E41501-05

OPERATION AND MAINTENANCE MANUAL

ConSep2000® Ⅱ

Issued on 1 October, 2004

NOTICE

- **Carefully read and understand the instructions in this manual.**
- **Fully understand the instructions written in the manual before handling the conveyor.**
- **Retain the manual in a fixed place that it is immediately available for your reference whenever it is necessary.**

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CONTENTS

1. LIMITED WARRANTY

TSUBAKIMOTO MAYFRAN INC. (herein after referred to as we) will repair the conveyor only when we determine to be defective. The warranty period is within 1 year after the conveyor is shipped from our place or 3,000 operation hours whichever is shorter. The foregoing shall constitute the sole remedy for any breach of our warranty.

- We make no warranties, either expressed or implied, except as provided herein, including without limitation thereof.
- We make no warranties when precautions that must be heeded are neglected.
- We will not be liable for any damages or consequential damages resulting from any abuse, misuse or misapplication of the conveyor supplied by us.
- We will not be liable for any damages or injuries resulting from any modification, without our written authorization, of the conveyor.
- We will not liable for any damages or injuries when the instruction manual is not included with the conveyor that has been resoled.
- We will replace any parts, delivered to overseas or delivered to overseas via your company, with substitutes or repaired parts only when the customer and we arrive at mutual agreement on the replacement of such parts provided that the parts substitute or repaired are delivered to specified places in Japan.

2. IMPORTANT INFORMATION

- Unfortunately, we cannot foresee all the dangers existing in the conveyor itself, dangers due to human error and dangers caused by the operating environment in which the conveyor is used. In addition, there are many cases of “not possible” and “must not”. All these cases cannot be listed in this manual and on the warning labels. Consequently, consideration also must be given to general safety measures not stated in this manual when operating and servicing this conveyor.

- The conveyor shall be operated, maintained or inspected by a person who is designated. The electrical equipment shall be handled by qualified person only.

- Do not use the equipment for purposes other than that it is intended for or do not perform any operations not stated in this manual.

- This conveyor complies with CE. However, it does not comply with any other safety codes and rules (UL, CSA, etc.) overseas.

- This instruction manual is written for operators or service men for the conveyor whose native language is English. If this is not the case, the customer has to provide detailed safety instructions for operators using the conveyor.
  The customer should add safety, caution and operating signs in the native language of the operators.

- This instruction manual is copyrighted and all rights are reserved. The plans and technical references, including this manual, may not, in hole or part, be copied or reproduced.

- Instructions for operating optional devices are also included in this manual.

- Illustrations and figures in this manual are for standard models. Your conveyor may differ from those in this manual. In addition, some parts or devices may be removed for illustrative purposes.

- The specification of the conveyor is subject to change without prior notice.

- If you lost or damage this manual, contact us to get new one. Where to contact is described on the back cover of this manual.

- When ordering the parts, be sure to let us know the serial No. (starting from MF), part No. and name of the part. The serial No. of the conveyor is shown in the nameplate put on the conveyor body. Order the parts from our branches described on the back cover of this manual.

- For disposal of the conveyor, observe local regulations.

3. BILL OF MATERIAL OF CONSEP 2000 II

No.	Description	Type	Make	pc.
1	Main drive cover frame		Tsubakimoto mayfran	1
2	Side panel		Tsubakimoto mayfran	2
3	Head side panel		Tsubakimoto mayfran	1
4	Tail side panel		Tsubakimoto mayfran	1
5	Tail side protect cover		Tsubakimoto mayfran	1
6	Under side protect cover		Tsubakimoto mayfran	1
7	Bolt [for drive cover]	M6x12		22
8	Head end cover		Tsubakimoto mayfran	1
9	Top cover		Tsubakimoto mayfran	1
10	Lower horizontal top cover		Tsubakimoto mayfran	1
11	Bolt [for top cover]	M5x8		38
12	Movable chain guide		Tsubakimoto mayfran	1 each
13	Bolt [for movable chain guide]	M6x20,PW		2
14	Head end panel		Tsubakimoto mayfran	1 each
15	Bolt [for head end panel and head end cover]	M5x8		8
16	Screw chute [for outlet side]		Tsubakimoto mayfran	1
17	Bolt [for screw chute]	M6x8,PW		3
18	Screw chute [for bearing side]		Tsubakimoto mayfran	1
19	Screw chute cover		Tsubakimoto mayfran	1
20	Bolt [for screw chute, screw chute cover and bearing]	M6x10,PW		7
21	Driving chain	RS35- 56Links	Tsubakimoto chain	1
22	Sprocket	RS35-B-34T	Tsubakimoto chain	1
23	Set screws	M5x10		2
24	Bearing [for screw]	ASPF202	NTN	2
25	Sprocket	RS35-B-13T	Tsubakimoto chain	1
26	Roll pin	D3x32		1
27	Take-up bolt	M12x80,RN		2
28	Screw shaft	D15	Tsubakimoto mayfran	1
29	Main bearing	UCFH205	NTN	2
30	Bolt [for main bearing]	M8x20,PW		6
31	Main shaft with sprocket	D25	Tsubakimoto mayfran	1
32	Parallel key	8x7x22/7x7x23		1
33	Parallel key	8x7x52/7x7x53		1
34	Hollow shaft gearmotor	CSM0X0-252 SM25GCEDX00L-N	Tsubaki-Emerson	1
35	Hollow shaft gearmotor detent pin	D14x51.5	Tsubakimoto mayfran	1
36	Cotter pin	D4x25		2
37	Plate washer	M14		2
38	Hollow shaft gearmotor mounting plate		Tsubakimoto mayfran	1
39	Bolt [for hollow shaft gearmotor mounting plate]	M10x40, Disk lock washer		1
40	Bolt [for take-up base]	M10x20,PW		6
41	Take-up base		Tsubakimoto mayfran	1
42	Inspection cover packing		Tsubakimoto mayfran	2
43	Inspection cover		Tsubakimoto mayfran	2
44	Inspection cover frame		Tsubakimoto mayfran	2
45	Bolt [for inspection cover]	M5x20		18
46	Hinged steel belt		Tsubakimoto mayfran	---
47	Pin link plate	D-hole	Tsubakimoto chain	2
48	Roller link		Tsubakimoto chain	---
49	Pin link plate	R-hole	Tsubakimoto chain	---

50	Joint belt pin		Tsubakimoto mayfran	2
51	Cotter pin	D1.6x8		4
52	Filter frame		Tsubakimoto mayfran	1
53	Filter sprocket	14/35T	Tsubakimoto mayfran	1
54	Filter sprocket	0/35T	Tsubakimoto mayfran	1
55	Filter frame bearing		Tsubakimoto mayfran	1
56	Filter frame side plate		Tsubakimoto mayfran	1
57	Drain pipe		Tsubakimoto mayfran	1
58	Filter unit upper bracket		Tsubakimoto mayfran	2
59	Filter unit lower bracket		Tsubakimoto mayfran	2
60	Back wash pipe		Tsubakimoto mayfran	1
61	Back wash nozzle		Tsubakimoto mayfran	---
62	Filter	PE158-HD	Tsubakimoto mayfran	1
63	Filter retainer			2
64	Bolt [for filter unit]	M6x12,M6x25	Tsubakimoto mayfran	---
65	Hose band [for filter fixing]	D300,Width12mm	ABA	2
66	Filter unit bracket packing	t1.5mm	Tsubakimoto mayfran	2
67	Filter unit seal	VR-160A	NOK	4

When ordering parts, be sure to provide the manufacturing No. (No., beginning with "MF") and the part name. Manufacturing Nos. for the ConSep 2000 II are stamped on the aluminum nameplate attached to the frame.

Parts given in the above table and the assembly drawing on the previous page are Tsubakimoto Mayfran standard parts, and may differ slightly from delivered products. Please check actual products.

