Bishamon®

Operation and Service Manual for Lifter X Series

Model

NX • X1ton • 2X
X2ton • X3ton Series

Sugiyasu Corporation
Aug. 2007

Preface

Before operating, an operator should read this manual carefully and understand completely. Keep this manual for further reference. In case of lost of this manual, please ask your local supplier for a new copy. Also in case of lost or any damage of WARNING/CAUTION decal, please ask your local supplier for a replacement.

Note:
On this manual WARNING means the danger, which could lead death or serious injury. CAUTION means the danger, which could lead slight injury or property damage.

⚠ Warning

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 accident resulting in injury or death, or damage to properties, make certain to understand them fully before operating lift.

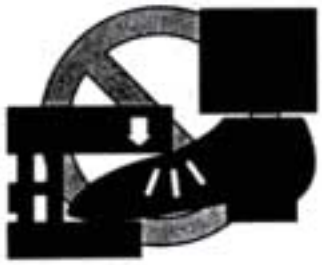
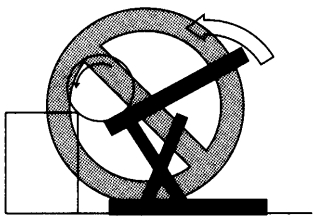
⚠ **Danger** ····Incorrect operation may imminently result in serious injury or death of the operator.

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

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

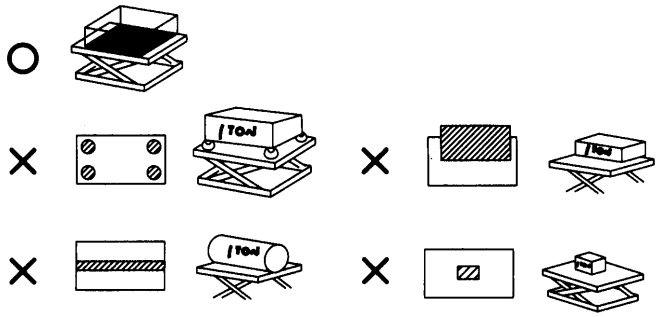
Contents

1 Warnings and Cautions

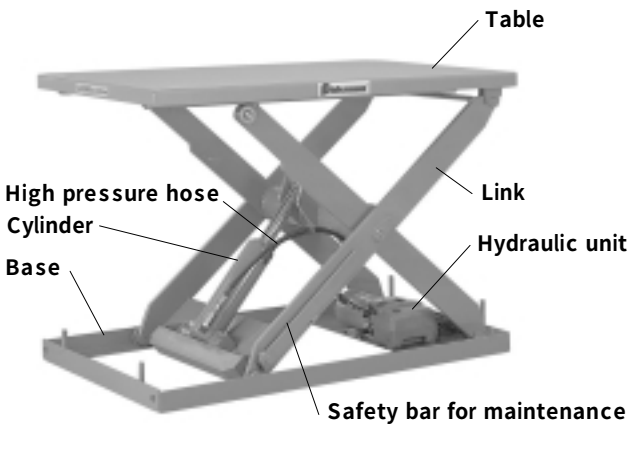
Warning	
Follow the instruction otherwise death or serious injury may occur.	
	DO NOT lift people. People could fall and could create severe injury.
	DO NOT enter under the table. In case you have to, unload the lifter and lock the safety bar.
	DO NOT put a foot or a hand in scissors mechanism.
	DO NOT put a foot under the table.
	DO NOT overload the lifter.
	It may lead load fall or damage on the lifter. When transferring load to the table, occasionally unbalanced load might lead the lifter fall. In used for transfer purpose, ask the manufacturer for information in advance.

