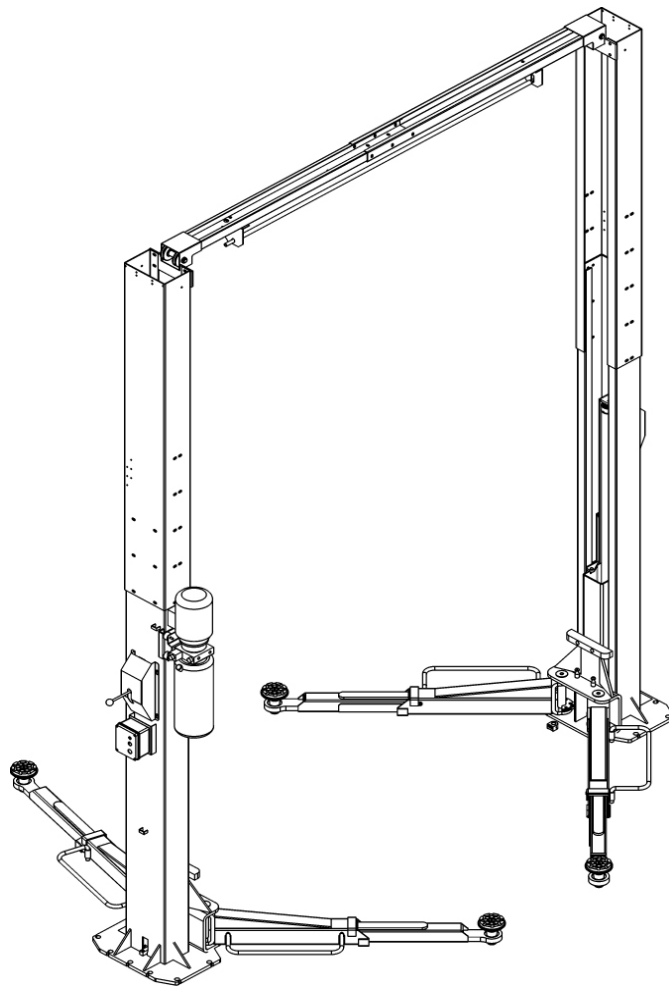


LIFT

HL-27M OPERATION MANUAL



The product specifications contained in this manual are
subject to change without prior notice for quality improvement
HESHBON Incorporated

NOTE TO THE USER

Thank you for purchasing HESHBON'S CAR LIFT.
Please read this instruction carefully for
safe and proper use of the car lift,
and keep it handy for future reference.

■ This Manual is for model ; HL-27M

1. AS FOR THE ASSURANCE OF SAFETY IN DESIGN AND
CONSTRUCTION OF CAR LIFT, READ THIS MANUAL FIRST.
2. PLEASE MAKE SURE THAT THIS MANUAL IS DELIVERED TO
END USERS FOR THEIR IMPLEMENTATION OF SAFETY.
3. DON'T USE THE CAR LIFT IN A POTENTIALLY
EXPLOSIVE ATMOSPHERE.

- ANY PART OF THIS PRINT MUST NOT BE REPRODUCED IN ANY
FORM WITHOUT PERMISSION.
- THIS PRINT IS SUBJECT TO CHANGE WITHOUT NOTICE.

Copyright (C) HESHBON CO., LTD

WARRANTY

The warranty period of the Car Lift shall be for a period of one year from the date of delivery to sales agent.

Subject to the limitations set forth below,

Contractor warrants that the Car Lift will be free from defects in material and workmanship and undertakes to, at parts, including repaired or replaced parts, in the which are (1) due solely to defective material and/or poor workman –ship on the parts of contractor and/or its sub–contractors and (2) for which notice there of is duly given to contractor in writing or by FAX. Confirmed in writing within thirty (30) days after discovery of any defects of which claim made hereunder.

This warranty is subject to the following conditions ;

- 1) Car Lift shall be properly used and operated by the company's operator solely in accordance with the specifications and operating instruction provided by contractor.
- 2) This warranty shall not be constructed to cover any defects due to ;
 - Normal wear and tear;
 - Bad operation and maintenance not in accordance with the operating and maintenance manuals to be provided by contractor;
 - Operation under conditions more severe than those in the specification and drawings;
 - Change in design or other modification by company without contractor's consent;
 - Movement or transfer without contractor's consent;
 - Consumable items in normal operating;
 - Any other carelessness not attributable to contractor.

Contact your sales agent for warranty coverage.

HESHBON CO., LTD.

673-52, Gyeongseo-dong, Seo-gu Incheon 404-170, KOREA

Tel) INT +82-32-585-3570

FAX) INT +82-32-585-3485

TABLE OF CONTENTS

- COVER SHEET
- Declaration of Conformity
- NOTE TO THE USER
- WARRANTY
- Table of Contents

CHAPTER 1. SAFEGUARDS

1-1	Important Notices	6
1-2	Qualified Personnel	8
1-3	Danger Notices	8
1-4	Principle safety objective	9
1-5	Safety notices	10
1-6	Essential Safety Checks (ESC's)	14
1-7	Safety Signs and Warnings location	15
1-8	Illumination	16
1-9	Level of sound pressure	16
1-10	Training	16

CHAPTER 2 OVERVIEW OF MACHINE

2-1	Specification	17
2-2	Description of Construction	18
2-3	Description of operation.....	24
2-4	Safety device	25

CHAPTER 3. TRANSPORTATION AND INSTALLATION

3-1	Preparation for installation	27
3-2	Precaution during installation	27
3-3	Transportation	28
3-4	Installation	29

CHAPTER 4. OPERATION

4-1	Warning for use	36
4-2	Checking point before operation	36
4-3	Preparation before operation	37
4-4	Description of control panel	37
4-5	Operation	38
4-6	How to lower manually the lift during emergency	40

CHAPTER 5. TROUBLESHOOTING

5-1	Inspection and repair	42
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CHAPTER 6. MAINTENANCE

6-1	General caution during maintenance	43
6-2	Check List and periodic maintenance	44
6-3	Lubricant	44

APPENDIX

1. ELECTRONIC CIRCUIT	45
2. PNEUMATIC CIRCUIT	46

CHAPTER 1. SAFEGUARDS

Please read carefully this chapter first for safe and proper use of the car lift. This company will not be held responsibilities for any injuries or accidents which occur due to the car lift being operated without having understood the contents of the instruction manual. Keep the Instruction Manual close to the car lift so that anyone can refer to when necessary. Also, designate a person to take care of the manual

1-1 Important Notices

Car lift must be considered to be a potential hazard to the health and safety of the car lift's operator and service personnel. It is important that this car lift is installed, maintained and operated according to the instructions set out within this manual. This is a responsibility imposed on the customer by the EU Council Directive 89/655/EEC, concerning the minimum safety and health requirements for the use of work equipment by workers at work.

Any modification, alternation or addition to the car lift or the fitting of ancillary equipment must comply with the EU Council Directive(s). HESHBON can not accept any liability whatsoever, which may result in legal action from failure to comply with the regulations, or any consequential loss, claim or counter claim for damage, personal injury, or death arising as a result of any modification, alteration or addition to the fitting of ancillary equipment.

EU Council machinery Directive 98/37/EC.

The above machinery directive requires all new machinery to carry the CE mark, declaring conformity with all relevant EN standards in respect of safety systems and car lift construction.

All HESHBON carry the CE mark and thus conform with the EU Directives. Any modification to the car lift may invalidate the original CE certificate, and therefore always refer to HESHBON as reassessment may be required.

This document provides the information required for the intended use of car lift. The documentation is written for technically qualified personnel such as engineers or maintenance specialists who have been specially trained and who have the specialized knowledge required in the field of industrial machinery.

A knowledge of the safety instruction and warnings contained in this document and their appropriate application are prerequisites for safe installation and commissioning as well as safety in operation and maintenance of the car lift described. Only qualified personnel have the specialized knowledge that is necessary to correctly interpret the general guidelines relating to the safety instructions and warnings and implement them in each particular case.

For the sake of clarity, not all details of all versions of the product are described in this documents, nor can it cover all conceivable cases regarding installation, operation and maintenance. Should you require further information or face special problems that have not been dealt with insufficient detail in this document, please contact the manufacturer specified on cover page.

We would also point out that the contents of this product documentation shall not become a part of or modify any prior or existing agreement, commitment or legal relationship. The purchase agreement contains the complete and exclusive obligations of HESHBON Co., Ltd. Any statements contained in this document do not create new warranties or restrict the existing warranty.

1-2 Qualified Personnel

Persons who are not qualified should not be allowed to handle the car lift.
Non-compliance with the warnings contained in this document or appearing on the car lift can result in severe personal injury or damage to property.
Only qualified personnel should be allowed to work on this car lift.

Qualified persons as referred to in the safety precautions in this document as well as on the car lift itself are defined as follows:

- ◆ Operating personnel who have been trained work with the car lift and are conversant with the contents of the documents in as far as it is connected with the actual operation of the car lift;
- ◆ Service personnel who are trained to repair such the car lift and who are authorized to energize, clear, ground and tag circuits, equipment and systems in accordance with established safety practices.

1-3 Danger Notices

The safety precautions in this manual are classified into the following four levels. Please be particularly careful when performing operations that have a high degree of danger.

DANGER : Failure to follow this safety precaution may result in a great physical danger to the operator, or even death.

CAUTION : Failure to follow this safety precaution may result in a great physical danger to the operator, or severe damage to the car lift.

WARNING : Failure to follow this safety precaution may result in an injury to the operator, or damage to the car lift.

NOTICE : Failure to follow this safety precaution may result in a damage to the car lift.

1-4 Principle safety objective

- 1) The principle safety objective is to remove the possibility of any hazard or risk to the health or safety of the car lift's operator or service personnel.
- 2) Extreme caution must be exercised while servicing or installing the car lift.
- 3) The only safe policy when working or inspecting the car lift is to follow the instructions in this manual. Wherever possible shut off all electrical power and follow the procedures outlined in this manual.
- 4) Accident prevention should become part of the standard working, operating and maintenance procedures, and training should be provided to ensure safety standards are understood. Part of safety training should include the instructions detailed in this section.
- 5) If ancillary equipment is to be fitted ensure this is done in accordance with the relevant standards or EU Directives, and that all requirements for safety are fully met.
- 6) Always ensure servicing and maintenance tasks are carried out by suitable qualified personnel. The operator should understand the limits of their responsibility, and the training should reinforce the importance of not exceeding them.
- 7) The essential routine safety checks have an important function in ensuring the car lift continues to work in a safe manner. These checks must be carried out according to the instruction and at the recommended intervals.
- 8) If there are any questions or doubts regarding any aspect of car lift safety or operation or maintenance, please contact the company shown on the front of this manual.