Exploded view of ConSep2000II

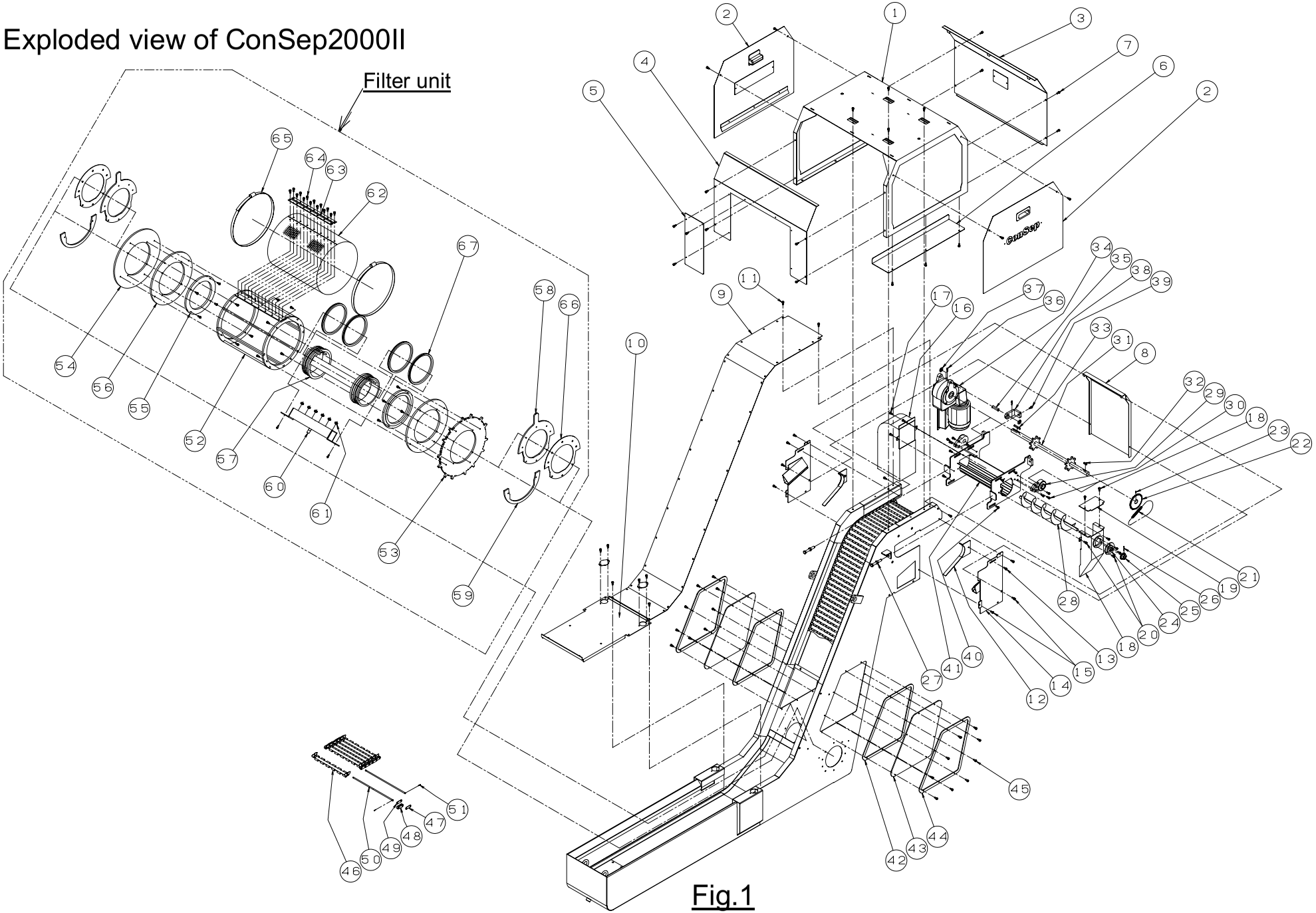


Fig.1

4. WARNINGS AND SAFETY INSTRUCTIONS

4.1 GENERAL INSTRUCTIONS

- Stick the included with stickers on easily-visible places on the conveyor.
- All specifications and instructions in the included operating instructions must be followed at all times!
- Non-qualified persons must not operate the unit!
- If customers attach parts themselves, be sure they do this properly!
- Never take short-cuts with regard to safety equipment/ measures!
- The proper functioning of safety equipment must always be ensured!
- Must not remodel the conveyor without permission.

- Work on electrical parts may be done only by qualified professionals, taking into consideration all locally applicable specifications.

- Never stand on the intake opening or reach into the opening.

- Whenever possible, cover the conveyor and all drive elements prior to placement into operation.
- Never remove covering materials while the unit is in use!
  (IF operating without cover, there is a possibility of get caught in hinged belts, the sucking of coolant and splashing coolant on the floor.)

- Never reach into the discharge opening!
- It becomes necessary to the discharge section to the protective structure that designed on the basis of EN294.
- Never touch moving part during the operation.

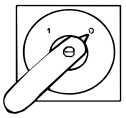
4.2 REMARKS

- ConSep 2000 II should only be used for the purpose for which it is originally intended !
- The range of operating ambient temperature is between –10 and +40℃.

- The noise level of ConSep 2000 II in operation is < 70 dB A (without machine pumps)

- The conveyor must be operated continuously during operation of the machine tool.
- The volume of charged chips must not be exceeded the handling capacity.

5. INSTRUCTIONS FOR REPAIR AND MAINTENANCE, MALFUNCTIONS.



- Switch off the main switch!
- Hang a warning tag from the main switch!
- Secure unit against unsupervised use!

- Pull out a connector for the conveyor from the machine!
- When the connector is connected again, there is the possibility that the conveyor is unexpected move to. Be careful not to touch a movable parts.

- Switch off the unit's pressure!

- Close off pipe forwarder!
- Remove all potentially harmful substances!
- Do not permit cooling lubricants to escape into the environment!

- If coming into contact with filings:
- Wear protective clothing, protective shoes, and protective gloves!

6. UNPACKING AND TRANSPORT

6.1 UNPACKING

ConSep 2000 II systems are usually supplied in one piece. According to the wishes of the customer, or in case of excessive lengths, these conveyors can be delivered in several sections.

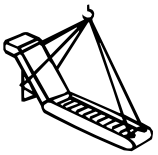
The hinged roller is packed on (a) palette(s) or in a crate. Small parts such as screws, roller connecting parts etc., are included in the container with the conveyor or separately.

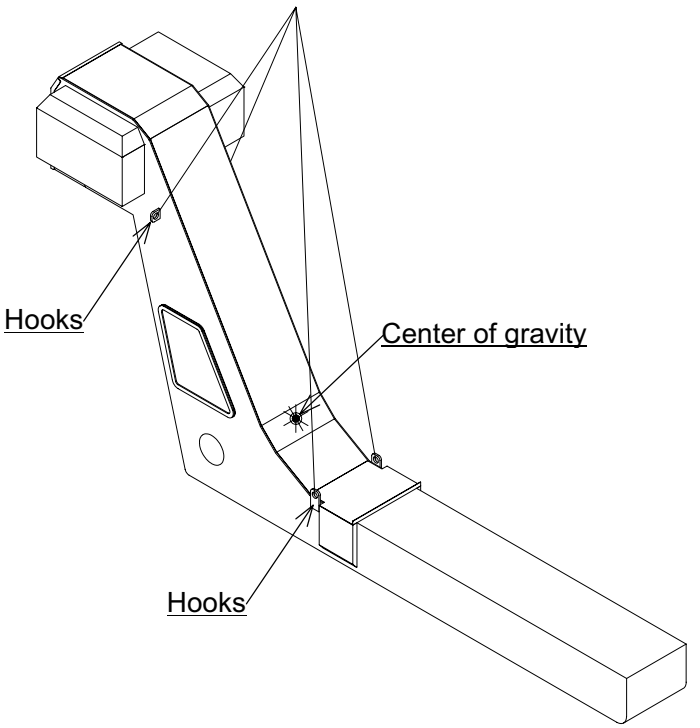
6.2 TRANSPORT

Do not stand under the moving unit! The illustrations on this page are to be seen as examples. Always use the equipment included for lifting and transport.

With crane:

- Original or other (not original) packaging!
- Always use the original lifting eye bolts or hooks.





