

**40 SERIES**

**FOUR POST LIFTS**

**User Manual**



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# **SECTION 1**

## **PURPOSE & PLANNING**

### **INFORMATION**

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**IMPORTANT:**      Do not attempt to operate the lift until you have read  
and understood the instructions contained in this manual



## **1.1 GENERAL INFORMATION**

### **1.1.1 Introduction**

The 40 series are 3000 kg and 4000 kg (6600lbs and 9000lbs) four post electro-hydraulic hoists designed to raise vehicles to a working height. They are specifically designed for use in vehicle servicing bays and commercial workshops engaged in servicing, checking, dismantling and reassembly of cars, vans and light commercial vehicles.

### **1.1.2 General Description**

Apart from dimensions and those design features associated with lifting capacity, all models are similar. The equipment consists of two longitudinal platforms linked at each end by transverse crossbeams known as Power Column Beams or Auxiliary Column Beams. Each of the ends of the transverse beams are located and guided vertically by a column. Three of the columns (known as auxiliary columns) provide the necessary guideways and upper cable anchorage points. The fourth (known as the power column) incorporates the power pack and primary lifting cylinder. The operation of the lift is achieved by an electrically driven gear pump feeding a lifting cylinder which is directly linked to one corner of the lift. The synchronised motion is transmitted to the three auxiliary columns by 3 separate wire ropes which travel via a system of pulleys through the lifting structure from the power column base to each of the respective auxiliary columns.

All models in the range regardless of capacity may be fitted with the Bradbury wheel-free system. This system consists of two wheel-free longitudinal beams which can be moved transversely to obtain the necessary location beneath the vehicle lifting points. The wheel-free longitudinal beams are supported at each end by Wheel-free Beam Long and Wheel-free Beam Short beams, which can be engaged into the slotted racks situated within the four columns. This feature enables the platforms to be lowered, leaving the vehicle supported on the wheel-free structure in a wheel-free condition.

In addition, special workshop cross members are available (optional extra). These rest across the Wheel-free longitudinal beams and permit the vehicle to be supported on its chassis/body lifting points and allow major transverse assemblies to be lowered clear of the vehicle e.g. back axle, transverse engine units etc.

## **1.2 DIMENSIONS**

Lift dimensions are shown in Figure 1.2.

## 1.3 SITE PREPARATION

### 1.3.1 User's Responsibility

These notes are for the user's guidance prior to the lift being erected and should be studied carefully and used in conjunction with the site plan.

It is the user's responsibility to provide a satisfactory site area. This means giving consideration to overhead clearance for the highest vehicle likely to be lifted, in addition to the other requirements set out below. To comply with BS AU 161 (in the UK) the user must also make available a vehicle to test the lift up to a maximum capacity and ensure that access for such a vehicle is not obstructed. Alternatively Wellman Bradbury can, at additional cost, test the lift to maximum capacity (UK Mainland only). The user will be liable for any additional work or visits unconnected with normal erection and testing resulting from abnormal site conditions.

### 1.3.2 Foundation Pad See Fig. 1.3a (& Fig 1.3b - Flush Fit only)

- a) The floor should be constructed with good sound concrete using small ballast. A mix of four parts ballast, two parts sand to one part cement is recommended to depths specified. The minimum depth of concrete should be 130mm.

All measurements should be made using a steel tape measure. Please consult an architect or builder if doubt exists as to the strength of the floor, and quote the column shock loadings indicated.

- b) Where lift columns are fixed direct to the floor, the fixing bolts penetrate the floor to a depth of 50mm. If underfloor heating or steel reinforcement is used, this must be more than 65mm below the surface. Such obstructions could result in a serious accident and one which could have expensive consequences.

**This company accepts no responsibility in such cases.**

For further details of the above methods contact your Bradbury representative or Braintree Commercial Office.

### **1.3.3 Unsuitable Surfaces**

No liability for any damage or any excessive time expended on site will be accepted should the user instruct the engineer to install a lift on an unsuitable surface. The following types of surface are NOT suitable:

- a) Floors heavily impregnated with oil.
- b) Floors which have been chemically attacked.
- c) Tiling, cobbles or thin cement screed.

### **1.3.4 Electrical Requirements**

- a) A single or three phase including a neutral electricity supply (according to voltage of lift ordered) should be brought to the site, terminating in a lockable fused isolation switch adjacent to the power column position and fused as follows:

1.1 kW 1 phase motors	25 amps
1.5 KW 3 phase motors	20 amps
1.8 KW 3 phase motors	15 amps

25 amp cable is recommended to avoid excessive voltage drop.

- b) A competent electrician should be on site for connecting and testing the electrical gear. The engineer will give approximately 2 hours notice of this requirement.

### **1.3.5 Other Considerations**

- a) The packaged lift should be protected from water and damage, and placed adjacent to the area where it will be erected before the engineer arrives. The site must be clear of all debris or obstructions.
- b) The assistance of a physically fit adult is required for the duration of the engineer's visit. Additional help may be needed for moving heavy components.
- c) If mechanical locking option is ordered, an external air supply [min pressure 50psi (3.5 bar), max 120 psi (8 bar)] is necessary, with a connection point adjacent to the power column.

### 1.3.6 Extracts from BS AU161 :1989 Part 1 Council Directive on Machinery

- a) Lifts should be positioned so that throughout their range of movements any moving part is at least 600mm away from the nearest fixed structure. If this is not possible the lift should be positioned so that any moving part is not more than 12mm away from any adjacent vertical structure throughout the movement of the lift and not less than 600mm from any other adjacent fixed structure throughout the movement of the lift.

Where the lift is installed adjacent to any other equipment which moves vertically, the clearance between the equipment and the lift should be at least 600mm. Consideration should be given prior to installation to the position of adjacent doorways and other possible hazards.

- b) The floor should be marked clearly for a distance of 300mm from the edges of the recess (flush fitted lifts only). Marking should be 100mm wide stripes on a 300mm pitch angled at 45° and painted yellow to colour 08-E51 of BS 4800: 1981, taking account of the safety signs regulations 1980 : BS 5378 : Part 1.
- c) Vehicle lifts should be tested by a competent person following completion of the installation and before being taken into service. The tests should be carried out throughout the full travel of the lift and at the design load or at a lesser load as agreed with the user.

The user should arrange for the provision of a suitable test load and in selecting this test load due attention should be given to the load/wheel spacing data contained in this manual - see page 1.12. After the test has been carried out and the test certificate presented, the lift should be marked with the 'rated load'.

### 1.3.7 Lighting Equipment

All lighting equipment is potentially hazardous if exposed to combustible levels of volatile gas or liquid even for a short time. It is recommended that the personnel be instructed accordingly.

#### **1.4 SITE PLAN**

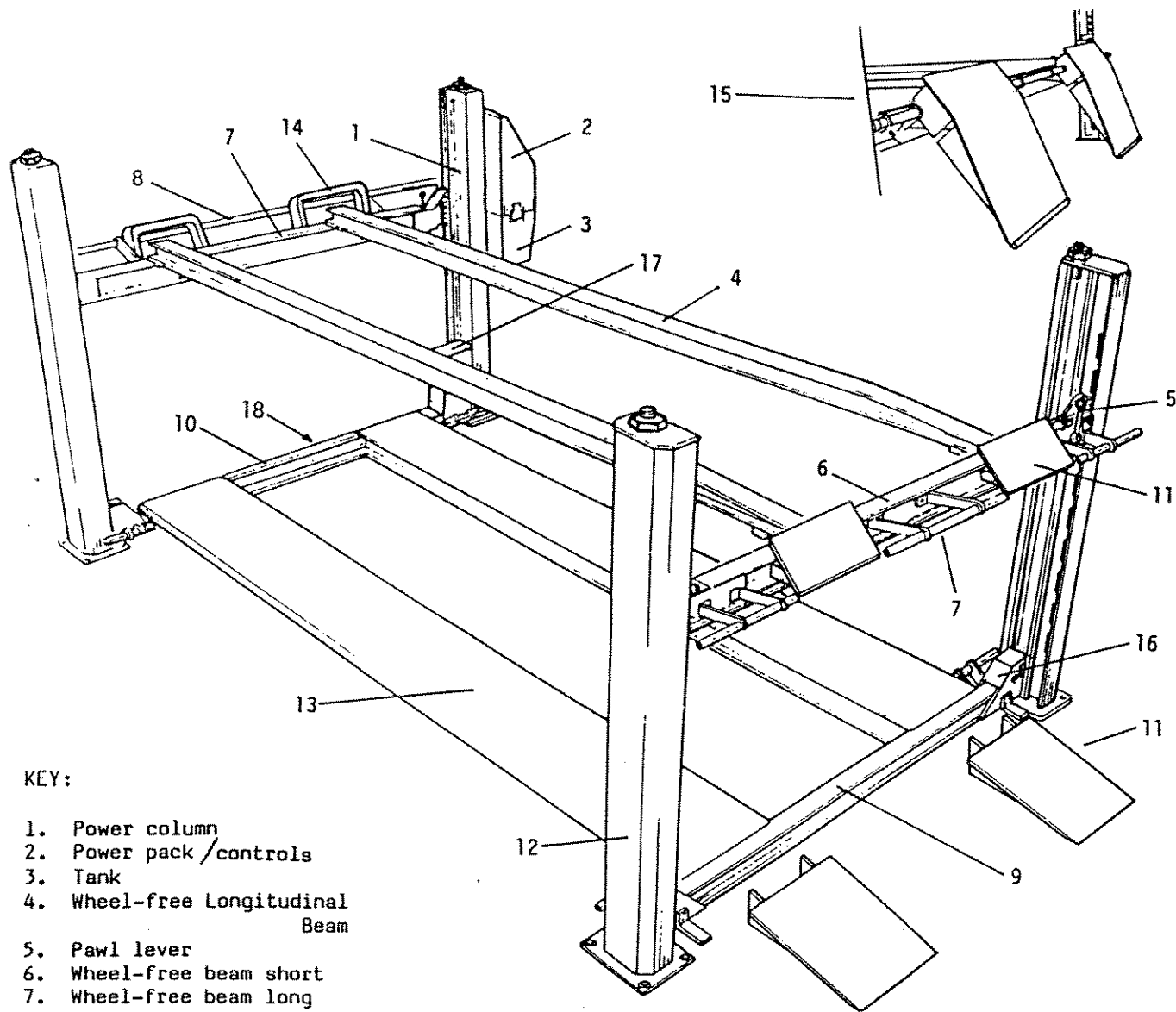
The site plan, including details of the foundation pad, is shown at Fig 1.3a (1.3b for Flush Fit only)

#### **1.5 IMPORTANT : BS AU 161**

All Bradbury lifts are designed to generally conform with BSAU 161 Part 1A 1989. For a lift installation in the UK to comply fully with the British Standard, it is the responsibility of the user to ensure the lift is installed to BS AU 161 recommendations.

The recommendations for installation include:-

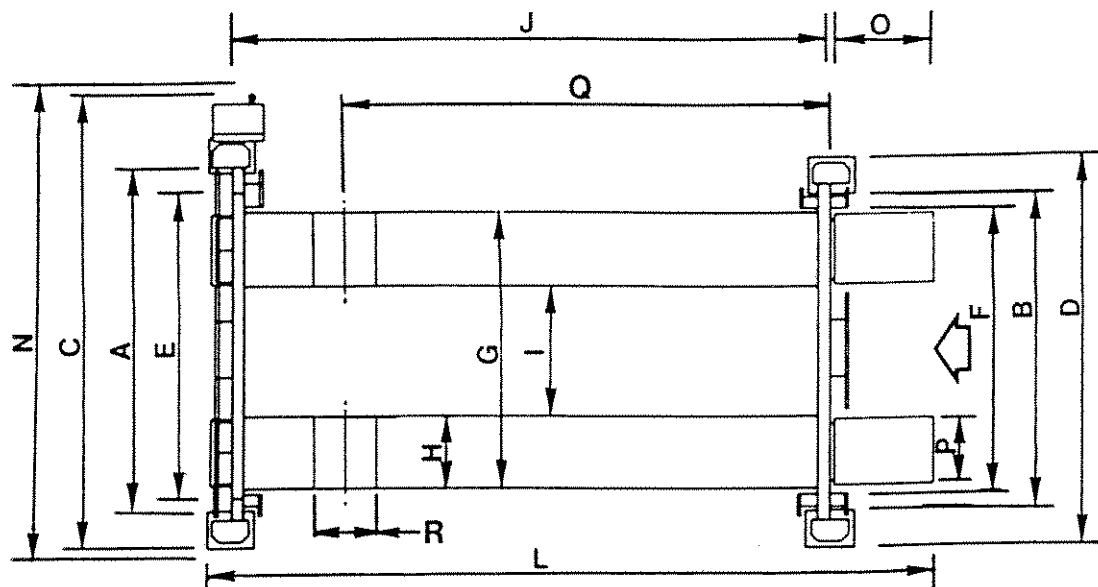
1. The correct positioning of the lift in relation to other fixed structures.
2. The marking of the floor.
3. Load testing after installation.
4. Provision of a test certificate.
5. The marking on the lift with the rated load.



KEY:

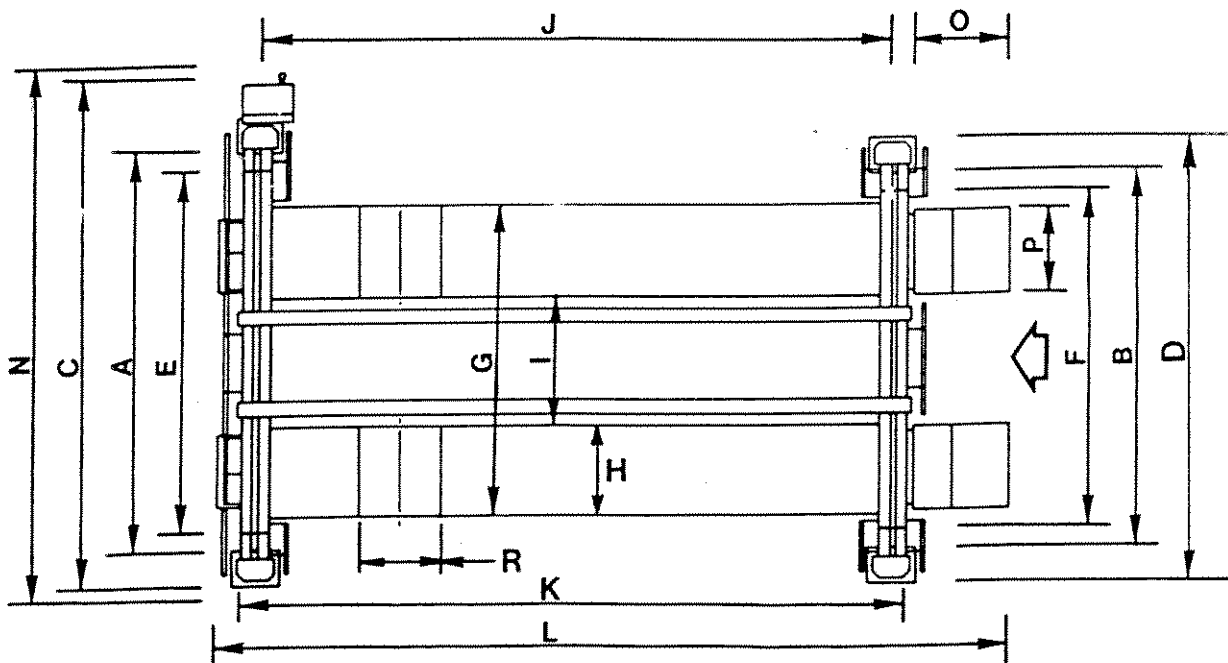
1. Power column
2. Power pack /controls
3. Tank
4. Wheel-free Longitudinal Beam
5. Pawl lever
6. Wheel-free beam short
7. Wheel-free beam long
8. Anti-toe trapping bars
9. Auxiliary column beam
10. Power column beam
11. Split chock ramp
12. Auxiliary column (2 off R.H., 1 off L.H.)
13. Platform
14. Fixed stops
15. Chock ramps
16. Single pulley box cover
17. Triple pulley box cover
18. Cable cover

Figure 1.1 General View Of Lift



**Models 410,420,430**

NORMAL DRIVE ON  
DIRECTION FOR  
R.H.D. VEHICLES



**Models 414,424,434**

**Figure 1.2 Lift Dimensions and Capacity**

\*NOT SHOWN

	410			414			420			424			430			434		
	METRIC	IMP		METRIC	IMP		METRIC	IMP		METRIC	IMP		METRIC	IMP		METRIC	IMP	
* HEIGHT OF PLATFORMS RAISED	1800	71		1800	71		1800	71		1800	71		1800	71		1800	71	
* HEIGHT OF PLATFORMS LOWERED	130	5 1/8		130	5 1/8		130	5 1/8		130	5 1/8		130	5 1/8		130	5 1/8	
* ACTUAL HEIGHT LIFTED	1670	66		1670	66		1670	66		1670	66		1670	66		1670	66	
* HEIGHT OF WHEEL-FREE MEMBERS ABOVE PLATFORMS	-	-		104	4		-	-		124	4 7/8		-	-		124	4 7/8	
A WIDTH BETWEEN COLUMNS POWER END	2486	98		2486	98		2486	112		2840	112		2840	112		2840	112	
B WIDTH BETWEEN COLUMNS AUX. END	2368	93 3/4		2368	93 3/4		2722	107 1/8		2722	107 1/8		2722	107 1/8		2722	107 1/8	
C OVERALL WIDTH OUTSIDE COLUMNS POWER END	2770	109		2770	109		3124	123		3124	123		3124	123		3124	123	
D OVERALL WIDTH OUTSIDE COLUMNS AUX. END	2652	104 1/2		2652	104 1/2		3006	118 1/2		3006	118 1/2		3006	118 1/2		3006	118 1/2	
E WIDTH BETWEEN PULLEY BOXES POWER END	2030	80		2030	80		2384	94		2384	94		2384	94		2384	94	
F WIDTH BETWEEN PULLEY BOXES AUX. END	1980	78		1980	78		2334	92		2334	92		2334	92		2334	92	
G MAXIMUM WIDTH ACROSS PLATFORMS	1905	75		1905	75		2160	85		2160	85		2160	85		2160	85	
H WIDTH OF EACH PLATFORM	508	20		508	20		635	25		635	25		635	25		635	25	
I DISTANCE BETWEEN PLATFORMS	890	35		890	35		890	35		890	35		890	35		890	35	
J Overall Length of Platforms (including crossbeams)	4153	163 1/2		4153	163 1/2		4360	171 5/8		4360	171 5/8		4826	190		4826	190	
K Overall Length of Wheel-free Superstructure	-	-		4415	174		-	-		4622	182		-	-		5088	200	
L Overall Length of Lift (incl. rams at one end)	5033	198 1/2		5265	207 1/2		5240	206 1/2		5472	215 1/2		5706	224 1/2		5938	234	
* Overall Height of Power Column (in top position)	3680	145		3680	145		3680	145		3680	145		3680	145		3680	145	
N Maximum Overall Width of Lift	3123	123		3123	123		3477	137		3477	137		3477	137		3477	137	
O Length of Each Approach Ramp	680	26 1/2		680	26 1/2		680	26 1/2		680	26 1/2		680	26 1/2		680	26 1/2	
P Width of Approach Ramp	488	19 1/2		488	19 1/2		588	23		588	23		588	23		588	23	
* Up Time on Full Load (3ph)	38 secs			38 secs			38 secs			38 secs			38 secs			38 secs		
* Up Time on Full Load (1ph)	73secs			73secs			73secs			73secs			73secs			73secs		
* Down Time on Full Load	23 secs			23 secs			23 secs			23 secs			23 secs			23 secs		
* Capacity (kg)	3000			3000			4000			4000			4000			4000		
* Motor Power 3 Phase (kW/hp)	1.5	2		1.5	2		1.8	2.4		1.8	2.4		1.8	2.4		1.8	2.4	
* Motor Power 1 Phase (kW/hp)	1.1	1.5		1.1	1.5		1.1	1.5		1.1	1.5		1.1	1.5		1.1	1.5	
* Oil Required to Operate Lift (Litres/gallons)	14	3		14	3		14	3		14	3		14	3		14	3	
Q Distance to of recess M.O.T. (including crossbeam)	3480	137		-	-		3455	136 1/8		-	-		-	-		-	-	
R Length of recess M.O.T. (including crossbeam)	3505	138		3505	138		3450	139 3/8		3450	139 3/8		4006	157 1/4		4006	157 1/4	
Length of recess non M.O.T.	360	14		360	14		-	-		-	-		-	-		-	-	
Length of recess non M.O.T.	420	16 1/2		420	16 1/2		540	21 1/2		540	21 1/2		540	21 1/2		540	21 1/2	



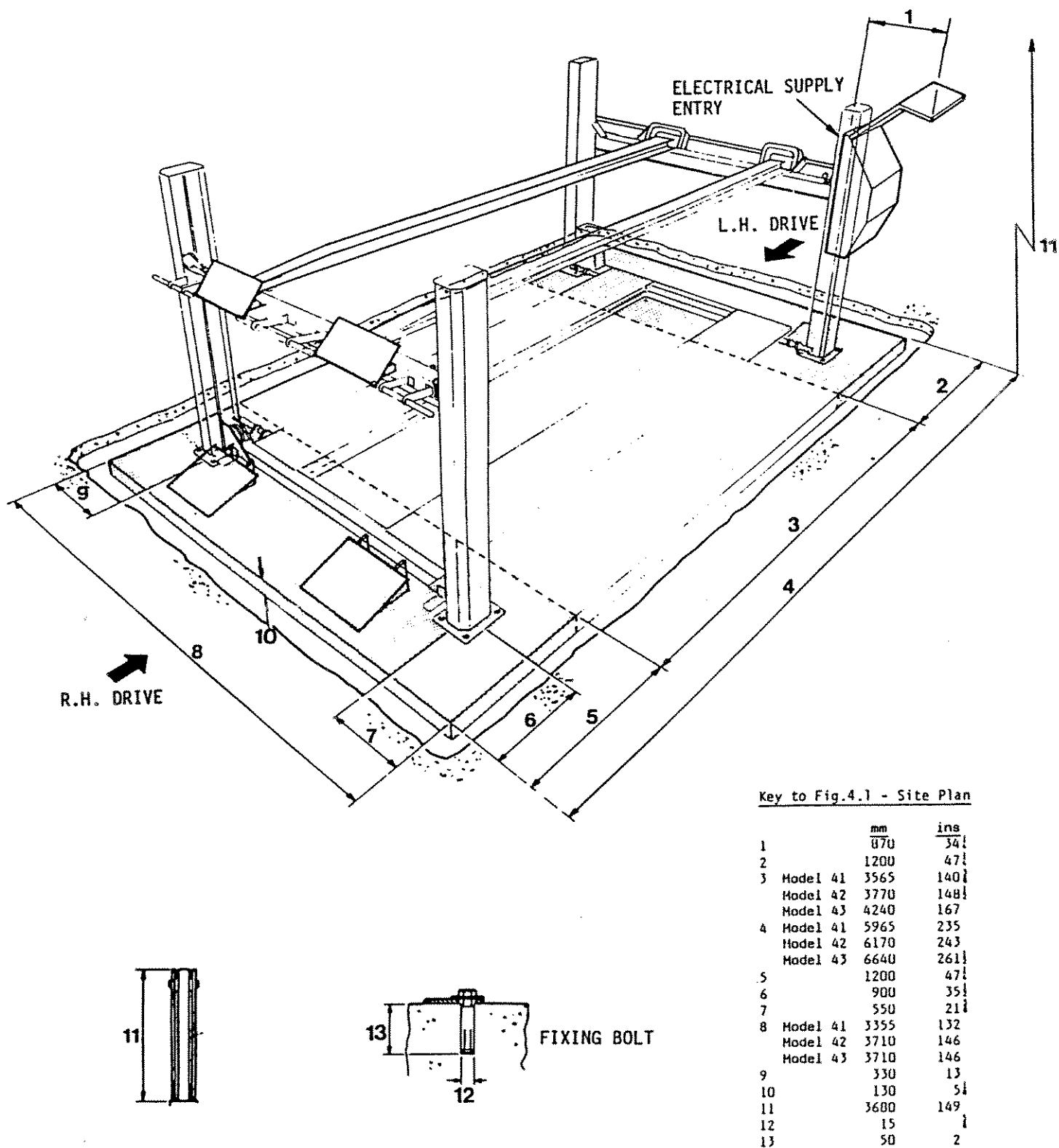


Figure 1.3a Site Plan and Load Limitations

# **Maximum Load and Minimum Wheel Spacing Data**

	LOAD			MIN. WHEELBASE
	KG	LB	MM	INS
<u>MODELS No. 410, 414</u>	3000	6600	2590	102
	2500	5512	2130	84
	2000	4410	1220	48
<u>MODELS No. 420, 424</u>	4000	9000	2590	102
	3500	7178	2130	84
<u>MODELS No. 430, 434</u>	4000	9000	3660	144
	3500	7178	3200	126
	3000	6600	2740	108
	2500	5512	2130	84

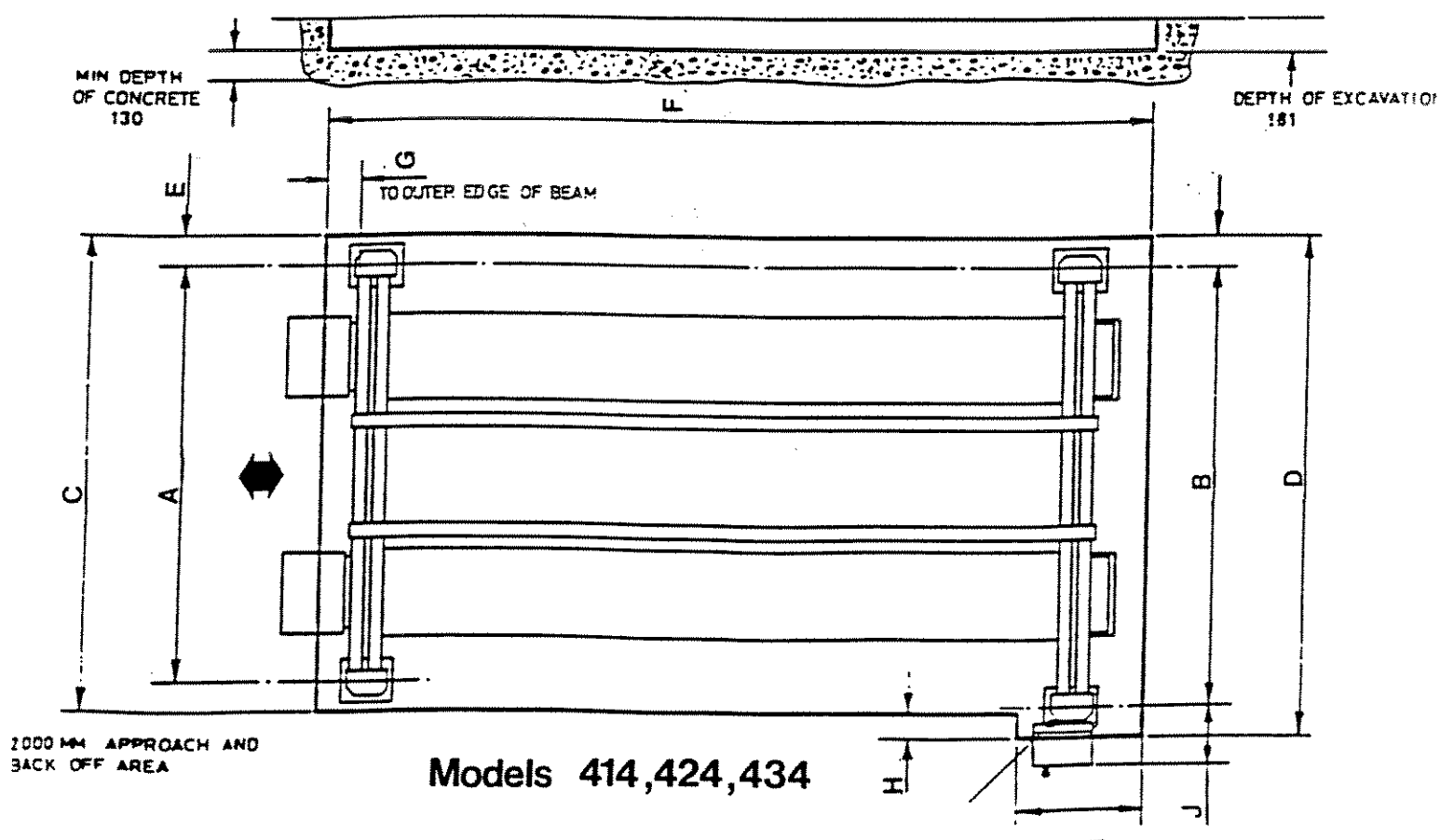
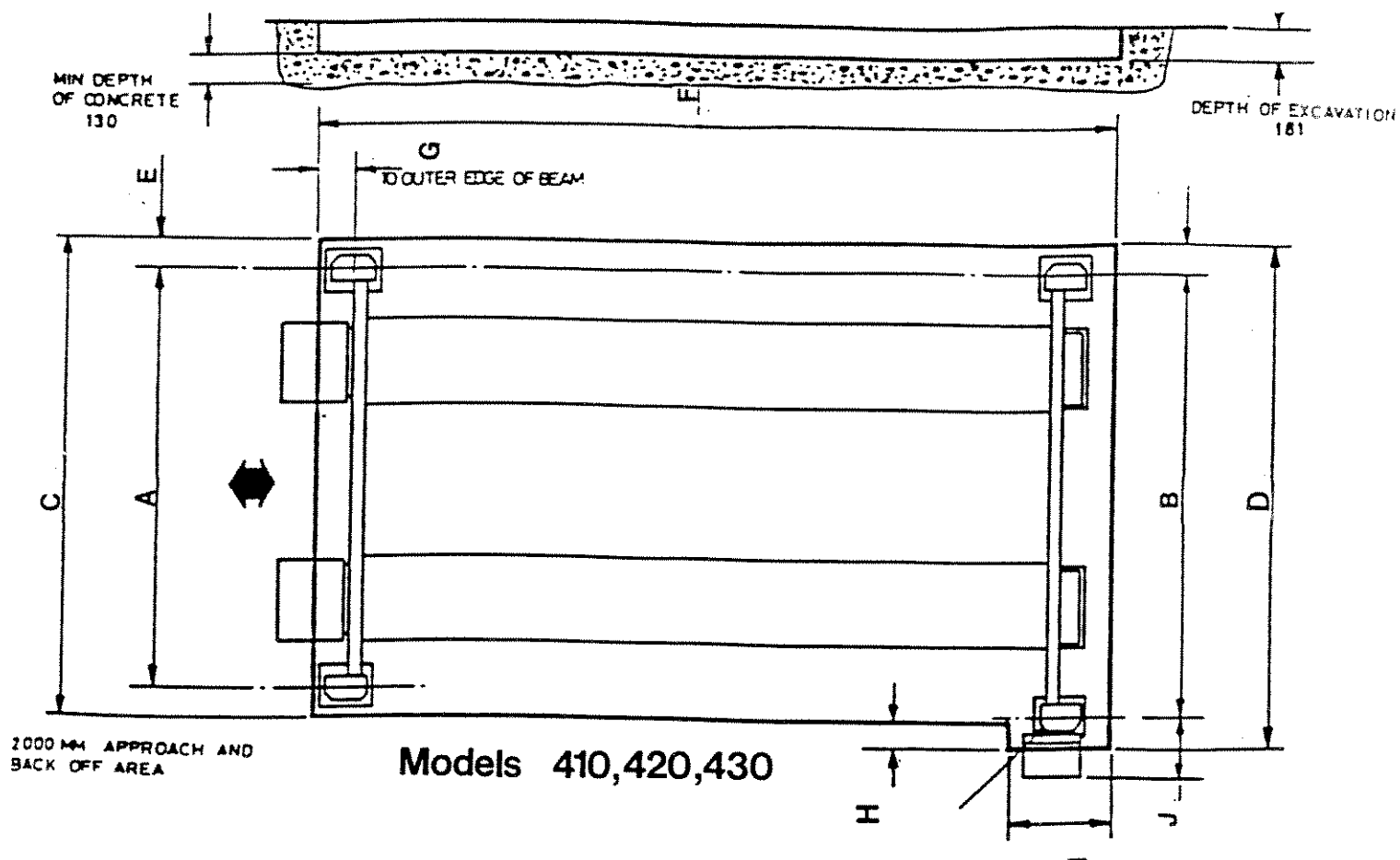


Figure 1.3b Recess Dimensions

### RECESS DIMENSIONS

	410	414	420	424	430	434
<b>A</b>	2500	2500	2850	2850	2850	2850
<b>B</b>	2630	2630	2980	2980	2980	2980
<b>C</b>	2820	2820	3170	3170	3170	3170
<b>D</b>	2972	2972	3322	3322	3322	3322
<b>E</b>	160	160	160	160	160	160
<b>F</b>	4670	4890	4890	5130	5350	5590
<b>G</b>	210	210	210	210	210	210
<b>H</b>	152	152	152	152	152	152
<b>I</b>	620	740	620	740	620	740
<b>J</b>	400	400	400	400	400	400

# SECTION 2

## USER OPERATION

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## 2.1 SAFETY PRECAUTIONS

### 2.1.1 General

It is important that the operating and safety instructions contained in this manual are read and fully understood before the lift is used. It is the duty of both the employer and the employee to minimise the risk of accidents occurring. The following points are listed for user guidance:

- a) Never exceed the Rated Load listed in Section 1. and shown on the lift. Always add the weight of the contents or load inside any vehicle to the weight of the vehicle. The total must not exceed the Rated Load.
- b) Before operating the lift, ensure that any objects which might obstruct the load or the lift structure are removed from the lift-bay area.
- c) Do not operate the lift if any personnel are within the lift-bay area or are so close to any part of the lift structure that they could be caught or injured. All personnel in the vicinity should be warned of the intention to operate the lift.
- d) Personnel should not stand or ride on any part of the lift structure or the vehicle during raising or lowering operations.
- e) Always position the vehicle on the lift to ensure an evenly balanced and adequately supported load. See Section 2.2.4 for details regarding positioning, raising and lowering a vehicle.
- f) Care must be exercised when running engines on the lift. This applies particularly to vehicles fitted with automatic transmission. These should be supported wheel-free whenever possible.
- g) If any part of the lift is struck accidentally or damaged it must be thoroughly examined and tested to ascertain its serviceability. If there is any doubt, the lift must be taken out of service for inspection by a Transervice engineer,(UK users) or agent, (overseas users).
- h) Always observe any special precautions that may be imposed by local authorities.
- i) Service the lift as described in Section 3. Remove all loads from the lift and isolate the electrical supply before carrying out any maintenance work.
- j) The Bradbury Wheelfree system is specifically designed for Bradbury lifts. Improvised or other wheelfree systems should not be used, as hazardous situations could arise.

### 2.1.2 Safety Features

- a) **Main Controls.** The main controls are of the Deadman type. The lift cannot be raised or lowered unless the operator is pressing the UP button or the DOWN lever at the same time as the MASTER button is depressed.
- b) **Wheel-Free Pawls.** The wheel-free pawls are controlled from each end of the lift by a lever. It should be noted that the levers at each end must both be operated to enable the wheel-free to operate.  
**N.B.** The operator should visually check all 4 pawls are fully engaged.
- c) **Anti Toe-trap Protection.** Anti toe-trap facility is provided by a special section on the platforms and by toe guard tubes on the beams.
- d) **Knock-off Feature.** The lift is fitted with an electro-mechanical knock-off device which automatically stops the platform when it has reached its maximum height, and an oil by-pass to tank system.
- e) **Cable Failure Protection.** Each auxiliary column has a safety device which prevents the lift from falling more than 100mm in the unlikely event of cable failure.
- f) **Hydraulic Failure Protection.**
  - 1. **Non-return Valve:** Maintains the pressure in system
  - 2. **Surge Valve:** This operates if a hydraulic pipe fails, thus preventing rapid descent of the lift
  - 3. **Piston Pawl:** To prevent the lift from descending in the event of main seal failure.
- g) **Mechanical Overload Protection.** Mechanical overload valve fitted in the delivery side of the non-return valve which prevents the lift being raised with an over-capacity load.

- h) **Wheel Chocks.** All models are installed fitted with auto-chocks. The 4 tonne models are also supplied with manual chocks. All chocks conform to BSI requirements.
- i) **Anti-Tilt.** This is a unit which is fitted into the triple pulley box of the power beam.

Should the lift be accidentally lowered onto an obstruction, the anti-tilt unit will detect this by the slackness in the cables and automatically prevent further downward movement of the platforms. The platforms must be raised to remove the obstruction and then lowered in the normal manner.

### 2.1.3 Optional Safety Features

- a) **Mechanical Locking.** This option consists of an air operated pawl in each of the three auxiliary corners of the lift.

When the lift has reached the desired working height, the platforms are lowered WITHOUT activating the master button on the power pack. The platforms will come to rest within 45mm when the mechanical locking pawls lock into the safety racks. The loaded platforms are then supported mechanically by the pawls and racks and not by the lifting cables.

To lower the lift, it must first be raised by about 25mm in the normal manner and then lowered to the floor (or new working height) by depressing the master button (which energises the locking pawls) and then operating the lowering lever. A short time delay of 2 or more seconds should be present between depressing the master button and operating the lowering lever to enable the locking pawls to become disengaged from the racks.

When lowering the lift, care must be taken to ensure that the platforms and the load descend horizontally. Should one or more corner not lower then the lift must be again raised and then lowered.

- b) **Lights.** This option enables the lift user to see the underside of the vehicle on the lift. It consists of two fluorescent lighting tubes, one on each side of the aperture between the platforms. The light unit is housed inside a clear protective tube. The control switch for the lights is mounted into the power pack lid and is a simple push for on and push again for off.



#### 2.1.4 Noise Information

Equivalent continuous A-weighted sound pressure level at the Control Position does not exceed 75 dB (A) during the raise or lower cycle with the lift carrying its rated load.

##### **NOTE: Operating Conditions and Methods of Measurement**

Example production model installed for the purpose of EC type testing.

Lift operated in the normal manner simulating working situation.

Meter held at 1.8m above ground, 0.9m from noise emission.

##### **Equipment used for testing:**

Hand-held, Brüel and Kjær, sound level meter.

#### 2.1.5. Load Testing after Installation

- a) Vehicle lifts should be tested by a competent person following completion of the installation and before being taken into service. The tests should be carried out throughout the full travel of the lift and at the rated load.
- b) The user should arrange for the provision of a suitable test load and in selecting this test load due attention should be given to the load distribution.
- c) The competent person should provide the user with a test certificate. A layout for the test certificate is shown in Fig 2.2.
- d) All safety devices should be checked for safe operating in accordance with the manufacturer's instructions.
- e) After the test has been carried out and the test certificate presented, the lift should be marked with the 'Rated Load'. The 'Rated Load' may be equal to the certified test load (see Fig 2.2) but wherever practicable the certified test load should be 110% of the 'Rated Load'

The hydraulic system must be pressure tested using a gauge, and the overload valve set at 110% of the rated load according to the model.

41———1325p.s.i.

42 & 43—1750p.s.i.

## **2.2 EQUIPMENT OPERATION**

### **2.2.1 General**

The lift is designed primarily as a multi-purpose lift for both routine services and major overhauls in the workshop. It can be rapidly converted from the wheel-supported to the wheel-free position, and with the addition of crossmembers it becomes a versatile workshop lift whereby complete axle assemblies, transmission units etc. may be lowered.

### **2.2.2 Working Environment**

The lift is **not** designed to be used for steam-cleaning nor to be installed in the open exposed to all weathers. **Lifts installed under such conditions are not covered by the Bradbury guarantee.**

### **2.2.3 Operator's Responsibility**

The operator must be a competent person. He must be in sole control of the lift and be made responsible for all aspects of safety, maintenance etc.

### **2.2.4 Positioning and Raising the Vehicle**

- a) Position the vehicle square on to the approach ramps.
- b) For normal wheel-free lifting ensure longitudinal wheel-free beams are within vehicle track.
- c) Drive vehicle squarely onto lift platform as near central as possible (and position manual wheel chocks on 4 tonne only.)
- d) Simultaneously press black MASTER button and green UP button to raise the lift. Release both buttons when the desired height is reached. (Platform will automatically stop at its upper limit of travel.)
- e) Check that auto-chocks have adopted the raised position.
- f) If fitted, and so desired, engage mechanical locking device, refer to 2.1.3.a.

### 2.2.5 Lowering the Vehicle

- a) Before lowering the lift ensure that there is not the slightest risk of either the loaded or unloaded structure trapping or injuring any person or object in its path.

- b) Check vehicle wheels are clear of auto-chocks, allowing free operation.

**NOTE:** Lifts with the optional Mechanical Locking Device See 2.1.3.a

- c) Depress black MASTER button and move control lever DOWNWARDS.  
To increase speed of descent, move control lever further DOWNWARDS.

### 2.2.6 Supporting a Vehicle Wheel-Free

- a) Stop lift when pawl at power column is in the middle of a slot at the required height.

- b) Position the two longitudinal wheel-free beams according to the vehicle underbody layout, type of suspension etc. as follows:

1. Beneath the rear shackle bolts and outer ends of the front suspension wishbones where the suspension is suitable, e.g. leaf springs at rear.

**NOTE:** Take extreme care not to damage any flimsy parts of the underbody structure.

2. Use blocks supplied on the longitudinal members and place them under the vehicle jacking points.

**NOTE:** Operators should exercise great care on new vehicle models and consult the vehicle manufacturer if any doubt exists as to suitable lifting points.

- c) Push operating pawl levers firmly to the engaged position at BOTH ends of the lift. Take hand completely away and ensure in each case that levers remain engaged. If the pawls do not engage the wheel-free rack correctly, the height of the lift should be altered relative to the wheel-free slots. (future note - the cables may need adjusting, refer to **Section 3** of this handbook.)
- d) Subject to the pawls remaining engaged, and personnel are clear of the lift lower lift as described at 2.2.5. (Particular attention should be paid to the areas of the wheel-free longitudinal and transverse beams where trapping can occur)

**WARNING:** never support the vehicle wheel-free with pawls engaged at one end of the lift only.

#### 2.2.7. Converting a Vehicle Back to the Wheel-Supported Position

- a) To disengage the wheel -free system, **ensure personnel are clear of the lift.** (Particular attention should be paid to the areas of the wheelfree longitudinal and transverse beams where trapping can occur) Raise lift until both pawl levers are disengaged. An indication of this can be gained audibly, but also check visually to see that all 4 pawls are disengaged. Do not disengage the system by any other method.
- b) Remove any support blocks which may have been used.
- c) Ensure that there are no obstructions under the lift.
- d) Lower lift as described at 2.2.5.

**WARNING:** Under no circumstances should the lift be raised or lowered whilst the operator or any other person has their hand on the pawl engaging levers. Any unsatisfactory operation of the wheel-free system should be attended to immediately, see Section 3 'Cable Adjustment'.

#### 2.2.8 Using the Workshop Crossmembers (optional extra)

- a) Workshop crossmembers rest across the long wheel-free load beams and permit a greater length of the vehicle chassis to be free of obstructions for various major workshop repairs. Individual vehicles and the type of work being undertaken will determine the precise positioning of the cross members.
- b) Push the two long wheel-free load beams outwards as far as possible.
- c) Drive the vehicle centrally onto the lift platforms.
- d) Place the two workshop crossmembers in position on the wheelfree beams.

#### NOTES:

- 1) On many cars it is possible to place the crossmembers outside the wheelbase but they must ALWAYS be in contact with the LEVEL SECTION of the wheelfree beams.
- 2) Depending upon the repair to be undertaken and vehicle construction, it may be necessary to use one crossmember outside the wheelbase and the other within the wheelbase.

- 4) When working on unfamiliar vehicles, close examination of the floor structure should be made to determine the best method of support.
- e) Engage the wheel-free pawls by pushing the pawl levers firmly to the engaged position at both ends of the lift.
- f) Lower the platforms to the ground or to a convenient working height.
- g) The vehicle is now completely chassis supported with maximum accessibility, but the platform is still free to travel up and down and can be used to remove and replace complete power units, axles etc., with the minimum of effort on the part of the operator.
- h) To convert back to wheel-supported lifting, raise the lift platforms until pawl levers move to the disengaged position. **Do not disengage the pawls by any other method.**
- i) Remove any blocks that may have been used and lower lift, ensuring that there are no obstructions below.
- j) The workshop cross members can be removed at ground level.

#### 2.2.9 Use of Turning Plate/Slip plate

- a) Position Turning Plates / Slip plates, ensuring retaining pins are fitted.
- b) Drive vehicle onto the platforms, so the wheels are positioned on the plates.
- c) Remove the retaining pins to allow movement of the wheels.
- d) When finished refit pins and remove vehicle.

