

# OPERATOR MANUAL DUAL STAGE FILTERVEYOR



Bulletin No. 99-5, Rev. 0816

## **WARNINGS**

- **THIS CONVEYOR IS DESIGNED FOR A SPECIFIC APPLICATION.**
- **CHECK FRAME AND METAL BELT FOR DAMAGE DURING SHIPMENT.**
- **READ THE MANUAL FOR PROPER INSTALLATION AND START-UP.**
- **CONVEYOR MUST BE LEVEL AND PLUMB FOR PROPER OPERATION.**
- **CHECK ALL DRIVE COMPONENTS FOR ALIGNMENT AND TENSION.**
- **CONTROL BOXES AND OTHER ATTACHMENTS MUST BE MOUNTED WITH EXTREME CARE SO AS NOT TO INTERFERE WITH CONVEYOR OPERATION**
- **Verify ALL WIRING FOR CORRECT VOLTAGE, CYCLE & AMPERAGE**
- **PROPER CHAIN TENSIONING IS REQUIRED AT INSTALLATION, AND WHEN IN USE FOR 30-45 DAYS, A RE-ADJUSTMENT SHOULD BE PERFORMED.**
- **LOCK OUT AND TAG OUT POWER SOURCE PRIOR TO ANY ADJUSTMENTS OR MAINTENANCE.**
- **KEEP HANDS AWAY FROM CONVEYOR WHEN POWER SOURCE IS NOT LOCKED OUT.**
- **DO NOT STEP ON CONVEYOR.**

## ***DANGER***

***Use OSHA Lockout/Tagout procedures before performing any inspections, adjustments, or maintenance procedures on this equipment. Failure to follow OSHA required procedures at all times without exception could result in severe injury and is against Federal workplace safety laws.***

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## 1.0 DESCRIPTION

### 1.1 GENERAL

Used primarily in machining operations, the Filterveyor is a filtration device that separates the chips and fine particles from the coolant, returning clean coolant back to the machine.

The Filterveyor consists of two stages. See Figure 1.

The first stage provides the first stage of separation. It contains a metal apron type belt and is responsible for separating the bulk of the chip load, carrying them to the collection container.

Contaminated coolant enters into the first stage load section along with the chips, drains by gravity through the perforated metal belt and finally weirs into the second stage and drum section. This coolant carries fine chips that pass through the apron belt perforations, into the second stage filtration section.

The second stage is the filtration portion of the Filterveyor. It consists of the second stage conveyor and a filtration drum with permanent media. A drag chain is used in the second stage to drive the filter drum, and to scrape some of the larger fine chips out of the second stage discharge, dropping them into the collection container.

The filter drum provides the second stage of separation. It consists of a frame with a filtration media (permanent type) fastened around its' circumference. Clean coolant passes through the media by gravity into a clean tank, leaving smaller fine particles behind, adhering to the media.

A spraybar located inside the filter drum washes these particles off the outside of the media. The drag chain cleats of the second stage also scrape up these particles and carry them to the collection container.

Clean coolant is pumped out of the Filterveyor's clean tank back to the machine, closing the cycle.

The following sections contain design/construction, installation, startup, maintenance, and trouble-shooting information for the Filterveyor; first stage and filtration section.

## 1.2 DESIGN/CONSTRUCTION

### 1.2.1 Casing Construction

The Filterveyor casing is a welded, watertight unit fabricated from sheet metal sections. Tracks are welded

onto the inside of the casing sidewalls (Figure 2). The tracks act as supports and guides for the conveyor belt (first stage) and the drag flight assembly (second stage).

### 1.2.2 Drive and Take-Up

The conveyors are driven by a gearmotor. The head-shaft may be driven via a chain between the gearmotor and driven sprocket (indirect drive). In some cases, the output of the gearmotor is connected directly to the head shaft (direct drive).

### 1.2.3 Conveyor Tail End (First Stage)

The tail end of the typical metal belt conveyor consists of fixed hardened tail hubs fastened to the conveyor casing (Figure 1F). The tail hubs support and guide the belt chain as it makes the turn and changes direction.

### 1.2.4 Conveyor Medium (First Stage)

The first stage consists of metal chain links (apron plates), mutually linked by axles (Figure 1C). Rollers on each end of the axles, in turn, support the axles; the rollers are supported and guided by tracks mounted on the casing. Conveyor belt pitch (the distance between axles) is 2-1/2 inches (63 mm). The conveyor apron plates are sandwiched between side wings to contain the product being carried. The side wings are mounted on the axles, between the apron plates and the roller. Belts are equipped with cross cleats to contain the material as it is lifted up the incline. Side bars are added to increase pulling capacity, based on the application.