1-5 Safety notices

To protect the operator or service personnel from any injuries or accidents during operating the car lift, please read this section and carefully for safe and proper use of the car lift.







◆General Safeguards




1. Please read carefully this instruction manual for safe and proper use of the car lift.
2. Only qualified personnel should be allowed to work on this car lift.
3. Checking before operation and routine inspection should be carried out in accordance with the procedures described in the manual.
4. When the abnormal condition not specified at this instruction manual is occurred during operating, stop the operation of car lift and contact the manufacturer specified on cover page or distributor.
5. This car lift should be only for repairing the car.

◆Danger Notices

DANGER	
	<p>Do not enter under the car lift during lifting the car.</p> <p>You may result in a great physical danger or even death.</p>
	<p>Do escape to the safety zone without staying under car lift when the car is possible to fall down.</p> <p>You may crush under car and then, result in a great physical danger or even death .</p>

◆Caution Notice

CAUTION	
	<p>Only qualified personnel should be allowed to work on this car lift.</p> <p>Unexpected accidents may be happened due to wrong operation.</p>
	<p>Do not lower the lift in the state of supporting a car by a stick to attach or detach components.</p> <p>The car may fall down.</p>
	<p>Do not shake the lifted-up car.</p> <p>The car may fall down.</p>
	<p>Do not move up the lift in the condition of putting only one side of car into the lift.</p> <p>A car may fall down or damage. And also, the lift may damage.</p>
	<p>Never modify a safety devices.</p> <p>If a safety devices are not operated, a serious accident may be happened.</p>
	<p>During lowering the lift, be careful to not put foot under a table.</p> <p>Serious injury may be happened.</p>

CAUTION	
	<p>To ensure the safe and proper use of the lift, first operate it after carefully reading the instruction manual and making sure that you understand the contents.</p> <p>Failure to observe this may result in serious accident.</p>
	<p>When positioning the car on the lift ensure equilibrium in all directions.</p> <p>Failure to observe this may result in serious accident..</p>
	<p>Risk of electric shock : When opening an electrical control panel, take care to avoid contact with electrical connections.</p> <p>Failure to observe this may result in serious injury or even death..</p>

◆Warning Notice

WARNING
<p>To ensure the safe and proper use of the lift first operate it after carefully reading the instruction manual and making sure that you understand the contents.</p> <p>Prior to using the lift observe the following ;</p> <ol style="list-style-type: none"> 1. This Lift is only for repairing the car. Do not use for other purpose. 2. Do not use the lift if any of the safety devices are not operating normally. 3. When driving on to or off the lift drive the car smoothly and avoid sudden braking or acceleration in order to prevent damage to the lift or to the underside of the car. 4. Avoid wheel spin due to wet surfaces or worn tyres.

WARNING

< During lifting and lowering the lift >

5. During moving up and down the lift must be observed by the operator throughout its entire motion.
6. If several lift are installed the respective allocation of the individual switches must be clear.
7. Never exceed the rated capacity of the lift.
8. Passenger transport is forbidden. Never operate the lift with personnel in the car or on the lift.
9. Check that the lift pads and arms are clean and free of oil/grease at all times.
10. Raise the lift only after checking that the car and pick-up pads are properly positioned.
11. Stop the operation of lift when it reaches the required working height or the maximum height.
12. Following any movement of the lift wait for 1 – 2 seconds before the next operation is carried out.
13. Be careful to not shake the car during lifting and lowering the lift. If the car should suddenly settle to one side, stop the operation of the lift immediately.
14. If on pressing the down switch the lift does not operate first press the up switch and then press the down switch again.
15. When the lift has been completely lowered to ground level swing the lift pads and arms free of the car and drive off the lift.
16. Ensure that unauthorized persons are nowhere near the lift during its operation.
17. Keep tools and component parts well clear of any moving parts of the lift. Failure to observe this may result in damage to the lift or the car.
18. During lowering the lift check that no person or any other obstruction is under or around the lift and car.

< During repairing the car observe the following : >

19. Check that the safety lock devices are properly engaged before entering the area under the car.
20. Prohibit unauthorized persons from entering the lift area.
21. Lower the lift completely if the operator intends leaving the lift area for a longer period or if the lift is not in operation.

< Other precautions >

22. Do not change or modify the lift without permission from the manufacturer. Failure to observe this may result in serious accident.
23. Should you find a fault on the lift during operation or during periodical safety checks, stop the operation of the lift immediately and call the distributor for maintenance service. DO NOT use the lift until it has been repaired.
24. Please note that this lift is not designed to be waterproof. Do not install the lift for car washing use or outdoor use..

1-6 Essential Safety Checks (ESC's)

The essential safety checks are the most important part of the operators responsibility. The purpose of the ESC's is to ensure the safety features of the car lift are functioning properly, and thus the car lift is in a safe condition for use.

In addition to the operator it is recommended that regular additional ESC's are carried out by the responsible person and that a record is maintained in accordance with the EU machinery Regulations.

If any of the ESC's are in the "Fail" condition do not operate the car lift, immediately notify the responsible person within the company and contact the manufacturer as soon as possible.

ESSENTIAL SAFETY CHECKS (ESC'S)

GROUP 1 GENERAL – Visual Inspection

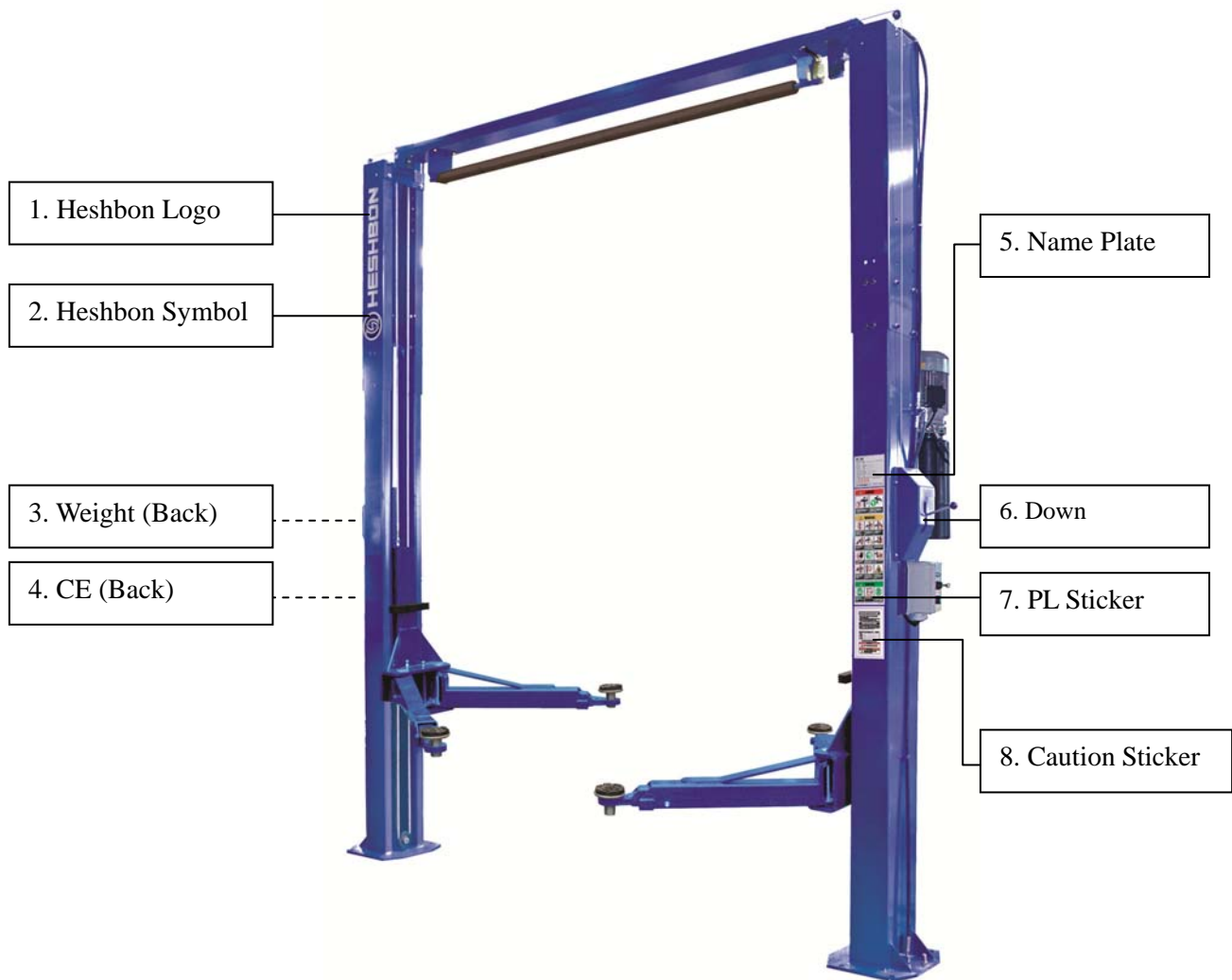
ESC	Description	O.K.	Fail
1A	Machine guarding		
1B	Electrical system including protective earth grounding		

GROUP 2 Electrical isolator switch

Set the electrical isolator switch to OFF position and check the following conditions.

ESC	Description	O.K.	Fail
2A	All functions have been disabled		

1-7 Safety Signs and Warning location




1-8 Illumination

This machine is not provided with a local lighting since it is designed for indoor use only. The sufficient illumination of the working area must be fulfilled by the factory in accordance with the appropriate code of practice and factory regulations. Minimum 300 lx is required. Flicker, dazzling, shadows and stroboscopic effects must be avoided to prevent a risk

1-9 Operation sound level

The equivalent continuous A-weighted sound pressure levels of car lift do not exceed 85dB (A).

 CAUTION	The factory must provide operator(s) with the appropriate measures including but not limited to an ear protection and a warning sign(s) if the sound pressure of 85dB (A) is exceeded.
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1-10 Training

Contact the manufacturer specified on cover page for information on training courses to aid you in becoming familiar with this car lift.

