Bishamon®

Battery Powered Lift & Drive Skid Lifter

Operation and Service Manual

ALV98　ALV98W

Read this manual carefully and understand completely before operating stackers. Keep filing this manual for future reference. If this copy is lost, please contact your local supplier for a replacement.

Explanation of Terms and Symbols

In this manual,「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.

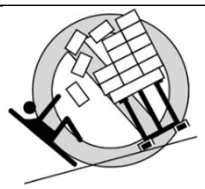
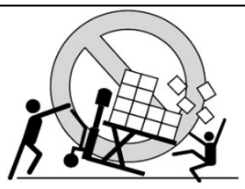
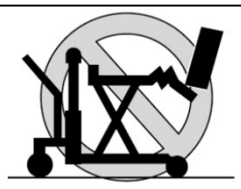
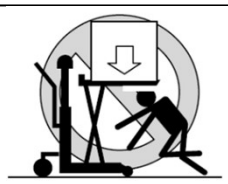
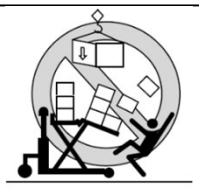
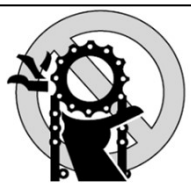
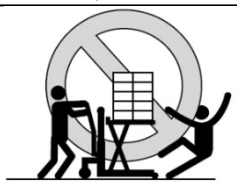
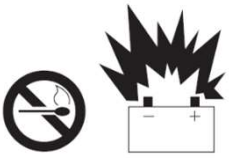
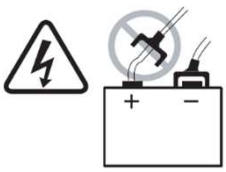
Warning　Incorrect operation may result in serious injury or death of the operator.

Caution　Incorrect operation may result in injury and damage to the property.

The

⚠ Warning !

◎ Hazard or unsafe practice which, if not avoided, may result in DEATH or SEVERE PERSONAL INJURY and PROPERTY DAMAGE.

			
DO NOT use lifter on slope, unlevel or soft surface. Lifter may become unstable and /or uncontrollable. SEVERE PERSONAL INJURY and PROPERTY DAMAGE could result.	Always travel with forks in lowered position. SEVERE PERSONAL INJURY and PROPERTY DAMAGE could result.	DO NOT load one fork more than other and DO NOT load tips on forks. SEVERE PERSONAL INJURY or DEATH could result.	NEVER sit, stand or ride on forks. SEVERE PERSONAL INJURY or DEATH could result.
			
NEVER go under forks. SEVERE PERSONAL INJURY or DEATH could result.	DO NOT overload lifter. ALWAYS stay within designated capacity and load center rating.	DO NOT jump start and turn steep with high speed accelaration. Lifter may become unstable/ or uncontrolable.	DO NOT use in areas of multi level floor surface that could create loss of control and result in SEVERE PERSONAL INJURY.
			
DO NOT put hand near chain sprocket or other moving parts. SEVERE PERSONAL INJURY could result.	KEEP FEET CLEAR of rolling wheels that could result in SEVERE PERSONAL INJURY.	USE ONLY in areas clear of all personnel and objects to prevent severe personal injury and property damage.	KEEP AWAY from open flame when charging battery. Handle battery after fully reading the instruction manual.
			
Fully attach the battery terminal cover. Danger of fire or electric shock from short circuit could result.	SHOCK HAZARD ! Disconnect power plug before opening Swtichboard and Control Panel.	Replace chain every four years or if inspection reveals excessive wear on links, pins, side plates and deformed, bent, rusted or broken links.	DO NOT put hand near Scissor mechanism or other moving parts. SEVERE PERSONAL INJURY could result.