### 1.2.5 Conveyor Medium – Second Stage

The drag chain assembly is comprised of two strands of 1.25" pitch commercial roller chain, with a series of cleats fastened to them.

The chains can be repaired, lengthened, or shortened on a link-by-link basis using typical roller chain techniques.

The cleat, which drags the fines up the bottom of the incline of the second stage conveyor, is made of sheet metal bent to form an angled leg. Each end of the cleat is bolted to an attachment, welded to the chain. With this arrangement, a damaged cleat can be replaced easily by removing the bolt on each end, and re-installing a new cleat.

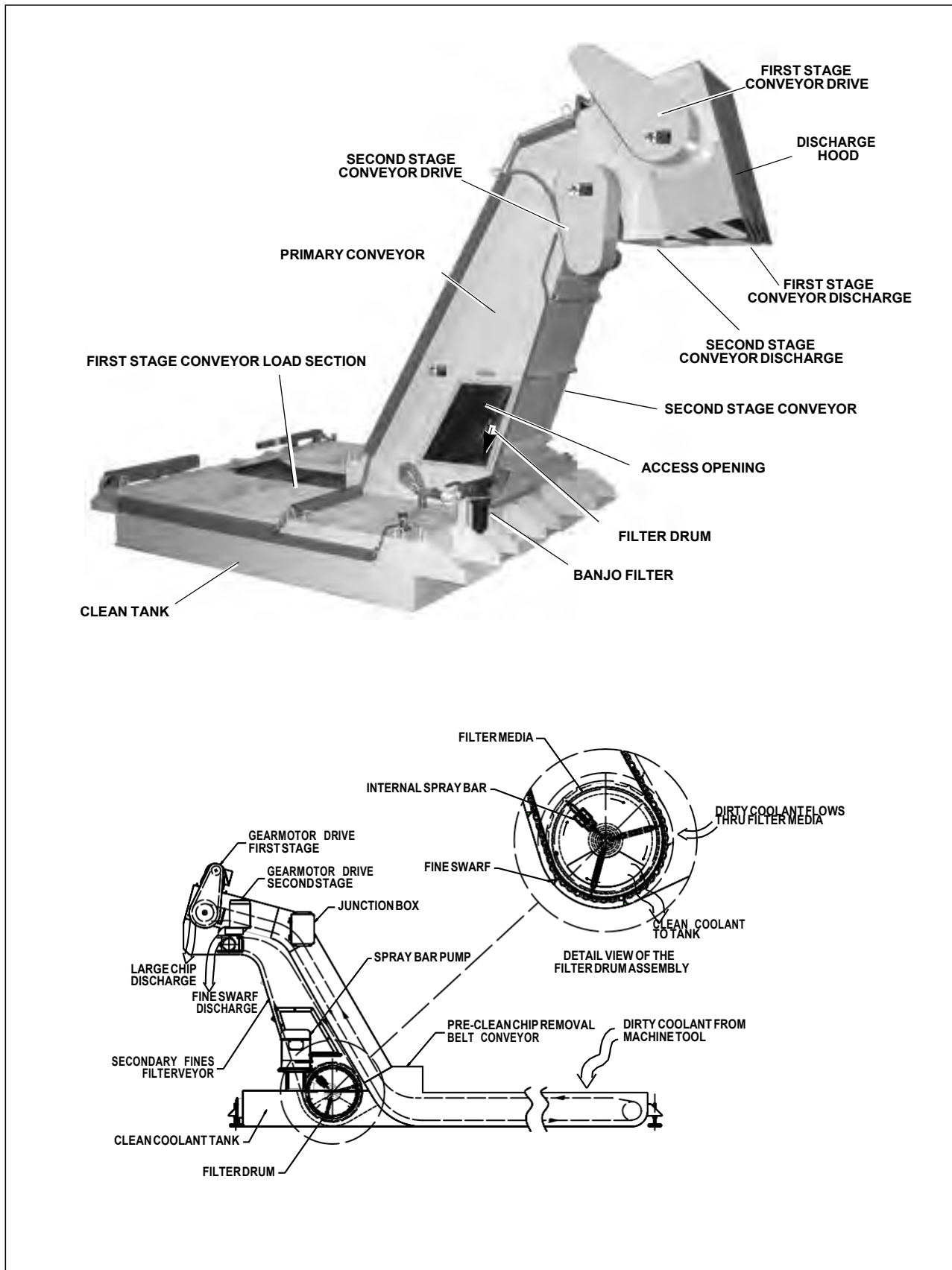


Figure 1. Conveyor Nomenclature (1 of 3)