With forklift truck:

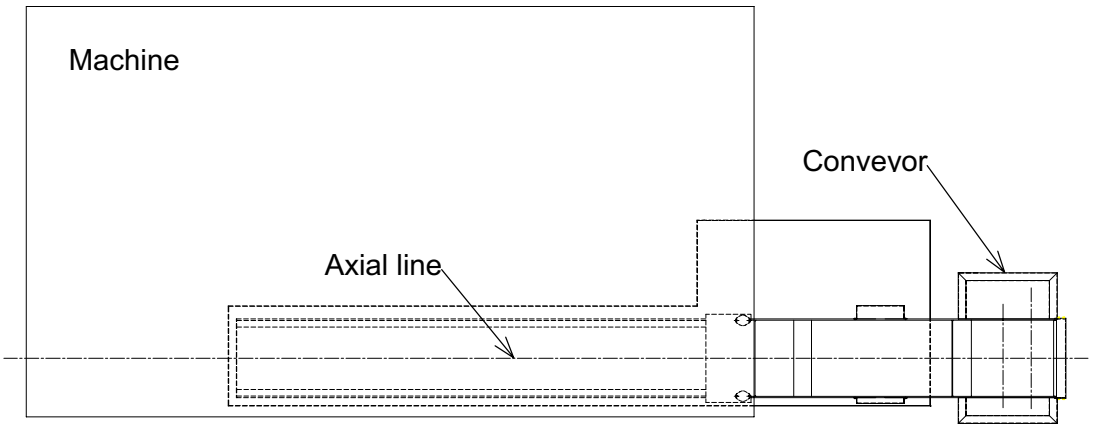
- Transport only on the original wooden pallet.
- Also secure equipment against falling or slipping.

7. COMMISSIONING THE CONSEP 2000 II

Commissioning the system

- Ensure that the system is installed in a stable and safe position.
- Take the necessary measures to ensure that the system cannot be started up unintentionally.
- Check to ensure that there is no risk of jamming.

(1) The conveyor must be aligned.



Deviation from the axial line may not be more than 2 mm to either side.

(2) The conveyor belt and the chain must be lightly oiled.

(3) Before starting up the conveyor, check the tension in the conveyor belt.
You should be able to press the underneath section of the conveyor belt (the part of the conveyor belt which passes over the drive) inwards with your hand.

(4) Safety of personnel
If electrical or mechanical work needs to be carried out on the installation, switch off and disconnect the main switch, since the power supply comes from the feed mechanism.

- Check to ensure that the system is free of tension during the inspection.

(5) The side plates of the conveyor belt must be parallel to one another in direction of transport. If there is too much play or if the side plates are not properly aligned, the material being transported will get jammed.

(6) The ConSep 2000 II must first run for at least five hours without any load. Take cares to ensure that during the running in the conveyor belt and/or the grippers are able to move freely without chafing anywhere.

(7) To retension the conveyor belt:

Take-up is factory-adjusted, but take-up bolts may loosen in transport. Therefore, check tightness of the take-up bolts. If loose, readjust as explained in “9.1.5.2 Adjustment_procedures”.

(8) Motor rotational direction check

To prevent trouble due to reversing, check motor rotational direction. In accordance with the instructions of the rotating direction sticker on the side of the frame. Also, be sure to remove all loaded workpiece from inside the frame to prevent reversing in loaded operation.

(9) Bolt tightness

During transport, bolts may loosen whereby displacing aligned parts. To prevent damage to the equipment, check bolts are tight before performing the test-run.

(10) Foreign objects inside the frame

When installing the ConSep 2000 II, bolts, tools and packaging materials or other objects can be lost or left inside the frame. Unless removed, these objects may get trapped in the mechanism, damage the filter or cause some other sort of trouble. Check there are no foreign objects inside the frame.

8. STARTING UP THE CONSEP 2000 II

8.1 GENERAL FUNCTIONS

Check to ensure that the EMERGENCY STOP press button is disengaged.

The ConSep 2000 system is now ready to be started up.

8.2 PRECAUTIONS IN OPERATIONS

8.2.1 Keep open flames and sharp objects away from the filter.

The filter is made of a synthetic resin and is easily damaged by fire and sharp objects. Keep open flames and sharp objects away from the filter.

8.2.2 Never open the inspection cover.

During operation, the filter is regularly back-washed. Never open the inspection cover during operation. Before performing maintenance and checks, stop the equipment and check the pump is not back-washing.

* By "back-washing", it is meant that coolant is forced from inside the filter to clean it.

8.2.3 Keep coolant to the proper level.

During operation, make sure coolant level is always between the upper and lower limits on the coolant tank gauge.

Too much coolant can decrease filtering capacity and cause overflows. Too little coolant can disable back-washing and clog the filter which in turn can lead to overflows.

Watch dynamic volume when charging the system for the first time and when replenish-ing loss.

* By "dynamic volume", it is meant the amount of coolant in the system during operation.

8.2.4 Be sure to connect a back-washing pump

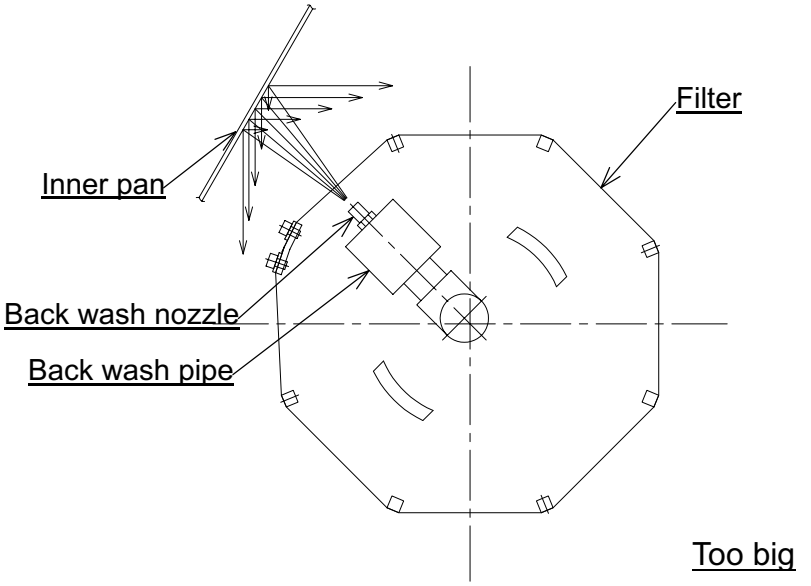
Operation without connection of the pump occurs to excessive accumulation of chips on the drum filter surface then the conveyor leads to overflow.

8.2.5 Flow control of back-washing

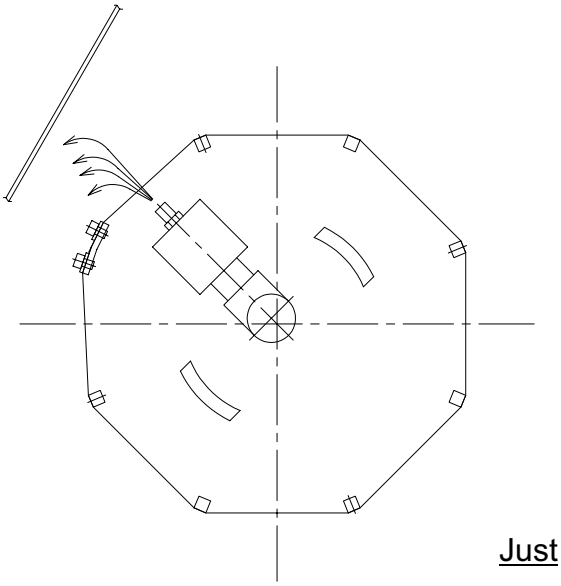
ConSep 2000 II is equipped with back-washing to prevent clogging of the filter and also equipped with a flow control valve to control flow rate. After filling the coolant to the tank, adjust the valve for back-washing to the degree that is appropriate for back-washing. (Please refers to the fig.7.)

Some kinds of coolant and high density of the coolant sometimes cause foaming.

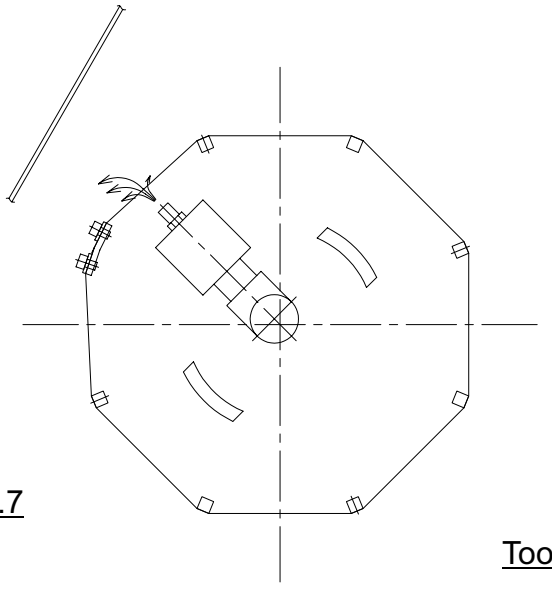
In case occurs, please adjust the valve for back-washing to reduce the pressure of back-washing. Please make sure the pressure is not too weak for back-washing.