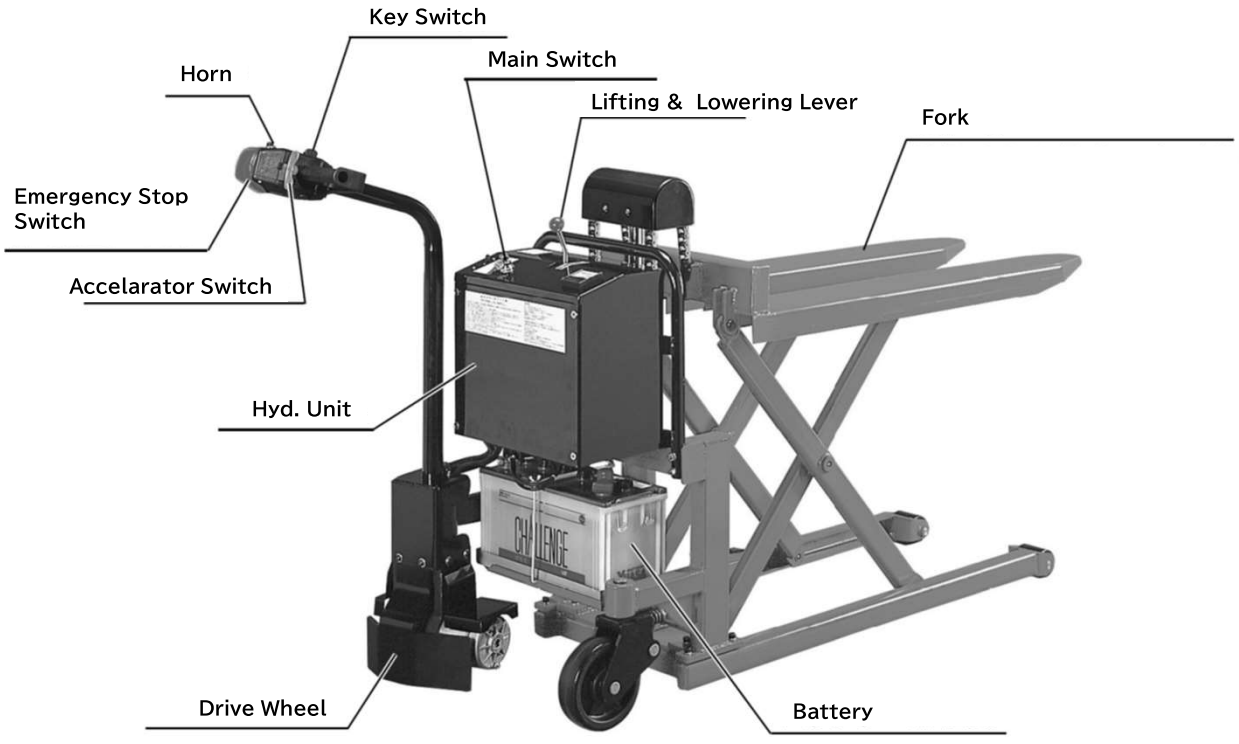
Initial Charging :
Battery is not charged upon delivery. Please charge after reading this operation manual and then manual supplied with charging unit.

⚠ Caution !

◎ Hazard or unsafe practice which, if not avoided, may result in MINOR or MODERATE PERSONAL INJURY and PROPERTY DAMAGE.

