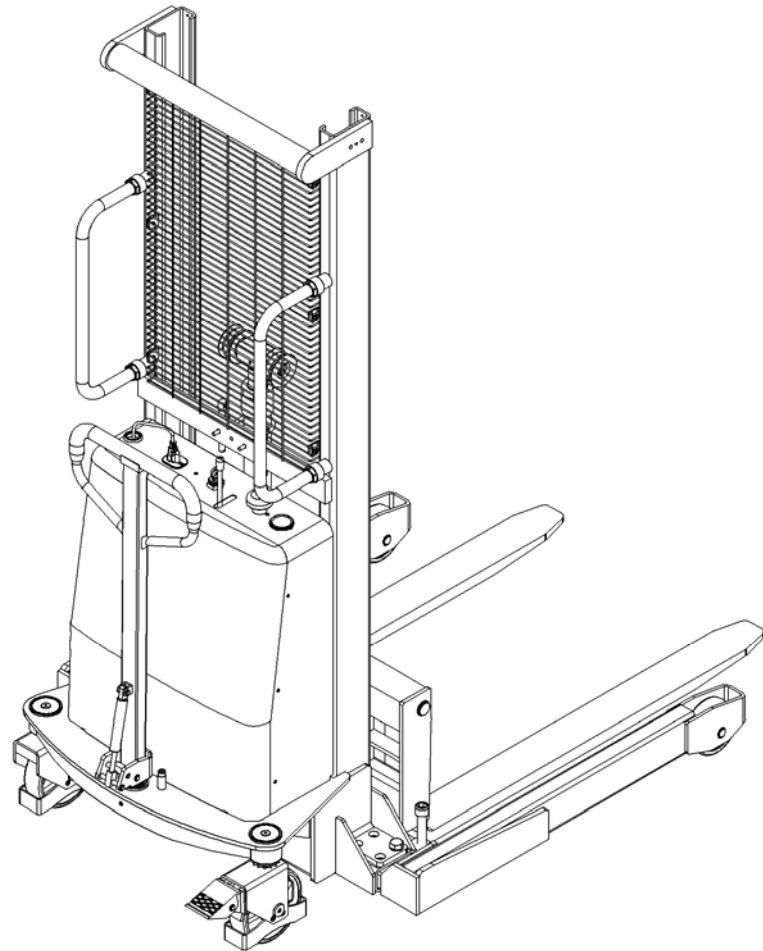


INSTRUCTION HANDBOOK SEMI-POWER STACKER SPN22



WARNING



Do not use the electric truck before reading and understanding these operating instructions.

NOTE:

- Please check the designation of your present type at the last page of this document as well as on the ID-plate.
- Keep for future reference.

Version 03/2017

SPN22A-SMS-001-US

Please read and save these instructions. Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with instructions could result in personal injury and/or property damage! Retain instructions for future reference.

Description

The Stackers SPN22A(63IN), SPN22A(98IN), SPN1030A-N,SPN22A(137IN) are specially designed for conveyance on level roads. This design makes them easy to turn within racking, while loading and unloading, and for the horizontal transport of goods up to 2200 lbs. This series is very flexible when used for order picking. The load capacity for each stacker is marked on the stacker data plate.

Unpacking and Inspection

Handle carefully. Check the packing list to account for all items. Visually inspect for shipping damage. If damaged, immediately file a claim with the carrier.

⚠ CAUTION If you are having difficulty removing the stacker from the pallet. a “Lift Kit for Unpacking” is available. Please request part number “2500437001”. This kit, with instructions, will be provided at no additional charge.

General Safety Information

READ AND FOLLOW SAFETY INSTRUCTIONS

⚠ WARNING Read and understand these operating instructions before operating product.

NOTE: Keep this manual for future reference.

Thank you for purchasing this electric stacker. For your safety and to ensure proper operation, carefully read this instruction book and the warnings on the stacker before using it.

These Operating Instructions are designed for you to thoroughly understand and master the safe operation of the stacker.

Specifications for multiple types of stackers may be described in these Operating Instructions. During operation and maintenance, please apply the relevant aspects for the type of stacker that you have purchased.

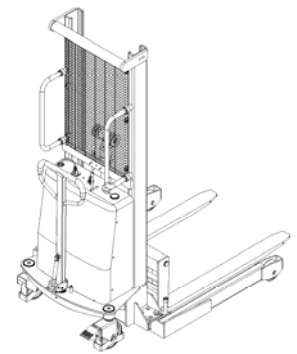


Figure 1

Safety specifications and special notices are marked with the following signs:

⚠ WARNING Safety warnings must be observed to avoid serious personal injury or equipment damage.

Specifications

Model	Drive	Lift	Maximum Capacity/ Rated Load (Q)	Load Center Distance ©
SPN22A(63IN)	Manual	Pedestrian	2200	24
SPN22A(98IN)	Manual	Pedestrian	2200	24
SPN22A(118IN)	Manual	Pedestrian	2200	24
SPN22A(137IN)	Manual	Pedestrian	2200	24

Model	Weight (incl. Battery)	Lifting Speed (laden/unladen)	Parking Brake	Lifting Motor Rating	Battery
SPN22A(63IN)	810	5.7/6	Manual, Caster Lock	2.0	12V/150Ah
SPN22A(98IN)	950		Manual, Caster Lock	2.0	12V/150Ah
SPN22A(118IN)	1020		Manual, Caster Lock	2.0	12V/150Ah
SPN22A(137IN)	1090		Manual, Caster Lock	2.0	12V/150Ah

