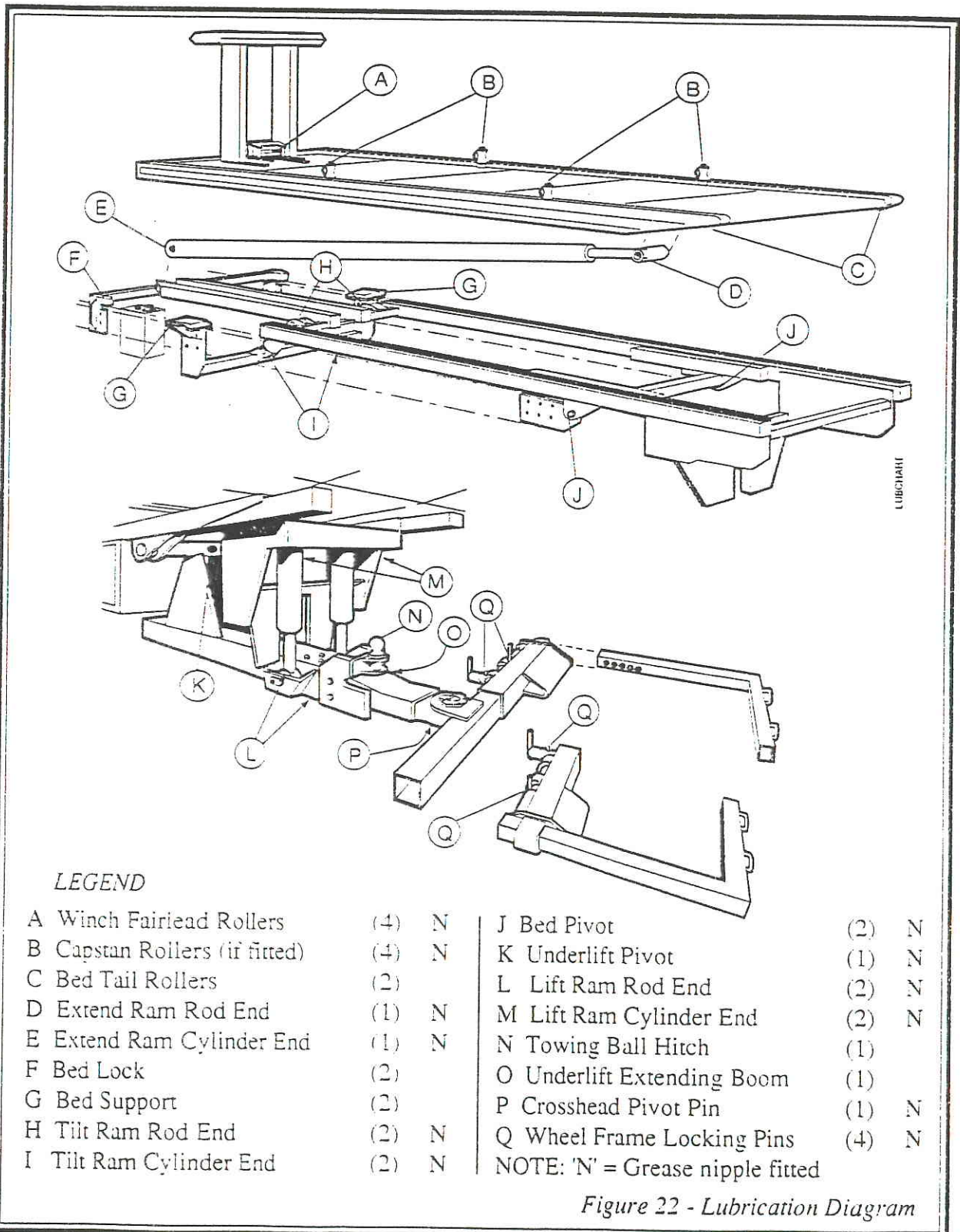
The winch should be serviced according to the manufacturer's published literature.



MAINTENANCE

6. LUBRICATION

a. It is important that the crosshead should not become dry, and it will probably need lubricating more often than any other component. The other points will need lubricating once per week at least, and when being used continuously, at the end of every day.



NOTE: The anchor points shown are for an aluminium bed. There are no nuts and bolts with a steel bed unit. The anchor points are welded in place

NOTE: The design of the flyer, lockers (if fitted), head board and length of the bed may vary from unit to unit.

