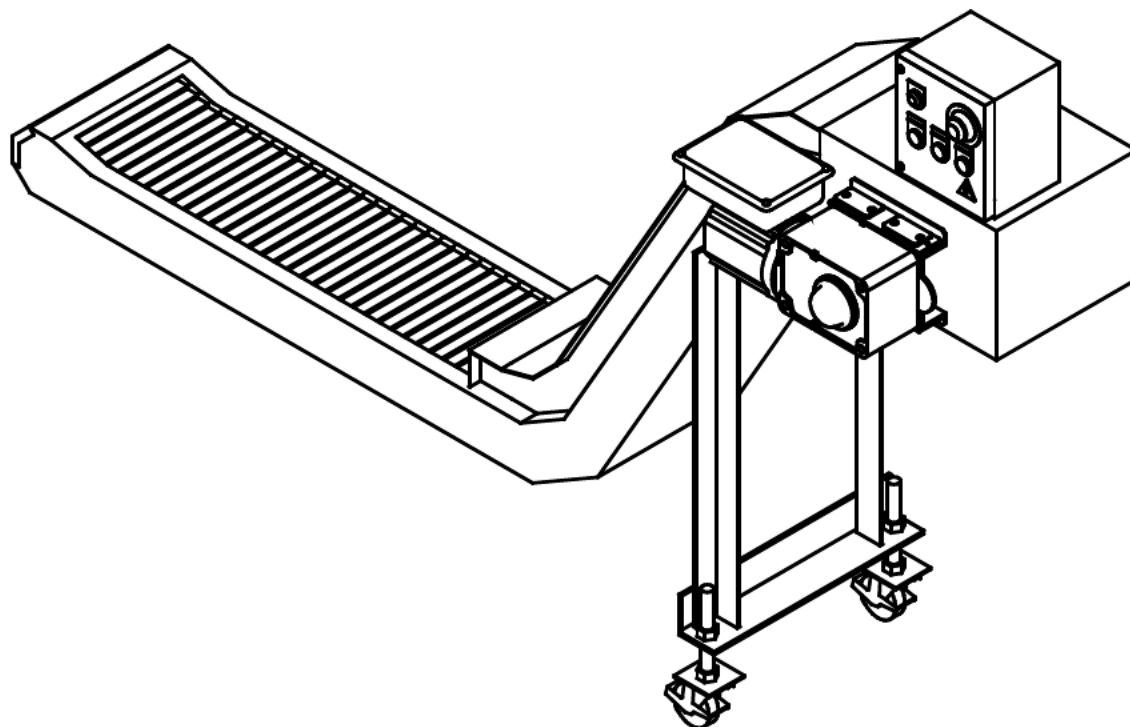


# Maintenance & Inspection Manual

## Chip Conveyor

(This manual includes the description for both floor type and scraper type)



### For Safety

- Make sure that an experienced operator operates this machine. DO NOT operate this machine until an operator has read this manual completely and understands it thoroughly.
- Be sure to keep the manual close at hand for the operator to read it whenever necessary.
- Preserve this manual with care so that it may be referred to before using this machine.

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Thank you very much for purchasing our chip conveyor.

In this manual the levels of injury or damage, which can result if this machine is used incorrectly, are categorized into two levels: warning and caution. The definitions and descriptions are as follows:

 <b>WARNING</b>	This is used where, if the designated instructions or procedures are not strictly followed, a strong possibility exists that either serious or fatal injury can result.
 <b>CAUTION</b>	This is used where, if the designated instructions or procedures are not strictly followed, a bodily injury or machine damage can result.

Even if an instruction is categorized in “CAUTION” a serious accident may result depending on the condition. Be sure to pay strict attention to the instructions and observe them.