Additional Specifications and Dimensions

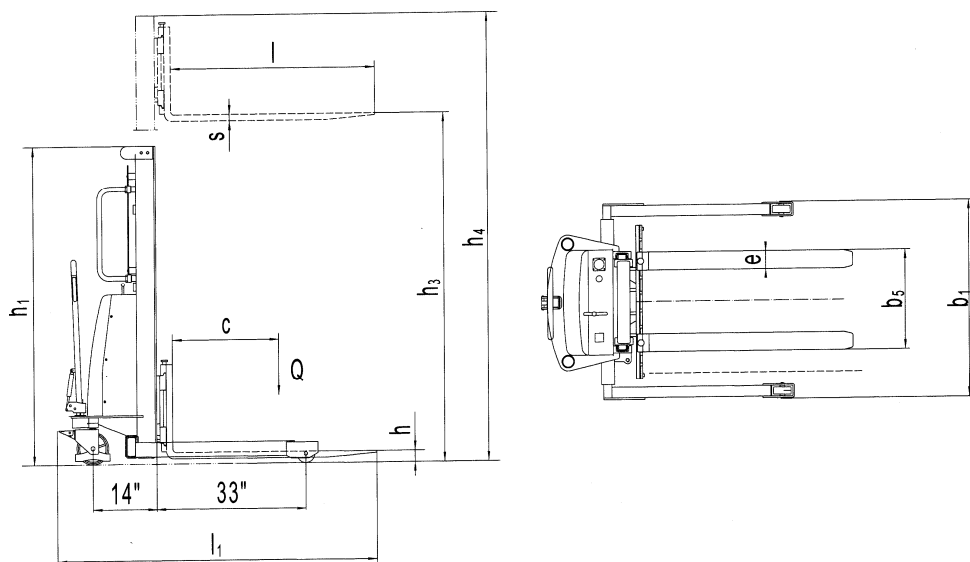


Figure 2 – Stacker Dimension

Description	Fig. 3 Reference	SPN22A(63IN)	SPN22A(98IN)	SPN1022A(118)	SPN22A(137IN)
Mast height (lowered)	h1	80"	70.9"	80"	89.5"
Lifting height, Max.	h3	63"	98.4"	118"	137"
Lifting height, Min.	h	2"	2"	2"	2"
Overall length	l1	66.5"	66.5"	66.5"	66.5"
Overall Width	b1	46—58"			
Fork Size-Length	l	42"			
Fork Size-Width	e	4"			
Width overall forks	b5	8 3/8—25"			
Base Legs Inside Dim.		38—50"			
Base Legs Outside Dim.		46—58"			

Table 1 – Stacker Specific Dimensions

Description	SPN22A(63IN), SPN22A(98IN) ,SPN1030A-N, SPN22A(137IN)
Tire material	Polyurethane wrapped steel
Tire size (front dia.)	4"
Tire size (rear dia.)	7"
Number of wheels	2 front wheels, 2 rear wheels

Table 2 – Wheel Dimensions

Lifting Height (H)*	Capacity at 24" Center	Capacity at 28" Center
63"	2200lbs	1600lbs
98.4"	2200	1600
118"	1800	1200
137"	1500	900

Table 3 – Lifting Heights

⚠ CAUTION Caution must be observed to avoid personal injury or equipment damage.

NOTE: or **IMPORTANT:** – General notices and specifications should be observed before use.

IMPORTANT: The information reported within this manual is based on data available at the time of printing. Products are constantly being developed and improved, therefore, we reserve the right to modify our products at any time without prior notice. As a result, it is always recommended to verify possible updates and changes.

NOTE: The majority of this stacker consists of steel, which can be completely recycled. Waste material from repairs, maintenance, cleaning or scrapping, must be collected and disposed of in environmentally friendly ways and in accordance with local laws and ordinances. Recyclable material should be taken care of by qualified authorities. Environmentally hazardous waste, such as oil, oil filters, batteries, and electronics, will have a negative effect on the environment, or health, if disposed of improperly.

OPERATOR REQUIREMENTS

- Stacker must be operated by an authorized and trained person who can demonstrate its proper operation.

OBLIGATIONS AND RESPONSIBILITIES OF THE OPERATOR

- Operator must fully understand his obligations and have received training on the stacker's proper operation prior to use.
- Operator must master the information contained in these Operating Instructions.
- Operator should wear appropriate safety equipment during use, including safety boots.

FORBIDDEN USE BY UNAUTHORIZED PERSONS

- Operator must be responsible for the stacker and must prevent unauthorized persons from driving or operating the stacker.
- Lifting or carrying persons is strictly prohibited.

FAILURE AND FAULT

In the event of equipment failure or fault, notify maintenance personnel immediately. In cases where the stacker's safety is compromised (e.g. worn-out wheel or brake fault), immediately discontinue using the stacker until it is properly repaired.

REPAIR

Only professionally trained and specifically authorized individuals are permitted to repair or modify any part of the stacker. Any changes to installed switches and safety devices by the operator are strictly prohibited.

IMPORTANT: All spare parts from the manufacturer are inspected by Quality Assurance Authorities. To ensure the safety and reliability of the stacker's operation, only manufacturer approved spare parts may be used. Replaced parts, including oils and fuels, must be disposed of in accordance with environmental protection regulations.

DANGER AREA

The "danger area" refers to the area where the stacker is working or lifting, causing a potentially dangerous situation for persons or property in that the area.

▲ WARNING Unauthorized persons must keep away from the danger area. In situations with potential danger to others, the operator must give a warning notice. If the danger area isn't vacated as requested, the operator must stop using the stacker immediately.