<p><b>NOTE:-</b> When Turning Plates / Slip plates are not in use ensure the retaining pins are fitted.</p>
---

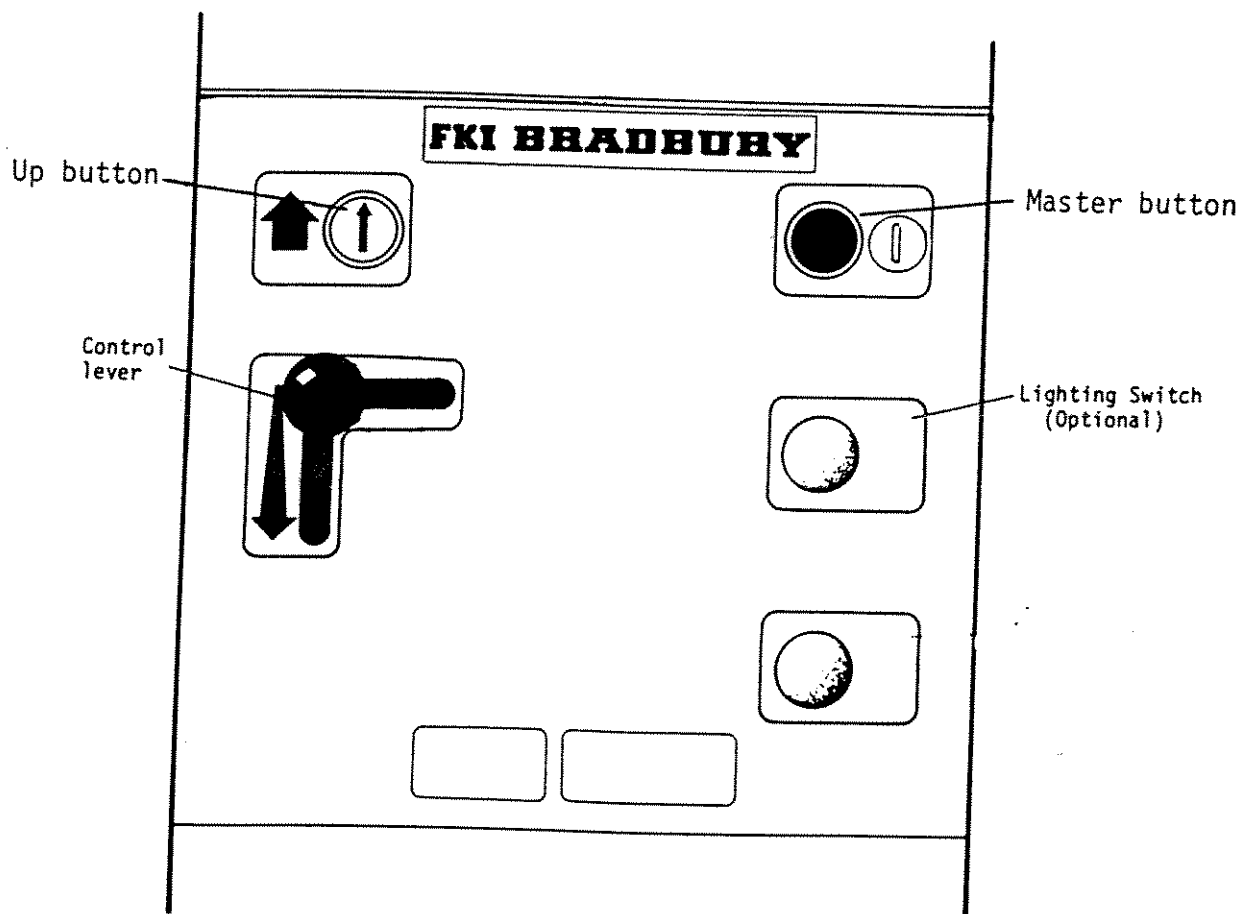


Figure 2.1 Control Panel

*Description*

Manufacturer \_\_\_\_\_

Model No. \_\_\_\_\_ Serial No. \_\_\_\_\_

Design Load \_\_\_\_\_ tonnes \_\_\_\_\_

*Installation*

Customer/User \_\_\_\_\_

Location of Installation \_\_\_\_\_

Date installation completed \_\_\_\_\_

*Test*

Test load applied \_\_\_\_\_ tonnes

Detail of test load applied \_\_\_\_\_

(Where a loaded vehicle is used as the test load enter:

Weighbridge Certificate Number \_\_\_\_\_ Date \_\_\_\_\_

*Declaration*

I/We certify that on \_\_\_\_\_ 19\_\_\_\_ the installation was thoroughly examined and found to be free from patent defects.

I/We also certify that the Rated Load of \_\_\_\_\_ tonnes is marked on the equipment in accordance with BS AU 161 Part 1a clauses **3.11** and **A.5**.

Signature(s) \_\_\_\_\_

Name(s) \_\_\_\_\_

Qualifications or Status \_\_\_\_\_

Company Name(s) \_\_\_\_\_

Address(es) \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

**Figure 2.2    Layout for Test Certificate**





# SECTION 3

## USER

### ROUTINE MAINTENANCE

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Maintenance Points

3.6

### 3.1 LUBRICATION ROUTINE

Carry out the following tasks as indicated depending upon service conditions and frequency of use. Isolate the electrical supply beforehand so that the lift cannot be operated. Where tasks include the cleaning and lubrication of cables, use of protective gloves is recommended.

#### 3.1.1 Monthly Tasks

Fig. 3.1 REF:	ITEM	ACTION	LUBRICANT
A	Cables	Wipe with oil soaked cloth. check and inspect the cable for fraying or rusting. If in doubt have the lift inspected by a Transervice engineer.	General purpose oil.
B	Cable safety and trip devices	Clean and thoroughly lubricate all pivot pins.	General purpose oil.
F	Wheel-free guides and rollers.	Thoroughly clean and lubricate.	General purpose oil.

### 3.1.2 Six Monthly Tasks

<b>Fig. 3.1 REF:</b>	<b>ITEM</b>	<b>ACTION</b>	<b>LUBRICANT</b>
C	Hydraulic Fluid	Check/top up pump reservoir. Top rim of tank to surface of oil is minimum of 140mm.	See note below.
D	Beam guide blocks.	Inspect the guide blocks for wear at point of contact. If they are excessively worn they should be replaced immediately.	-
E	Electrical equipment.	Check for looseness of connections.	Clean and tighten.
G	Pulley bearings.	Strip all pulleys and repack bearings.	Molydisulphide based grease.

**NOTE: Examples of recommended hydraulic fluids are as follows:**

- |   |  |
|---|--|
| <b>a. Temperate climates:</b><br>Esso Teresso 47<br>Filtrate Hydraulic Lift Oil<br>BP Energol HLP 65<br>Castrol Hyspin AWS 46<br>Regent Rando HDB<br>Shell Tellus 41<br>Mobil DTE 25<br>Duckhams Zircon 5 | <b>b. Tropical climates</b><br>Esso Teresso 65<br>Filtrate Fluid 30<br>Power Petroleum<br>Energol CS150<br>Regent Cartra Regal E<br>Shell Tellus 41<br>Vacuum Gargoyle DTE Heavy |
|---|--|

### 3.1.3 Eighteen Monthly Task

Fig. 3.1 REF:	ITEM	ACTION	LUBRICANT
C	Hydraulic fluid	Drain and clean reservoir. Renew strainer and fluid.	See 3.1.2 a. or b.

## 3.2 USER CHECKS AND ADJUSTMENTS

### 3.2.1 Cable Adjustment and Inspection (Fig 3.1 H)

- a. Cable adjustment is correct when the platform of a fully loaded lift is level.

Alternatively, an unloaded lift should produce a situation where each of the auxiliary column corners are 6mm to 9mm higher than the power column corner. This can be checked by raising the lift so that the wheel-free pawl on the power column is set just clear of a slot, at which point the remaining three pawls should clear the wheel-free rack easily.

If the cables are found to require adjustment, hold the cable anchor by the flats provided and turn the adjuster nut to obtain the correct platform height.

- b. Inspect the cables at least every **3 months** for fraying, rusting and general wear.

### 3.2.2. Inspection of Safety Catch Gear (Fig 3.1. I)

Inspect the safety catch gear at least every **3 months**. Check for obvious damage or wear and in particular ensure that the system shows no signs of rust or corrosion.

### 3.2.3 Column Base Fixing Bolts (Fig 3.1. J)

Periodically check that the base fixing bolts at each column are tight. The correct torque figure is 37Nm.

### 3.3 ACCIDENTAL DAMAGE ACTION

In the event of the lift sustaining any accidental damage or component failure, it must be inspected thoroughly to ascertain its serviceability. If in doubt, the lift must be removed from service pending inspection and repair by a **Transervice Engineer**, for UK users, or **Bradbury** agent, for overseas users. Please refer to the after-sales service page at the end of this section.

### 3.4 AFTER-SALES SERVICE (UK)

The reliability of this equipment is fully supported by **Transervice** with repair workshops and field service engineers to provide a full range of after-sales care, including installation, contract maintenance, factory overhaul and emergency repairs on site. Please refer to the after-sales service page at the end of this section.

### 3.5 REPLACEMENT PARTS

It is essential for the safe and reliable performance of the product that only genuine Bradbury or Transervice replacement Parts are fitted.

### 3.6 IMPORTANT : BSAU161

All Bradbury lifts are designed in accordance with **BSAU161 Part 1A 1989** and the EEC Council directive on machinery. To comply fully with these standards, it is the responsibility of the user to maintain the lift in accordance with **BSAU161** recommendations.

The recommendations for maintenance and examination include:

- 1) The lift shall be maintained in accordance with the manufacturer's instructions.
- 2) The lift shall be examined by a qualified person at least every six months, and a register be kept to record all service and examination details.
- 3) Load-bearing chains, cables and lift screws shall be inspected and assessed according to the set criteria.
- 4) All safety devices must be checked every six months and tested every five years.

### INSIST THAT ONLY GENUINE BRADBURY SPARES ARE FITTED

Alternative parts may seem the same, but their performance may affect the inherent safety of the lift. We devote a great deal of time to developing and testing the suitability of our parts to ensure the reliability and safety of your lift. **The use of alternative spare parts is not approved by Bradbury and will automatically cancel the company's liability.**

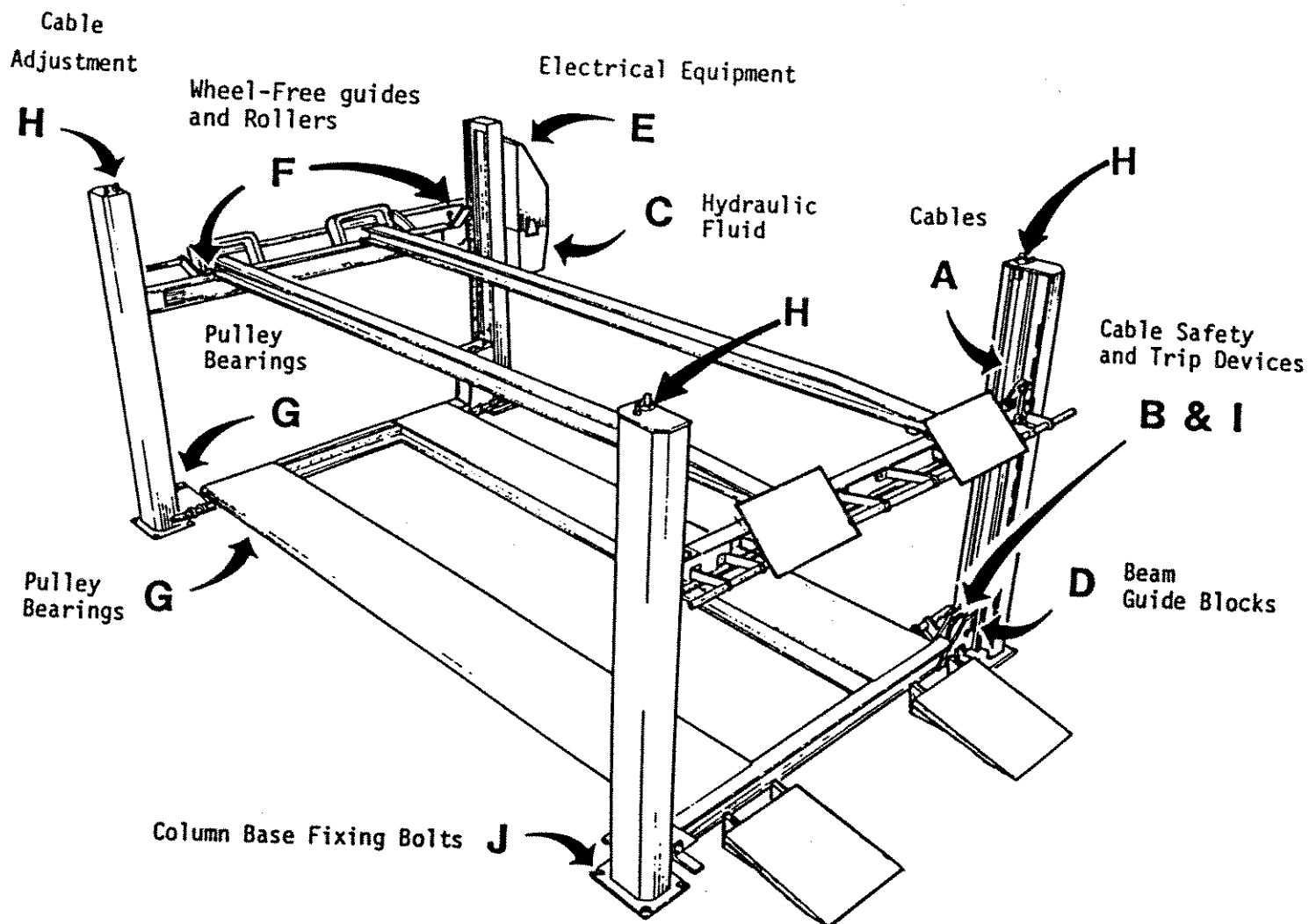


Figure. 3.1 Maintenance Points

Extract from Home Market Terms & Conditions of Sale  
of Bradbury Ltd.

(Overseas customers should refer to their Agent or supplier of equipment who will furnish guarantee terms on request).

**MANUFACTURERS GUARANTEE**

We guarantee our products as free from defects due to faulty material or bad workmanship for a period of 12 calendar months for all products except trolley jacks and pit jacks, for which the guarantee is 6 calendar months. The period of guarantee commences from the date of delivery to the purchaser, either by us or by our distributor. Our liability is limited to the replacement of parts found defective and making good defects found within the prescribed period arising solely from faulty material or bad workmanship, in the products of our own manufacture, properly used solely for the purposes for which they were intended, and not due to wear and tear, misuse, neglect or improper adjustment.

Any product alleged to be defective shall be forwarded to us, carriage paid, immediately the alleged defect is discovered, for identification, examination and report, or if not capable of being so forwarded, notice in writing shall be sent to us immediately. The customer will be charged for engineers time and travelling expenses if a warranty repair is carried out on site, other than for fixed items of equipment such as lifts. If we accept liability the repaired or new product, in replacement, will be delivered free our works. We give no guarantee in respect of any proprietary electrical or other equipment made by other manufacturers, and supplied with our products, but will so far as possible, transfer the benefit of such guarantee, if any, given by such other manufacturers. We are in no circumstances liable for any consequential or other loss or damage arising through any defect in our product. In lieu of any express or implied statutory or other warranties, guarantees, conditions or liabilities (whether as to fitness, quality, standard or workmanship or otherwise) which are hereby excluded, the following provisions shall apply:

- (a) The Purchaser shall not be entitled to rescind the contract or to claim damages on the grounds of any statement whatsoever as to the suitability of the goods for any particular purpose, and the Purchaser assumes responsibility for the capacity and performance of the goods being sufficient and suitable for his purpose, and for his premises being suited to the installation and operation of the plant and machinery. The Purchaser agrees and confirms that apart from the express terms of the contract, no statement or representation has been made by the Company relating to the goods to be supplied under the contract or, if any has been made, he has not relied on it.
- (b) The Company's liability in respect of any defect whether of quality, suitability of performance or otherwise in any goods supplied or for any loss, injury or consequential damage attributable thereto is limited to the terms of this guarantee and the Purchaser hereby acknowledges:
  - (i) that it purchased the goods in a competitive market and that the bargaining power of the Company was in no way a relevant factor in the purchase of the goods from the Company.
  - (ii) that the Purchaser knows the extent of the meaning of this Condition and the limitations thereby imposed by it under Sections 13, 14 and 15 of the Sale of Goods Act 1893.

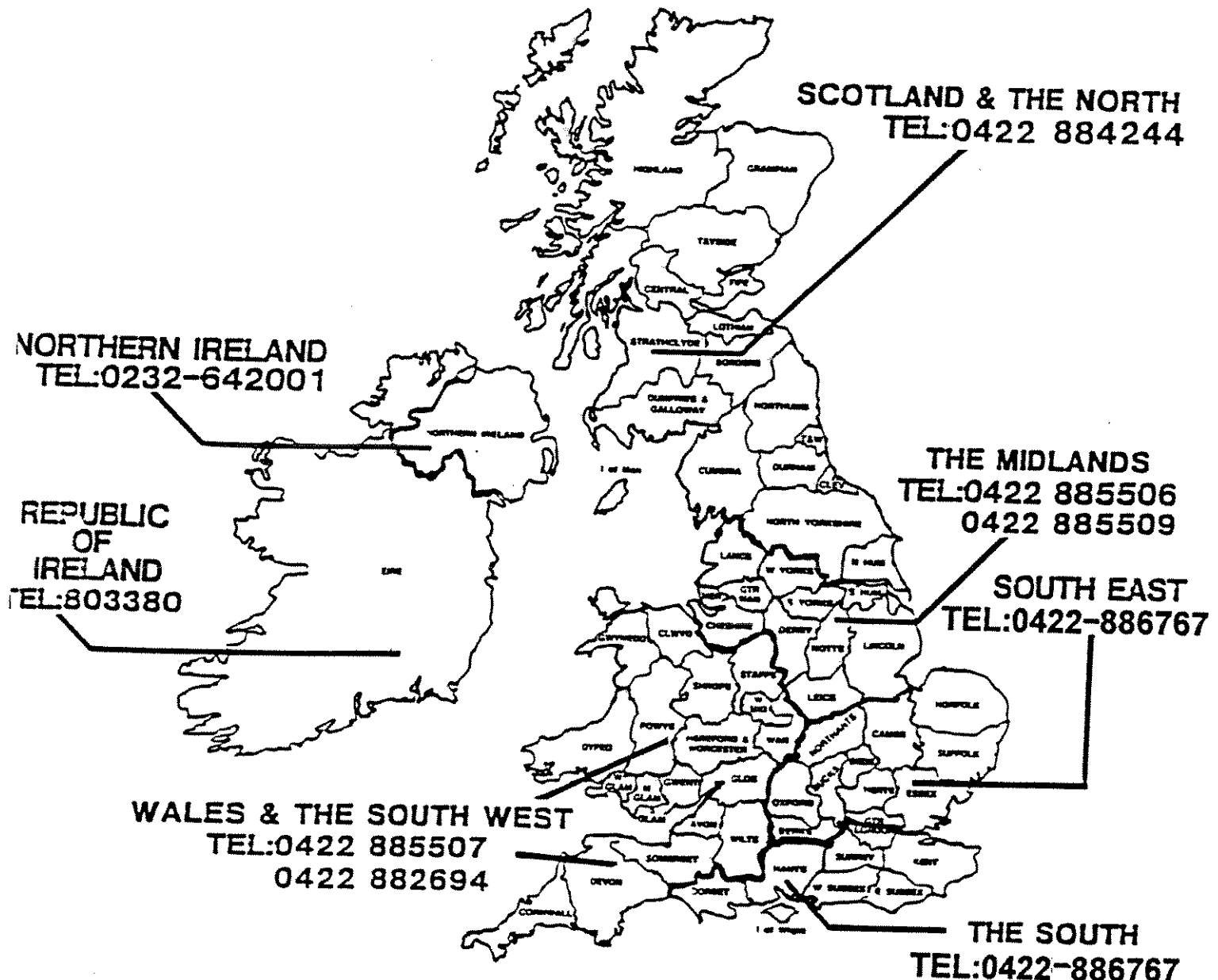
Our guarantee does not apply should equipment be operated or stored under adverse conditions e.g. outside installations or in areas used for steam cleaning or pressure washing etc.

# AFTER SALES SERVICE

Apart from the routine maintenance and adjustments stipulated in this manual the equipment must not be tampered with in any way. All further servicing must be carried out only by a Transervice engineer or Authorised Agent, as below. Failure to observe these conditions will invalidate the Guarantee.

## ON-SITE SERVICE

If you require a Service Engineer to attend ON SITE, please contact the Service Office shown in your area. All have 24hr. answering services.



## OVERHAUL CENTRE

If the equipment covered by this manual requires to be sent back for factory overhaul, please send it to:

Transervice Limited,  
Brearley Works  
Luddendenfoot Halifax  
West Yorkshire HX2 6JB  
TEL: Halifax (0422) 882383

## FULLY COMPREHENSIVE AFTER-SALES SERVICE

Installations. Contract Maintenance. Factory Overhaul. Repairs on Site. Spare Parts. Certification and Calibration of Equipment. Lift Safety Kits. Car Data. Technical Manuals.

## OVERSEAS

Service abroad is provided by the agent from whom your equipment was purchased

# TRANSEERVICE

The Service Organisation for CRYPTON • BRADBURY

Transervice Limited  
Brearley Works  
Luddendenfoot Halifax  
West Yorkshire HX2 6JB  
TEL: Halifax (0422) 882383



# **SECTION 4**

## **INSTALLATION PROCEDURES**

### **SCOPE**

The following procedure is intended for use by competent persons who are experienced in the installation of vehicle lifts.

Ensure that you have read and fully understood these instructions before attempting to install a lift.

The lift models covered by this procedure are:

**BRADBURY**

**40 Series Four-Post Hydraulic Lifts  
Rated Loads 3000kg or 4000kg**

Specialised equipment is required to carry out this procedure. This equipment is only available from **Transervice**. The use of any other lifting or installation equipment is not covered in this procedure and therefore the manufacturer or its representatives cannot be held responsible for any accidents or damage caused as a result of its use.

# SECTION 4

## INSTALLATION PROCEDURES

SECTION

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#### 4.1. SPECIAL TOOLS AND EQUIPMENT

- a) Hilti hammer drill and 15mm bit.
- b) Circlip pliers (external).
- c) Pressure gauge 0-3000 psi (200 Bar) with extension pipe and male adaptor Fig.4.20a.
- d) Safety catch gear spring compressor. Fig 4.20b.
- e) Torque wrench 0-100Nm. (136 lbf-ft)
- f) Wire Stripper
- g) Plumb line.
- h) Trolley Jack (desirable) 1500kg (3300lb) capacity.
- i) Crowbar 1.25m (48 ins).
- j) ROCOL MTS 1000 lubricant.
- k) Overload valve adjusting tool. Fig4.20c
- l) Spanners Metric

Size	5.5	7	10	13	17	18	21	22	24	25	26	27	30	32	55
Open End	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Ring	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
Socket	✓	✓	✓	✓	✓	✓	✓	✓							

- m) Wrenches for socket screws, metric.

SIZE	1.5	2.5	3	4	5	8
------	-----	-----	---	---	---	---

## **4.2 PRE INSTALLATION PROCEDURES**

The lift should arrive on site packaged in one unit with all hardware and loose items necessary for assembly to the main package.

No oil is supplied with lifts for Overseas areas. This should be obtained locally. Grades of oil and quantity are given on Pages 1.10 and 3.3.

Before proceeding with the installation of the lift, check that the condition of the floor area (and in particular the concrete foundation pads) meets the criteria laid down at **Fig.4.1**

Ensure also that the chosen site or run-off area and headroom are as specified.

Check the existence of an electrical supply to the power column position as illustrated.

Unpack the lift and check that the main assembly is complete as shown in **Fig.4.2**. Unpack the boxes of hardware and check that all items are complete as shown on the Despatch Schedule.

## **4.3. INSTALLATION PROCEDURE**

**NOTE:** In the following instructions RIGHT and LEFT apply as viewed from the hydraulic power column, looking across the lift towards the opposite auxiliary columns.

### **4.3.1 Positioning of Assemblies (Refer to Fig.4.2)**

- a) Place the power column in the approximate position for instalment, and check that the electrical supply cable will have a clear run from the supply source.
- b) Position the auxiliary columns in their approximate positions, followed by all other main assemblies as shown.
- c) Place the platforms on blocks of at least 4" (100mm) in height (the blocks should all be of equal height).

**NOTE:** This is important, as it will be necessary at a later stage to gain access beneath the platforms.

- d) Select the correct pulleys, pulley spacers and pulley pins and lay them adjacent to the respective pulley boxes and platform ends. (See **Figs.4.4. a,b,c and d.**)
- e) At this stage, confirm the position of the lift with the customer.

#### **4.3.2 Installation Of Cables (Refer To Fig.4.3)**

- a) Lay cables out and remove any twists.
- b) Locate knurled-shank setscrews (**Fig.4.5**) in the holes in the auxiliary side platform pulley box only (two each end). Use the nuts and washers provided to draw the setscrews firmly into position. Ensure the setscrews are positively locked - access to these is restricted once the platform pulleys are installed. Remove the nuts and washers from the setscrews.
- c) Stand the auxiliary side platform on its side and thread the long and medium cables through the structure as shown, leading with the non adjustable anchor ends and starting at the single pulley boxes in the auxiliary column beam. Ensure that the cables are not twisted or crossed. (See **Fig.4.3**)
- d) Fit two small pulleys with pulley pins, washers and spacers to each of the platform pulley boxes (**Fig.4.4.c.**) The larger spacer should be installed above the pulleys and the smaller shim spacer at the bottom of the pulleys. Smear the pulley bearings with grease before installing. Locate pulley pin lock tabs with Taptite setscrews. (See **Figs.4.4.a and b.**)
- e) Lay the auxiliary platform down again, making sure that the cables are not trapped.

#### 4.3.3 Installation of Power and Auxiliary Beams

- a) Using a tape measure, set the inside platform securing holes (where knurled-shank setscrews fit) to a dimension of approximately 1080mm at both ends of the platforms. Also ensure that the platforms are parallel and square (Fig.4.6).
- b) Offer up the power beam to the platforms to locate the knurled shank setscrews in the auxiliary platform with the corresponding holes in the beam (Fig.4.7). This is easiest done by tucking the top flange of the beam under the decking of the platforms and then rolling the beam into position (Fig.4.8).
- c) When the beam is located over the knurled-shank setscrews, loosely secure the beam with the plain and spring washers and nuts. Then fit two knurled-shank setscrews through the power platform pulley box into the corresponding holes in the beam. Fit the plain and spring washers and nuts.

**NOTE:** The knurled-shank setscrews are a necessary close fit in the beam holes, and some shifting and repositioning of the platforms maybe be required.

- d) Once all four nuts are fitted, tighten them fully.
- e) Repeat the procedure for the auxiliary end beam.
- f) Thread short cable through boxes - outside of power column beam.

#### 4.3.4 Installation of Triple Pulleys

- a) Install three large bore diameter pulleys into the lower position of the power beam triple pulley box. Position each pulley individually and ensure correct cable is fed beneath and behind it before spacers and pulley pins are installed, as shown in Figs.4.4.d & 4.9.
- b) Secure pulley pin lock tabs with Taptite setscrews.
- c) Repeat (a) and (b) for upper three pulleys ensuring that cables are fed above and in front of them.



#### **4.3.5 Installation of Safety Catch Gear (refer to Fig.4.10)**

- a) Mount the cable roller (item 10) onto its spindle on the pawl assembly and secure with a circlip (item 6).
- b) Mount two small O/D plain washers (item 5) onto the safety gear actuator pivot on the pawl assembly, followed by the safety gear actuator (item 4) and one plain washer. Retain with circlip.
- c) Using the safety pawl pivot pin (item 2) fit the pawl assembly into the single pulley box of the beam (making sure that the actuator rod is first engaged in the hole in the rod bracket). Secure the pawl pivot pin with a circlip at each end.
- d) Mount spring (item 7) and plain washer (item 8) onto safety gear actuator. Using spring compressor, fit split pin (item 9).

**NOTE:** Care must be taken to fit the correct hand safety pawl assembly into the corresponding single pulley box.

#### **4.3.6 Installation of Single Pulleys (Refer to Fig. 4.4,4.4a,b & 4.11)**

- a) Fit cable retainers to single pulley boxes.
- b) Fit single pulleys (small bore diameter) to the power and auxiliary beam single pulley boxes, note position of spacers in each box. Ensure that the cables are beneath and behind the pulleys but on top of the cable retainers.
- c) Fit pulley pivot pins and secure the lock tabs with the Taptite setscrews.

#### 4.3.7 Assembly of Power Column

- a) Fit cylinder guide roller to triple pulley box. (See Fig 4.9) These are retained by the beam guide blocks.
- b) Locate cable anchors into retaining bracket at base of power column. Slide anchor retainers between the anchors and the underside of the bracket from opposite sides until the closed ends are flush with the edge of the bracket.
- c) Bend the overlapping legs upwards at each side to prevent accidental removal. (See Fig4.9)
- d) Fit lifting links and crosshead pin spacers to top of piston rod. (See Fig.4.12)
- e) Position cylinder so that lower lifting link holes align with boss on triple pulley box side plates. Engage boss in holes and fit washers and self locking screws. (See Fig.4.12).
- f) Align the complete lift structure so far assembled in the exact position required.
- g) Position the power column so that the hydraulic cylinder butts against the cylinder guide roller and is also central between the triple pulley box side plates. Drill the floor for the two rear power column locating holes using the baseplate as a template. Use 15mm bit.
- h) Fit Hilti floor anchors to the rear holes and secure with washers and M12 x 50 bolts. Do not fully torque tighten at this stage.
- i) Drill the two front power column holes, fit Hilti floor anchors, washers and M12 x 60 bolts.
- j) Using a plumb line, check that the power column cylinder is perfectly upright. Fit shims under the base plate if necessary.

**NOTE:** Time taken to ensure the cylinder is upright will be well spent. Failure to shim correctly may cause beam guides to jam in column tracks when lift is operated.

- k) When column is upright, tighten all four foundation bolts sufficiently to hold the column safely, but do not fully torque tighten them at this stage.
- l) Fit knock-off arm, compression spring and rod assembly into the two guide runners located inside the top of the power column cover. Fit the circlip to retain the rod.

- m) Fit hydraulic hose assembly to the lower connection at the base of the hydraulic cylinder (**Fig.4.14**) (Tuck the top hose connector between the lifting link and cylinder to make the top connection easier when column cover is in place.)
- n) Place the power column cover into position by lifting it over the cylinder. Remove the two front column bolts and washers from the base of the column. Secure the column cover with single setscrew at rear and with the two front foundation bolts at the base. Torque all four foundation bolts to 37Nm (50lbf-ft).
- o) Make sure that cylinder guide is butted up against the cylinder, then proceed to fit the guide blocks to each side of the triple pulley box and secure with two Taptite setscrews. Do not fully tighten at this stage.

**NOTE:** Large guide blocks to outer side of pulley box, small guide blocks to inner side.

- p) Secure triple pulley box cover.

#### **4.3.8 Installation of Power Pack (Refer to Fig.4.15)**

- a) With assistance, lift power pack and hook it onto the bracket at front of power column cover.
- b) Feed hydraulic hose through aperture in power column cover and connect to the power pack using male adaptor and Dowty seal.
- c) Feed overflow pipe through aperture in back of power pack cover.
- d) Secure power pack to power column cover with setscrew.
- e) Fit piston pawl lever and secure with cap head screws.
- f) Set limit switch initial adjustment by slackening spindle nut and rotating arm anti-clockwise until the roller (item 10) contacts the knock-off arm.
- g) Retighten the spindle nut.
- h) With powerpack hydraulic tank removed, discard plastic bag from strainer element.
- i) Fill tank with hydraulic fluid until a minimum dimension of 140mm (5½") from rim of tank to surface of oil is reached. Replace under power pack.

#### **4.3.9. Installation of Auxiliary Columns (Refer to Fig 4.16)**

- a) Fit locknut to top of safety rack and position it at the lower extremity of thread.
- b) Locate the lower end of the safety rack between the safety catch pawl and the two guide pins protruding from the single pulley box side plates. Feed the top of the rack through the aperture in the top of the auxiliary column. Fit retaining nut and tighten, ensuring that it is secured at the fullest extent of the thread. (It may be necessary to disengage the pawl from the rack by pushing the top of the pawl against its spring with foot.) Repeat on other auxiliary columns.
- c) Place single pulley box covers in position.
- d) Move auxiliary columns into position so that the single pulley box is situated in the column track. Fit guide blocks to box side plates and tighten Taptite setscrews temporarily.
- e) Ensuring that the guide blocks are pushed back in their slots, align each auxiliary column in its exact position and, using base plates as templates, drill holes and insert Hilti anchors, bolts and washer to hold column safely.
- f) Use plumb line to square up each column, and shim as described at 4.3.7 . Torque all foundation bolts to 37Nm (50lbf-ft).
- g) Push adjustable cable anchors up through the aperture in the top of the auxiliary columns and fit the anchor nuts at least one full nut thickness.

#### **4.3.10 Assembly of Wheel-Free Beams (Refer to Fig 4.17)**

- a) Bolt the wheel-free beam carrier brackets to the power and auxiliary beams.
- b) Locate the wheel-free beams into the racks in the columns.

#### **4.3.11 Electrical Tasks**

With supply isolated, connect a temporary supply cable. (connection details are supplied on a label attached to the power pack lid.)

#### 4.3.12 Installation of Anti-Tilt

1. Raise the unloaded lift to approx. mid height. Place four axle stands, one under each corner of the lift structure and lower the lift onto them. Release the cables by unscrewing the threaded anchors from the top of the three auxiliary columns.
2. Isolate the lift electrical supply.
3. Remove the triple pulley box cover.
4. Starting with the long cable, followed by medium and short, place each cable behind their corresponding rollers in the anti-tilt unit. (the anti tilt unit should have its limit switch striker flap uppermost.) (see Fig. 4.22a)
5. Position and secure the anti-tilt unit in the triple pulley box using the four taptite screws provided.
6. Fit the limit switch to the side of the triple pulley box with the roller positioned inside the triple pulley box and behind the anti-tilt flap. (see Fig. 4.22a)
7. Thread the two wires (1 Black, 1 white) through the flexible conduit and connect one end to the anti-tilt limit switch.  
  
The two wires must be connected to the normally closed (N.C.) pair of contacts.
8. Feed the other end of the conduit through the back of the power pack and secure.
9. Cut through one of the wires which feed the piston pawl solenoid and, using the terminal block provided, wire in series, the anti-tilt limit switch. (see Fig. 4.22b)
10. Set and lock into position the limit switch roller and arm so that in its neutral position its arm reads 5 o'clock.
11. Make sure that the limit switch roller is the correct side of the anti-tilt flap (behind flap, obscured from view). Reconnect the cables. Make sure that the cables are correctly routed through the anti tilt unit. Raise the lift a short distance.

12. Whilst holding in the lower button, manually actuate the anti-tilt limit switch by pushing the flap. This action should cause the piston pawl solenoid to de-energise and when the flap is released the solenoid should re-energise. Only a small amount of flap movement should be present in order to de-energise the piston pawl solenoid (approx. 12mm) if this movement is excessive reposition the limit switch arm to half past four and so on until approx. 12mm of flap movement activates the solenoid.
13. Lower the lift onto a single axle stand placed under one of the auxiliary corners of the lift, as the cable becomes slack the anti-tilt unit should de-energise the piston pawl solenoid so that the piston pawl engages into the piston rack and thus stops the lift from lowering further.

When the lift has stopped, raise the lift to make sure that the anti-tilt unit re-energises the piston pawl solenoid.

Carry out this test on all three auxiliary corners of the lift.

Should the unit not function:

At all	Check the wiring
The lift will not stop when lowering	Check the setting of the limit switch (the nearer the arm is to 3 o'clock the more sensitive the unit, the nearer to 6 o'clock the less sensitive the unit).
The Piston Pawl solenoid disengages but the lift will not stop.	Check adjustment of the piston pawl.
The lift will not reset i.e. after raising the lift and moving the obstruction the lift will not lower.	The limit switch is set too sensitive. Reset the position of the limit switch arm.

14. When the anti-tilt unit operates correctly:
  - a. Refit the triple pulley box cover.
  - b. Re-adjust the cables.
  - c. Demonstrate the unit to the customer.

#### 4.3.13 Miscellaneous Tasks

Raise lift to convenient working height, engage wheelfree pawls and lower platforms to suitable level.

- a) Fit toe guards as shown at Fig. 4.18.
- b) Fit fixed stops to power end of lift.
- c) Fit cable cover to outer side of power beam. Position cover by sliding end into single pulley box, then moving across to securing position.
- d) Raise platforms release wheelfree, lower to ground and place the wheel-free longitudinal beams across structure, ensuring taper at drive-on end. Move into position.
- e) Attach all labels to lift, ensuring that the correct maximum load figures are used for each lift model: (see Fig. 4.21)

Model 41	3 tonne.
Model 42	4 tonne.
Model 43	4 tonne.

#### 4.3.14 Fit Chocks and Ramps (Refer to Fig.4.18. and 19)

##### Wheel supported Models Only

- a) Bolt chock ramps onto auxiliary beam using brackets and bolts provided.

##### Wheel-Free Models Only

- a) Bolt chocks onto auxiliary end wheel-free beam using brackets and bolts provided.
- b) Lower lift to the floor. Position the ramps under the chocks so that there is a gap of 3mm between the chock plate and the ramp plate. Using the ramp as a template, drill through the two holes and secure the ramp with the Hilti anchors, bolts and washers provided.

## 4.4 TESTS AND ADJUSTMENTS

### 4.4.1 Cable Adjustment

- a) Raise unloaded platform clear of ground so that the cables are under tension.
- b) Using the power column as a datum, adjust auxiliary column cable adjusters so that the following measurements are achieved:

RH auxiliary column corner : +6mm  
LH auxiliary column corners: + 9mm

### 4.4.2 Guide Block Adjustment

- a) Set platforms at mid-height and adjust guide blocks on the power and auxiliary beams so that they are in light rubbing contact with their respective column tracks. Tighten Taptite setscrews.

#### Wheel-Free Models Only

- b) Centralise the wheel-free beams within the column tracks and adjust the wheel-free guide blocks in the same manner as in a) above.

### 4.4.3 Knock-off Adjustment (Refer to Fig 4.15)

- a) Raise lift until top of platform height is 1800mm.
- b) Slacken the socket screw clamping the knock-off actuating arm, and by means of trial and error adjust the arm until the limit switch trips the motor out at a platform height of 1800mm.

Ensure that the platforms are not raised too high as this will result in permanent damage to the piston seal, necessitating its replacement.

### 4.4.4 Piston Pawl Adjustment (see Fig. 4.15)

- a) Raise the lift to a height at which the pawl is opposite a window on the piston rod rack.
- b) Adjust the top of the pawl spring plunger so that the pawl engages the piston rod rack when the solenoid is de-energised.
- c) Raise the lift and the lower without pressing the master button, to ensure the pawl engages and is operating correctly.
- d) Raise the lift and lower with the master button depressed, to ensure the pawl disengages correctly.



#### 4.4.5 Final Tasks

- a) Raise and lower the lift fully to check for smooth operation. In particular, check that all guide blocks are free from binding or excessive free play. Check also that cables run freely on pulleys, and that cable adjustment anchor nuts are secure.
- b) Wheel-Free Lifts - Ensure that the wheel-free engages and disengages at both ends of lift over its full range. Check guide block shims for correct setting of beams in vertical relationship to column i.e. compensate for chock overhanging weight.
- c) Demonstrate the function of the lift to the customer, i.e. raise and lower controls, limits of travel, wheel-free operation etc., and refer him to the User Handbook regarding user maintenance and service centre details.
- d) Ensure that adequate instructions are left for the electrician who will permanently connect up the equipment at a later date.

#### 4.4.6 Load Test to BS AU 161

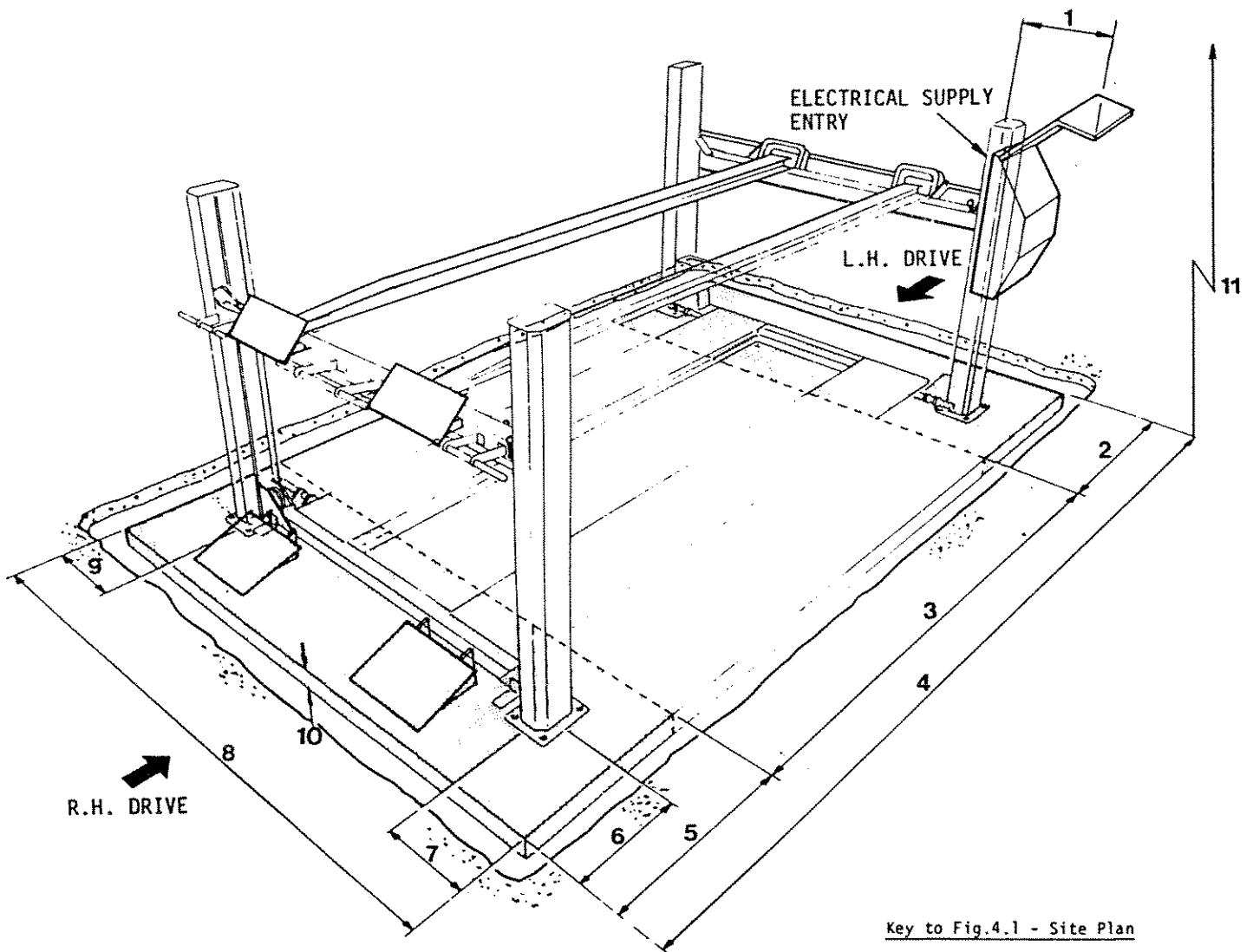
##### **IMPORTANT**

In the UK, to comply with BS AU 161 the lift must be load tested after installation, the Rated Load marked on the lift, and a test certificate issued before bringing the lift into service. The Rated Load marked on the lift can be any capacity up to the full design load of the lift. If any test load less than full design load is used, then it shall be 110% of the Rated Load to be marked on the lift.

The hydraulic system must be pressure tested using a gauge, and the overload valve set at 110% of the rated load according to the model.

41———1325p.s.i.

42 & 43—1750p.s.i.