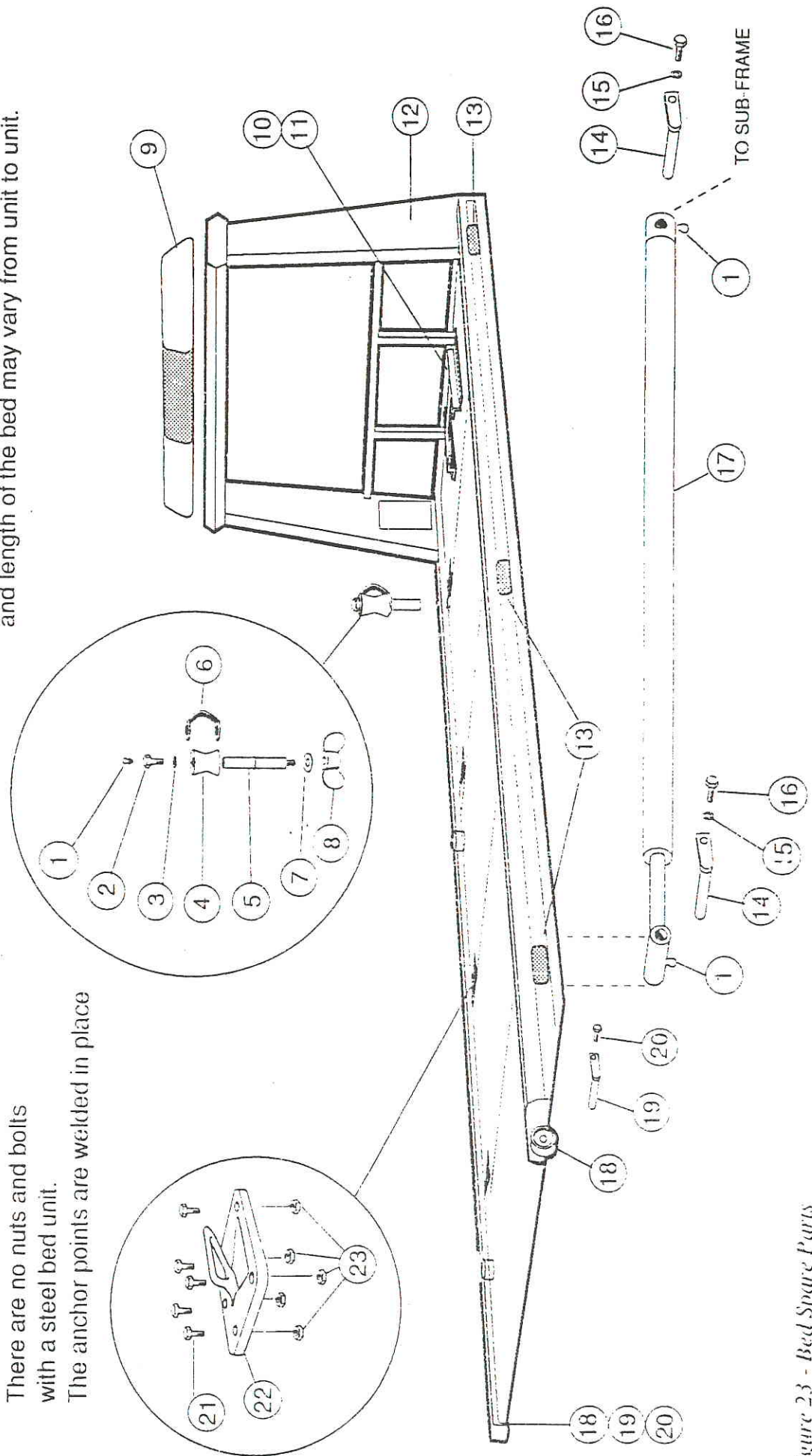


Figure 23 - Bed Spare Parts

**SPARES**

## 1. SLIDE BED SPARES

ITEM	DESCRIPTION	Qty	PART NO
1	Grease Nipple	3	
2	Bolt, special *	1	(if fitted)
3	Plain Washer	1	(if fitted)
4	Capstan Barrel	1	(if fitted)
5	Spigot	1	(if fitted)
6	Cable Retainer	1	(if fitted)
7	Washer	1	(if fitted)
8	Wing Nut	1	(if fitted)
9	Beacon (to order)	1	
10	Winch Mounting (to suit)	1	
11	Mounting Bolts	4	
12	Bed (See note)	1	
13	Reflectors (to order)	6	
14	Ram Locating Pin	2	
15	Spring Washer	2	
16	Fixing Bolt	2	
17	Hydraulic Ram (See Figure 29)	1	
18	Tail Wheel	2	
19	Axle Pin	2	
20	Retaining Bolt	2	
21	Fixing Bolts (Aluminium Bed only)	5	] Quantities refer to ] per anchor point. ] Number of anchor points can vary with size of bed. Fixing nuts and bolts are used only on aluminium beds. Steel beds have anchor points welded in place.
22	Anchor Point complete	1	
23	Nuts	5	
	* = Specially modified		



# Chapter 4

## SPARE PARTS

### SLIDE BED

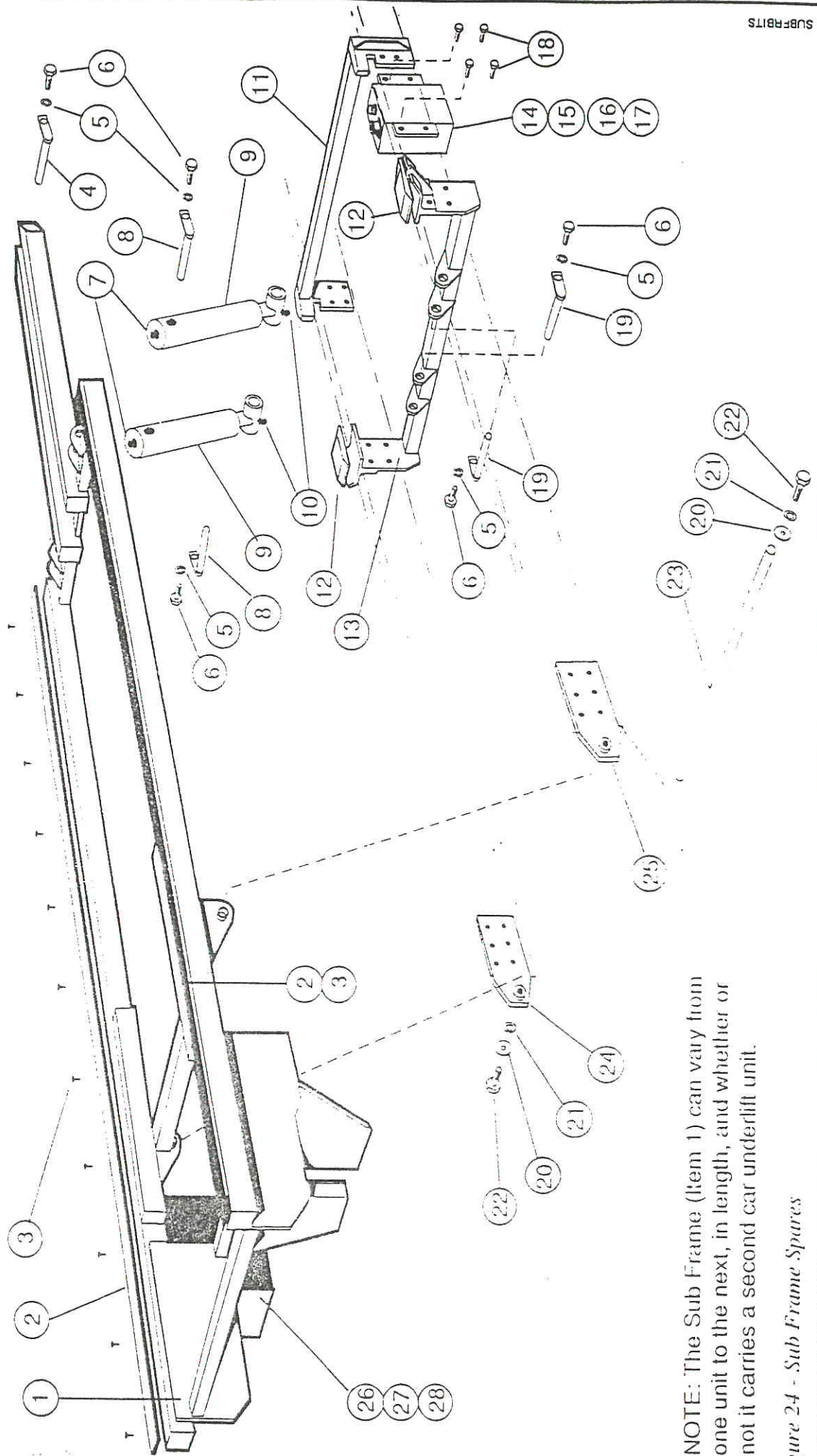


Figure 24 - Sub Frame Spares

## SPARES

## 2. SUB FRAME SPARES

ITEM	DESCRIPTION	Qty	PART NO
1	Sub Frame assembly	1	
2	Nylatron Track	2	
3	Track Fixing Screws	22	
4	Bed Travel Ram Locating Pin, Cylinder End	1	
5	Spring Washer	5	
6	Set Screw	5	
7	Grease Nipple 1/4in NF	2	
8	Tilt Ram Locating Pin, Cylinder End	2	
9	Hydraulic Ram, Bed Tilt (See Figure XX)	2	
10	Grease Nipple 1/8in BSF	2	
11	Bed Lock Bracket	1	
12	Nylatron Pads	2	
13	Cross-member Assembly	1	
14	Hydraulic Tank	1	
15	Hydraulic Filler Cap	1	
16	Hydraulic Filter Body	1	
17	Hydraulic Filter Element (Not illustrated )	1	
18	Tank Fixing Bolts	4	
19	Tilt Ram Locating Pin, Rod End	2	
20	'Penny' Washer	2	
21	Spring Washer	2	
22	Securing Screw	2	
23	Sub Frame Pivot Pin	1	
24	Bed Pivot Bracket, LH	1	
25	Bed Pivot Bracket, RH	1	
26	Hydraulic Control Box	1	
27	Rubber Seal	1	
28	Identification Panel	1	
	NOT ILLUSTRATED		
29	Flexible Hose Track	1	
30	Hose Track Mounting Brackets	2pr	
31	Flexible Hose Track Support Channel	1	
32	Fixed Hose Channel	1	