Too big



Just



Too small

Fig.7

8.3 Safety devices

8.3.1 Emergency STOP button (option)

If serious danger is likely to occur or if there is a possibility it may occur while operating the conveyor, push the EMERGENCY STOP button to immediately stop the conveyor, prohibiting the conveyor operation.
When the EMERGENCY STOP button is pulled (the button may be of turn-reset type), the emergency stop state is canceled and the conveyor can be operated again.
The EMERGENCY STOP button is a red push button installed to the place reachable from the transferred objects discharging part.

NOTICE

- **There are some conveyors not provided with the EMERGENCY STOP button.**
- **Installed position of the EMERGENCY STOP button differs depending on the conveyor. Before operating the conveyor, confirm the position of the button in your conveyor.**
- **For turn-reset type button, turn the EMERGENCY STOP button to the right to cancel the emergency stop state.**

8.3.2 Shock relay（Electrical/CSM type hollow shaft gear motor）

The shock relay is built in the hollow shaft gear motor. It functions to protect the conveyor at an emergency case such as a jammed load. It recovers by restarting after removing the cause of overloading and turning off the power of the conveyor for 1 minute.
Also, an output terminal (dry contact of 1C) for shock-relay actuating signal (overloading detecting signal) is provided; therefore, the electrical signal can be easily transmitted by providing the wiring separately.

NOTICE

- **Once the shock relay functions, the motor will maintain stopped; however, there is a possibility that the conveyor unexpectedly starts operating by an emergency stop or malfunction. When touching the conveyor, follow each item for "2.WARNINGS AND SAFETY INSTRUCTIONS".**

8.3.3 Ball clutch（Mechanical/SM type hollow shaft gear motor）

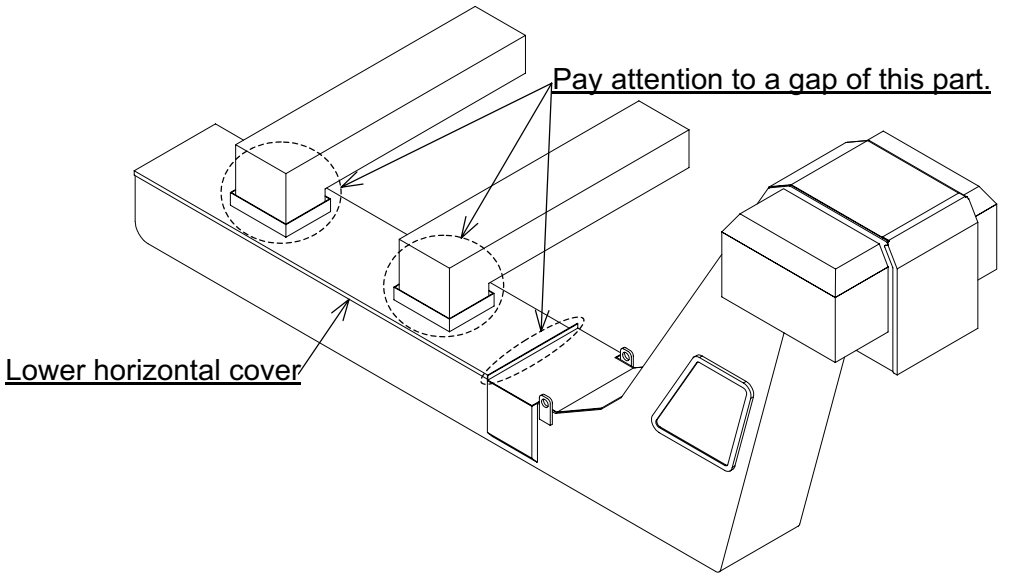
The ball clutch, incorporated in the hollow shaft gear motor, operates in an emergency (when transferred objects are caught in the conveyor, etc.) to protect the conveyor. After removing the cause of the overload, restart the system to automatically operate the conveyor.

NOTICE

- **There is a hollow shaft gear motor that does not incorporate the ball clutch in order to use shock relays, etc. as overload-prevention safety devices. Whether or not your hollow shaft gear motor incorporates the ball clutch is shown in the specification separately submitted.**

8.4 LOWER HORIZONTAL COVER

If the lower horizontal part is not covered with the cover, the gap to be less than 20mm, should arrange the cover.



8.5 INSPECTION WINDOW

Inspection window is made of PVC, therefore may be corroded by contents of the coolant.

Don't use a coolant that rots PVC.

Get 'Material Safety Data Sheet (MSDS)' from coolant's maker and confirm 'MSDS'.

8.6 If restart the conveyor, stopped due to the trouble or an emergency.

(11) Specify the cause that stopped due to the trouble or an emergency.
(See 10.TROUBLESHOOTING)

(12) Verify the cause that stopped is eliminated.

9. Warnings About a Chip Conveyors' Ability to Remove Swarf

9.1 Poor maintenance of chip basket

It is important to empty the chip basket when it is full. If swarf piles up too high in the basket there will be problems. A big problem is the conveyor belt pulling swarf back into the conveyor frame.

When this happens, the conveyor can stop because the swarf is jammed inside the frame. Also, the conveyor could be broken.

9.2 Parts discharged into the conveyor

Parts and tools with a dimension greater than about 30mm should not be discharged into the conveyor.

The conveyor can stop because the part or tool jams the conveyor. Also, the conveyor could be broken.

One solution to this problem is to install a part-catching grate over the chip conveyor belt.

9.3 Long chips discharged into the conveyor

Chips that are longer than about one meter should not be discharged into the conveyor. This long chip can change shape as the conveyor moves it. The new shape can stop the conveyor because the new shape can jam inside the frame. Also, the conveyor could be broken.

One solution is to install a chip-breaker tool that will break the long chip into smaller pieces. Another solution is to carefully remove the chip by hand or with a pulling tool.

NOTE:

Stopping or breaking of the conveyor from jamming caused by any of the above warning items is not covered by the chip conveyor guarantee.

10. Maintain procedure for storage

(1) Pull out a connector from the machine.

(2) Take the countermeasures to rust-prevention.

11. MAINTENANCE AND CHECK

11.1 MAINTENANCE

Provided that this MAYFRAN ConSep 2000 II is carefully looked after, the system will remain operative throughout a long life span with little wear of the component parts.

Take care to ensure that both the conveyor belt and the chain are always lightly oiled.

Generally speaking, monthly oiling of the conveyor belt will be sufficient. However, if the conveyor belt is exposed to the effects of the weather, careful maintenance is required.

Inspect the conveyor belt for any signs of damage on a regular basis, and see to it that component parts are replaced as soon as possible, thereby avoiding the possibility of malfunction.

11.1.1 Driving gearmotor

The gearmotor was designed specifically for our smaller conveyors.

11.1.1.1 Lubrication

The reduction gear is factory-sealed in high quality lubricant and thus requires no filling.

11.1.1.2 Allowed temperature

Allowed temperature for the reduction gear and motor are as follows:

Reduction gear ····· Atmospheric temperature (Max. 40℃) +50℃

Motor ····· Atmospheric temperature (Max. 40℃) +40℃

11.1.2 Main bearing

The main bearing is used an oilless bearing and thus requires no charging, replenishment or replacement.

11.1.3 Chain and belt

Any type of machine oil is available.

11.1.4 Filter check and change

Check the filter unit periodically for damage and clogging.

If discovering something abnormal, remove and replace the filter element.

(Service life will vary from part to part depending on the type of works conveyed, installation and maintenance, and operating conditions. So there will be from few months to few years difference of life span.)

11.1.4.1 Filter change procedure (Fig. 2.)

(1) Drain the ConSep 2000 II of coolant until the bottom of the filter is exposed.

(2) Remove the inspection cover.

(3) Remove all sludge and waste accumulated on the filter surface. Be careful not to drop sludge and waste inside the frame. Foreign matter can clog the backwash nozzle, causing overflow.

(4) Remove the filter retainer and hose bands, followed by the filter.

(5) Set a new filter on the filter frame and lay the retainer ‘A‘ on top of it. Then, secure the retainer ’A’ with bolts. Wind the filter tightly around the frame to eliminate all slack and bunching.

(6) Similarly, lay the retainer ‘B’ on top of filter.

(7) Lock the retainer ‘B’ down with the bolts. Attach the hose bands.