Key to Fig.4.1 - Site Plan

	mm	ins
1	870	34 1/4
2	1200	47 1/4
3	Model 41 3565	140 1/4
	Model 42 3770	148 1/4
	Model 43 4240	167
4	Model 41 5965	235
	Model 42 6170	243
	Model 43 6640	261 1/4
5	1200	47 1/4
6	900	35 1/4
7	550	21 1/4
8	Model 41 3355	132
	Model 42 3710	146
	Model 43 3710	146
9	330	13
10	130	5 1/4
11	3600	141 3/4
12	15	1/2
13	50	2

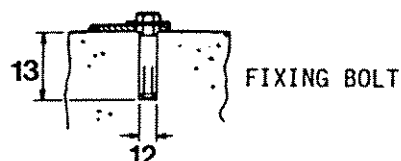
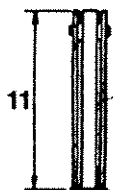
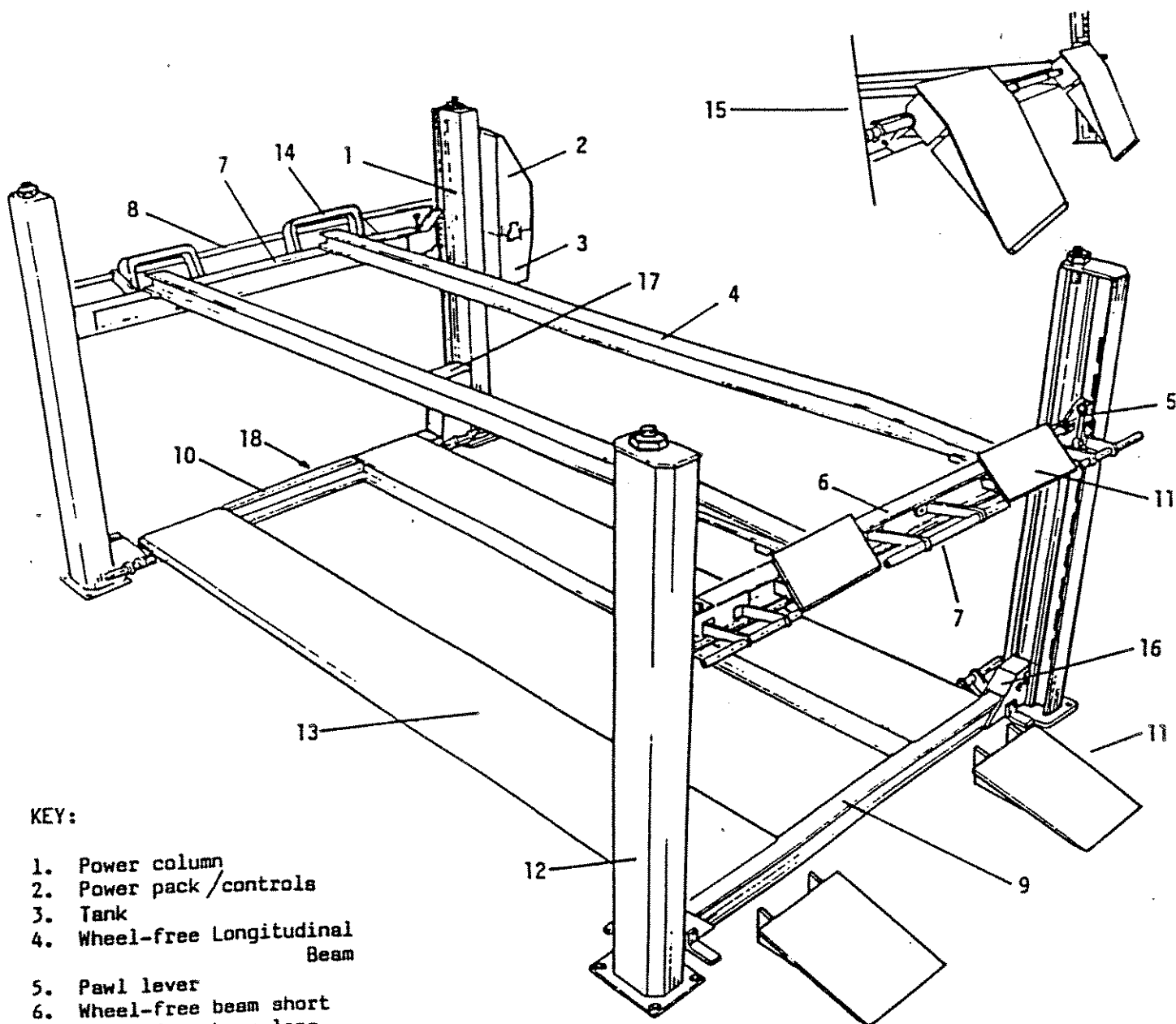


Figure 4.1 Site Plan



KEY:

1. Power column
2. Power pack /controls
3. Tank
4. Wheel-free Longitudinal Beam
5. Pawl lever
6. Wheel-free beam short
7. Wheel-free beam long
8. Anti-toe trapping bars
9. Auxiliary column beam
10. Power column beam
11. Split chock ramp
12. Auxiliary column (2 off R.H., 1 off L.H.)
13. Platform
14. Fixed stops
15. Chock ramps
16. Single pulley box cover
17. Triple pulley box cover
18. Cable cover

Figure. 4.2 General view of lift Assembled

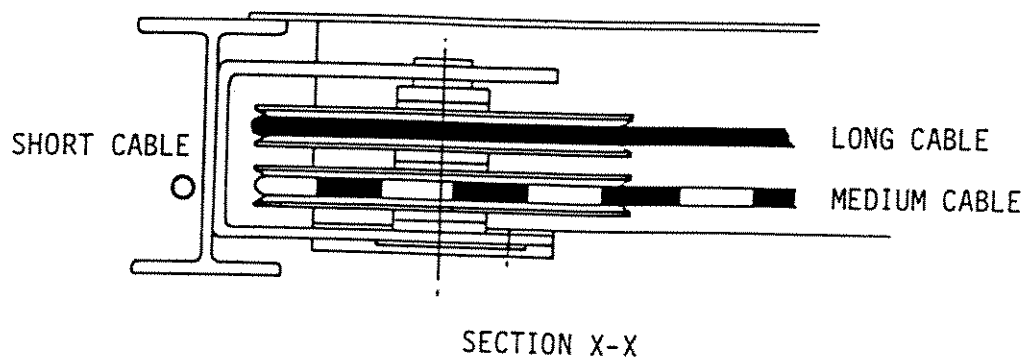
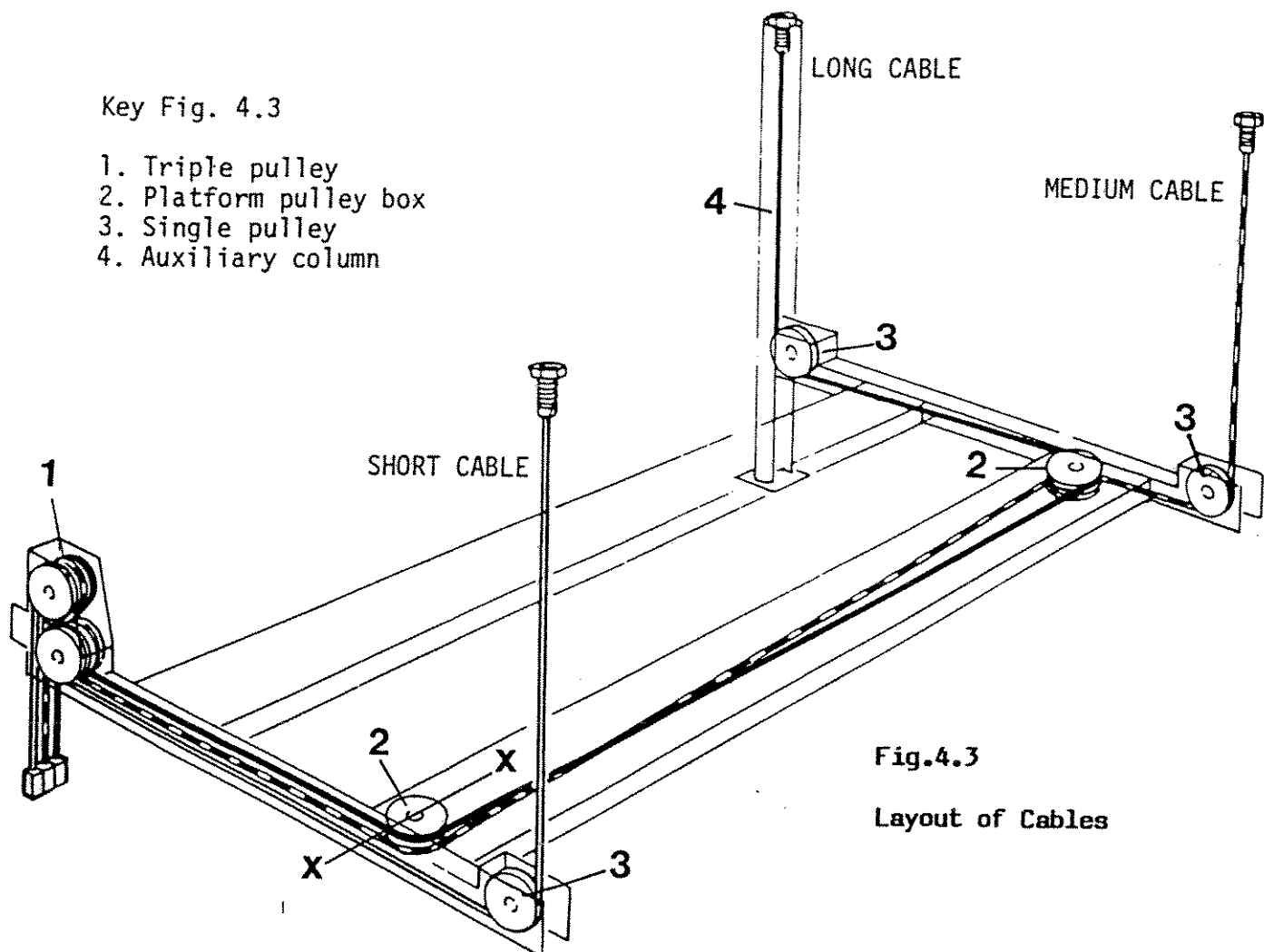
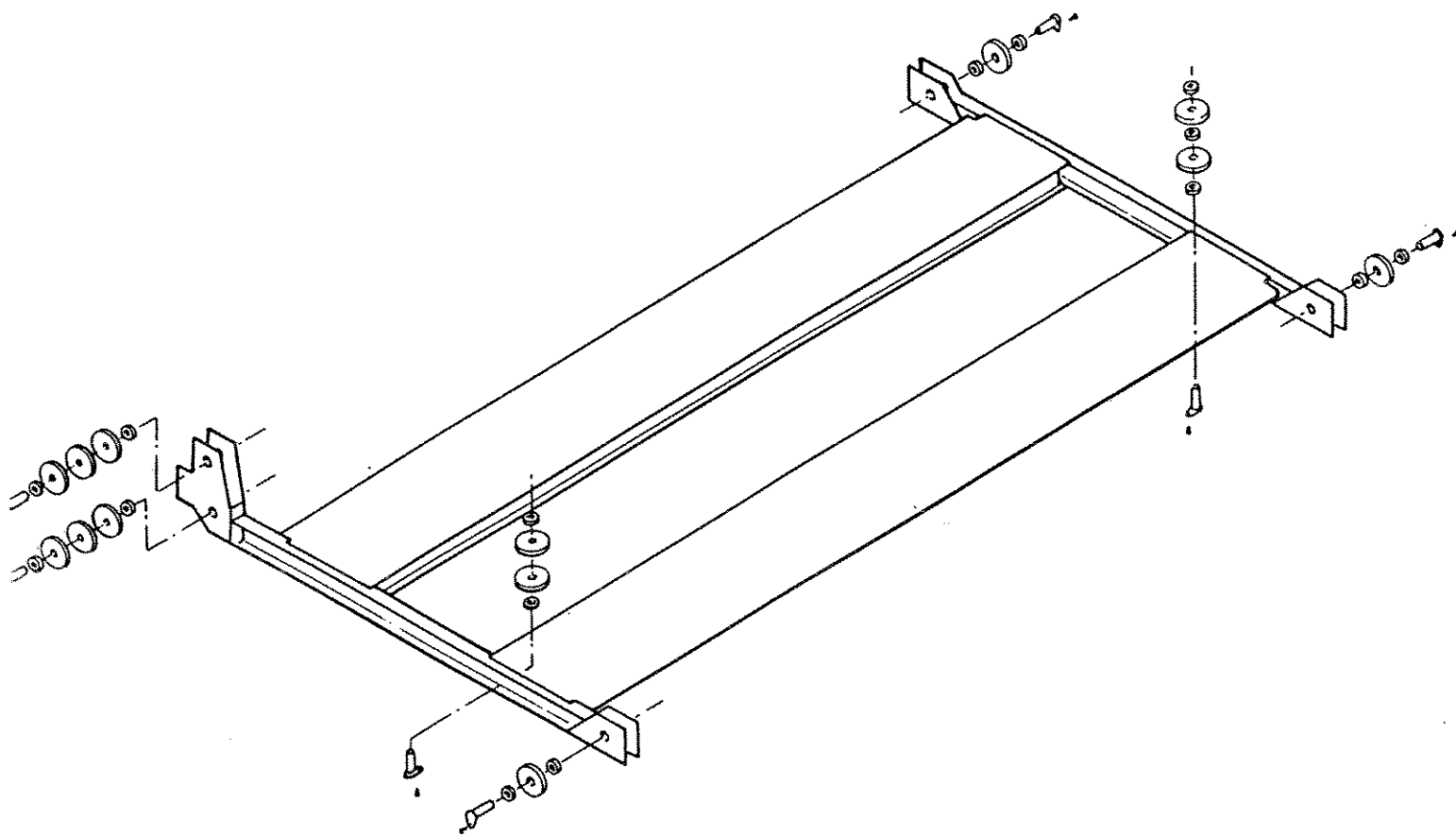


Figure.4.3 Layout of Cables



**Figure.4.4 Pulley Assembly**

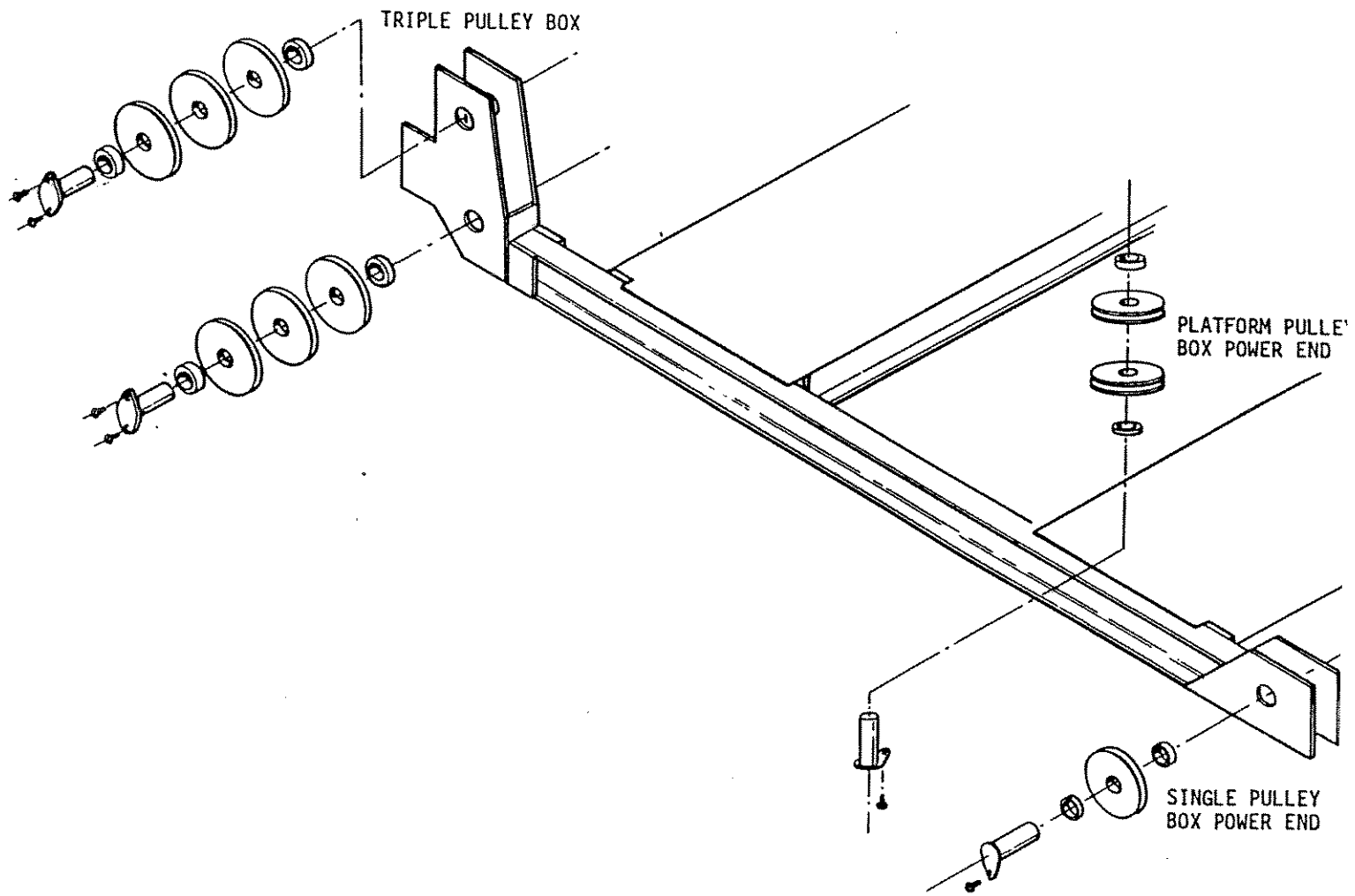


Figure.4.4a Power End Pulley Assembly

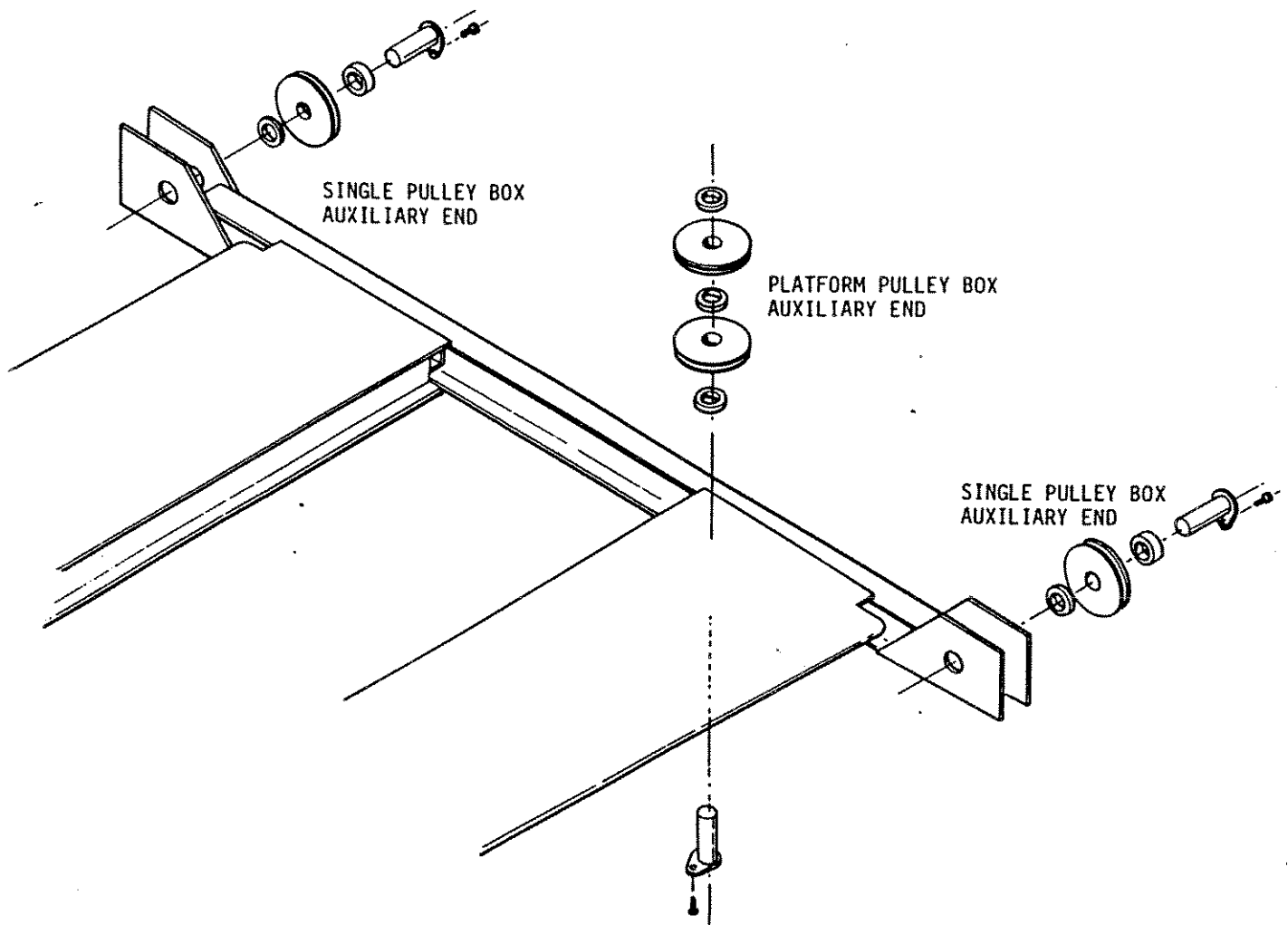
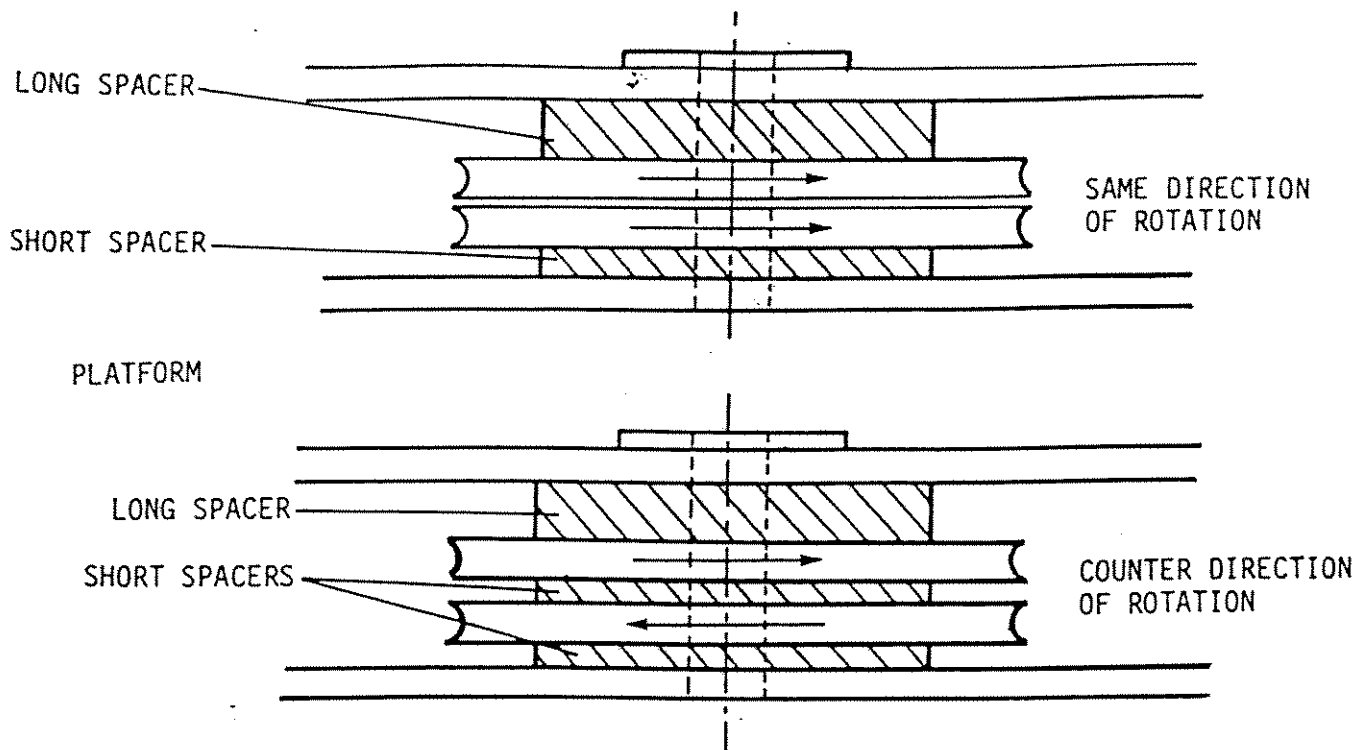
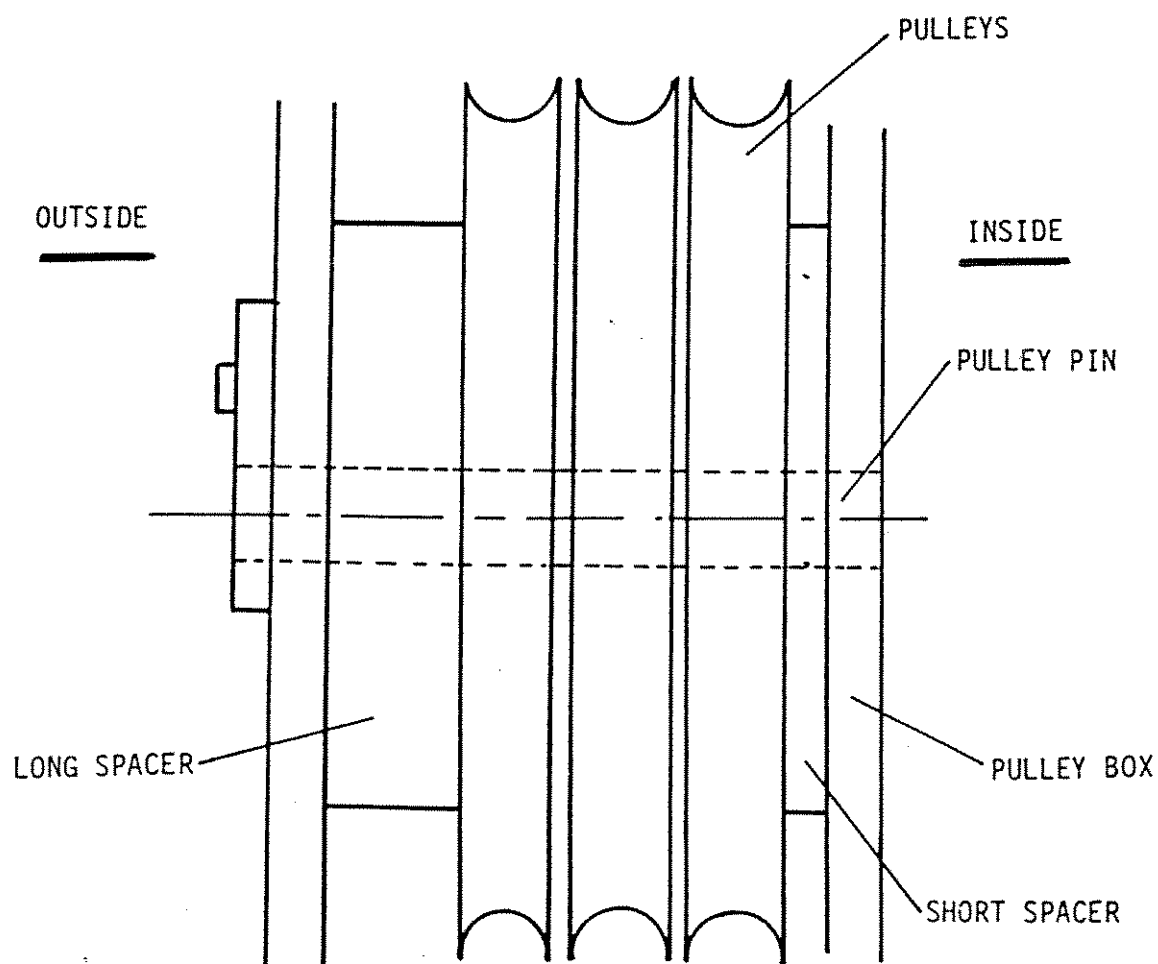


Figure.4.4b Auxiliary End Pulley Assembly

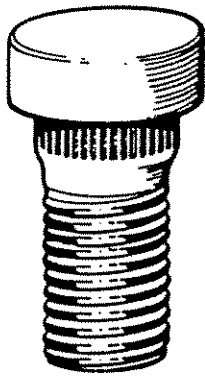


**Figure 4.4c Platform Pulley Spacer**

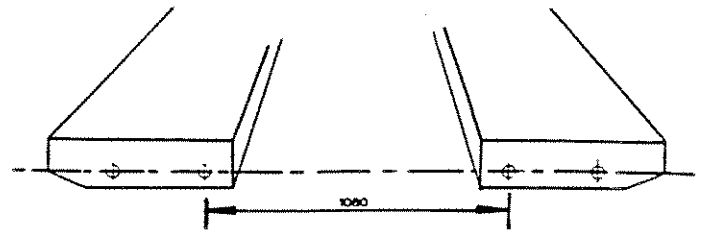


**Figure 4.4d Triple PulleyBox Spacers**

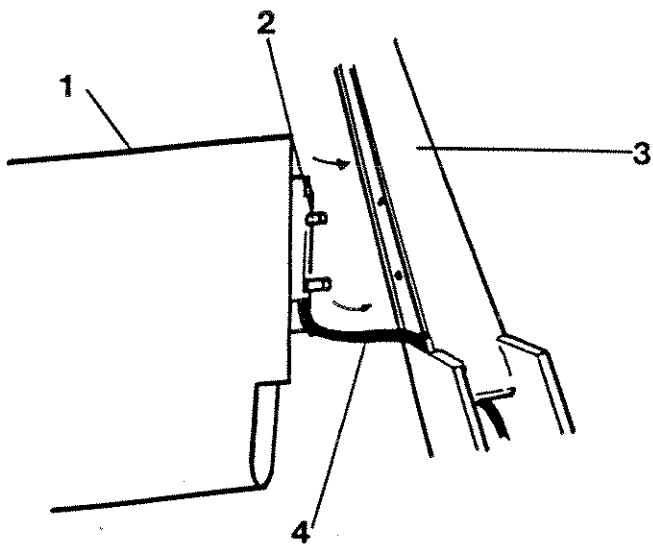




**Figure 4.5 Knurled Shank set-screw**

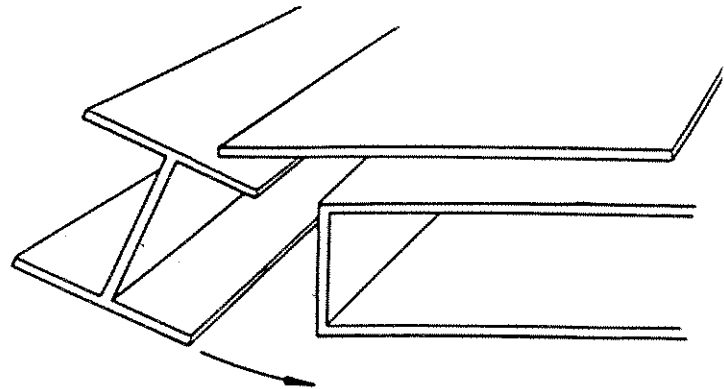


**Figure 4.6 Installation of Platforms**



- |                           |          |
|---------------------------|----------|
| 1. Platform               | 3. Beam  |
| 2. Knurled shank setscrew | 4. Cable |

**Figure 4.7 Locating Set Screws in Beam**



**Figure 4.8 Fitting Power Beam to Platform**

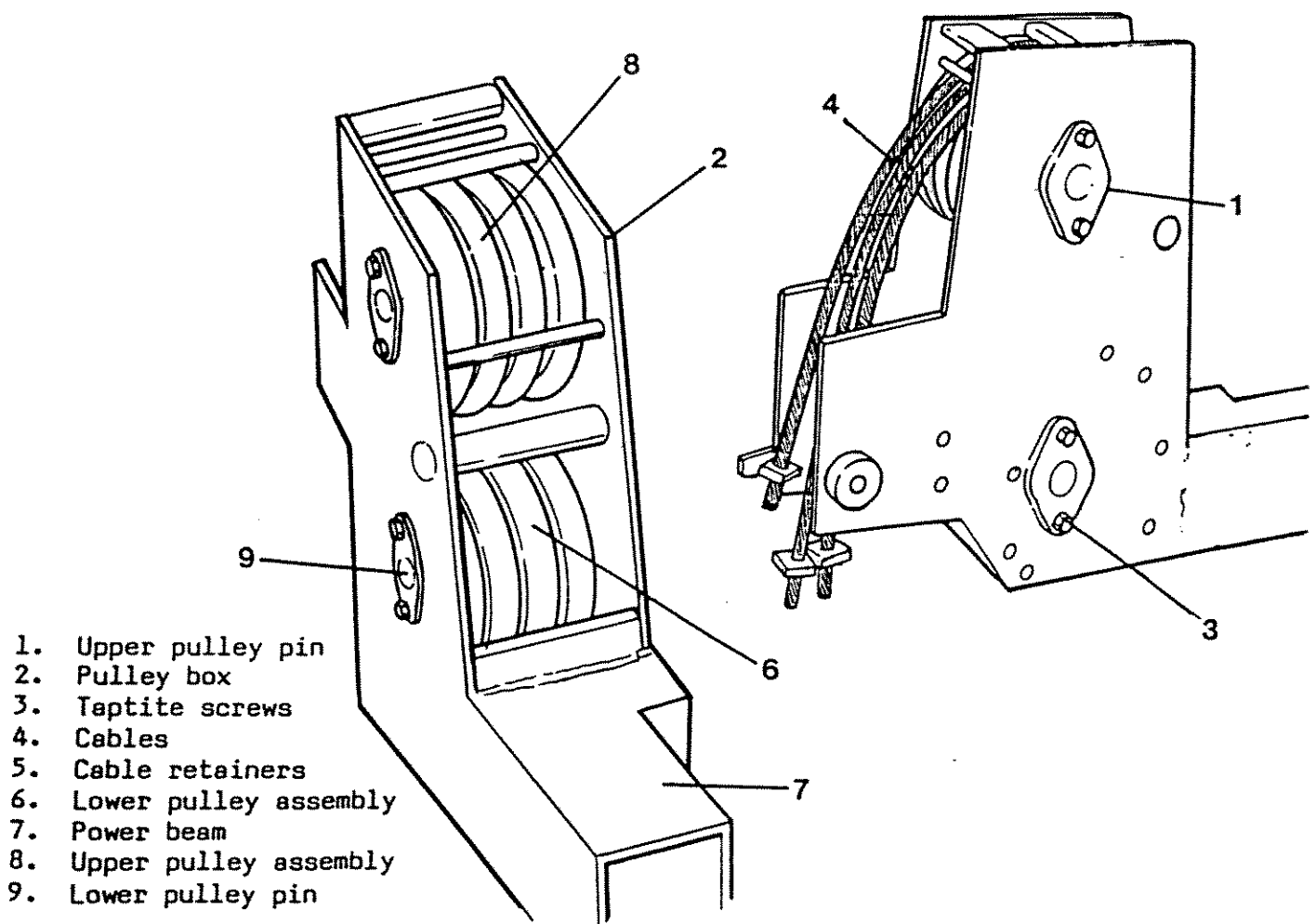
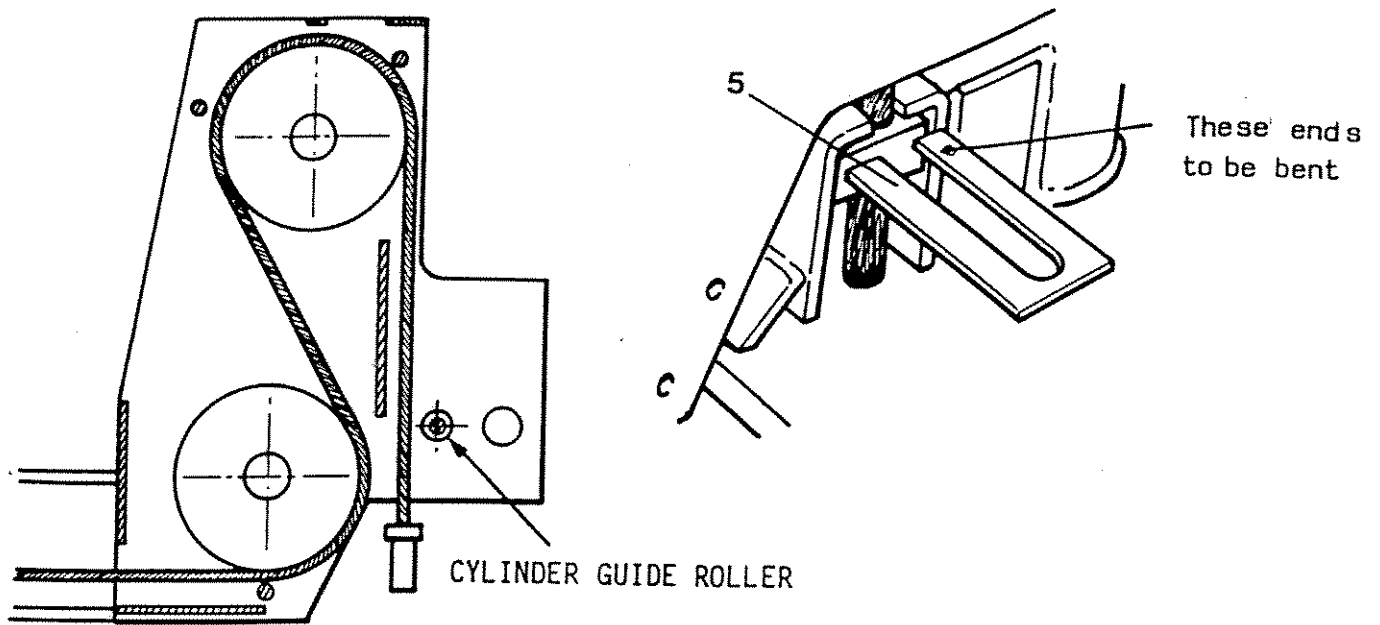
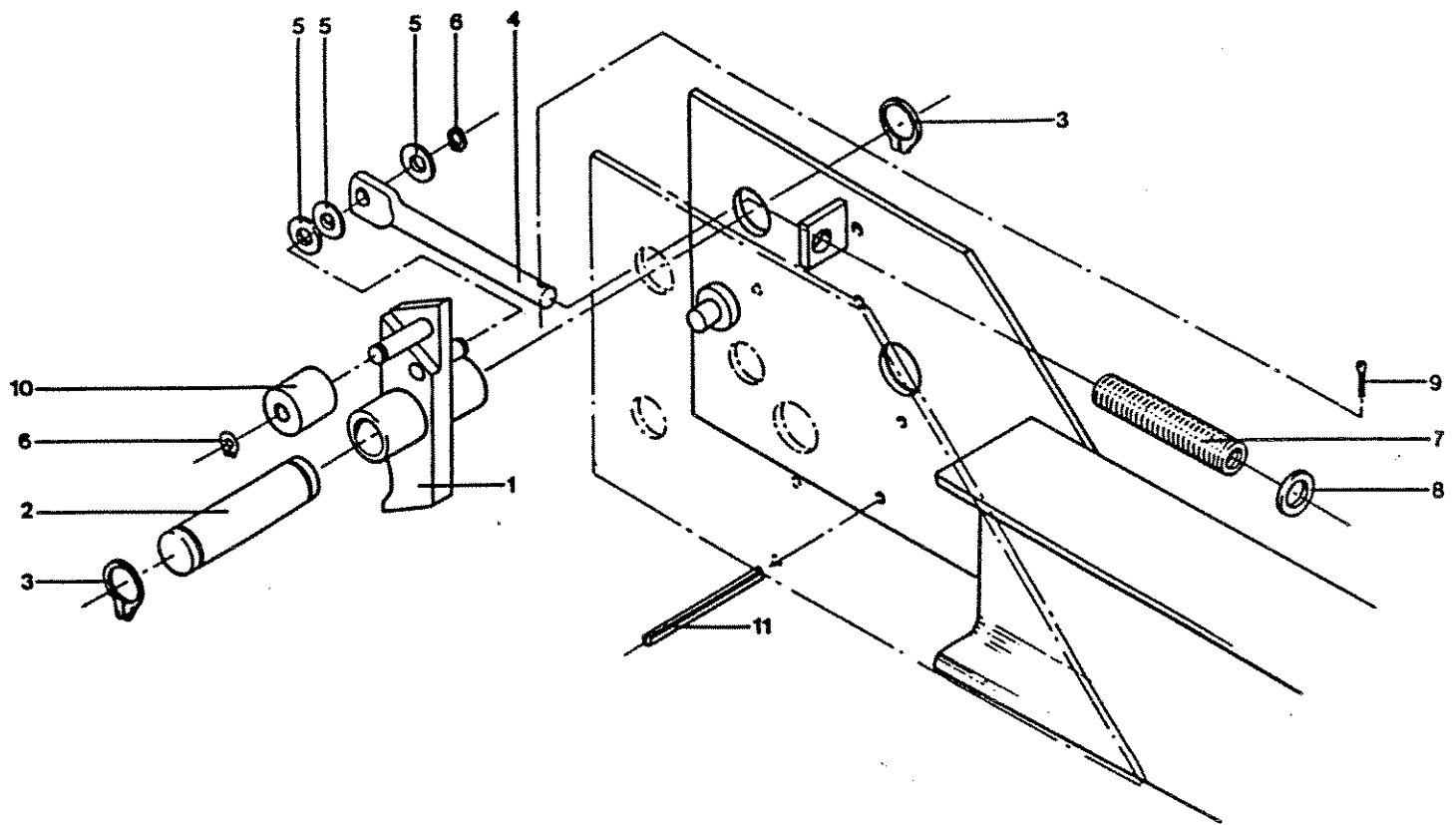
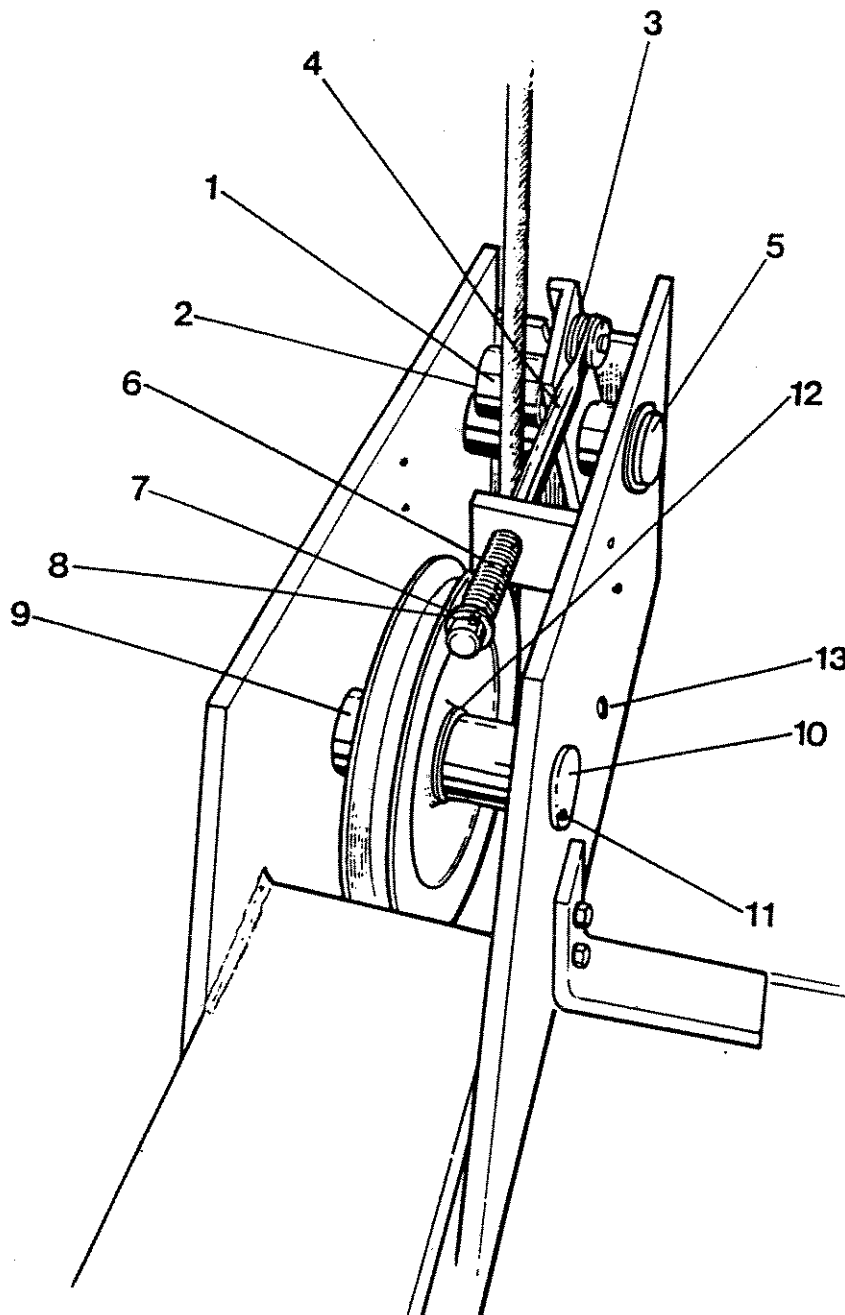


Figure.4.9 Installation of Triple Pulleys



1. Safety Pawl R.H. 1 Reqd  
L.H. 2 Reqd opposite hand
2. Safety Pawl Pin
3. Circlip
4. Safety Gear Actuator
5. Plain Washer
6. Circlip
7. Compression Spring
8. Plain Washer
9. Split-pin
10. Cable Roller
11. Roll Pin Cable Retainer

Figure.4.10 Safety Gear Assembly



- |                                |                                     |
|--------------------------------|-------------------------------------|
| 1. Cable Roller                | 7. Plain Washer                     |
| 2. Circlip                     | 8. Split Pin                        |
| 3. Two small O/D Plain Washers | 9. Spacers                          |
| 4. Safety Gear Actuator        | 10. Pulley Pin                      |
| 5. Safety Pawl Pin             | 11. Taptite Screws                  |
| 6. Compression Spring          | 12. Single Pulley (small bore dia.) |
|                                | 13. Roll Pin/Cable Retainer         |

**Figure.4.11 Safety Catch Gear and Single Pulley Assembly**

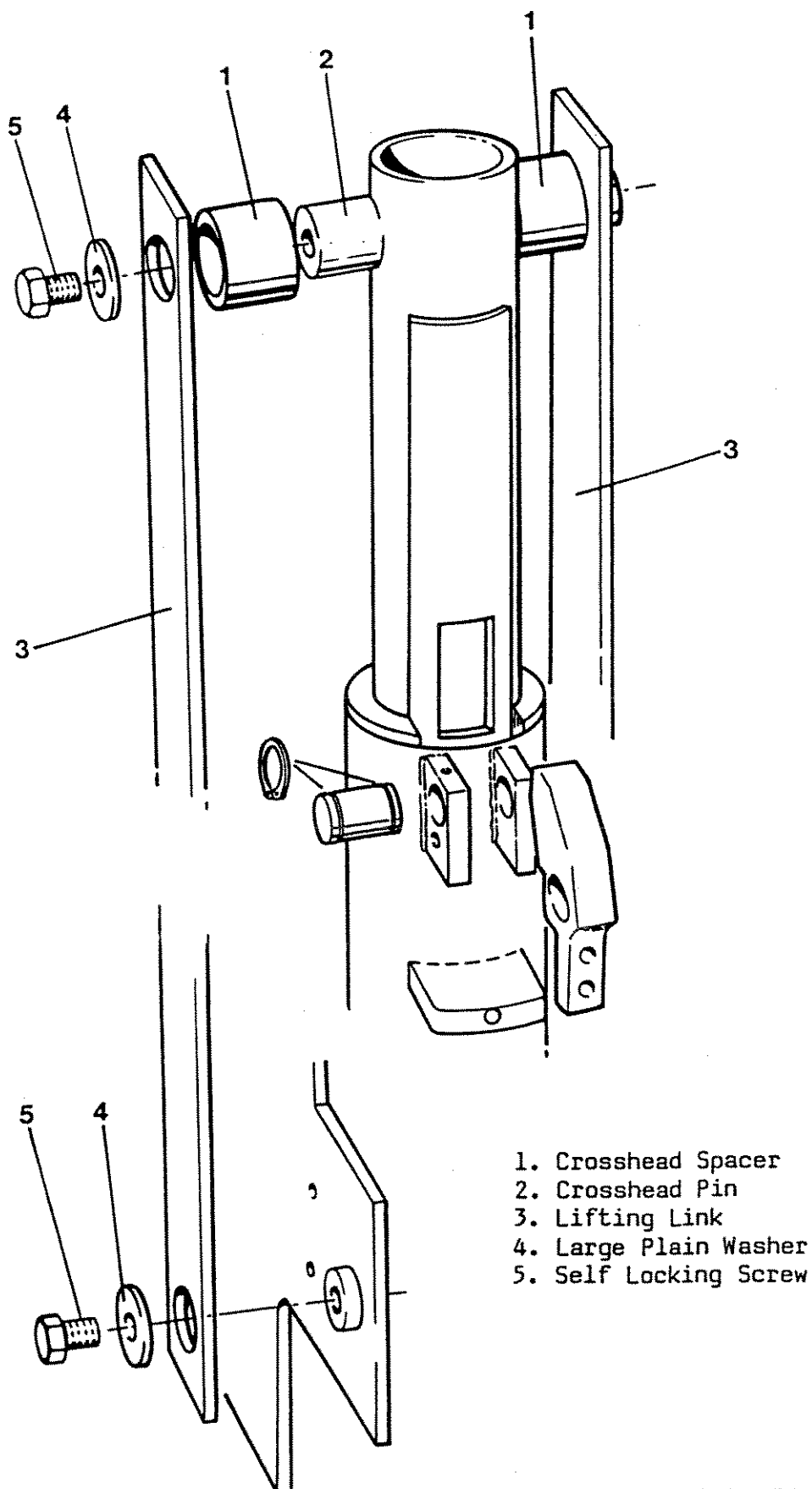


Figure.4.12 Lifting Link Assembly

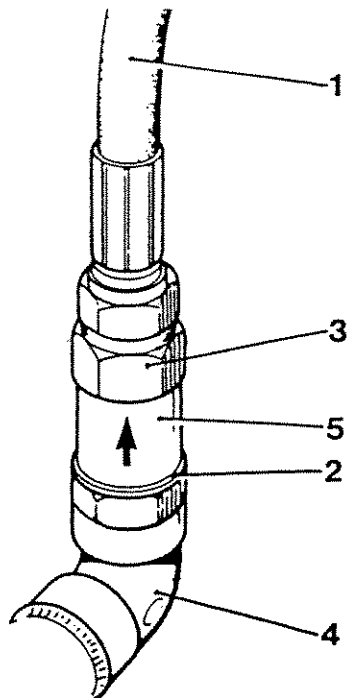


Fig.4.14

#### Hydraulic Hose Assembly

1. High Pressure Hose
2. Dowty Seal
3. Straight Male Adaptor
4. Cylinder Inlet Elbow
5. Excess Flow Valve

1. Knock-off Rod
2. Compression Spring
3. Knock-off Actuating Arm

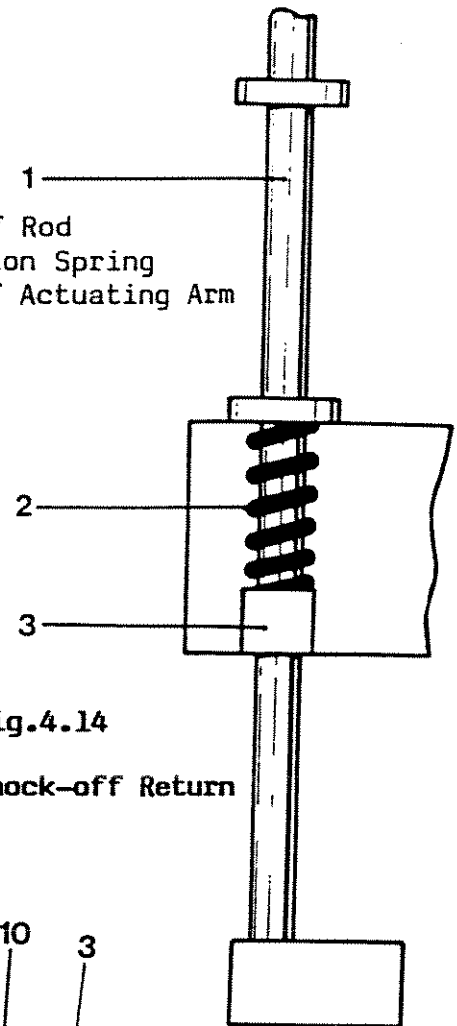


Fig.4.14

#### Knock-off Return

1. Socket Screw
2. Piston Pawl Lever
3. Limit Switch Arm
4. Limit Switch Arm Lock Nut
5. Knock-off Actuating Lever
6. Pawl Spring Bracket
7. Oil Return
8. Pawl Spring Plunger
9. Tension Spring
10. Limit Switch Roller
11. Compression Spring