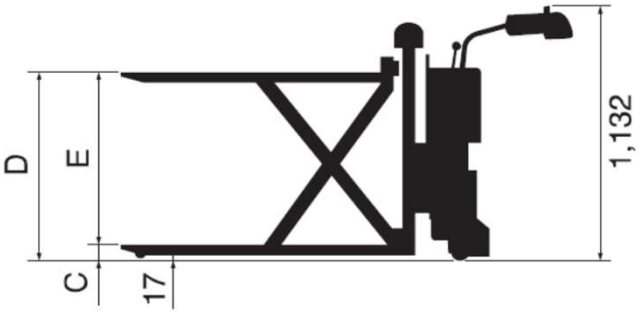
1. **READ THIS OPERATION MANUAL COMPLETELY BEFORE USING AND THOROUGHLY UNDERSTAND AND FOLLOW ALL SAFETY INSTRUCTIONS. Wrongful use may result in accident.**
2. **This skid lifter is designed to use on smooth floor with balanced, stable, firmly stacked load that is within capacity and load diagram. DO NOT use for any other purpose than its intended use.**
3. **Skid lifter shall be operated by TRAINED personnel only. OPERATOR shall read "Operation Manual" completely and thoroughly understand the controls and operation of this equipment BEFORE operating the lifter.**
4. **Do Not lower the fork with load with fast speed. Ot it may result in impact load and damage the stacker.**
5. **ALWAYS observe lifter and ALWAYS stay at the controls while the lifter is in motion. RELEASE controls and STOP lifter immediately if load on the lifter appears to become unstable. NEVER leave the loaded lifter unattened unless the forks are fully lowered position.**
6. **Set the parking brake and park the skid lifter when moving the load onto the fork. Or the unit may start to move all of a sudden during moving of the load and may result in falling of the load.**
7. **DO NOT use lifter with unstable, unbalanced or loosely stacked load. Unbalanced loads may become unstable and fall. SEVERE PERSONAL INJURY and PROPERTY DAMAGE could result.**
8. **Do Not handle unsecured or unstable load that could fall backwards.**
9. **Perform the inspection following to the instructions of Operation Manual.**
10. **Do Not alter or modify the skid lifters in any way.**
11. **Do Not use forks or lift as a hoist or to pull up the load. SEVERE PERSONAL INJURY and PROPERTY DAMAGE could result.**
12. **ALWAYS keep feet, hands and fingers away from casters, load wheels and all moving components. SEVERE INJURY could result.**
13. **ALWAYS perform maintenance and inspection with lifter unloaded.**
14. **Do Not keep raising or lowering a load continuously over 40 seconds. The Motor may overheat.**
15. **When replacing batteries, fuses etc., be sure to remove the battery Negative (-) terminal first.**
16. **Overuse of the battery may result in overdischarge and decrease the life of the battery.**
17. **Do Not move too fast. Or it may result in the inability of the control of the unit.**
18. **The lifter is NOT waterproof and is intended to be used in a dry environment and at a moderate temperature range.**

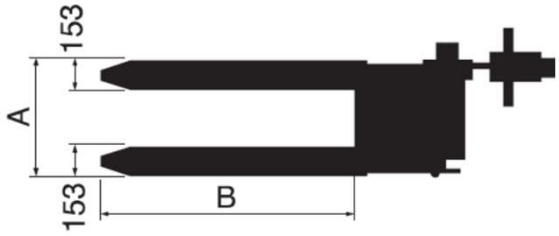
1. Name of Components

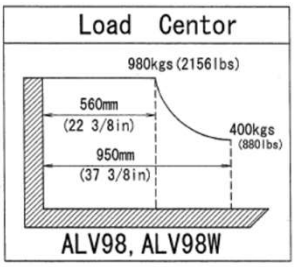


MODEL : ALV98

2. Specifications







	Model	ALV98	ALV98W
	Capacity (Kgs)	980	980
A	Width of forks (mm-Fork Outside)	520	685
B	Fork Length (mm)	1080	1080
C	Fork Min. Height (mm)	83	83
D	Fork Max. Height (mm)	833	833
E	Vertical Travel (mm)	750	750
	Handle Height	1132	1132
	Overall Width (mm)	682	682
	Overall Length (mm)	2040	2040
	Lifting Speed (Seconds)	18 Seconds	18 Seconds
	Lowering Speed (Seconds)	Adjustable	Adjustable
	Front Wheel (Polyurethane) OD (mm)	Φ70 mm	Φ70 mm
	Rear Wheel (Polyurethane) OD (mm)	Φ180 mm	Φ180 mm
	Driving Speed (km/h)	Max 2.5km/h (Unloaded with full charged)	
		Max 2.2km/h (980 kgs. loaded with full charged)	
	Speed Control	Chopper Control	Chopper Control
	Lifting Motor (KW)	0.7KW (DC12V)	0.7KW (DC12V)
	Drive Motor (KW)	0.4KW (DC12V)	0.4KW (DC12V)
	Battery Capacity	92Ah/5Hr	92Ah/5Hr
	(12V) JIS Standard	GX-130E41R	GX-130E41R
	Hyd. Cylinder	Φ60mm x 385 mm	Φ60mm x 385 mm
	Machine Weight (Kgs.)	219 kgs.	227 kgs.
	Oil Volume (Litter)	1.55 Litter	1.55 Litter
	Minimum Turning Radius (mm)	1512	1566

* Specifications are subject to change without notice

3. Pre-Operation Checks

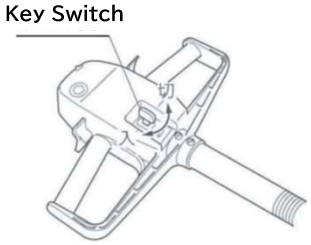
⚠ Caution

DO NOT use this skid lifter at all if repairs are required or if you suspect a malfunction.