WORKING IN HAZARDOUS ENVIRONMENTS

A stacker operating in an area where there is a hazard risk, or in any other high-risk area, should be specially equipped for use in that environment.

▲ CAUTION This stacker is not equipped for hazardous situations.

SAFETY DEVICES AND WARNING SIGNS

Special attention should be given to safety devices, warning signs, and warning notices within these Operating Instructions and on the stacker itself.

▲ WARNING *The stacker should always be driven with the forks at a height of 12 inches (300 mm) or less except when placing or removing a load!*

DRIVING IN PUBLIC AREAS

The stacker should not be driven on public roads.

DISTANCE BETWEEN VEHICLES

Bear in mind that the material handling vehicle in front of you may brake suddenly; therefore, keep a reasonable distance when operating this stacker.

PASSENGERS

Passengers should not ride on the stacker unless it is indicated as permissible on the stacker.

CLEARANCE HEIGHT

The stacker cannot be used where the overhead clearance height is less than the height of the load or the mast.

USE IN ELEVATORS AND ON LOADING PLATFORMS

This stacker may only be driven into an elevator or loading platform if it has been authorized. The operator must confirm that the elevator or loading platform has adequate load capacity to support the weight of the operator, stacker, load and other contents of the elevator or loading platform before entering the elevator or loading platform. Cargo should be placed properly inside the elevator to avoid touching the elevator walls. Passengers must enter the elevator only after proper parking of the stacker, and should depart from the elevator before moving the stacker.

DRIVING LANES AND WORK AREAS

Only lanes and routes that are specially allocated for stacker traffic may be used. Unauthorized persons should stay away from work areas. Loads must only be stored in places specially provided for this purpose.

OPERATOR CONDUCT

Driving speeds must be applicable for conditions. Low speed is mandatory when turning, navigating narrow aisles, passing through doors, or driving with a blocked field of vision. The operator must be able to measure the braking distance to the front of the stacker by sight and control his stacker at all times. Sudden braking (except in emergency), quick U-turns, and passing other trucks in dangerous or blind spots is prohibited. Operator should stay within the operator's area during operation.

VISIBILITY

The operator must have clear visibility in the driving direction the stacker is traveling. If cargo obstructs your line of sight, operating in reverse is recommended. If operating in reverse isn't suitable, another person must walk ahead of the stacker to give guidance and warning.

NEGOTIATING SLOPES AND INCLINES

Operating on slopes is permitted only when they are recognized lanes, when they are clean and non-slip surfaces, and when the technical data of the stacker permits safe driving on such slopes or inclines. Cargo must face in an upward direction of slope. U-turns, cutting obliquely over slopes or inclines, and parking on slopes or inclines is prohibited. When operating on a slope, the stacker should be driven at slow speed and the operator must be prepared to brake and stop.

FLOOR LOAD

Carefully check maximum floor load capacities and ensure they are not exceeded.

TRANSPORTS

The stacker should always be driven with the forks to the lowest position except when placing or removing a load. The stacker should be driven in the opposite direction of the forks when possible. This will allow better visibility and maneuverability. Driving with the forks pointing forward may cause the stacker to turn unexpectedly.

LOAD CHARACTERISTICS

Only loads that have been safely and correctly secured may be carried. Never transport loads stacked higher than the top of the stacker.

STACKER ON ANOTHER VEHICLE'S LOADING PLATFORM OR ON A GANGWAY

Before the stacker is driven from a loading dock onto a platform or vehicle, always check the maximum load capacity of the gangway. Ensure that there are devices to prevent the gangway from sliding. The driver must check the maximum load capacity of the vehicle that you intend to drive onto. There should be devices (e.g. wheel chocks) that prevent the vehicle from moving.

PARKING

The stacker should not be left unattended other than in specified parking areas. The stacker should always be parked on a level surface. If the stacker is equipped with a parking brake, it should be engaged. The forks should be lowered to their lowest position. Always turn the key switch to the "OFF" position. Unauthorized personnel should not use the stacker. Always remove the key when leaving the stacker.

NOTE: If the stacker will be left unused for a prolonged period without being recharged (e.g. between two shifts), the battery plug should be disconnected.

PROTECTIVE SHOES

Protective shoes should be worn when working with stacker.

ADDITIONAL FEATURES / TRAILERS

An authorized representative should be contacted if, after delivery, the stacker needs to be equipped with additional features, tow hitch equipment for trailers, or other accessories which could influence the stability or braking capacity of the stacker.

Additional Specifications

TECHNICAL DATA-STANDARD VERSION

Descriptions of technical data are according to VDI 2198 and are only provided for standard stackers. Nonstandard types, additional equipment, etc. could produce other values. The manufacturer reserves the right to make technical modifications and additions.

EN STANDARDS

Sustained noise levels must be < 70dB (A); Refer to ISO4871 Standard.

NOTE: Continuous sound levels are averaged values according to standard regulations, taking into account the noise level when driving, lifting and idling. The noise level is measured at the ear.

ELECTROMAGNETIC COMPATIBILITY

(EMC) The manufacturer tests electromagnetic emissions, immunological interference, and electrostatic elimination in compliance with EN12895 and other standards.



No modifications to the electrical system may be made without written approval from the manufacturer.

APPLICATION CONDITIONS Ambient temperature operation range: 40°F (5°C) to 105°F (40°C).

DIMENSIONS

(See Tables 1 and 2 on page 2 and 3 for Wheel and Stacker Dimensions.)