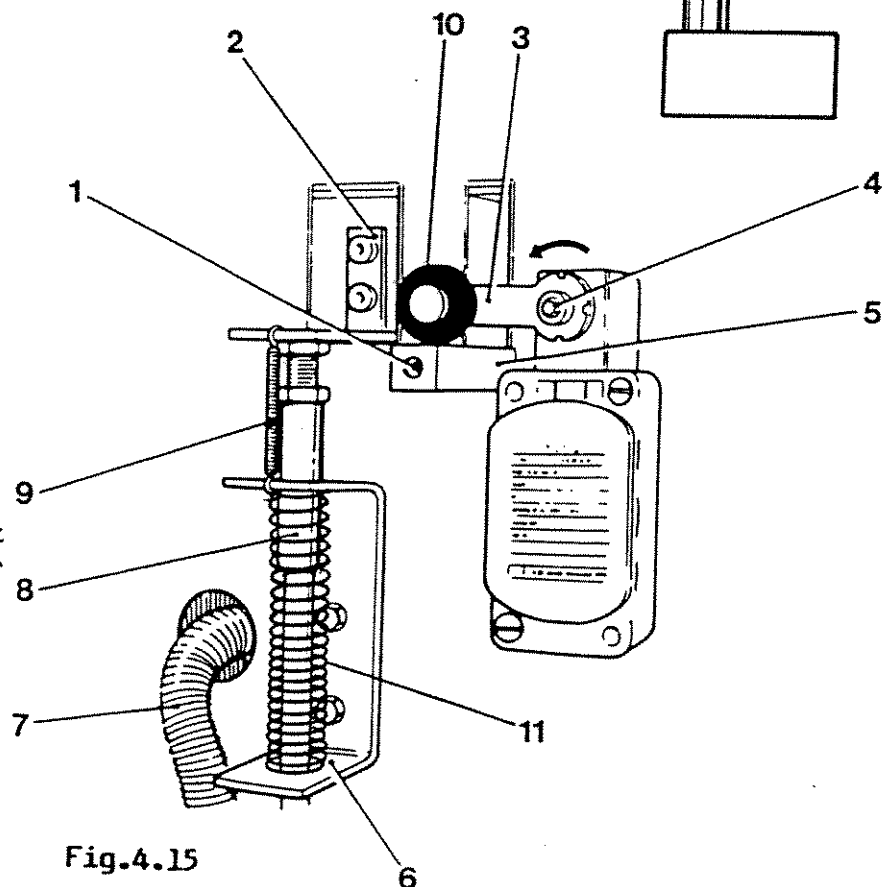


Fig.4.15

#### Piston Pawl Lever & Limit Switch

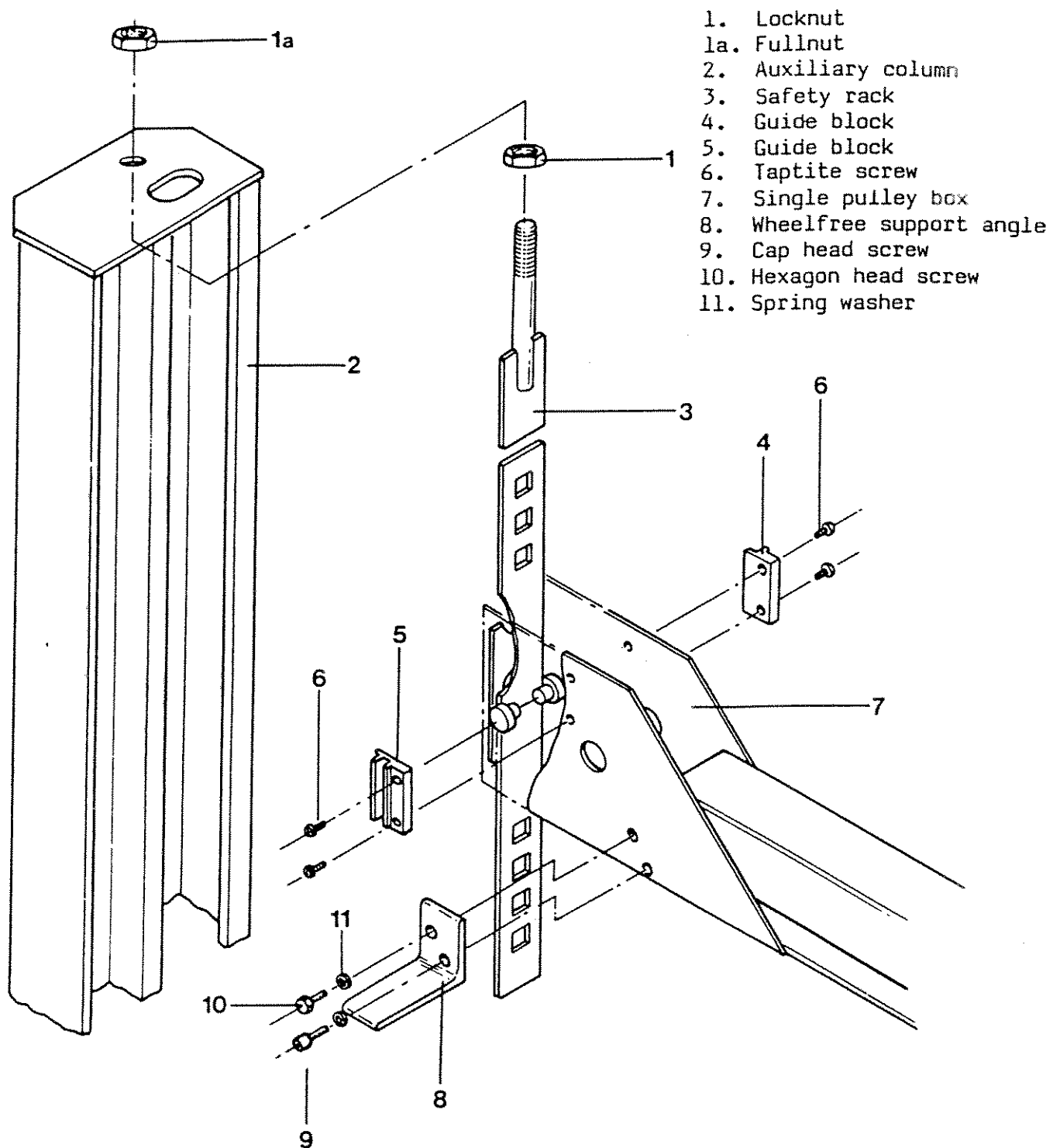
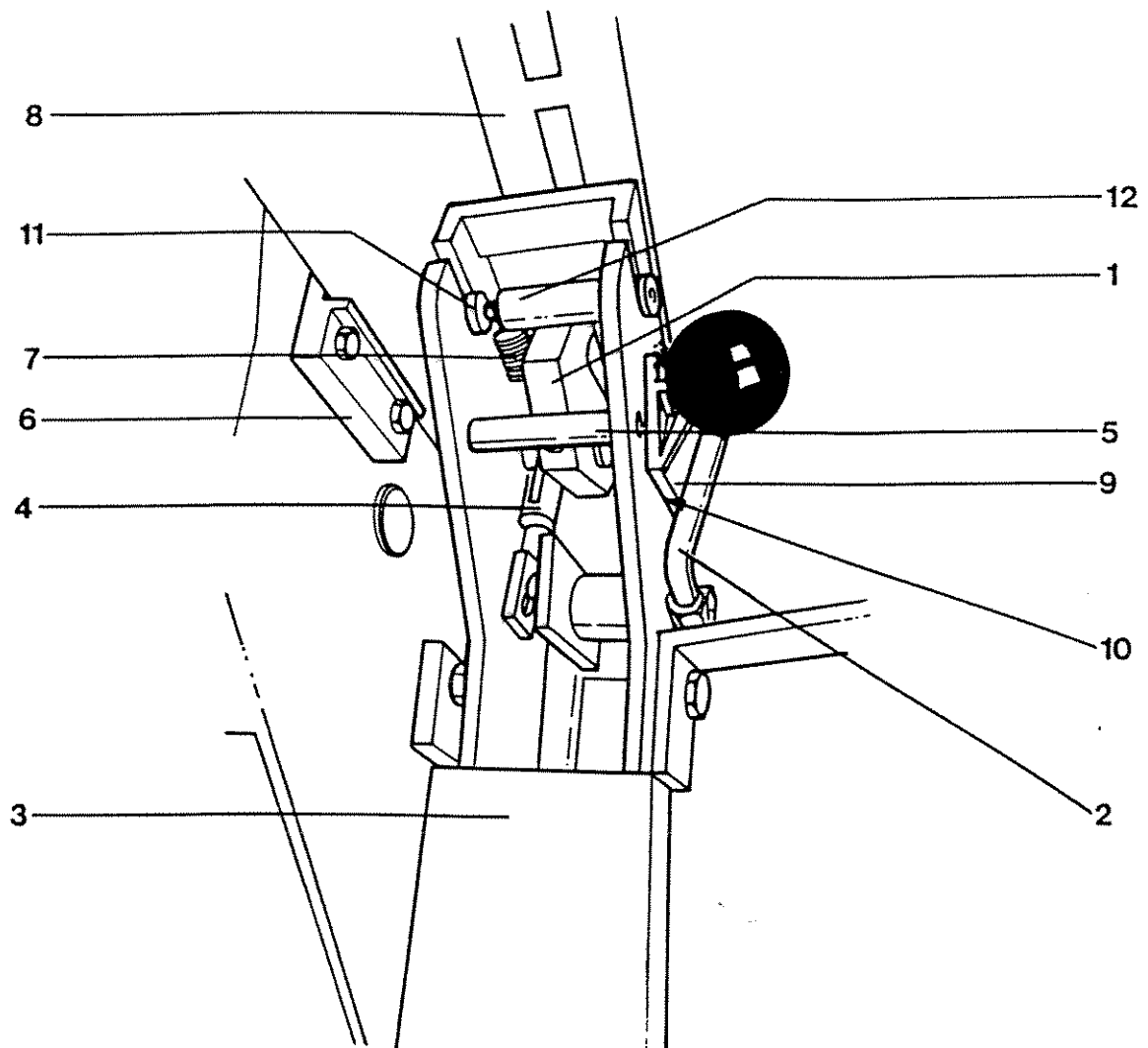


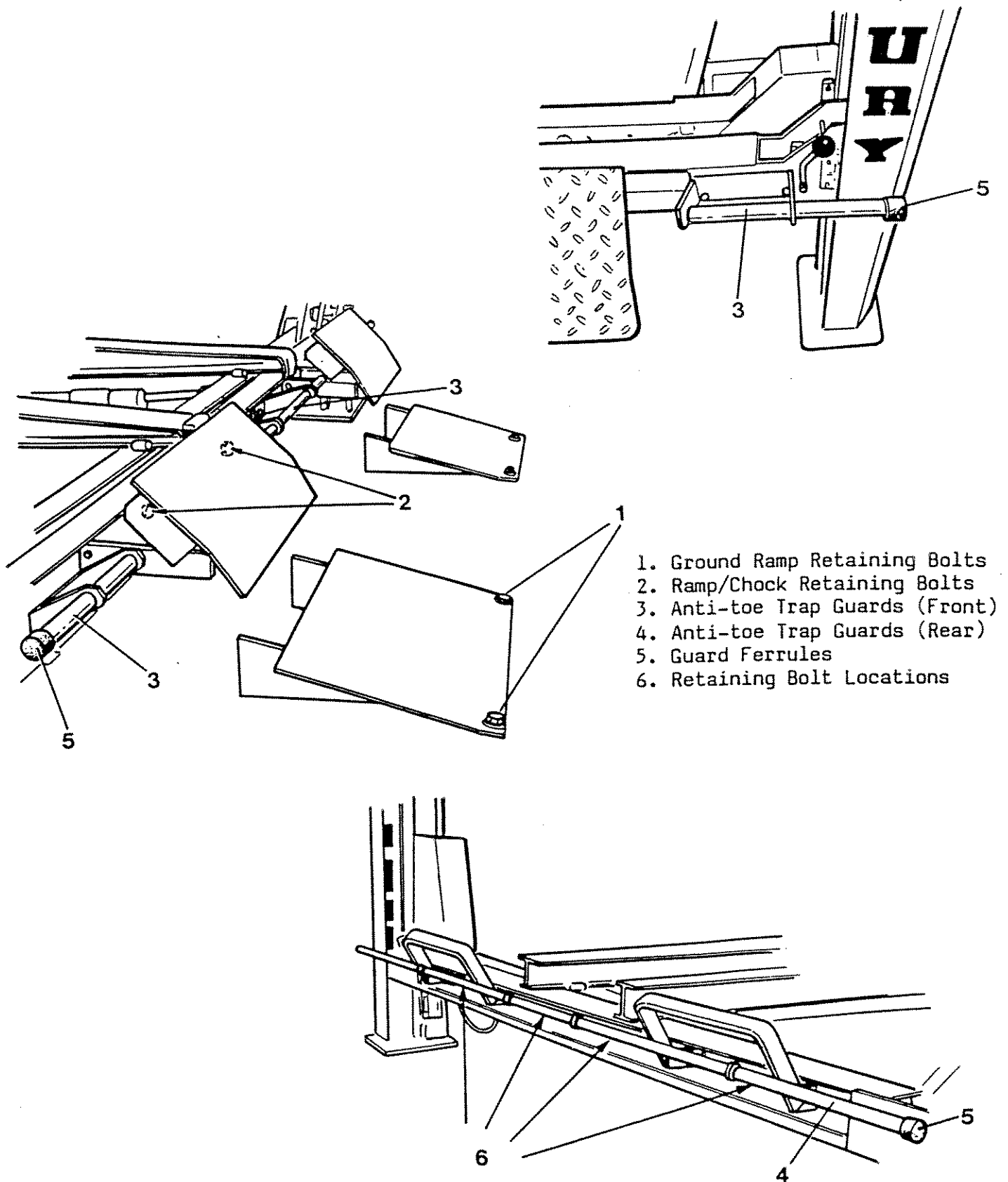
Figure 4.16 Auxiliary Column/Safety Rack Assembly



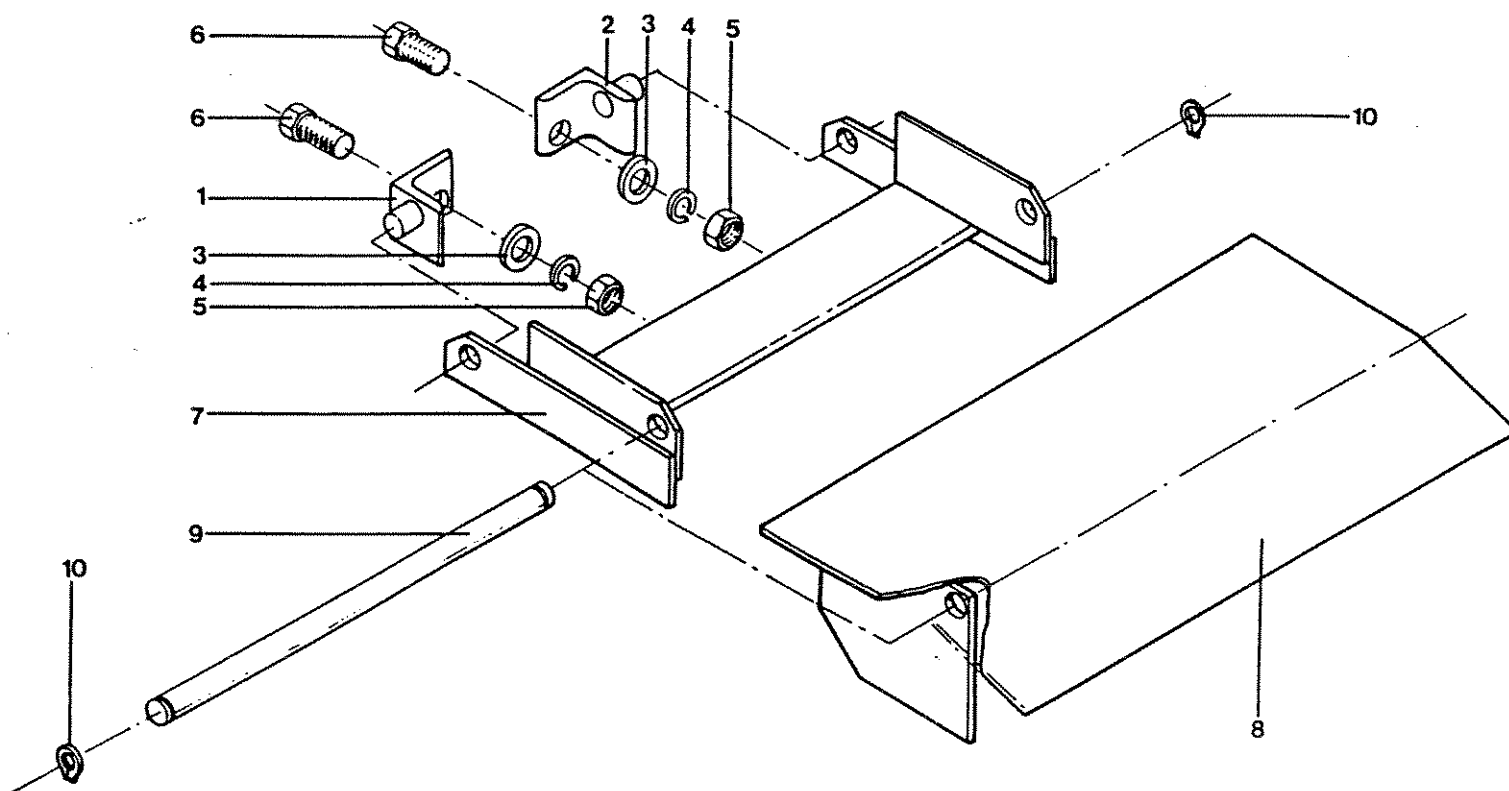
- |                               |                         |
|-------------------------------|-------------------------|
| 1. Pawl                       | 7. Tension Spring       |
| 2. Operating Lever            | 8. Column Rack          |
| 3. Wheelfree Beam             | 9. Guide                |
| 4. Adjustable Actuating Lever | 10. Guide Shim          |
| 5. Pawl Stop                  | 11. Detent Roller Guide |
| 6. Column Guide               | 12. Detent Roller       |

**Figure.4.17 Wheel-Free Pawl Assembly**





**Figure.4.18 Toe Guard, Ramp & Chock Positions**



1. Chock Mounting Bracket L.H.
2. Chock Mounting Bracket R.H.
3. Plain Wash
4. Spring Wash
5. Nut
6. Bolt
7. Chock Bracket
8. Chock Plate
9. Chock Pivot
10. Circlip

**Figure.4.19 Chock Assembly**

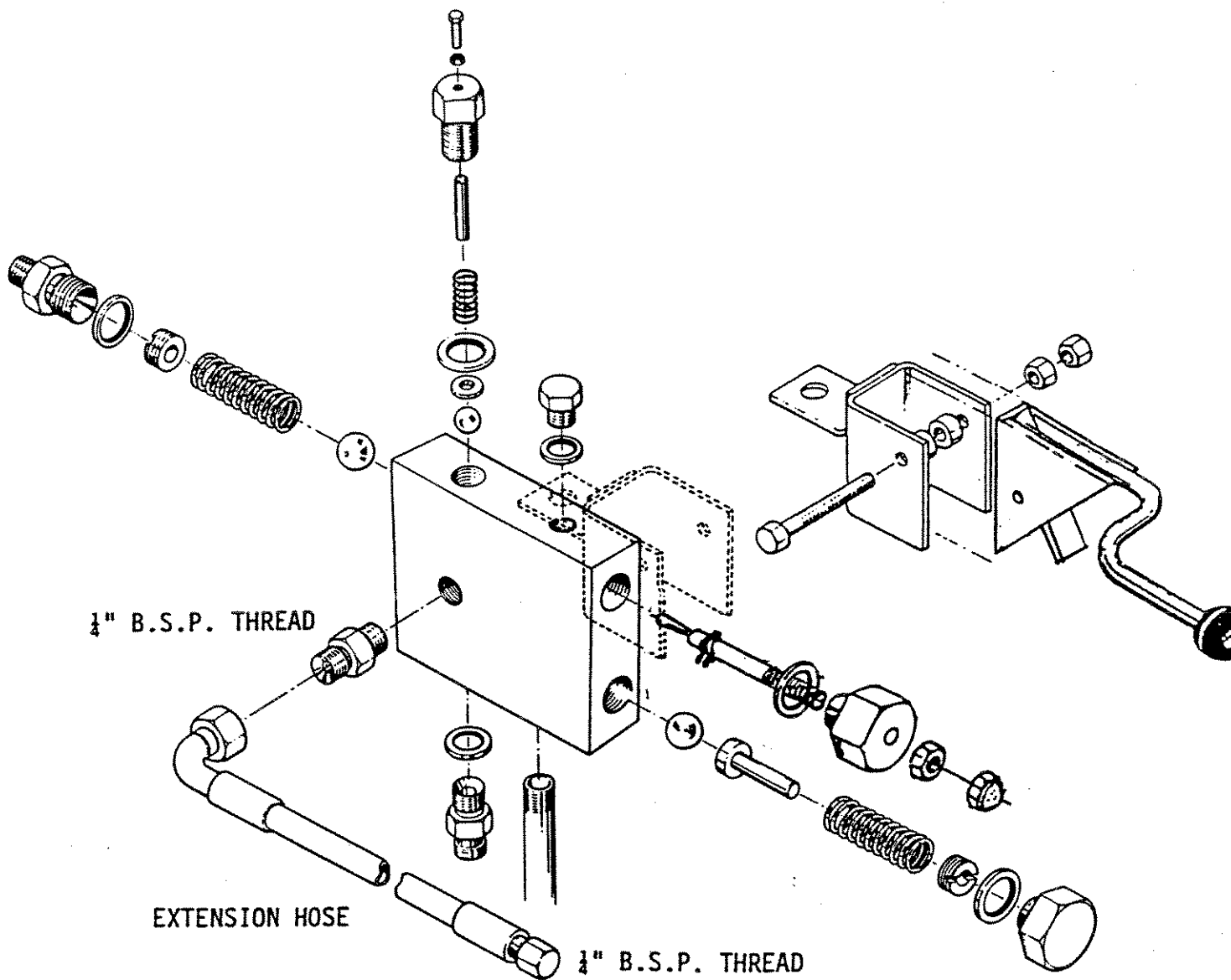


Figure.4.20.a Extension Hose & Male Adaptor

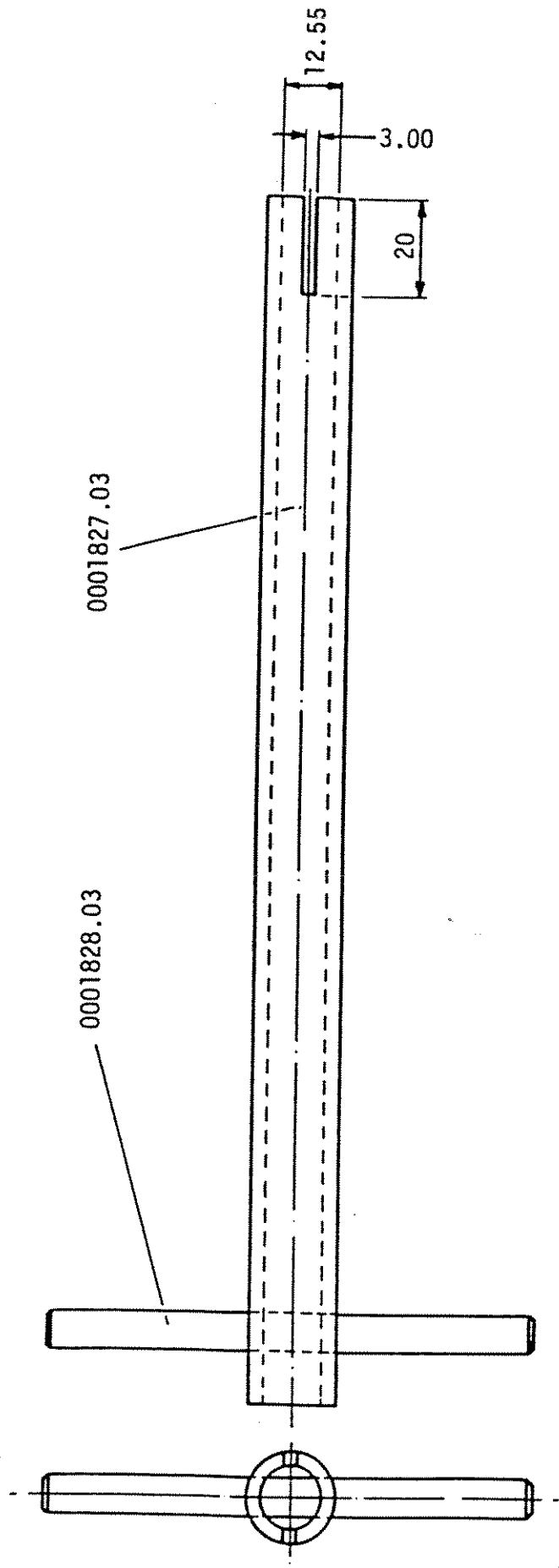
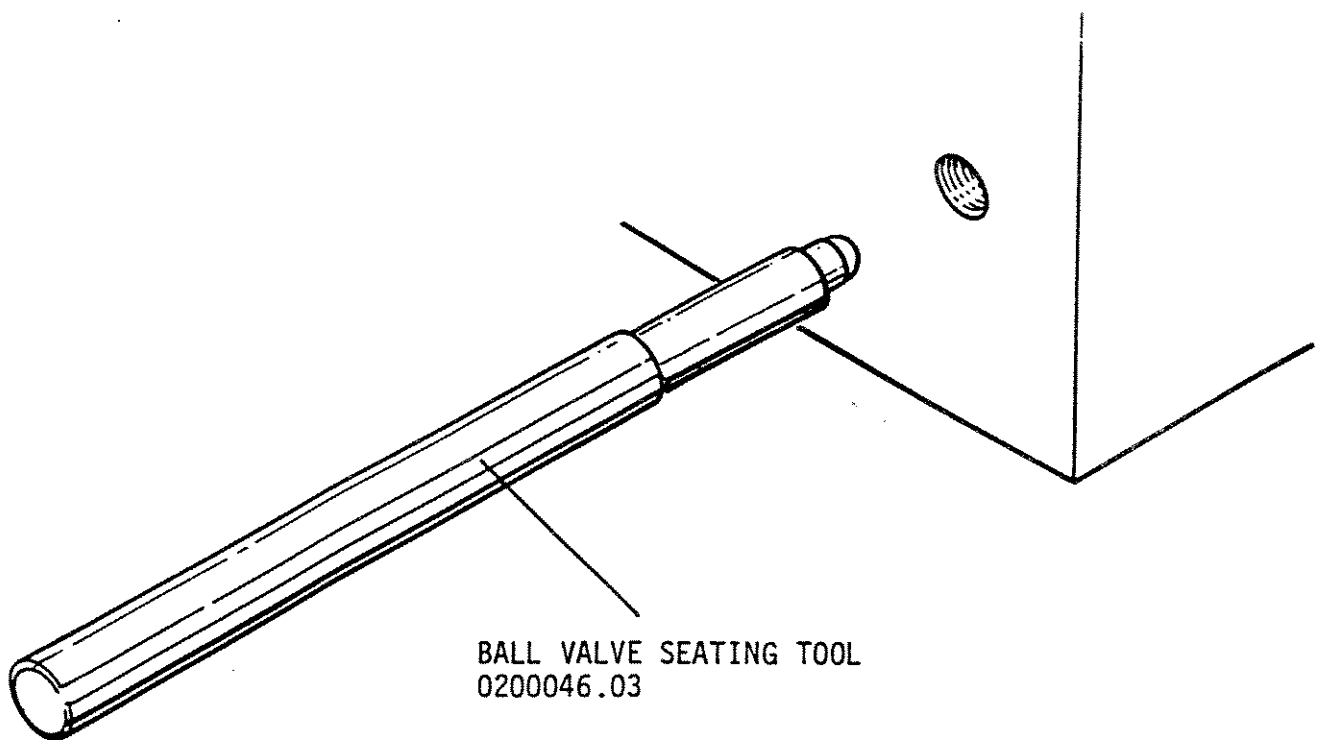


Figure.4.20.b Safety Gear Spring Compressor



BALL VALVE SEATING TOOL  
0200046.03

Figure.4.20.d.1 Ball Seating Tool

Non-Return Valve Seating Tool (Screw Down Type) 0200469-03 1 off

See Fig 4.21d.2.

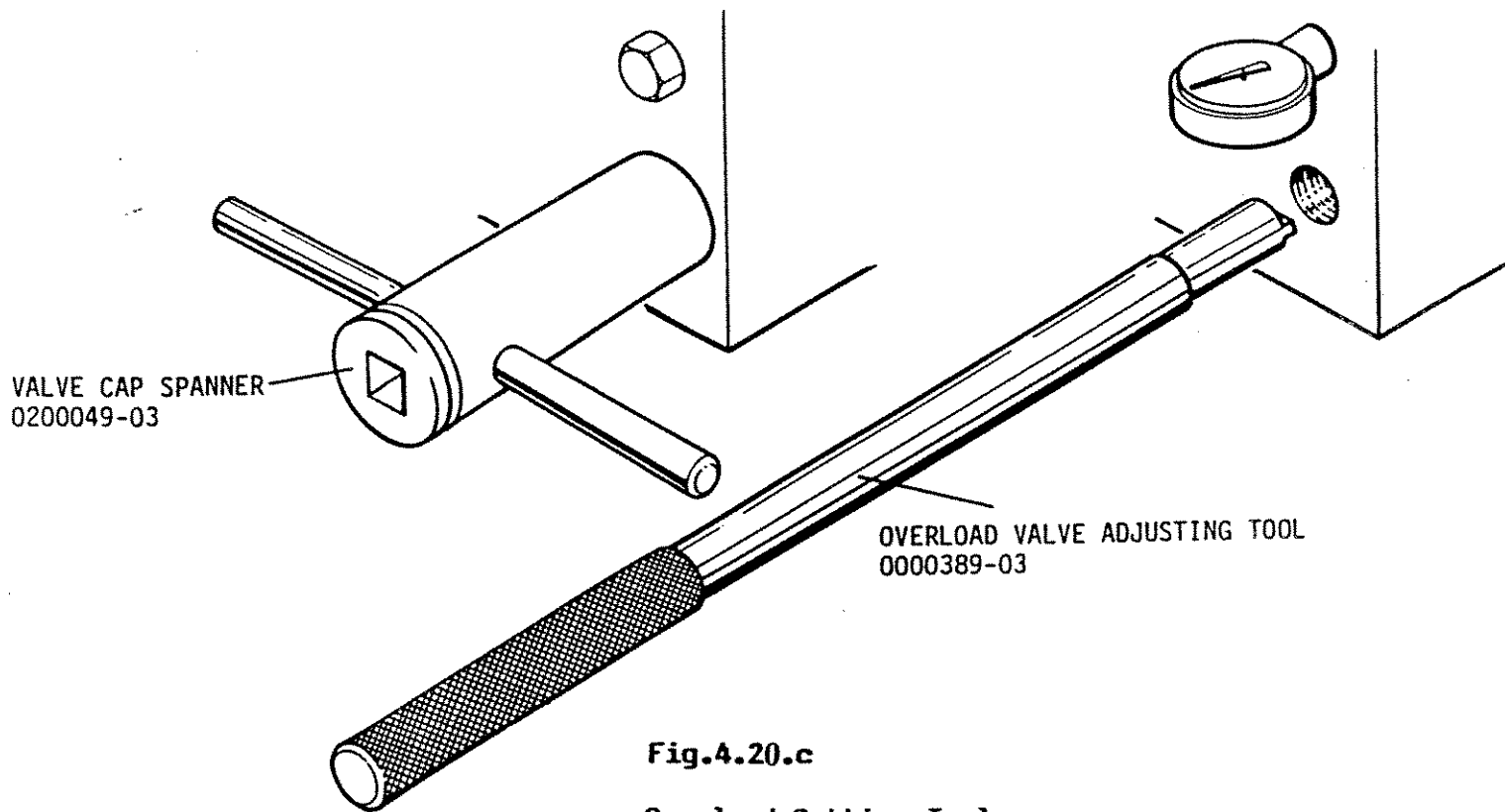
The procedure for using this tool is as follows:-

Remove the non-return valve cap, bonded seal, washer, spring and ball from the valve block.  
Inspect the Ø½" ball (4292612-09) for damage and replace if necessary.

With the ball in position in the bottom of the non-return valve drilling, screw down the seating tool firmly by hand. Tighten the seating tool a further ¼ turn using a wrench.

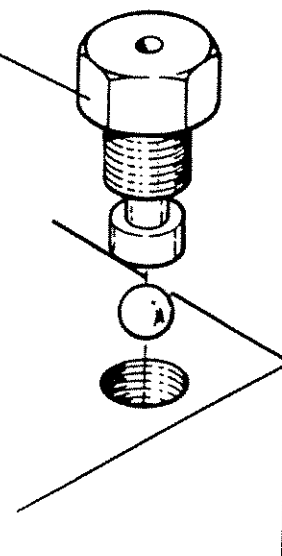
Remove the seating tool and replace the non-return valve components.

VALVE BLOCK MAINTENANCE TOOLS



NON-RETURN VALVE SEATING TOOL  
0200469-03

Fig.4.21.d.2  
Ball Seating Tool



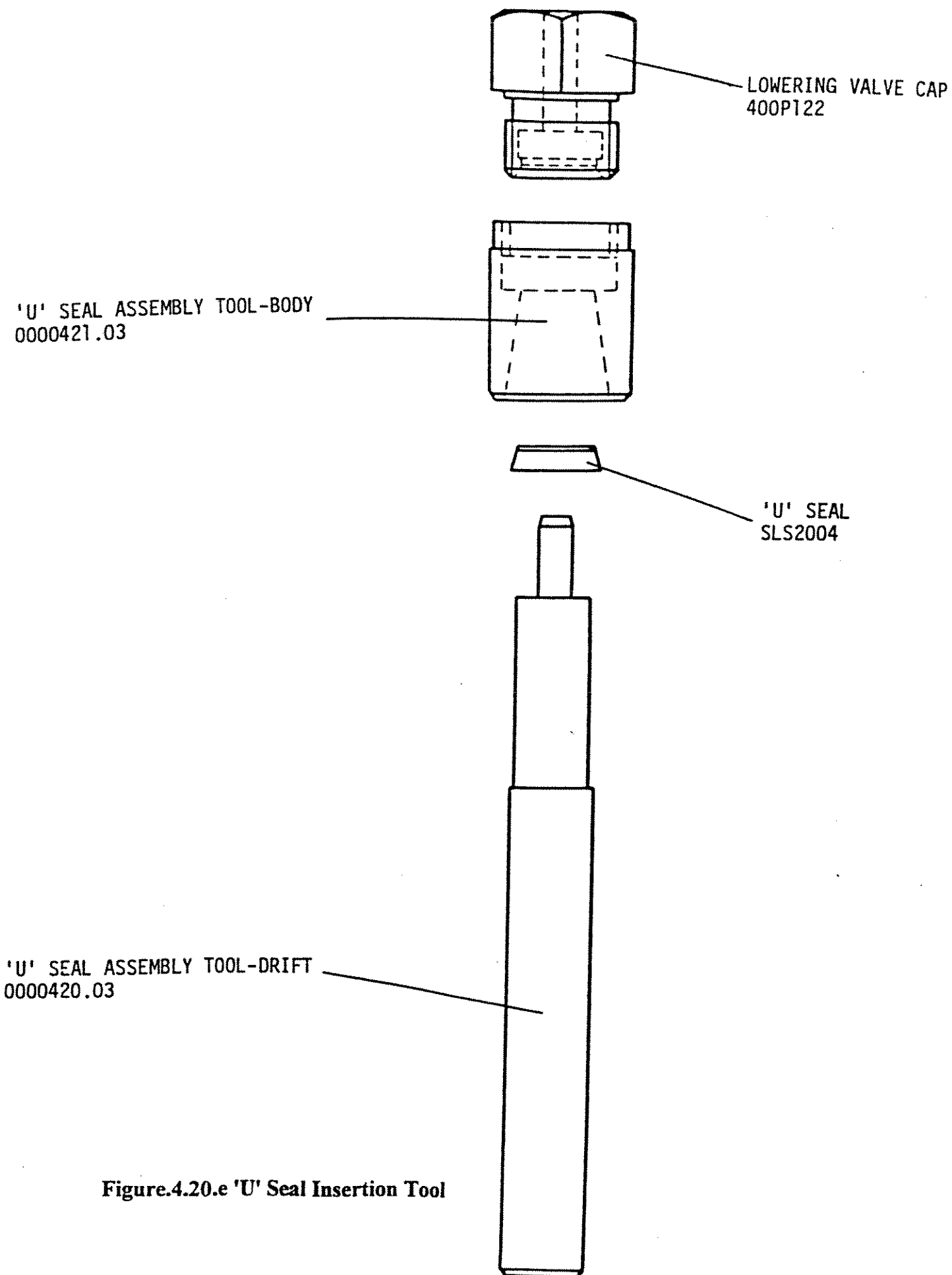
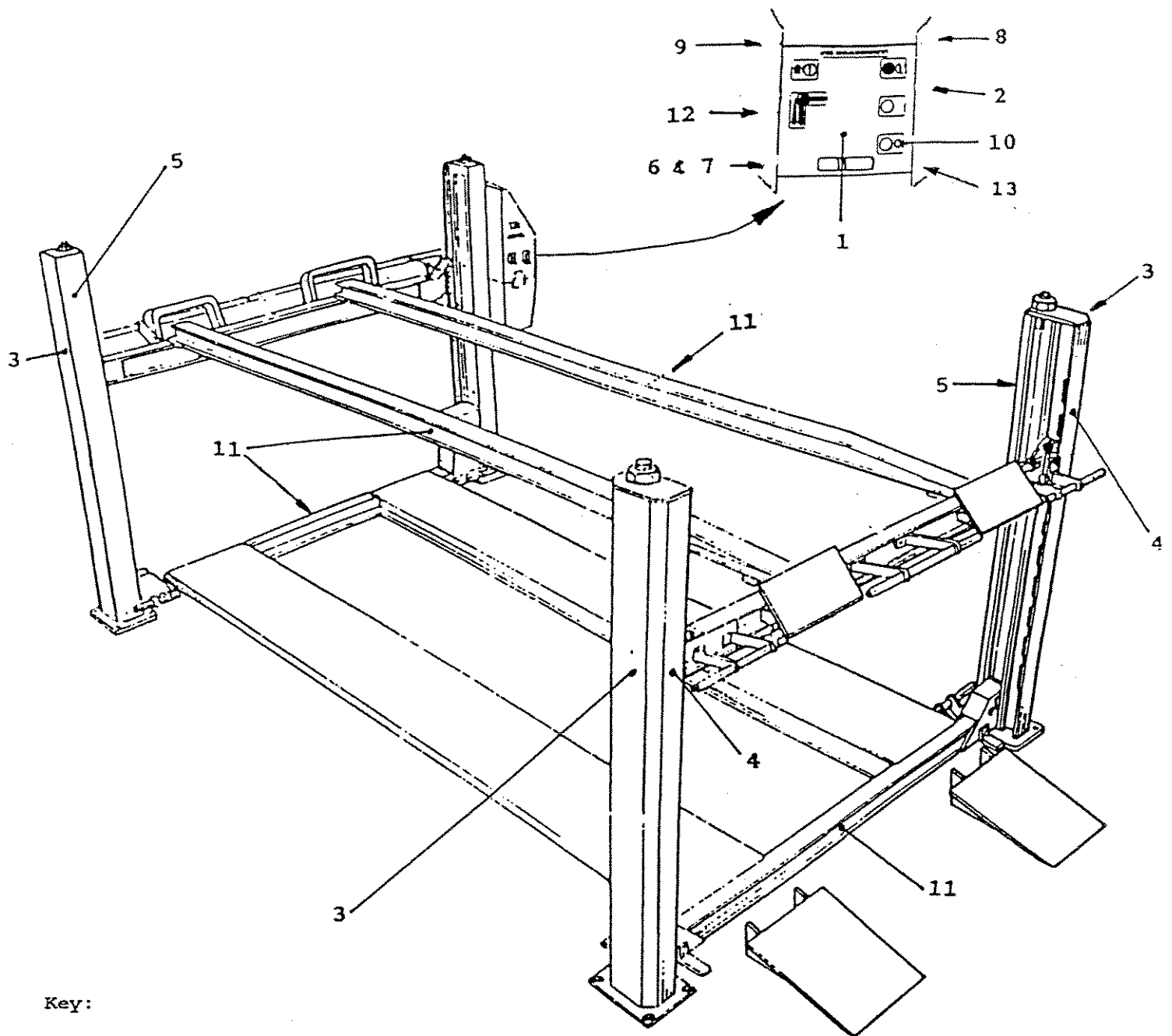


Figure.4.20.e 'U' Seal Insertion Tool

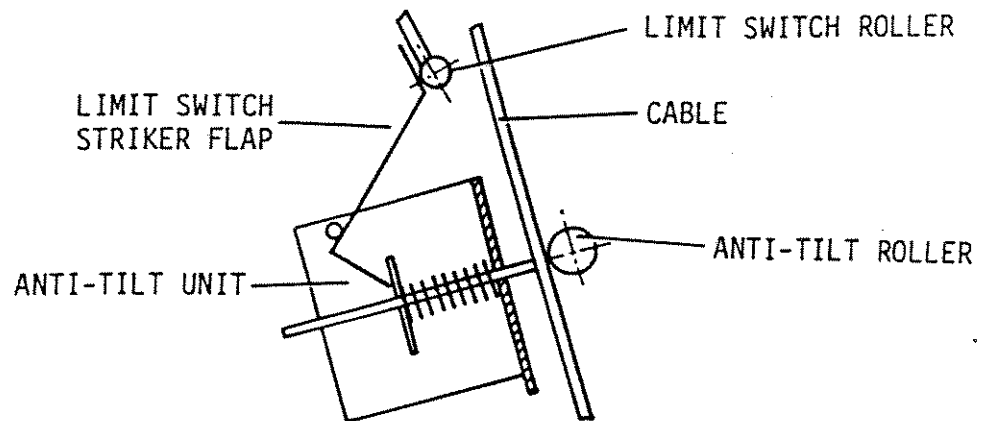




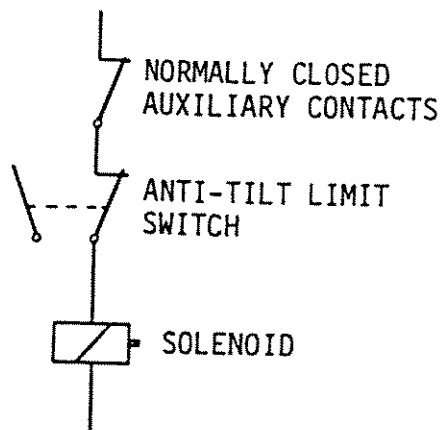
Key:

ITEM	DESCRIPTION	
1	Operating Instructions	LBL0049
2	CE Marking	LBL0202
3	Label 'BRADBURY'	LBL0001
4	Label 'BRADBURY'	LBL0055
5	Label 'Max. Load 3 Tonnes'	LBL0052
	Label 'Max. Load 4 Tonnes'	LBL0053
6	Name Plate Label	LBL5109
7	Transervice Label	4265726
8	Wheelfree Instructions	LBL0056
	(Optional)	
9	Mechanical Locking (Optional)	LBL0154
10	Lighting Label (Optional)	LBL0057
11	Caution Label (Optional)	ADH0106
12	Air Supply. (Optional)	LBL0208
13	Load Distribution Label	LBL0221

Figure.4.21 Label Positions



A



B

Figure 4.22 Anti-tilt

# SECTION 5

## SPECIALIST MAINTENANCE

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## **5.1. GENERAL TECHNICAL DESCRIPTION**

### **5.1.1 Model Variations**

The models 42 and 43 are wider and longer versions of the model 41, but apart from overall dimensions, all three lifts are mechanically very similar.