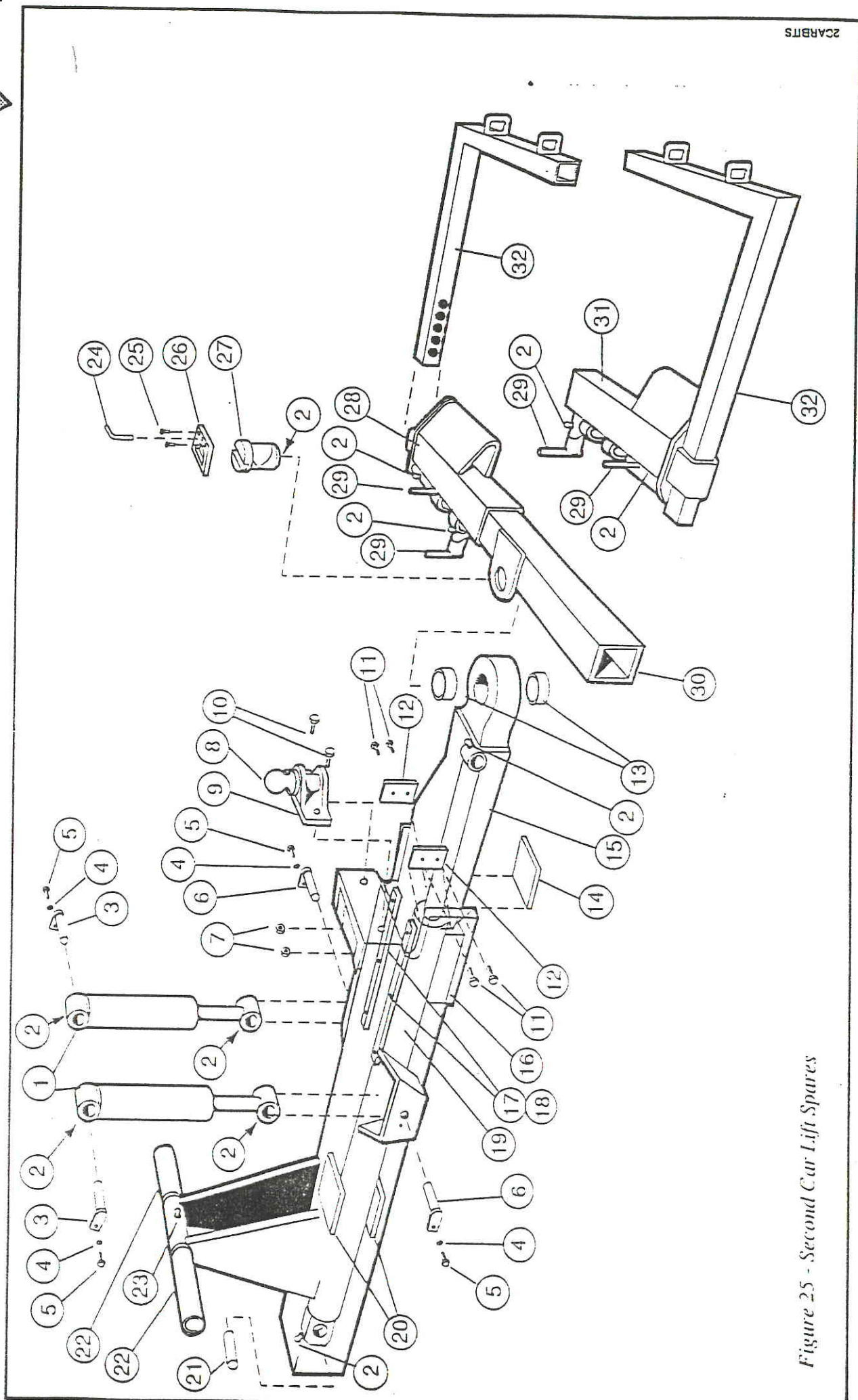


Figure 25 - Second Car Lift Spares



## SPARES

## 3. SECOND CAR LIFT

ITEM	DESCRIPTION	Qty	PART NO
1	Hydraulic Ram, Lift	2	
2	Grease Nipple 1/4in NF	6	
3	Lift Ram Locating Pins, cylinder end	2	
4	Spring Washer	4	
5	Retaining Screws	4	
6	Lift Ram Locating Pins, rod end	2	
7	Nuts	2	
8	Ball Hitch	1	
9	Towing Attachment	1	
10	Hitch Fixing Bolts	2	
11	Screws	4	
12	Nylatron Bearing Pads	2	
13	Pivot Pin Bushes	2	
14	Nylatron Bearing Pad	1	
15	Boom Inner	1	
16	Boom Outer	1	
17	Nylatron Bearing Strips	2	
18	Bearing Strip Fixing Screws (Not shown)	6	
19	Hydraulic Ram, Extend	1	
20	Nylatron Bearing Pads	2	
21	Extend Ram Locating Pin, cylinder end	1	
22	Spacer	2	
23	Grease Nipple, 1/8 BSF	1	
24	Crosshead Locking Pin	1	
25	C/S Screws M12	2	
26	Pivot Pin Locking Plate	1	
27	Crosshead Pivot Pin	1	
28	Wheel Frame Outer R.H.	1	
29	Frame Locking Pins	4	
30	Crosshead	2	
31	Wheel Frame Outer L.H.	1	
32	'L' Arms	2	