CHAPTER 2. OVERVIEW OF MACHINE

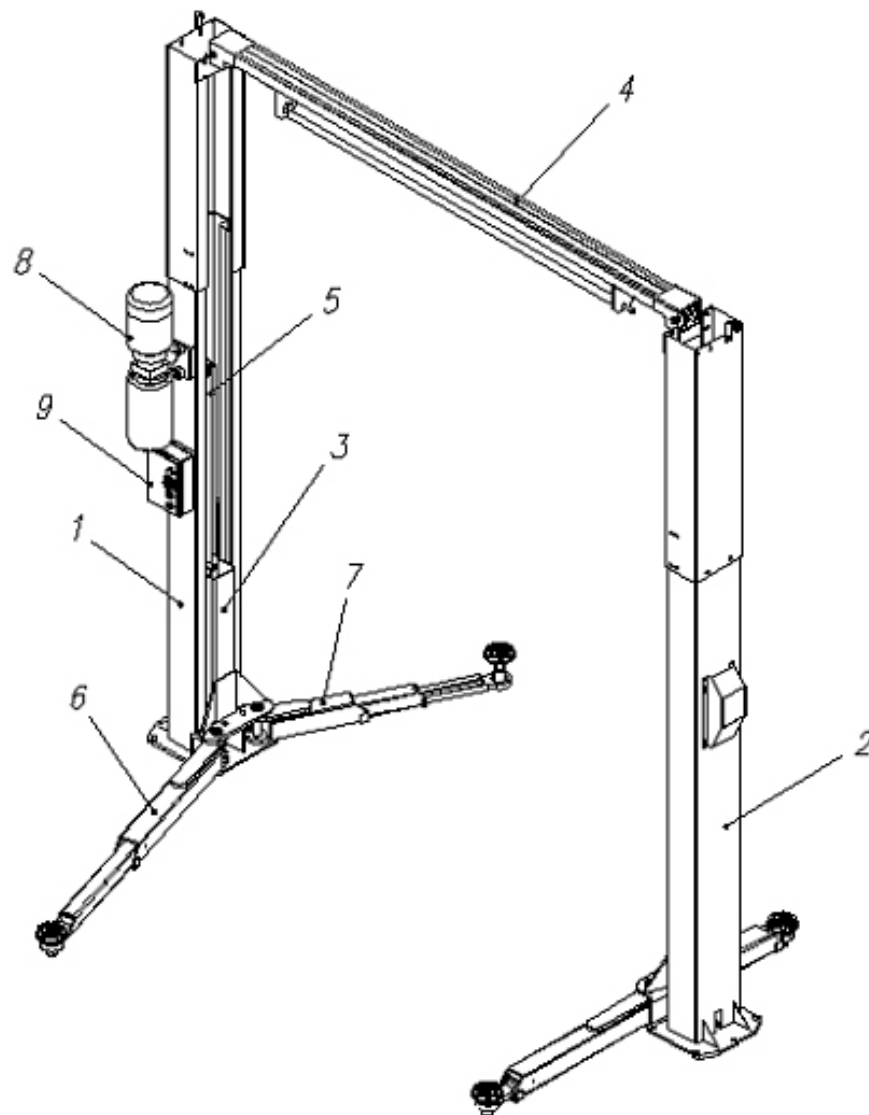
HI-27M is a stationary 2-column lift designed to raise vehicles for the purpose of examining them or working on or under the them whilst in a raised position.

2-1 Specification

The rated Capacity		6,000 Kg
Overall Max. Height		1,924 ~ 2,032mm
Min. Height		124 ~ 232mm
Min. Runways Height		1,800mm
Lifting Time		Approx. 40 ~ 60 sec.
Lowering Time		Approx. 30 ~ 40 sec.
Standard Motor		T/P : 2HP, 220V/380V/50Hz
Dimension	Dimensions(Outer Width X Inner Width)	3,446 X 2508mm
	Max. Height	3,450mm
Net Weight		760 Kg

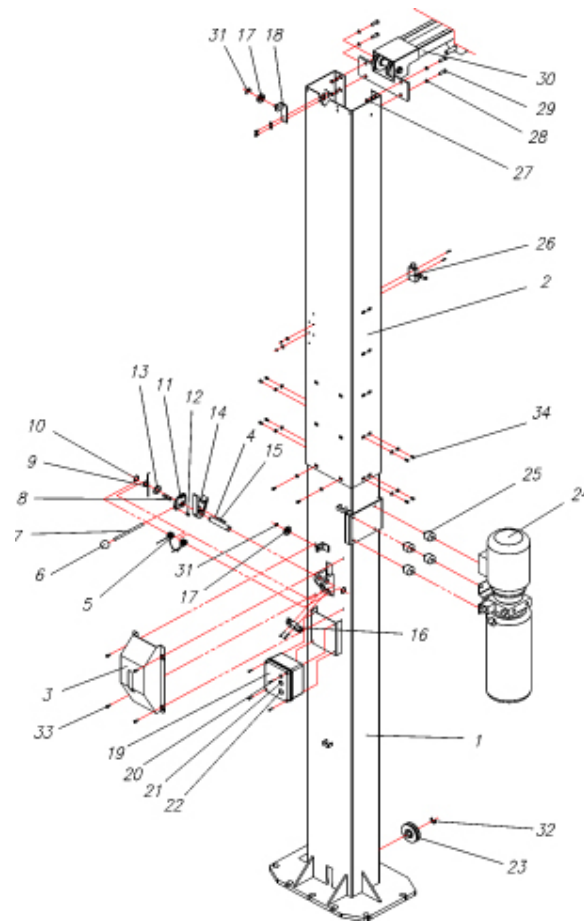
2-2 Description of Construction

2-2-1 Construction of car lift



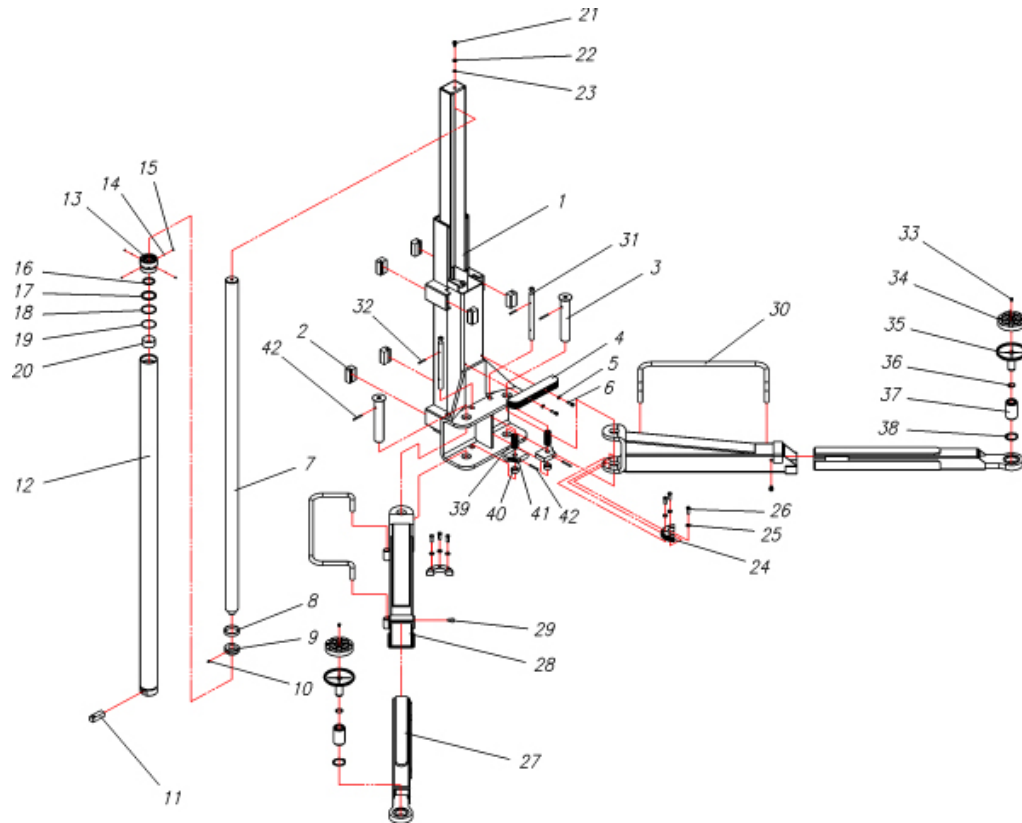
1. Drive post	6. Long arm
2. Driven post	7. Short arm
3. Carry	8. Power units
4. Upper support beam	9. Control panel
5. Cylinder	

2-2-2 Construction of Post



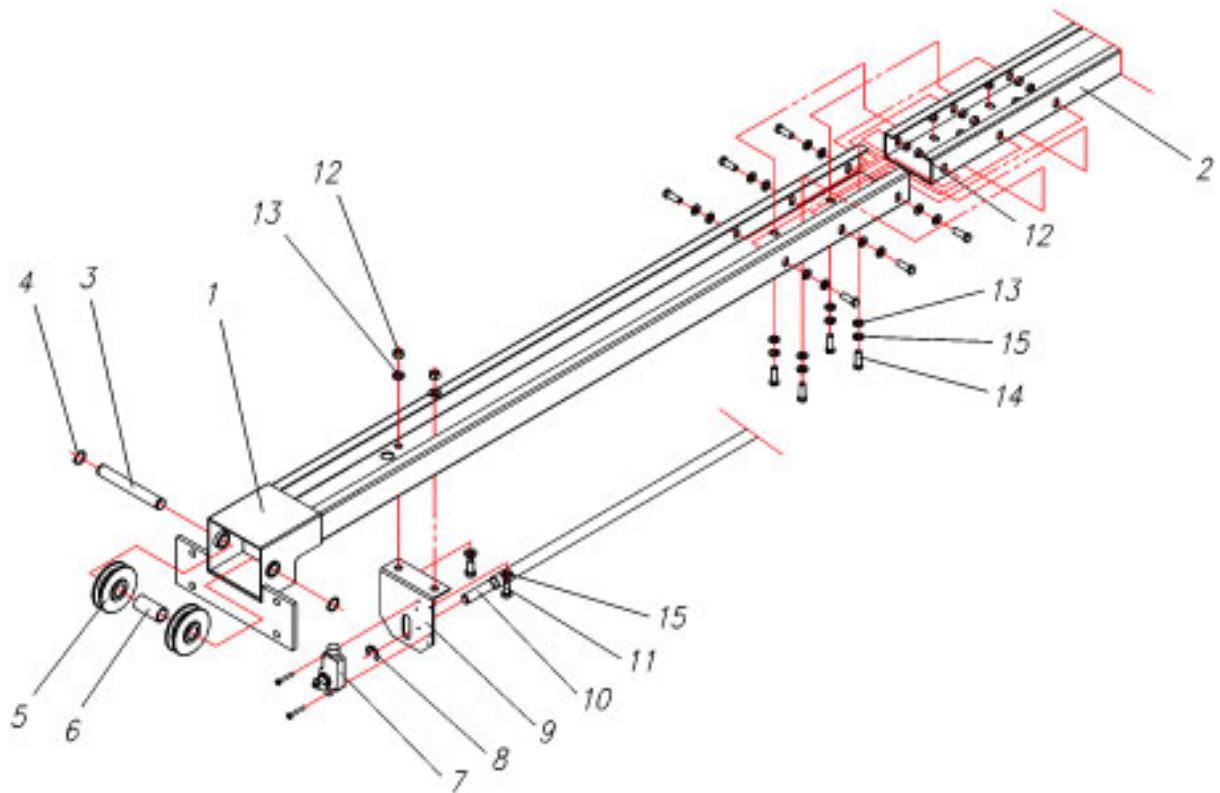
NO.	PART NAME	NO.	PART NAME	NO.	PART NAME
1	POST	13	LOCK SPACER	25	ANTI-VIBRATED RUBBER
2	EXTENDED POST	14	LOCK BLOCK	26	UP LIMIT SWITCH
3	LOCK COVER	15	SPRING PIN (Ø6x40L)	27	HEXA NUT (M10)
4	LOCK SHAFT	16	DOWN LIMIT SWITCH	28	FLAT WASHER (M10)
5	LOCK SPRING 1	17	LOCK WIRE ROLLER	29	HEXA BOLT (M10x25L)
6	LEVER HANDLE	18	LOCK WIRE ROLLER BRACKET	30	UPPER SUPPORT BEAM
7	LEVER SHAFT	19	CONTROL PANEL	31	E-RING (E-8)
8	LOCK WIRE FIXTURE	20	PILOT LAMP	32	E-RING (E-15)
9	LOCK SPRING 2	21	KEY SWITCH	33	TRUSS HEAD BOLT (M6x8L)
10	E-RING (E-19)	22	PUSH BUTTON SWITCH	34	WRENCH BOLT (M10x20L)
11	LEVER CONNECTOR	23	WIRE ROLLER		
12	WRENCH BOLT (M6x15L)	24	POWER UNIT		