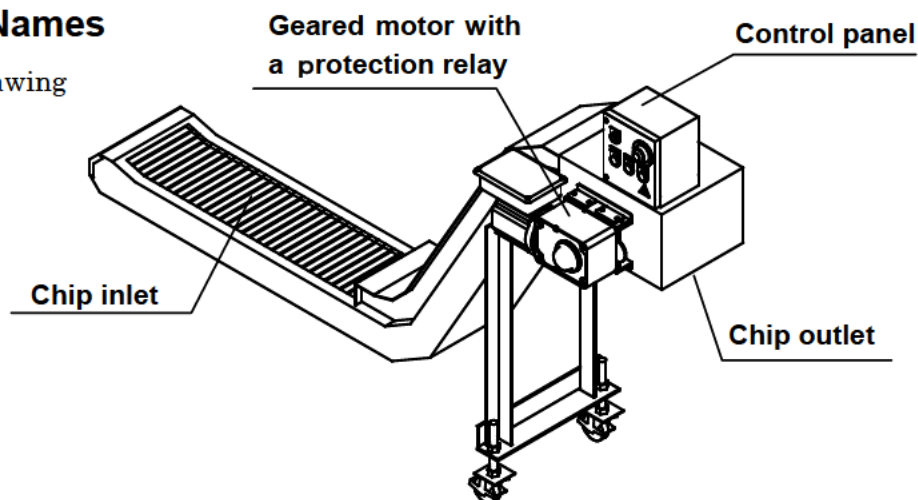
 <b>WARNING</b>
<p>DO NOT use this machine in an explosive environment. It may cause explosion, fire, electrical shock, and injury or machine damage. Make sure that qualified personnel performs carriage, installation, wiring, operation, maintenance and inspection. Explosion, fire, electrical shock, injury or machine damage may result. DO NOT remove the machine plate. DO NOT modify the machine. We cannot take responsibility for modification.</p>

 <b>CAUTION</b>
<p>Be sure to follow the specifications on the machine plate, the drawings, and the control panel assembly drawing. Electrical shock, injury or machine damage may result. DO NOT put a hand or a foot in the opening section of the chip conveyor such as the chip inlet or outlet. Electrical shock, injury or machine damage may result. DO NOT remove the machine plate. DO NOT modify the machine. We cannot take responsibility for modification.</p>

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# 1 Section Names

## (1) Outline Drawing



## (2) Safety Device

This machine is provided with a safety device to prevent the conveyor from excessive torque. When excessive torque occurs, the protection relay in the geared motor automatically stops the machine. In this case, look into the cause of the overload and remove the cause of the overload.

## (3) Protection relay Terminal Connection

When you control the conveyor, connect the terminals according to the following connection so that the safety unit works properly.

(A protection relay has an exclusive operation power supply terminal(A1·A2) to cope with the different voltage and inverter driving.)

### 1. Connection of the main power supply(U·V·W)

Please connect the wiring to terminal U·V·W in the terminal box.

### 2. Connection of the operation power supply(A1·A2)

Please connect AC100~240V (for exclusive use of the operation) to an operation power supply terminal by all means. In the case of an authentic sample(200V grade motor), a tie line is connected.

### 3. Connection of the signal output terminal(95/c·96/b·98/a)

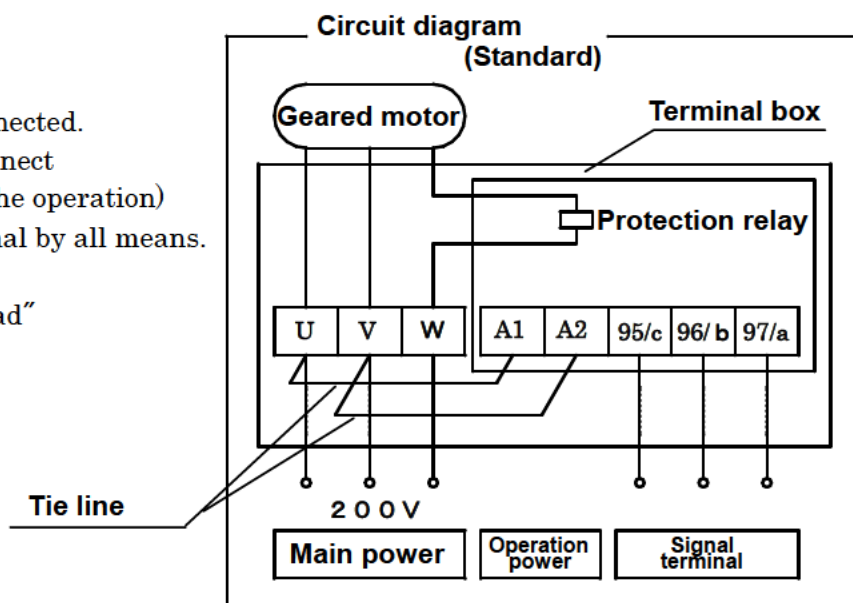
When an electric current is beyond a set point at the time of overload outbreak, a signal appears. Please prepare for an electric circuit stopping the geared motor.