Perform the Pre-Operation checks before operating everyday.

1. Any damage, distortion or crack in post
2. Any damage, distortion or crack in carriage and forks
3. Smooth movement of front and rear wheels
4. Any oil leak from hydraulic line or cylinder
5. Any damage, kink or crack in chain
6. Check if brake works properly
7. Any natural lowering
8. Fastening of bolts and nuts
9. Is battery liquid at adequate level ?
10. Looseness of battery terminal
11. Is battery fixed firm ?
12. Smooth movement of Lifting & Lowering Lever. Does lever return to neutral when released ?
13. Check smooth operation of handle. Any excessive over-steering ?
14. Check smooth operation of Accelarator Switch. Does switch return to neutral when released ? Check the smooth operation for driving forward, reverse, high speed and low speed.
15. Check the operation of Main Switch and Emergency Stop Switch.
16. Check the noise, excessive wear and uneven wear of the Drive Wheel.
17. Check if the battery is charged.

4. Operation

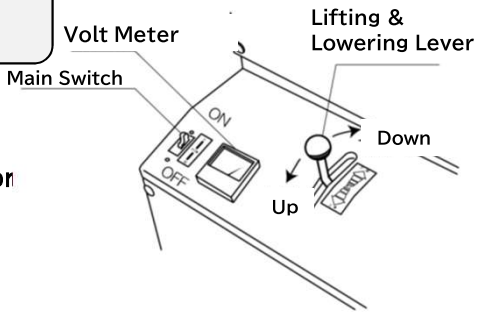


(1) Preparation of the operation

① Insert the Key into Key Switch and turn clockwise.
② Turn on Main Switch.

⚠Caution

Main Switch would be turnd "OFF" in case of overload operation to protect motor.



(2) Lifting and Lowering

Forks can be lifted and lowered by operating Lifting & Lowering Lever.

① Forks lift up by tilting the lever towards operator
② Forks lower by pushing the lever forward.

Lifting and lowering speed can be adjusted by pushing and tilting angle.

⚠ Caution

DO NOT lift up the load or anything above the rated capacity.
DO NOT lift the load only at the tip of the forks. Lift up the load within loading diagram(※) capacity.

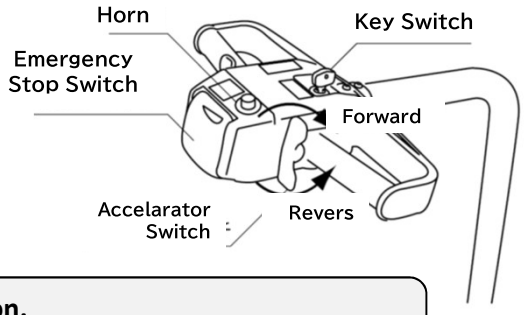
※ Load Center is the distance from root of the fork for the max capacity available. Refer to the loading diagram of each model.

⚠ Caution !

DO NOT keep lifting with excessive slow lifting speed and continuously over 35 seconds. Rapid lowering operation may result in load collapse and dangerous. Also rapid lowering and sudden stop may result in impact load and damage to the unit.

(3) Driving Operation

① Drive the lifter by operating Accelarator Switch.
② Driving speed in both forward or reverse driving can be adjusted by the operation of Accelarator Switch.
③ Pushing Switch further would increase speed.
④ Lifter stop immediately when pushing the "Emergency Stop Switch".



⚠ Caution

DO NOT move or turn around with load kept at high position.
DO NOT jump start and turn steep which may result in uncontrolable and unstable of lifter.

(4) Horn

Push the horn button.