2-2-3 Construction of Carry



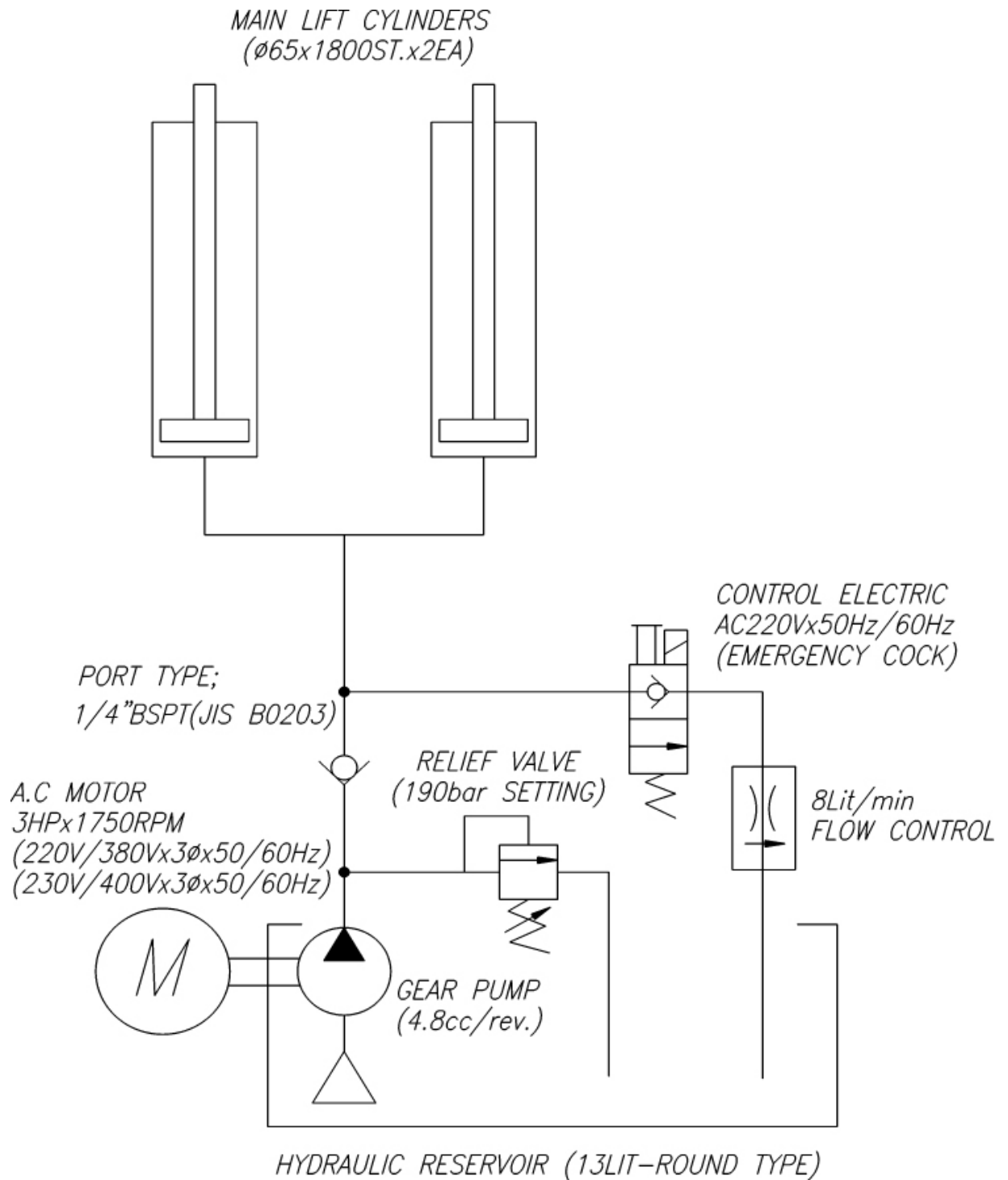
NO.	PART NAME	NO.	PART NAME	NO.	PART NAME
1	CARRY	15	LOCKING BOLT (M6x4L)	29	WRENCH BOLT (M10x15L)
2	CARRY GUIDE	16	DUST SEAL	30	FEET SAFETY GUIDER
3	ARM SHAFT	17	U-PACKING	31	GEAR SHAFT
4	DOOR PROTECT RUBBER	18	BACK UP RING	32	SPRING PIN (Ø6x20L)
5	FLAT WASHER (M8)	19	O-RING	33	WRENCH BOLT (M6x15L)
6	WRENCH BOLT (M8x30L)	20	D.U BEARING	34	ARM SUPPORT RUBBER
7	ROD BAR	21	WRENCH BOLT (M12x30L)	35	ARM SUPPOTER
8	WEAR RING	22	SPRING WASHER (M12)	36	SANP RING (CS25)
9	PISTON	23	FLAT WASHER (M12)	37	ARM 2nd SUPPORTER
10	LOCKING BOLT (M8x10L)	24	LARGE ARM LOCK GEAR	38	SANP RING (CS45)
11	HOSE ADAPTER	25	SPRING WASHER (M10)	39	ARM LOCK SPRING
12	CYLINDER	26	HEXA BOLT (M10x30L)	40	ARM LOCK SPACER
13	HEAD COVER	27	LONG SLIDE ARM	41	SMALL ARM LOCK GEAR
14	STEAL BALL	28	LONG ARM	42	SPRING PIN (Ø6x50L)

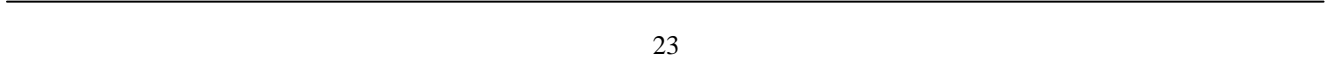
2-2-4 UPPER SUPPORT BEAM



NO	PART NAME	NO	PART NAME
1	UPPER SUPPORT BEAM (1)	9	LIMIT SWITCH FIXTURE
2	UPPER SUPPORT BEAM (2)	10	UPPER LIMIT TOUCH BAR
3	WIRE ROLLER SHAFT	11	HEXA BOLT (M10x20L)
4	SNAP RING (CS20)	12	HEXA NUT (M10)
5	WIRE PULLEY	13	FLAT WASHER (M10)
6	WIRE PULLEY SPACER	14	HEXA BOLT (M10x25L)
7	LIMIT SWITCH	15	SPRING WASHER (M10)
8	E-RING (E-15)		

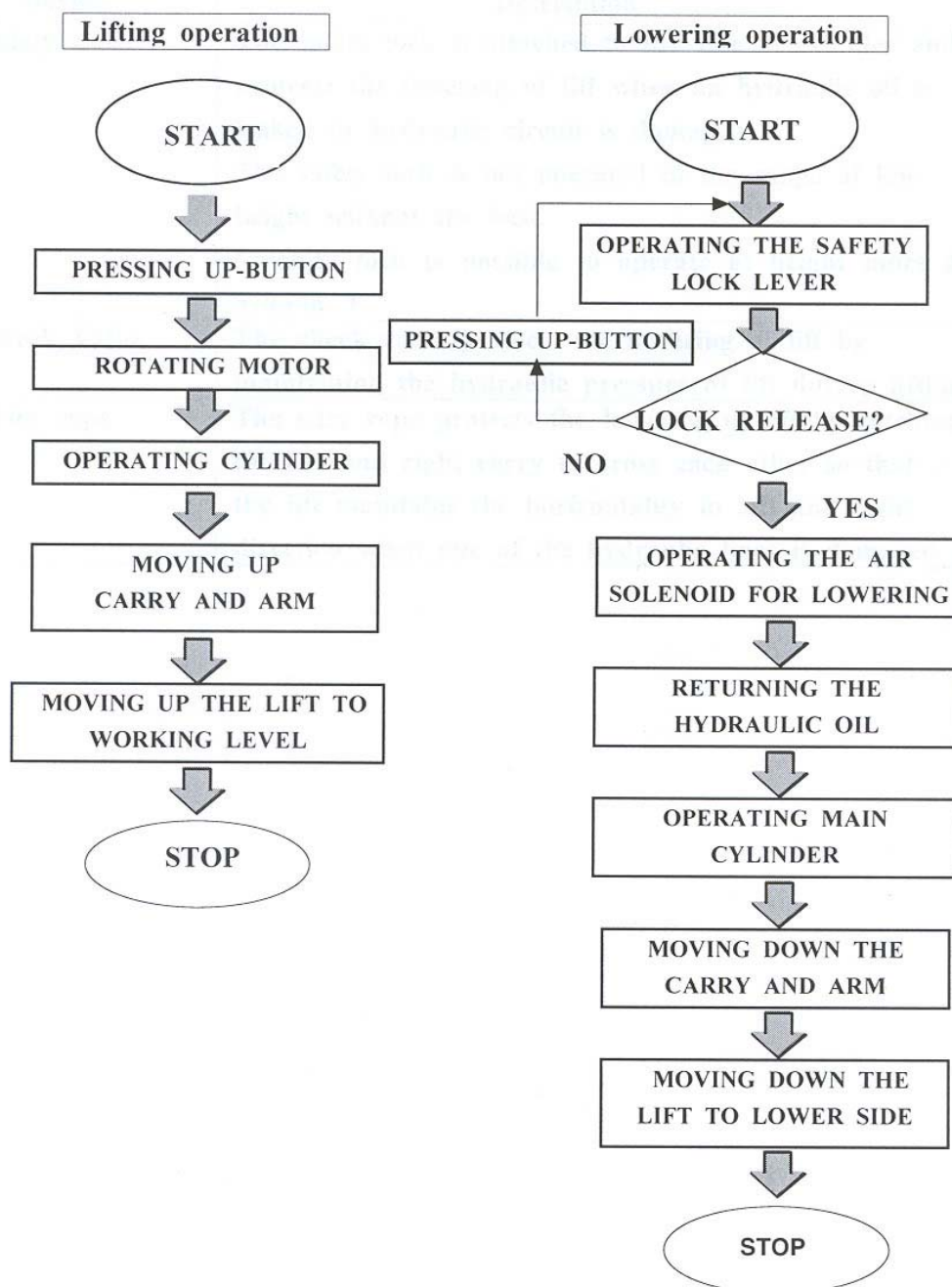
2-2-5 Hydraulic Circuit





2-3 Description of operation

The lifting, lowering or stopping of lift is carried out by pressing the switch on the control box. The following shows the flowchart for operation.