### 【Attention】

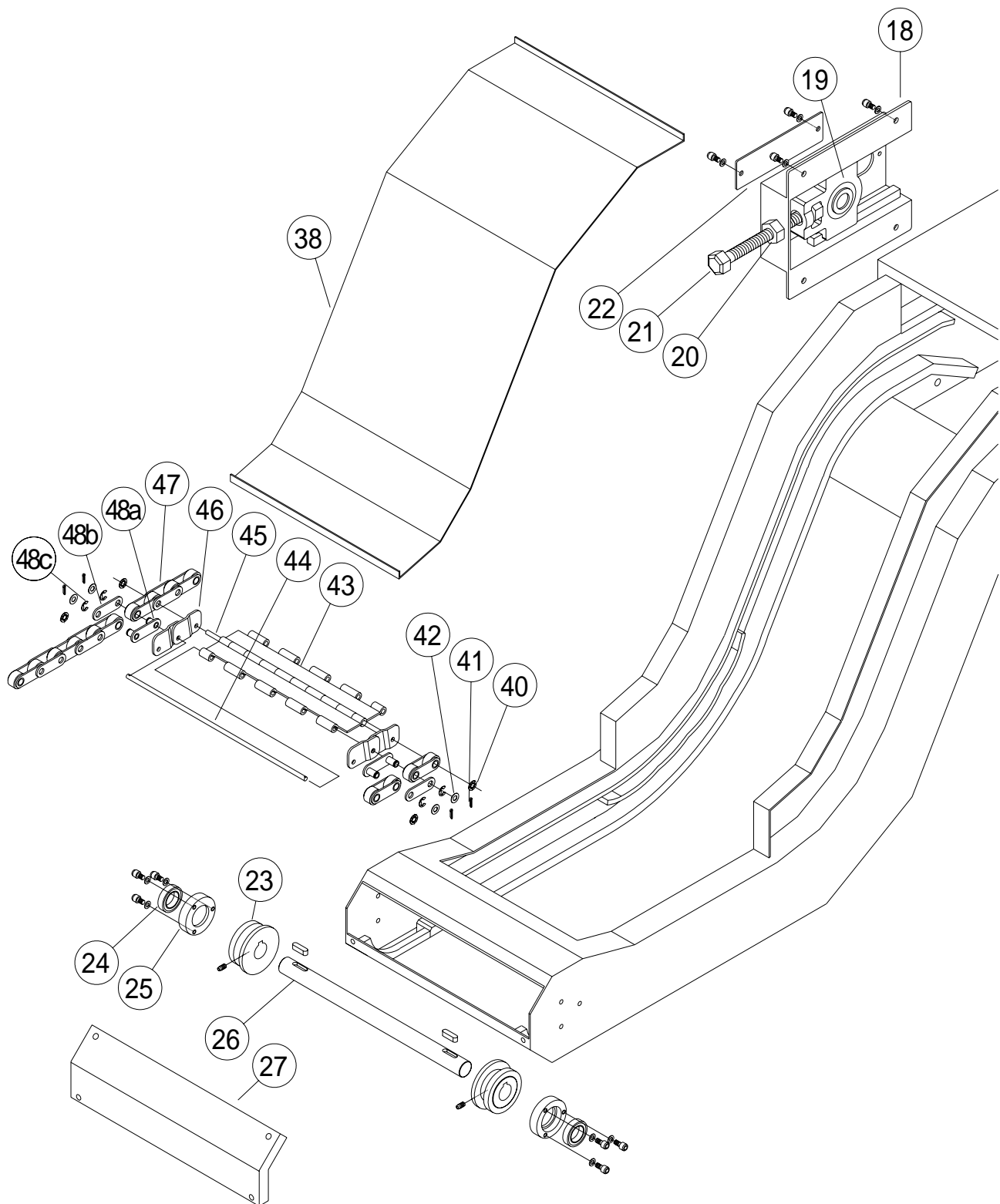
In the case of an authentic sample (200V grade motor), a tie line is connected.