(8) Inch the ConSep 2000 II only (keep backwash pump off) and check the filter turns properly.

(9) Reattach the Inspection cover.

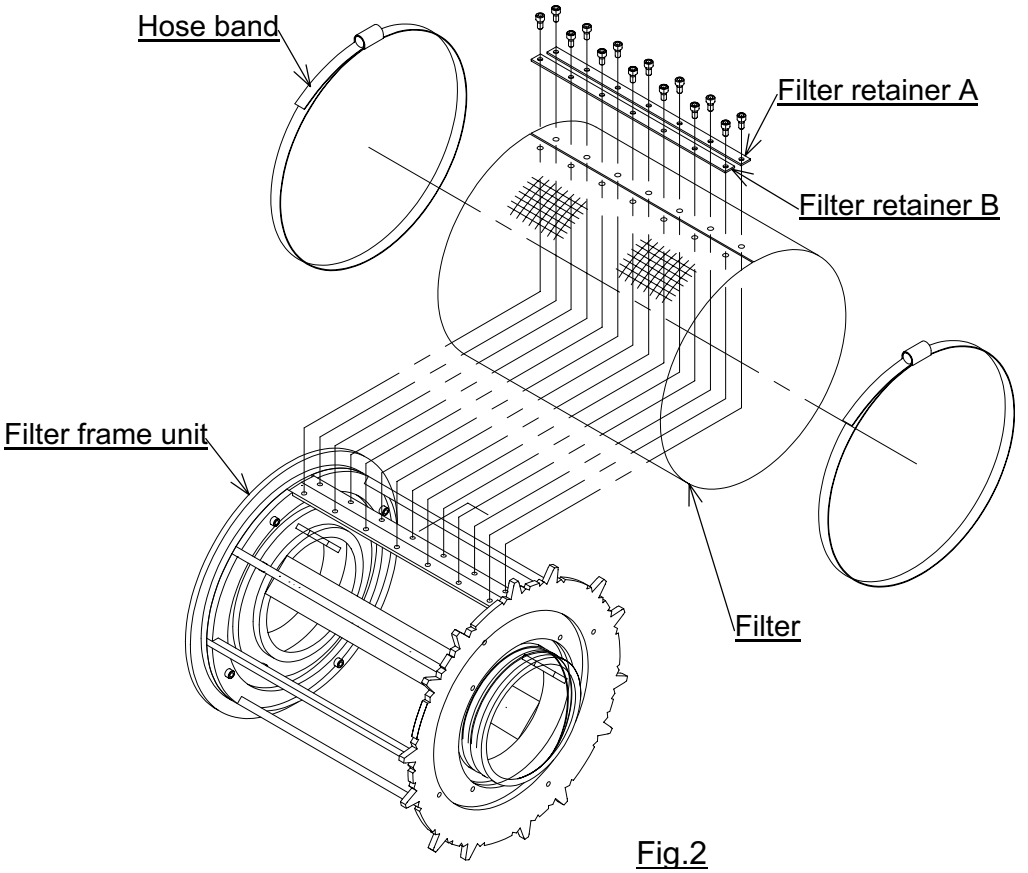
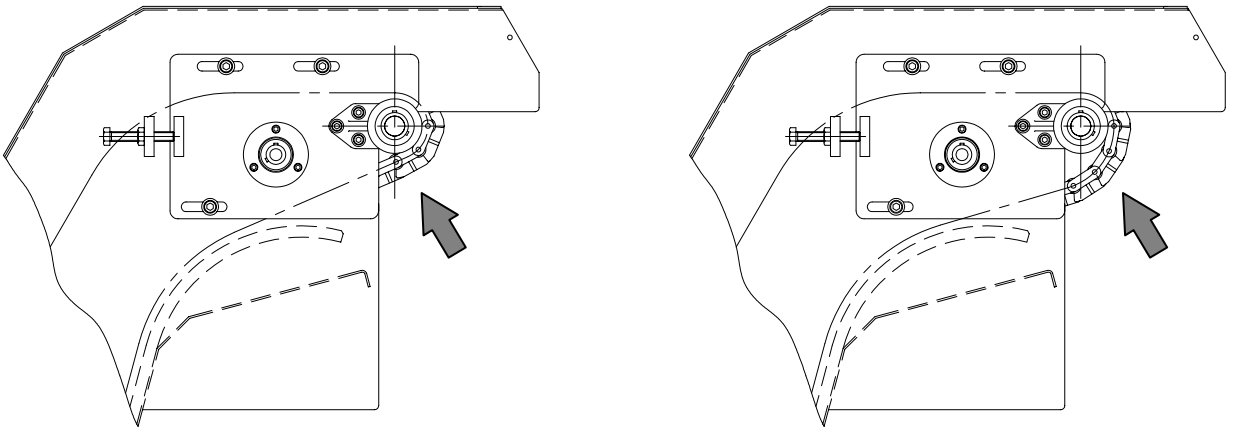


Fig.2

11.1.5 Take-up adjustment

As conveyor is used, wearing will stretch the belt. No take-up adjustment will get belting and rollers worn, and finally the conveyor itself stopped. So please adjust the take-up referring to the instruction below.



Normal belt tension　　Slacken belt tension

Fig.3

11.1.5.1 Adjustment interval

(1) After two to three month from starting operation.

(2) Once a year after above take-up.

11.1.5.2 Adjustment procedures

(1) Loosen the bolts locking down the head end cover, the movable chain guide and the head end panel. Then remove these parts from the head panel.

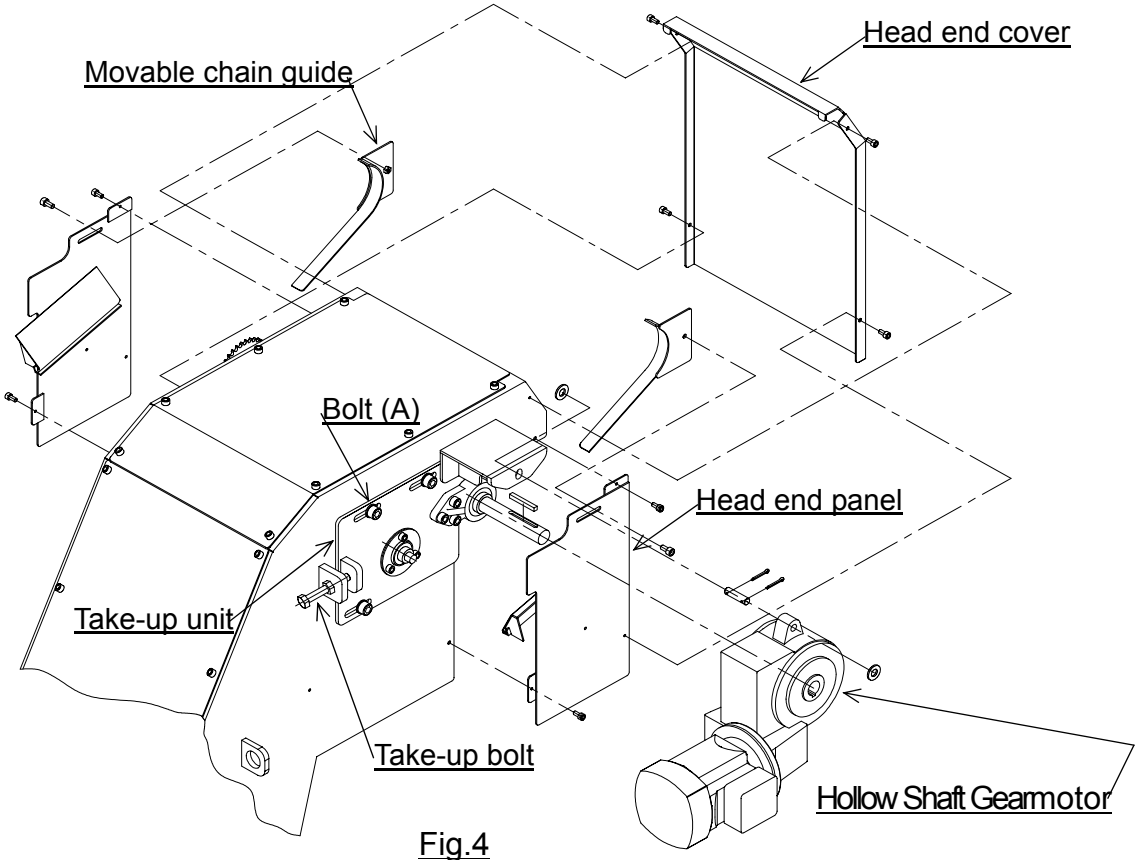


Fig.4

(2) Loosen the lock nuts to bolt 'A' and the take-up bolts.