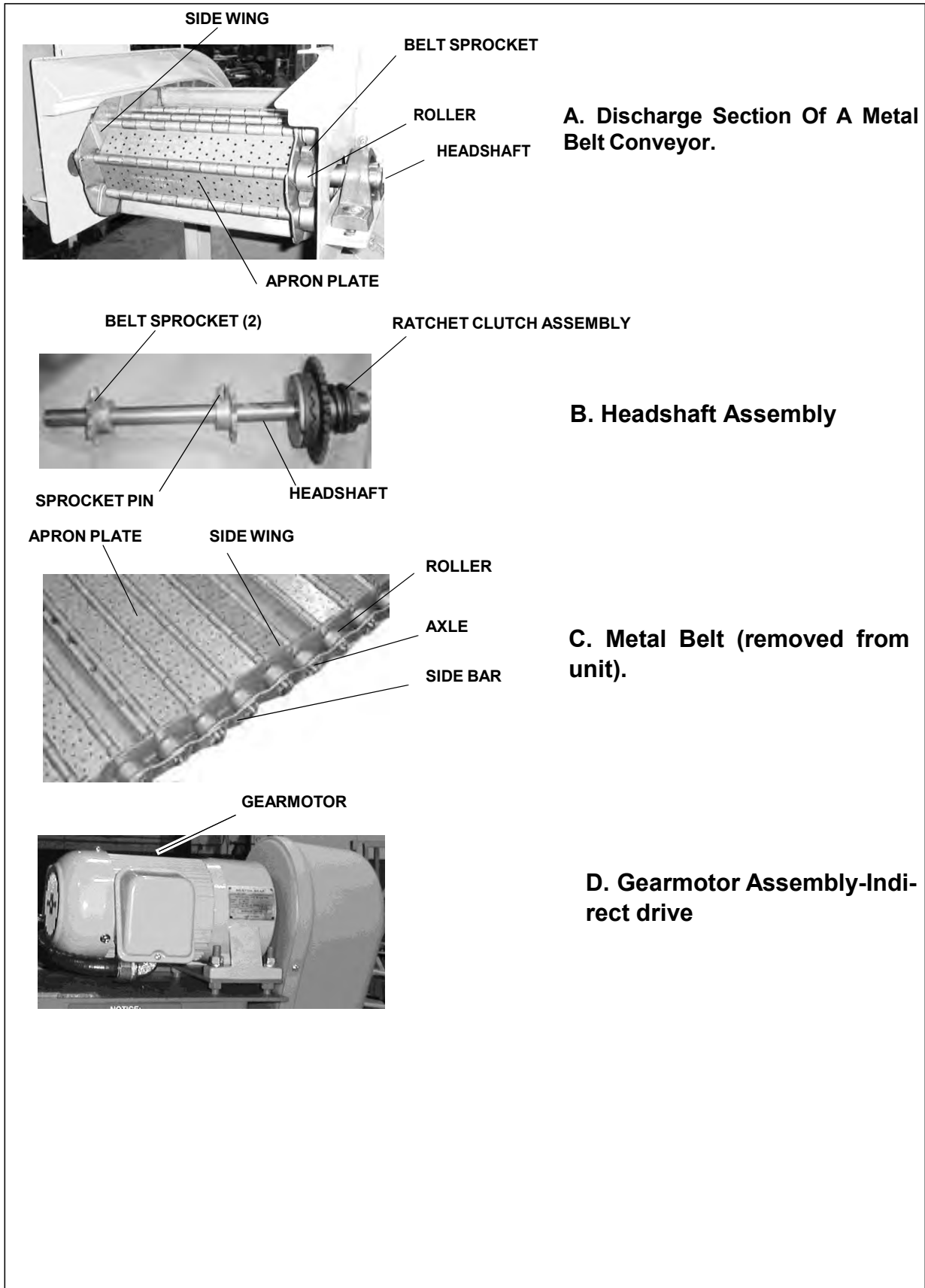
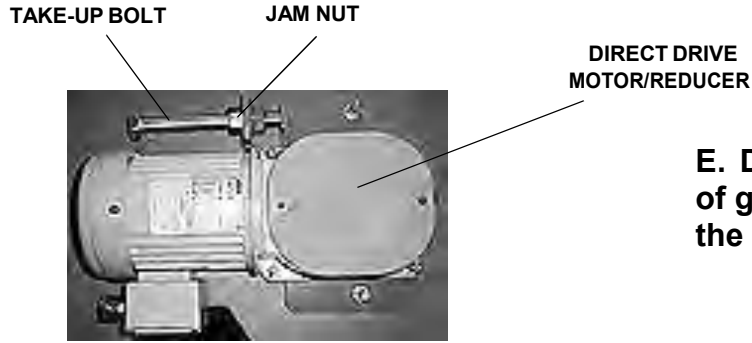
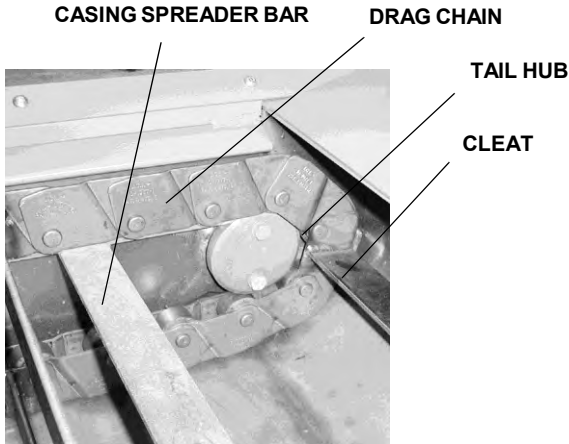