Caution

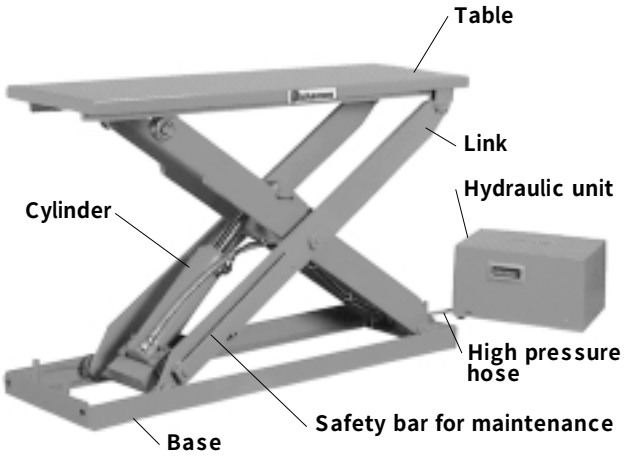
1. Read this operation manual carefully and understand completely before operating the lifter. Improper operation leads to an accident.
2. This lifter is designed to lift up and down the load under the rated capacity, using more than 80% of the table surface. Do not use the lifter for other purpose than its intended use.
3. The tact time of this lifter should be more than three minutes. Do not use it at high frequency or high speed.
4. Do not allow person to operate the lifter, who does not understand its operation.
5. Keep watching the load condition. Stop operation of the lifter if the load becomes unstable.
6. Practice maintenance work according to the service manual.
7. Do not modify the lifter without the manufacture's written consent.
8. Put the load well-balanced on more than 80% of the table surface while lifting the load. Unbalanced load leads to machine damage or poor durability.
9. Be aware of unbalanced load while transferring the load.
10. Remove load from the table and lock the safety bar at the time of maintenance and inspection.
11. Stop operating immediately when the table reaches to the highest or lowest possible position. The motor or the coil would overheat and burn out.
12. Do not put unbalanced load on the table as shown below.



2 Name of parts



NX100WC



X10410

3 Installation of lifter

Warning

Follow the instruction otherwise death or serious injury may occur.

Do not install the lifter on inclined surface.

It leads to damage or fall of the lifter.

Do not hold the table when moving the lifter.

One side of the table may be lifted and it leads to a danger.
Hold the base when moving the lifter.

Caution

1. **Installation should be done where there is no space between the base and the floor. In case of any space, the base may bend.**
2. **The power cable should be shorter than 10M and its cross section should be larger than 2 square millimeter. Long or thin cable may cause overheat of the motor or the cable, which leads to a danger.**
3. **Install the lifter where the ambient temperature is between 0℃ to 30℃.**
4. **This lifter is not designed to be water-proof or for outdoor use. Install the lifter indoor under dry circumstances.**

1. Check if the installation floor is flat.

Caution

※ Install the lifter where the ambient temperature is between 0℃ to 30℃.
※ This lifter is not designed to be water-proof or for outdoor use. Install the lifter indoor under dry circumstances.

2. Unpack the lifter and place it at the desired place. In case of any space between the base and the floor, fill it with some spacer or cement.

Caution

※ Do not hold the table while moving the lifter. One side of the table may be lifted, which leads to a danger.

3. Connect the power cable to the power source and check the movement of the lifting unit.

Caution

※ If the table does not rise while the motor is working, this could be due to the opposite rotation or single phase movement of the motor. In that case, exchange two of three cables or make sure if all three cables are connected and turned on.
※ The power cable should be shorter than 10M and its cross section should be larger than 2 square millimeter. Long or thin cable may cause overheat of the motor or the cable, which leads to a danger.

4. If necessary, fix the lifter with anchor bolts.

4 Daily inspection before working

Daily inspection is important for safety and early discovery of malfunction. Check the followings before working.

(1) Check if there is any abnormality on the appearance.
(2) Check if there is any foreign article inside of the lifting unit.
(3) Check if the quantity of oil is sufficient.
(4) Check oil leakage from the piping, cylinder or hydraulic unit.
(5) Check if there is any abnormality on the electric circuit. Check if the lifting movement is smooth.
(6) Check unusual wear on the lifting unit.
(7) Check unusual noise from the lifting unit, motor or pump.
(8) Check the looseness of the screws and bolts.

Caution

Remove the load from the table and lock the safety bar while working under the table for maintenance or inspection.

5 Operation of lifter

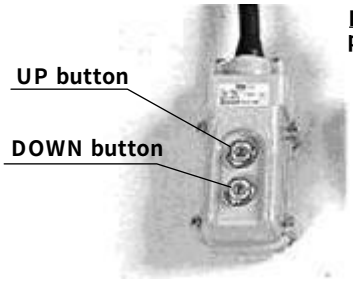
This lifter is operated by push buttons or foot switch.
Push " UP " button (pedal) and the table goes up.
Push " DOWN " button (pedal) and the table goes down.

Caution

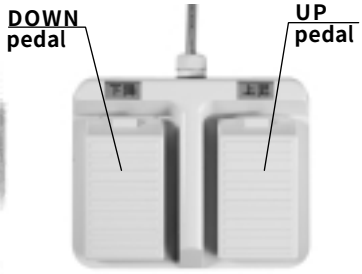
Stop operating immediately when the table reaches to the highest or lowest possible position. The motor or the coil would overheat and burn out.