(5) Volt Meter

Volt Meter shows the voltage of battery. Refer to for the battery remaining capacity.

⚠Caution !

Battery life will decrease if dischaged over 80% continuously.

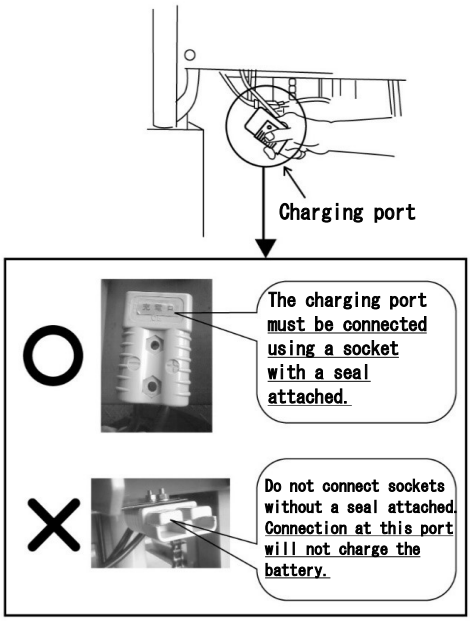
(6) Battery and Charging

■ How to Charge Battery

① Make sure that battery fluid is present upto the designated fluid level. Add purified water if the fluid is insufficient.
② Unplug the battery socket and insert the charging device into the open socket (indicating as "charging port") to charge the battery.
③ Refer to the instruction manual supplied with the charger regarding methods of use.

⚠Warning

・Keep battery away from open flame when charging. Battery may be at risk of explosion.
・Choose a well-ventilated area to charge the battery. Hydrogen gas may be produced, creating the danger of explosion.
・Charging the battery with insufficient battery fluid repeatedly also could result in the risk of explosion.



■ Battery Life

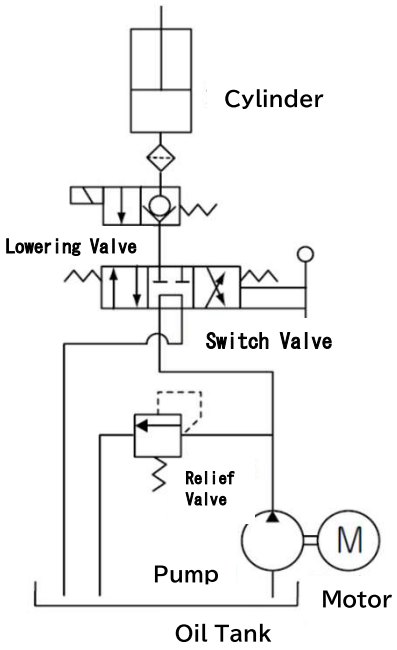
① Battery is a consumable product and is not applicable for the product warranty.
② Battery can be used for 150 to 180 charges, but maintenance and storage conditions also strongly influence the life of battery.

⚠ Caution !

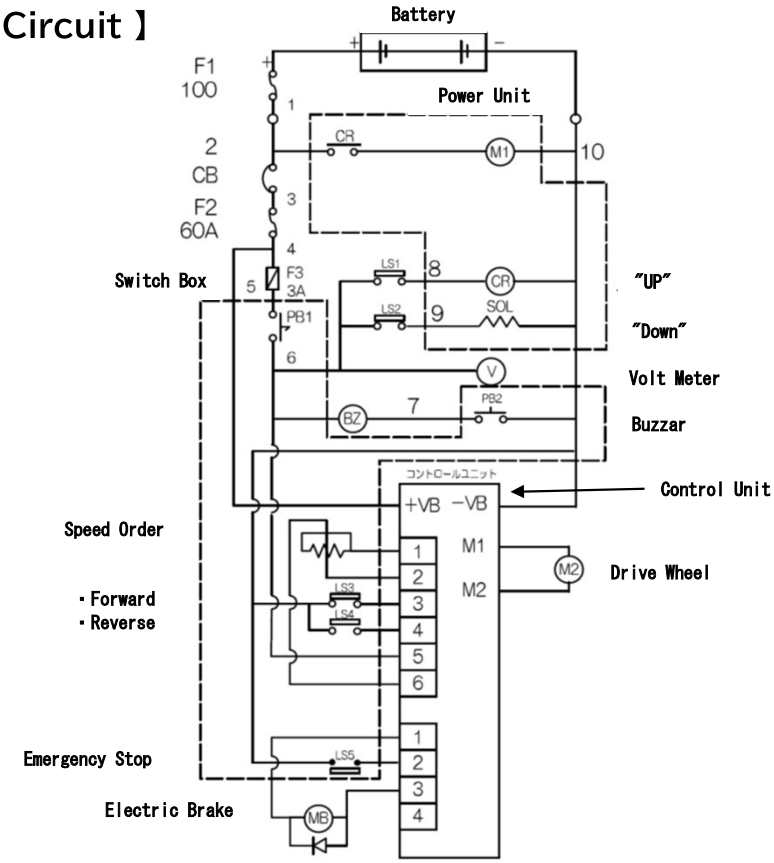
Cover the battery termial completely. Electrical short circuit can cause danger of fire, or electric shock. DO NOT overcharge or boost the charger. Also DO NOT discharge the battery