2-4 Safety device

The following safety device is installed at this lift.

Device	Description
Safety Lock	The safety lock is attached to the side of the cylinder and prevents the lowering of the lift in the event of a hydraulic circuit damage. The safety lock is not in operation in the lower part of the lift range beneath the lock position. (Safety lock is operational at heights above 570mm).
Check Valve	The check valve is a non-return valve to maintain the hydraulic pressure of the lift during lifting.
Wire rope	The wire rope connects the 2 lift carriages left and right to ensure synchronization at all times and to ensure that they remain at the same horizontal level.





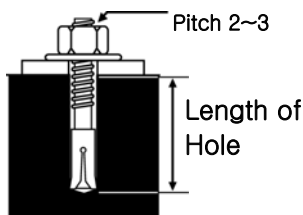
Transportation & Installation

Before Installation

- ① Only trained and authorized personnel of Heshbon or our distributors should install the lift, since it is precisely manufactured and contains some parts that normal engineers are not aware of.
- ② Please contact Heshbon head office or distributors for the removal of lifts.
- ③ Raise and lower the lift at the beginning of each shift, without a vehicle on, to verify the lift is leveled and operating properly.
If the lift malfunctions, call your local distributor immediately.

Installation place

- ① Lifts should only be installed on level concrete floors with a minimum thickness of 250 mm.
- ② The anchor bolt shall endure the tensile load of at least 8KN/m.
- ③ The load of the floor under the posts shall be at least 350KN/m.
- ④ In order to manage the unit, the lift must be installed indoor.
- ⑤ If it is inevitable to install the unit outside, the lift must be covered with tent against snow or rain. (The cable entrance of control panel should be water-proofed.).
- ⑥ The lift must be installed on the location with operation temperature range ($-10^{\circ}\text{C} \sim 50^{\circ}\text{C}$) and humidity (30%~70%).
- ⑦ Ensure that the tower is level. Refinish under column base with concrete or mortar. (This operation must be carried out by the user.)
- ⑧ Drill holes fairly deep for anchor bolts and tighten the bolts hard. (Refer to the third figure below)

		
<p>HESH-BON is not responsible for any problem occurs after the unit is removed and installed by any third party except the distributors or the manufacturer.</p>	<p>Do not install the lift at outdoor. (The lift can broke down.)</p>	<p>Length of Hole 120mm Anchor Bolt ▶ 80mm 150mm Anchor Bolt ▶ 110mm Drill holes fairly deep for anchor bolts and tighten the bolts hard.</p>

CHAPTER 3. TRANSPORTATION AND INSTALLATION

This chapter explains how to install your lift. Always read it ahead of time, even when the lift is installed by HESHBON Co., Ltd. or the place of purchase. Please refer to this chapter when you re-locate your lift.

3-1 Preparation for installation

< Before Installation >

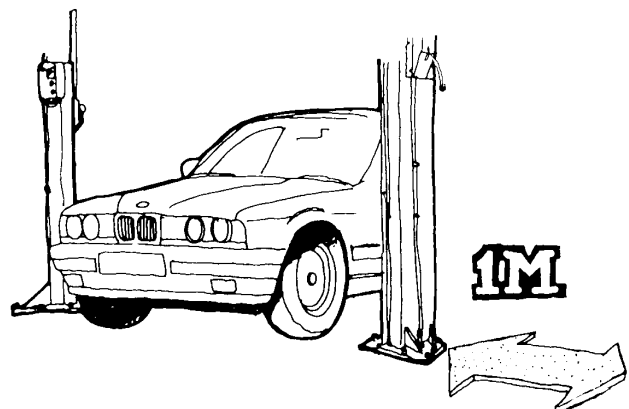
This is a lift that has been made precisely by the advanced technologies and unique features of HESHBON not known to other engineers. Therefore, for higher reliability, it must be installed by our engineer or local representative or under the witness of our staffs or local representative to ensure the safe use for a longer time. This is also true when you re-locate your lift.

< Installation Place >

- 1) The lift should be installed on a solid concrete and its strength should be at least $15\text{KN}/\text{m}^2$ or stronger. And, anchor bolts should withstand a strength of at least $8\text{KN}/\text{m}^2$.
(The load strength of surface under the post shall have more than $350\text{KN}/\text{m}^2$)
- 2) If spacers between post base plate and floor surface are necessary during installation to ensure that the base plate is horizontal and the post vertical, any gaps should be grouted with a mixture of cement and water. (This job must be carried out by the user.)

3-2 Precaution during installation

- 1) Install the lift about 1m or more away from the wall in order to ensure the sufficient work space

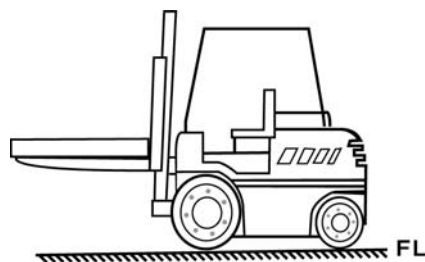


- 2) Do not change the specifications (lifting or lowering speed, and pressure) that have been pre-set at the factory.
- 3) Do not install the lift out of outdoors; doing so invalidates the warranty. Should you, however, choose to do so at your own risk, ensure that the electrical connection to the control panel is waterproof.

3-3 Transportation

The lift is packaged in a wooden box at the factory. After the lift is arrived at the installation site, transport the product to the installation location in accordance with following procedure.

- 1) machine should be transported to installation place by fork lift car.



- 2) Unloading and unpacking

Check the packages against the packing list and assembly drawing, carry them into the installation site in order. It is to be desired that packages should be unpacked at the final installation place wherever practicable. Reinforced materials are usually fitted with this machine so as to protect parts against transport damage. Make sure not to remove them until the installation work starts.

- 3) Checking accessories and spares.

Check that all accessories and spares are provided when unpacking the lift. Check all accessories and spares against the provided packing list. When you ordered optional equipment, check the equipment against the accessories and spares against packing list. Contact HESHBON CO., LTD. immediately if any parts are missing or damaged.

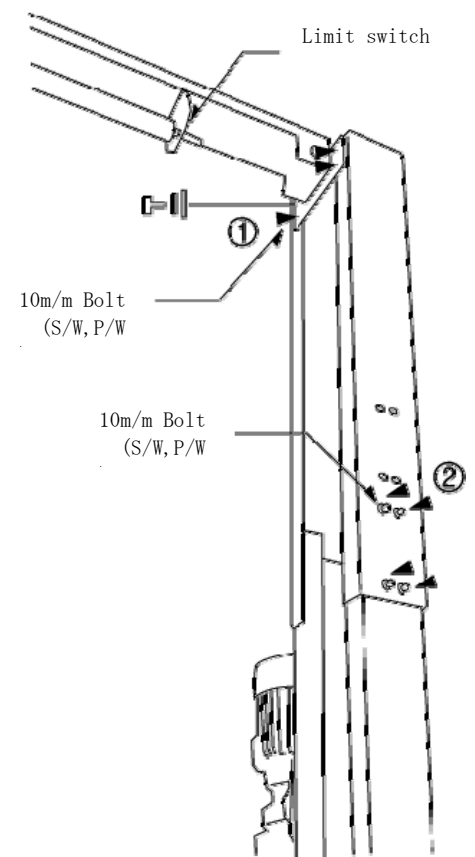
3-4 Installation

The installation should be carried out in accordance with the following procedures.

1. After checking the parts, arrange them to the installation site as follows:

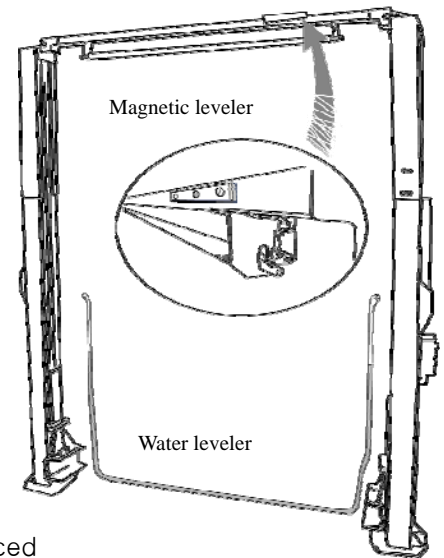
2. Erect the post.

3. Assemble the upper support beam using the truck or ladder etc.

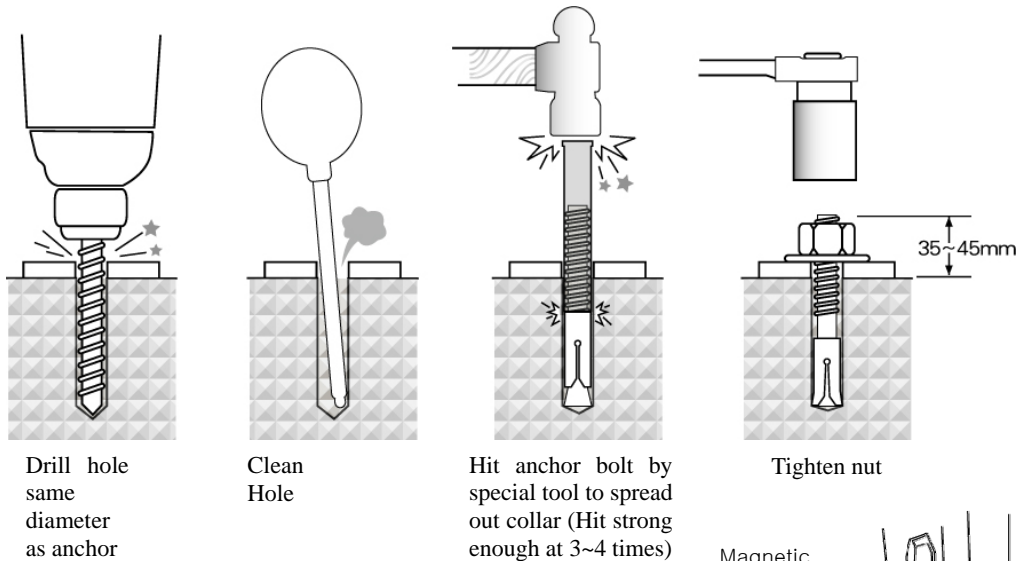


4. By the use of a water hose gauge or spirit level check that the right and left carriages are level. If necessary, adjust under the base plates with spacers to equalize the height.

