Bishamon®

Operation Manual

4 Posts Lift

Model FP3500 & FP3500X

Model FP4000 & FP4000X

Dear Users,

Thank you for purchasing our Bishamon 4 posts lift. Before using the lift, read through and be familiar with this manual. Fully understand the precautions, directions, and other information contained in this manual to ensure correct use. Failure to do so may result not only in insufficient performance of the lift but also in falling of the vehicle, serious injury and death, and damage to properties.

Keep this manual in a safe place for future reference. In case of loss, immediately request a new copy.

If the product is supplied with a wrong manual, contact your lift supplier for a correct copy.

About Maintenance Inspection :

Perform periodic maintenance inspection of the lift to ensure safe work with the lift and keep the lift fully functional.

Sugiyasu Corporation

Sept. 2019

Preface

Thank you for purchasing our Bishamon 4 posts lift. Before using the lift, read through and be familiar with this manual. Fully understand the precautions, directions, and other information contained in this manual to ensure correct use. Failure to do so may result not only in insufficient performance of the lift but also in falling of the vehicle, serious injury and death, and damage to properties.

The contents of the manual may differ when the purchased lift is modified. For any question about the product or this manual, feel free to contact your lift supplier.

Keep this manual in a safe place for future reference. In case of loss, contact your lift supplier and request for a new copy immediately.

Explanation of Terms and Symbols

In this manual, 「Danger」,「Warning」, 「Caution」 are defined and specified as below. Notice of Warnings are very important for safe operations. As these are very Important to protect operators from accidents resulting in personal injury and death, and damage to property, so make sure to read thoroughly and understand fully before operation.

⚠ **Danger** **Incorrect operation may imminently result in serious injury or death of the operator.**

⚠ **Warning** **Incorrect operation may result in serious injury or death of the operator.**

⚠ **Caution** **Incorrect operation may result in injury and damage to the property. The occurence of the danger is lower than "Warning" articles.**

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1. Intended Use

This product is a lift to be used for oil and parts replacement, general maintenance, motor vehicles inspection and maintenance etc. of mini-to ordinary sized passenger cars, small sized trucks, and the like.

2. Danger, Warning, Caution

Caution for Safety

As there are very important to protect operators from accidents which may result in injury and death, and damage to cars and properties, make sure to understand fully before operating lift.

2.1 General Safety Rules to be observed

1. Read and be familiar with the operation manual before operating.
2. Only trained operators are allowed to use the lifts.
3. Make sure to perform daily and periodic inspections in accordance with the instructions of Operation Manual.
4. If any abnormal conditions, such as noise, occur during operation, prohibit the use of the lift and contact lift supplier for an inspection.
5. This lift is designed for motor vehicle servicing. DO NOT use for any other purposes.
6. Do not remove any labels and do not modify the lift anyway.

2.2 Caution in Operation

The meaning of the mark (symbol) used behind pictures are as below.

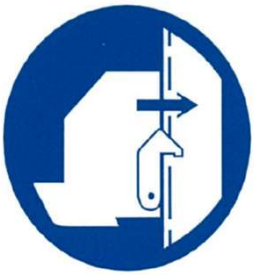
The specified act that should not be conducted.

The specified act that should be conducted.

Warnings and cautions that are possible to occur due to incorrect operation.

Danger	
	When lift is operating, DO NOT get under the vehicle. DO NOT allow others to get under vehicle Or it may result in death or serious injury.
	If the Vehicle STARTS TO FALL FROM LIFT, Move away quickly DO NOT attempt to support vehicle. Or it may result in death or serious injury.

⚠Warning

		
DO NOT use lift unless you have been trained in it's operation. *Incorrect operation may result in an accident.	**DO NOT** lower the lift while any stand or support is in position under vehicle. **DO NOT** use "Down" motion of lift to push parts into position.	**DO NOT** swing, shake or push the raised vehicle.
		
DO NOT use adaptors other than those supplied by the manufacturer for this model lift.	**DO NOT** lift vehicles by one end only.	**DO NOT** modify this lift under any circumstances.
		
KEEP FEET CLEAR When lowering lift, make sure to keep feet clear of hoist and vehicle.	Apply parking brake and position wheel stop when operating lift.	**READ** and be familiar with the operating manual for this lift.
		
Make sure that Safety Hook is engaged when vehicle is raised.	Vehicle must not be angled to hoist.	**ELECTRICAL HAZARD!** **DO NOT** open control box or remove cover plates without isolating electrical supply.

⚠ Caution

Make sure to ground the unit (Take earth).

Make sure to install the power supply with an earth leakage breaker (Magnet Contactor)

⚠ Caution

Carefully read and fully understand this manual before use.

<Pre-Operation Check>

1. This lift is designed for motor vehicle servicing. **DO NOT** Use for other purpose.
2. Coating, consumable parts, and the like are outside the scope of the warranty. When corrosion or wearing occurs, apply repair coating or replace the parts.
3. **DO NOT** attempt to lift heavier loads than its rated capacity.(3500 or 4000 kgs.)
4. If any of safety device does not operate properly, **DO NOT** use lift.
5. Use only genuine supports to lift vehicle (Side Sill Block for FP3500X and 4000X).
6. Position vehicle for the correct lifting point of Upper Scissor lift (FP3500X and FP4000X). If vehicle lifting points can not be positively identified, **DO NOT** lift the vehicle. For the correct lifting points, refer to maintenance manual of the vehicle.

<Lift-Up/Down Operation>

1. When operating the lift, pay constant attention to the area around the vehicle and the lift. **NEVER** look aside during operation.
2. **DO NOT** lift vehicles with passengers or baggage inside.
3. When the Upper Scissors lift come into contact with the vehicle during lift-up, make a halt and ensure that Top Plates (Free Wheel Stand) of Upper Scissor Lift are in proper contact.
4. **DO NOT** approach or touch the vehicle or the moving parts of the lift during lifting.
5. **DO NOT** operate the lift with anything such as tools or parts left in the posts or under the lift. Failure to comply may result in failure of the lift or falling of the vehicle.
6. Before lowering the lift, ensure that no person or objects is around vehicle or lift.
7. Only after the Upper Scissor Lift and lower lift are completely down, drive the vehicle onto or out from the lift.
8. DO NOT use the lift if the hydraulic pressure is released from the cylinder after lowering the lift with the Lowering Stop Hook engaged.

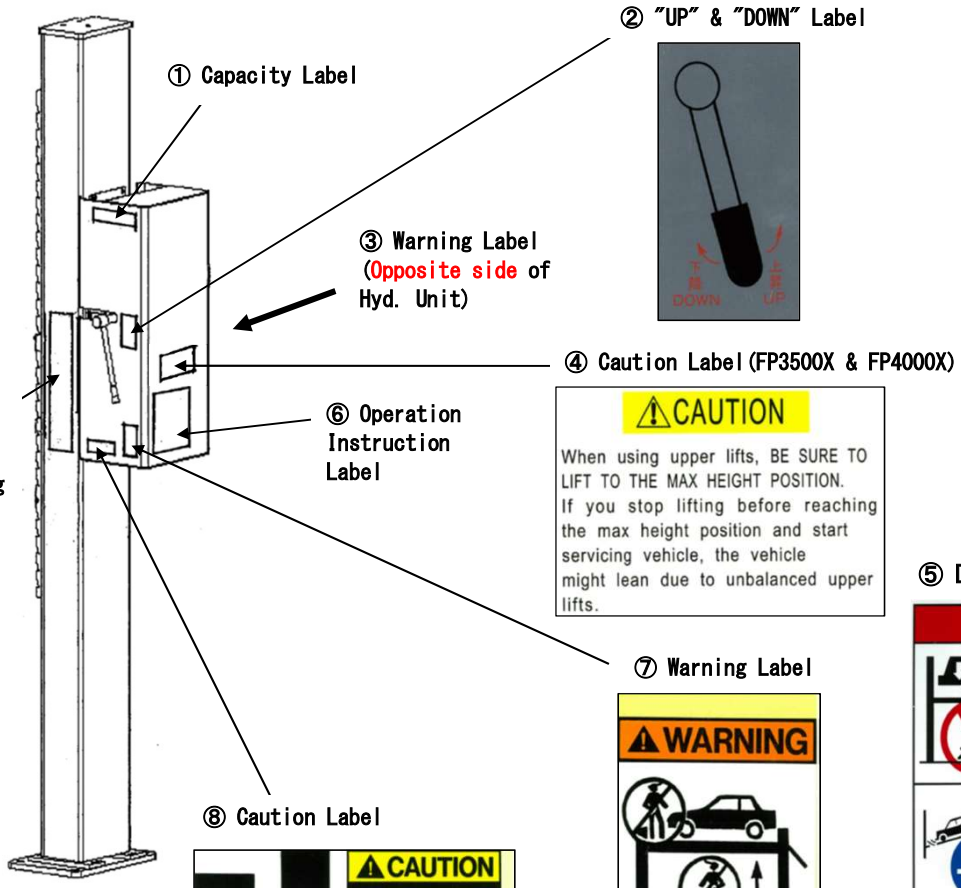
<During Work>

1. Make sure Safety Hooks are engaged before getting under vehicle.
2. When working on a vehicle in raised position, make sure the lift is above the position that Safety Hook is engaged at least with 1st ratchet (Cut out) from the bottom. The lift may drift down (Natural Lowering), causing damage to the vehicle or equipment, tools, or the like nearby.
3. Keep anyone but the operator out from around the lift.
4. **DO NOT** leave a vehicle on the lift for long time.
5. When not in use, the lift must be lowered to the lowest position. Even when not in use, raise and lower the lift all the way through the range at least once a day to maximize it's life.