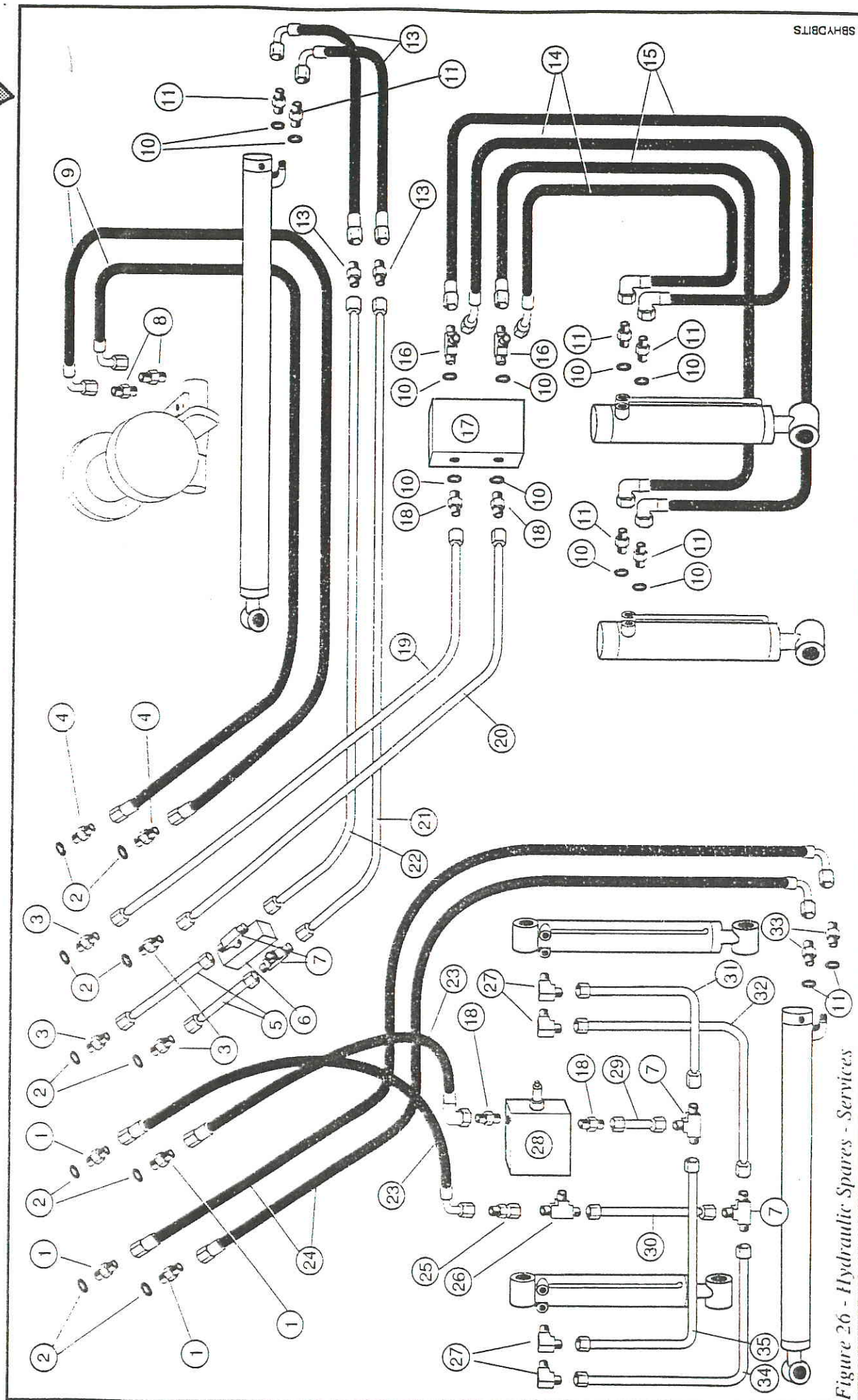


Figure 26 - Hydraulic Spares - Services

SBHYDBITS



**SPARES**

## 4. HYDRAULIC SERVICES

ITEM	DESCRIPTION	Qty	PART NO
1	Adaptor 1/2in x 1/4in BSP	4	GEV 12 LR 1/2in
2	Bonded Seal 1/2in	10	
3	Adaptor 1/2in BSP x 12mm	4	
4	Adaptor 1/2in x 1/2in BSP	2	
5	Pipe Assembly	2	
6	Relief Valve	1	TV 12 L
7	Tee 12mm	4	
8	Adaptor 1/2in BSP x 1/2in BSPT	2	
9	Hose Assembly, Winch	2	
10	Bonded Seal 3/8in	10	
11	Adaptor 3/8in BSP x 3/8in BSP	6	* GEV 12 LR 3/8in
12	Hose Assembly, Bed Travel	2	
13	Adaptor 12mm x 3/8in BSP	2	
14	Hose Assembly, Tilt	2	
15	Hose Assembly, Tilt	2	
16	Tee 3/8 BSP male equal	2	
17	Check Valve	1	
18	Adaptor 1/4in BSP x 1/4in BSPT	3	
19	Pipe Assembly, Tilt	1	
20	Pipe Assembly, Tilt	1	
21	Pipe Assembly, Travel	1	WEV 12 LRK
22	Pipe Assembly, Travel	1	
23	Hose Assembly, Extend	2	
24	Hose Assembly, Lift	2	
25	Adaptor	1	
26	Tee, 12mm x 1/4 NPT	1	
27	Elbow, 12mm x 3/8NTP	4	
28	Pilot Operated Check Valve	1	
29	Pipe Assembly	1	
30	Pipe Assembly	1	
31	Pipe Assembly	1	
32	Pipe Assembly	1	
33	Adaptor 1/4 BSP x 3/8 BSP	2	
34	Pipe Assembly	1	
35	Pipe Assembly	1	
NB. Items marked * have been specially modified			

SPARES

5. PRIMARY HYDRAULICS

ITEM	DESCRIPTION	Qty	PART NO
1	Adaptor 3/4 BSP x 1/2 BSP	2	
2	Return Hose Assembly	1	
3	Hose Assembly	1	
4	Tee	1	
5	Diverter Valve	1	
6	Adaptor 3/4 BSP x 3/4 BSP	2	
7	Hose Assembly	1	
8	Blanking Plug 3/8 BSP	1	
9	Bonded Seal 3/8"	1	
10	Bonded Seal 1"	1	
11	Adaptor 1" BSP x 1" BSPT	1	
12	Suction Hose Assembly	1	
13	Adaptor 1" x 3/4" BSP	1	
14	Hydraulic Pump*	1	
15	Adaptor 1" x 1" BSP	1	
16	Feed Hose Assembly	1	
17	Filter Sealing Ring	1	
18	Filter Unit	1	
19	Filter Element	1	

\* The pump can vary from unit to unit, and the outlets can be 1" or 3/4". Therefore that will affect Items 13 & 15 accordingly.