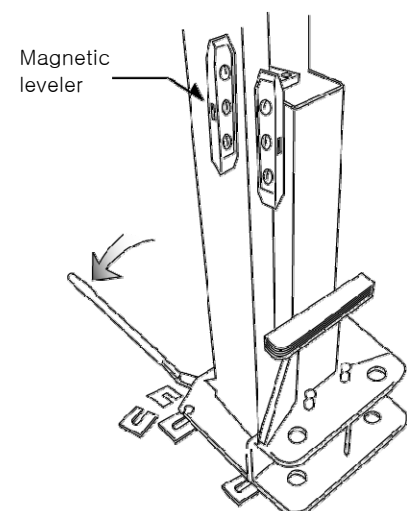
5. Check that both posts are perpendicular in both directions, using a magnetic spirit level.



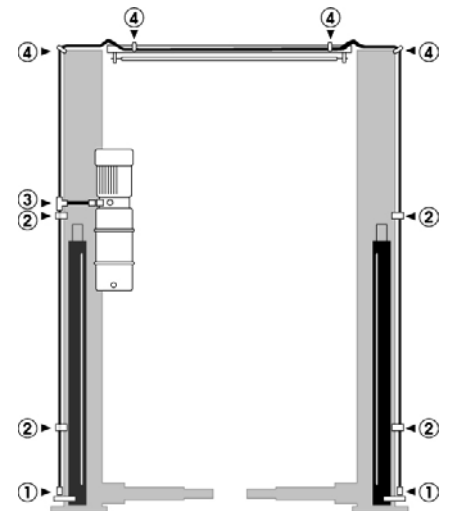
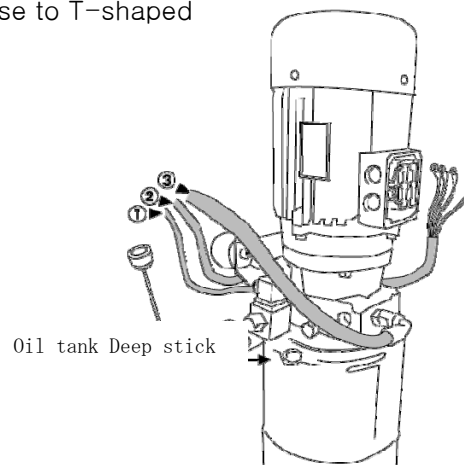
6. The lift shall be installed on hard and flat floor made with reinforced concrete with the thickness of 250mm.
The anchor bolt shall endure the tensile load of at least 8KN/m^2 .
The load of the floor under the posts shall be at least 350KN/m^2 .
7. Make enough space around the lift, and install the lift at a distance of at least 1 meter from the wall in consideration of operation work.



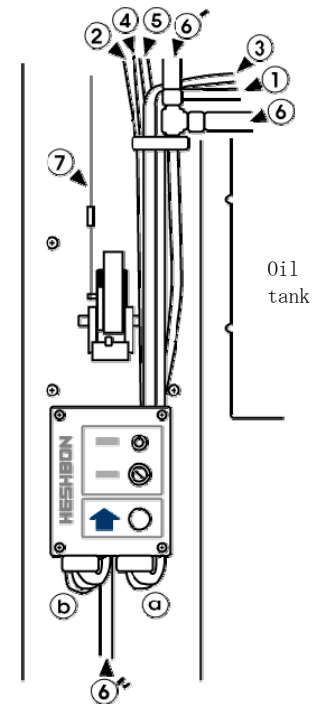
8. Using the base plate holes as templates drill the floor.
Using 10 anchor bolts, $5/8" \times 150$, fix each base plate firmly to the floor



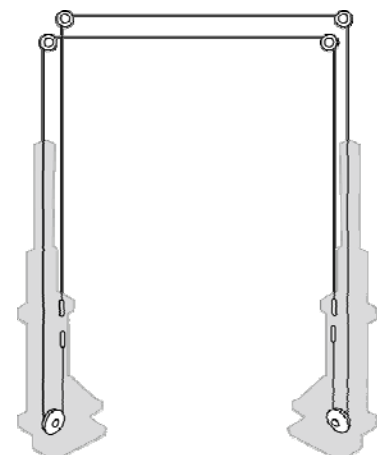
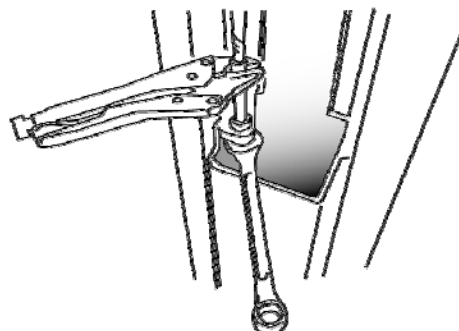
9. Assemble the hydraulic hose to T-shaped union on the drive post.



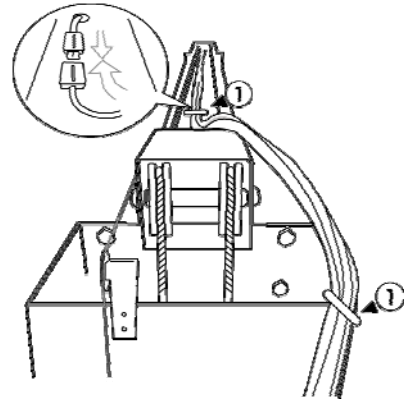
10. Install the hydraulic hose from the drive post along the upper support beam. The hose should be run along the upper edge of the post to avoid direct contact with the top of the carriage. Bind the hose and the cable for the limit switch together using cable ties as shown.



11. Pass the wire rope from the left carriage over the wire roller, along the cross beam over the right roller and down to the right carriage. Repeat this with the wire rope from the right carriage over the cross beam to the left carriage. Insert the bolt for fixing the wire rope in its attachment at the top of the carriage and tighten the nut tightly.



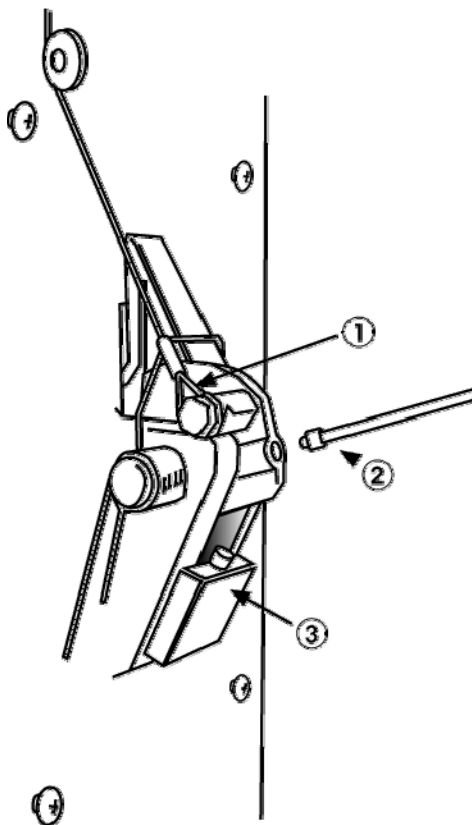
12. Insert the connector for the limit switch.



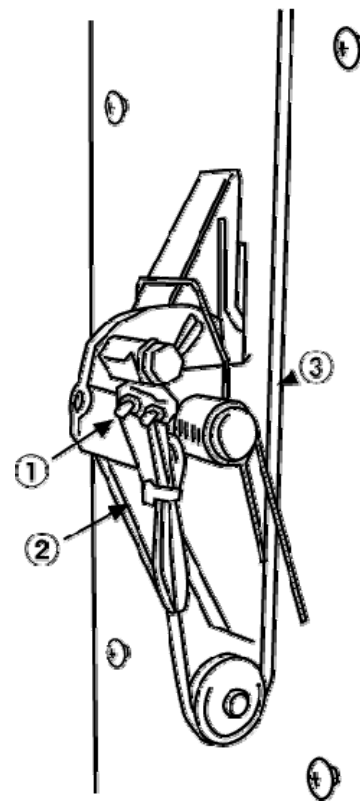
13. Bind the hydraulic hose at beam fixing hole located at the opposite side with a cable tie.