<Others>

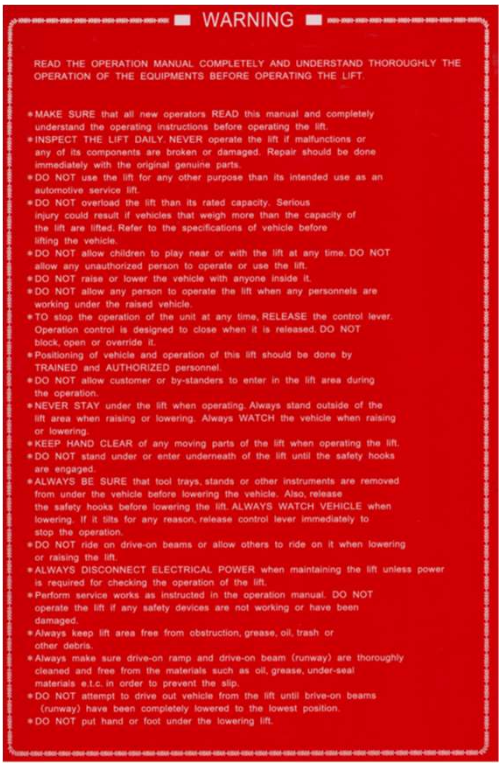
1. **DO NOT** modify the lift without permission from the manufacturer. Failure to comply may result in insufficient performance and lead to serious accident.
2. When an abnormality is detected during use or inspection, stop the use of the lift immediately and repair. **DO NOT** use lift until the repair is completed.

3. Location of Warning, Caution etc. Labels

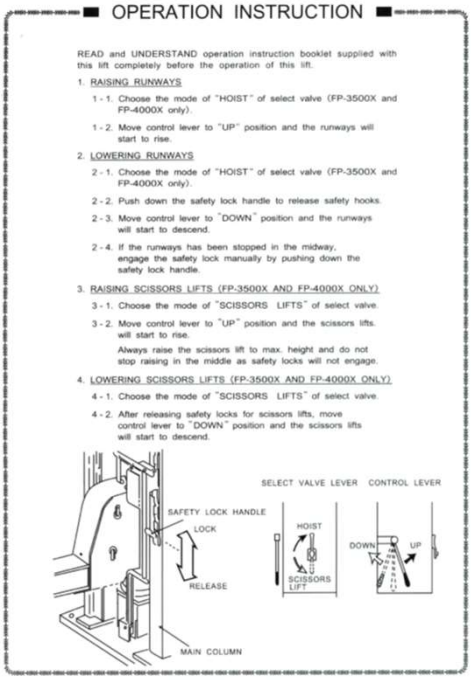


⑤ Danger & Warning Label

③ Warning Label (Opposite side of Hyd. Unit)



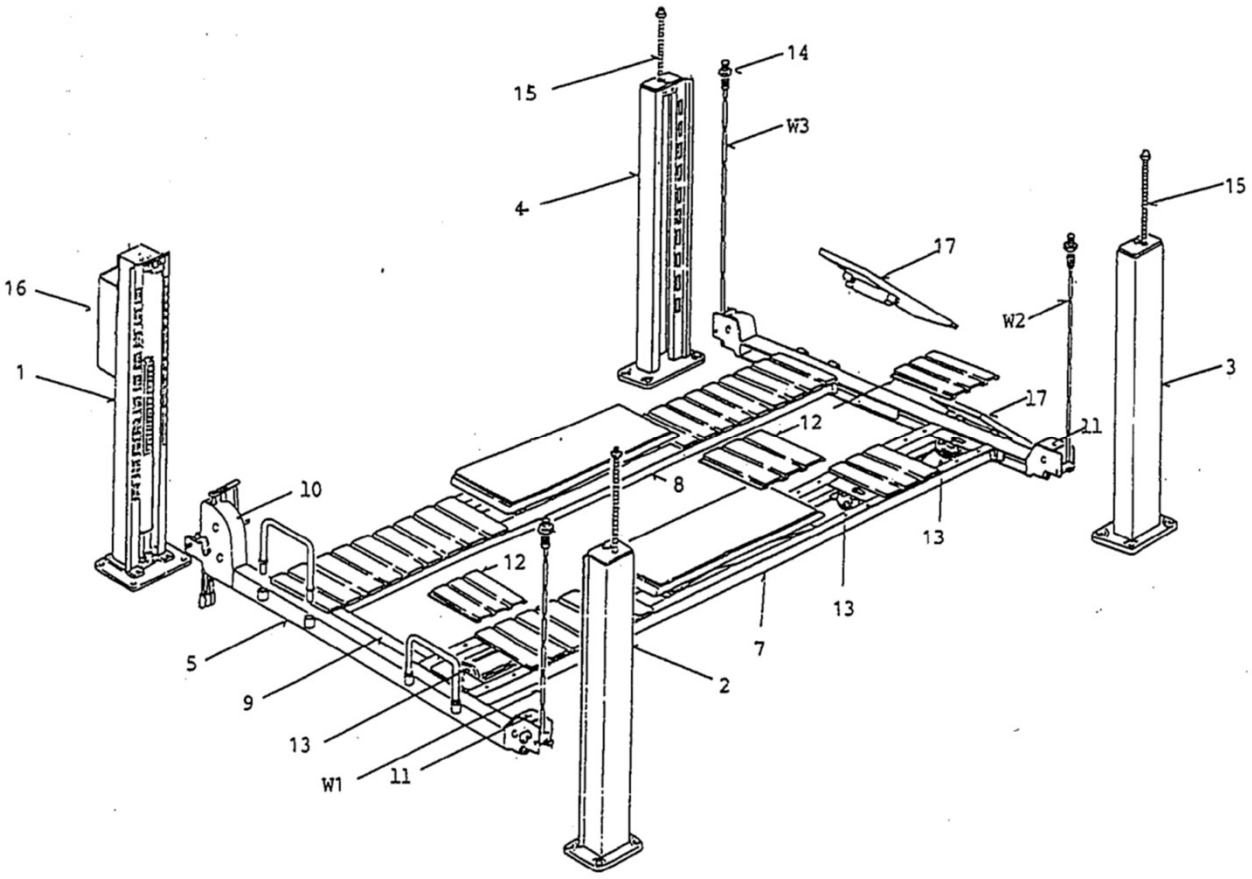
⑥ Operation Instruction Label



Caution

If any label is worn/damaged or peeled during use, immediately purchase and put a new one correctly.

4. Name and Functions of the components



No. 1	Main Post	No. 10	Main Cover (D. Beam Cover)
No. 2	Sub Post A	No. 11	Sub Cover (End Beam Cover)
No. 3	Sub Post B	No. 12	Beam Plate
No. 4	Sub Post C	No. 13	Pulley
No. 5	End Beam A	No. 14	Wire(Cable) End (Adjust) Nut
No. 6	End Beam B	No. 15	Safety Bar
No. 7	Drive-On Beam A	No. 16	Hydraulic Unit
No. 8	Drive-On Beam B	No. 17	Drive-On Ramp
No. 9	Pipe Cover(X Model Only)		

■ Select Valve Lever and Control Lever

Select Valve Lever

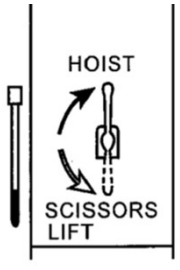
Model FP3500X and FP4000X has this Select Valve Lever. For lifting and lowering the **Drive-On Beams**, push the lever upto **"HOIST"** position. For lifting and lowering the **Upper Scissor lift**, push the lever down to **"SCISSORS"** position.

Control Lever

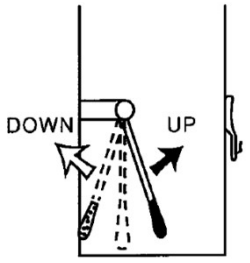
This lever controls the lifting and lowering of the lifts. Release the lever to stop the lift immediately.

- Push the lever to **"UP"** side to turn the motor and **raise the lift**.
- Push the lever to **"DOWN"** side to lower the lift.

Select Valve Lever



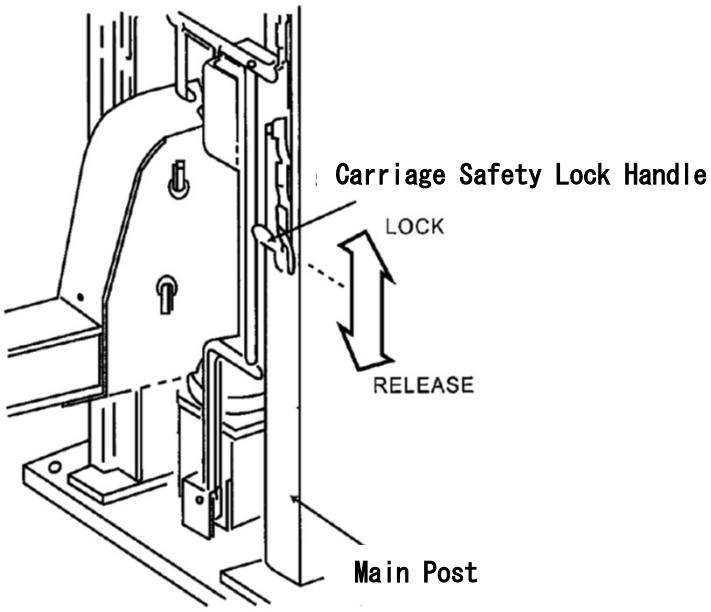
Control Lever



■ Carriage Safety Lock Handle

When lift (Drive-On Beams) are lowered to lowest position, Carriage Safety Lock device is automatically turned into **"Lock"** position so that Safety Hook would engage in Lifting mode.

If the Safety Hooks can not be disengaged(released) in Lowering mode, raise Drive-On Beams slightly so that the hooks would be free from ratcheted (engaged).

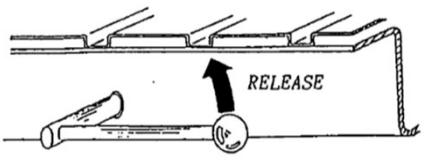


⚠ Caution

During the lifting up and work, keep the Carriage Safety Lock (Hook) "engaged".

■ Safety Lock Release Lever for Upper Scissors (Wheel Free) Lift

(For Model FP3500X and FP4000X only)



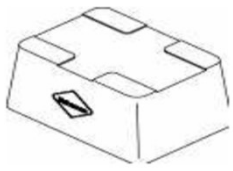
When raising the Upper Scissors Lift to the top, Safety Lock (Hook) is automatically engaged.