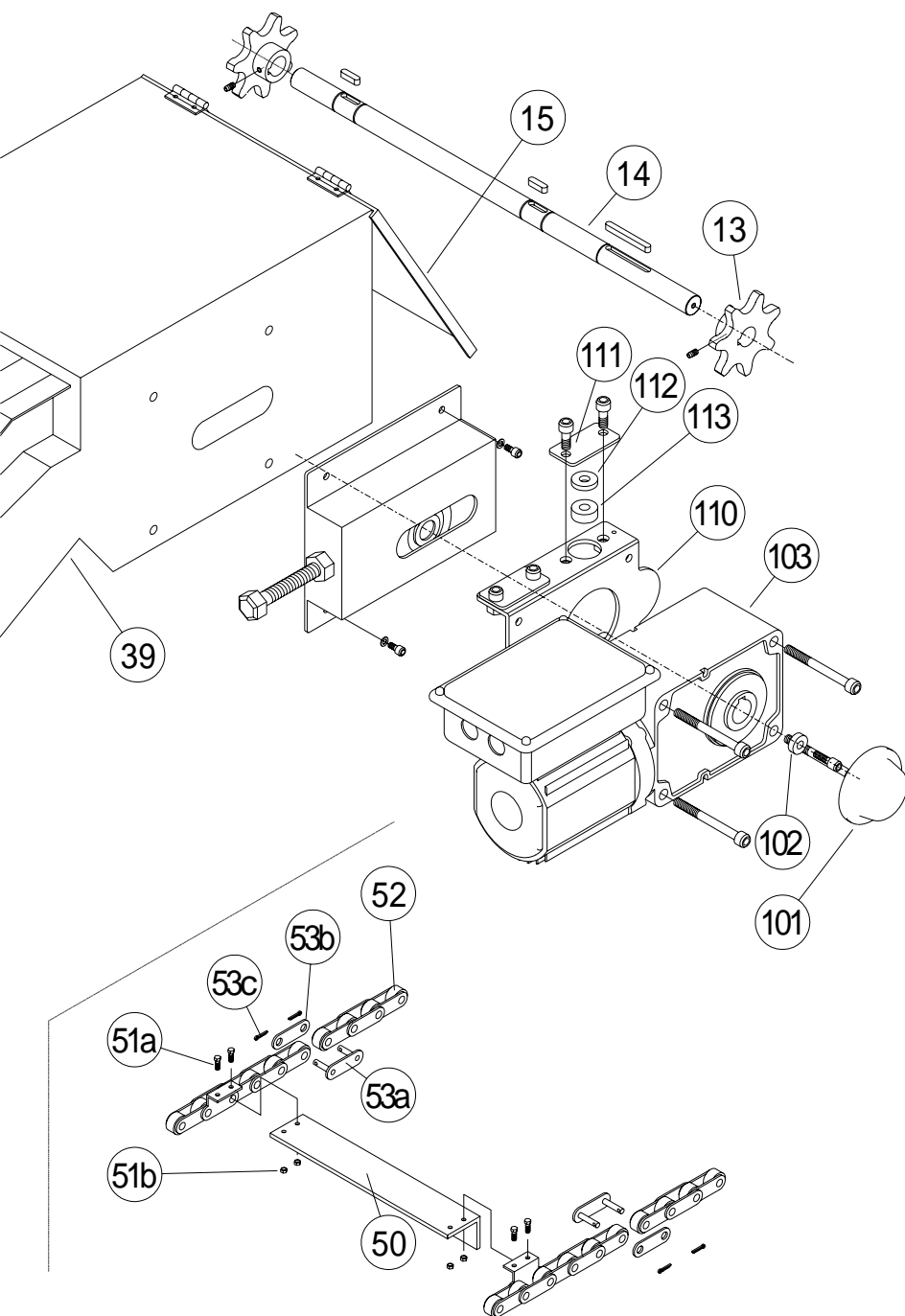
After having removed a tie line connect AC100~240V (for exclusive use of the operation) to an operation power supply terminal by all means.

(The detailed explanation please read "geared motor instruction manual")



( 4 ) Part Name





- |       |                              |
|-------|------------------------------|
| 1 3   | Sprocket R                   |
| 1 4   | Drive shaft                  |
| 1 5   | Top cover                    |
| 1 8   | Take-up bracket              |
| 1 9   | Take-up unit                 |
| 2 0   | Lock nut                     |
| 2 1   | Tension bolt                 |
| 2 2   | Bracket cover                |
| 2 3   | Pulley                       |
| 2 4   | Bearing                      |
| 2 5   | Housing                      |
| 2 6   | Driven shaft                 |
| 2 7   | Tail cover                   |
| 3 8   | Center cover                 |
| 3 9   | Main frame                   |
| 4 0   | Bush nut                     |
| 4 1   | Split pin                    |
| 4 2   | Washer                       |
| 4 3   | Hinge plate                  |
| 4 4   | Pin B                        |
| 4 5   | Pin A                        |
| 4 6   | Side plate                   |
| 4 7   | Roller link                  |
| 4 8 a | Link                         |
| 4 8 b | Link plate                   |
| 4 8 c | E-ring                       |
| 5 0   | Scraper                      |
| 5 1 a | Bolt ( Scraper use )         |
| 5 1 b | Nut ( Scraper use )          |
| 5 2   | Roller link ( Scraper type ) |
| 5 3 a | Link ( Scraper type )        |
| 5 3 b | Link plate ( Scraper type )  |
| 5 3 c | Split pin ( Scraper type )   |
| 1 0 1 | End cover                    |
| 1 0 2 | Spacer                       |
| 1 0 3 | Geared motor                 |
| 1 1 0 | Torque arm                   |
| 1 1 1 | Cushion retainer             |
| 1 1 2 | Rubber washer                |
| 1 1 3 | Urethane cushion             |

Since this is a standard unit drawing, it may be slightly different from the actual machine. The machine is subject to technical modification without prior notice.