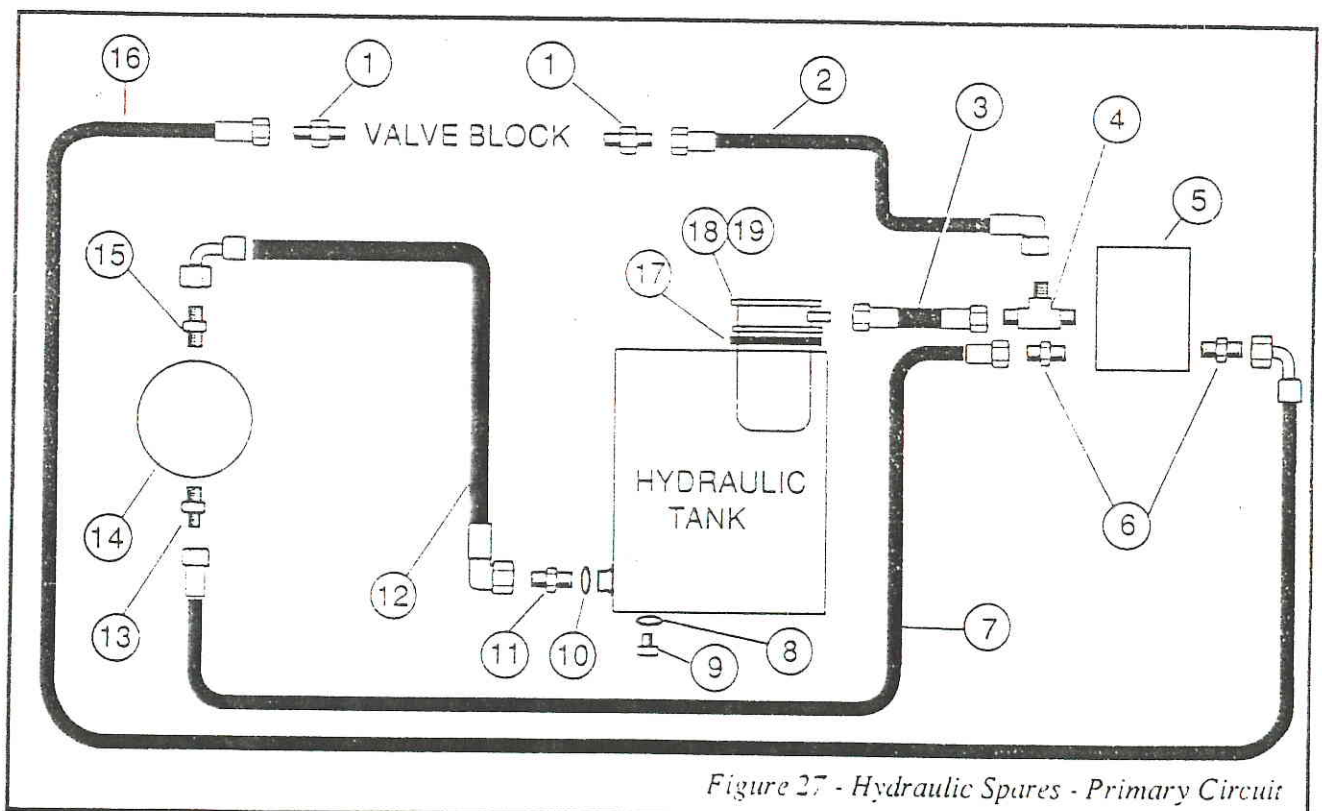


Figure 27 - Hydraulic Spares - Primary Circuit

**SPARES**

## 6. TILT RAMS

ITEM	DESCRIPTION	Qty	PART NO
1	Ram Body	1	
2	Grease Nipple, straight	1	
3	Grease Nipple, right angled	1	
4	Rod	1	
5	Wiper Seal	1	
6	Gland Seal (inside)	1	
7	Gland	1	
8	Gland 'O' Ring	1	
9	Piston 'O' Ring	1	
10	Piston	1	
11	Piston Seal Set (3 Items)	1	
12	Retaining Nut 1" BSF	1	
13	Split Pin.	1	

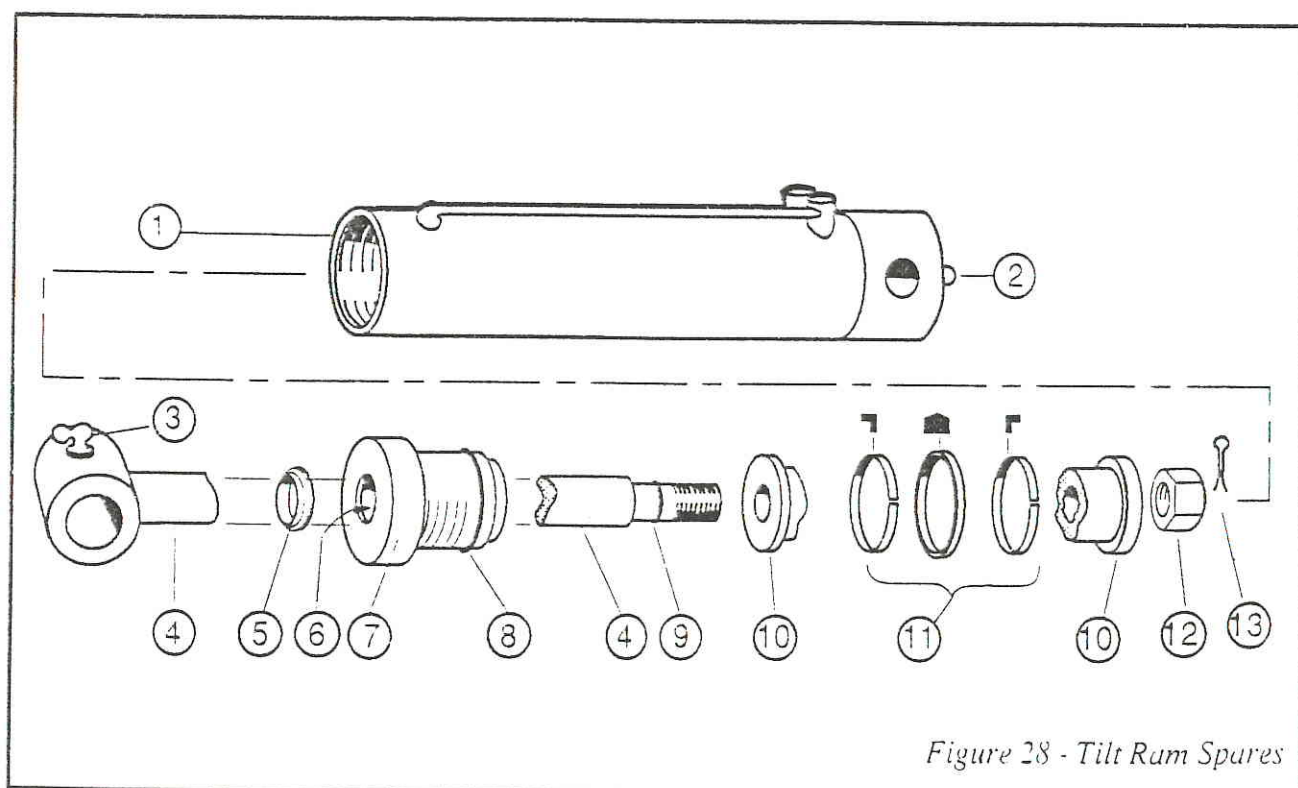


Figure 28 - Tilt Ram Spares



SPARES

7. BED EXTEND RAM

ITEM	DESCRIPTION	Qty	PART N0
1	Ram Body	1	
2	Grease Nipple, straight	2	
3	Rod	1	
4	Wiper Seal	1	
5	Gland Seal (inside)	1	
6	Gland	1	
7	Gland 'O' Ring	1	
8	Piston 'O' Ring	1	
9	Piston	1	
10	Piston Seal Set (3 Items)	1	
11	Retaining Nut 1" BSF	1	
12	Split Pin.	1	