Safety bar

This lifter is equipped with a safety bar in case of working under the table for maintenance or inspection. Lock the safety bar without fail while working under the table for maintenance or other works.



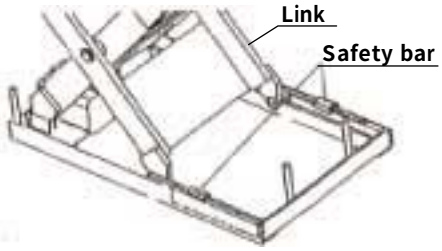
Push button switch



Foot switch

How to lock a safety bar

(1) Remove all loads from the table.
(2) Raise the table at the highest position.
(3) Rotate the safety bar and put it on the base.
(4) When lowering the table, the safety bar touches the base end, which stops the table
(5) That is how to lock the safety bar. Practice maintenance.
(6) After maintenance, raise the table and put the safety bar back to the link.



Safety bar put on the base

6 Periodical inspection

Warning

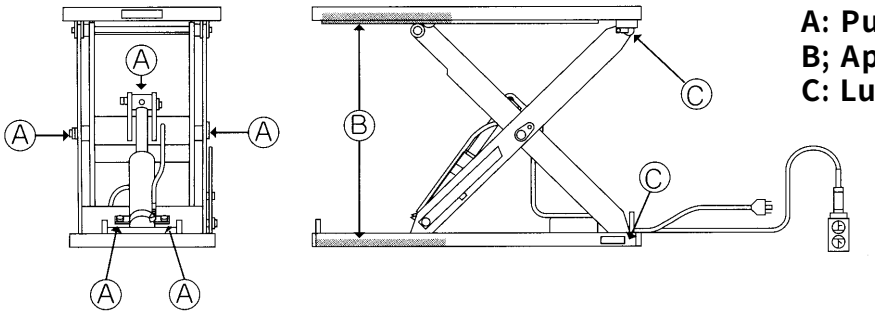
Remove the load from the table and lock the safety bar while working under the table for maintenance or inspection.

Periodical inspection is important for safety and early discovery of malfunction. Inspect periodically the below said parts. There are some difficult parts to be inspected correctly by a customer and inspection by the dealer is recommended. (Fare-paying)

Inspection

Inspection part	Method	Period
Lubrication	Lubricate all parts designated in this manual.	Every month or Once per 10000 times of lifting
Hydraulic oil	Replace hydraulic oil completely with new one 3 months after the installation.	Every year after the first replacement
Natural fall	Put the rated load on the table and measure its natural vertical fall	Every six months
Appearance	Check crack or deformation on the unit. Especially those on welded parts.	Every six months
Axles and bearings	Check wear status on the axles and bearings.	Every six months

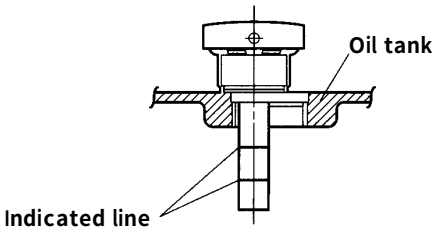
Lubrication



A: Put grease in grease nipple
B; Apply grease
C: Lubricate

Oil used for Lifter

There is a gauge in the oil plug.
Make sure if the oil surface is between the indicated lines.



Classification of viscosity
: ISO VG32 anti-wearing hydraulic oil.

Brand	Name
Esso	Nuto H32, HP32 Uni-power SQ32, SL32
Showa Shell	Terrace oil 32, K32
Mobile	Mobile DTE24

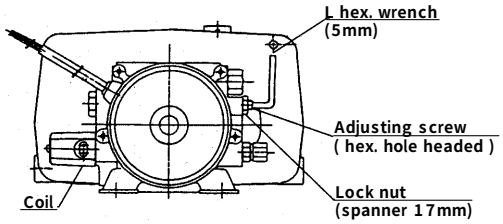
7 Adjustment of lowering speed

Warning

※ The lowering speed is preset under the specified load before delivery. Adjust the speed as less as possible because too much increase of lowering speed may leads to a danger.
※ When speed is adjusted with no load, there might be a case that lowering speed gets too fast with load, which leads to a danger.

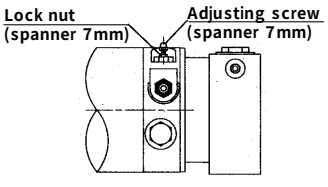
1. NX, X1ton, 2X Series

1) Loosen the nut with 17mm spanner.
2) Turn the adjusting screw (hex. hole headed) with 5mm hexagon wrench and adjust the speed.
   Clockwise····· Slow
   Counterclockwise ····· Fast
3) Hold the adjusting screw (hex. hole headed) with hexagon wrench and tighten the hexagon nut with spanner.