⚠ CAUTION During continuous operation of the stacker in conditions below 40°F (5°C), or in low temperature and high humidity, special protections should be taken to protect electronic gauges and circuitry.

IMPORTANT: Read and understand all product data plates before use. In case of problems or to purchase spare parts, refer to the series number and part codes on data plates.

Transportation and Commissioning

STACKER CONVEYANCE

⚠ WARNING The load capacity of the stackers must not be exceeded. (Carried weight = net weight of stacker + weight of battery; refer to data plate.)

NOTE: Hoisting position is indicated on the chassis by the manufacturer.

Prior to conveyance:

- Place the stacker at a safe position.
- Attach to a point of strength on the crane using the hoisting position on the stacker.

⚠ WARNING The point of strength of the crane must be attached to hoisting position to avoid slippage of the stacker. During hoisting, the hoisting equipment must be attached to the hoisting position without touching the stacker.

COMMISSIONING

⚠ WARNING Only battery power may be used to operate the stacker. AC power will damage the electric circuitry. Battery connecting cables should be less than 20 feet (6 meters) in length.

For normal operation after delivery or transportation, the following procedures should be followed:

- Verify that the assembly of all stacker is complete and will satisfy the job requirements.
- If necessary, install the battery, taking care to avoid damage to the battery cable.
- Charge the battery immediately.
- If the consumer expects to apply a maintenance-free battery as a substitute, verify that the type of battery is compatible with the electronics of the stacker and charger. Get approval from the manufacturer if there is any doubt regarding compatibility.

Assembly

STRADDLE LEG ASSEMBLY INSTRUCTIONS

This stacker may require assembly. If so, carefully follow the assembly instructions taking care to heed all safety precautions. Some tools are required, including wrenches, a dead blow or other non-marring hammer, snap ring pliers, and a hoisting device such as a crane.

⚠ WARNING Do not remove the stacker from the pallet. The stacker should remain secured to the pallet until after assembly is completed. Failure to follow this instruction could cause serious injury. Stabilizing the stacker during assembly using a suitable crane or hoist is recommended.

STRADDLE LEG ASSEMBLY

1. Unscrew and remove the bolts on the leg of the stacker.
2. Slide the leg into the slot of the body to the desired position.
3. Insert and tighten the bolts securely.
4. Assemble the other leg following the above steps.
5. Remove the stacker from the pallet using a crane or other suitable lifting device.

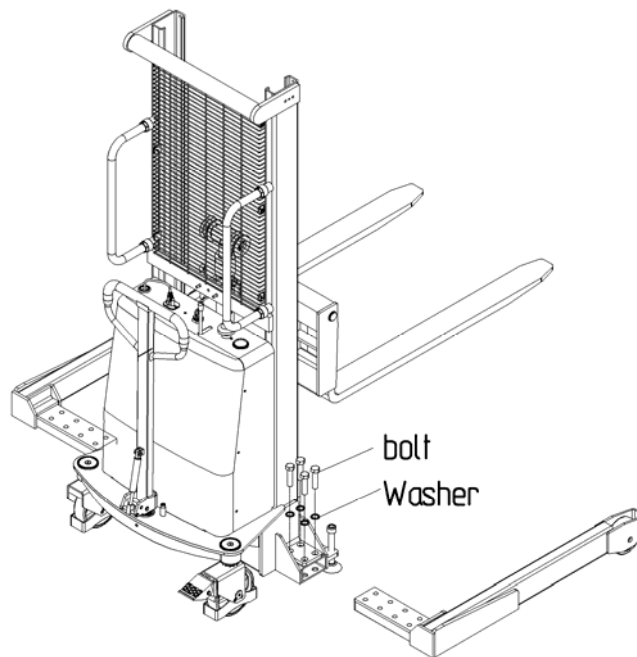


Figure 3 – Straddle Leg Assembly

FORK ASSEMBLY

1. Use snap ring pliers to remove the retaining ring and the fork carriage shaft from the carriage.
2. Place the forks so that the holes of the forks match up to the hole for the carriage shaft. You may need someone to help hold the forks in place.
3. Insert the shaft into the hole in the fork carriage, passing through the holes in the forks. Adjust the fork placement as necessary.

Use snap ring pliers to insert the retaining ring to lock the shaft in place.

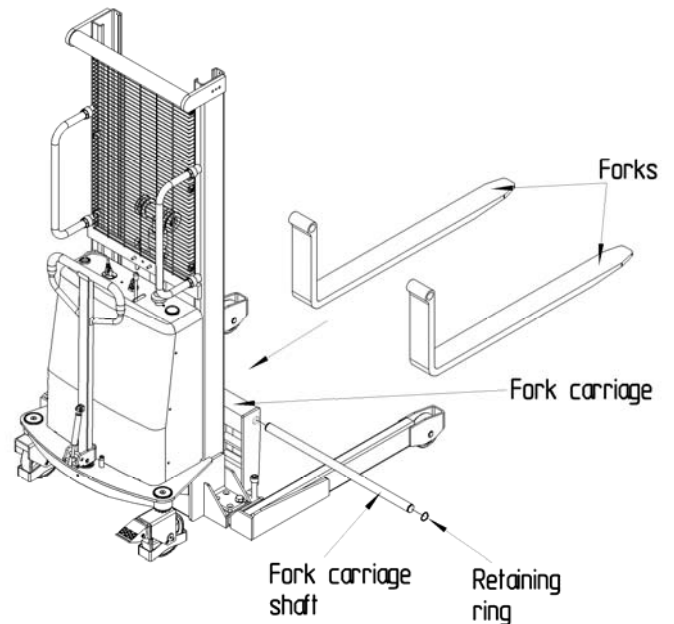


Figure 4 – Forks Assembly

Operation

CONTROL PANEL

LIFT/LOWER LEVER

This lever controls the pump motor to raise and lower the forks. Press forward to raise, pull back to lower the forks.