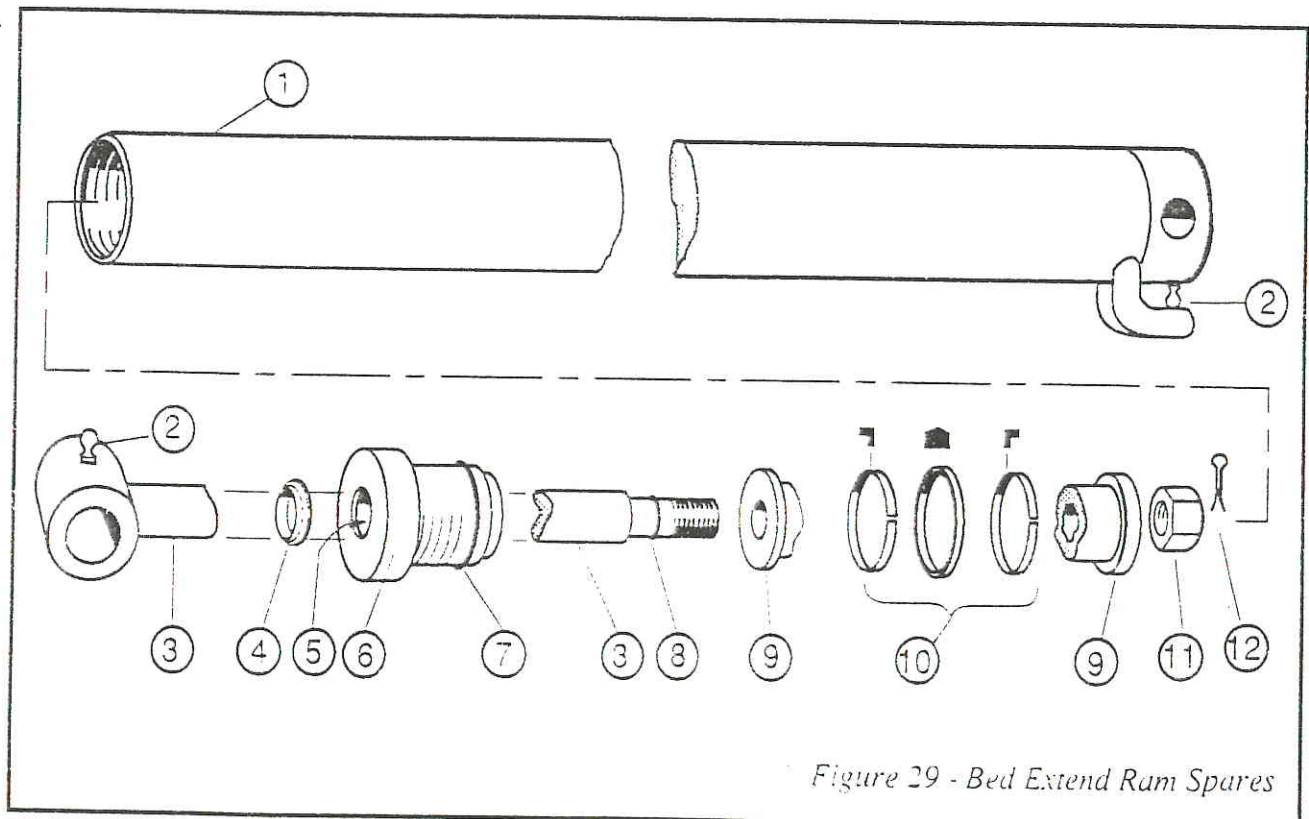


Figure 29 - Bed Extend Ram Spares

SPARES

8. SECOND CAR LIFT RAMS

ITEM	DESCRIPTION	Qty	PART N0
1	Ram Body	1	
2	Grease Nipple, straight	1	
3	Grease Nipple, right angled	1	
4	Rod	1	
5	Wiper Seal	1	
6	Gland Seal (inside)	1	
7	Gland	1	
8	Gland 'O' Ring	1	
9	Piston 'O' Ring	1	
10	Piston	1	
11	Piston Seal Set (3 Items)	1	
12	Retaining Nut 1" BSF	1	
13	Split Pin.	1	

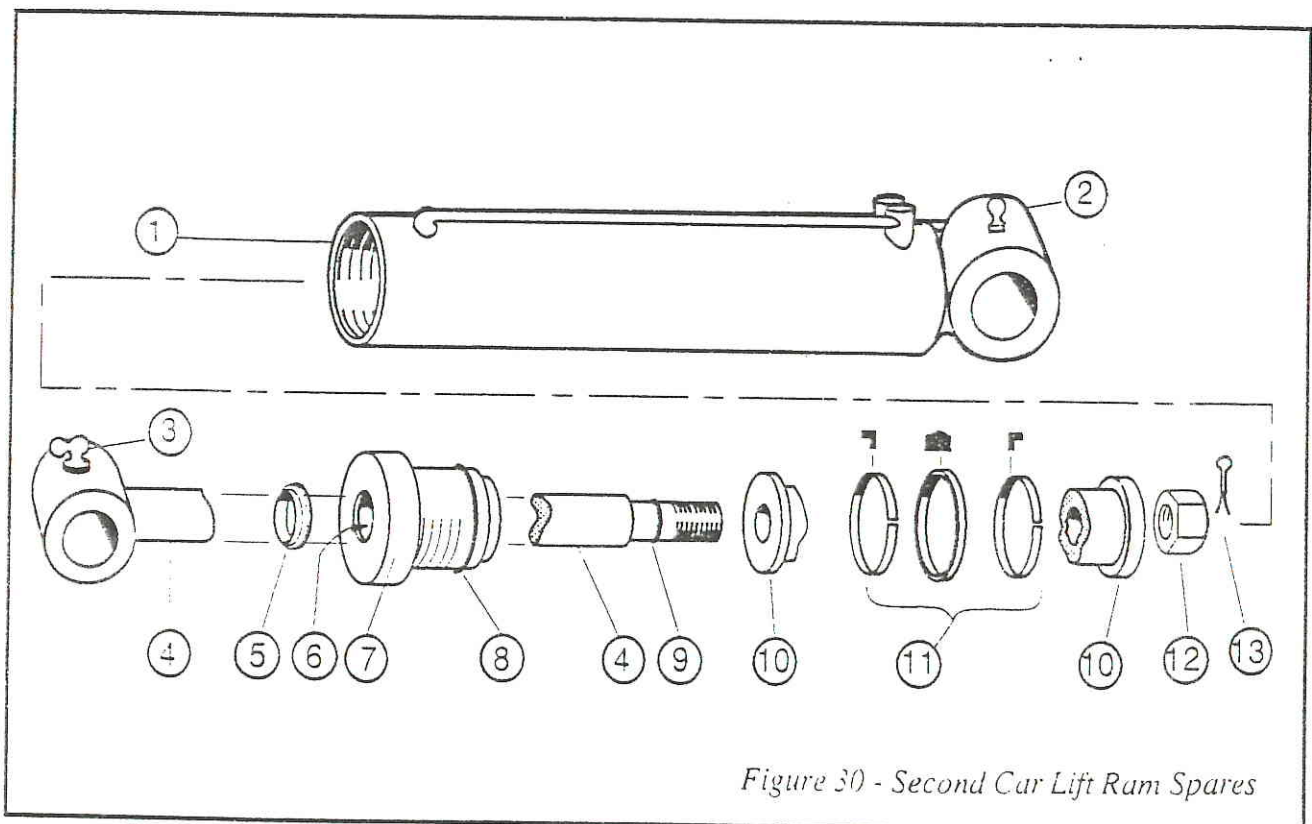


Figure 30 - Second Car Lift Ram Spares

**SPARES**

## 9. SECOND CAR BOOM EXTEND RAM

ITEM	DESCRIPTION	Qty	PART NO
1	Ram Body	1	
2	Grease Nipple, straight	2	
3	Rod	1	
4	Wiper Seal	1	
5	Gland Seal (inside)	1	
6	Gland	1	
7	Gland 'O' Ring	1	
8	Piston 'O' Ring	1	
9	Piston	1	
10	Piston Seal Set (3 Items)	1	
11	Retaining Nut 1" BSF	1	
12	Split Pin.	1	