In order to lower the Upper Scissors Lift, push up (Release) the Safety Lock Release Lever before operating Control Lever.

■ Side Sill Block

(For Model FP3500X and FP4000X only)

Can be used for ordinary passenger vehicle that are lifted with Side Sill.



5. Functions of Safety Device

5.1 Safety Hooks on all the posts

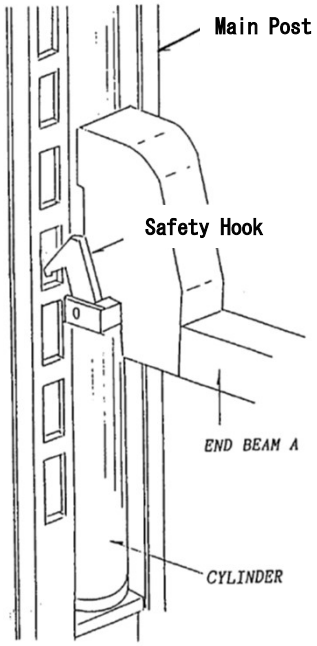
■ Safety Hook on Main Post against Hydraulic Leakage

There is the Safety Hook on Main Post (End Beam A) to prevent the lowering from the leakage in hydraulic circuit. The Safety Hook would be turned to lock position automatically when Beams are lowered to lowest position. This Safety Hook must be in Lock position at all times except when Beams are being lowered.

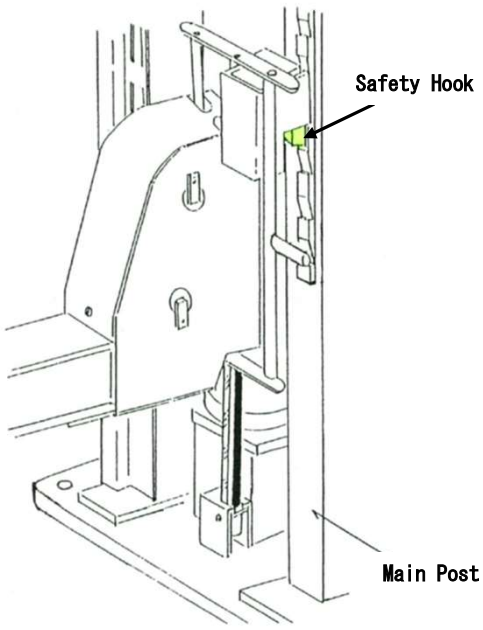
■ Safety Hook on Main Post against Chain Breakage

Safety Hook against Chain Breakage is installed on Main Post. This Safety Hook is normally disengaged from Ratchet (Rack). It would engage when chain is broken or slackening.

Safety Hook against Hydraulic Leakage



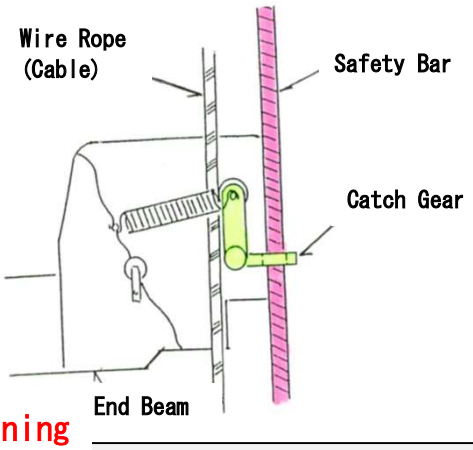
Safety Hook against Chain Breakage



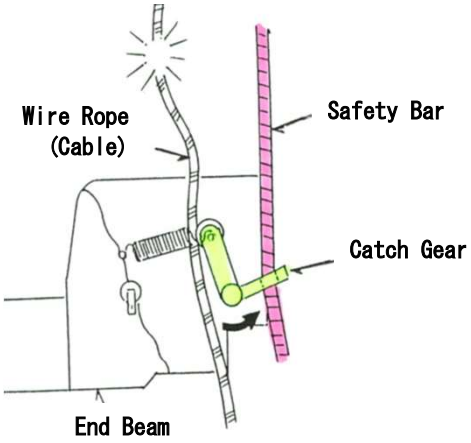
■ Safety Device on Sub Posts against Wire Rope (Cable) Breakage

This device consists of **Catch Gear** and **Safety Bar**. This device is installed on all Sub Posts to prevent the sudden falling of the lift (End Beam) in the event of Wire Rope (Cable) breakage. In the event of Wire Rope breakage, **Safety Hook Pull Spring** will pull the **Catch Gear** instantly, and as a result, Catch Gear **catch** (bite) the **Safety Bar** and stop the falling.

Under normal use



In case Wire Rope breakage



⚠ Warning

Replace Wire Ropes (Cables) with new one every 2 years.

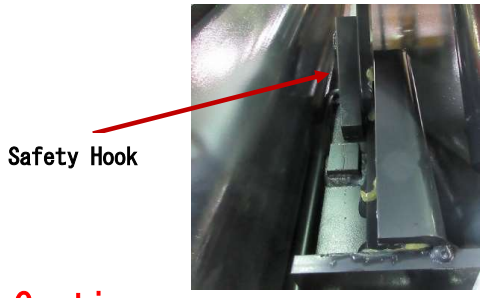
⚠ Caution

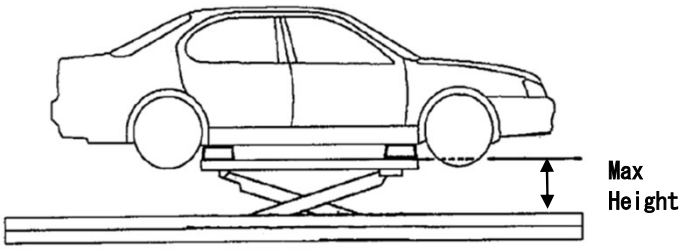
Replace Safety Bar and Catch Gear with the new one in the event of Wire Rope breakage as Safety Bar will be bent and Catch Gear could be damaged.

5.2 Safety Device for Wheel Free (Upper Scissors) Lift

(For Model FP3500X and FP4000X only)

Four Safety Hooks are installed in Wheel Free (Upper Scissors) lift to prevent the lift lowering in the event of hydraulic leakage. This safety devices work only when Support Plate is raised to the highest position.



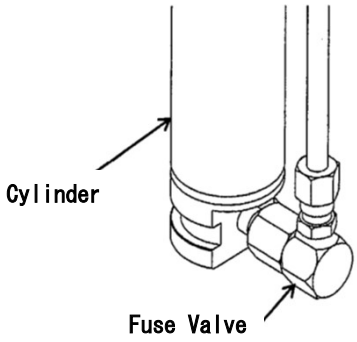


⚠ Caution

DO NOT stop raising Wheel Free (Upper Scissors) lift in the middle of its rising travel to work on the vehicle. Safety Hook does not engage to Ratchet (Rack) in the middle of rising travel.

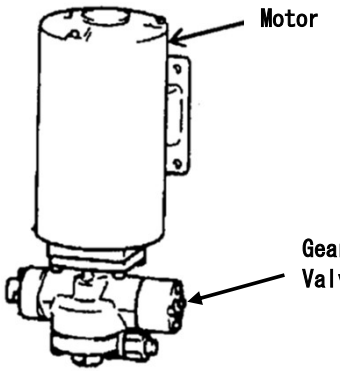
5.3 Other Safety Devices

■ Fuse Valve



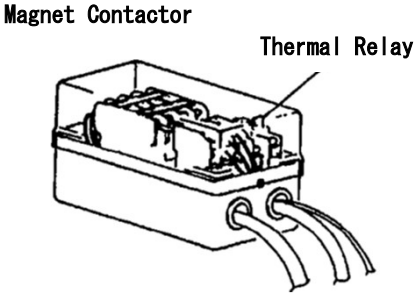
This valve is installed on the hydraulic cylinder to prevent a rapid outflow of oil (fast speed lowering) due to the cause such as damaged hydraulic circuit.

■ Relief Valve



This valve releases the hydraulic pressure to prevent damage to the lift or an accident when the pressure in the hydrauic circuit increases abnormally during lift-up of a vehicle exceeding the lift capacity or due to a problem. The valve is installed inside of the gear pump.

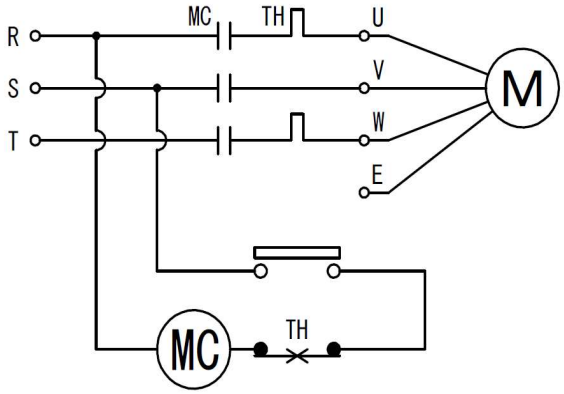
■ Thermal Relay



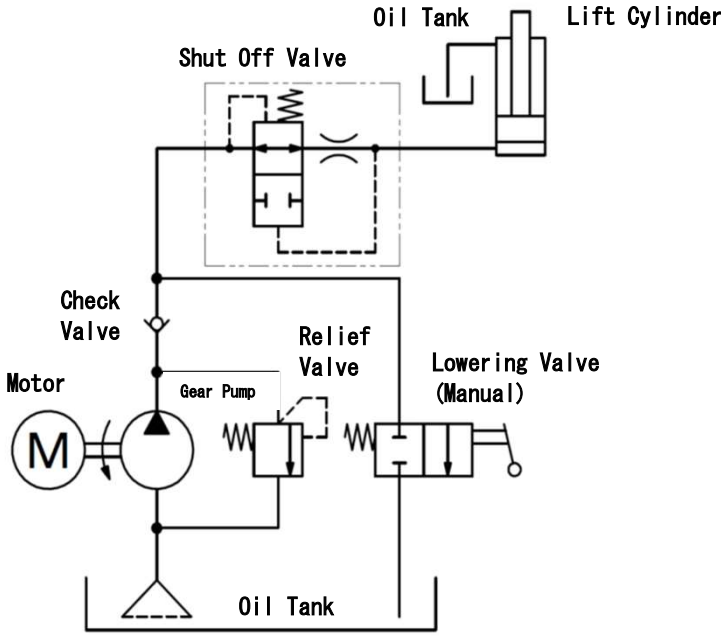
When detecting an overload of current, this relay breaks the electric circuit to prevent burning of the motor. This relay is installed in the magnet contactor.