### **5.1.2 Major Options available**

- a) **Mechanical Locking** This option consists of three pneumatically controlled locking pawls (one in each auxiliary column). When the lift is in any raised position, the locking pawls engage themselves into the slotted safety racks so that the lift is mechanically supported, thus removing the load from the lifting cables.
- b) **Lights** This option consists of fluorescent light tubes that are attached to the inside of the platforms.
- c) **Flush Fit** Lifts can be installed in a pit of predetermined size so that the platforms are flush with the surrounding area. This will eliminate any drive or clearance problems associated with some vehicles.

## FITTING INSTRUCTIONS FOR MECHANICAL LOCKING OPTION

1. Raise the unloaded lift to approx. mid height. Place four axle stands, one under each corner of the lift structure and lower the lift structure onto them. Release the cables by unscrewing the threaded anchors from the top of the three auxiliary columns.
2. Isolate the lift electrical supply.
3. Starting at the corner opposite to the power corner (short cable run), disconnect the safety rack from the column, remove the guide blocks and remove the floor fixing screws from the column base. Take the column away from the lift, leaving the safety rack in the end of the beam.
4. Remove the dia. 6mm roll pin, which acts as a cable retainer, from the single pulley box.
5. Assemble one of the air cylinders onto a trunnion block and secure with an M3 cheese head screw and nyloc nut. Using one of the New 6mm roll pins provided, assemble the air cylinder into the single pulley box. (See Fig 5.1a)
6. Fit mechanical locking pawl into pulley box using dia. 25mm pin and circlips provided. Take special care to fit the correct pawl! (The cut out in the pawl is to clear the pulley). (See Fig 5.1a)
7. Repeat procedures 3 to 6 on the other two auxiliary columns.
8. **Note:-** If the lighting kit is fitted ignore the following steps and use existing conduit/ducting/fittings.

a) If the platform section is as Fig 5.1b, cut a Ø 20mm hole through the underside of the platform ANTI TOE trapping section at the power corner. Insert adaptor for flexible conduit and secure with locking ring. Fit one end of the conduit to the adaptor.

b) If the platform section is other than Fig 5.1b, position the coupling bracket on the platform edge plate, at the power corner, and using it as a template, drill 2 Ø 4.5 holes. Secure with M5 x 12 Taptite screws and fit adapter for flexible conduit and fit end of conduit.

Place a length of ducting against lower half of main longitudinal beam, with the end of the ducting approx. 280 mm from end of beam. Using this as a template drill 12 holes equi-spaced Ø 4.5mm. Secure with 12 M5 x 12 Taptite screws. Place remaining length in line with previous length and repeat.



16. Raise the lift and again lower onto the piston pawl. The mechanical locking pawls should now be engaged, re-check that the lift platforms and beams are lying perfectly horizontal.

When the mechanical locking is operating correctly, demonstrate its use to the lift operator/customer, pointing out clearly to him that once the mechanical locking has been engaged the lift must first be raised before lowering in order to free the pawls from their racks. Also point out that great care must be taken when lowering to ensure that the lift descends equally on all four corners.

Should one or more corners not lower the lift must be raised beyond the point at which it becomes jammed before lowering in the normal manner.

9. Connect the dia. 4mm plastic pipe to the three air cylinders using the pipe and fittings provided as shown in **Fig 5.1b**. Use the cable mounts and ties to secure the pipe across the column beams and feed the pipe through the fitted ducting/platform section.
10. Thread the remaining length of plastic pipe through the flexible conduit. If not previously done, connect to the Tee connector in/beneath the platform. Feed the other end through the back of the power pack and secure the flexible conduit to the back of the power pack.
11. Position and secure the solenoid valve to the side of the power pack, (the holes are pre-drilled). Cut the plastic pipe to suit and connect free end to the valve. (see **Fig 5.1c**) for position.

Assemble regulator and gauge as shown in literature **Fig 5.1c** and secure the side of power pack using fixing bracket, (holes pre-drilled). Connect air outlet on regulator to solenoid valve using remaining plastic pipe.

12. Wire the solenoid valve into the power pack electrical circuit as shown in the wiring diagram.

Connect air supply to the regulator and adjust to between 3.5 and 8 bar. Test the circuits for operation and leaks by depressing the master button on the power pack lid. When the button is pressed the mechanical locking air cylinders should be actuated and when the button is released they should also release.

13. Set the position of the mechanical locking pawls by connecting the air cylinder piston rod end to the spigot on the pawl, when the air cylinder is energised the point of the pawl should be clear of the safety rack, and when the air cylinder is de-energised the point of the pawl should engage with the windows of the safety rack. When the correct position of the pawl is achieved, lock the trunnion block onto its roll pin by tightening the socket set screws in the trunnion block. Repeat this on all three auxiliary corners of the lift.
14. Re-fit the three auxiliary columns ensuring that they are perfectly upright and correctly positioned against the guide blocks. Reconnect the safety racks. Reconnect the cables and adjust so that the lift lies horizontal.
15. By depressing the lowering handle only, lower the lift onto the piston pawl. Then using a spirit level on the power end beam, adjust the safety rack in the short cable run column so that when the mechanical locking pawl is engaged in the safety rack the power beam lies perfectly horizontal. Then place the spirit level along each of the platforms and adjust the auxiliary end safety racks so that the platforms lie perfectly horizontal.

**U.K. LIGHTING KIT P/40/LK  
380 & 415V, 3PH AND NEUTRAL**

The following instructions describe the installation of the fluorescent light fittings on the inner edges of the platform as shown in Fig.5.2.

**IMPORTANT**

Before commencing installation, raise lift platforms to a convenient working height then switch isolator to "OFF" position. Preferably withdraw the fuses or place a notice on the isolator stating electrical work in progress and it must remain "OFF".

**INSTALLATION**

1. Position the four light unit brackets (400P198) as shown in Figs.5.2 and 5.3a and using them as templates, drill through the joist with a Ø6mm drill.
2. Fasten the bracket to the joist using M5 x 12 set screws (BLT0516), M5 nuts (NUT0006), plain washer (WAS0005) and spring washer (WAS3007).
3. Place the lighting units (LTG0004) on the brackets so that the supply terminals are facing the relative ends and secure in position with No.4 hose clips (FST5024).
4. Place the length of ducting (400P200) against inside web of power crossbeam, above wire rope run, see Fig.5.3b. Using this as a template, drill through the ducting into the joist in two positions with a Ø6mm drill. Fix ducting to beam with M5 x 12 set screws (BLT0512), M5 nuts (NUT0006), plain washer (WAS0005) and spring washer (WAS 3007).
5. Drill Ø20mm hole in platform ANTI TOE trapping section, (see Figs.5.2, 5.3c and 5.3d). Insert adaptor (CDT5006) for flexible conduit and secure with locking ring (CDT5005). (If mechanical locking not fitted).
6. Feed 3 core electrical cable through platform ANTI TOE trapping section, (see Figs. 5.2 and 5.3d), use piece of stiff wire to pull cable through. Working at auxiliary end, pass cable over the top of the platform pulley box but underneath the decking, connect to light unit. Pass cable through connector in platform anti-toe trapping and cut to length, leave sufficient length to accommodate complete platform travel and connection to power pack, see (Fig. 5.2c)
7. Working at power end, feed 3 core electrical cable through connector in platform ANTI TOE trapping. Feed over the top of the platform pulley box but underneath the decking, across the power beam and connect to the light unit. Secure into the ducting by fitting its cover..
8. Feed earth wire through connector in platform ANTI TOE trapping, across top of power end platform pulley box but underneath decking. Remove one ducting securing screw, scrape paint from beam to facilitate earth. Secure earth wire with ducting fixing screw.

9. Ensure flexible conduit (CDT0002) correct length for complete platform travel. Thread two 3 core electrical cables and one earth wire through flexible conduit. Assemble adaptor (CDT5006) for flexible conduit into Ø20mm hole in rear of power pack and secure with locking ring (CDT5005). Thread cable through adaptor into power pack and connect flexible conduit to adapters.
10. Remove the two screws securing the supply terminal block in the top left hand corner of the power pack. Position the lighting terminal block bracket (400P223) behind it then replace the screws. This will secure both assemblies.
11. Mount the push button (SW15502) and snap on contactor block (SW15503) in the top Ø22mm hole on the right hand side of the power pack lid.
12. Remove one of the blue control circuit wires from the bottom of the neutral 'way' on the supply terminal block and insert it in the centre 'way' of the lighting terminal block, (see Fig. 5.4). Connect a blue link wire between the neutral on the supply terminal block and the centre 'way' of the lighting terminal block. (This method of connection is required because it is not possible to put three wires into one 'way' on a terminal block).
13. Refer to Fig.2. Connect brown wires from push button to lighting terminal block and from push button to contactor, assemble fuse holder (EXX0057) and fuse (EX0058) into this line. Ensure sufficient lengths so as not to create problems when lid is raised or lowered. Near to push button the wires should be attached to the lid using cable ties (EXX0007) with cable tie mounts (EXX0015). Tape spare fuse to wire.
14. Connect the two 3 core cables to the lighting terminal block, (see Fig. 5.4). and extend the earth wire to the securing point on the power pack chassis.
15. Connect a 'Megger' or similar generator type test instrument between the power pack chassis and a cleaned area of the lift platform and ensure the earthing resistance complies with I.E.E. or local regulations.
16. Close power pack lid, ensure routing of electrical wire is not trapped, switch on mains isolator and test the lift lighting for satisfactory operation. Secure push button operating label to power pack (LBL0057) beside button.

**U.K. LIGHTING KIT P/43/LK  
380 & 415V, 3PH AND NEUTRAL**

The following instructions describe the installation of the fluorescent light fittings on the inner edges of the platform as shown in **Fig. 5.2.1**.

**IMPORTANT:-**Before commencing installation, raise lift platforms to a convenient working height then switch isolator to "OFF" position. Preferably withdraw the fuses or place a notice on the isolator stating electrical work in progress and it must remain "OFF".

**INSTALLATION**

1. Position the four light unit brackets (400P198) as shown in **Figs 5.2.1** and **5.3.1.A** and using them as templates, drill through the joist with a Ø6mm drill.
2. Fasten the bracket to the joist using M5 x 15 set screws (BLT0516), M5 nuts (NUT0006), plain washer (WAS0005) and spring washer (WAS3007).
3. Place the lighting units (LTG0004) on the brackets so that the supply terminals are facing the relative ends and secure in position with No.4 hose clips (FST5024).
4. Place the length of ducting (400P200) against inside web of power crossbeam above wire rope run, see **Fig. 5.3.1B**. Using this as a template, drill through the ducting into the joist in two positions with a Ø6mm drill. Fix ducting to beam with M5 x 16 set screws (BLT0516), M5 nuts (NUT0006), plain washer (WAS0005) and spring washer (WAS3007).
5. Position coupling bracket (430P127) on the platform edge plate and using it as a template drill 2 Ø4.5 holes. Secure with 2 M5 x 12 Taptite screws (SCR4502), see (**Fig 5.3.1b**). Insert adaptor (CDT50006) for flexible conduit and secure with locking ring (CDT5005).
6. Place a length of ducting (EXX0059) against lower half of main longitudinal beam with the end of ducting approx. 280mm from end of beam, (**Fig 5.3.1D**). Using this as a template drill 12 holes equi-spaced Ø4.5. Secure to platform with 12 M5 x 12 Taptite screws. Place remaining length in line with previous length approx. 280 from other end. Drill as before securing with remaining 12 M5 x 12 Taptite screws.

Secure 3 core electrical cable in the ducting. Working at auxiliary end, pass cable over the top of the platform pulley box but underneath the decking, connect to light unit. Pass cable through adaptor on platform and cut to length. Leave sufficient length to accommodate complete platform travel and connect to power pack, see **Fig, 5.3.1C**.

7. Working at power end, feed 3 core electrical cable through adaptor on platform edge, feed over the top of the platform pulley box but underneath the decking, across the power beam and connect to light unit. Secure into the ducting by fitting its cover

8. Feed earth wire through adaptor on platform edge, across top of power end platform pulley box but underneath decking. Remove one ducting securing screw, scrape paint from beam to facilitate earth, secure earth wire with ducting fixing screw.
9. Ensure flexible conduit (CDT0002) correct length for complete platform travel. Thread two 3 core electrical cables and one earth wire through flexible conduit. Assemble adaptor (CDT5006) for flexible conduit into Ø20mm hole in rear of power pack and secure with locking ring (CDT5005). Thread cable through adaptor into power pack and connect flexible conduit to adaptors.
10. Remove the two screws securing the supply terminal block in the stop left hand corner of the power pack. Position the lighting terminal block bracket (400P223) behind it then replace the screws. This will secure both assemblies.
11. Mount the push button (SW15502) and snap on contactor block (SW15503) in the top Ø22mm hole on the right hand side of the power pack lid.
12. Remove one of the blue control circuit wires from the bottom of the neutral 'way' on the supply terminal block and insert in the centre 'way' of the lighting terminal block, (see Fig 5.4). Connect a blue link wire between the neutral on the supply terminal block and the centre 'way' of the lighting terminal block. (This method of connection is required because it is not possible to put three wires into one 'way' on a terminal block).
13. Refer to (see Fig 5.4)., Connect brown wires from push button to lighting terminal block and from push button to contactor, assemble fuse holder (EXX0057) and fuse (EXX0058) into this line. Ensure sufficient lengths so as not to create problems when lid is raised or lowered. Near the push button the wires should be attached to the lid using cable ties (EXX0007) with cable tie mounts (EXX0015). Tape spare fuse to wire.
16. Connect the two 3 core cables to the lighting terminal block, see Fig 5.4 and extend the earth wire to the securing point on the power pack chassis.
17. Connect a 'Megger' or similar generator type test instrument between the power pack chassis and a cleaned area of the lift platform and ensure the earthing resistance complies with I.E.E. or local regulations.
18. Close power pack lid, ensure routing of electrical wire is not trapped, switch on mains isolator and test the lift lighting for satisfactory operation. Secure push button operating label to power pack (LBL0057) beside button.

## 5.2 DETAILED TECHNICAL DESCRIPTION

### 5.2.1 Electrical Specification And Pressure Chart

MODEL	Single Phase 230 Volt 1.1kW	3 Phase 230 Volt	3 Phase 400 Volt	Pressure at 110% full load
410	25 Amp	20 Amp (1.5kW)	12 Amp (1.5kW)	1325 psi 90 Bar
414	25 Amp	20 Amp (1.5kW)	12 Amp (1.5KW)	1325 psi 90 Bar
420	25 Amp	25 Amp (1.8kW)	15 Amp (1.8kW)	1750 psi 119 Bar
424	25 Amp	25 Amp (1.8kW)	15 Amp (1.8kW)	1750 psi 119 Bar
430	25 Amp	25 Amp (1.8kW)	15 Amp (1.8kW)	1750 psi 119 Bar
434	25 Amp	25 Amp (1.8kW)	15 Amp (1.8kW)	1750 psi 119 Bar

**NOTE:** 410) 3 phase 1.5kW  
414)

420) 3 phase 1.8kW  
424)  
430)  
434)

## 5.3 SPECIAL TOOLS AND EQUIPMENT

- a. Torque wrench 0-100Nm. (0 - 74 lbf - ft)
- b. Safety gear spring compressor
- c. Pressure gauge
- d. Seating tool
- e. 'U' Seal seating tool
- f. 6mm dia hand reamer

## 5.4 FAULT DIAGNOSIS

The following information, which has been gathered as a result of engineer experience in the field is given to aid speedy rectification of faults and reduce equipment down time.

Further field experience may produce additional fault diagnosis information which will be published in this section from time to time.

**All feedback is welcomed**

### 5.4.1. Fault:- Lift motor will not operate

CAUSE	ACTION
Main Supply switch fuse blown	Replace fuse with one of correct value 1.8kW 3ph 400 Volts -15 Amps 1.8kW 3ph 230 Volts -25 Amps 1.5kW 3ph 400 Volts -12 Amps 1.5kW 3ph 230 Volts -20 Amps 1.1kw 3ph 230 Volts - 25 Amps
Limit switch faulty: switchfuse contacts are defective.	Remove switch cover and inspect contact operation. Inspect switch contacts and clean or replace as necessary.
Motor defective	Replace motor
Contacts in starter switch defective.	Clean or replace contacts

### 5.4.2 Fault: Lift will not rise but motor runs

Rated Load exceeded. Overload incorrectly set.	Check weight of vehicle. Remove if over the Rated Load of lift. Hydraulic pressure settings are shown at 5.2.1.
Non return valve not opening	Remove valve cap and inspect. The ball and plunger should be free to move. When assembled check that the M5 screw is "backed off" five turns, so that it does not hinder the movement of the ball.



#### **5.4.3 Fault: Lift Rises Slowly**

##### **CAUSE**

##### **ACTION**

Blocked strainer or worn pump

Remove tank and inspect strainer.  
Remove pump, inspect, clean and replace as necessary.

Release valve ball not seating

Flush valve block by depressing raise button whilst operating lift lowering handles. Continue flushing for approx. 1-2 minutes.

#### **5.4.4 Fault: Lift rises a short distance then cuts out while raise buttons are depressed**

Maximum Rated Load of lift exceeded.

Check weight of vehicle. Remove if over the Rated Load of lift.

#### **5.4.5 Fault: Lift does not reach full height**

Insufficient oil in reservoir.

Check and top up if necessary.

#### **5.4.6 Fault: Lift creeping down, oil running into tank through plastic return tube**

Worn main seal

Fit new seal to piston rod.

#### **5.4.7 Fault: Lift creeping down, oil running in tank through steel return pipe.**

Raise valve not seating.

Dismantle and inspect. If necessary, improve seating of ball with seating tool.  
**\* See Note**

Overload valve not seating

Dismantle and inspect. If necessary, improve seating of ball with seating tool.  
**\* See Note**

#### **5.4.8 Fault: Lift creeping down, oil running in tank oil filter**

<b>CAUSE</b>	<b>ACTION</b>
Non-return valve not seating correctly.	Dismantle and inspect. If necessary, improve seating of ball with seating tool. * See Note

#### **5.4.9 Fault: Lift cannot be lowered**

Hydraulic piston in power column has crept down onto parking pawl.	Raise lift a short distance to free pawl and lower lift in normal manner.
In the event of a power failure.	Lowering Procedure 2
Surge valve closing	Lowering Procedure 3

#### **5.4.10 Fault: Lift platforms stick when wheel-free engaged**

Friction between guide blocks and column.	Back off the guide blocks slightly and oil columns.
---	---

**\*NOTE:** When release valve port has been resealed, it will be necessary to ream the release plunger hole using a 6mm diameter hand reamer. Again reseal with the special tool, but this time tap the seat with the special tool very lightly as this will remove any burrs caused by the reaming operation.

After re-assembly, the valve block must be flushed thoroughly. This can be done by refitting the valve block to the lift in the normal manner, then with the lowering valve lever in the fast lower position, operate the raise function of the lift. This will allow oil to flush through the valve block and return to the tank. This should be done for a period of 1-2 minutes. The lift will then be ready for normal operation.

**WARNING:-**Great care must be taken when dealing with any hydraulic problems when the lift is raised, as removal of certain valves or caps may cause the lift to lower suddenly.

Also, oil may be exhausted under great pressure which could result in injury.

## **5.5 LOWERING PROCEDURES**

### **5.5.1 Lowering Procedure 1 - Cable Failure**

Refer to Bradbury for UK users, or agents, for overseas users.

**NOTE:** If Mechanical Locking is fitted, check pawls for permanent deformation.

### **5.5.2 Lowering Procedure 2 - Electrical Failure**

1. ISOLATE THE MAINS SUPPLY
2. If the mechanical locking is fitted, disengage it by loosening the socket set screw in the trunion block and rotating the block until the pawl is clear of the rack. Repeat for the other two auxiliary columns.

**NOTE:**

If the lift has been lowered onto the mechanical locking, it will need raising to disengage the pawl, as above. This is possible using a jack and block(s) to Jack each corner by 5-10mm

3. Manually operate the parking pawl (inside the Power Pack) and lower lift by activating the lowering lever.

### **5.5.3 Lowering Procedure 3 - Surge Valve Or Hose Failure Valve Closed**

1. Raise the lift slightly to equalise the pressure on either side of the valve.
2. Lower the lift by simultaneously pressing the master button and lowering lever on the control panel.

### **5.5.4 Lowering Procedure 4 - Hose or Hydraulic Pipe Failure**

1. Locate and replace the damaged part. If necessary, top up the hydraulic fluid.
2. Raise the lift slightly to equalise the pressure on either side of the valve.
3. Lower the lift by simultaneously pressing the master button and lowering lever on the control panel.

#### **5.5.5. Lowering Procedure 5 - Pneumatic Failure (Mechanical Locking only)**

1. Disengage each of the 3 Mechanical locking pawls by loosening the socket set screws in the trunion blocks, then rotating the block until the pawl is clear of the rack. The lift may need to be raised a short distance to disengage the pawl from the safety rack.
2. Lower lift by simultaneously pressing master button and lowering lever on the control panel.

## **5.6 PREFERRED REPAIR PROCEDURES**

### **5.6.1 Replacement of piston lip seal, piston guide and wear ring**

- a) Place wooden blocks approx. 100mm (4 ins) high under each of the four pulley boxes and lower the lift onto them.
- b) Remove the crosshead pin and lifting links from the top of the piston rod.
- c) Remove the piston rod guide from inside the top of the cylinder.
- d) Raise the piston rod by starting the lift in the normal manner.
- e) Stop the piston rod when it is just short of its normal operating height.
- f) Withdraw the piston rod manually from the cylinder and place it on a clean bench. The piston rod guide will be drawn out of the cylinder on the piston rod. DO NOT allow the piston rod to come into contact with abrasive dust etc. from the floor or any other source.
- g) Remove the piston seal assembly.
- h) Inspect the piston rod guide for wear, replace if necessary.
- i) Fit a new seal assembly.
- j) Open the lowering valve by operating the lift lowering handle, hold the piston pawl away from the piston rack, replace the piston rod in the cylinder. An assistant will be required for this operation.
- k) Slide the piston guide over the piston rod before the piston is fully lowered and enter the guide into the top of the cylinder with the lip uppermost and re-secure.

**NOTES:** Since the new fluid seal will be a snug fit in the cylinder, considerable pressure may be needed to push the piston fully home.

In cold climates it may be found easier if the delivery hose is disconnected from the rear of the power pack.

- l) Refit the lifting links and crosshead pin to the top of the piston rod.

### 5.6.2 Cable Replacement

- a) Place wooden blocks approx. 150mm (6 ins) high under each of the four pulley boxes and lower lift structure onto them.
- b) Remove all pulley covers from the four pulley boxes.
- c) Unscrew the cable anchor nuts from the cable anchors in the top of the three auxiliary columns.
- d) Remove all of the pulleys and pins from lift (7 pins total).
- e) Remove the cable anchors from the base of the power column. Starting at the threaded anchor end, withdraw the old cables from the structure, taking careful note of the cable routes.
- f) Install the new set of cables in the reverse order of removal, noting the following points:-
  - i. That the cable strands do not become separated and are kept free of abrasive grit etc.
  - ii. The cables do not become crossed or twisted during assembly.
  - iii. That all pulley pins are greased with molybdenum grease and have their spacers correctly fitted.
  - iv. When replacing pulley pins, starting at auxiliary end and finishing at power column.
  - v. Screw each cable anchor nut at least the full thickness of the nut onto the cable anchors at the top of the three auxiliary columns.
  - vi. Refit the cable anchor retainers at the base of the power column.
- g) Raise the lift. Remove all support blocks, examine the cable runs to ensure that there are no twists and that the cables are all in their respective pulley grooves.
- h) Test the lift with the heaviest vehicle available (do not exceed the Rated Load of the lift.) Lower the lift and remove vehicle.
- i) Check and, if necessary, adjust the cable tension.

Cable adjustment is correct when the platform of a fully loaded lift is level.

Alternatively, an unloaded lift should produce a situation where each of the auxiliary column corners are 6mm to 9mm higher than the power column corner. This can be checked by raising the lift so that the wheel-free pawl on the power column is set just clear of a slot, at which point the remaining three pawls should clear the wheel-free rack easily.

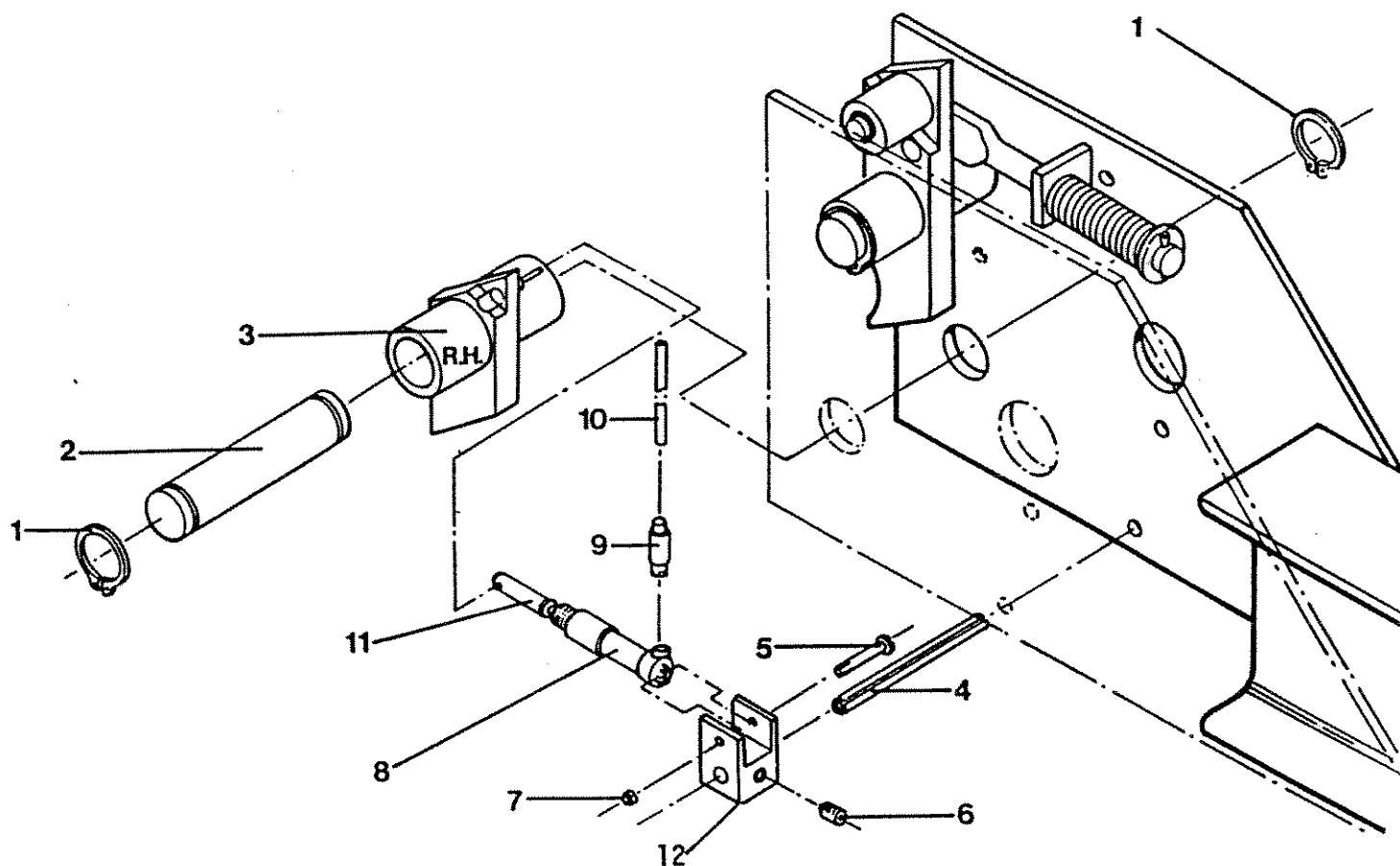
If the cables are found to require adjustment, hold the cable anchor by the flats provided and turn the adjuster nut to obtain the correct platform altitude.

- j) Replace all pulley box covers and guides.

### 5.6.3 Electrical Equipment Maintenance

**WARNING:** Always isolate lift from electrical supply before inspecting.

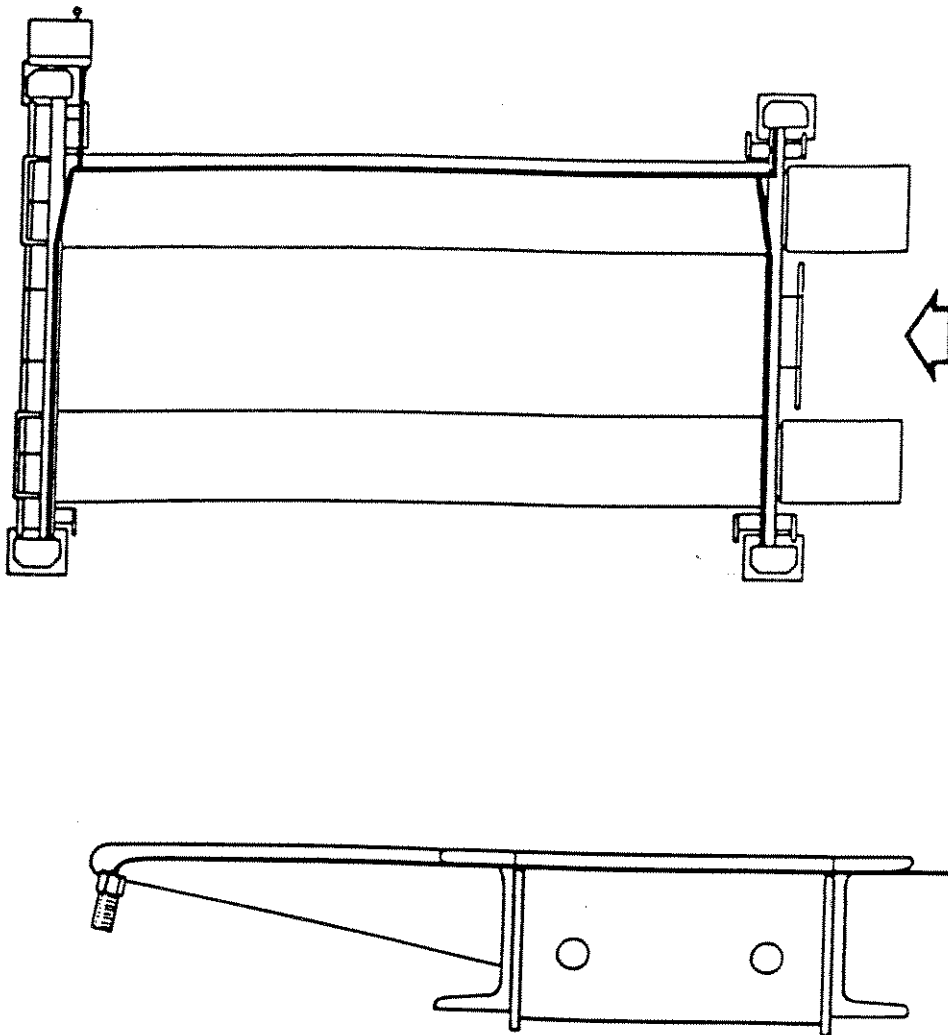
Check Every Three Months	Check For	Action
Starter. All parts	Dust, damp & corrosion	Clean and dry. Replace corroded parts.
Moving parts	Binding, sticking	Determine cause. This may be due to distortion or dirt. (Do not lubricate)
Contacts	Excessive wear	Replace if necessary
	Deposits of dirt	Clean with carbon tetrachloride
General Connections	Looseness	Clean and tighten
Solenoid	Correct operation	Clean or replace as necessary.
	Security of mounting screws	Tighten
Limit switch	Looseness of nut securing roller -lever arm.	Tighten



1. Circlip
2. Safety Pawl Pin
3. Mechanical Locking Pawl R.H. 1 reqd.  
L.H. 2 reqd.
4. Roll Pin
5. Set Screw
6. Socket Set Screw
7. Nyloc Nut
8. Air Cylinder
9. Straight Connector
10. Air Pipe
11. Air Cylinder Piston Rod End
12. Trunnion block

**Fig 5.1a Mechanical Locking Assembly.**





**Fig 5.1b Mechanical Locking Layout and Section.**

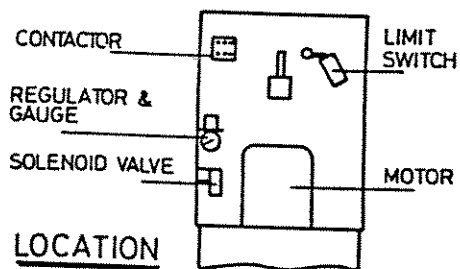
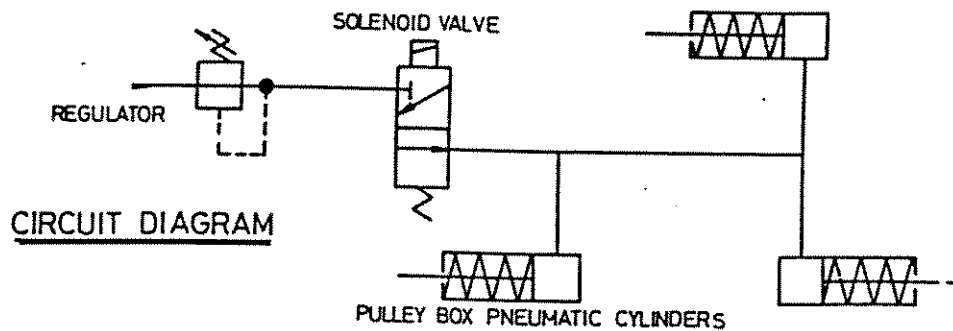
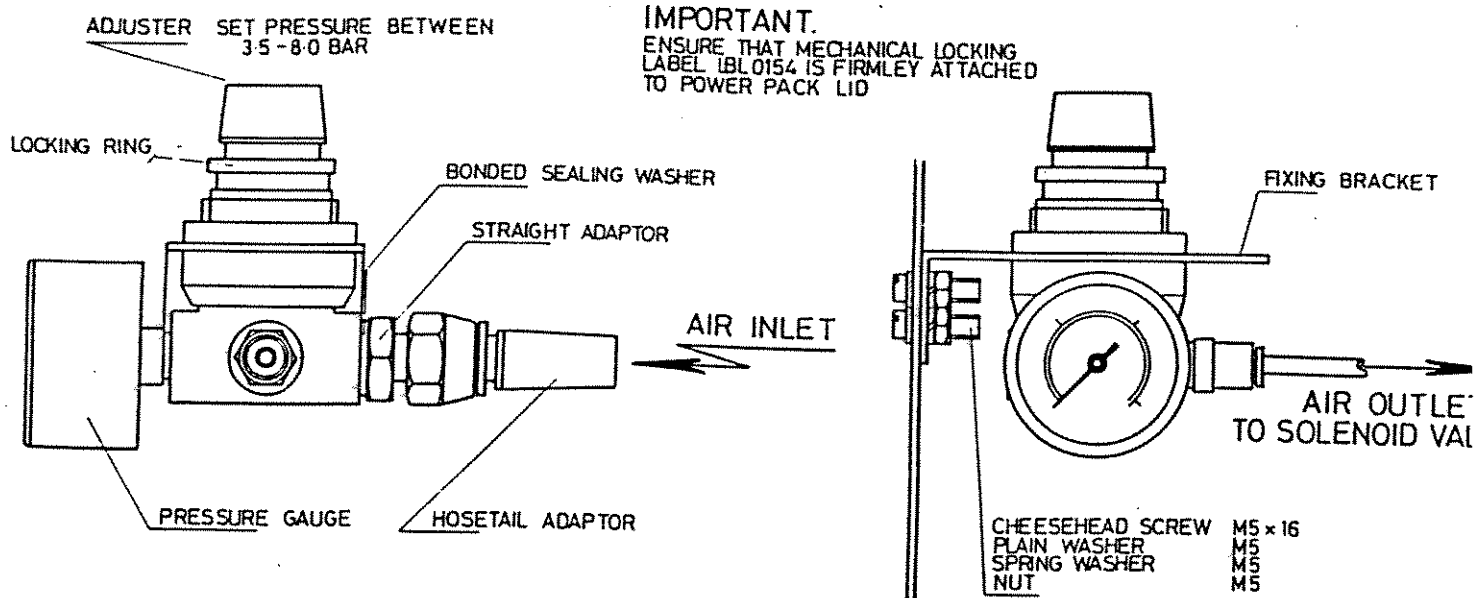
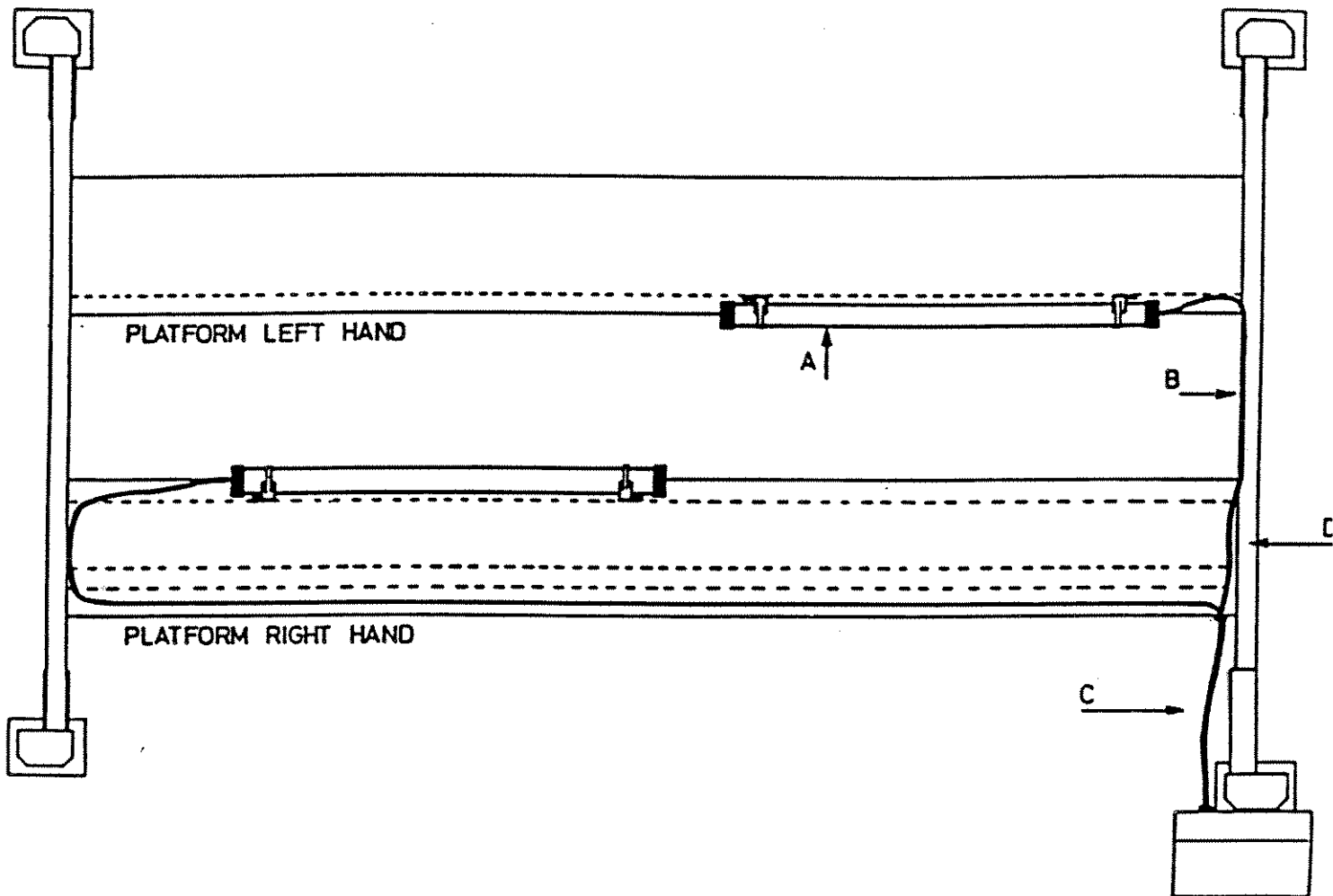


Fig 5.1c Mechanical Locking Information [LIT 8000]