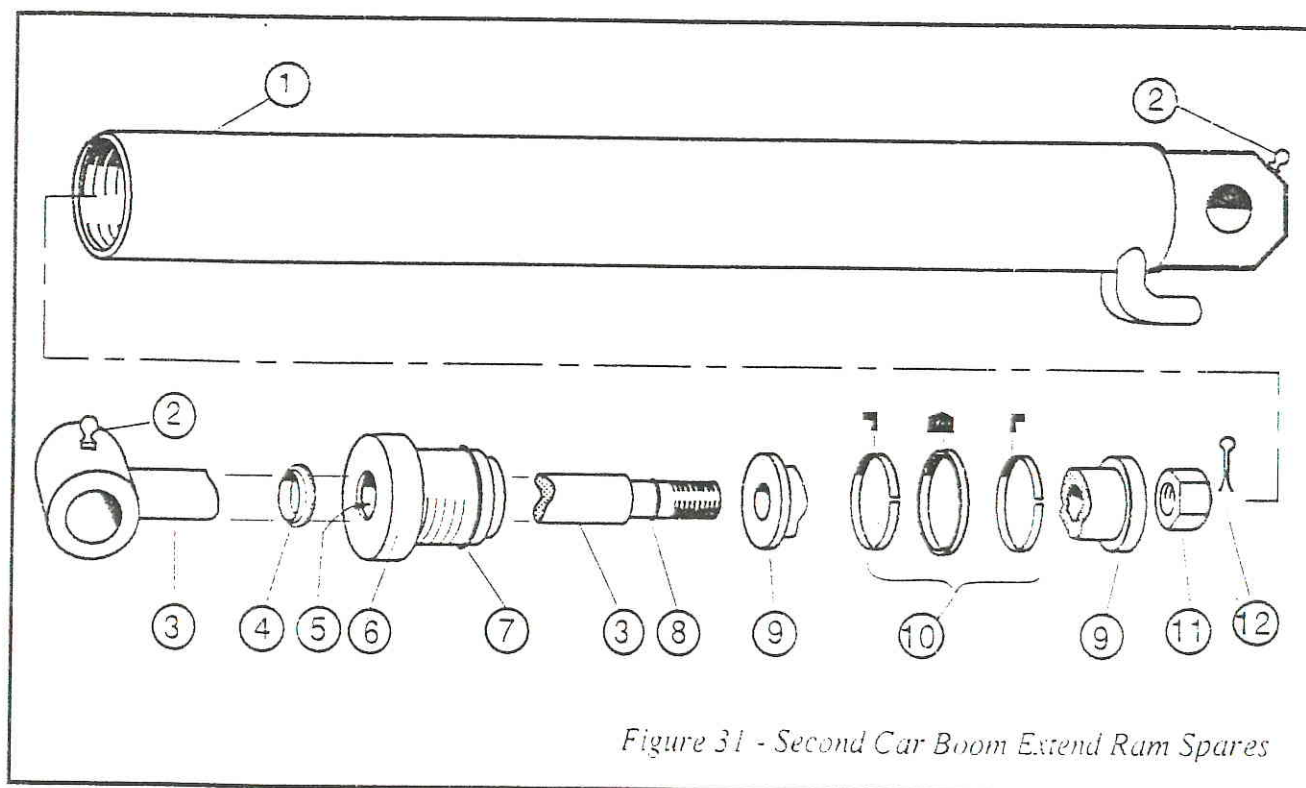


Figure 31 - Second Car Boom Extend Ram Spares



**SPARES**

## 10. ELECTRICAL COMPONENTS (Not Illustrated)

ITEM	DESCRIPTION	Qty	PART NO
1	Push-Pull Switch (Hella)	2	
2	Rear Working Lamps (Hella)	2	
3	Beacon	1	
4	8-Way Junction Box	1	
5	Fuse Box	1	
6	Amber Reflectors	6	
7	White Reflectors	2	
8	Number Plate Lamp	1	
9	Buzzer	1	
10	Air Switch (only when remote control is fitted)	1	
11	Repeater Lamps	2	
12	Junction Box	1	
13	7-Pin Socket	1	
14	Gaiter	1	
15	25 amp Fuse	4	

## SAFETY PRECAUTIONS

### THE SLIDE BED

1. When operating the Slidebed controls, always make sure that it is safe to do so, and that there is no one else in a vulnerable position when doing so.
2. Never attempt to raise the bed without first operating the 'Travel Out' control to disengage the bed from the bed locks on the subframe. (See Fig. 7)
3. Before driving off ensure that the bed is engaged in the bed locks.
4. Never drive with the Power Take-Off engaged. It will get ruined.
5. Take care when loading or unloading a casualty on sloping ground. Do not let it run away, run forwards on the bed and damage the flyer or run backwards off the bed.
6. Do not regard the winch rope as a means of securing a casualty onto the bed of the recovery vehicle. Winches can 'creep' under load and security will be lost. Always lash the casualty with reliable equipment.
7. When driving with a casualty on board, do not ignore it. A professional recovery operator must pay attention to potential problems as soon as they become apparent.

### THE UNDERLIFT UNIT

8. The safe working loads of the Second Car Underlift unit are displayed in a prominent place. Be sure not to exceed those ratings.
9. When operating the unit controls, always make sure that it is safe to do so, and there is no one else in a vulnerable position when doing so.
10. Never work under a vehicle which is not properly supported. If the casualty has been lifted, even slightly, by the recovery unit, no one should get under it without properly rated jack stands to support it.
11. Always lash the wheels securely before driving off. Even in a hazardous situation it is not permissible to rig temporary lashings for a move to a safer place. Also fit a safety chain between the casualty and the recovery vehicle.
12. Use the Emergency Cut-outs when a dangerous situation occurs. The best way to ensure that they will work when needed is to test them regularly, say once per week.

### THE WINCHES

13. Never use the winch for hauling over the side unless the slide bed is lowered, retracted and engaged in the bed locks. Otherwise the bed pivots will get distorted.

**SAFETY PRECAUTIONS (Continued)**

14. Do not overload the winch or winch ropes. If the calculations indicate too great a load for the winches, rig tackle to reduce the loading.
15. Make sure that winch ropes wind onto the drums tidily. Overlaps can cause the winches to lock up, and could also damage the ropes beyond repair.
16. Never operate the clutch or freespool controls when there is a load on the winch.
17. Take special care during winching operations. Choose a firm anchor point on the casualty to haul with. Make sure no one is standing in line with the winch cable when heavy winching is taking place.
18. Watch out for signs that a winch rope is about to fail. The warning signs are:
  - a) The winch rope getting very hot - look for steam coming off.
  - b) In the dark sometimes sparks can be seen.
  - c) The rope 'sings' as strands part in succession.

NOTE: These safety notes are given in good faith and without prejudice to Boniface Engineering Ltd.