6. Electric and Hydraulic Circuit Diagram

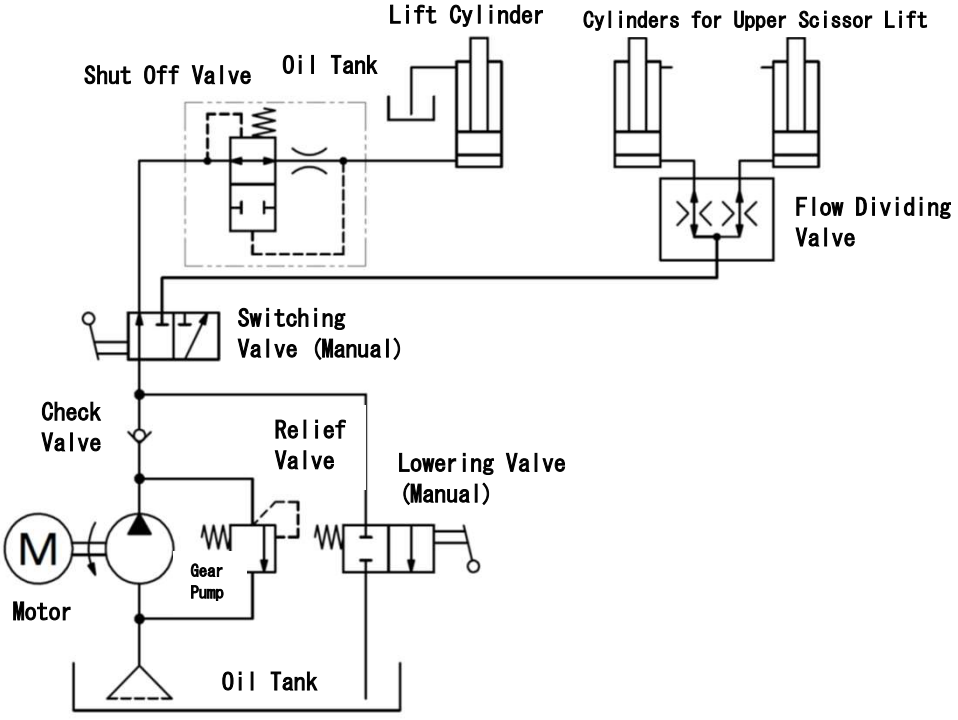
6.1 Electric Circuit Diagram for All models



6.2 Hydraulic Circuit Diagram for Model FP3500 & FP4000



6.3 Hydraulic Circuit Diagram for Model FP3500X & FP4000X



7. Operating Principle

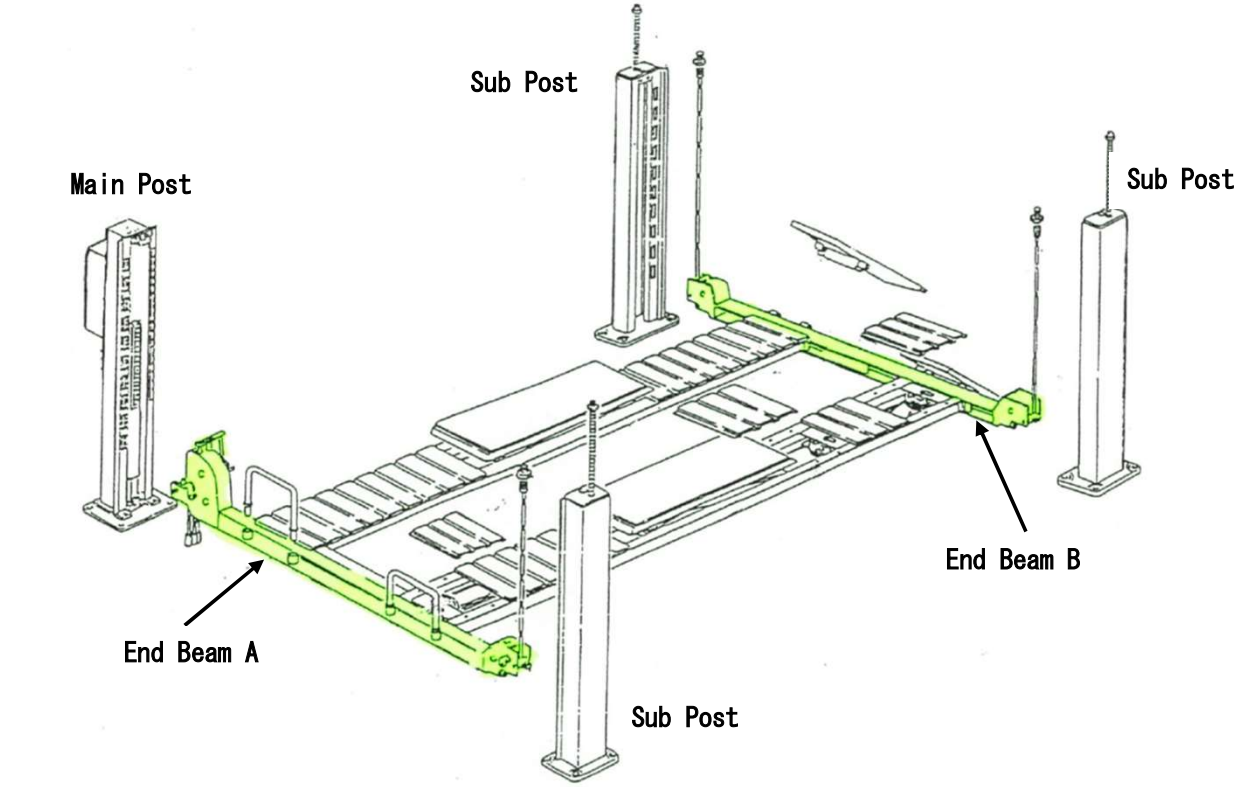
This product uses a motor-driven hydraulic pump to activate a hydraulic cylinder installed at Main Post that raises an End Beam A via driving chain. All Sub Posts are connected via synchronizing Wire Ropes (Cables) to the Main Pulley at End Beam A so that both End Beam A nd B will move up and down togehther.

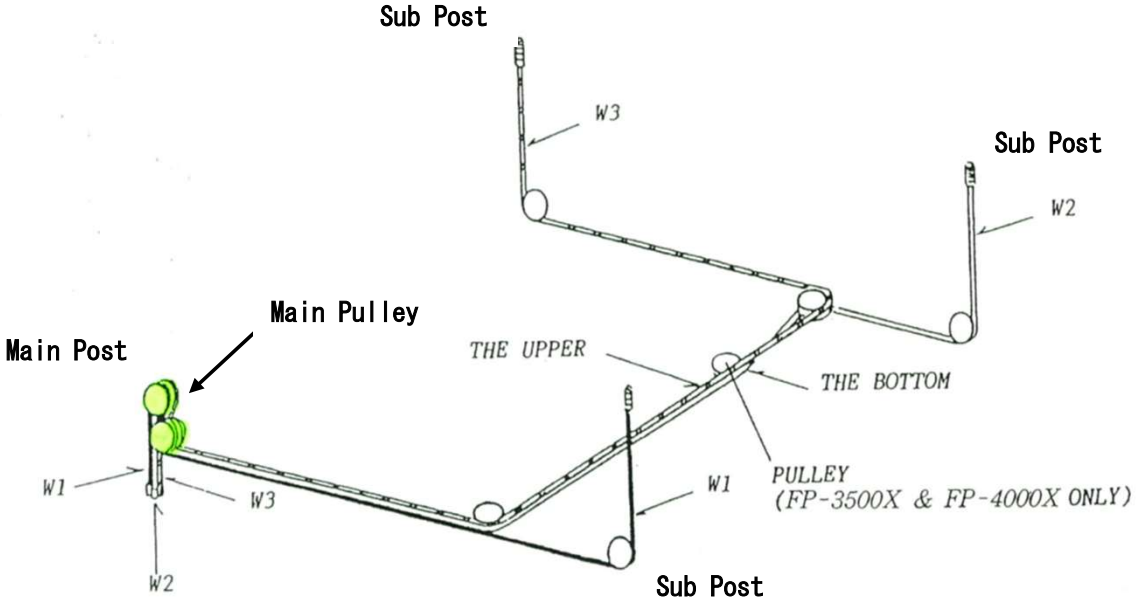
■ Lift-Up

With the Control Lever pushed to **"Up"** side, the motor turns and the pump feeds hydraulic oil to the cylinder to raise End Beam A via drive chain.

■ Lift-Down

With the Control Lever pushed to **"Down"** side, the lowering valve opens to flow the hydraulic oil in the cylinder back to the oil tank through Flow Stop Valve, Lowering Valve, and the Flow Control Valve so that End Beam A will move down.





8. Pre-Operation Check

Perform Pre-Operation Checks before operation everyday. The check must be done without load.

⚠ Caution

If any possible abnormality is detected, prohibit the use of the lift until abonormality is fully repaired. Then contact your lift supplier immediately. If the lift is used with abnormality left unsolved, damage to the lift or serious accident may occur.