**Fig.5.2 Lighting Layout**

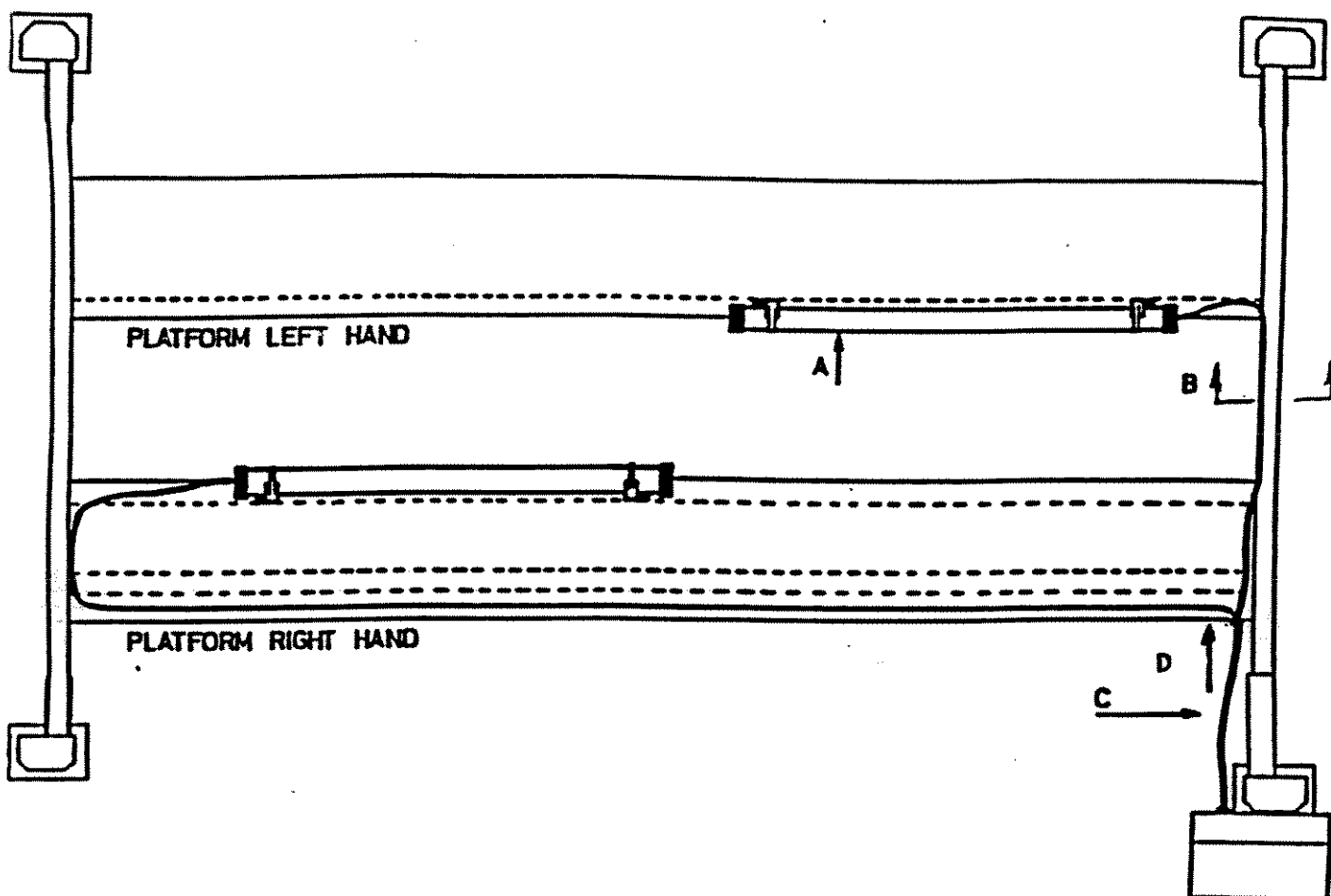


Fig.5.2.1 Lighting Layout  
ONLY P43LK

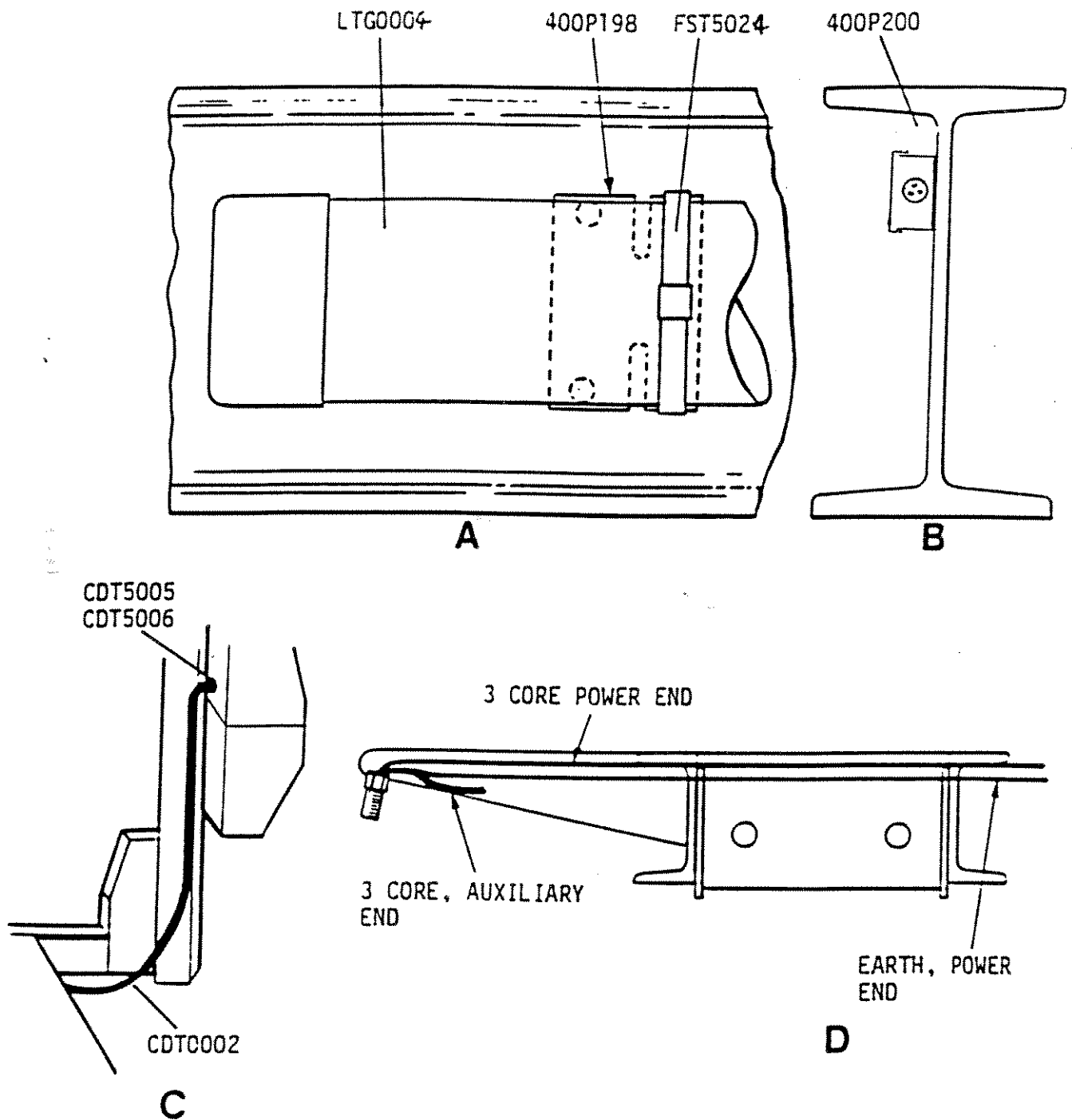


Fig.5.3 Lighting Details

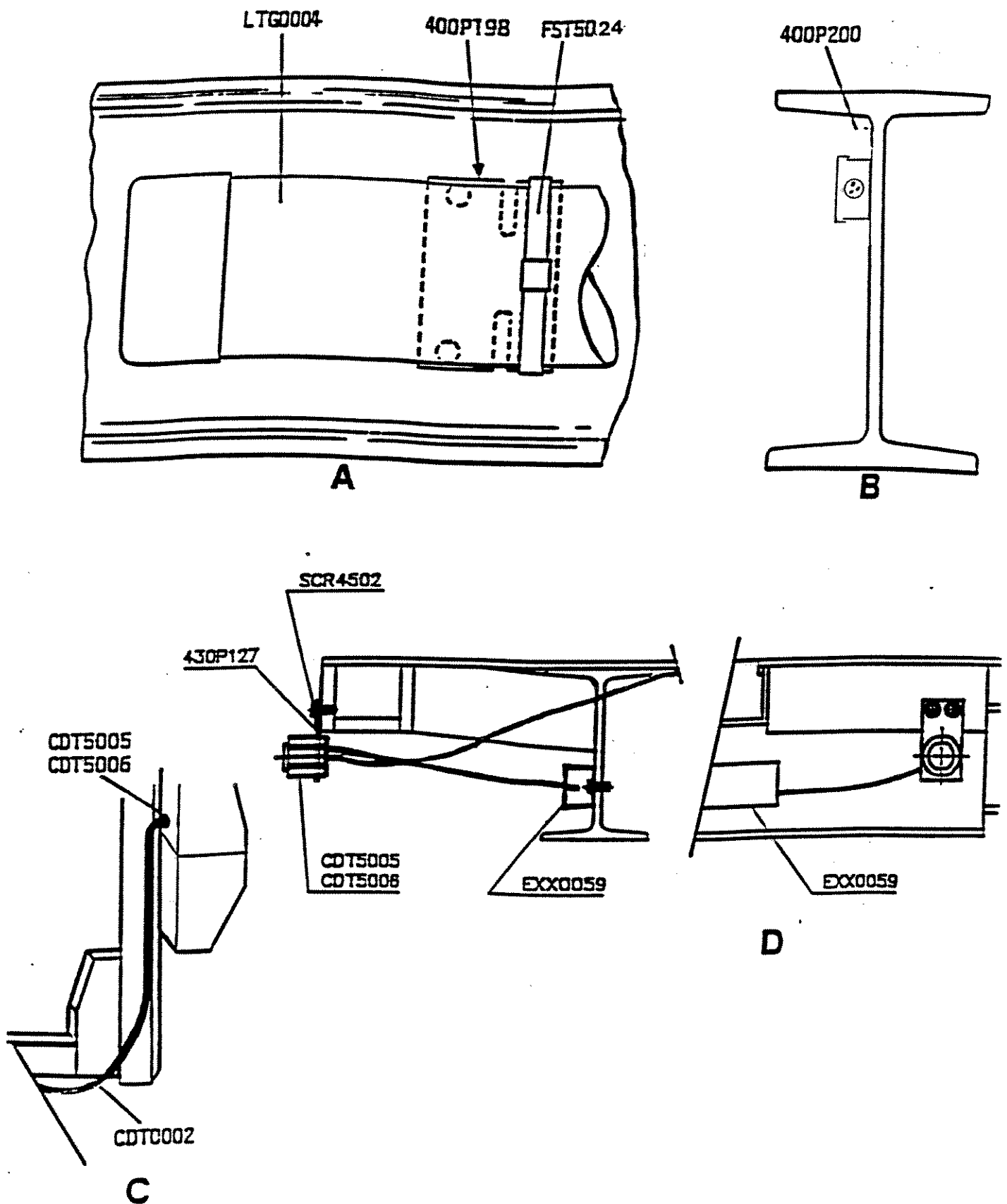


Fig.5.3.1 Lighting Details

ONLY P43LK

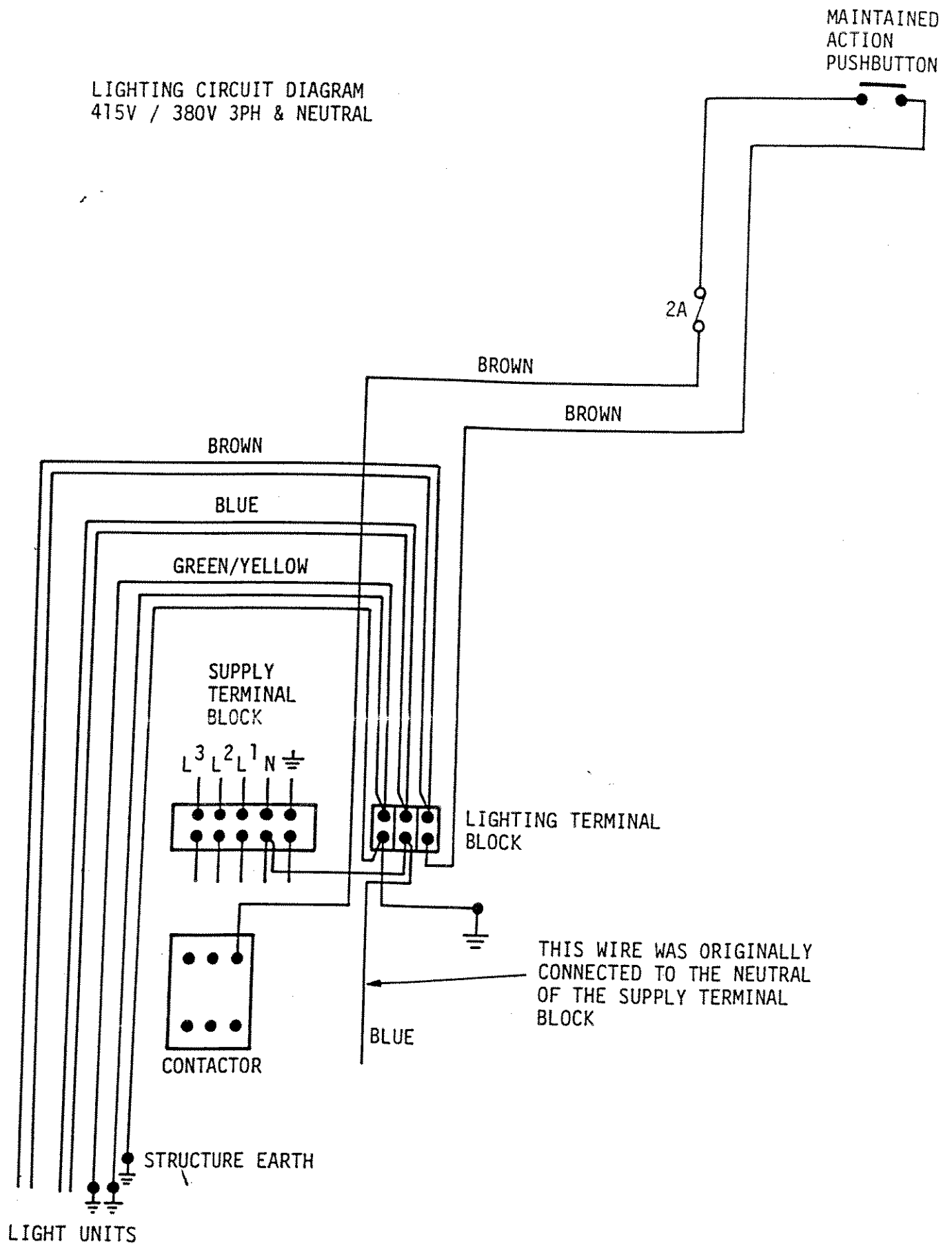
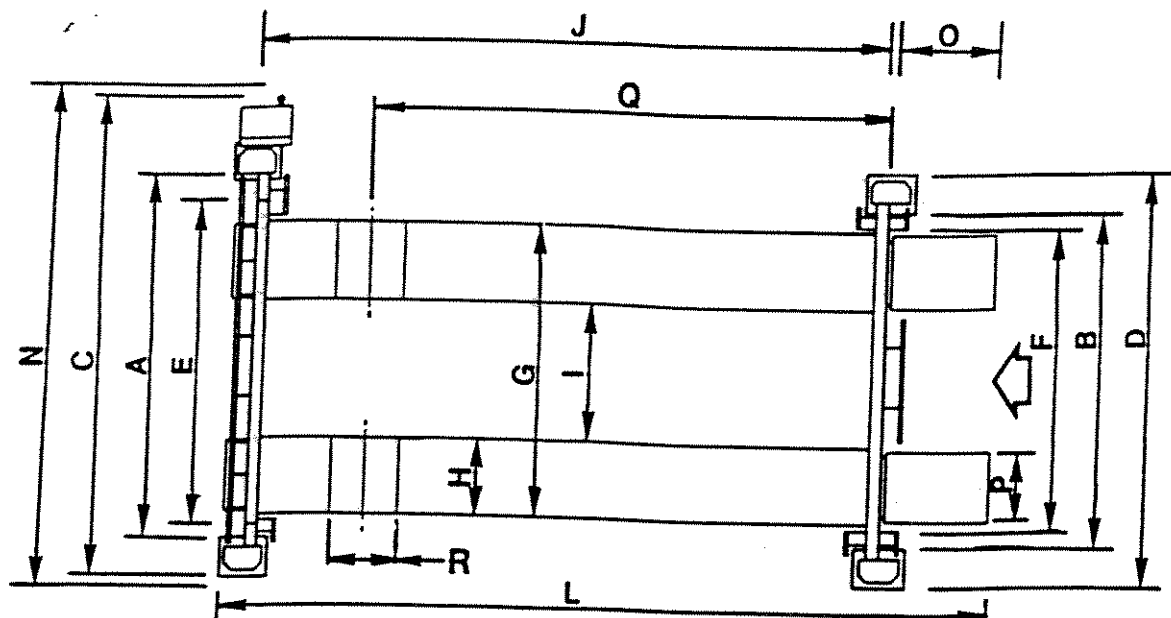
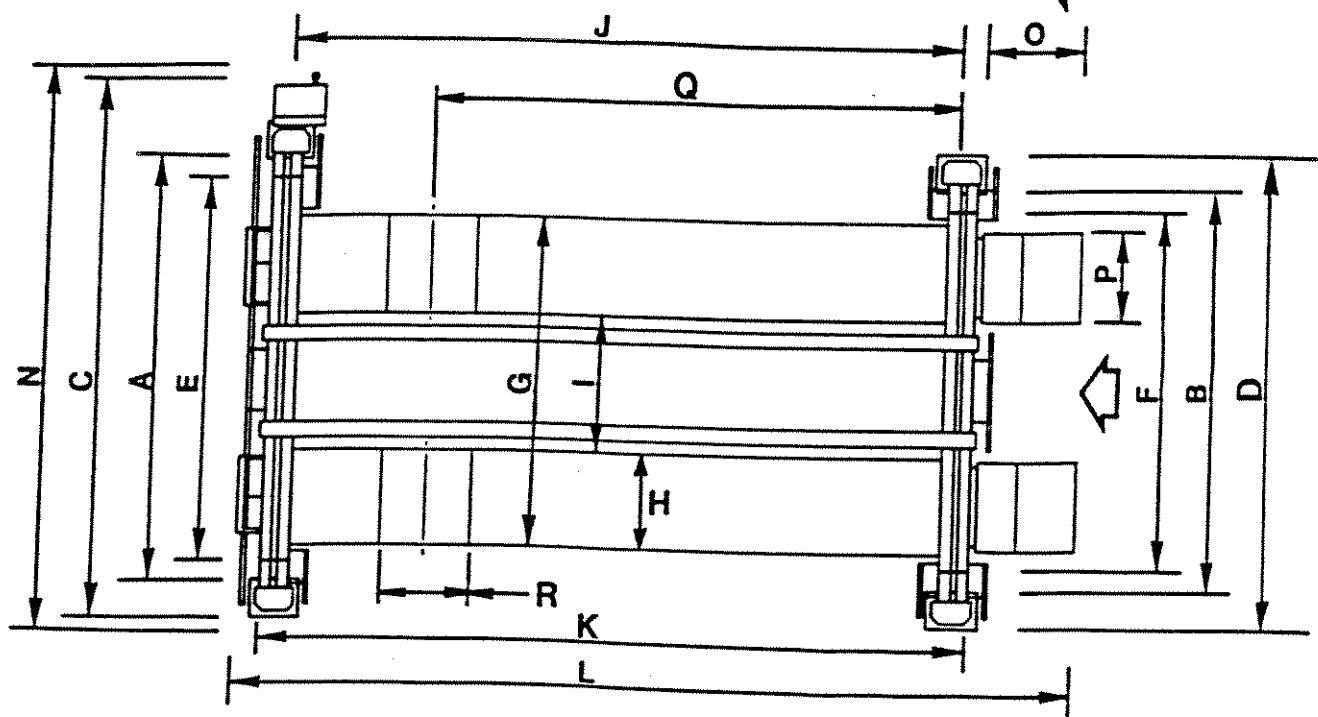


Fig.5.4 Lighting Wiring



**Models 410,420,430**

NORMAL DRIVE ON  
DIRECTION FOR  
R.H.D. VEHICLES



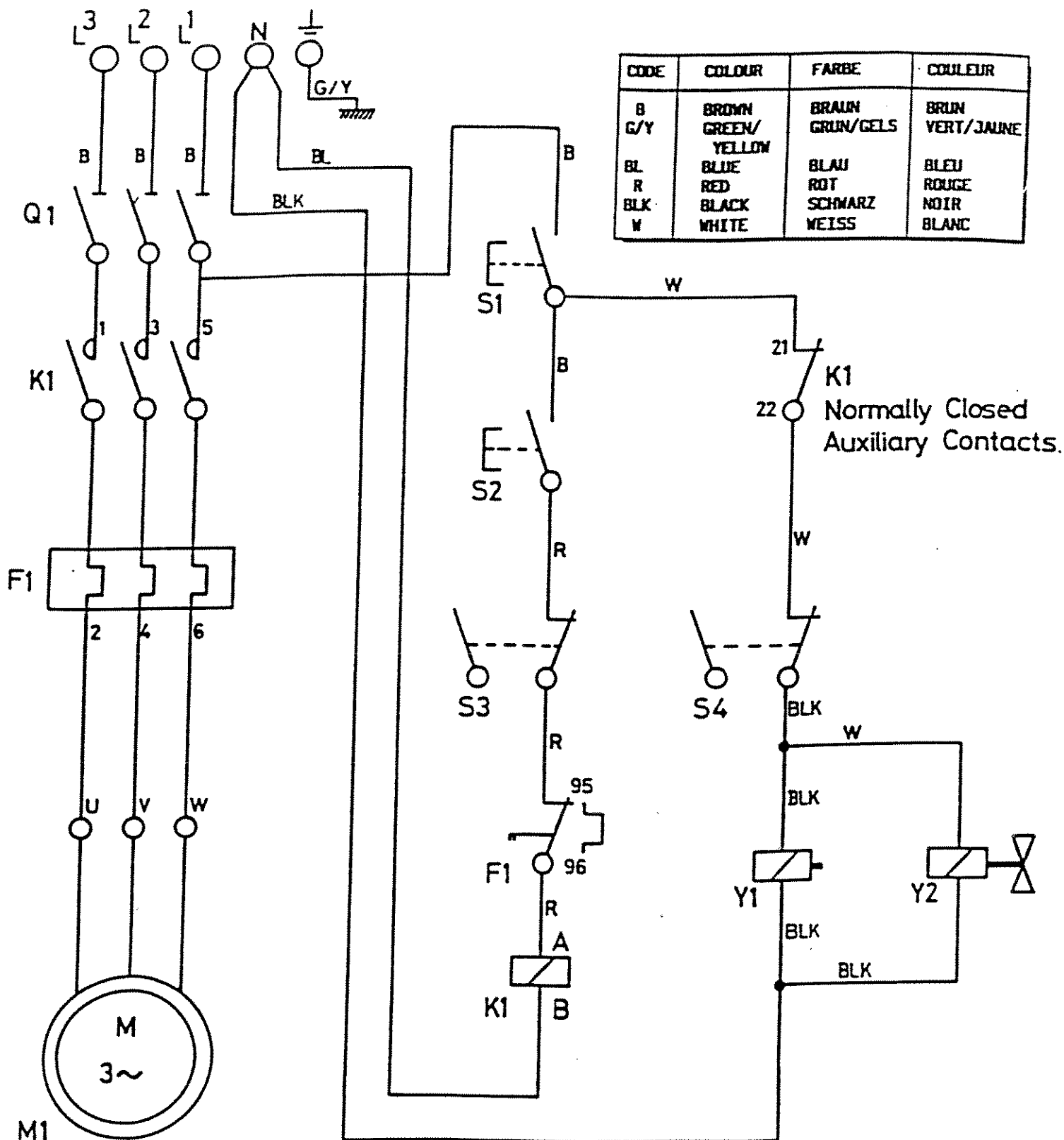
**Models 414,424,434**

**Fig 5.5 Lift Dimensions and Capacities**



\*NOT SHOWN

	410			414			420			424			430			434		
	METRIC	IMP		METRIC	IMP		METRIC	IMP		METRIC	IMP		METRIC	IMP		METRIC	IMP	
* HEIGHT OF PLATFORMS RAISED	1800	71		1800	71		1800	71		1800	71		1800	71		1800	71	
* HEIGHT OF PLATFORMS LOWERED	130	5 1/8		130	5 1/8		130	5 1/8		130	5 1/8		130	5 1/8		130	5 1/8	
* ACTUAL HEIGHT LIFTED	1670	66		1670	66		1670	66		1670	66		1670	66		1670	66	
* HEIGHT OF WHEEL-FREE MEMBERS ABOVE PLATFORMS	-	-		104	4		-	-		124	4 7/8		-	-		124	4 7/8	
A WIDTH BETWEEN COLUMNS POWER END	2486	98		2486	98		2486	112		2486	112		2486	112		2486	112	
B WIDTH BETWEEN COLUMNS AUX. END	2368	93 3/4		2368	93 3/4		2722	107 1/8		2722	107 1/8		2722	107 1/8		2722	107 1/8	
C OVERALL WIDTH OUTSIDE COLUMNS POWER END	2770	109		2770	109		3124	123		3124	123		3124	123		3124	123	
D OVERALL WIDTH OUTSIDE COLUMNS AUX. END	2652	104 1/4		2652	104 1/4		3006	118 1/2		3006	118 1/2		3006	118 1/2		3006	118 1/2	
E WIDTH BETWEEN PULLEY BOXES POWER END	2030	80		2030	80		2384	94		2384	94		2384	94		2384	94	
F WIDTH BETWEEN PULLEY BOXES AUX. END	1980	78		1980	78		2334	92		2334	92		2334	92		2334	92	
G MAXIMUM WIDTH ACROSS PLATFORMS	1905	75		1905	75		2160	85		2160	85		2160	85		2160	85	
H WIDTH OF EACH PLATFORM	508	20		508	20		635	25		635	25		635	25		635	25	
I DISTANCE BETWEEN PLATFORMS	890	35		890	35		890	35		890	35		890	35		890	35	
J Overall Length of Platforms (Including crossbeams)	4153	163 1/4		4153	163 1/4		4360	171 3/8		4360	171 3/8		4360	171 3/8		4360	171 3/8	
K Overall Length of Wheel-free Superstructure	-	-		4415	174		-	182		4622	182		-	-		5088	200	
L Overall Length of Lift (Incl. rams at one end)	4921	193 1/4		5153	203		5128	202		5360	211		5594	220 1/4		5826	229 3/8	
* Overall Height of Power Column (In top position)	3680	145		3680	145		3680	145		3680	145		3680	145		3680	145	
N Maximum Overall Width of Lift	3123	123		3123	123		3477	137		3477	137		3477	137		3477	137	
O Length of Each Approach Ramp	467	18 1/8		467	18 1/8		467	18 1/8		467	18 1/8		467	18 1/8		467	18 1/8	
P Width of Approach Ramp	488	19 1/4		488	19 1/4		588	23		588	23		588	23		588	23	
* Up Time on Full Load (3ph)	38 secs			38 secs			38 secs			38 secs			38 secs			38 secs		
* Up Time on Full Load (1ph)	73secs			73secs			73secs			73secs			73secs			73secs		
* Down Time on Full Load	23 secs			23 secs			23 secs			23 secs			23 secs			23 secs		
* Capacity (kg)	3000			3000			4000			4000			4000			4000		
* Motor Power 3 Phase (kW/hp)	1.5	2		1.5	2		1.8	2.4		1.8	2.4		1.8	2.4		1.8	2.4	
* Motor Power 1 Phase (kW/hp)	1.1	1.5		1.1	1.5		1.1	1.5		1.1	1.5		1.1	1.5		1.1	1.5	
* Oil Required to Operate Lift (Litres/gallons)	14	3		14	3		14	3		14	3		14	3		14	3	
Q Distance to of recess M.O.T. (Including crossbeam)	3480	137		-	-		3455	136		-	-		-	-		-	-	
Distance to of recess non M.O.T. (Including crossbeam)	3505	138		3505	138		3450	139 3/8		-	-		4006	157 1/4		4006	157 1/4	
R Length of recess M.O.T.	360	14		360	14		-	-		-	-		-	-		-	-	
Length of recess non M.O.T.	420	16 1/4		420	16 1/4		540	21 1/4		540	21 1/4		540	21 1/4		540	21 1/4	

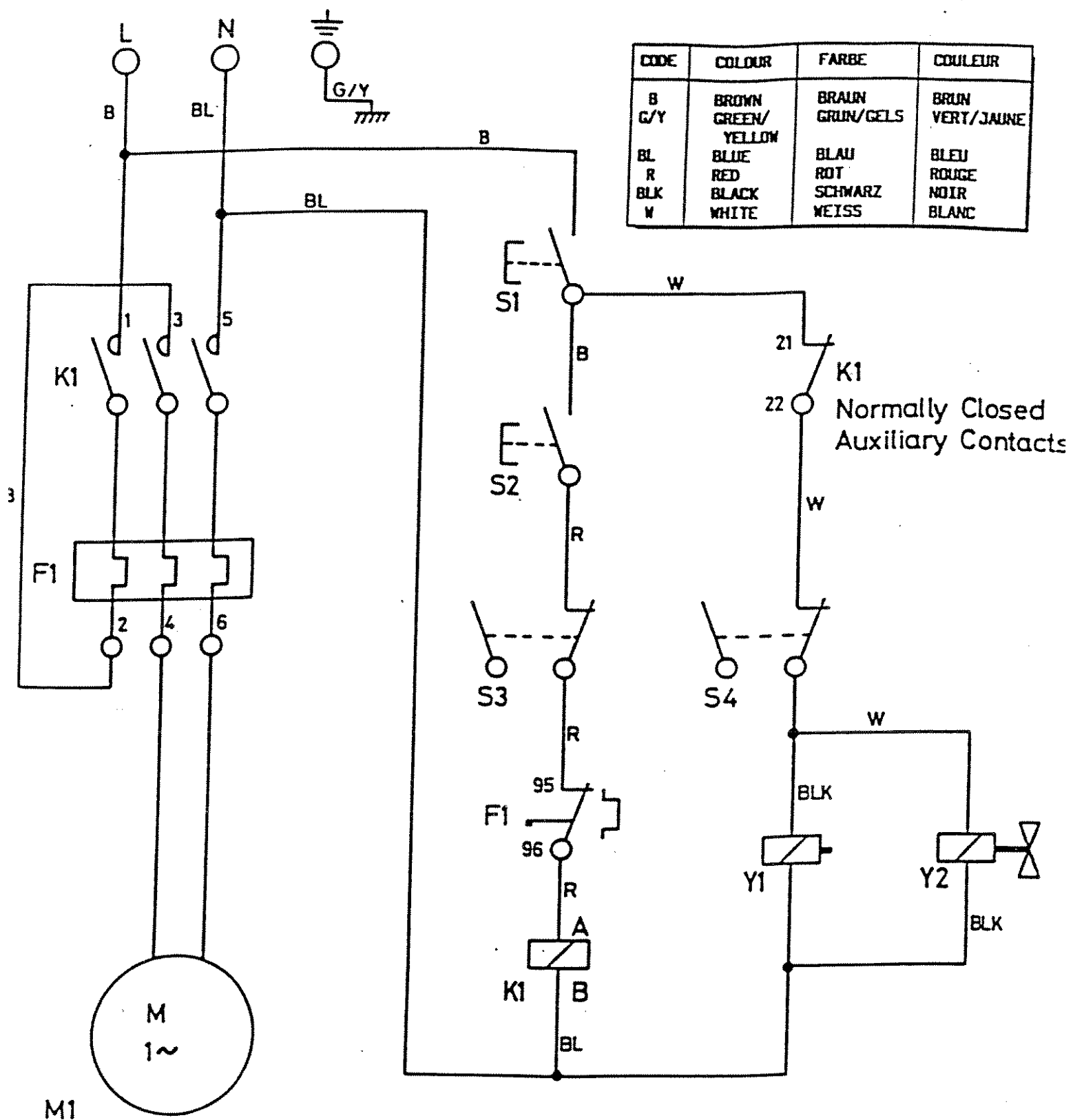


K1 Contactor  
F1 Overload (optional)  
M1 Motor  
Q1 Isolator (optional)

S1 Push-button Master  
S2 Push-button Raise  
S3 limit Switch  
S4 Limit Switch Anti-tilt

Y1 Solenoid  
Y2 Solenoid Valve  
Mech. Locking  
(option)

Fig 5.6 Wiring Diagram 3 phase & Neutral

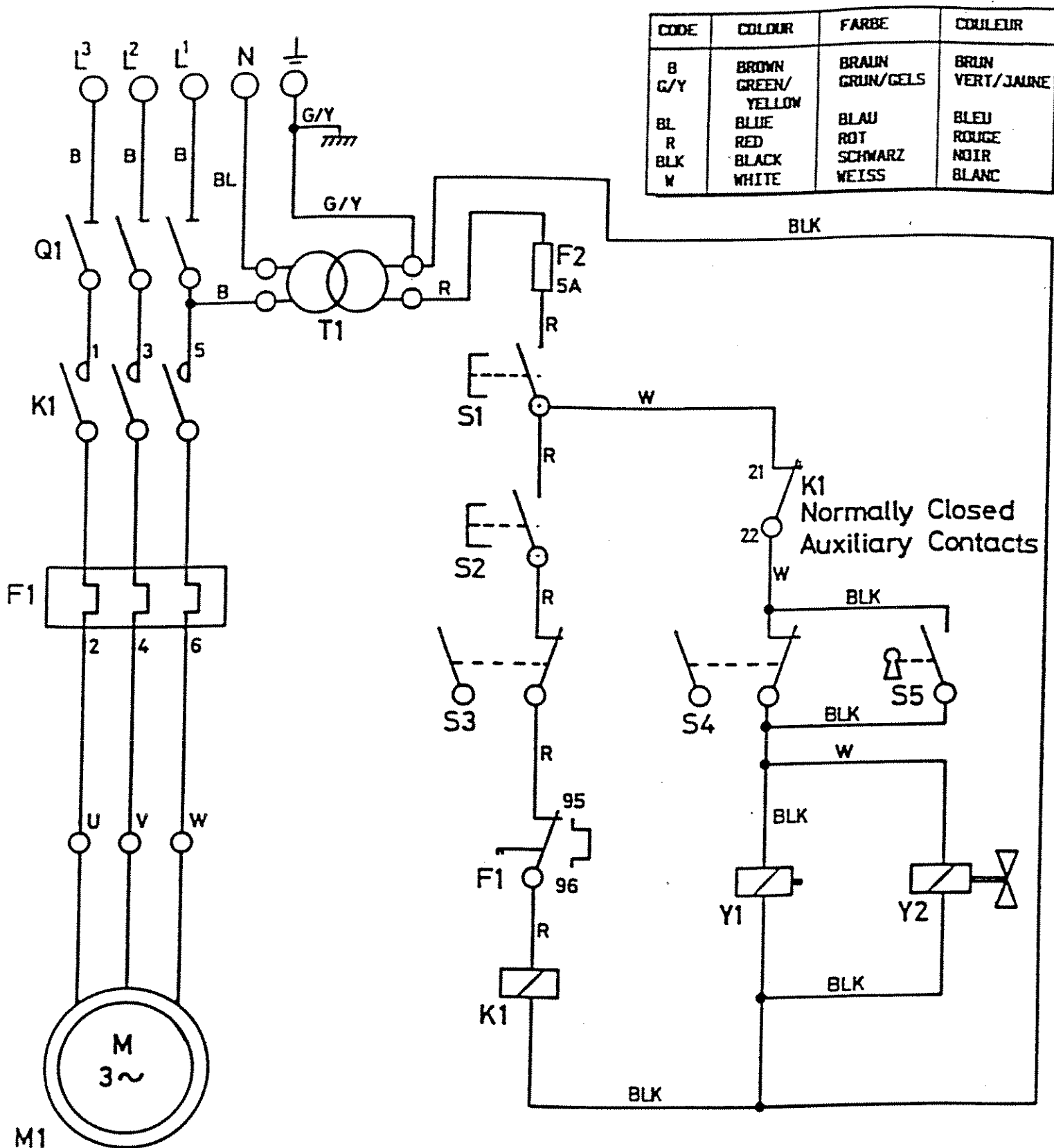


K1 Contactor  
F1 Overload (optional)  
M1 Motor

S1 Push-button Master  
S2 Push-button Raise  
S3 limit Switch  
S4 Limit Switch Anti-tilt

Y1 Solenoid  
Y2 Solenoid Valve  
Mech. Locking  
(option)

Fig 5.7 Wiring Diagram 1 phase



K1 Contactor  
 F1 Overload (optional)  
 F2 Fuse  
 M1 Motor  
 Q1 Isolator (optional)

S1 Push-button Master  
 S2 Push-button Raise  
 S3 Limit Switch  
 S4 Limit Switch Anti-tilt  
 S5 Key Override Switch (option)

Y1 Solenoid  
 Y2 Solenoid Valve  
 Mech. Locking  
 (option)  
 T1 Transformer

Fig 5.8 Wiring Diagram 3 phase & Neutral 24V Control

[illegible]

- Y1 Solenoid  
Y2 Solenoid Valve  
Mech. Locking  
(option)  
T1 Transformer

Page:5.35



**SECTION 6**  
**40 SERIES**  
**ILLUSTRATED SPARE PARTS**  
**LIST**

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x Denotes used on pre-40 series power pack lift

#### **INSIST THAT ONLY GENUINE BRADBURY SPARES ARE FITTED**

Alternative parts may seem the same but their performance may effect the inherent safety of the lift. Bradbury take a great deal of time testing the suitability of our parts to ensure the reliability and safety of your lift. The use of alternative parts is not approved by Bradbury and will automatically cancel the company's liability.

ITEM No.	BRADBURY No.	DESCRIPTION
1	SEE PAGES 7.30	POWER COLUMN
2	SEE PAGES 7.13	POWER PACK
3	400W003	POWER COLUMN COVER
4	400W001	AUXILIARY COLUMN R.H.
5	400W002	AUXILIARY COLUMN L.H.
6		PLATFORM
	410W001	PLAIN PLATFORM
	410G031	POWER PLATFORM RECESSED M.O.T. COMPLETE WITH TURNTABLE
	410G032	AUXILIARY PLATFORM RECESSED M.O.T. COMPLETE WITH TURNTABLE
	410W024	POWER PLATFORM RECESSED M.O.T. WITHOUT TURNTABLE
	410W025	AUXILIARY PLATFORM RECESSED M.O.T. WITHOUT TURNTABLE
	410W020	POWER PLATFORM RECESSED FOR OPTICAL WHEEL ALIGNING
	410W021	AUXILIARY PLATFORM RECESSED FOR OPTICAL WHEEL ALIGNING
	420W001	PLAIN PLATFORM
	420G026	POWER PLATFORM RECESSED M.O.T. COMPLETE WITH TURNTABLE
	420G027	AUXILIARY PLATFORM RECESSED M.O.T. COMPLETE WITH TURNTABLE
	420W020	POWER PLATFORM RECESSED M.O.T. WITHOUT TURNTABLE
	420W021	AUXILIARY PLATFORM RECESSED M.O.T. WITHOUT TURNTABLE
	420W015	POWER PLATFORM RECESSED FOR OPTICAL WHEEL ALIGNING
	420W016	AUXILIARY PLATFORM RECESSED FOR OPTICAL WHEEL ALIGNING

ITEM No	BRADBURY No	DESCRIPTION
	430W001	PLAIN PLATFORM
	430W002	POWER PLATFORM RECESSED FOR OPTICAL WHEEL ALIGNING
	430W003	AUXILIARY PLATFORM RECESSED FOR OPTICAL WHEEL ALIGNING
7	400P096	TRIPLE PULLEY BOX COVER
8	400W017	SINGLE PULLEY BOX COVER
9		AUXILIARY COLUMN BEAM
	410W003	MODELS 410 AND 414
	420W003	MODELS 420,424,430 AND 434
10		POWER COLUMN BEAM
	410W002	MODELS 410, 414
	420W002	MODELS 420,424,430 AND 434
11		CABLE COVER
	410W007	MODEL 41
	420W005	MODELS 42 AND 43
12	BXX0081	KNURLED SHANK SCREW
13	400P095	TRIPLE PULLEY BOX ROLLER SPINDLE
14	400P094	TRIPLE PULLEY BOX ROLLER
15		TURNTABLE
	040S011	MODELS 41 & 42
	400S058	MODEL 43

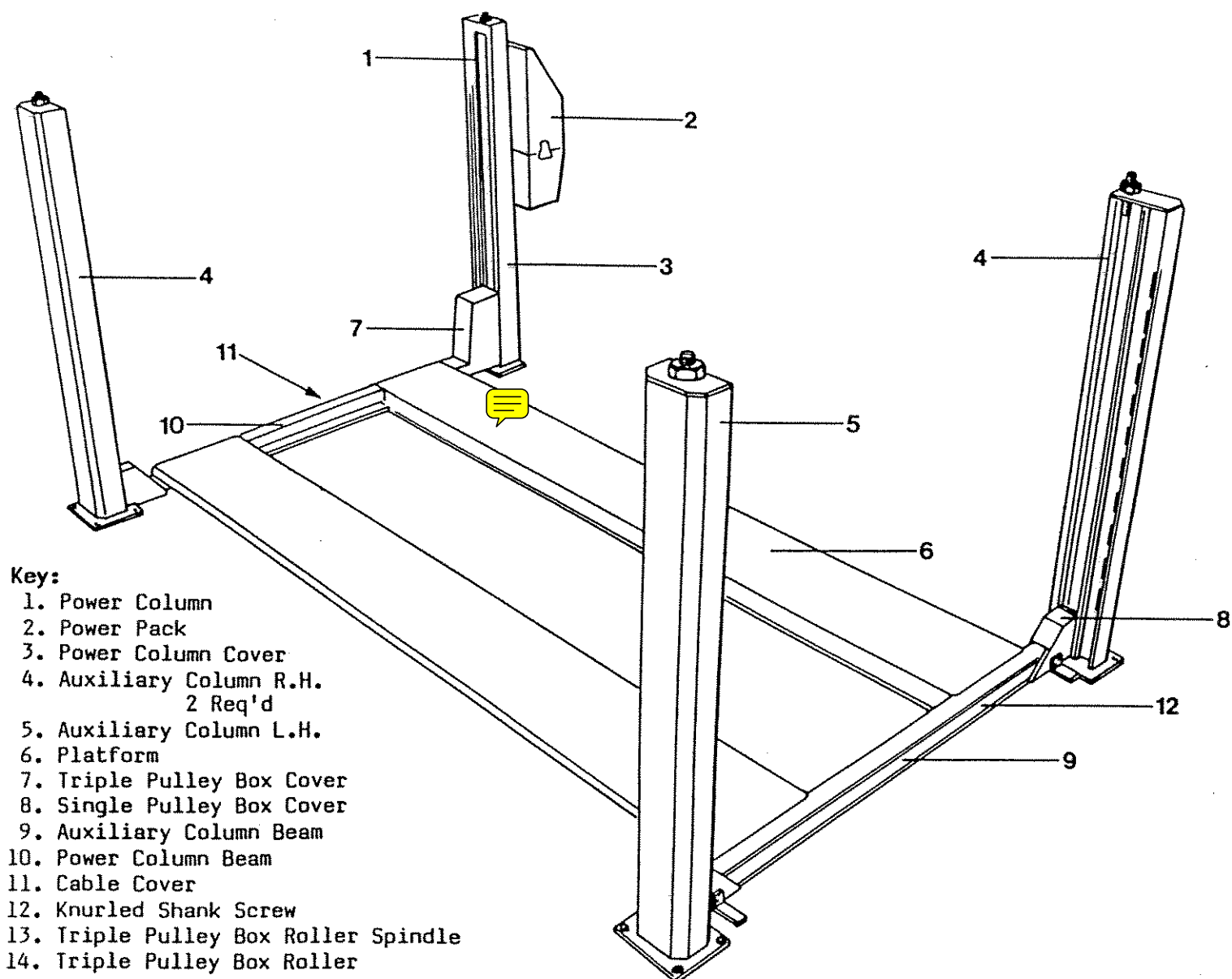
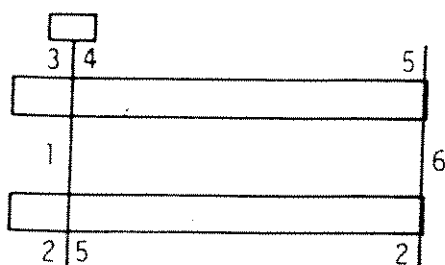


Figure 1 Lift Structure

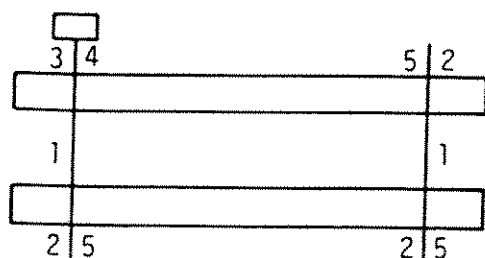
**REFER TO FIGURE 2 ANTI-TOE TRAPPING 200MM DEEP**

ITEM No	BRADBURY No.	DESCRIPTION
	400W043	POWER BEAM ANTI TOE TRAPPING BAR
	410W018	AUXILIARY BEAM ANTI TOE TRAPPING BAR
	410W038	TRIPLE BOX (INNER) ANTI TOE TRAPPING BAR
	410W039	TRIPLE BOX (OUTER) ANTI TOE TRAPPING BAR
	410W040	SINGLE BOX ANTI TOE TRAPPING BAR L.H.
	410W041	SINGLE BOX ANTI TOE TRAPPING BAR R.H.
	410W045	SINGLE BOX ANTI TOE TRAPPING BAR L.H.
	410W046	SINGLE BOX ANTI TOE TRAPPING BAR R.H.
	410W047	AUXILIARY BEAM ANTI TOE TRAPPING BAR
	420W013	AUXILIARY BEAM ANTI TOE TRAPPING BAR
	420W022	TRIPLE BOX (INNER) ANTI TOE TRAPPING BAR
	420W023	TRIPLE BOX (OUTER) ANTI TOE TRAPPING BAR
	420W024	SINGLE BOX ANTI TOE TRAPPING BAR R.H.
	420W025	SINGLE BOX ANTI TOE TRAPPING BAR L.H.



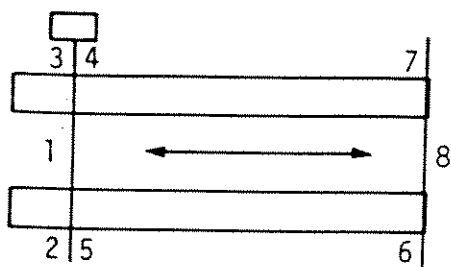
Drive On - Back Off

	1	2	3	4	5	6
410,414	400W043	410W041	410W039	410W038	410W040	410W018
420,424,430,434	400W043	420W024	420W023	420W022	420W025	420W013



Drive Through

	1	2	3	4	5	6
410,414	400W043	410W041	410W039	410W038	410W040	
420,424,430,434	400W043	420W024	420W023	420W022	420W025	



Drive On - Back Off

	1	2	3	4	5	6
414 Wheel Aligning	400W043	410W041	410W039	410W038	410W040	410W046
	7	8				
	410W045	410W047				

Figure.2 Anti Toe Trapping 200mm Deep

<b>ITEM No.</b>	<b>BRADBURY No.</b>	<b>DESCRIPTION</b>
5	NUT0008	FULL NUT M36
6	400P047	CABLE ANCHOR RETAINER
7		CABLE SET CONSISTING OF SHORT MEDIUM AND LONG CABLES
	410G004	SINGLE REF C.A.
	420G004	TWIN REF C.B.
	430G002	TWIN REF C.C.