## 2 Unpacking

Check the following after opening the package. If something is wrong or you find any problems, contact your sales agent.



### CAUTION

Check that the machine is the one you ordered. Installing the wrong machine may cause injury or machine damage.

- ( 1 ) Check the specifications on the machine plate to confirm your order.
- ( 2 ) Check that the machine has not been damaged during transportation.
- ( 3 ) Check that bolts and nuts are firmly tightened.
- ( 4 ) Check that all accessories you have ordered are included in the package.

## 3 Carriage



### WARNING

DO NOT go under the machine while it is being hoisted for carriage. A fatal accident may result if the machine falls.



### CAUTION

Take the greatest care to prevent this machine from dropping when carrying it. Be sure to use hoisting fittings if provided.  
However, DO NOT hoist the whole machine with hoisting fittings after installation. This may damage hoisting fittings or the machine, or cause injury due to the machine's fall.

## 4 Installation



### CAUTION

Attach a cover to the chip inlet of the chip conveyor to keep hands from entering during operation. Injury may result.  
DO NOT climb onto or hang from the chip conveyor. Injury may result.  
DO NOT put any obstacles which prevent ventilation around the geared motor.  
Burns due to overheating or fire may result.

## 5 Wiring



### WARNING

Perform wiring according to the electric equipment technical standards and wiring regulations.  
Burns, electrical shock, fire or injury may result.  
Make sure that qualified personnel, such as an electrician, perform wiring.  
Burns, electrical shock, fire or injury may result.  
Be sure to place the ground leakage breaker at the power source.  
Burns, electrical shock, fire or injury may result.

- ( 1 ) Connect this machine to a power source of appropriate voltage.
- ( 2 ) Be sure to ground the machine.
- ( 3 ) Use IV or KIV wire with a rated cross section of more than 2 mm<sup>2</sup> or vinyl cable for wiring.

## 6 Operation



### WARNING

DO NOT operate the machine with the operation panel open.  
Electrical shock may result.  
Be sure to turn OFF the machine when electric failure occurs.  
When electricity recovers, the machine starts suddenly, which may result in electrical shock, injury or machine damage.  
DO NOT put a hand or foot in the opening section of the chip conveyor during operation.  
Injury may result due to a hand or foot being caught in the machine.



### CAUTION

Stop the machine immediately when trouble occurs.  
Electrical shock, injury or machine damage may result.  
DO NOT touch the machine during operation.  
The geared motor becomes very hot, and may cause burns.  
DO NOT continue to feed the conveyor in reverse. The machine may be damaged.

- ( 1 ) Before turning on the machine, check the following
  - 1 . That the wiring is correct.
  - 2 . That the terminals are firmly connected.
  - 3 . That grounding is properly performed.
- ( 2 ) When commissioning, check the following
  - 1 . That no foreign matter is on the conveyor.
  - 2 . That the conveyor's actual rotating direction matches the machine's arrow direction.  
When they are different, turn off the machine and switch two of the three electric lines.
  - 3 . Feed the conveyor more than one round by inching with a two-second interval to make sure that there are no abnormalities.
- ( 3 ) Check the following during operation
  - 1 . There is no abnormal sound, vibration and heat.

## 7 Maintenance and Inspection



### WARNING

- Be sure turn OFF the machine and cut OFF the power supply to the machine before maintenance, inspection, changing parts, adjustment, or repairing the machine. Fatal accidents may result.
- When performing maintenance or inspection, make sure to inform other workers who are concerned with the machine.
- DO NOT operate the machine without the cover after maintenance or inspection work. Serious accidents may result due to an operator's is being caught in machine.



### CAUTION

- Make sure that only a specialist adjusts, fixes, disassembles or assembles the machine. Electrical shock or injury may result without knowledge of the machine.
- Be sure to wear a helmet, safety glasses, safety shoes, and gloves before adjusting, fixing, disassembling or assembling the machine. Injury may result.