Point to be checked	Check Item	Check Method
Parts and major components of the lift	Check Drive-On Beams, Drive-On Ramps, End Beams, Posts, Wheel-Free Lift (Upper Scissor Lift) and Cylinder for any deformation, damage or wear	Visual
	Check for smooth lifting and lowering of the lift and any abnormal noise during operation.	Visual and Hearing
	Check for any foreign articles in the posts	Visual
	Check for any obstacles on the Drive-On Beams	Visual
Side Sill Block (Model FP3500X and FP4000X only)	Check for any deformation, damage or wear	Visual
Select Valver Lever	Check for smooth operation	Visual
Control Lever	Check for smooth operation	Visual
Safety Hook on End Beam A (Main Post)	Check for the sound (chattering) made by Safety Hook during lifting operation	Visual and Hearing
Carriage Safety Lock Handle (Main Post)	Check if the Carriage Safety Lock Handle is returned to be put in "Lock" position when lowered to bottom	Visual and Hearing
Safety Lock Release Lever(Model FP3500X and FP4000X only)	Check if Safety Lock is engaged when raising Wheel Free Lift (Upper Scissor Lift) to the top	Visual
Leaf Chain	Check for any foreign articles such as dirt or sand	Visual
Wire Rope (Cable)	Check for any foreign articles such as dirt or sand	Visual
Hydraulic Circuit	Check the hydraulic piping, the cylinder, and the hydraulic unit for any oil leakage	Visual
	Check for abnormal noise	Hearing
Electric Circuit	Check that proper earthning is provided	Visual
Bolts and Screws	Check for tight fastening	Refastening

⚠ Warning

If any malfunctioning or abnormality is found, DO NOT OPERATE the lift. Contact lift supplier for the repair.

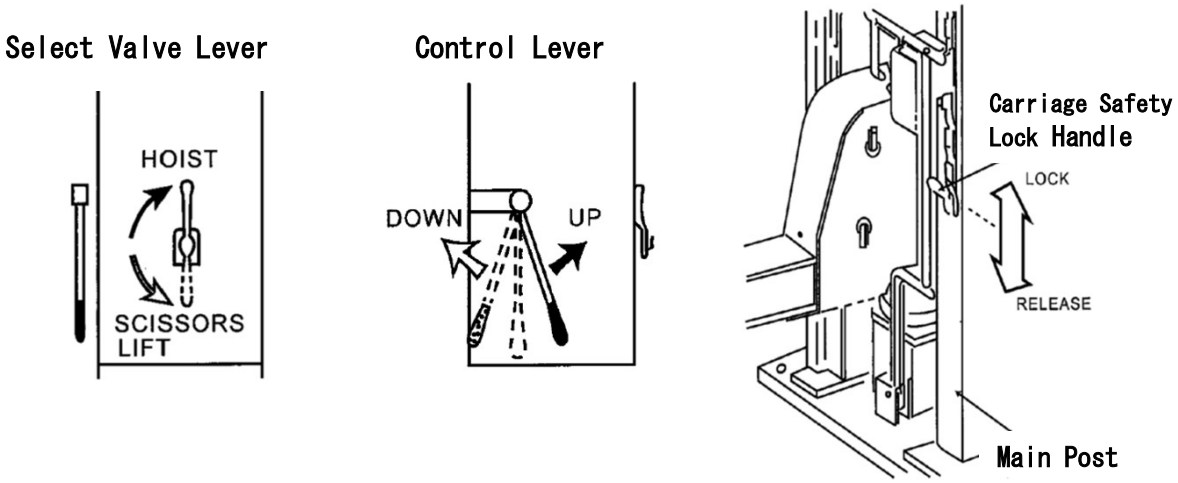
9. Operation Instructions

9.1 Preparation before Driving-In Vehicle

9.1.-1 Turn the Lever of Select Valve to **"Hoist"** mode (FP3500X and FP4000X only)

9.1.-2 Push down Carriage Safety Lock Handle and release Safety Hook.

9.1.-3 Move Control Lever to **"Down"** position and lower Drive-On Beams to the **lowest positon**. If Safety Hooks can not be disengaged, raise Drive-On Beams slightly so that Hooks will be free from ratchet.



9.1.-4 Check if both of Drive-On Beams are fully lowered.

9.1.-5 Check if Wheel Free (Upper Scissors) Lifts are fully lowered.

9.1.-6 Make sure to remove all obstacles such as tools, car parts etc. from Driv-On Beams.

⚠ Caution

If the lifts are not lowered to lowest position, vehicle may hit the Wheel Free (Upper Scissors) lifts, or Drive-On Beams, or End Beams, and may result in damage to the lift and vehicle.

9.2 Driving-in Vehicle

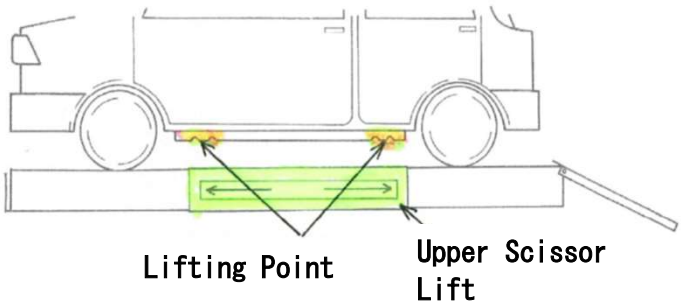
⚠ Caution

Drive the vehicle in slowly to match the center of the vehicle width direction with the center of the both sides Drive-On Beams. DO NOT drive or stop the vehicle too fast.

Drive in vehicle on the Drive-On Beams straight and park the vehicle in the center of the lift.

■ For Model FP3500X and FP4000X

Park the vehicle so that CG of the vehicle stay within CG Range and in the position Wheel Free (Upper Scissor) Lift can lift up the best lifting point of the vehicle.



9.3 Lifting Up Vehicle (Drive-On Beams)

⚠ Warning

- **DO NOT get under vehicle when operating the lift**
- **Pay close attention for any vehicle tilt during lifting and lowering of the lift**

⚠ Caution

- **When operating lift, pay constant attention to the area around the vehicle and the lift. NEVER look aside during operation.**
- **DO NOT lift vehicle with passengers or baggage inside.**

9.3.-1 Push the **Control Lever** to **"UP"** direction.

9.3.-2 Release the **Control Lever** to stop lifting when lift reached the required height.

9.4 Lifting Up Vehicle by Wheel Free (Upper Scissors) Lift

⚠ Warning

- **DO NOT get under vehicle when operating the lift**
- **Pay close attention for any vehicle tilt during lifting and lowering of the lift**
- **Make sure to place support (Side Sill Block) on flat and sturdy spot.**

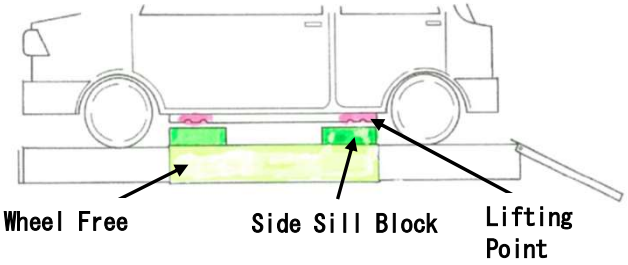
⚠ Caution

- **When the Wheel Free (Upper Scissors) lift come into contact with the vehicle during lift-up, make a halt and ensure that Top Plates (Free Wheel Stand) of Upper Scissors Lifs are in proper contact with lifting point of the vehicle.**
- **When operating lift, pay constant attention to the area around vehicle and the lift. NEVER look aside during the operation.**
- **DO NOT lift vehicle with passengers or baggage inside.**
- **When lifting the vehicle by Upper Scissors lift, DO NOT Use any other supports except manufacturer's genuine parts, Side Sill Block between Top Plate of Wheel Free (Upper Scissors) Lift and lifting point of the vehicle.**
- **Make sure to lift up Wheel Free (Upper Scissors) lift to the highest position before releasing the lever in order to secure Safety Hook to be engaged.**

Wheel Free (Upper Scissors) Lift is designed to be used for lifting passenger vehicles only. It can not be used for RV, Truck, One Box Car etc. which require the lifting by vehicle frame. Those vehicles can be lifted up by Jacking Beam (Option).

9.4.-1 Check and make sure the Wheel Free (Upper Scissors) Lift is positoned under the proper lifting point of the vehicle.

9.4.-2 Place **Side Sill Block** on the proper spots on the Wheel Free (Upper Scissors) Lift for the correct lifting point.



9.4.-3 Turn **Select Valve Lever** from "Hoist" to **"Scissors"** mode.

9.4.-4 Push the **Control Lever** to **"UP"** direction.

9.4.-5 Stop lifting before Side Sill Block contact the vehicle to check if Side Sill Block is to contact correct lifting point. If not, readjust the vehicle location.

9.4.-6 Make sure to lift up Wheel Free (Upper Scissors) lift to the highest position and keep lifting for 2 seconds before releasing the lever to secure Safety Hook to be engaged.

9.5 During Work

⚠ Danger

If the vehicle is falling from the lift, move away quickly. DO NOT attempt to support the vehicle.

⚠ Warning

- **Keep anyone but the operator out from around the lift area.**
- **Before start servicing vehicle, make sure Safety Hooks are "engaged".**
- **DO NOT swing, shake, or push the raised vehicle.**
- **DO NOT leave a vehicle on the lift for a long time.**
- **If the vehicle tyres are free (neutrtal), make sure to put the Wheel Stop, or pull the Side Brake.**

9.6 Lowering Wheel Free (Upper Scissors) Lift

⚠ Warning

- **DO NOT get under vehicle when operating the lift**
- **Pay close attention for any vehicle tilt during lifting and lowering of the lift**

⚠ Caution

- **When lowering the lift, pay constant attention to the area around vehicle and lift.**
  NEVER look aside during the operation.
- **Before start lowering the lift, make sure there are nobody and no obstacles at lift area.**

9.6.-1 Check if there are any tools or obstacles inside the Wheel Free (Upper Scissors) Lift and under the vehicle. If any are found, remove them away from lift.

9.6.-2 Push the **Control Lever** to **"Down"** direction. Lower the Wheel Free (Upper Scissors) Lift to the lowest position without stop in midway, and keep pushing lever for 2 seconds before releasing. If the lift does not lower, raise the lift slightly, and then lower the lift.