14. Install the wire for the safety lock on the relevant rollers at the top of both posts.

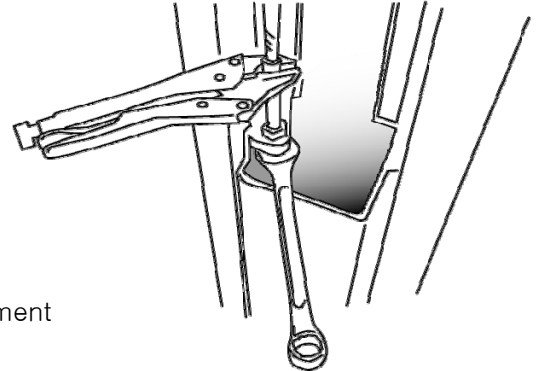
Master



Slave





15. After inserting the wire rope into the carriage, tighten.

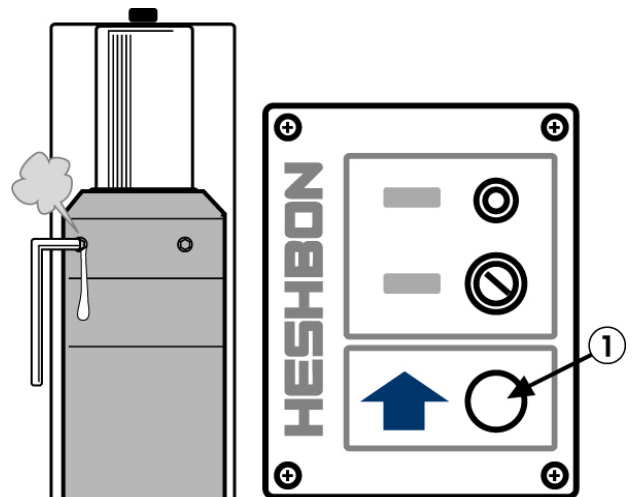


16. After inserting the wire for the safety lock into the attachment on the lock handle, tighten.

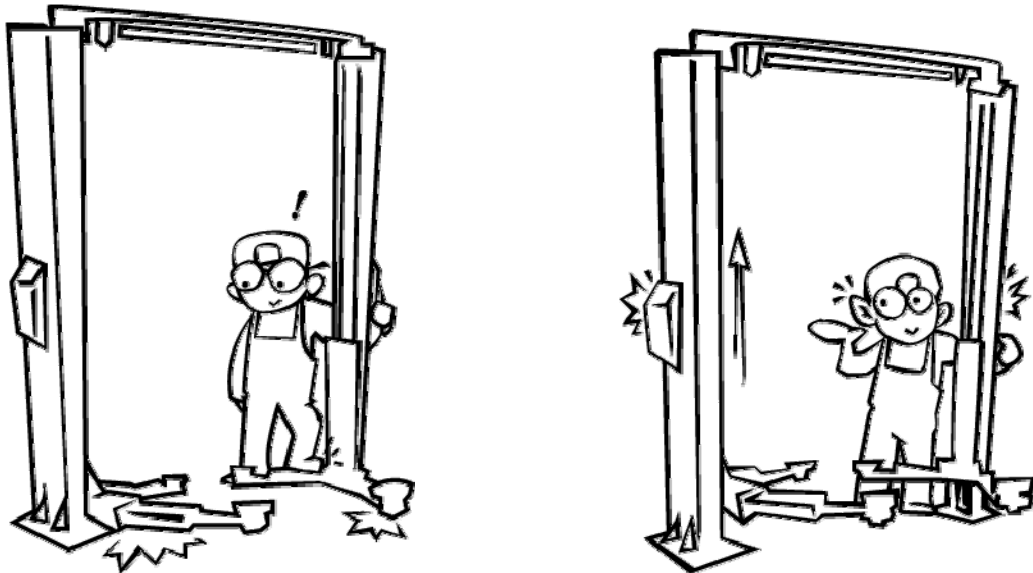
17. Connect the input power line.

 Warning	<p>Turn off the main switch on the power supply distribution panel, place the warning sign, and then, connect the power cable.</p>
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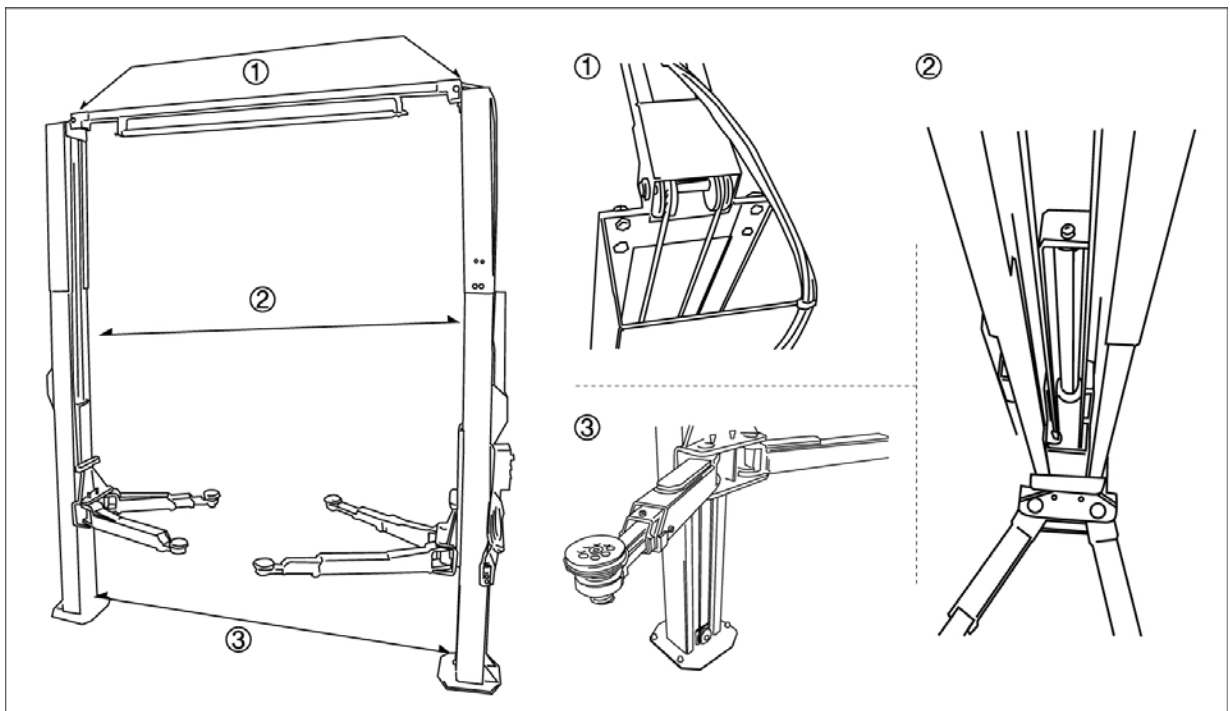
	<p>How to eliminate air in side Of cylinder</p>
<p>Loosen a bit 6mm bolts with tool for 3mm wrench around 1~2 rotations to not missing. (caution:there is a bead) &press ' ascent' button until hydraulic fluid comes out a bit. After make sure a tighten 6mm bolts!</p>	



18. Start the lift. Listen for the engagement of the safety lock. When this occurs, stop the lift, adjust the position of the threaded sleeve crimped to the wire rope end. Fit and tightly fasten the lock nuts.




19. Moving up and down the lift, supply the grease at the slide side of post inside.



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20. Check if the hydraulic oil of hydraulic unit tank is properly maintained.
 21. Check if the motor is rotated to the counter-clockwise when pressing the UP button.
When the motor is rotated to the clockwise, change the phase connection of motor.
 22. After finishing all of the above confirmation, start no-load test run. Press the UP and DOWN switch 2 or 3 times at the intervals of about 2 seconds. Should something wrong be found as the result of the test run, refer to troubleshooting.
 23. If the above no-load test run passes satisfactorily, you can make test run under load.
It is convenient to record the test result for future maintenance.

CHAPTER 4. OPERATION

4-1 Warning for use

 CAUTION	Only qualified personnel should be allowed to work on this car lift.
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4-2 Checking point before operation

- Check the below items every day before operation
During checking, do not load a car on the lift.
- When you find the fault of list during using or checking the lift,
stop the operation of lift, and request the maintenance to the
sales agency. Do not use the lift until the lift is repaired.

- (1) Check that the lift operates normally during lifting and lowering. Check that there is no abnormal noise level.
- (2) Check that lift operates correctly when the buttons are pressed and check that the lift stops immediately when the buttons are released.
- (3) Check for oil leakage from the hydraulic lines, the hydraulic seals, the hydraulic cylinder, and the hydraulic unit and that there is no abnormal noise from pump or cylinder.
- (4) Check that the safety lock operates normally during lifting.
- (5) Check that all nut, bolts and screws are correctly tightened.
- (6) Check visually the lift structure, arms, pick-up pads etc. for damage.
- (7) Check that all electrical functions operate normally.
- (8) Check that the lift and working area are clean and tidy.

4-3 Preparation before operation

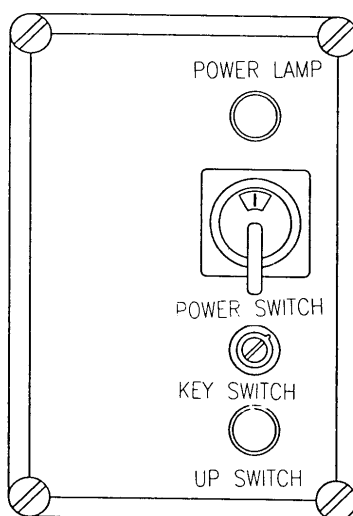
Check the following items before loading a car on to the lift;

- (1) Ensure that the lift is at the bottom position.
- (2) Prohibit the access of unauthorized persons to the lift area.
- (3) If the lift has been out of use for a long time check the oil level in the pump unit and top up if necessary. Operate the lift up and down 2-3 times without load.
- (4) When driving the car on to the lift ensure that the vehicle is equally distant from each post.
- (5) Do not change the pre-set safety valve pressure as this is adjusted by the manufacturer.
- (6) If the oil level is too low the lift cannot operate effectively.
Do not operate the lift under these conditions.
- (7) Before lowering the car lift, check that the lift area is clear and there are no persons or obstructions to prevent lowering.
- (8) Passenger transport on the lift or in/on the vehicle is forbidden.
- (9) During the winter season, operate the lift 3 to 5 times without load in $5^{\circ}\text{C} \sim -20^{\circ}\text{C}$. Do not use the lift in the temperate below -20°C .

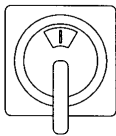



4-4 Description of control panel

4-4-1 Configuration of panel

The configuration of control panel is as follows.



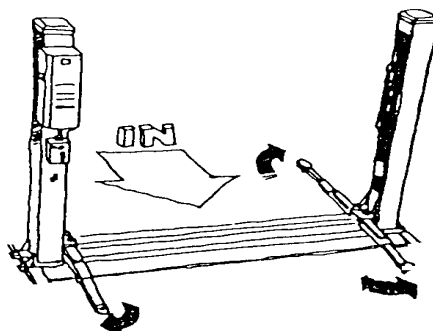
4-4-2 Description of control panel

Switches and Lamp	Function description
	The CAM switch is the mains switch for the supply of power to the lift. Before the lift is operated this switch must be turned ON. In the event of emergency turn OFF the power to isolate the lift.
	KEY switch for supplying the control power. When Key switch is positioned to ON, UP button and manual lever for lowering the lift can be operated.
	Push button switch for moving up the lift. When the key switch is positioned to ON and the button is pressed, the lift moves up.
	When the CAM switch is turned ON the power lamp will light to indicate that power is connected.

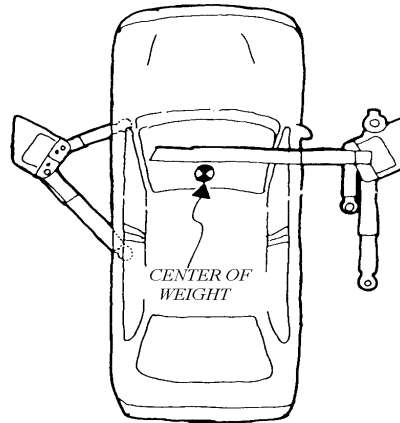
4-5 Operation

The procedure for operating the lift is as follows:

1. Lower the carriage to the ground by moving down the XGFDS manual lever for lowering the lift.
2. Spread the arms to their maximum positions as shown so that the car can be driven on to the lift.




3. Drive the car on to the lift and ensure that it is equally distant from each post and that the center of gravity is midway between the 2 posts as shown below.