(3) Do the take-up bolts up right and left alternately as tight as possible. After that, rotate the take-up bolts counter-clockwise about one point five rounds. Left and right take-up bolts are independent of one another, therefore keep tension even on both sides.

(4) Measure distance 'A' (Fig. 5) between the main sprocket wheel and the inside edge of the frame

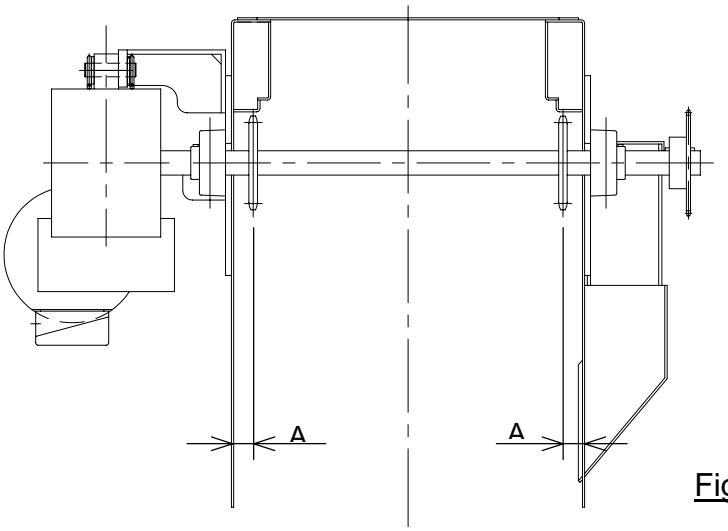


Fig.5

on both sides, and make sure the main shaft is not off-center.

(5) When finished, reassemble parts by following the above procedure in the opposite order.

11.1.6 Y-Strainer check and cleaning

Check and clean the Y-Strainer element once a month to six months, as explained here following: Check and clean interval is changes. Take cleaning action in a timely.

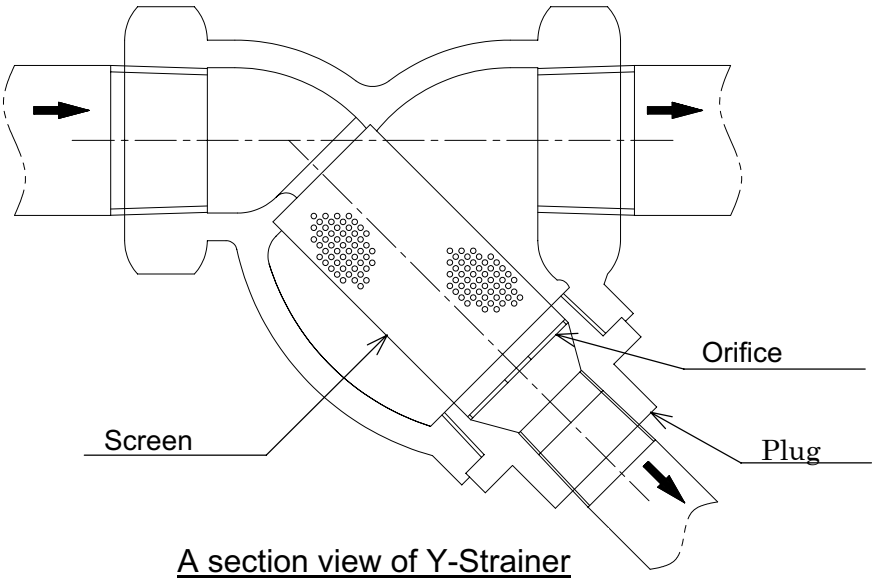
(1) Remove the plug, orifice and element from the Y-Strainer. (Refer to a section view.)

(2) Check the element when take cleaning in case of clogging.

Note

Put on safety glasses when take cleaning action.

When finished, assembly is the reverse of disassembly.



A section view of Y-Strainer

11.1.7 Inspection and cleaning

In most cases the inside of the conveyor is hidden by the frame or a machine tool. In order to check the case inside, the roller and the sprocket for wear, inspect the case inside and clean all the parts once or twice every year.

Instructions for inspection and cleaning are given below. (see Fig.4 and 6)

11.1.7.1 Inspection and cleaning procedures

(1) Take out the conveyor from a machine tool.

(2) Remove the gear motor mount's pin and then the hollow shaft gear motor.

Note:

Draw little by little when remove the gear motor from the main shaft.

Be careful about a posture because a body takes the weight of the gear motor when the gear motor comes off the end of the shaft.

(3) Remove the movable guard.

(4) Remove the head-end panel.

(5) Remove the joint till the head, remove each two cotter pins fitted to the belt pins on both sides of

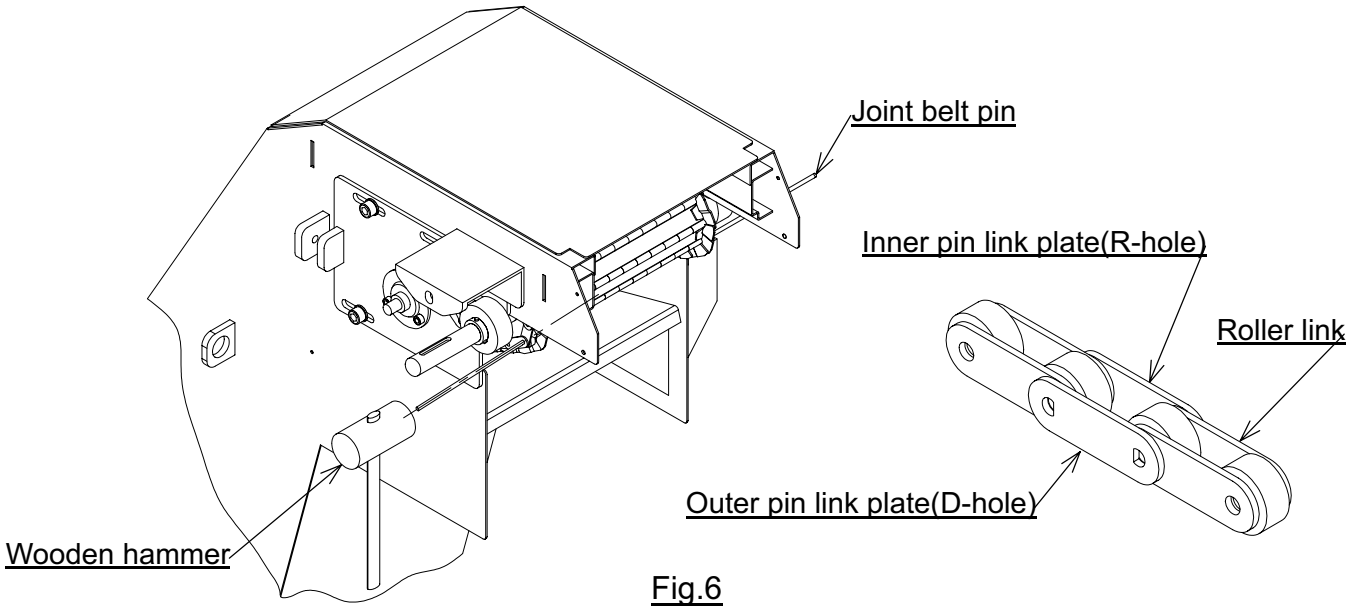


Fig.6

the conveyor and then remove the outer pin link plates (small D-hole) on both sides.After removing the pin link plate, pull out one of the two belt pins fitted to the pin link plates, to one side, using a wooden hammer.

(6) Pull out the separated belt roller on the returning side, using wire.

After disassembling the conveyor as above, inspect and clean it. For the inspection items, see 3-E). For reassembling reverse the above procedure.

11.1.8 Keep an order and cleaning around the conveyor

Keep an order and cleaning around the conveyor and get the enough places.

11.2 MAINTENANCE AND CHECK ITEMS

【Daily check】

	Check items	How to check	Judgment / adjustment
1	Motor strange Noises.	Listen to the motor sounds.	Locate cause.
2	Strange noises from frame.	Listen to abnormal sound of the conveyor.	Locate cause.
3	Filter clogging.	Check visually.	Clean the filter.
4	Filter damage.	Check visually.	Replace.
5	Emergency stop button.	Push the button.	The conveyor has to stop.