9.7 Lowering Drive-On Beams

⚠ Warning

- **DO NOT get under vehicle when operating the lift**
- **Pay close attention for any vehicle tilt during lifting and lowering of the lift**
- **DO NOT lower lift while any stand or support such as mission jack etc. is in position under vehicle**
- **When lowering lift, keep feet clear of Drive-On Beam and Wheel Stop to avoid being squished.**

⚠ Caution

- **When lowering the lift, pay constant attention to the area around vehicle and lift.**
  NEVER look aside during the operation.
- **Before start lowering the lift, make sure there are nobody and no obstacles at lift area.**

9.7.-1 Turn **Select Valve Lever** from "Scissors" to **"Hoist"** mode.

9.7.-2 Push the **Control Lever** to **"DOWN"** direction. Pay close attention for any vehicle tilt during the lowering of the lift.

9.8 Vehicle Exit

9.8.-1 Lower the lift to the lowest position.

9.8.-2 Drive the vehicle out carefully.

10. Clean Up after Service Work

・After completing work, wipe any oil or grease off from the supports or the lift area.
・Air-blow all parts and components of the lift sufficiently to remove moisture, dirt etc.

Eliminate moisture or dirt from around the lift. If any abonormality is detected,contact your lift supplier immediately for advice. To ensure the safety, lower the lift to the lowest position and turn off the power (circuit breaker)

11. Maintenance Inspection

To ensure safe use, be sure to perform **monthly Maintenance Inspection** in addition to **Daily Pre-Operation inspection**. The check must be done without load.

⚠ Caution

If any possible abnormality is detected, prohibit the use of the lift until the abnormality is fully repaired. Contact your lift supplier immediately for repair. If the lift is used with the abnormality left unsolved, damage to the lift or serious accident may result. Always use Bishamon genuine parts for repair.

Point to be checked	Check Items	Refer to
Leaf Chain	Check for rust, kinks and cracks	11-1
Wire Rope (Cable)	Tension and deformation	11-2
Cable Pulley and Chain Wheel	Bearing lubrication	Smooth rotation ? Any wear ?
Points to be lubricated	Lubrication	11-3
Safety Hook on End Beams	Operations Check for Chain Breakage	11-4
Safety Hook on all Posts	Operations Check	11-5
Safety Hook on Sub Posts	Operations Check	11-6
Safety Lock Release Lever	Check for normal operation	11-7
Hydraulic System	Cylinder and hydraulic oil	Check for oil leakage
Chain Wheel Shaft	Tightness of the bolts	Retighten
Hydraulic Oil	Hydraulic Oil Replacement	11-8

Make Pre-Operation Checks in addition to the above checks.

⚠ Caution

Wear protective gear as necessary before starting inspection.

Important Safety Instructions

In addition to the above maintenance inspection, a lift must undergo periodic inspection by a specialist once a year. Contact your lift supplier for for periodic inspection.

11.1 Leaf Chain

⚠ Warning

Even before the end of replacement intervals, replace chain immediately if battery fluid is spilt on it or if any rust, bend, or crack is detected on it. If any abnormality is detected, prohibit the use of the lift. Resume use only after any abnormality is fully repaired.

1. Lubrication

Check the surface for tear or for any red or dark brown portion. ⇒ Apply lubricant.
(Recomemended typ of oil : Lubricant (Oil) with viscosity of SAE 30 to 40)

2. Check Chain Plate

Check plates for cracks in hole rim or side face
⇒ If any crack is detected, replace the chain.

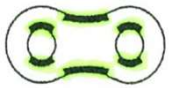
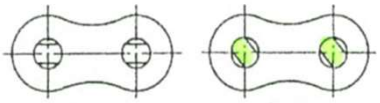


Plate section which can possibly crack

3. Check Chain Pin

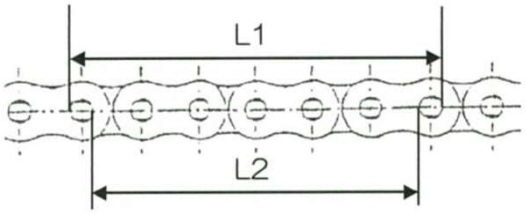
Check Pins for any rotation
⇒ If any pin rotation is detected, replace the chain



Normal Pin is rotated

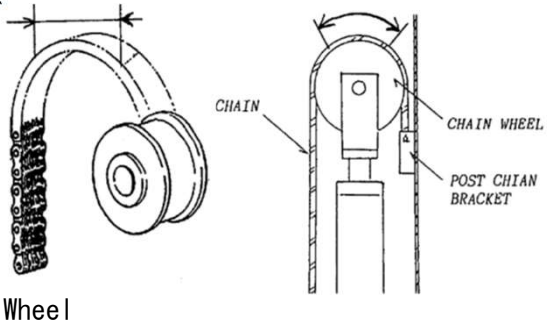
4. Check the elongation of the chain

Check if the elongation of the chain is kept less than 2%



Length of 6 links

Section over Chain Wheel



Pick up the section of the chain which go over the Chain Wheel
and measure the length of L1 and L2 of 6 links by vernier caliper.
L1 is the length of pin outer side, and L2 is the length of pin inner side.
And calculate the judgement index, L = (L1 + L2)/2.

	1 Link Length	6 Links Length	Limit Length allowed to be used
Leaf Chain for FP3500(X) AL866-53L	25.4 mm	152.4 mm	155.5 mm
Leaf Chain for FP4000(X) BL866-53L	25.4 mm	152.4 mm	155.5 mm

If the elongation is more than 2%, replace the chain.

In principle, replace the chain every 4 years, or when used more than 8,000 times.
Contact your lift supplier for replacing chain.

11.2 Wire Rope (Cable)

1. Weekly Clean Up

Clean up Wire Rope (Cable) every week with cloths soaked in oil, and remove dirt and sands etc.

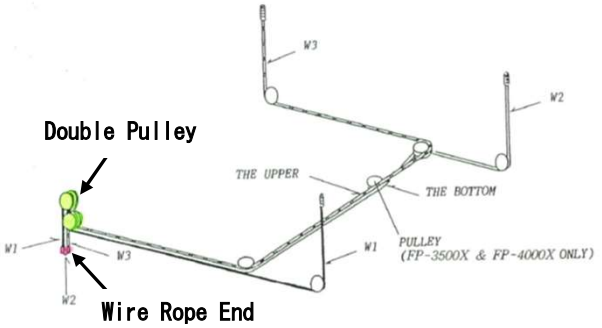
2. Inspection and Replacing

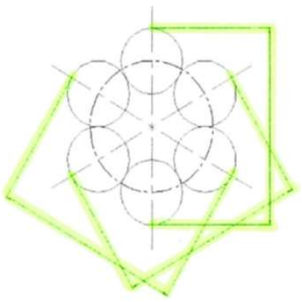
Follow the below procedures for inspection.

① Within one year after installation, inspect the Wire Rope (Cable) every month.
After one year after installation, inspect the Wire rope (cable) every week.

② Visually inspect the wear, loose wires and breaking of wires.

Inspect Wire Rope very closely within 2 meters range from the Wire Rope End at the double pulleys.





Measure from 3 directions

③ Inspect and measure the OD of Wire Rope at few locations by vernier caliper. Measure from 3 directions.
⇒ If average OD is less than Φ9.3mm, replace Wire Rope.

④ Replace Wire Rope if it lost its shape.

⑤ Replace Wire Rope if there is rust in Wire Rope.

⑥ Replace Wire Rope if Wire Rope is twisted and kinked.

⑦ Replace Wire Rope if Wire Rope was extended more than 10mm suddenly.

⑧ Replace Wire Rope if Wire Rope has breaking of wires.

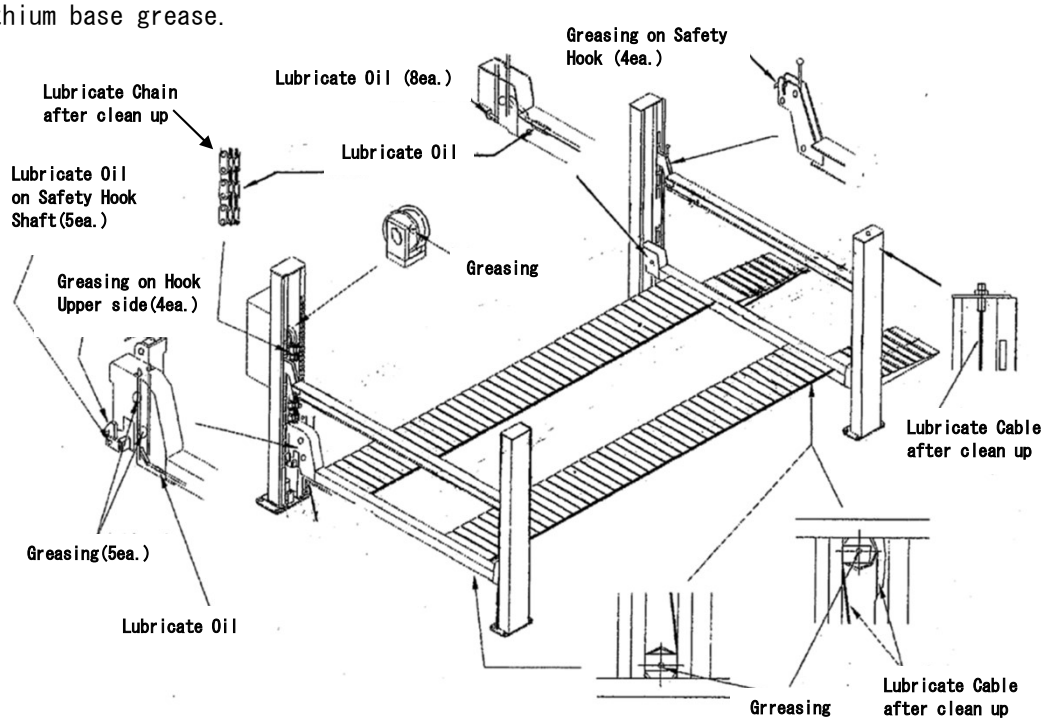
・In principle, replace the Wire Rope (cable) every 2 years.