4. After leaving the car, position the 4 arms so that the pick-up pads are directly below the vehicle manufacturer's recommended pick-up points. Press the up button and raise the lift to the required working height.
5. For your safety, do not release the locker and fix the carry to the locker position by moving down the manual DOWN lever.
6. After checking that the lift is in order, repair the car.
7. After finishing the repair raise the lift slightly to disengage the safety lock. Then operate the down lever to lower the lift to ground level.
8. When the lift reaches its lowest position swing the arms out from under the car to their maximum straight-ahead position and drive the car off the lift to a safe area.

4-6 How to lower the lift manually in the event of an emergency

4-6-1 Situations that could require manual descent operation:

 CAUTION	If your staff are unable to carry out this operation, contact the manufacturer or distributor for assistance.
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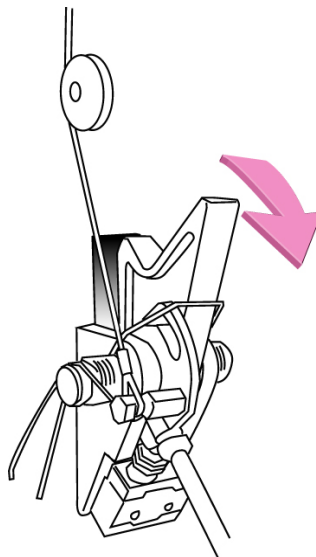
- 1) General power failure
- 2) Damage to hydraulic circuits
- 3) Failure of electrical components fitted to the lift

4-6-2 Preparation prior to the manual descent operation


- 1) Remove all obstructions under the lift.
- 2) Turn off the power switch.
- 3) Check if there are no persons under the lift.

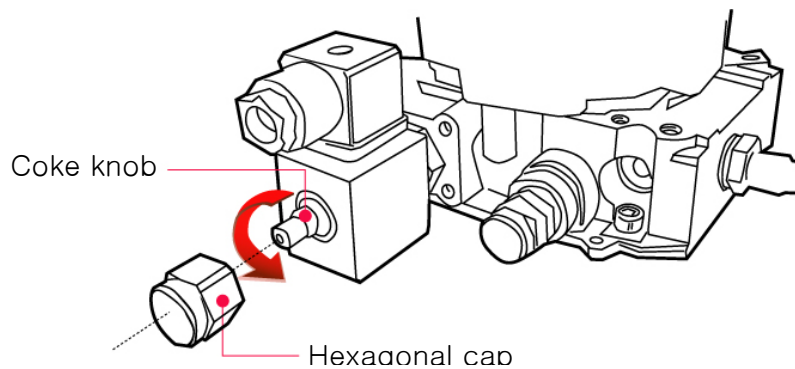
4-6-3 Operation procedures

- 1) Operate the manual down lever to disengage the safety lock. If the lock does not disengage it is under load in which case the lift must be raised more than 30mm by the use of a hydraulic trolley jack and extension under the base of the lift carriage to raise the lock above the ratchet position and thereby allow the manual lever to disengage the lock. When it is disengaged, lower the trolley jack and remove it to avoid obstruction under the lift.



- 2) Open the hydraulic cock provided anti-clockwise to lower the lift during an emergency. The cock is situated on the side of the hydraulic unit, see sketch above. This allows the oil to return to the tend and the car to be lowered by gravity.
- 3) Retighten the hydraulic cock when the lift is completely at floor level.

 CAUTION	Open the cock slowly to ensure that descent is slow and gentle.
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CHAPTER 5. TROUBLESHOOTING

5-1 Inspection and repair

Symptoms		Check point	Corrective Action to be taken
Wire Rope and Locking device	Carriages and arms do not synchronize during lifting.	1. Check if wire rope is partially loosened. 2. Check if clip of wire rope is loosened.	1. Readjust the fixing bolts of the wire rope to ensure that the carriages are leveled. 2. Tighten clips after adjustment.
	Lift does not lower when down lever is operated or if down button is operated independently	1. Check if the safety lock is engaged in the carriage and under load. 2. Check the electrical power is available at the down button and solenoid valve	1. Raise the lift, disengage the safety lock with the down lever, and lower the lift. 2. Repair the electrical connections if possible, alternatively lower the lift in accordance with the manual descent procedure.
	Carriages and arms do not synchronize during lowering.	1. Check if the oil at load head cover is sufficient. 2. Check if the air is mixed at the hydraulic oil.	1. Top up the oil tank to the correct level. 2. Bleed the air from the hydraulic unit.
	Safety lock does not Operate during lifting or lowering.	1. Check the connection of wire and connector. 2. Check the operation of manual lever.	1. Reconnect if necessary. 2. Release manual lever.
Hydraulic system and its components	Abnormal noise from the motor.	1. Rated capacity is exceeded. 2. Relief pressure is low. 3. Shortage of hydraulic oil.	1. Operate within rated capacity. 2. Adjust to 4 ton. 3. Bleed the hydraulic unit after topping up the oil level.
	Hydraulic oil leakage	1. Defective hydraulic hoses 2. Leakage from hydraulic unions 3. Lead age from cylinder high pressure seal	1. Replace the hydraulic hose. 2. Tighten the union connection 3. Request A/S center.
	Oil connections	Hydraulic fluid pollution by water or foreign debris.	1. Exchange oil (annually) (Hydraulic oil : 32CST/11liter) First oil change 2 months after installation, Therefore regular oil changes at annual intervals.
	The lift does not rise.	1. Check for oil leaks or damage to the hydraulic unit. 2. Check that the correct operating procedure is being used. 3. Check that the load is not above the rated capacity. 4. Check that the pressure valve is correctly adjusted	1. Request A/S center. 2. Bleed the hydraulic system. 3. Limit the load to the rated capacity or less. 4. Adjust to 4ton.
	The lift does not lower.	1. Check if the safety lock is engaged and under load. 2. Check if the electric circuit is damaged.	1. Re-lower after lifting slightly to allow the safety lock to disengage. 2. Refer to electric check points.
Electric components	Motor does not operate and/or abnormal noise from the motor.	1. Check if the motor is damaged. 2. Check for blown fuses. 3. Check if the push button is damaged. 4. Check if the upper limit is operative. 5. Check that the wire gauge on the electrical supply is correct. 6. Check that the input voltage is no less than minimum 200V.	1. Replace the motor (Request A/S center). 2. Replace the fuse after solving trouble. 3. Replace the push button (Request A/S center). 4. Re-operate after lowering the lift. 5. Replace to the cable with over 3.5mm ² diameter. 6. Increase the input power capacity.
	NFB or circuit breaker (30A) is operated.	1. Check the Contact of magnetic contactor. 2. Check the capacity of circuit breaker.	1. Replacement (Request A/S center). 2. Replacement (Request A/S center). 3. Replacement after checking.
	Motor operates but lift does not rise.	1. Check that the phases are correctly connected and that the motor rotates anti-clockwise.	1. Re-operate after changing the phase connection. 2. Refer to check points for hydraulic cylinder

CHAPTER 6. MAINTENANCE

6-1 General precautions for maintenance

- 1) Maintenance should be performed by more than two persons.
- 2) Maintenance should first be carried out after the work area has been clearly marked "no entry".
- 3) Do not disassemble any system before you are familiar with the dismantling procedure and reassembly.
- 4) Record the place or parts where maintenance is needed.
- 5) Keep the disassembled parts safely.
- 6) Fasten bolts and nuts correctly in their respective position during attaching the parts.
- 7) Before opening the control box check always that the CAM switch is in the OFF position.
- 8) During replacement of electrical component, fasten the bolts of part tightly after checking the wire no. (or color) and parts no.
- 9) When replacing the motor, use a stabile ladder or work platform.
- 10) After replacing the motor, carry out the insulation resistance test to the new motor.
- 11) When replacing the oil filter, drain the oil tank completely.
- 12) Clean the control box inside with compressed air once a month (remember that the CAM switch is to be in the OFF position).
- 13) Check once a week whether the bolts are loosen, and if the bolts are loosen, fasten the bolts tightly.
- 14) Before maintenance of the control box, first obtain the permission of the person(s) in authority.

6-2 Check List and periodic maintenance

Inspection period	Points to be checked	Items to be checked	Inspection method	Action to be taken	Replacement period
1 week	Rubber Support for adjustment	Abrasion and deformation	Visual	Replacement if necessary	1 year
	Magnetic	Damage of contact points	Measurement	Replacement	2 year
3 months	Wire Rope	Abrasion, deformation and Breaking of wire	Visual	Replacement	2 year
	Leaf Chain	Abrasion and deformation	Visual	Replacement	4 year
	Leaf Chain Wheel and DU bearing	Abrasion	Visual	Replacement	4 year
	Axle for Arm Lock	Operation of lock	Visual	Replacement	4 year
	Housing for Arm Lock	Operation of lock	Visual	Replacement	4 year
	Dust-proof rubber	Abrasion and deformation	Visual	Replacement	2 year
6 months	Carriage Guide	Abrasion	Visual	Replacement	3 year
	Electrical components	Damage to components	Visual / Measurement	Replacement	3 year
	Hydraulic Oil Level	Shortage of oil	Visual	Replacement	1 year
1 year	Piston Seal Kit	Oil leak or deformation	Visual	Replacement	3 year
	Load Seal Kit	Oil leak or deformation	Visual	Replacement	3 year

6-3 Lubricant

Moving parts should be lubricated with the application of oil or grease in the situations where a grease nipple for this purpose is fitted. This form of maintenance reduces the frictional losses and increases the power available and therefore the efficiency of the machine. The followings are the type of lubricant recommended:

Oil supplying plan

Location to be applied	Kinds of oil or grease	Period of exchange
MC rail	SAE 20 or SAE 30	Supply every 6 months

2. SPARE PARTS LIST

NO	DWG NO	DESCRIPTION	STANDARD	Q' TY	MANUFACTURE	REMARKS
1		Magnetic Contactor	LP1K0910-8D	1	TELEMECANIQUE	
2		Cam Switch	V01 690V 20A	1	SCHNIDER	
3		Timer	MA4-C DC 24V 50/60Hz	1	HAN YOUNG	HL-31X HL-3000N
4		Air Solenoid V/V	SV-121 DC 24V	1	TANHAY PNEUMATICS CORP	
5		Bridge Diode	KBPC 10A 50V	1		
6		Limit Switch	M-904	1	KOREA AUTO CONTROL or HAN YOUNG	
7		Micro Switch	ZCN P-501A 10A 250V	1	HAN YOUNG	HL-2500E HL-27M
8		Push Button Switch	KD5BRRER10S	2	KOREA AUTO CONTROL	
9		Pilot Lamp	DC24	1	HAN YOUNG	
10		Fuse	250V 1A 110V 3A	2 1	LEGRAND	
11		Over Load Relay	LR2K0316	1	TELEMECANIQUE	
12		Key Switch		1	HAN YOUNG	



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