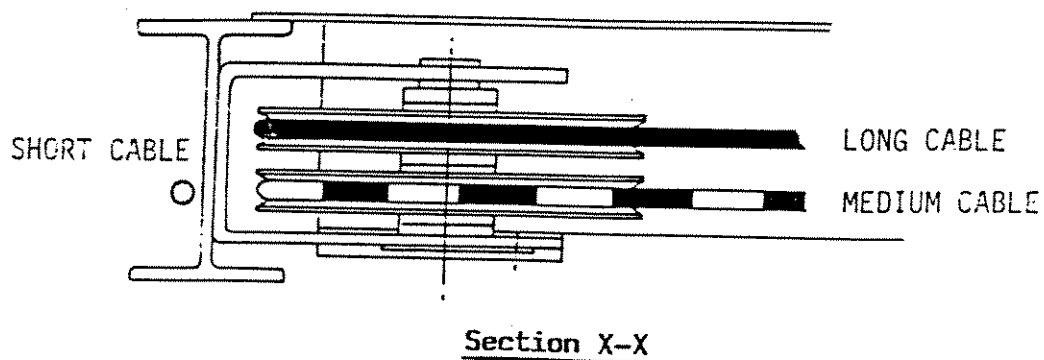
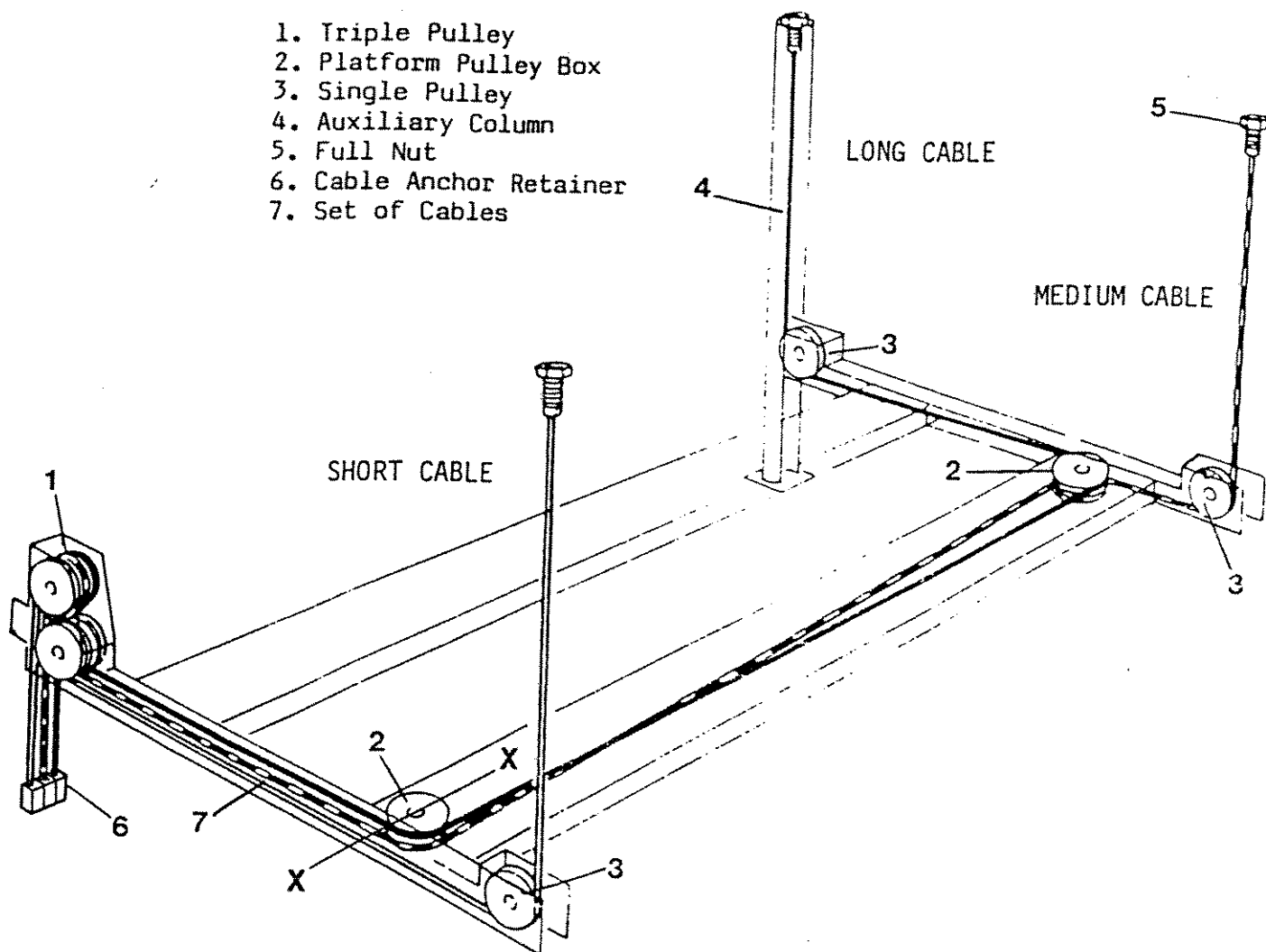


Figure 3 Cables



**REFER TO FIG NO 4****WHEEL FREE**

ITEM No.	BRADBURY No.	DESCRIPTION
1		POWER END WHEELFREE BEAMS
	414G002	MODEL 41
	424G002	MODELS 42 & 43
2		AUXILIARY END WHEELFREE BEAMS
	414G001	MODEL 41
	424G001	MODEL 42 & 43
3		LONGITUDINAL WHEELFREE BEAM
	424G003	DRIVE ON/BACK OFF
	414G003	DRIVE ON/BACK OFF
	4346001	DRIVE ON/BACK OFF
Not shown	x 414G006	CHASSIS SUPPORT 50MM
Not shown	x 414G007	CHASSIS SUPPORT 100M
Not shown	x 424G006	CHASSIS SUPPORT 50MM
Not shown	x 424G007	CHASSIS SUPPORT 100MM
Not shown	x 414G014	WORKSHOP CROSSMEMBER
Not shown	x 424G014	WORKSHOP CROSSMEMBER

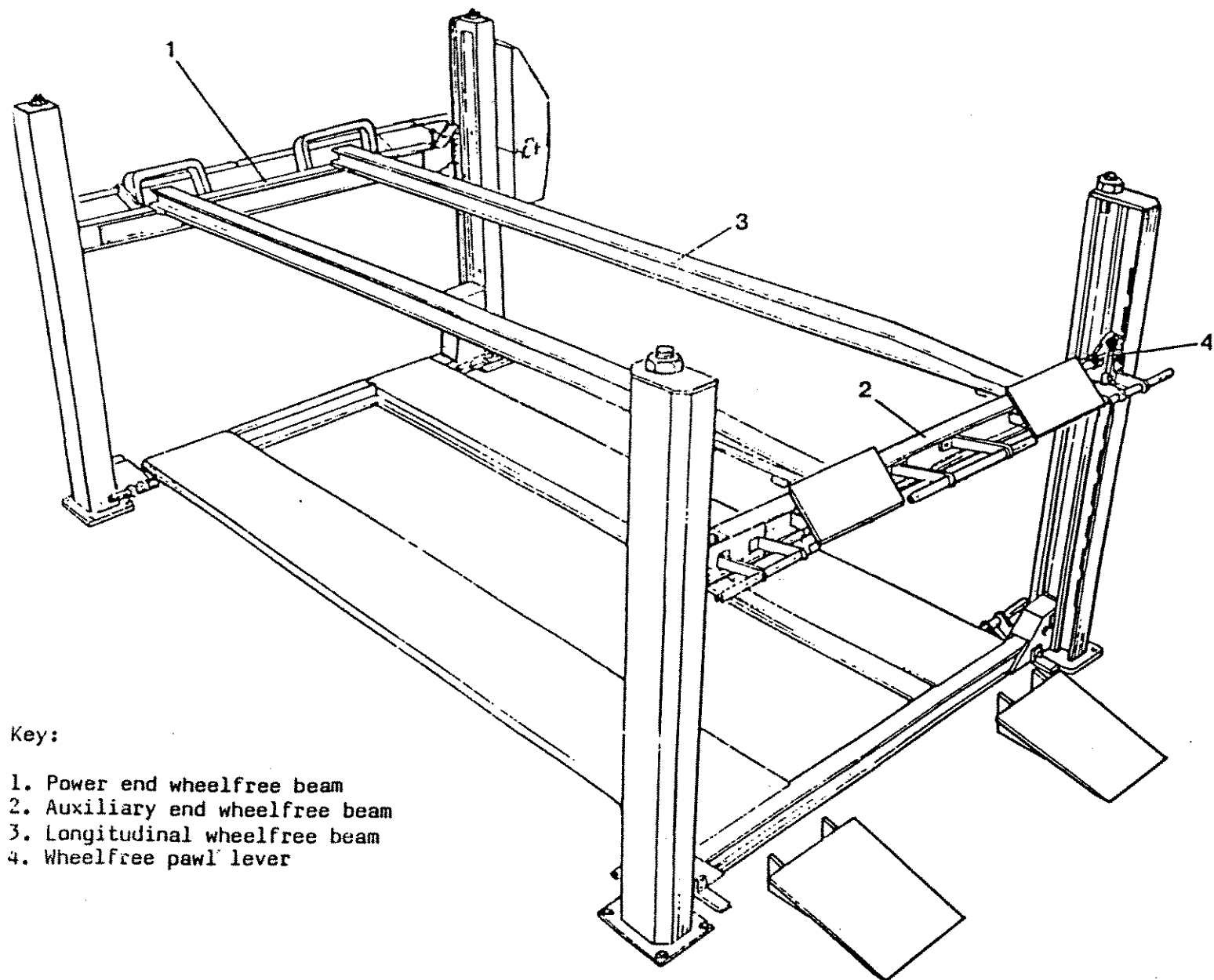
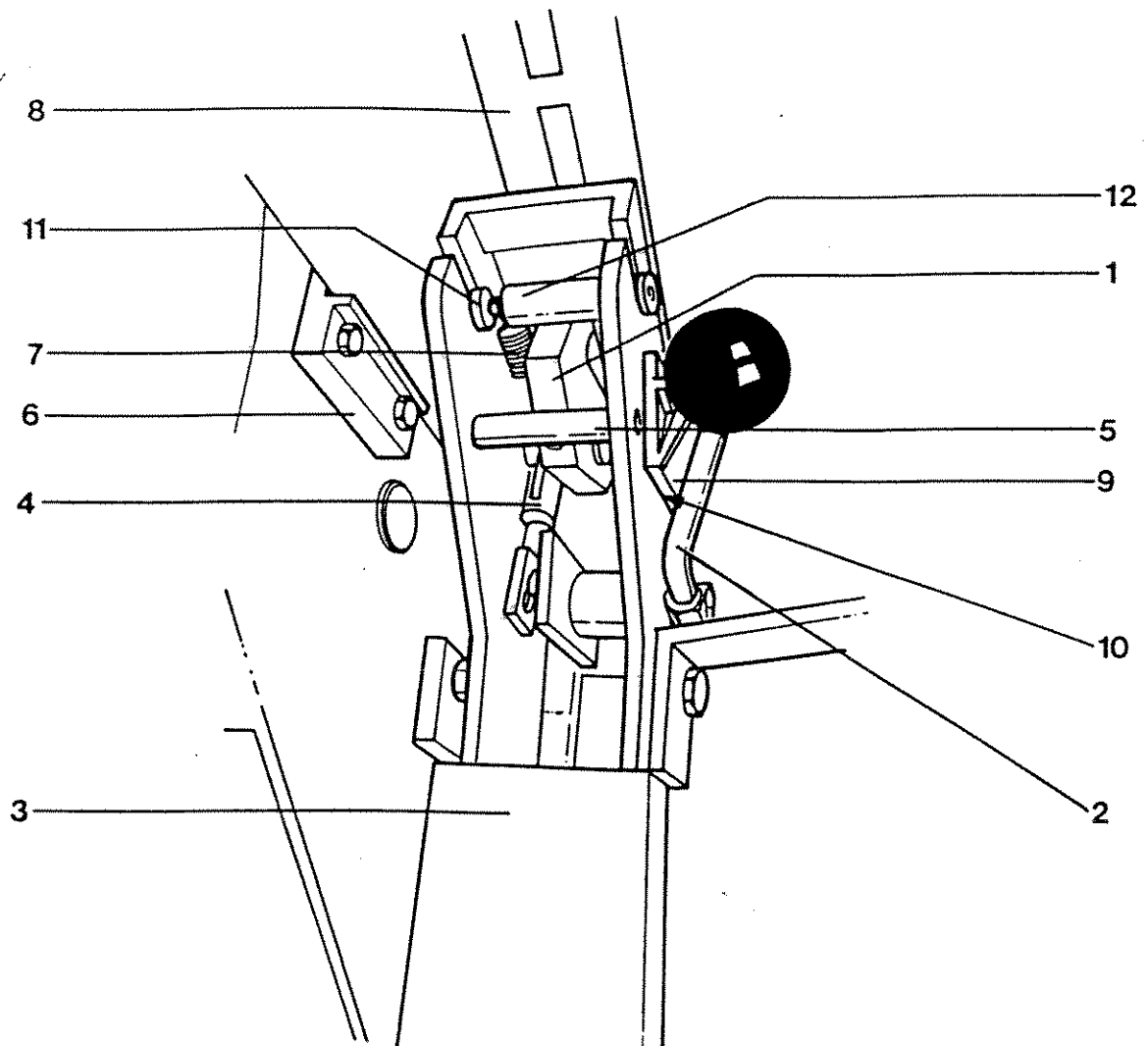


Figure 4 Wheelfree

**REFER TO FIG. 5**

**WHEELFREE PAWL ASSEMBLY**

<b>ITEM NO.</b>	<b>BRADBURY NO.</b>	<b>DESCRIPTION</b>
1	404W001	WHEELFREE PAWL
2	404W005	OPERATING LEVER
3	SEE PAGE 7.9	WHEELFREE BEAM
4	404W003)	
	404W004)	ADJUSTABLE ACTUATING LEVER
5		PART OF BEAM WELD ASSEMBLY
6	SEE PAGE 7.22	GUIDE BLOCK
7	SPR2004	TENSION SPRING
8		PART OF COLUMN WELD ASSEMBLY
9	BXX0111	WHEELFREE GUIDE
10	BXX0138	WHEELFREE GUIDE SHIM
11	404P008	WHEELFREE DETENT ROLLER GUIDE
12	404P007	WHEELFREE DETENT ROLLER



- |                               |                         |
|-------------------------------|-------------------------|
| 1. Pawl                       | 7. Tension spring       |
| 2. Operating lever            | 8. Column rack          |
| 3. Wheelfree beam             | 9. Guide                |
| 4. Adjustable actuating lever | 10. Guide shim          |
| 5. Pawl stop                  | 11. Detent roller guide |
| 6. Column guide               | 12. Detent roller       |

**Figure 5 Wheelfree Pawl Assembly**

ITEM No.	BRADBURY NO.	DESCRIPTION
1	SWI4002	LIMIT SWITCH
	WAS0005	PLAIN WASHER M5
	SCR0010	CHEESE HEAD SCREW M5 x 40
2	x TRN3001	SOLENOID 220V .50HZ
	x TRN3003	SOLENOID 23/25v 50HZ
	WAS0005	PLAIN WASHER M5
	SCR0012	CHEESE HEAD SCREW M5 x 16
3	x SWI8006	ISOLATOR (COMPLETE WITH FIXINGS)
4		MOTOR
	x MOT0010	1.5. kW 3ph 50Hz DUAL VOLTAGE D80 MODEL 41 LIFTS
	x MOT6001	1.1KW 1ph 50HZ 220/240V D90 MODELS 41,42, AND 43 LIFTS
	MOT0017	1.8KW 3PH 50HZ DUAL VOLTAGE D90 MODELS 42 AND 43 LIFTS
	x MOT0021	1.5KW 3PH 50HZ 346V D80 MODEL (41 LIFT)
	x MOT0022	1.8KW 3PH 50HZ 346V D80 MODELS (42 AND 43 LIFTS)
5	NUT004	FULL NUT M10
6	WAS3001	SPRING WASHER M10
7		FLEXIBLE COUPLING
	x CPL4001	D80 MOTOR
	x CPL4008	D90 MOTOR

ITEM No.	BRADBURY No.	DESCRIPTION
8		BELLHOUSING
	x CPL4000	MODELS 41,42 AND 43 LIFTS
9	WAS0010	PLAIN WASHER M10
10	BLT1050	HEXAGON HEAD BOLT M10 X 50
11	SLS6000	DOWTY SEAL
12	HXX3000	HOSE ASSEMBLY SHORT
13	x HXX3002	ADAPTOR 3/8" B.S.P. X 3/8" B.S.P.
14	WAS0006	PLAIN WASHER M6
15	WAS3003	SPRING WASHER M6
16	SCR3512	CAP HEAD SCREW M6 x 25
17		PUMP
	x PMP0002	PUMP COMPLETE WITH ELBOW MODELS 41,42 AND 43 LIFTS
18	x HXX7002	STRAINER
19	x PLG0003	PLUG
20	x PLG3003	GROMMET
21	TRN0006	TRANSFORMER CHEESE HEAD SCREW M5 x 16
	(TRN0006)	PLAIN WASHER M5
22		THERMAL OVERLOAD
	x SWI2504	MODEL 41,42, AND 43 LIFTS, 3PH AND 1PH

ITEM No.	BRADBURY No.	DESCRIPTION
23		CONTACTOR
	SWI1012	3PH U.K. MARKET MODELS 41,42 AND 43 LIFTS
	SWI1013	1PH U.K., MODELS 41,42 AND 43
	SWI1014	24V CONTROL MODELS 41,42 AND 43 LIFTS
	SWI1008	346V MODELS 41,42 AND 43 LIFTS
	SCR0013	CHEESE HEAD SCREW M4 X 16
	WAS0004	PLAIN WASHER M4
	NUT6000	SELF LOCKING NUT M4
24	WAS0004	PLAIN WASHER M4
25	BLT0402	HEX AGON HEAD SET SCREW M4 X 20
26	MXX026	SPACER
27	x 4005016	LID STAY
28	NUT6000	SELF LOCKING NUT M4
MECHANICAL LOCKING OPTION ONLY		
29	PNE0001	SOLENOID VALVE
	WAS0017	PLAIN WASHER M3
	SCR0006	CHEESE HEAD SCREW M3 x 12
30	GAU0002	PRESSURE GAUGE 0-10 BAR
	4292886	Ø 3/8" INSERT
	4292658	HOSE CLIPS 3/4" 00-075
	4292887	MALE ADAPTOR 1/8" BSP
	4187126	SEAL 400-020-4490 PP45A
	GAU 7000	BRACKET KIT C/W PANEL NUT
	NUT0006	M5 STEEL HEX FULL NUT
	WAS0005	M5 NORMAL PLAIN WASHER
	ECR0012	M5 x 16 CHEESE HEAD SCREW

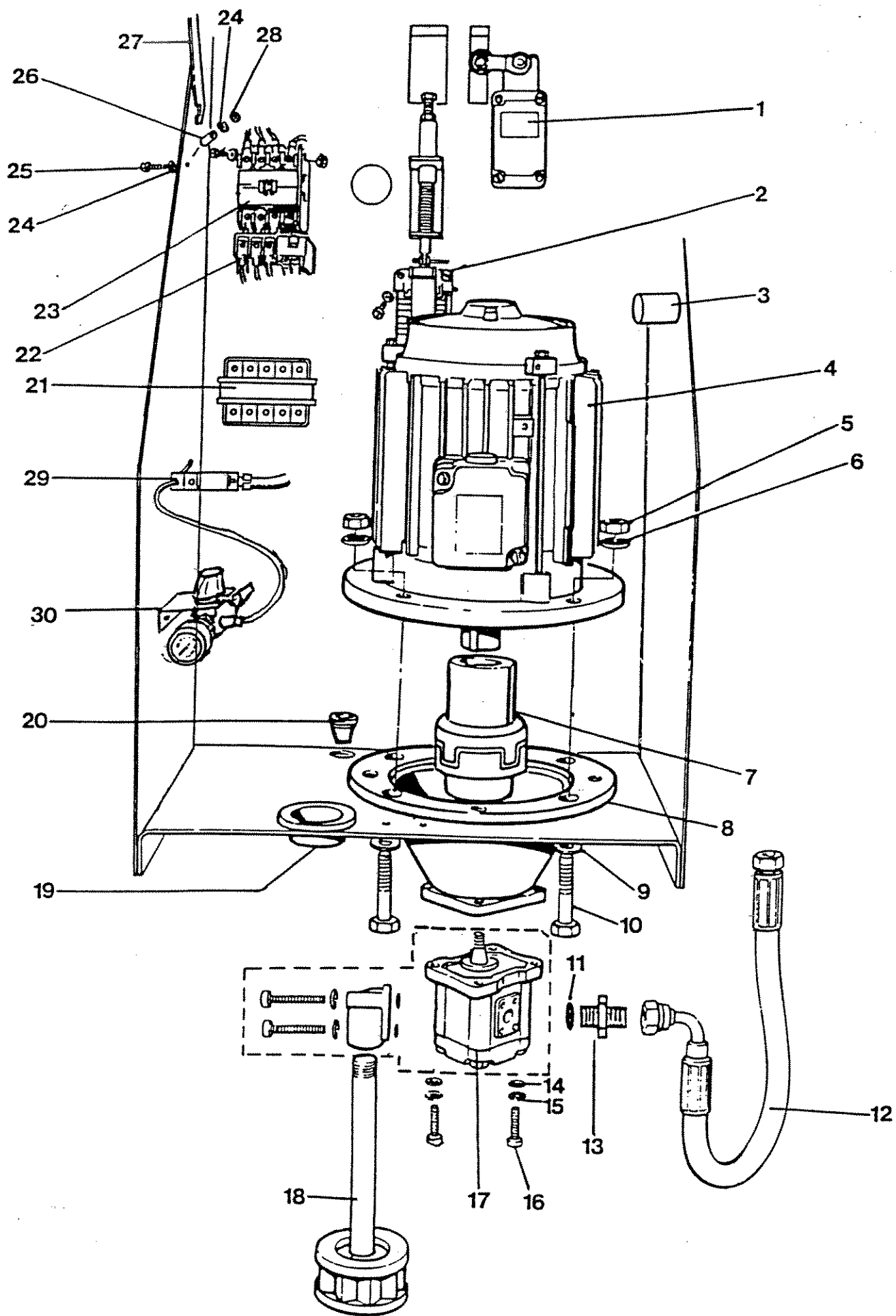


Figure 6 Power Pack



**REFER TO FIGURE 7      VALVE BLOCK**

ITEM No.	BRADBURY No.	DESCRIPTION
1	400P127	VALVE BLOCK
2	400P281	LOWERING VALVE PLUNGER
3	400P176	LOWERING VALVE SPRING RETAINER
4	SPR0012	LOWERING VALVE SPRING
5	x MXX0028	STEEL BALL
6	x SLS6001	DOWTY SEAL
7	x 400P122	LOWERING VALVE CAP
8	x SLS2004	'U' SEAL
9	x 400P124	OVERLOAD VALVE PLUNGER
10	x SPR0009	OVERLOAD SPRING
11	x 400P125	OVERLOAD VALVE ADJUSTER
12	x 400P126	OVERLOAD VALVE CAP
13	BLT0520	HEXAGON HEAD SETSCREW M5 x 20
14	NUT0006	FULL NUT M5
15	x 400P115	NON RETURN VALVE CAP
16	x 400P114	NON RETURN VALVE PLUNGER
17	x SPR0007	NON RETURN VALVE SPRING
18	WAS6017	WASHER
19	HxX3003	PLUG 1/4" B.S.P.
20	SLS6002	DOWTY SEAL
21	x SLS6000	DOWTY SEAL
22	x HXX3002	ADAPTOR 3/6" B.S.P. x 3/8" B.S.P.
23	x 400P123	TANK RETURN PIPE
24	HXX3005	UNEQUAL ADAPTOR 1/2" B.S.P. X 3/8" B.S.P.
25	400W055	LOWERING HANDLE BRACKET

**REFER TO FIGURE 7**      **VALVE BLOCK(continued)**

<b>ITEM No.</b>	<b>BRADBURY No.</b>	<b>DESCRIPTION</b>
26	400P199	LOWERING HANDLE SPACER
27	NUT0005	FULL NUT M6
28	400W054	LOWERING HANDLE
29	x MXX0027	KNOB
30	NUT1000	LOCKNUT M6
31	BLT5655	M6 x 55 HEX HEAD SETSCREW
32	FST0014	EXTERNAL CIRCLIP - DIA 6mm
33	NUT1000	M6 LOCK NUT
34	NUT4001	M6 DOME HEAD NUT

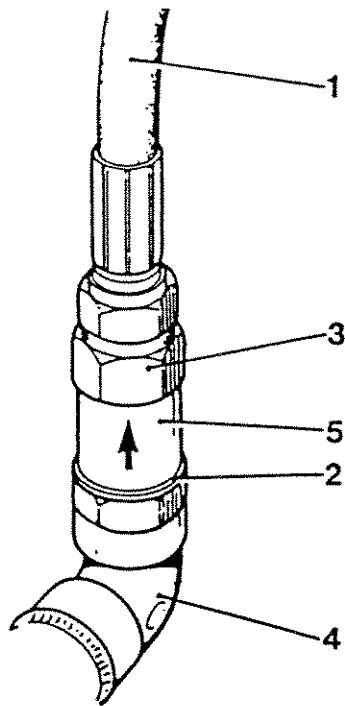


**REFER TO FIGURE 8****HYDRAULIC HOSE ASSEMBLY**

ITEM No.	BRADBURY No.	DESCRIPTION
1	HXX3001	HOSE ASSEMBLY
2	SLS6000	DOWTY SEAL
3	x HXX3002	MALE ADAPTOR $\frac{3}{8}$ " B.S.P. x $\frac{3}{8}$ " B.S.P.
4		PART OF HYDRAULIC CYLINDER
5	HXX0001	EXCESS FLOW VALVE

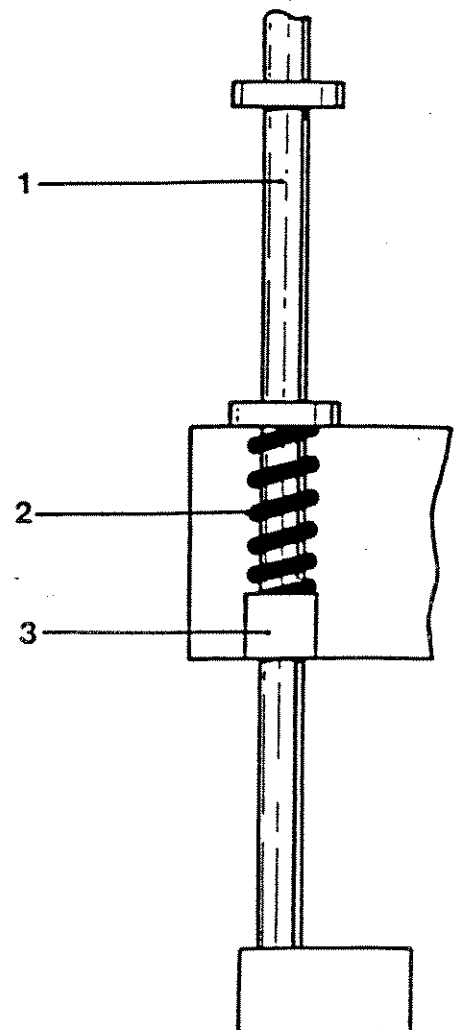
**REFER TO FIG NO. 9****KNOCK OFF RETURN**

ITEM No.	BRADBURY No.	DESCRIPTION
1	400W012	KNOCK OFF ROD
2	SPR0011	COMPRESSION SPRING
3	400S015	KNOCK OFF ACTUATING ARM



1. High pressure hose
2. Dowty seal
3. Straight male adaptor
4. Cylinder inlet elbow
5. Excess flow valve

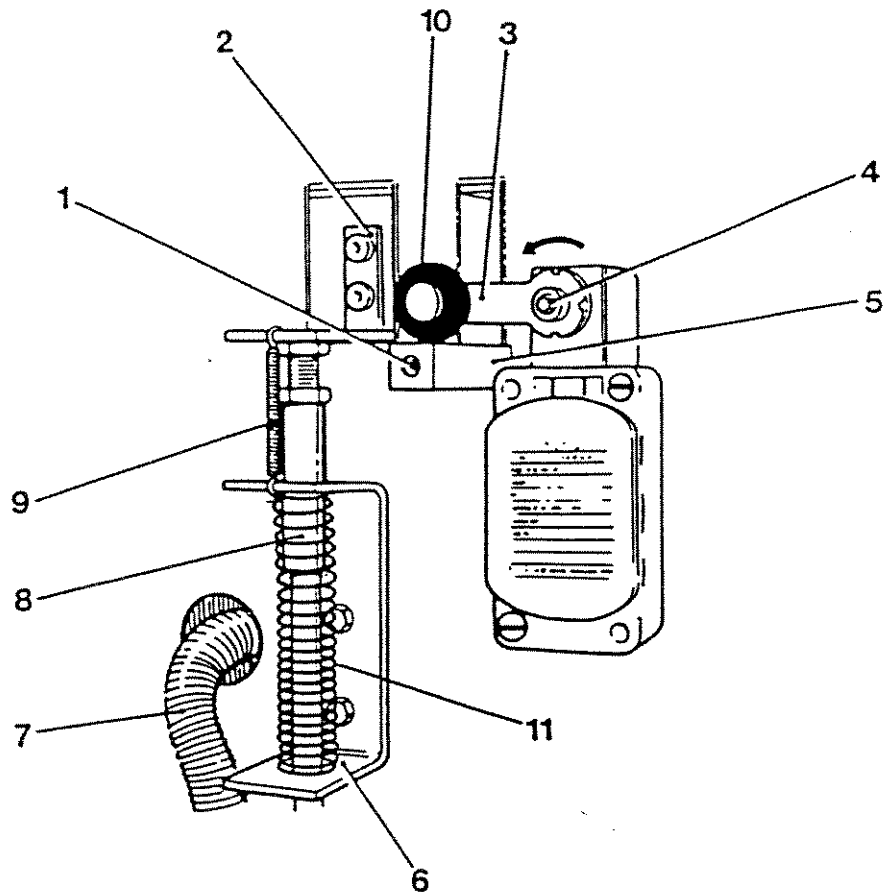
**Figure 8 Hydraulic Hose Assembly**



1. Knock-off rod
2. Compression spring
3. Knock-off actuating arm

**Figure 9 Knock-Off Return**

<b>ITEM No.</b>	<b>BRADBURY No.</b>	<b>DESCRIPTION</b>
1	SCR2009	SOCKET SET SCREW M8 x 8
2	x BXX0080	PISTON PAWL LEVER
3	WAS0006	PLAIN WASHER M6
	WAS3003	SPRING WASHER M6
	SCR3511	CAP HEAD SCREW M6 x 12
3		PART OF LIMIT SWITCH
4		PART OF LIMIT SWITCH
5	x 400S015	KNOCK OFF ACTUATING ARM
6	x 400P132	PAWL SPRING BRACKET
7	x CDT0003	OIL RETURN
8	x 400S018	PAWL SPRING PLUNGER
9	x SPR2003	TENSION SPRING
10		PART OF LIMIT SWITCH
11	x SPR0010	COMPRESSION SPRING



1. Socket screw
2. Piston pawl lever
3. Limit switch arm
4. Limit switch arm lock nut
5. Knock-off actuating lever
6. Pawl spring bracket
7. Oil return
8. Pawl spring plunger
9. Tension spring
10. Limit switch roller
11. Compression spring

**Figure 10 Piston Pawl Lever And Limit Switch**

<b>ITEM No.</b>	<b>BRADBURY No.</b>	<b>DESCRIPTION</b>
1	SEE FIG NO.	VALVE BLOCK
2	x SWI5500	PUSH BUTTON, RAISE (GREEN)
3	x SWI5501	PUSH BUTTON, MASTER (BLACK)
4	X SWI5502	PUSH BUTTON FOR LIGHTS (OPTIONAL)
	SWI5503	SNAP ON CONTACTOR BLOCK
	EXX 0057	IN LINE FUSE HOLDER
	EXX 0058	QUICK BLOW FUSE 3AMP
6	x BXX0095	POWER PACK LID



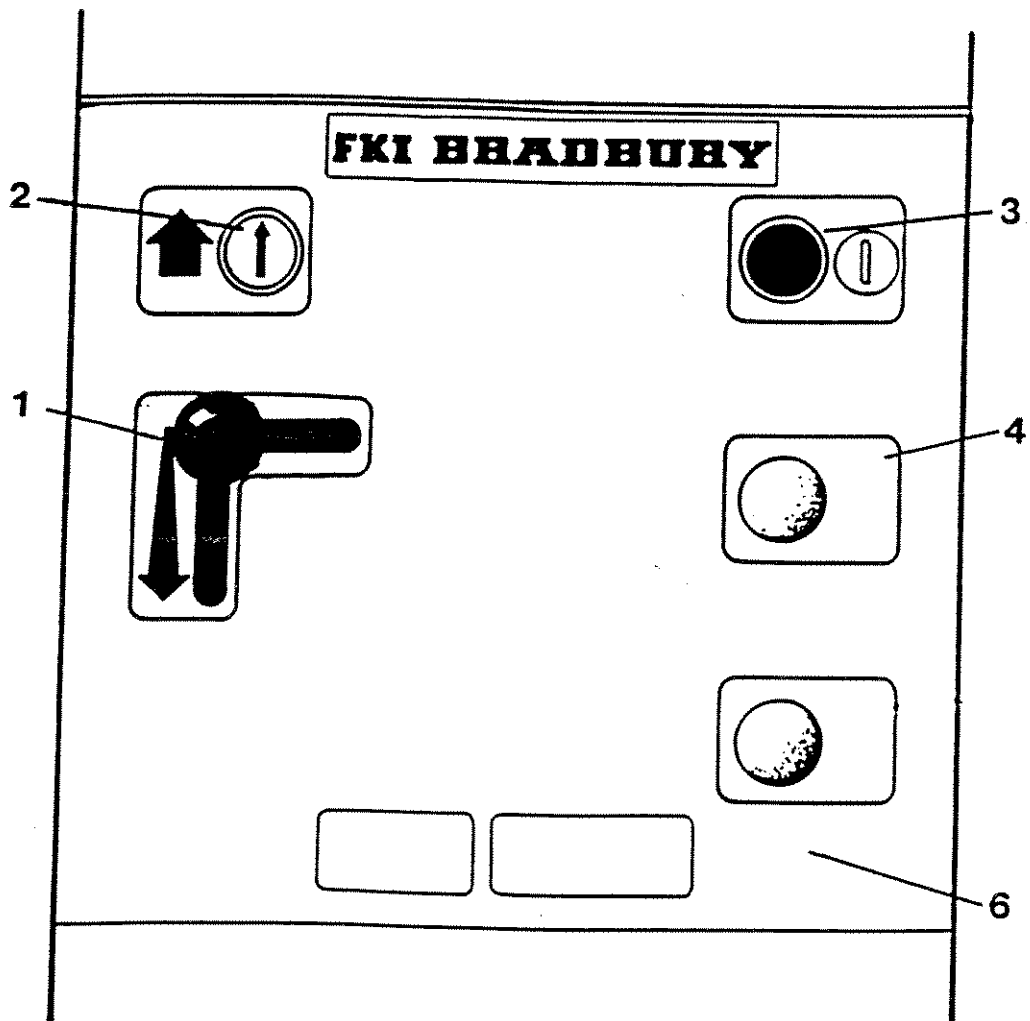
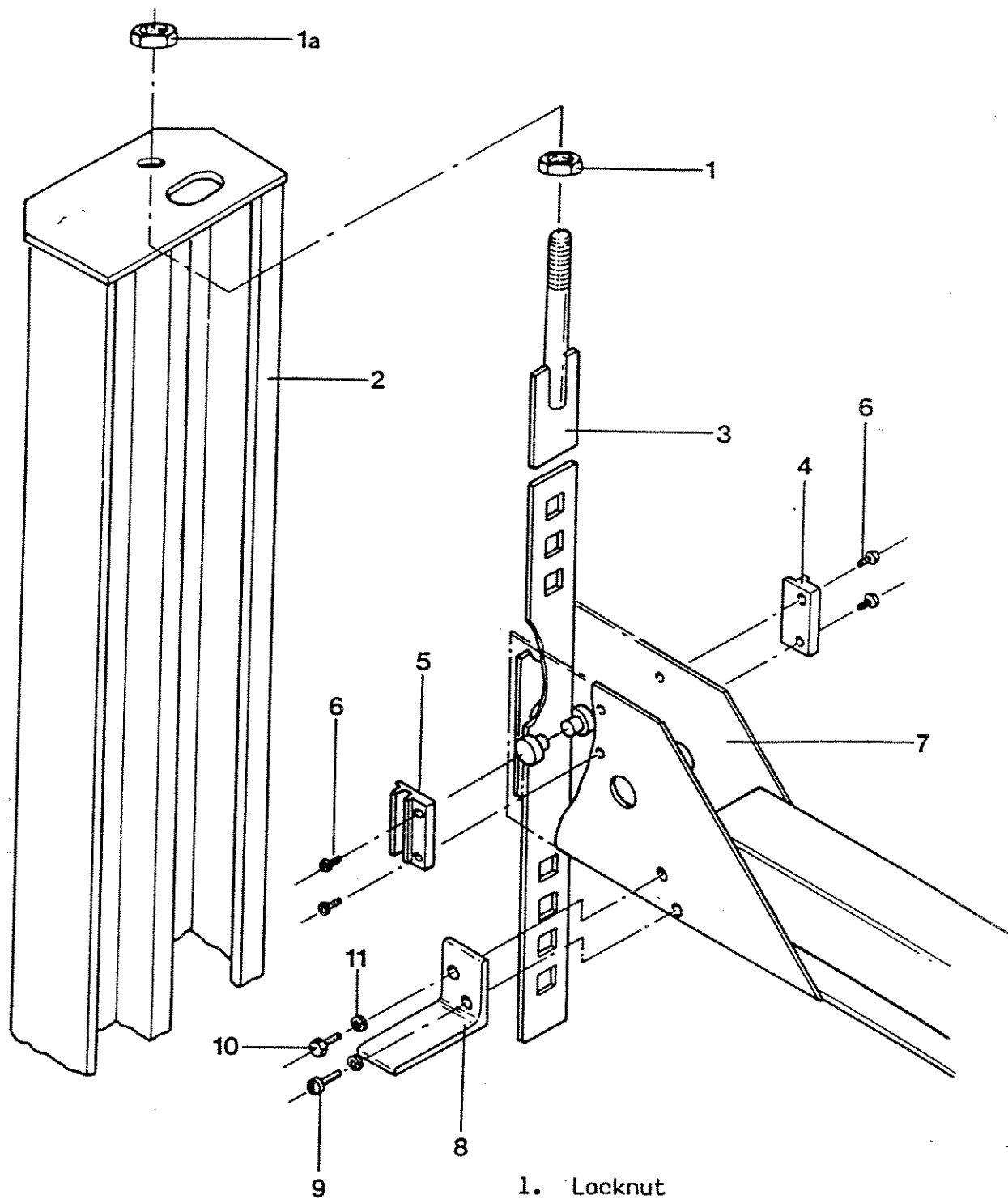


Figure 11 Power Pack Lid

<b>ITEM No.</b>	<b>BRADBURY No.</b>	<b>DESCRIPTION</b>
1	NUT1005.	LOCKNUT
1A	NUT0007	FULLNUT
2	SEE FIG 1	AUX ILIARY COLUMN
3	400W009	SAFETY RACK
4	BXX0066	GUIDE BLOCK
5	BXX0067	GUIDE BLOCK
6	SCR4506	TAPTITE SCREW M6 X 20
7		PART OF CROSSBEAM
8	404P021	WHEELFREE SUPPORT ANGLE L.H. (AS SHOWN)
	404P011	WHEELFREE SUPPORT ANGLE R.H.
9	SCR3502	CAP HEAD SCREW M10 X 20
10	BLT1020	HEXAGON HEADED SET SCREW M10 X 20
11	WAS3001	SPRING WASHER M10

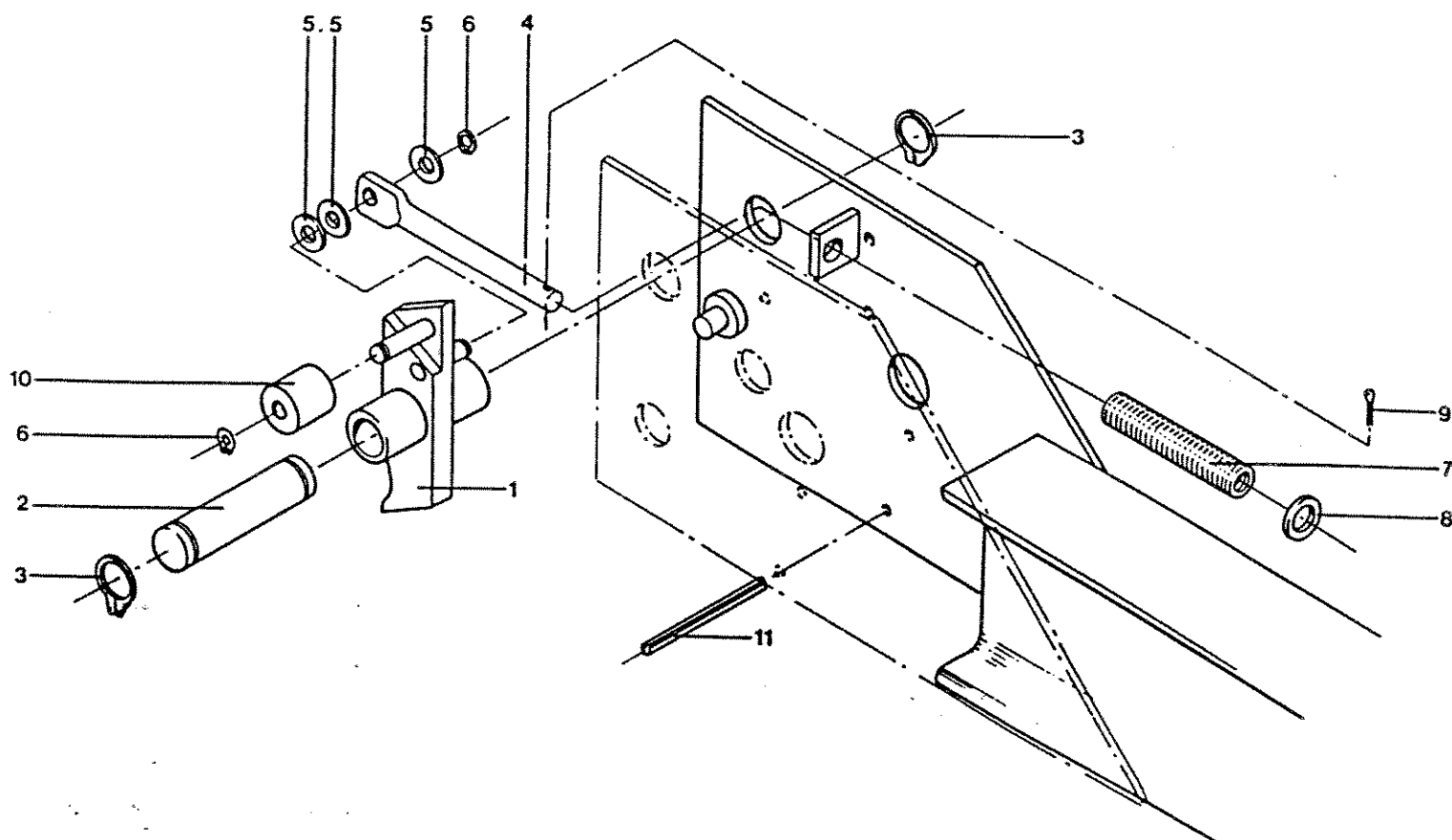


1. Locknut
- 1a. Fullnut
2. Auxiliary Column
3. Safety rack
4. Guide block
5. Guide block
6. Taptite screw
7. Single pulley box
8. Wheelfree support angle
9. Cap head screw
10. Hexagon head screw
11. Spring washer

**Figure 12 Auxiliary Column/Safety Rack Assembly**

**REFER TO FIGURE 14****SAFETY GEAR ASSEMBLY**

<b>ITEM No.</b>	<b>BRADBURY NO.</b>	<b>DESCRIPTION</b>
1	900W018	SAFETY PAWL R.H. (AS SHOWN)
	900W017	SAFETY PAWL L.H.
2	400P072	SAFETY PAWL PIN
3	FST0008	EX TERNAL CIRCLIP 25 DIA
4	400P071	SAFETY GEAR ACTUATOR
5	WAS0010	PLAIN WASHER M10
6	FST0002	EXTERNAL CIRCLIP 10 DIA
7	SPR0006	COMPRESSION SPRING
8	WAS0012	PLAIN WASHER M12
9	FST1003	SPLIT PIN $\frac{3}{32}$ " DIA X $\frac{7}{8}$ " LONG
10	400P080	CABLE ROLLER
11	FST2009	ROLL PIN 6mm DIA x 90 LONG



1. Safety Pawl R.H. 1 Reqd  
L.H. 2 Reqd opposite hand
2. Safety Pawl Pin
3. Circlip
4. Safety Gear Actuator
5. Plain Washer
6. Circlip
7. Compression Spring
8. Plain Washer
9. Split-pin
10. Cable Roller
11. Roll Pin Cable Retainer

Figure 13 Safety Gear Assembly

**REFER TO FIGURE 14a,b and c**

**PULLEYS PINS AND SPACERS**

<b>ITEM NO.</b>	<b>BRADBURY NO.</b>	<b>DESCRIPTION</b>
1	400W015	TRIPLE PULLEY PIN
2	400P058	TRIPLE PULLEY SPACER LONG
3		PULLEY LARGE HOLE
	410S002	SINGLE GROOVE
	420S002	TWIN GROOVE
4	WAS0003	TRIPLE PULLEY SPACER SHORT
5	SCR4505	TAPTITE SCREW M6 X 12
6	400P060	SINGLE PULLEY SPACER SHORT
7		PULLEY SMALL HOLE
	410S001	SINGLE GROOVE
	420S001	TWIN GROOVE
8	WAS6014	SINGLE PULLEY SPACER SMALL
9	400W014	SINGLE PULLEY PIN
10	400P059	SINGLE PULLEY SPACER LONG