BATTERY INDICATOR

This indicator shows the residual capacity of the battery. When the showing residual capacity is under 20 percent, you should recharging the battery

ON/OFF SWITCH

Press key into the slot and turn clockwise to turn the power on.

EMERGENCY STOP SWITCH

When urgent situation, press the switch to turn the power on. Turn switch clockwise to turn off.

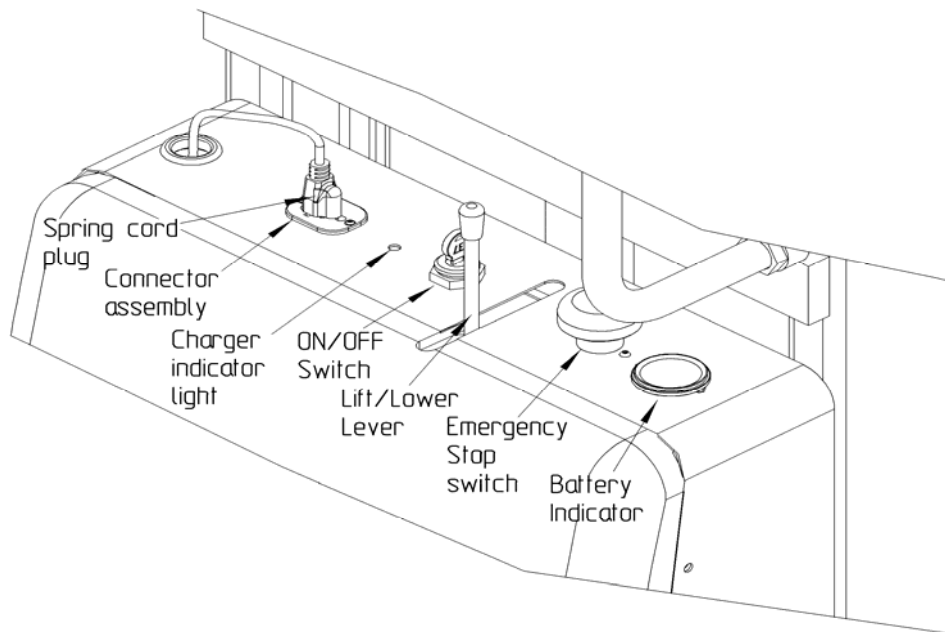


Figure 5 – Control Panel

STARTING THE STACKER

⚠ WARNING Confirm that no persons are in the danger area before starting and operating the stacker or lifting any cargo.

ROUTINE CHECKS BEFORE START UP

- Check for any external stacker defects (especially wheels and pallets).
- Check that the battery is firmly fixed and cables are connected properly.

STACKER START UP

- Press the switch to turn the power on
- Check the battery meter for adequate capacity.
- Disengage the parking brake to begin use.

STACKER OPERATION

⚠ CAUTION Caution must be used when driving the stacker. Riding of any kind is prohibited.

DRIVING ON A SLOPE

⚠ WARNING Operator should stand uphill of the load when traveling on a slope. Non-uniformly loaded cargo must be loaded in an upward direction of the slope. Make sure the area downhill from the stacker is clear should any slippage occur. When traveling downhill, pull the handle downward from the full upright position and then release it as needed to utilize the electromagnetic brake and control the speed and the direction of the stacker.

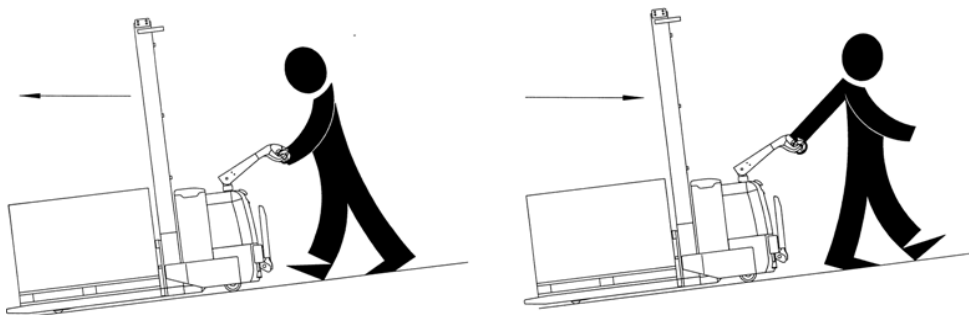


Figure 6 – Movement on a slope

CARGO LOADING/UNLOADING

▲ WARNING Before loading cargo, the operator must confirm that cargo is properly placed on the pallet and the weight of the cargo is within the rated load capacity of the stacker. Carrying full capacity loads for extended periods is prohibited.

- The forks should extend the full length of the bottom of the cargo.
- The Lift / Lower Lever will lift and lower the load at a adjustable speed.

LIFTING OF FORKS

- Move the control lever until desired height is achieved. Pay attention to the overhead clearance.

LOWERING OF FORKS

- Move the control lever to lower the forks to the required height.

▲ WARNING Forks should be as low as possible when driving with a load.

PARKING

IMPORTANT: Parking the stacker on a slope is strictly prohibited. Forks must be lowered to their lowest height when parking.