【Weekly check】

	Check items	How to check	Judgment / adjustment
1	Main bearing.	Check visually.	If abnormal locate cause and / or replace bearing.
2	Looseness in main bearing Installation bolt.	Check with wrench ,etc.	Tighten as necessary.

【Monthly check】

	Check items	How to check	Judgment / adjustment
1	Chain tautness / turn.	See 11.1.5.2	
2	Bent/damaged conveyor chain/cleats.	Visually check parts.	Repair or replace as necessary. (Use U-nut and M5 x 12 bolt to install cleats.)
3	Back wash nozzle clogging.	Check visually.	Clean or replace as necessary.

【Yearly check】

	Check items	How to check	Judgment / adjustment
1	Tooth wear in main sprocket wheel / drive sprocket wheel.	Visually measure or touch parts.	Replace if worn approx. 3 mm.
2	Rail wear.	Measure with calipers. etc.	Replace frame if worn 1/3 of plate thickness.
3	Chain pitch elongation.	Measure pitch in several links and compute average per link.	Replace chain if elongation is 2% of nominal pitch.
4	Chain roller rotation.	Visual check. Turn by hand.	Clean / lubricate the roller.
5	Traction of conveyed works.	Visually check entire chain.	Clean the chain.
6	Missing / damaged split pins.	Visually check chain coupling.	Replace the split pins as necessary.
7	Chain roller wear.	Turn roller by hand and visually check bottom plate on inside.	Replace roller if side bars contacts travel rail.
8	Side bar wear.	Visually check or measure with calipers.	Replace chain if worn 1/3 of plate thickness.
9	Filter sprocket wear.	Visually check or touch parts.	Replace if worn approx. 2 mm.
10	Filter frame bearing wear.	Visually check or measure with calipers.	Allowable wear: Max. 9 mm of thickness.
11	Back wash nozzles wear.	Check visually.	Replace.

12. TROUBLESHOOTING

12.1 Safety precaution

Most of the accidents occur when troubleshooting is performed. When troubleshooting as per 10.2, follow the instructions in the section “2.WARNINGS_AND_SAFETY_INSTRUCTIONS”. If you think that you cannot perform the troubleshooting, contact us.

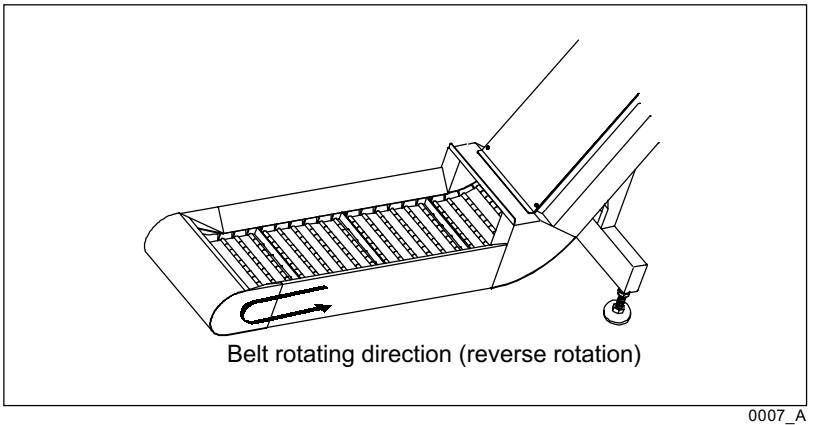
12.2 Troubleshooting when the conveyor comes to a sudden stop

12.2.1 For ball clutch (Mechanical/SM type hollow shaft gear motor)

When the conveyor which is operating comes to a sudden stop, follow the procedure below.

(1) Confirm that any transferred objects is not caught in the frame. If there is any object, remove it.

(2) Reverse-inch the conveyor.



0007_A

NOTICE

- **Remove the objects on the belt surface before reverse-inching the conveyor.**

(3) Confirm that the belt is able to move after performing the step (2).

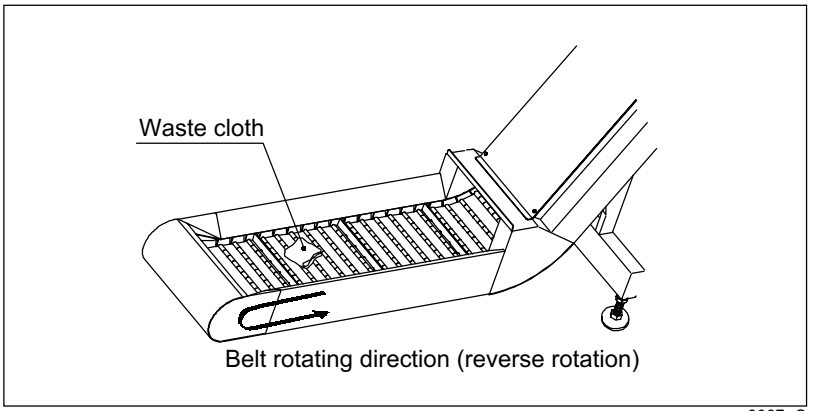
(a) When the belt moves

1) Put a proper quantity of waste cloth on the belt.
(Do not put too many waste clothes.)

2) Rotate the conveyor reverse.

3) Chips are discharged together with the waste clothes. Remove them.

4) If the conveyor stops by doing the above, take out the belt and clean the inside of the frame. For disassembling, refer to “9.1.7 Inspection and cleaning”.



(b) When the belt does not move

1) Remove the hollow shaft gear motor.

2) Set a pipe wrench, etc. to the sprocket-attached main shaft and turn it.

NOTICE

- **If there is any flaw on the sprocket-attached main shaft, finish the surface with files, etc. smooth.**

3) Take out the belt and clean the inside of the frame. For disassembling, refer to “9.1.7 Inspection and cleaning”.

(4) Assemble again the belt or hollow shaft gear motor which have been removed.

(5) If the conveyor does not operate even after the above troubleshooting is performed, contact us. Where to contact is shown on the back cover of this manual.

12.2.2 For shock relay (Electrical/CSM type hollow shaft gear motor)

In case of the operating conveyor stops due to overloading, follow the procedures below.

(1) Press the conveyor stop button.

(2) Check to see if there is any item jammed in the frame. If so, remove it.

(3) Stop the conveyor over 1 second.

(4) Press the conveyor start-up button. The conveyor will start.

(5) Confirm that the belt is able to move after performing the step (4).

(a) When the belt moves

1) Put a proper quantity of waste cloth on the belt.
(Do not put too many waste clothes.)

2) Rotate the conveyor reverse.

3) Chips are discharged together with the waste clothes. Remove them.

4) If the conveyor stops by doing the above, take out the belt and clean the inside of the frame. For disassembling, refer to "9.1.7 Inspection_and_cleaning".

(b) When the belt does not move

1) Remove the hollow shaft gear motor.

2) Set a pipe wrench, etc. to the sprocket-attached main shaft and turn it.

NOTICE

- **If there is any flaw on the sprocket-attached main shaft, finish the surface with files, etc. smooth.**

3) Take out the belt and clean the inside of the frame. For disassembling, refer to "9.1.7 Inspection_and_cleaning".

(6) Assemble again the belt or hollow shaft gear motor which have been removed.

(7) If the conveyor does not operate even after the above troubleshooting is performed, contact us. Where to contact is shown on the back cover of this manual.

NOTICE

- **Once the shock relay functions, the motor will maintain stopped; however, there is a possibility that the conveyor unexpectedly starts operating by an emergency stop or malfunction. When touching the conveyor, follow each item for "2.WARNINGS_AND_SAFETY_INSTRUCTIONS".**

12.3 Remedies for Problems

Trouble	Cause	Remedies (measures)
Belt rising.	Insufficient chain tautness.	Adjust take-up.
Side wing is bent or damaged.	Foreign object inside equipment.	Remove foreign objects.
	Overloading.	Repair or replace side wing as necessary.
Hinge of the hinge link is bent or damaged.	The goods are caught in.	Remove the goods being caught in.
	Rust owing to lack of oil.	Repair or replace the hinge link. Oil the hinge.
Conveyor chain side bar is loosened.	Missing / damaged cotter pin.	Replace cotter pin.
Overflow.	Clogged filter, back wash nozzle.	Clean or replace parts as necessary.
Solid waste discharged.	Damaged filter.	Change filter.
Stopped conveyor	Jamed with chips, tools or work pieces.	Put gloves on, then use tools as pliers to remove.