#### ( 1 ) Daily inspection

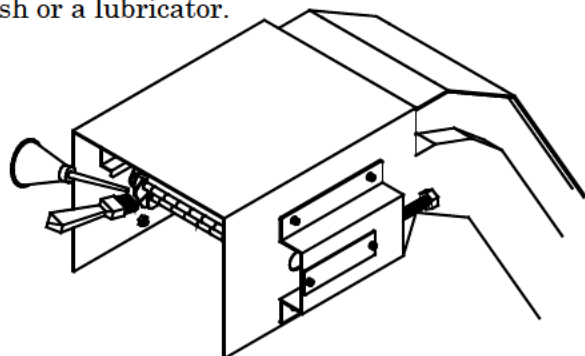
Check point	How to check	Description
Over currency	Ammeter	Currency is less than rated current specified on the specification plate.
Noise	Listen	Noise.
Vibration	Touch	Abnormal vibration.
Surface temperature	Touch	The geared motor surface temperature is less than 80°C.
Emergency button	Press the button	The emergency button stops the conveyor.

#### ( 2 ) Periodical inspection

Check point	How to check	Description
Conveyor chain tension	Monthly	Check the conveyor chain for looseness and tightness. Adjust the tension, referring to ( 4 )
Conveyor chain lubrication	Every 3 months	Lubricate SAE30 Mobil oil or oil close to it or apply grease, referring to ( 3 )
Bolts' looseness	Annually	Check bolts for looseness with a spanner or a wrench. if they are loose, tighten them.
Cleaning inside the conveyor	Annually	Clean inside the conveyor referring to ( 5 )

#### ( 3 ) Lubrication

1. The geared motor does not require lubrication since it is prelubricated.
2. Lubricate the conveyor chain with a brush or a lubricator.

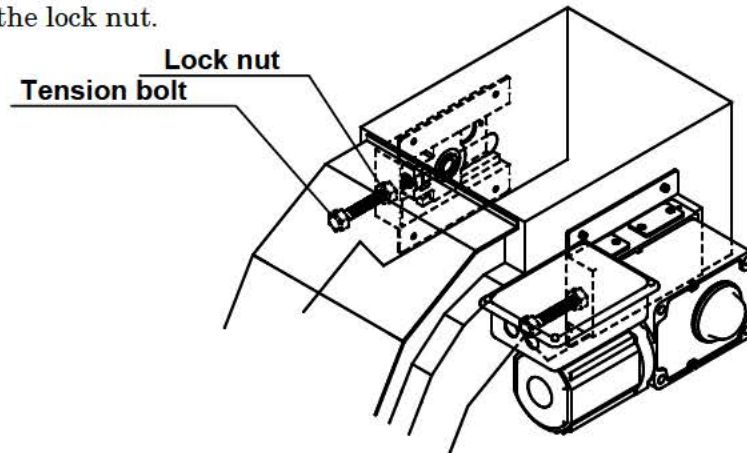




#### (4) Adjusting the conveyor chain tension

The conveyor loses its tension as it is used. Adjust the tension in the following procedure.