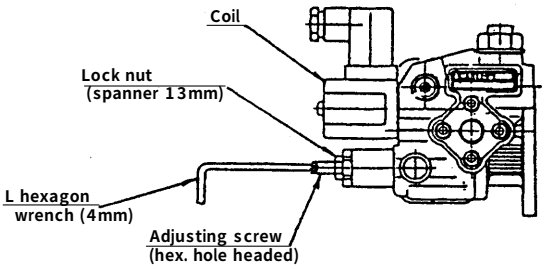
X10410, X10413, X10415

1> Loosen the lock nut with 7mm spanner.
2> Turn the adjusting screw with 7mm spanner.
   Clockwise·····Slow
   Counterclockwise·····Fast
3> Tighten the lock nut.



2X10918, 2X11218

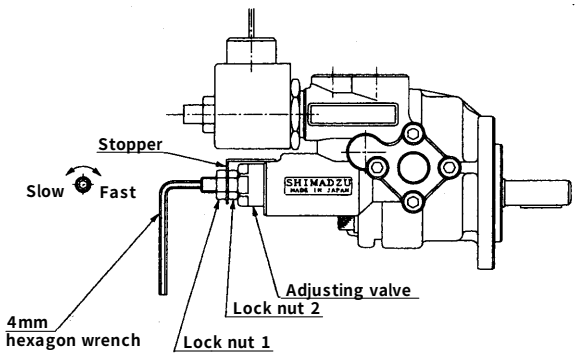
1> Loosen the nut with 13mm spanner.
2> Turn the adjusting screw (hex. hole headed) with 4mm L hexagon wrench.
Clockwise ····· Fast
Counterclockwise····· Slow
3> To fix the nut, hold the adjusting screw with L hexagon wrench and tighten the nut.



2. X2ton, X3ton Series

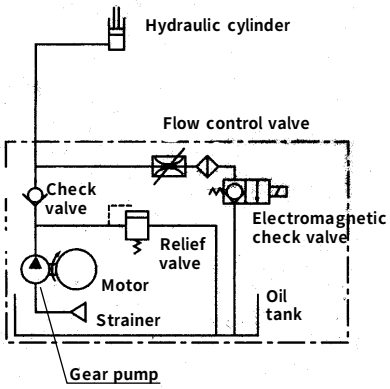
1) Loosen the lock nut 1 with 13mm spanner.
2) Remove the stopper.
3) Loosen the lock nut 2 with 13mm spanner.
4) Adjust the speed with 4mm hexagon wrench.
Clockwise ····· Fast
Counterclockwise····· Slow
5) Tighten the lock nut 2.
6) Fix the stopper and tighten the lock nut 1.

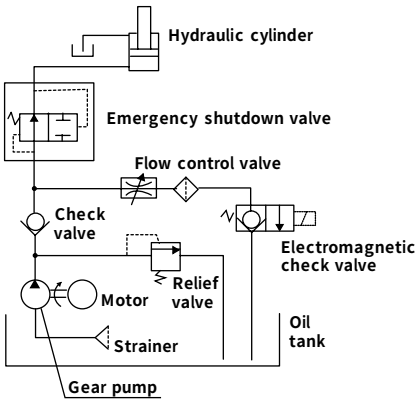
※ While tightening a lock nut, hold the screw (hex. hole headed) with hexagon wrench.