- Lower the forks to their lowest height.
- Depress the brake pedal.
- Turn off the Emergency stop Switch and Power Switch.

STRADDLE WIDTH ADJUSTMENT

1. Raise the carriage slightly.
2. Screw the holding bolt downward until it contacts the ground.

NOTE: Follow the hoisting instructions provided in the "Transportation and Commissioning" section of this manual.

3. Unscrew and remove the bolts on the upper of the stacker.
4. Move the straddle leg to the desired position.
5. Insert and tighten the upper bolts ,and adjust the feet on both sides to make the car stable on both sides.
6. Reposition the other leg following the above steps.
7. Remove the hoisting equipment.

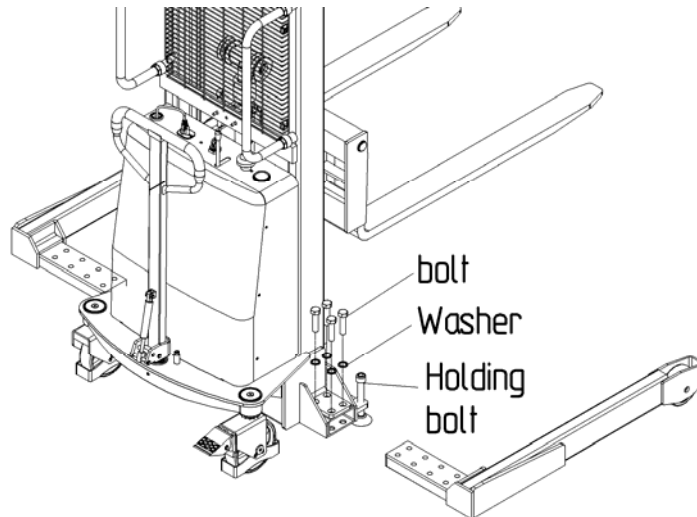


Figure 7 - Straddle Leg Adjustment

Maintaining, Charging and Replacing the Battery

SAFE OPERATION RULES FOR LEAD-ACID BATTERY

Before doing any maintenance on the battery, securely park the stacker in a safe location.

MAINTENANCE STAFF

Charging, repairing, and replacing batteries should only be performed by qualified professionals. Before operating, carefully read the instructions included in this manual regarding battery preparation and charge requirements.

▲ WARNING The electrolyte in the battery is poisonous and corrosive. Battery maintenance should always be

performed while wearing protective goggles and clothing to avoid bodily contact with the battery acid solution.

▲ WARNING If clothing, skin or eyes accidentally come into contact with the electrolyte in battery, liberally flush the affected parts with clean water and consult a doctor immediately. Any spilled electrolyte must be neutralized as soon as possible.

FIRE PROTECTION

Smoking and any other sources of ignition are strictly prohibited near the battery. The battery should be stored and charged at least 6 feet (2 meters) away from any flammable substance. Batteries should be stored in a well ventilated location with fire protection equipment.

MAINTENANCE OF BATTERY

1. Keep all screw caps on the battery cells dry and clean. Battery posts and cable terminals should be tightened and covered with clean dielectric grease. Terminal connections and battery posts should be covered with anti-slip insulated covers.
2. Cables connecting the cells should have good contact. Check nuts for loosening or slippage and tighten if necessary.
3. Keep the surface of the battery clean and dry.
4. Over-charging or rapid discharging of the battery should be avoided. Forcibly charging or discharging the battery will shorten its life.
5. To prevent a short circuit or explosion, conductive objects (including metal tools) should not be placed on the battery.
6. After battery is discharged, it should be recharged in a timely fashion. Maximum charging intervals should not exceed 24 hours. On cold days, if the battery doesn't take a charge, move it indoors and allow it to warm to room temperature.
7. If the battery will not be used for a long period of time, it should be fully charged prior to storage, and a full charge should be reapplied monthly.
8. If a cell malfunctions, the cause should be determined and the malfunctioning cell should immediately be repaired or replaced.
9. When charging batteries, ventilation equipment should be used to exhaust any potentially harmful or flammable gases.

▲ WARNING *There is a risk of hydrogen explosion in poorly ventilated conditions.*

10. The weight and dimension of the battery have a significant effect on the stability of the stacker. Any change of battery type should be approved by manufacturer.

BATTERY DISPOSAL

Scrap batteries must be disposed of in an environmentally-friendly way and in accordance with the regulatory authorities.

BATTERY REMOVAL AND INSTALLATION

▲ WARNING Park the stacker on level ground. Cover electrodes with a rubber gasket to avoid a short circuit. When removing the battery, adjust the battery cables to keep them from impeding the battery's removal.

▲ WARNING When lifting the battery with a hoist, confirm that the hoist has adequate capacity (battery weight is shown on the stacker data plate). The hoist hook must be safe and reliable. The hoist hook must not contact the battery posts.

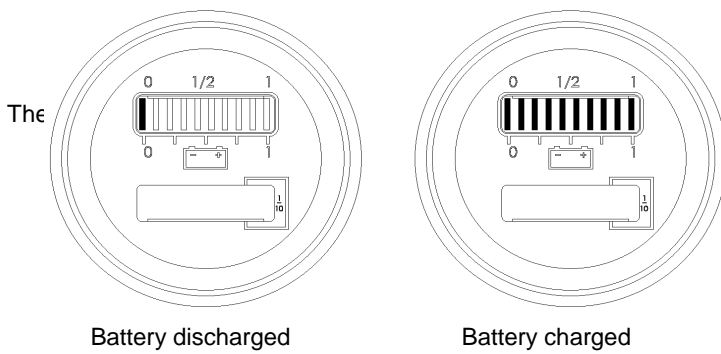
- Engage the brake and turn off the Emergency Stop Switch.
- Disconnect the battery.
- Remove the battery using a hoist or crane.