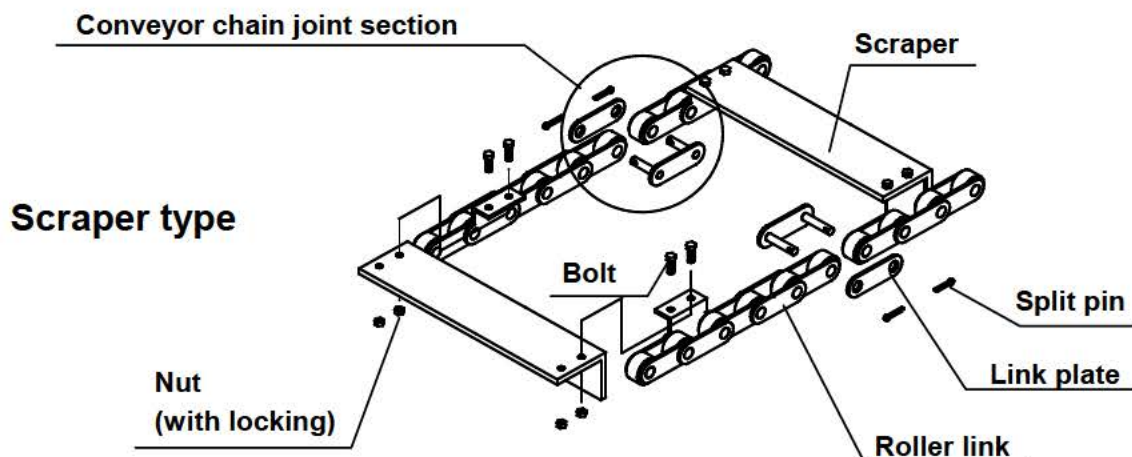
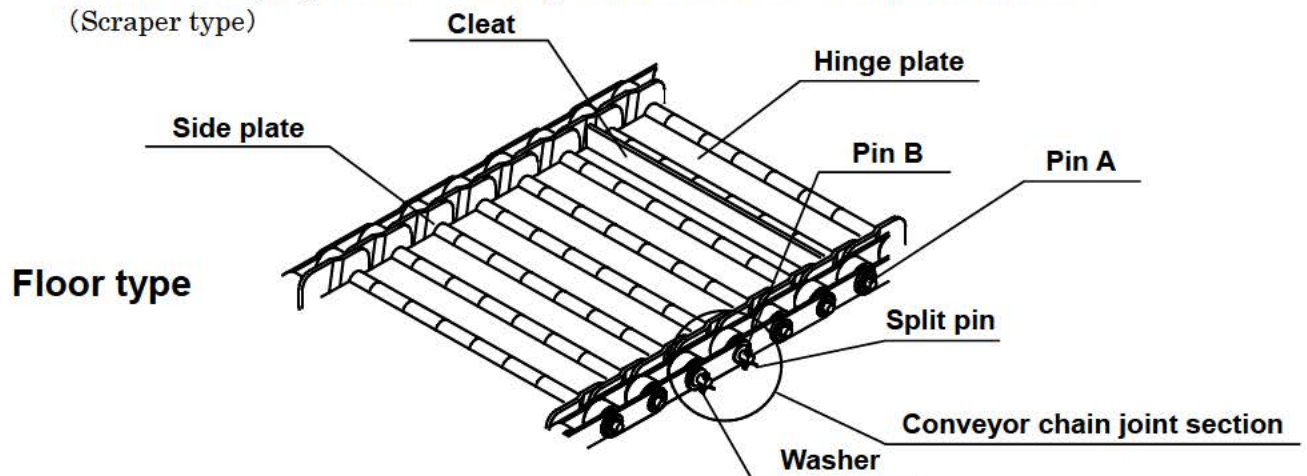
1. Loosen the lock nut.
2. Turn the tension bolts on both sides little by little alternately to tighten the conveyor chain until it has the appropriate tension.
3. Tighten the lock nut.

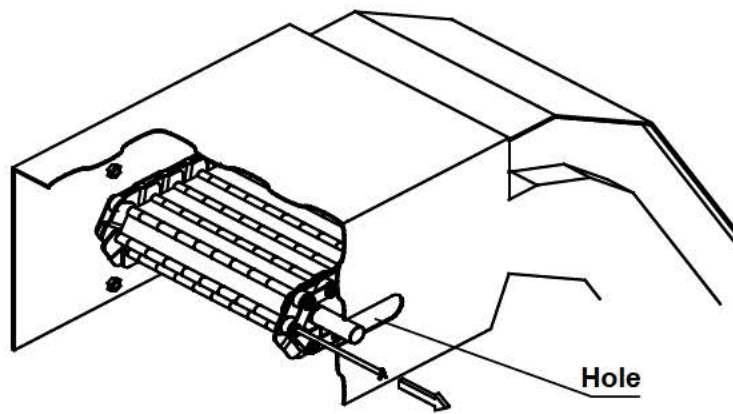


#### (5) Cleaning inside the conveyor

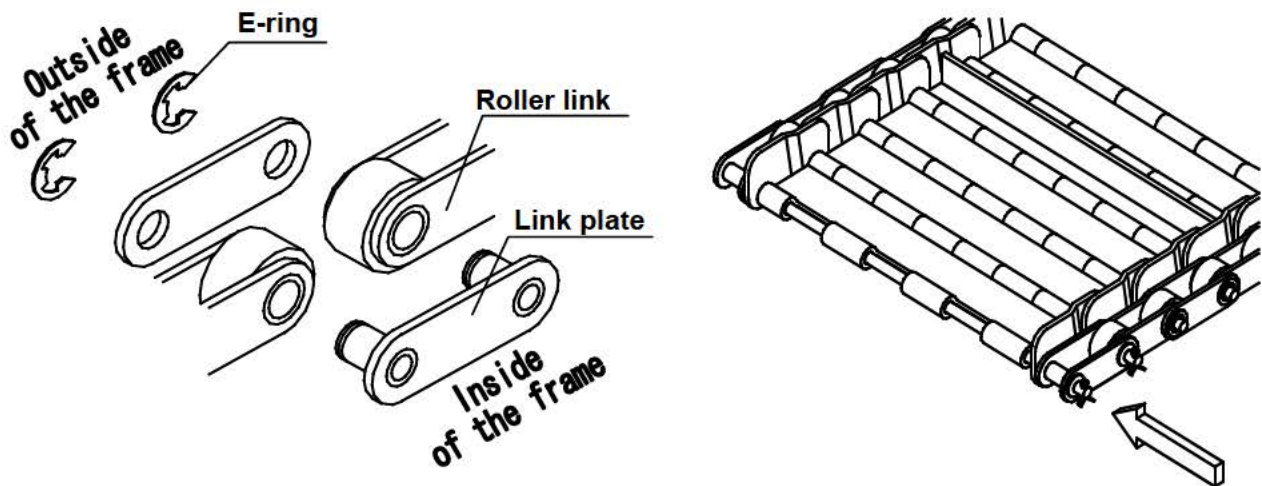
Clean inside the conveyor once a year. Following is the procedure for disassembling and assembling the hinge plate and the scraper when cleaning the conveyor.