The ConSep 2000 II conforms to safety regulations. If it is not possible to remedy troubles as above described, contact Tsubakimoto mayfran without attempting further intervention.

13. SPECIFICATIONS

13.1 Weight of ConSep2000II

Estimated mass : kg

13.2 SPEED AND REVOLUTIONS OF ConSep2000II

	Frequency	Reduction ratio 1/400	Reduction ratio 1/200
Conveyor speed	50Hz	0.9 m/min	1.9 m/min
	60Hz	1.1 m/min	2.3 m/min
Reducer revolutions	50Hz	3.6 rpm	7.3 rpm
	60Hz	4.4 rpm	8.8 rpm
Screw conveyor revolutions	50Hz	9.5 rpm	19.0 rpm
	60Hz	11.4 rpm	22.9 rpm
Drum filter revolutions	50Hz	0.8 rpm	1.7 rpm
	60Hz	1.0 rpm	2.0 rpm

13.3 Capacity of chips

Conveyor speed	Conveyor width / Kind of chips	W300	W350	W400	W450	W500	W600	W700	W800
0.9 m/min	Mainly long swarf	794	935	1076	1217	1357	1639	1921	2202
	Mainly short swarf	13	16	19	21	24	29	35	40
1.1 m/min	Mainly long swarf	971	1143	1315	1487	1659	2003	2347	2692
	Mainly short swarf	16	20	23	26	29	36	42	48
1.9 m/min	Mainly long swarf	1588	1870	2152	2433	2715	3278	3841	4404
	Mainly short swarf	27	32	37	43	48	59	69	80
2.3 m/min	Mainly long swarf	1941	2285	2630	2974	3318	4006	4695	5383
	Mainly short swarf	33	39	46	52	59	72	85	98

unit : (L/h)

13.4 Coolant pump for back wash

Discharge connection : PT 3/4 “

Working point Pressure : 0.15 Mpa

Working point Volume :

Conveyor width	W300	W350, W400, W450	W500, W600	W700, W800
Demand flow rate	25	45	55	80

unit : (L/min)

13.5 Driving gearmotor

13.5.1 Specification of hollow shaft gear motor of CSM type

Type	CSM020-252H400-SR	CSM040-252H200-SR
Motor output (kW)	0.2	0.4
Reduction ratio	1/400	1/200
Output shaft torque (Nm)	189/189	187/185
Output shaft revolution speed (rpm)	3.6/4.4	7.3/8.8

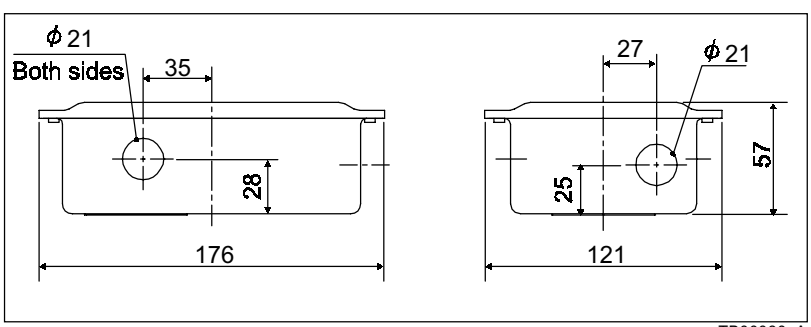
NOTICE

- **Do not connect the inverter to the CSM type hollow shaft gear motor. It can cause a malfunction or damage on the shock relay.**
- **In case of stopping for overloading, make sure to restart only after removing the cause. If stop and restart is frequently performed without removing its cause, it can damage the conveyor or hollow shaft gear motor.**
- **Once the shock relay functions, the motor will maintain stopped, there is a possibility that the conveyor unexpectedly starts operating by an emergency stop or malfunction. When touching the conveyor, follow each item for "2.WARNINGS AND SAFETY INSTRUCTIONS".**
- **Provide a thermal relay (available separately) for a motor protection.**
- **CSM type hollow shaft gear motor has been set to prevent from being overloaded at the plant before the shipment. Do not change the setting. If the setting is changed, we will not be responsible for such change.**

13.5.1.1 Wiring Specification

1) Outside dimension and wiring bore

The outside dimension shall be as below.



2) Terminal box internal

The position of the terminal box shall be as below.

Power terminal and earth terminal

Screw size : M3.5

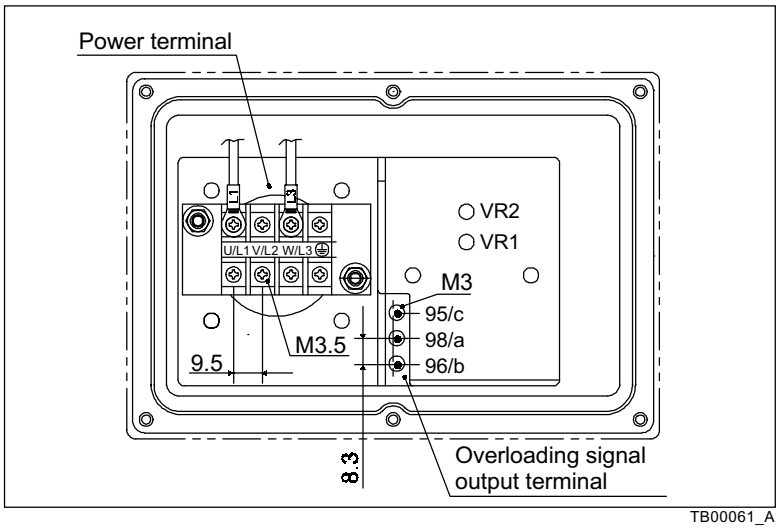
Recommended crimp-style terminal : R2-3.5 (round terminal for 2mm^2)

Overloading signal output terminal (1C dry contact)

Contact capacity : AC250V, 1A (resistant load)

Screw size : M3

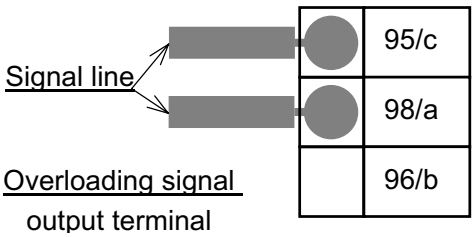
Recommended crimp-style terminal : R1.25-3 (round terminal for 1.25mm^2) or R0.75-3 (round terminal for 0.75mm^2)



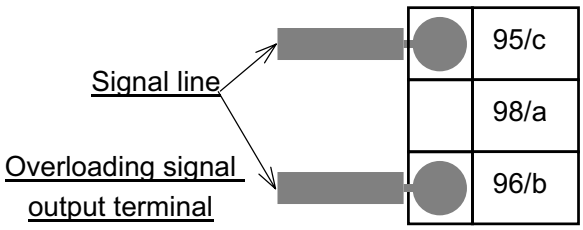
3) Overloading detection contact examples

When transmitting the overloading signals, precede either connection shown below.

(1) For a contact output



(2) For b contact output



NOTICE

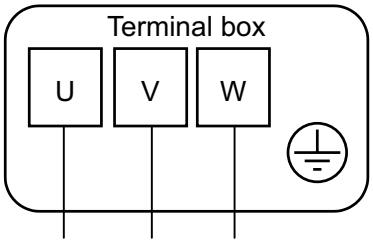
- **If the overloading signals are input directly into the programmable controller (PLC), a connection failure may be generated due to minute electric current.For input to PLC, it is recommended to drive the coil of the relay for minute electric current by overloading signals first, and to input its relay contact in PLC.**

13.5.2 Specification of hollow shaft gear motor of SM type

Type	SM25GCED400L-NM	SM25GCED200L-NM
Motor output (kW)	0.2	0.4
Reduction ratio	1/400	1/200
Output shaft torque (Nm)	189/189	187/185
Output shaft revolution speed (rpm)	3.6/4.4	7.3/8.8

13.5.2.1 A Connection method of a motor

See figure, how a motor is connected.



13.6 ELECTRICAL COMPONENTS（The option）

- Level indicator

Supplier : Endress & Hauser
Type : FTL260-1020
Voltage : DC 24V

Remarks : Power supply for control devices(DC24V) must be SELV.

14. MAYFRAN'S OFFICES

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