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**SAFE ROADSIDE WORKING - CODE OF PRACTICE**

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**ALL RECOVERY/BREAKDOWN VEHICLES**

1. All vehicles must be maintained in a clean condition and comply with current legislation
2. All vehicles should be marked with reflective tape on the sides and rear
3. All vehicles to be fitted with four-way flashing hazard warning lights.
4. All vehicles to be fitted with a minimum of two roof beacons or a full width lighting bar.
5. Any additional working lamps must comply with Construction & Use Regulations.

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**VEHICLE EQUIPMENT**

All vehicles must carry the following items:

- Fire Extinguisher
- First Aid Kit
- Six Identical Traffic Cones

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**SERVICE/BREAKDOWN/RECOVERY PERSONNEL**

1. All personnel attending a breakdown/recovery scene must be in possession of a reflective safety garment, BS6629 Class A (appendix G)
2. Garment must be stored and maintained in good, clean condition.
3. Reflective garment must be worn at all times when working outside on a vehicle.
4. At no time will wet weather clothing or any other item be worn over a reflective safety garment.
5. It is strongly recommended that the following items be used:

- Safety Footwear - BS 1870
- Safety Gloves
- Safety Glasses - BS 2092

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**WORKING PRACTICE AND PROCEDURES (GENERAL RULES)**

Initial attendance at the scene:

1. All approaches to be made from the rear.
2. Park the recovery vehicle parallel with the offside running lane, as close to the nearside as possible, with front wheels turned full lock to the nearside.
3. Park the recovery vehicle 2 - 3 car lengths to the rear of the disabled vehicle.
4. Illuminate roof beacons and hazard flashers
5. Exit the vehicle from the nearside.
6. Place the traffic cones 3 - 4 car lengths to the rear of the recovery vehicle.

Disabled Vehicles - Occupants

It is the responsibility of recovery/breakdown personnel to ensure the safety of immobilised vehicle occupants.

All movements between vehicles must be confined to the nearside of the vehicle.

---

**MOTORWAY PROCEDURES (Additional to General Rules)**

1. Park on hard shoulder as far away from the nearside running lane as possible.
2. Where immobilised vehicles are found to have come to rest in an unsafe position - in all cases inform the Police.
3. Under no circumstances will recovery/breakdown personnel attempt to cross a motorway running lanes or central reservation on foot or in their vehicles.
4. At no time will recovery/breakdown personnel reverse on a motorway slip road or hard shoulders to gain access to immobilised vehicles - in all cases of difficulty, inform the Police.
5. Never work on the offside of your vehicle or of the immobilised vehicle.

## CODE OF PRACTICE (continued)

### MANOEUVRING OF BREAKDOWN VEHICLES

The longer you are at a breakdown scene, the greater the danger.

1. Only where absolutely necessary will recovery /breakdown vehicles be manoeuvred or parked to the front of a disabled vehicle, i.e. to connect up for a recovery.
2. If recovery is to be undertaken, recovery equipment must be connected, whenever possible, prior to moving recovery vehicle to the front of immobilised vehicle. All such manoeuvres must be completed with extreme care.
3. If breakdown faults cannot be rectified quickly and safely, immediately recover the vehicle to a place of safety.

### REMOVAL OF IMMOBILISED VEHICLES (GENERAL RULES)

1. In all cases - inform the driver of the immobilised vehicle of the recovery procedures to be undertaken.
2. Before moving off from the breakdown scene, be mindful of the other road users and their safety.
3. Where a recovery manoeuvre is likely to obstruct the flow of traffic - contact the Police.
4. Before moving off, remove debris, tools, equipment and cones.

### REMOVAL FROM MOTORWAY HARD SHOULDER.

Use the hard shoulder to build up speed and, having identified a suitable space in the nearside lane, signal and move off the hard shoulder. Extreme care should be taken during this manoeuvre, being mindful of other vehicles that may be stationary on the hard shoulder.

### REMOVAL OF ACCIDENT DAMAGED VEHICLES.

Action in all cases of removal of accident damaged vehicles:

- a) If Police present - under their direction. b) If no Police - comply with all safety guidelines.

### GENERAL ADVICE TO MOTORIST

Following a repair, the driver of a previously immobilised vehicle should be given advice regarding the safe procedures for re-joining the traffic flow.

### GENERAL ADVICE TO BREAK/RECOVERY PERSONNEL

#### Hazardous Chemicals

All recovery/breakdown personnel should be aware of the legal requirements in respect of vehicles carrying hazardous loads. If in doubt - contact the Police.

ALL PERSONNEL SHOULD BE AWARE OF THE EVER-PRESENT DANGERS TO THEMSELVES AND OTHER ROAD USERS WHEN ATTENDING THE SCENE OF A BREAKDOWN/RECOVERY INCIDENT

### FAILURE TO COMPLY WITH THE CODE OF PRACTICE COULD SERIOUSLY DAMAGE YOUR HEALTH

NOTE: This Code of Practice has been formulated and sponsored by the following organisations: THE AUTOMOBILE ASSOCIATION, THE ROYAL AUTOMOBILE CLUB, GREEN FLAG/NATIONAL BREAKDOWN RECOVERY CLUB, and THE INSTITUTE OF VEHICLE RECOVERY.

Whilst Boniface Engineering endorse the aims of this Code of Practice, it is not of their composing. No liability will be accepted by this company.



## WEIGHTS OF LOOSE EQUIPMENT

ITEM	FIGNo	ITEM	PARTNo	WEIGHT
SECOND CAR CROSSHEAD c/w	17	17	} 07-706	25 Kg
Wheel frame Outer R.H. & L.H.	17	22		
'L' ARM	17	24	04-548	8Kg.

**WINCH OPERATION**

NOTE: The winch manufacturer's Handbook is supplied with the Fixed Bed Transporter information package. Nothing written here is intended to countermand anything contained in that book.

- A. When engaging the winch clutch make sure it is fully home and when disengaging, that it is fully out. When putting the clutch in, it may be necessary to move the drum by hand slightly to get the gears to mesh.
- B. The mechanism incorporates a drag brake, which should stop the drum from overrunning when paying out the cable. Never attempt a winching operation without at least four turns of cable on the drum.
- C. The winch rope can be paid out by free-wheeling or under power. A man pulling will be enough, but if a rope is paid out under power without a small load or a man pulling, it will get badly tangled.
- D. When winching in, always keep the rope feeding straight onto the drum, and this will help to prevent the rope building up at one end or the other. That will reduce the effective range of pull, and if on the drum a large coil falls down onto a smaller diameter coil, it will lock up when being fed out again.
- E. Always have a load on the rope when winching in.
- F. Never try to disengage the clutch when the winch is under load.
- G. Use protective gloves when handling the cable, a loose strand can cause nasty injuries.
- H. Some versions of this unit have side-winching capstans fitted to enable side winching to be carried out. The diameter of the capstan barrels is rather small for a heavily loaded winch rope to pass around, and therefore we rate them for intermittent use only.
- I. Please note that the rope must always be passed through the safety link. (See Illustration)
- J. Always keep well clear of the winch rope. Use of the optional remote control handset will enable you to do that.
- K. Use of the capstans will upset the natural lay of the cable on the winch drum. After use it is advisable to pay out the cable again and rewind onto the drum normally.
- L. If you need to carry out a lot of heavy winching over the side, we suggest you use a bed-end fairlead, which was designed for that purpose, and is available from Boniface Engineering, Thetford.