1. Find the conveyor chain joint section. Feed the conveyor so that the joint section reaches the chip outlet. (where the split pin is seen through a slot.)
2. After loosening the lock nut, loosen the tension bolt fully. Refer to (4)
3. Remove one split pin from the pair of pin Bs on one side of the joint section. (Floor type)  
Remove the split pin from the conveyor chain and remove the link on both sides.  
(Scraper type)

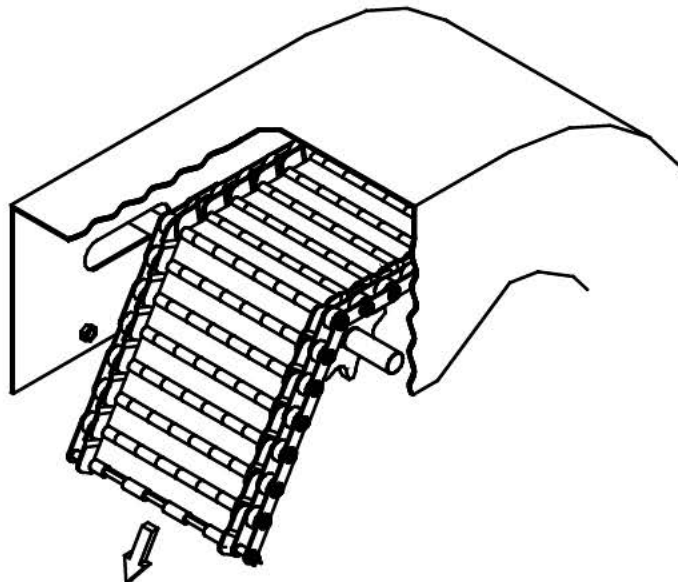




4. Pull out pin B to remove the side plate and hinge plate.(Floor type)
5. Remove the conveyor chain E-ring with pliers. Then remove the links on both sides of the coupling (Floor type)
6. Return pin B to its original position to fix the end of the conveyor chain. (Floor type)



7. Pull out the conveyor chain . (When replacing the hinge plate and scraper, attach a new conveyor chain to the old one to facilitate replacement.)
8. Reassemble the machine in the reverse order of disassembly.(Set the conveyor chain from the bottom. Pay attention to the direction of the side plate or the scraper.)




## 8 Troubleshooting

Trouble	Cause		Countermeasure
The conveyor does not start.	Electricity is not supplied to the control panel.		Check for power failure, line breakage, and disconnection.
	Thermal relay is activated.		Press the reset button.
The conveyor stops.	Foreign matter is in the machine.		Remove the foreign matter by reversing the machine.
	Chips are in the machine.		Remove the chips by reversing the machine.
	A split pin (bush nut) is damaged or missing.		Replace the split pin (bush nut).
	The safety device is activated.		Reverse the machine to set it.
	A large amount of chips are loaded at one time.		Feed the conveyor in reverse to remove the chips.
Others	Knocking	Conveyor chain has lost its tension.	Adjust the conveyor chain tension.
	Abnormal sound	Bearing malfunctions.	Replace the bearing and the take-up unit.
	Abnormal sound	The conveyor chain needs soil.	Lubricate
	Side plate damage	Foreign matter is in the machine.	Remove the foreign matter and replace the side plate.
	Hinge plate damage	A heavy object fell on the hinge plate.	Replace the hinge plate and pins.
	Scraper breakage	The Scraper is caught or wound by long chips.	Replace the scraper.

chips differ in forms and amount depending on the machining conditions and materials .  
Consult us (Hakusan Kiko CO.,Ltd.)if you have any problems or inquiries.

## 9 Disposal

 <b>CAUTION</b>
Dispose of the chip conveyor as general industrial waste.

## 10 Guarantee

This machine is guaranteed for one year after delivery as long as it is installed in a designated way and operated with proper maintenance and inspections. Only the main unit is guaranteed to be repaired.