NOTE: Installation procedure is the reverse of the above sequence.

▲ WARNING After installing, check for damage on all cables and plugs. Battery posts must be covered by an insulating cap for protection. When connecting the battery, the stacker must be turned completely off to avoid arcing.

▲ CAUTION Use caution when covering the battery case. Avoid putting fingers between the cover and case. Before using the stacker, ensure the battery and cover are properly secured.

BATTERY METER



Battery discharge indicator

Only when the battery is properly charged, the most right LED lit. As the battery's state-of-charge decreases, successive LEDs light up, only one on at a time.

- The 2nd from left LED flashes, indicating “energy reserve” (70% depth of discharge).
- The 2 most left LEDs alternately flash, indicating “empty” (80% depth of discharge).

BATTERY CHARGING

▲ WARNING Battery charging must comply with any instruction manuals provided by the battery and charger suppliers.

▲ WARNING *Before charging, make sure the Emergency Stop switch are in the off position. Charge the battery in a dry and air-circulated environment and keep away from fire sources. The battery should be charged regularly (once per month at a minimum).*

When the battery power is low, discontinue use and charge the battery immediately.

AUTOMATIC CHARGER

A fully automatic smart charger is included with the stacker. The charger indicator lights in red when the battery is charging. The charger will automatically adjust the current flow according to residual capacity of the battery, which ensures an optimum charge. When complete, the charger indicator lights green and the charger automatically stops. A full charging course generally lasts 5-7 hours.

IMPORTANT: Before charging, make sure no metal objects are on the battery. Check for any obvious faults on all cables and plugs. Safety instructions, including common rules and battery charging preparation procedures, should be strictly observed. During charging, cock caps for each cell should be opened to maintain air circulation conditions.

Maintenance

SAFETY OPERATION AND ENVIRONMENTAL PROTECTION

The instructions in this section should be performed based on the time intervals specified in the Maintenance List.

▲ WARNING No part of the stacker, especially safety devices, may be changed without the manufacturer's written permission. All spare parts from the manufacturer are qualified by Quality Assurance Authorities. To ensure safe and reliable stacker operation, only spare parts from the manufacturer should be used. Replaced parts, including oils and fuels, must be disposed according to environmental protection regulations.

MAINTENANCE SAFETY RULES

MAINTENANCE STAFF

Repair and maintenance should only be performed by qualified professionals who have been trained by the manufacturer.

LIFTING THE STACKER

Hoisting equipment used to lift the stacker should be safe and reliable. When the stacker is lifted, necessary precautions should be taken to avoid slipping or overturning of the stacker (a wedge block or wood block can be applied). The stacker should be lifted only when the forks are fixed and adequately strong connecting cables are applied.

CLEANING

Using flammable fluids to clean the stacker is strictly prohibited. Before cleaning, safety measures must be taken to avoid sparking (e.g. caused by short circuit). Battery work should only be performed after cutting off the power. Electric elements and electronic assemblies should only be cleaned using compressed air or a nonconductive, anti-static brush.

▲ WARNING If the stacker is cleaned with a high pressure washer, all electric elements and electronic assemblies should be covered to avoid a functional fault. Cleaning with a steam nozzle is prohibited.

ELECTRICAL SYSTEM

Work on the stacker's electrical system should only be performed by trained professionals. Protective measures should be taken to avoid electric shock. Before beginning work, separate the battery socket to cut off power to the stacker.

WELDING

To avoid damage of electric and electronic assemblies, assemblies should be removed from the stacker before welding.

INSTALLATION

After repairing or replacing hydraulic components, electric elements, and electronic assemblies, confirm that all components are at original positions before resuming use.

WHEELS

Wheel quality greatly affects the stability and driving performance of the stacker. Any change of wheels should be approved by the manufacturer. During replacement of wheels, the stacker must be kept in an upright position. Wheels must be replaced in pairs, (e.g. both left and right).

LIFTING CHAINS AND ROLLERS

Without proper lubrication, lifting chains and rollers will wear out prematurely. Maintenance intervals outlined in this section are for normal operating conditions. In substandard operating conditions (high dust, extreme temperatures), more frequent lubrication will be necessary.

HYDRAULIC OIL

Check hydraulic oil levels at least every 6 months and replace every 12 months. Replace only with hydraulic oil: ISO VG32, with a viscosity of 32cSt at 100°F (40°C). Capacity is approximately 4 quarts. Hydraulic oil line should be replaced every six years. Hydraulic oil should be replaced at the same time.

DAILY MAINTENANCE (BEFORE EACH SHIFT)

1. Check the battery's acid levels daily. Note that the acid level will rise during recharging.
2. Check battery terminals and cables for proper fit.
3. Make sure the battery box is securely fastened in its holder.
4. Check for any oil leakage.
5. Check the functionality of the parking brake.
6. Check the frame and wheels for any signs of damage.

MAINTENANCE AND INSPECTION

Complete and professional maintenance is an important part of safe stacker operation. Neglecting maintenance will cause premature failure of the stacker and potential danger to persons and equipment.

NOTE: Maintenance cycles stated in the Instruction Manual refer to single shift operation under normal conditions. Under dusty conditions, extreme temperature variations, or when operating multiple shifts, maintenance cycles should be shortened.