・Inspect the wear of Pulley and Pulley Shaft when inspecting Wire Rope (Cable), and replace if necessary.

Contact your lift supplier for replacing Wire Rope (Cable).

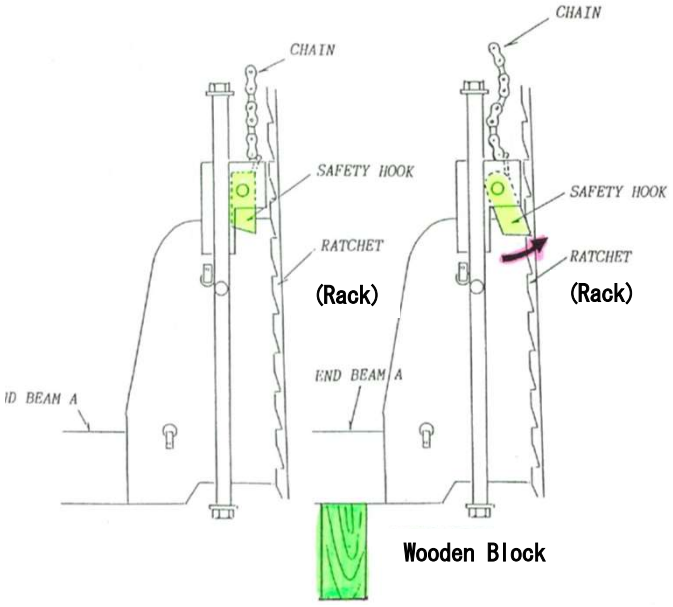
11.3 Lubrications

Use lithium base grease.



11.4 Safety Hook on End Beams

- Operations Check against Chain Breakage



● How to Check the Function

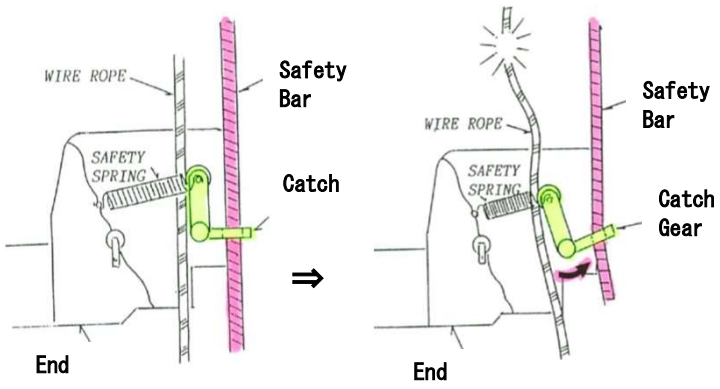
1) Remove any load or vehicle from Drive-On Beams
2) Raise Drive-On Beams about 50cm and put a wooden block under End Beam A.
3) Lower Drive-On Beams and stop lowering operation when End Beam A is blocked by wooden block. After End Beam A hit the wooden block, chain become slacking and can check if Safety Hook is engaged to Ratchet (Rack). If Safety Hook is engaged, it is functioning.

11.5 Safety Hook on All Posts

● How to Check the Function

1) Remove any load or vehicle from Drive-On Beams
2) Lower the Drive-On Beams to the bottom
3) Raise Drive-On Beams and check if all Safety Hooks make clicking sound. If they make clicking sound, they are functioning.

11.6 Safety Hook on Sub Posts



● How to Check the Function

1) Remove any load or vehicle from the Drive-On Beams
2) Raise the Drive-On Beams a little bit and put 4 wooden blocks under End Beams.
3) Lower Drive-On Beams to contact the wooden blocks and stop the lowering operation when Wire Rope become slackening. If Catch Gear turns and contact Safety Bar, they are functioning.

⚠ Warning

Replace Wire Ropes (Cables) at least every 2 years.

⚠ Caution

Replace Safety Bar and Catch Gear in the event of Wire Rope (Cable) breakage as Safety Bar may be bent and Catch Gear could be damaged.

11.7 Safety Lock Release Lever (Upper Scissors Lift)

● How to Check the Function

1) Remove the load from Support Plate.
2) Raise the Upper Scissors Lift to the highest position.
3) Push the Control Lever to "Down" position without releasing Safety Hooks. If Safety Hooks become engaged to Ratchet (Rack) and Upper Scissor lifts do not lower, Safety Hooks are functioning.

⚠ Caution

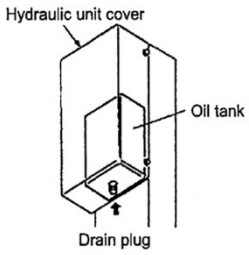
DO NOT stop raising Wheel Free (Upper Scissors) lift in the middle of its rising travel to work on the vehicle. Safety Hook does not engage to Ratchet (Rack) in the middle of rising travel.

11.8 Hydraulic Oil

【 Hydraulic Oil Replacement 】

1. Replace the hydraulic oil after 1 year of use. From the 2nd time and on, replace full amount of oil every 3 years.

● Replacement Procedure



1. Remove the hydraulic unit cover
2. Remove the drain plug from the bottom of oil tank to drain the old hydraulic oil. After draining the oil, put drain plug back and tighten securely.
3. Remove the top lid from the oil tank to check the conditon of the suction filter. A dirty or rusty filter must be cleaned, replaced, or otherwise appropriately treated.
4. Fill the specified amount (8 liters) of the hydraulic oil through the top of the oil tank.
5. Raise the lift to check for normal operation.

Note that this lift uses gear pump of which performance would be significantly affected by quality of hydraulic oil used. Be sure to select appropriate brand oil from below table.

Viscosity Grade ISO VG32 Wear-Proof hydraulic oil (Amount to be used - 8 liters)

Manufacturer (Brand name)	Products Name
Idemitsu	Super Hydraulic Fluid 32
ESSO	Nuto H32 Unipower SQ32 and XL32
Showa Shell	Terrace Oil 32 and K32
JX Nikko-Nisseki	Super Hyrando 32
Mobil	Mobil DTE Oil 24

⚠ Caution

- **Use extreme care to avoid touching any high-voltage parts during inspection.**
- **After performing inspection with the cover and associated parts removed, put them back in place using all mounting screw.**
- **If an inspection reveals any abonormality, prohibit the use of the lift immediately and contact lift supplier for repair.**

12. Trouble Shooting

If any abonormality occurs, carefully read this manual and make the following checks and actions.
If abonormality can not be eliminated, contact your lift supplier for advice.

Symptom	Possible Cause	Action
Lift does not rise	〖 Motor does NOT run 〗	
	・Power cable improperly connected or broken	→ Check the cable for connection and the breakage of the wire
	・Magnet contactor thermal relay activated	→ Identify the cause and reset
	・Primary-side circuit breaker tripped	→ Reset promary-side circuit breaker
	〖 Motor does RUN 〗	
	・Motor runs in the wrong direction	→ Replace R, and T phases of cable
	・Lack of oil	→ Fill the oil
	・Overload	→ Normal. Vehicle exceeding the lift capacity can not be lifted up
Natural Lowering (lifts drifts down)	・Natural Lowering at the rate of less than 1.0mm/5 min.	→ Normal.It is within the tolerance.
	・Hydraulic oil leaking from piping	→ Retighening the piping
	・Hydraulic oil leaking from cylinder	→ Replace the seals of cylinder
Lift rise too slowly	・Overload	→ Check the weight of the vehicle
Noise	・Lack of oil	→ Fill the oil
	・Piping not secured properly	→ Tighten the piping
	・Cover not secured properly	→ Tighten the cover

⚠ Warning

Before performing any electrical work, be sure to turn off the power supply.

13. Periodic Replacement Parts

Replace the following parts periodically to maintain the safety of the lift and to prevent faults and other problems.

Note : The replacement intervals do not show the Warranty period of the parts.

The listed parts may have to be replaced before the specified interval timings and even the parts not listed belowe may have to be replaced depending on the operating conditions and environment where the lift is installed.

Contact your lift supplier for replacement of parts.

Replacement Interval	Parts Name
Once a year	Side Sill Block (FP3500X & FP4000X)
Every 3 years	Oil (One year after installation) and then every 3 years
See 11.1 (Page 18)	Leaf Chain
See 11.2 (Page 19)	Wire Rope (Cable)

14. Installation and Relocation

Contact your lift supplier for the installation and relocation of the lift.
Have your lift inspected by your lift supplier before relocation.

15. Disposal

When disposing of this lift, break it down into scrap and separate the scrap into steel, non-ferrous metals, plastics, hydraulic oil, etc. Disopose of these materials as industrial waste. Hydraulic oil, in particular, must be disposed of as per applicable statutory and regulartory requirements. Ensure proper disposal in accordance with applicable laws and regulations.

16. Warranty

We warrant the lift manufactured by Sugiyasu Corporation to be free from defects in workmanship and material for 1 year. Our obligation under this warranty is limited to repair or replacement, at our option, of any parts or material which, within this warranty period, are found to our satisfction to be defective.

The belows are not to be covered by the warranty.

1 The damage or trouble caused by false operation, negligence of maintenance and storage required.
2 The damage or trouble caused by the modification that affects the original designed functions.
3 Any consumable parts that need to be replaced.
4 The damage or trouble caused by natural disaster such as fire, earthquake, flood etc.
5 The damage or trouble caused by not using the original manufacturer's genuine parts.
6 The required information such as serial No. etc. would not be provided.
7 The damage or trouble caused by improper installation.

* Any consumable parts such as rubber parts etc. are not covered under this warranty.
* As this lift is not weatherproof, trouble caused by corosion, rust, short circuit from water are not covered under warranty.