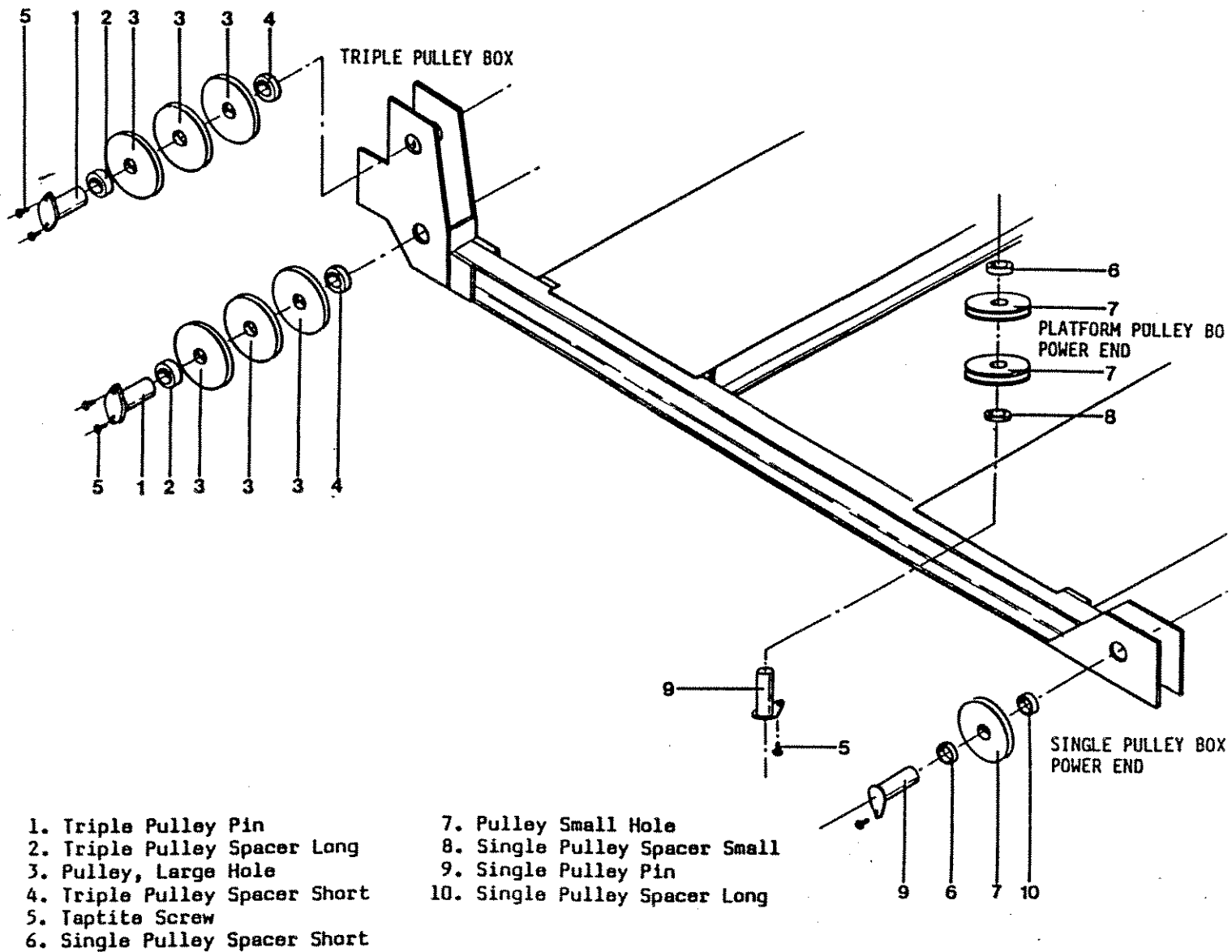


Figure 14a Power End Pulley Assembly

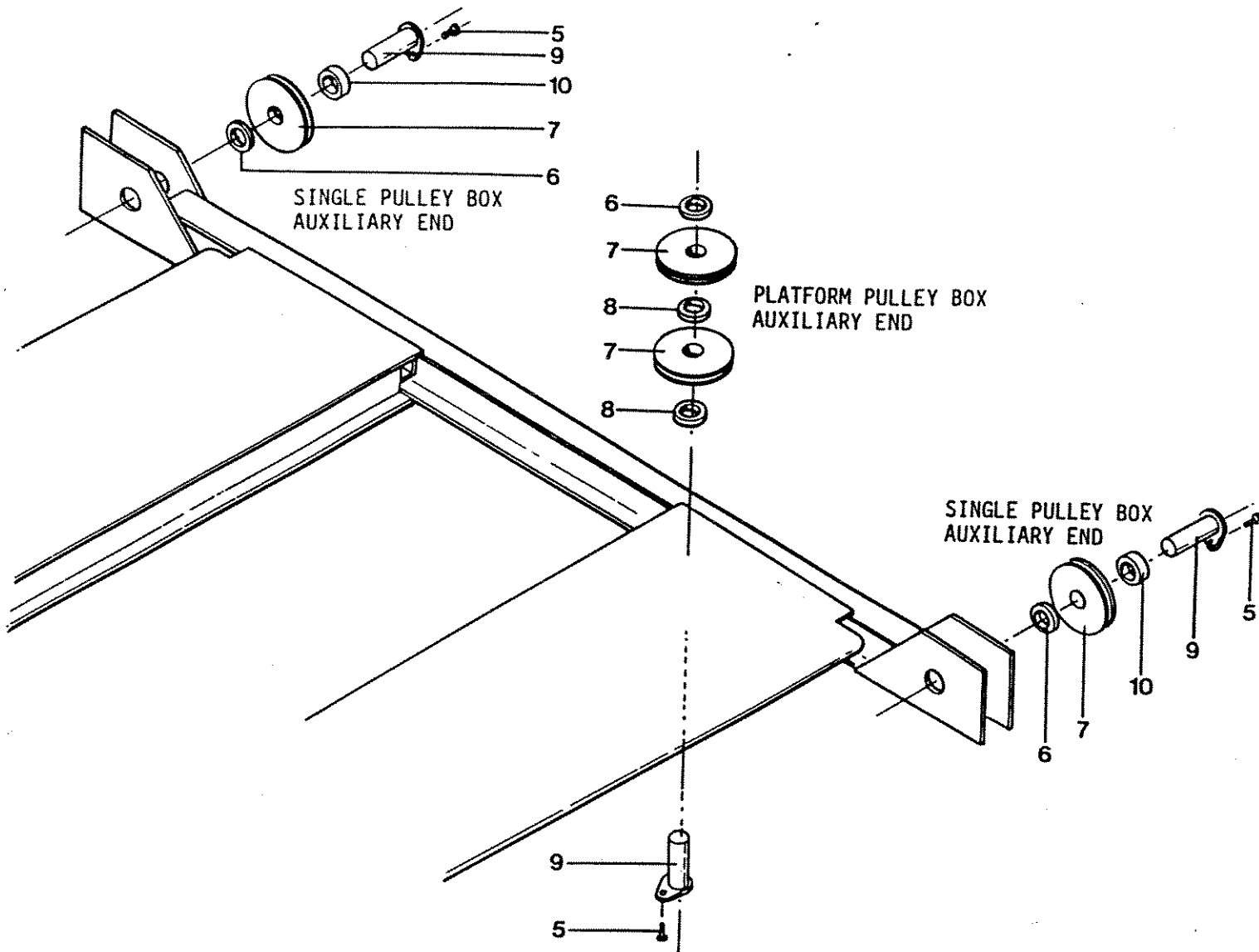


Figure 14b Auxiliary End Pulley Assembly



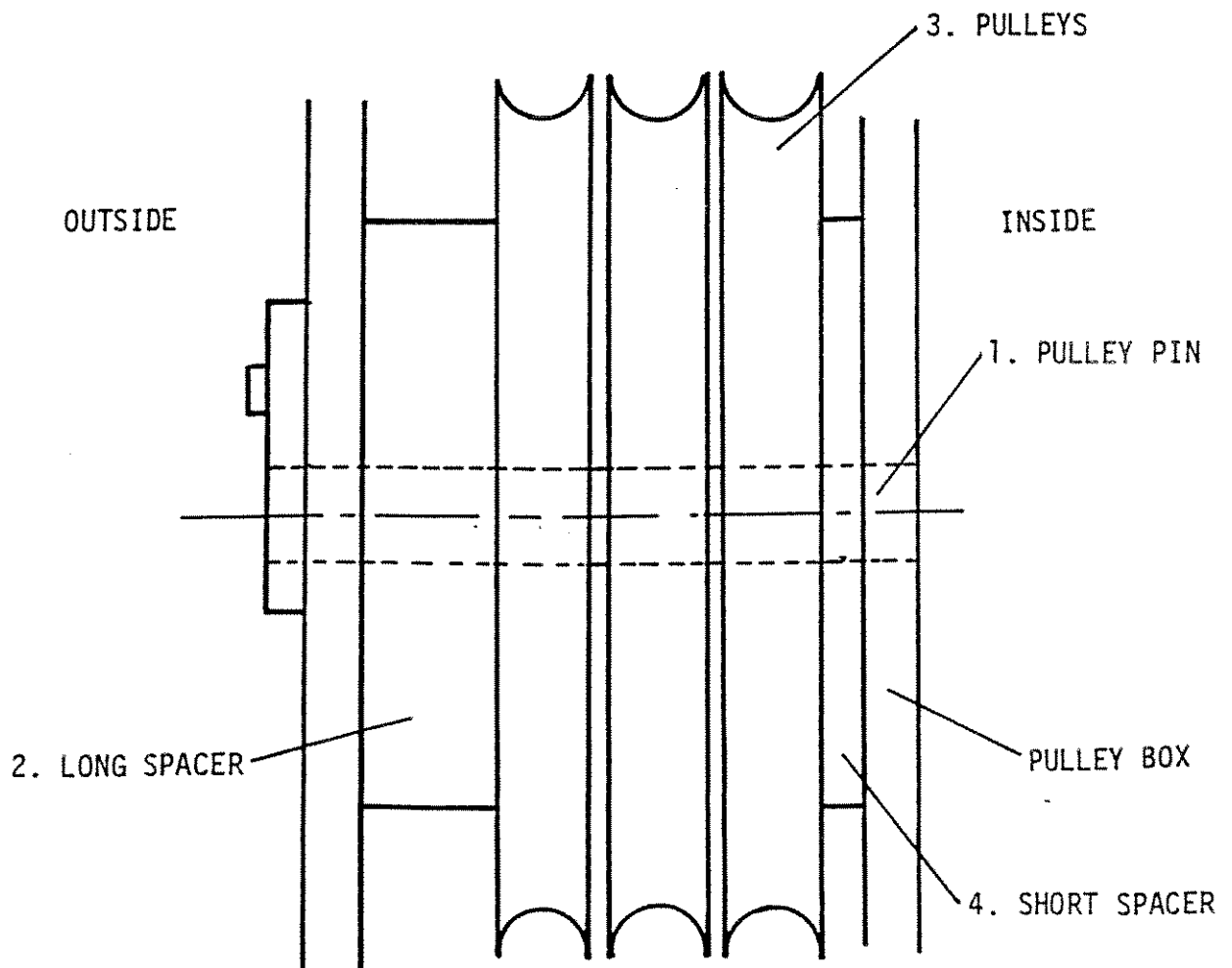
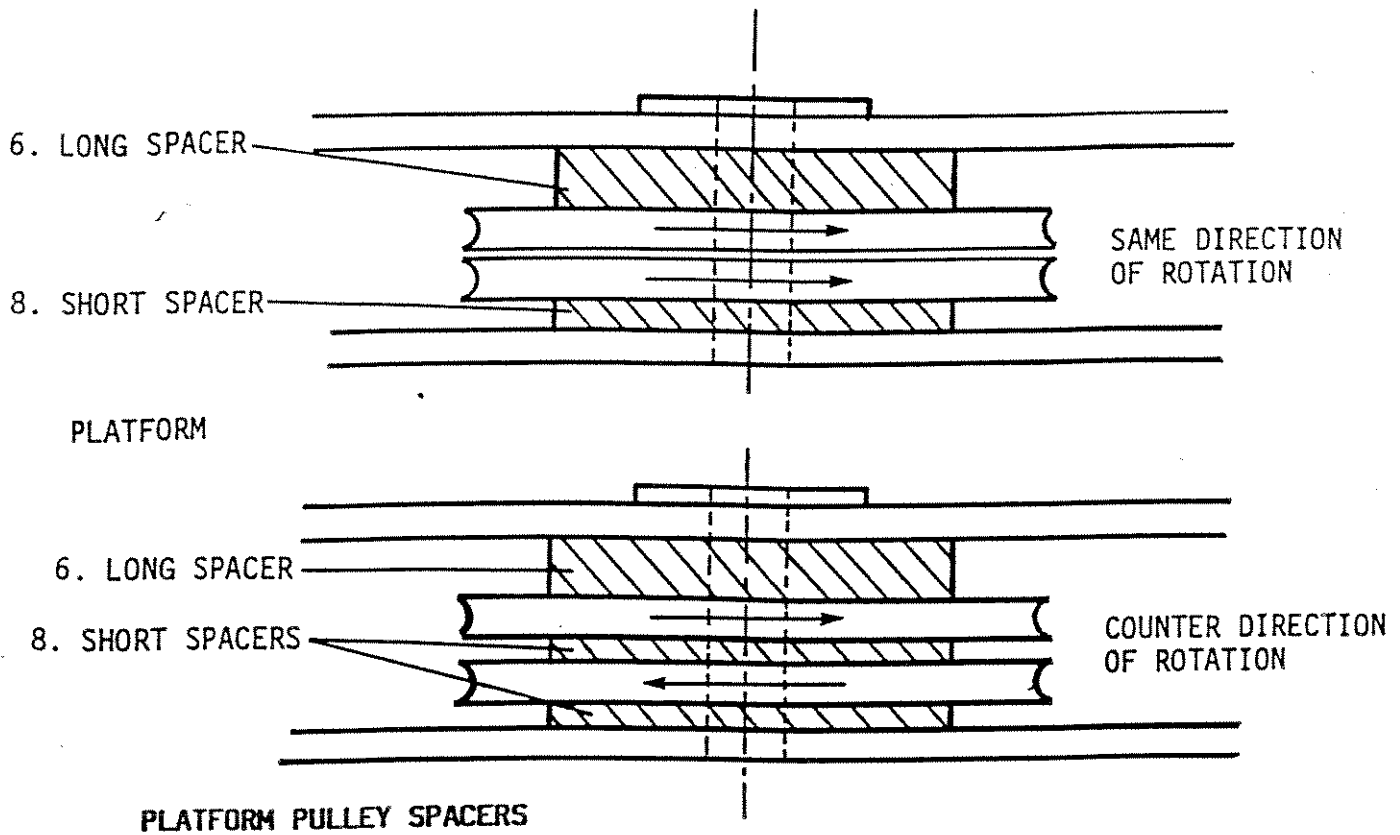


Figure 14c Triple Pulley Box Spacers

**REFER TO FIGURE 16****CYLINDER ASSEMBLY**

<b>ITEM No.</b>	<b>BRADBURY No.</b>	<b>DESCRIPTION</b>
1	400P069	CROSSHEAD SPACER
2	400P068	CROSSHEAD PIN
3		LIFTING LINK
	400P150	STANDARD LIFT
	400P194	LIFT BLOCKED UP 50MM
4	WAS6005	PLAIN WASHER
5	SCR9000	NYLOCK SET SCREW M12 X 16
6	x 400P166	PISTON ROD GUIDE
7	WAS3003	PLAIN WASHER
8	BLT0612	HEXAGON HEAD SETSCREW M6 X 12
9	WAS3006	SPRING WASHER M20
10	400W057	PISTON ROD WELD ASSEMBLY
11	SLS4000	WEAR RING
12	SLS2008	PISTON SEAL
13	SLS8004	PISTON SEAL RETAINER
14	NUT0007	FULL NUT M20
15	BLT2050	HEXAGON HEAD SETSCREW M20 X 50
16	FST0010	EXTERNAL CIRCLIP 18 DIA
17	400P088	PAWL RETAINING PIN
18	400P087	PISTON PAWL
19	SLS8013	WIPER RING

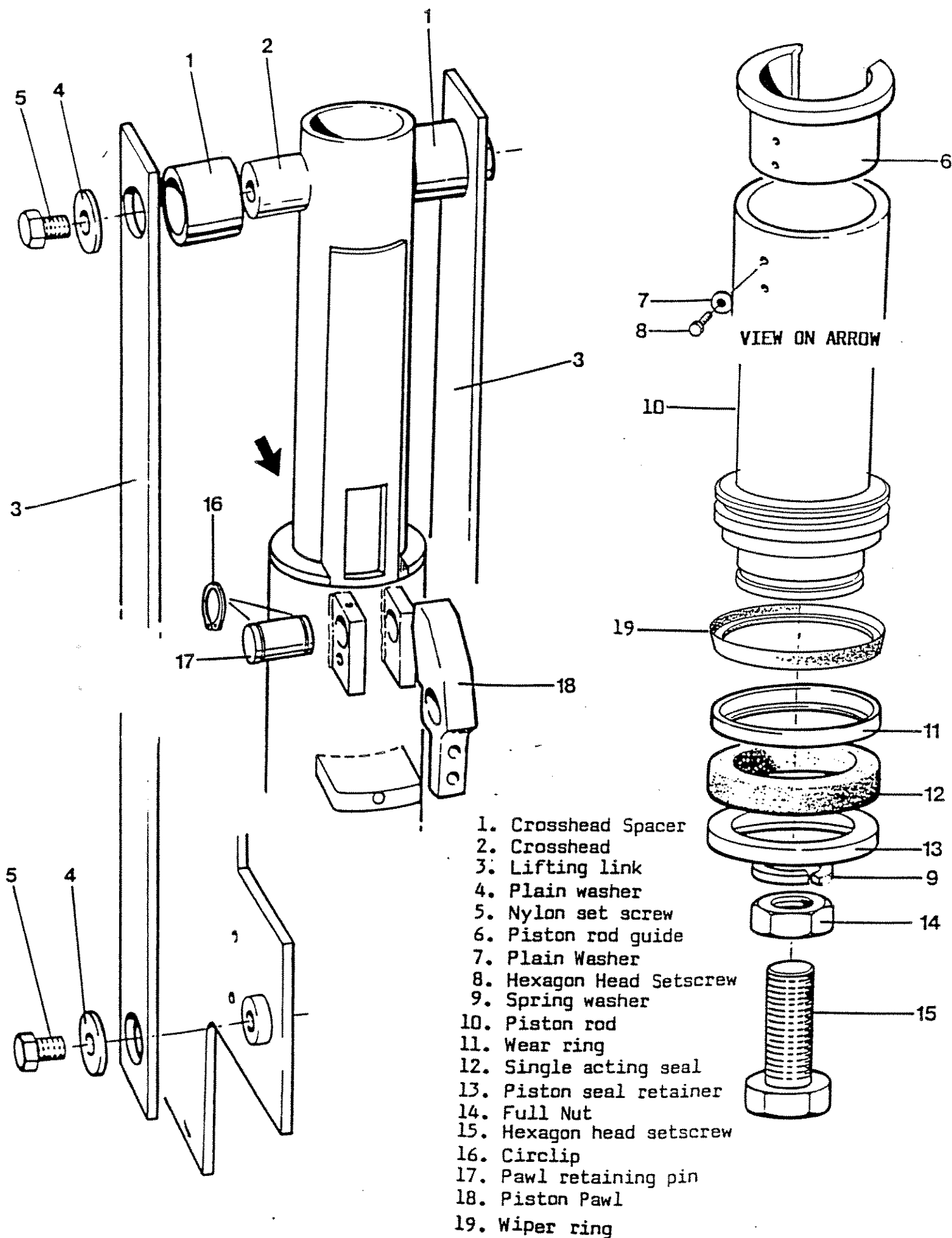
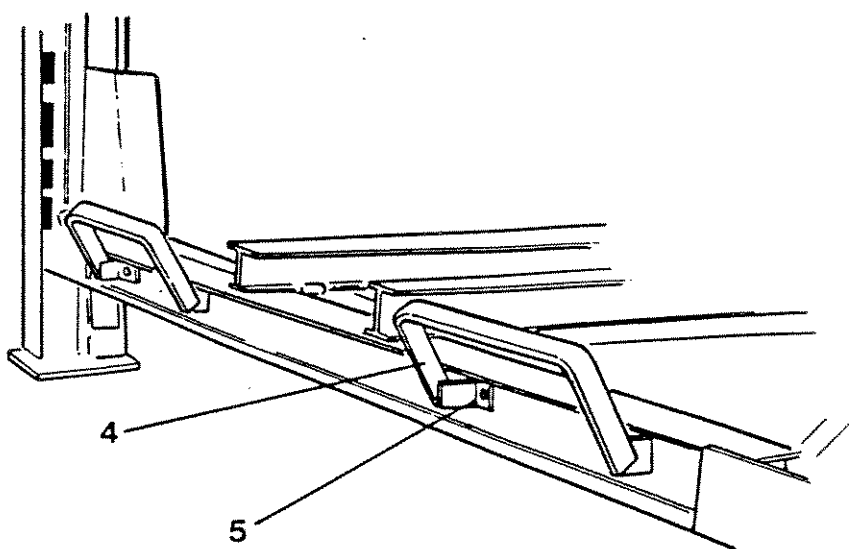
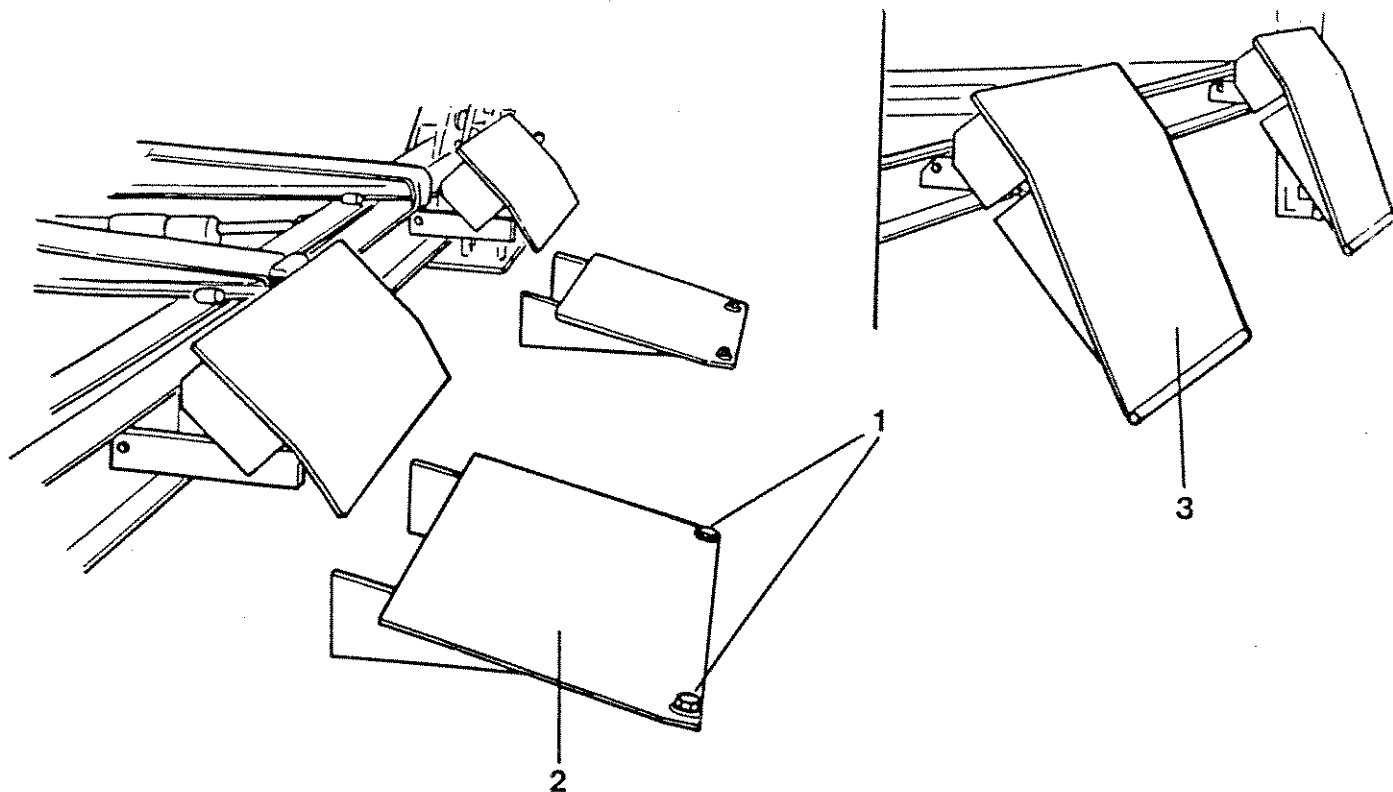


Figure 15 Cylinder Assembly

**REFER TO FIGURE 16****FIXED STOP AND RAMP ASSEMBLY**

ITEM No.	BRADBURY No.	DESCRIPTION
1	BLT1225	HEXAGON HEAD SETSCREW M12 X 25
	WAS6005	PLAIN WASHER
	FST5004	FLOOR FIXING ANCHOR
2		RAMP
	410W015	MODEL 414 LIFT
	420W010	MODELS 424 AND 434 LIFTS
	410W048	MODEL 414 LIFT, BLOCKED UP 50MM
	420W029	MODEL 424 AND 434 BLOCKED UP 50MM
3		CHOCK RAMP
	410W019	MODEL 410 LIFT
	420W014	MODELS 420 AND 430 LIFTS
4		FIXED STOP
	410W004	MODEL 41 LIFTS
	420W004	MODELS 42 AND 43 LIFTS
5	BLT1635	HEXAGON HEAD SETSCREW M16 X 35
	WAS0016	PLAIN WASHER M16
	WAS3000	SPRING WASHER M16
	NUT0002	FULL NUT M16

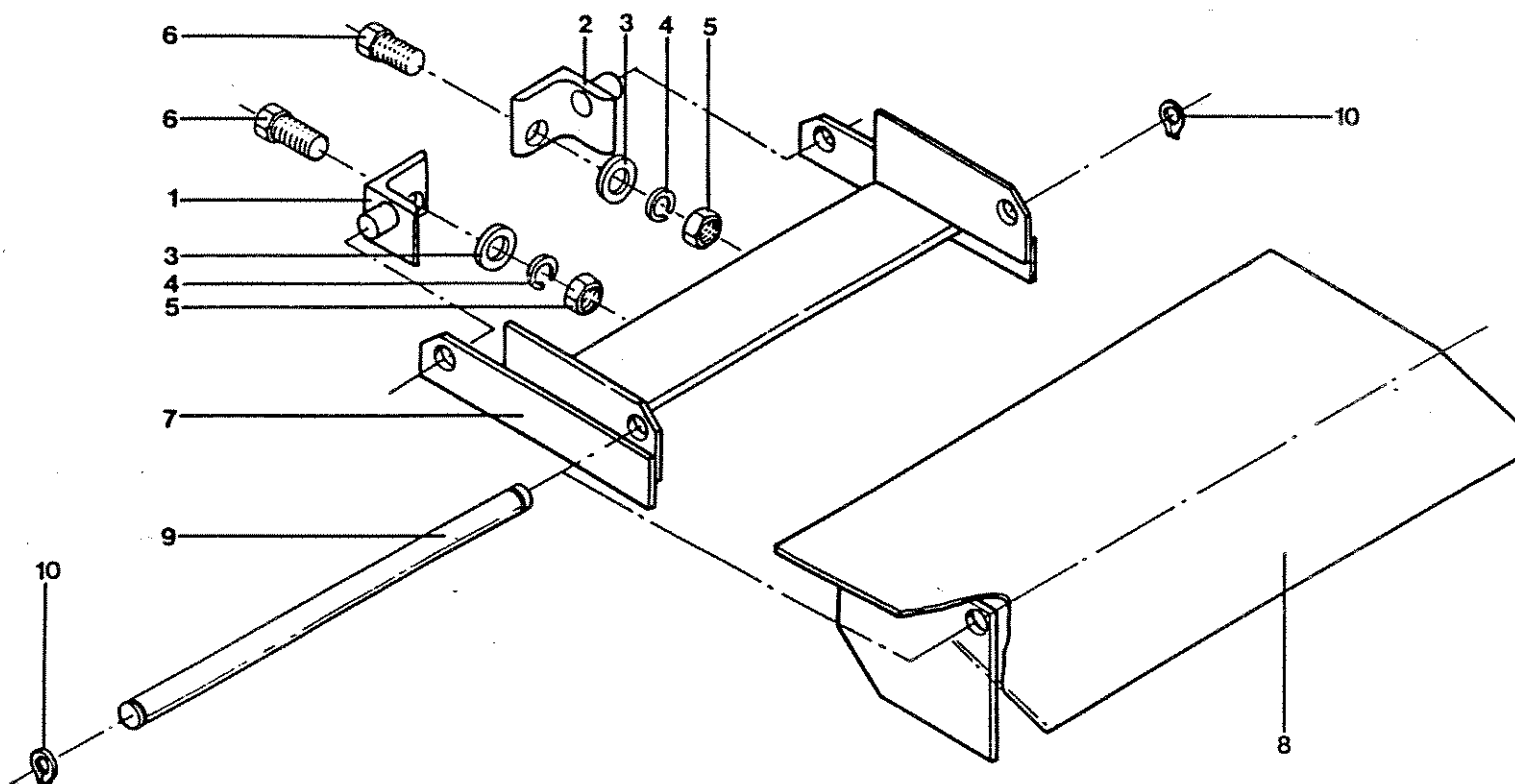


1. Retaining Bolt  
Washer  
Floor Anchor
2. Ramp
3. Chock Ramp
4. Fixed Stop
5. Fixing Bolt  
Plain Washer  
Spring Washer  
Full Nut

**Figure 16 Fixed Stop and Ramp Assembly**

**REFER TO FIGURE 17****CHOCK ASSEMBLY**

<b>ITEM No.</b>	<b>BRADBURY No.</b>	<b>DESCRIPTION</b>
1	400W026	CHOCK MOUNTING BRACKET L.H.
2	400W025	CHOCK MOUNTING BRACKET R.H.
3	WAS0016	PLAIN WASHER M16
4	WAS3000	SPRING WASHER M16
5	NUT0002	FULL NUT M16
6	BLT1635	HEXAGON HEAD SETSCREW M16 X 35
7		CHOCK BRACKET
	410W016	MODEL 41 LIFTS
	420W011	MODEL 42 AND 43 LIFTS
8		CHOCK PLATE
	410W017	MODEL 414 LIFT
	420W012	MODEL 424 AND 434 LIFTS
	410W026	MODEL 41 LIFTS, FLUSH FIT
	420W019	MODEL 42 AND 43 LIFTS, FLUSH FIT
9		CHOCK PIVOT
	420P018	MODEL 41 LIFTS
	420P020	MODEL 42 AND 43 LIFTS
10	FST0006	EXTERNAL CIRCLIP 16MM DIA.



1. Chock mounting bracket L.H.
2. Chock mounting bracket R.H.
3. Plain washer
4. Spring washer
5. Nut
6. Bolt
7. Chock bracket
8. Chock plate
9. Chock pivot
10. Circlip

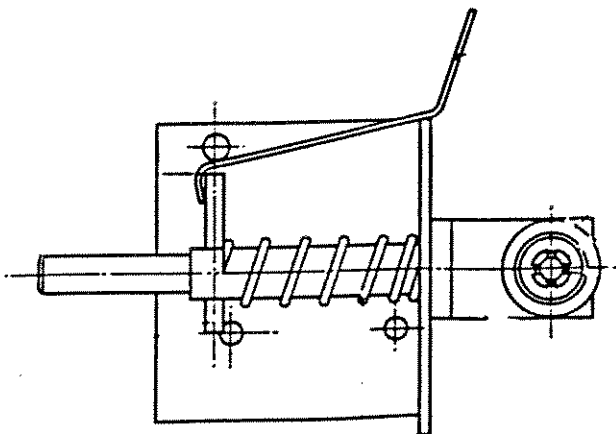
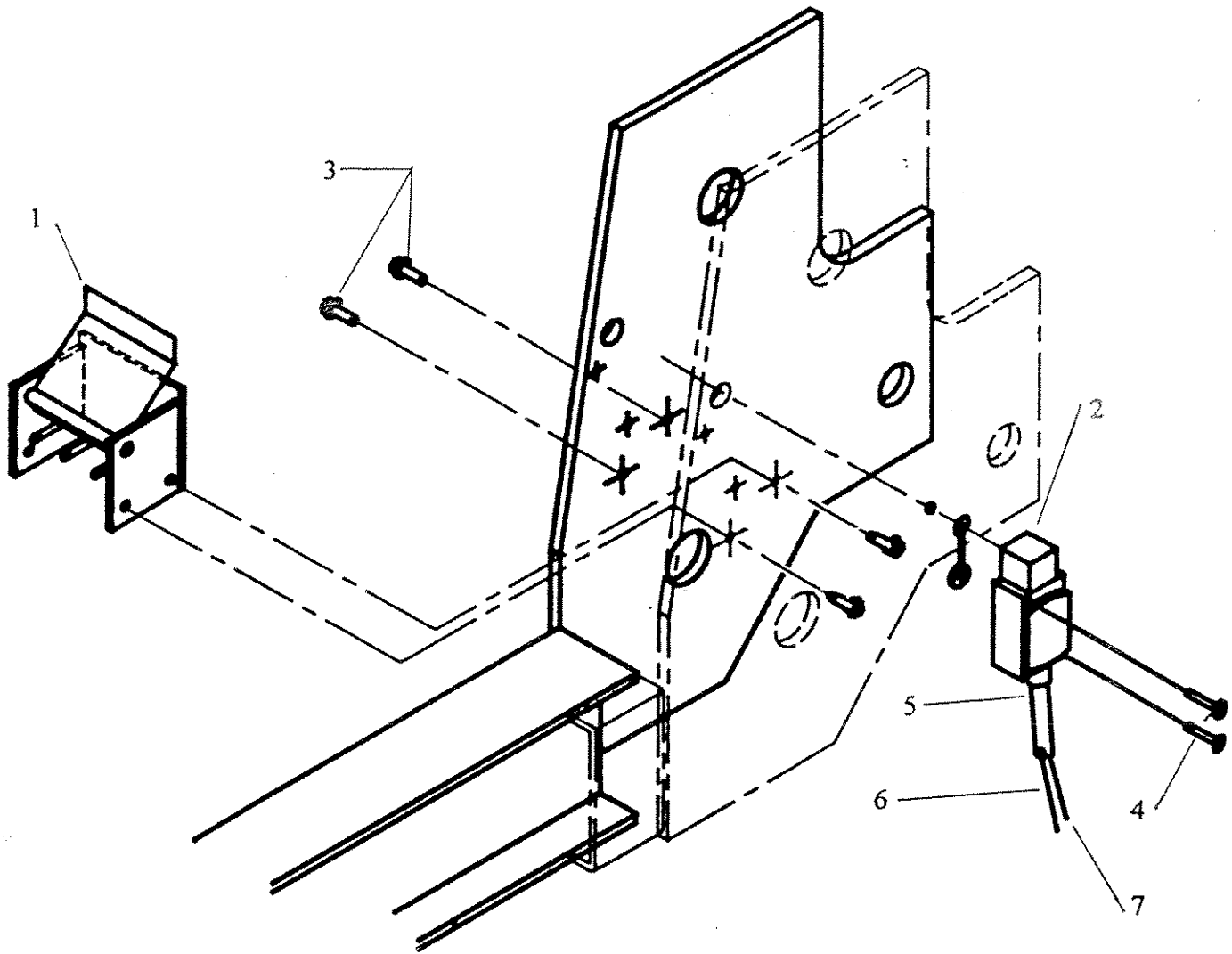
Figure 17 Chock Assembly

**REFER TO FIGURE 18**

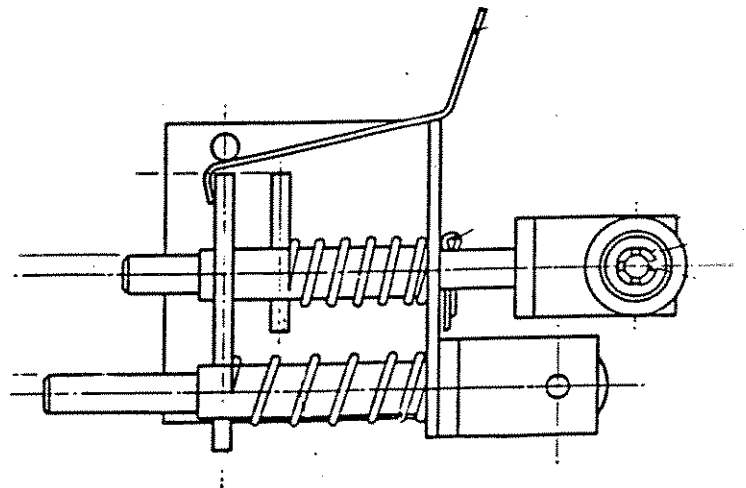
**ANTI TILT**

<b>ITEM No.</b>	<b>BRADBURY No.</b>	<b>DESCRIPTION</b>
1		PLUNGER BOX
	410S006	MODEL 41
	420S006	MODELS 42 AND 43
2	4067315	LIMIT SWITCH
3	SCR4505	TAPTITE SCREW M6 X 12
4	SCR0011	CHEESE HEAD SCREW M5 X 35
5	CDT5006	CRITCHLEY COUPLING 20MM
	CDT5005	CRITCHLEY LOCKING RING
6	CDT0002	CRITCHLEY FLEX CONDUIT
7		ELECTRICAL CABLE 2491X
	WIR0027	WHITE (SINGLE)
	WIR0024	BLACK (SINGLE)





MODEL 41

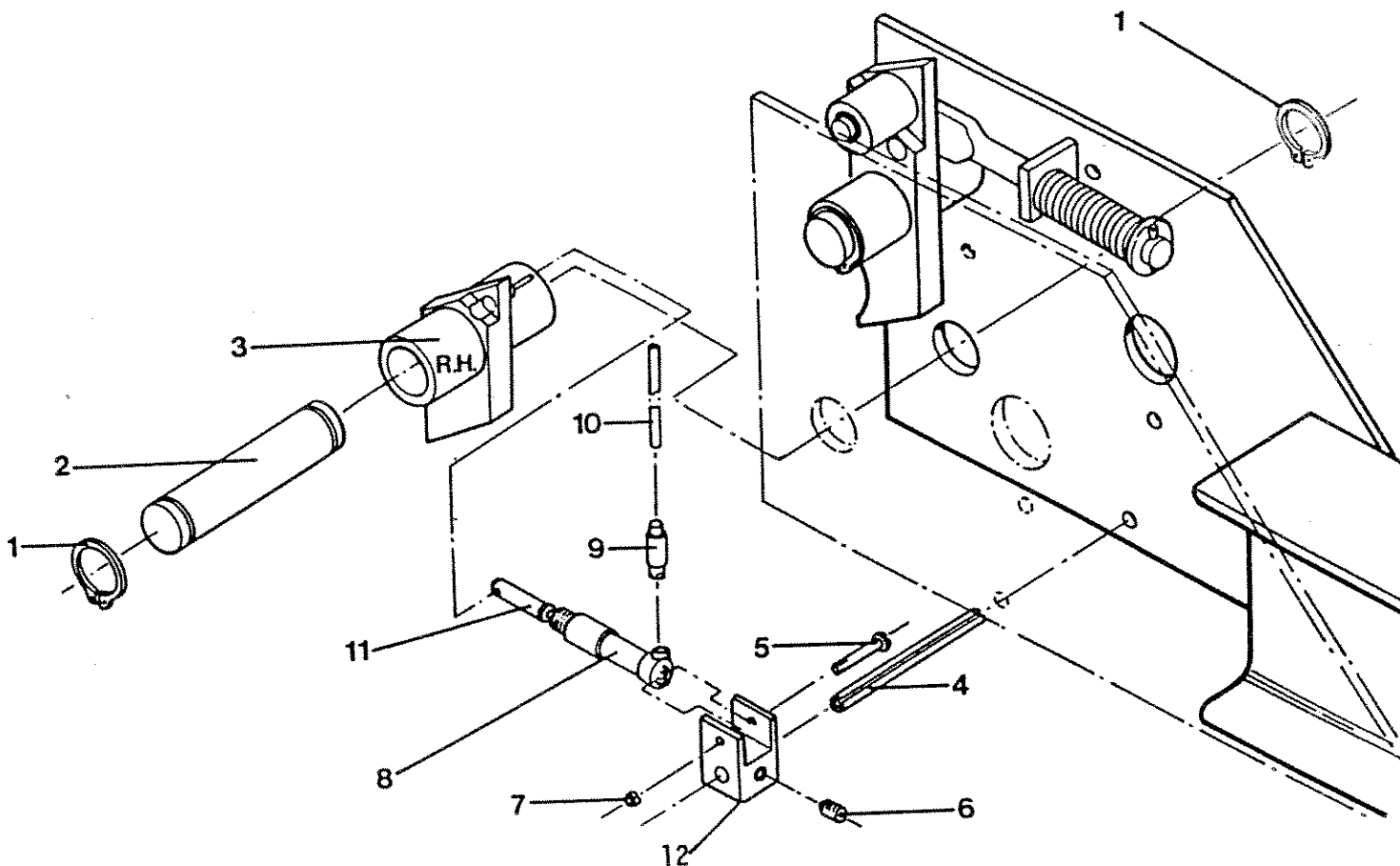


MODELS 42 AND 43

**Figure 18 Anti Tilt**  
January, 95

**REFER TO FIGURE 19****MECHANICAL LOCKING**

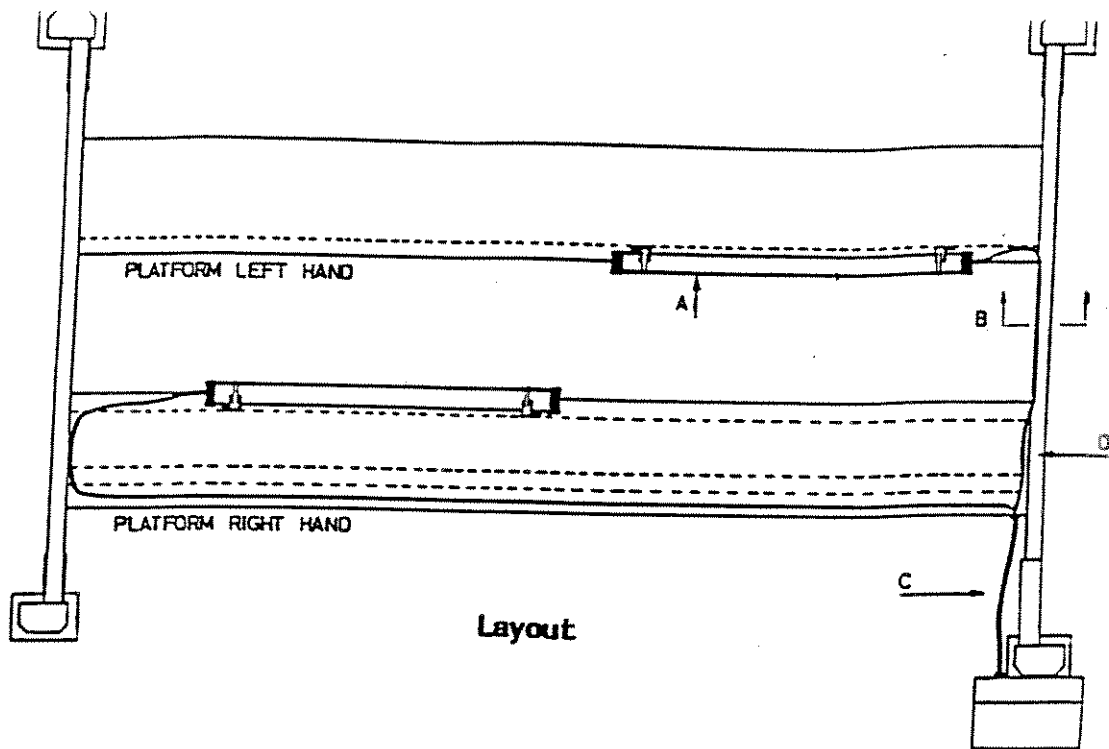
<b>ITEM No.</b>	<b>BRADBURY No.</b>	<b>DESCRIPTION</b>
1	FST0008	CIRCLIP 7100-25
2	4000P72	SAFETY PAWL PIN
3		MECHANICAL LOCKING PAWL
	400W030	R.H. (1No)
	400W031	L.H. (2No)
4	FST2009	ROLL PIN M6 x 90
5	BLT0430	SOCKET SET SCREW M4 x 30
6	SCR2003	SOCKET SET SCREW M6 x 8
7	NUT 6000	M4 NYLON INSERT NUT
8	PNE2000	AIR CYLINDER
9	CPL0007	STRAIGHT FITTING M5-4MM
10	NFX4001	4MM NATURAL NYLON PIPE
11	400P182	AIR CYLINDER PISTON ROD END
12	400P181	TRUNION BLOCK



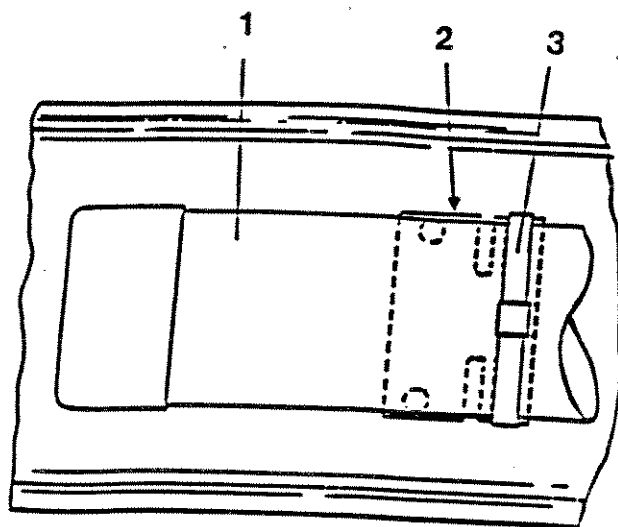
1. Circlip
2. Safety Pawl Pin
3. Mechanical Locking Pawl R.H. 1 reqd.  
L.H. 2 reqd.
4. Roll Pin
5. Set Screw
6. Socket Set Screw
7. Nyloc Nut
8. Air Cylinder
9. Straight Connector
10. Air Pipe
11. Air Cylinder Piston Rod End
12. Trunnion block

Figure 19 Mechanical Locking

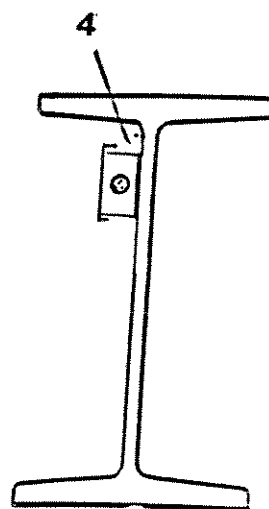
ITEM No.	BRADBURY No.	DESCRIPTION
1	LTG0004	LIGHT UNIT
2	400P198	LIGHT BRACKET
3	FST5024	HOSE CLIP
4	400P200	DUCTING PLAIN 25/20 (896mm LONG)
5	CDT5006	CRITCHLEY COUPLING 20mm
	CDT5005	CRITCHLEY LOCKING RING
6	CDT0005	CRITCHLEY FLEX CONDUIT
7	430P127	COUPLING BRACKET (SEE DETAIL D (42,43))
8	SCR4502	TAPTITE SCREWS
9	EX0059	DUCTING PLAIN 25/20 (2m LENGTHS)
10	WIR2007	3 CORE ELECTRIC CABLE 3183Y
11	WIR0002	YELLOW/GREEN SINGLE WIRE 2491X



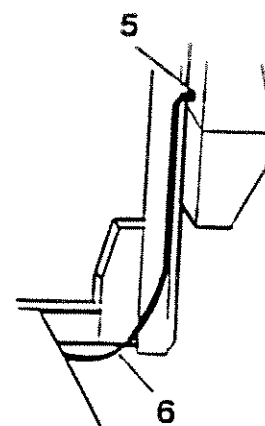
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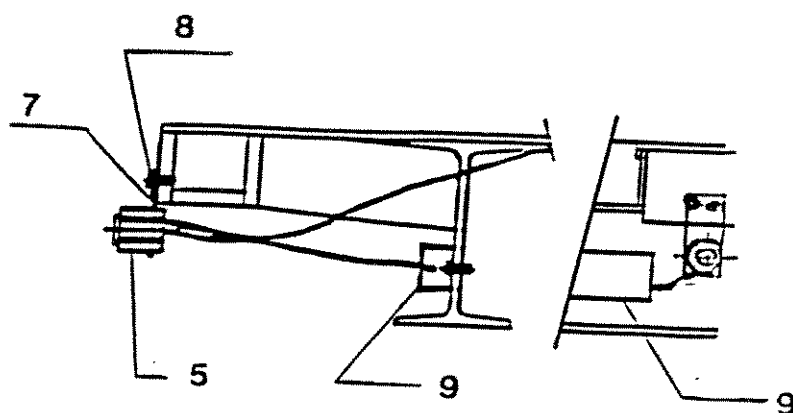
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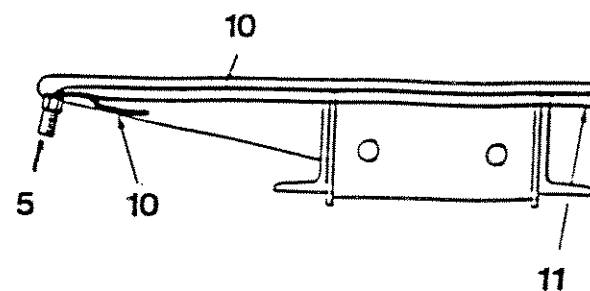
B



C



D 42, 43



D 41

Figure 20 Lighting