Maintenance should be performed according to the following intervals under normal conditions:

W1 = every 50 working hours or at least once per week.

M3 = every 500 working hours or at least once every three months.

M6 = every 1000 working hours or at least once every six months.

M12 = every 2000 working hours or at least once per year.

For newly commissioned stackers, the following additional maintenance should be done:

After 50 hours to 100 hours of operation or after 2 months of use:

- Check for any loose nuts on the wheels and tighten as necessary.
- Check for any leakage of hydraulic parts and tighten fittings as required.

MAINTENANCE SCHEDULE

Refer to Table 4 for weekly, monthly and yearly schedules.

Maintenance Area	Action	1 week	3 Months	6 Months	1 Year
Chassis and Stacker Frame	Inspect for any damage of load bearing parts		•		
	Inspect all joints and bolts		•		
Wheels	Inspect for wear and damage		•		
	Inspect bearings inside wheels and ensure a proper fit †		•		
Steering System	Inspect steering operation motion		•		
Brake	Inspect brake performance and adjust as needed	#	•		
	Check for brake wear		•		
Lifting Equipment	Check performance, look for wear		•		

	Visually inspect for any blockages in the loading wheels		•		
	Check for any wear or damage to the edges of forks and pallet	#	•		
Hydraulic System	Check performance	#	•		
	Check for any leakage or damage on all joints ‡	#	•		
	Check for leakage or damage to hydraulic cylinder, verify safety and reliability of connections	#	•		
	Check oil capacity	#	•		
	Replace hydraulic oil ‡‡			#	•
	Inspect adjustment function of pressure regulator			#	•
Electrical System	Check performance		•		
	Check for safety and reliability of cable connections, check for damage		•		
	Inspect fuses for proper amperage ratings		•		
	Check safety, reliability, and function of switches		•		
	Inspect connections, replace worn parts if necessary		•		
	Inspect function of alarm equipment	#	•		
Battery	Check the density and capacity of acid, check the battery voltage	#	•		
	Inspect for safety hoods and dielectric grease on connection terminals	#	•		
	Clean battery connections, inspect for tightness of fit	#	•		
	Check for damage to battery cables, replace if necessary		•		
Lubrication	Check grease fittings for proper lubrication, add grease as needed	#	•		
Integrated Measurement	Check for faults in grounding of the electrical system				•
	Check lifting and lowering speed				•
	Inspect safety devices		•		

Table 4 – Maintenance Schedule

(•) Standard

(#) Refrigerated warehouse

(+) After initial 100 hours of operation, check for any loose nuts on wheels and tighten as necessary

(‡) After initial 100 hours of operation, check for any leakage of hydraulic parts and tighten as required

(‡‡) 500 hours after initial operation

MAINTENANCE AND REPAIR PREPARATIONS

Take necessary safety precautions to avoid accidents during repair and maintenance by:

- Parking the stacker safely
- Pressing the parking brake.

▲ WARNING If it becomes necessary to lift the stacker for maintenance or repair, refer to the related instructions in the “Transportation and Commissioning” section for precautions to be taken when lifting the forks or lifting the stacker.

USING THE STACKER AFTER MAINTENANCE

Complete the following operations before using the stacker:

- Clean the stacker.
- Check the brake.

STORAGE OF THE STACKER

If the stacker will be unused for 2 or more months, it should be parked in a cool (non-freezing) and dry location. The following measures should be taken before, during, and after storage.

NOTE: During storage, the stacker should be elevated to keep the wheels completely off the ground. This will protect the wheels and the bearings inside wheels from damage. In the case of storage period of over 6 months, contact the manufacturer for additional measures.

PREPARATIONS BEFORE STORAGE

- Clean the stacker thoroughly.
- Check the brake.
- Check the hydraulic oil capacity, add fluid if necessary.

- Apply oil or grease to fittings as needed.
- Consult detailed Lubrication List to lubricate the stacker.
- Recharge the battery.
- Disconnect and clean the battery. Apply dielectric grease to the battery electrodes.

NOTE: In addition to the above, instructions provided by the battery supplier should also be observed.

MEASURES TO BE TAKEN DURING STORAGE

Every two months: charge the battery.

IMPORTANT: It is important to recharge the battery regularly. Batteries allowed to completely discharge may become damaged and require replacement.

RE-COMMISSIONING

- Clean the stacker thoroughly.
- Consult detailed Lubrication List to lubricate the stacker.
- Clean the battery, apply dielectric grease to electrode bolts and connect the battery.
- Recharge the battery.
- Check for any moisture in the hydraulic oil, replace if required.
- Check all safety functions before using.

BATTERY OPERATION

In the case of a fault in the electrical system, brush all exposed electrical connections or clean with contact cleaner. Repeat this step to remove oxidation on controller connections.

TROUBLESHOOTING CHART

Fault	Reason	Treatment
Forks won't lift	1. Hydraulic oil is low 2. Blown fuse 3. Battery level is below 20-30%	1. Check hydraulic oil and add if needed 2. Check fuse; replace if necessary 3. Charge the battery
Forks won't lower	1. Control valve is blocked with dirty fluid 2. Lowering valve is off or damaged	1. Check hydraulic oil and clean control valve. Replace hydraulic oil if necessary 2. Check lowering valve and replace if needed
Forks won't stop lifting	Lifting micro switch is damaged	Turn off power and replace lifting micro switch
Poor directional control	Pedal plate for brake interfere the chain for steering	Release the brake, let the pedal plate be level.

Hydraulic Flow Diagrams