5. Circuit Diagram

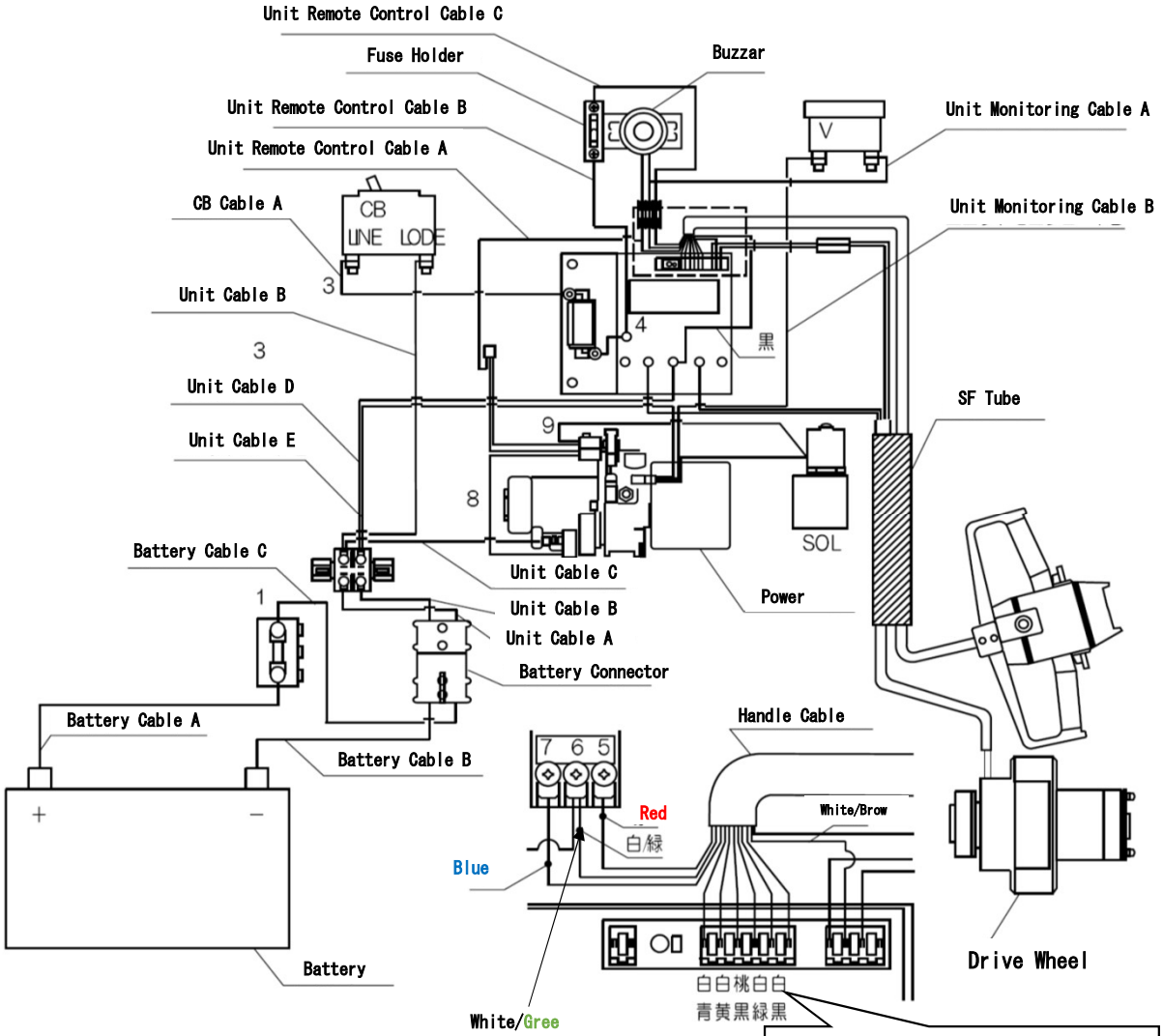
【 Hydraulic Circuit 】



【 Electric Circuit 】



【 Actual Wiring Schematic 】



6. Periodic Inspections

Perform the periodic inspections for safe operation.

Monthly Inspection :

Inspection Point	Inspection Items
Loading & Hydraulic Device	・Distortion or Crack of Frame and Fork ・Any rust, damage, crank and tension of chain and adjustment ・Smooth movement of lifting and lowering ・Any oil leak from cylinder ・Any damage, oil leak on high pressure hydraulic hose ・Oil level in oil tank and oil leak from oil tank
Battery & Electric Device	・Operation of battery charger ・Operation of battery meter ・Liquid level, capacity and cleanesss of battery ・Looseness and damage of battery terminal ・Switch operation ・Connection, contact and burnout of the contactor ・Installation of terminal cover ・Looseness of wiring and teminal ・Ensure that the density of each battery cell is 1,270 (at 20°) or greater
Braking and Driving	・Oversteering of the handle ・Braking function ・Any oil leak from gear case ・Damage and wear of the wheels ・Fixing bolts and pin
Others	・Lubrication and greasing ・Any damage and looseness on botls and nuts ・Any damage or distortion of the overall unit and frame ・Sliding portion of rollers ・Greasing to chain

Replacing Oil and Battery

■ Types of Hydraulic Oil