8 Hydraulic circuit, Electric circuit

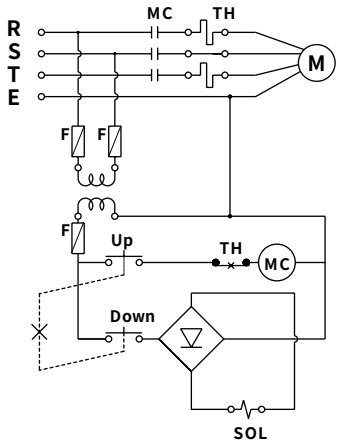
Hydraulic circuit



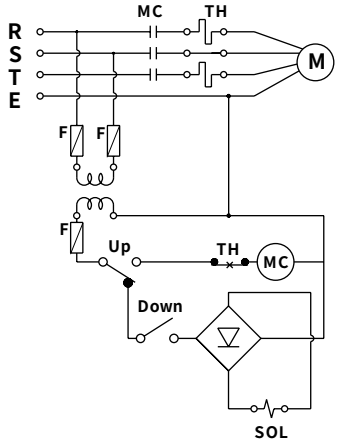


Electric circuit

Push button switch type



Foot switch type



9 Trouble shooting

Trouble	Cause		Countermeasure
Malfunction of table lifting	Electricity	Reverse rotation of the motor	Exchange two of three cables
		Single phase operation	Verify three phase operation
		Malfunction of the magnet switch	Coil burnout Poor contacting of the switch or cable disconnecting Thermal relay is working.
		Poor contacting of the magnet switch	Check the switch contact and replace it with a new one (with case) if necessary.
	Valve	Always open valve owing to a foreign object in the lifting valve	Remove the foreign object or replace the lifting valve
		Improper pressure adjustment with the relief valve	Set the pressure as designated by adjusting the relief valve. (Do as less as possible in principle)
	Hydraulic oil	Oil shortage	Supply hydraulic oil. (When the table is at the highest position, oil should be 10mm up from the filter surface.)
	Pump	Malfunction at the rated relief valve pressure	Replace the pump.
Slow speed of table lifting	Pump	Under specified capacity owing to gearwheel wear of pump	Replace the pump.
	Motor	Under specified motor output	Replace the motor or check the voltage
	Filter	Clogged filter	Clean the filter, replace hydraulic oil
	Cylinder	Oil leakage from a broken seal in the cylinder	Repair the cylinder. (Replace the seal.)
Malfunction of table lowering	Electricity	Disconnection or poor contacting of the lifting valve	Check, referring to the electric circuit. Repair.
	Lifting valve	Opening malfunction	Overhaul or replace the valve.
	Lifting unit	A foreign object on the guide rail.	Remove the foreign object.
Slow speed of table lowering	Lifting valve	Clogged filter of the valve Spool trouble in the valve	Clean or replace the filter. Repeat lifting and lowering. In case of defective spool, replace the valve.
	Lowering valve	Improper adjustment of flow rate of the lowering valve	Adjust the lowering speed with the lowering valve
Natural fall after stopping	Cylinder	Oil leakage from a broken seal in the cylinder	Repair the cylinder. (Replace the seal.)
	Piping joint	Oil leakage from the high pressure hose or pipes	Retighten each joint. Replace the sealing tape.
	Check valve	Foreign object in the check valve. Defect working face of the check valve.	Replace the combination pump.
	Lifting valve	Foreign object in the spool of the lifting valve Spool trouble	Remove the foreign object from the lifting valve. Replace the lifting valve.
Knocking while table lifting	Lifting unit	Looseness of pins Defective rotating of wheels for moving	Repair or replace the main unit or lubricate. Lubricate or replace the wheel.
	Hydraulic oil	Air absorption owing to hydraulic oil shortage	Supply hydraulic oil.
Noise while lifting and lowering	Lifting unit	Lubrication shortage at pins and holes Wear of bushings or a pins.	Lubricate. Replace the bushings or the pins.

⑩ Disposal

For proper disposal, divide the lifter into 4 categories; ferrous material, nonferrous material, resin material and hydraulic oil and dispose them as industrial waste.
If you have any questions, contact your supplier before disposal.

⑪ Warranty

We warrant the products 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 satisfaction to be defective.

The belows are not covered by the warranty.

1. **The damage or trouble caused by the false operation, negligence of the maintenance and storage required.**
2. **The damage or trouble caused by the modification that affects the originally 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 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 corrosion, rust, short circuit from water are not covered under this warranty.**

How to claim

For warranty claim under the above said provision, contact your supplier and the supplier will take the required procedure.
However please note to accept the claim or not, is totally judged by the manufacture.

12 After service

- Something is wrong ⇒ Check in accordance with this manual
- Something is still wrong ⇒ Contact your supplier for repair
- Repair under warranty period ⇒ Will be repaired in accordance with warranty rules
- Repair after warranty period ⇒ Contact your supplier
- Availability of Spare Parts ⇒ The spare parts is available for 8years after discontinuing manufacturing

Contact your supplier for any information regarding to the after service.
When contacting your supplier, provide Model No., Serial No., purchase date and conditions of trouble.

For your records and future contact, fill out below.

Model No.		
Serial No..		
Purchase Date		
Supplier	Name Address Tel. No.	
Installer	Name Address Tel. No.	
Trouble Date and conditions		Date :
		Date :
		Date :
		Date :
		Date :

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