How To Claim

Contact your lift supplier

17. Specifications

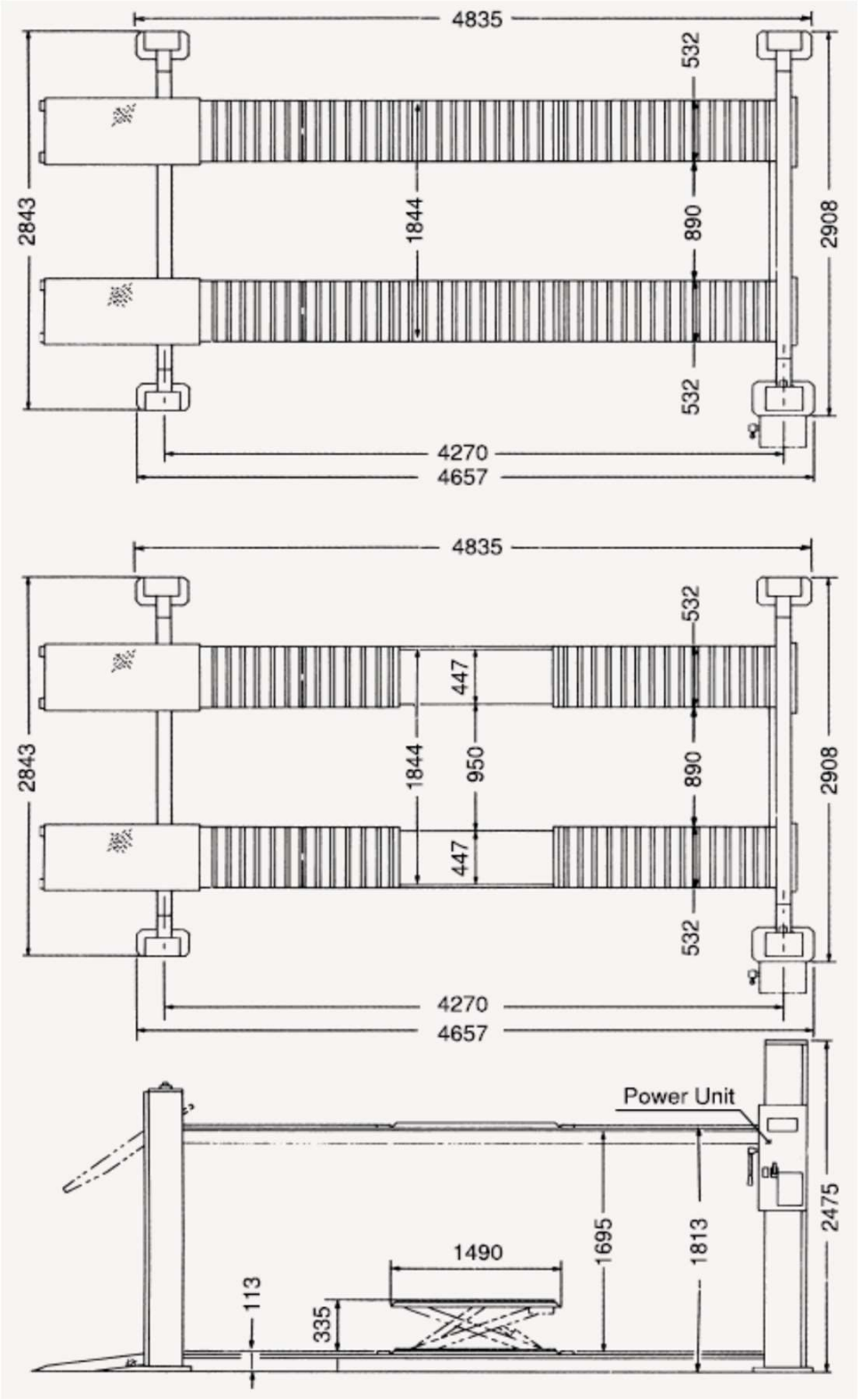
FP3500 & FP3500X

FP3500

Model No.	FP3500
Installation	Above Ground
Capacity	3,500 kgs.
Vertical Travel	1,695mm
Control	Lever Type
Power	3 Phase
Motor	1.5KW
Rising Speed (Approx.)	50 Sec. (60Hz)
	60 Sec. (50Hz)
Oil Volume	8L (ISO VG32)

FP3500X

Model No.	FP3500X
Installation	Above Ground
Capacity (Lower Lift)	3,500 kgs.
Capacity (Upper Lift)	1,500 kg x 2
Vertical Travel	1,695mm
Control	Lever Type
Power	3 Phase
Motor	1.5KW
Rising Speed (Lower Lift)	50 Sec. (60Hz)
	60 Sec. (50Hz)
Rising Speed (Upper Lift)	13 Sec. (60Hz)
	16 Sec. (50Hz)
Oil Volume	8L (ISO VG32)



17. Specifications

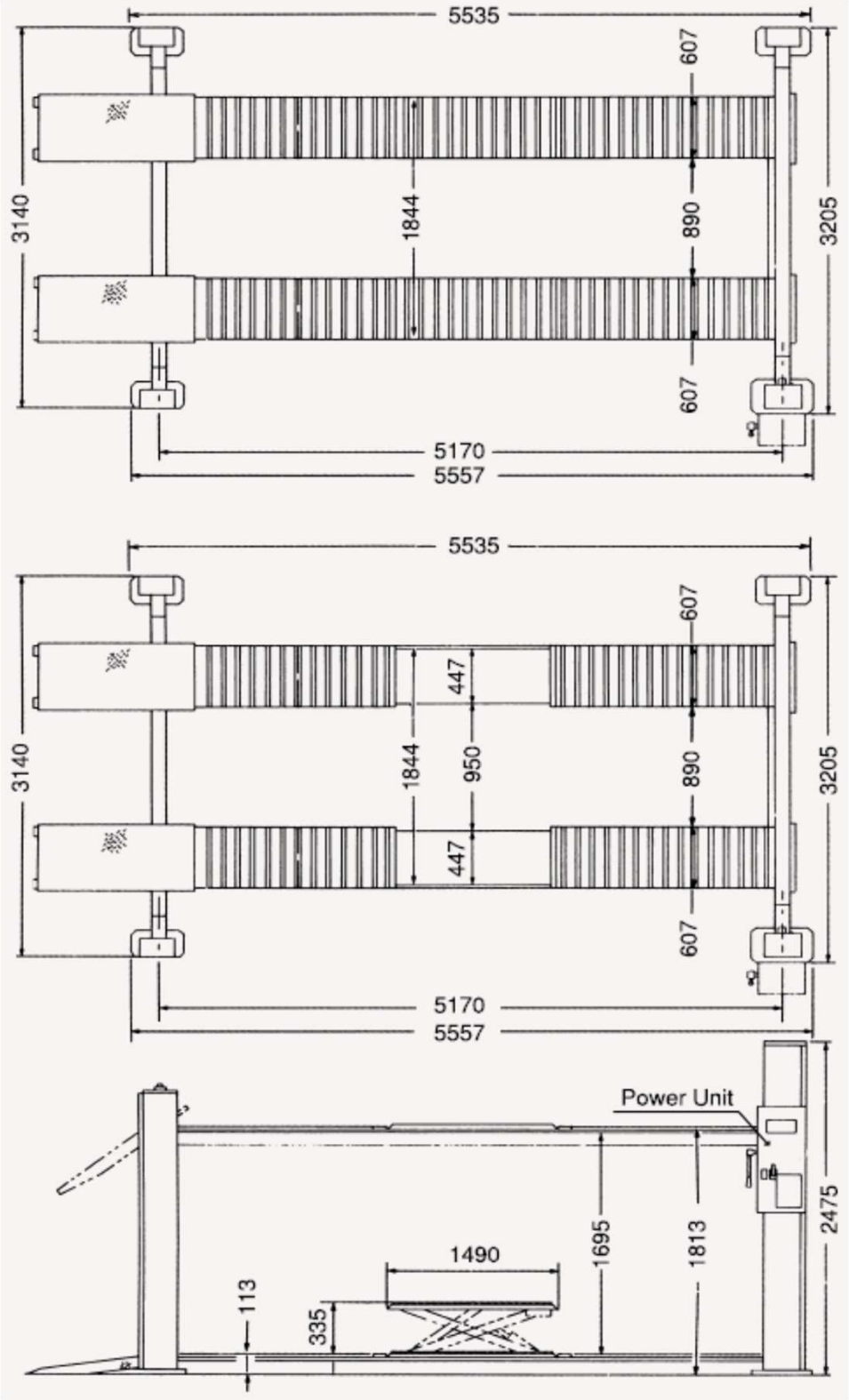
FP4000 & FP4000X

FP4000

Model No.	FP4000
Installation	Above Ground
Capacity	4,000 kgs.
Vertical Travel	1,695mm
Control	Lever Type
Power	3 Phase
Motor	2.2KW
Rising Speed (Approx.)	50 Sec. (60Hz)
	60 Sec. (50Hz)
Oil Volume	8L (ISO VG32)

FP4000X

Model No.	FP4000X
Installation	Above Ground
Capacity (Lower Lift)	4,000 kgs.
Capacity (Upper Lift)	1,500 kg x 2
Vertical Travel	1,695mm
Control	Lever Type
Power	3 Phase
Motor	2.2KW
Rising Speed (Lower Lift)	50 Sec. (60Hz)
	60 Sec. (50Hz)
Rising Speed (Upper Lift)	13 Sec. (60Hz)
	16 Sec. (50Hz)
Oil Volume	8L (ISO VG32)



18. After Service

Something is wrong	Check in accordance with this manual
Something is still wrong	Contact your lift supplier
Repair under Warranty period	will be repaired in accordance with Warranty rules
Repair after Warranty period	Contact your lift supplier
Availability of spare parts	The spare parts are available for 8 years after discontinuing manufacturing

Contact your lift supplier for any information regarding after service.
When contacting your lift supplier, provide following information.

- **Model No.**
- **Serial No.**
- **Purchase Date**
- **Conditions of trouble**

Record the above information in the table below for future inquiries.

Type	
Serial No.	
Purchase Date	
Lift Supplier	
Installer	
Trouble Date and conditions	Date :
	Date :
	Date :
	Date :

Bishamon

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