Viscosity classification ISO VG32 abrasion resistant hydraulic fluid oil;
Fluid volume : 1.6 liters

Oil Brand	Product Name
Esso	Nuto H32, HP32, Unipower SQ32
Idemitsu	Super Hydraulic Fluid 32
Showa Shell	Terasu Oil 32, K32
Mobile	Mobile DTE24
Cosmo	Cosmo Hydro AW32
Kygnus	Unit Oil WR32

■ Replacing Battery

Battery used for this stacker is JIS standard battery. Make sure to replace with same standard spec.

Applicable Model No.	JIS Spec.
ALV98, ALV98W	130E41R

⚠Caution !

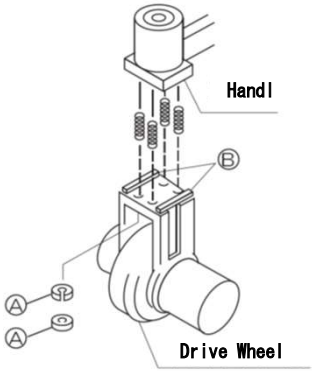
Caution on Battery :

1) Make sure to remove the battery socket before work. **2)Always be cautious of a short circuit.**
3) DO NOT mistake the (+) and (-) terminals. **4)Make sure to cover the (+) terminal.**
5)Make sure to secure the battery with a battery clamp to prevent vibrating etc.

Adjustment of Drive Wheel

Perform the adjustment of the Drive Wheel when wheel has become worn following the below procedure.

1) Loosen the Hex Nut and Spring of Ⓐ
2) Install(Put) the adjustment clip plate (Ⓑ - t3mm, or t6mm) between Handle Base and Drive Wheel depending on the abrasion condition.
3) Put the Nut and Spring of Ⓐ back and fasten.



7. Troubleshooting

The below show how to deal with relatively minor malfunctions. For other further issues, please contact your supplier of this stacker.

Symptoms of malfunction		Possible Cause	Action
Does not run, and does not lift up and lower		・Key swtich and main switch is not turned on	・Turn on Main and Key switch
		・Battery sockeet is not connected	・Connect the battery socket
		・Short of battery capacity	・Check and charge battery
		・Fuse is blown	・Check 100A, 10A fuse, and replace
Does not run	Does not run either forward and reverse	・Broken wire of Remote Control Cable for run	・Check the wire and replace cable
		・Broken wire of Motor Cable for run	・Check the wire and replace cable
		・Broken wire of Brake Cable for run	・Check the wire and replace cable
	Does run only forward, or reverse	・Broken wire of Remote Control Cable for run	・Check the wire and replace cable
		・Broken wire of Motor Cable for run	・Check the wire and replace cable
		・Defects of Accelarator Switch	・Adjust switch or replace
Does not lift up	Motor does not run	・Wiring defects	Check through 【Actual Wiring Schematic】
		・Battery Socket is loose	Fix the socket firmly
		・Defective Power Unit	Replace Power Unit
	Motor is running	・Relief Valve is not adjusted Properly	Readjust Relief Valve
		・Power Unit(Pump) defects	Replace Power Unit (Pump)
		・Hydraulic Oil is not full	Fill the oil
Lowers natually		・Defective seating of Lowering Valve	Replace Lowering Valve
		・Piping defects	Repair location of leak
Does lift up, but does not run		・Battery charge is insufficient	Check battery and charge
Does not lower		・Wiring defects	Check through 【Actual Wiring Schematic】
		・Defective Lowering Valve	Replace Lowering Valve
Oil Leak	At Cylinder	・Defective Seals	Replace Cylinder seals
	At Pipe or Joint	・Improper fastening	Check and Fasten
	At Air Breather	・Excessive Oil	Adjust fluid to appropriate level

8. Disposal

When disposing of this stacker, dispose of the metal, non-metal, plastic, and hydraulic oil components separately. There are regulations for disposing of the hydraulic oil, so make sure to sourt and follow the local rules. If you have any questions regarding disposal, please check with your supplier of the stacker.

9. Product Warranty Conditions

Warranty

Should the unit malfunction within the warranty period (Within one (1) year of purchase) when it has been operated in accordance with the user manual and the warning labels on the unit, we will adjust the defective component,repair it, or send a replacement part free of charge. However, this does not apply in the case of secondary damage or any damage to which any of the following apply:

(1) Damage or injury resulting from incorrect operation, improper inspection, improper storage, or any other type of negligence
(2) Damage of injuries resulting from changes (modifications) that negatively impact the product's operation mechanism
(3) Consumable parts that are damaged and need to be replaced
(4) Damage or injury resulting from fires, earthquakes, wind, floods, or other natural disasters or external factors
(5) Problem resulting from specified parts not being used
(6) Error in the warranty claim process (Ex: failure to indicate Model or Serial No.etc.)
(7) Damage or injury resulting from installation
(8) Repairs performed not by our company or not by our authorized dealer
(9) Damage confirmed to be the result of overuse, user error, or accident

Furthermore, all rubber components and other naturally degradable products used in this products and its accessories, as well as all consumable products, fall outside the scope of this warranty.

This lift is not waterproof, so rust, corrosion, short citcuits, and other damage caused by water is not covered under warranty.

How to Claim Warranty

If you decide to file claim for this product based on the above, please contact your dealer. The dealer will carry out the necessary procedures. In addition, we can not decide whether or not any particular situation falls within the scope of this warranty.

10. After Sales Service

・Product does not work properly	→	Review the manual and try to find solution
・Product stilldoes not work properly	→	Contact your supplier and request repairs
・Repairs within the warranty period	→	The warranty is valid one year from the date of purchase. We will service your product in accordance with warranty conditions.
・Repairs out of warranty period	→	Consult with your supplier
・Availability of Spare Parts	→	The spare parts are available for 8 years after discontinuing manufacturing

Contact your lifter supplier for any information regarding after service.
When contacting your lifter 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	
Lifter Supplier	
Installer	
Trouble Date and conditions	Date :
	Date :
	Date :
	Date :