Figure 1. Conveyor Nomenclature (2 of 3)

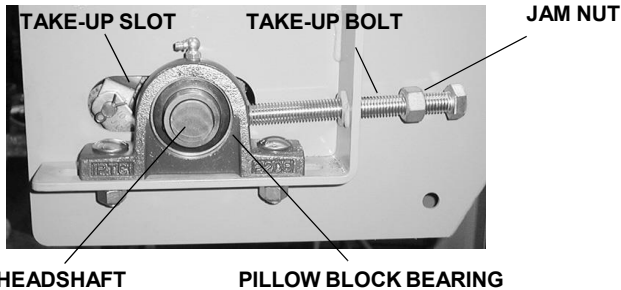




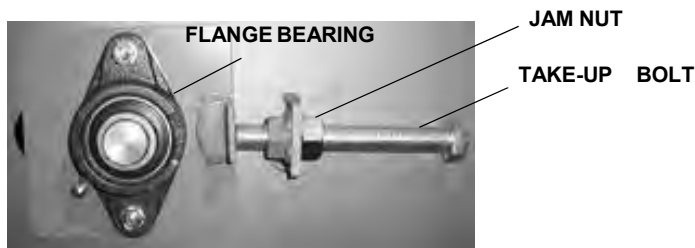
**E. Direct drive assembly consists of gearmotor connected directly to the headshaft.**



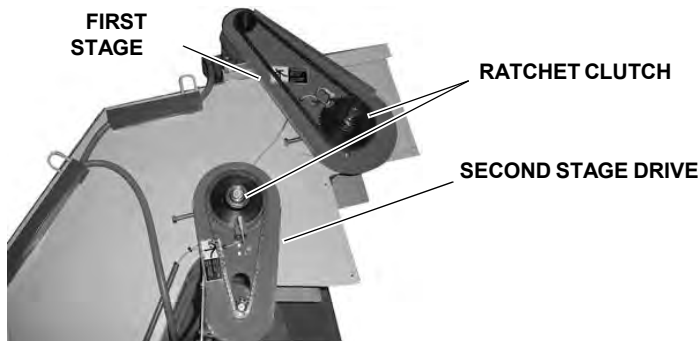
**F. Tail end of a drag chain conveyor is shown to illustrate the use of tail hubs. NOTE: The metal belt conveyor and the drag chain conveyor use identical hubs. (larger units may use sprockets instead of hubs).**



**G. Non-drive side of conveyor and take-up assembly with pillow block bearing. Note the take-up slot behind the bearing.**



**H. Alternative non-drive side bearing and take-up assembly with flange bearing.**



**I. First and second stage drives.**

**Figure 1. Conveyor Nomenclature (3 of 3)**



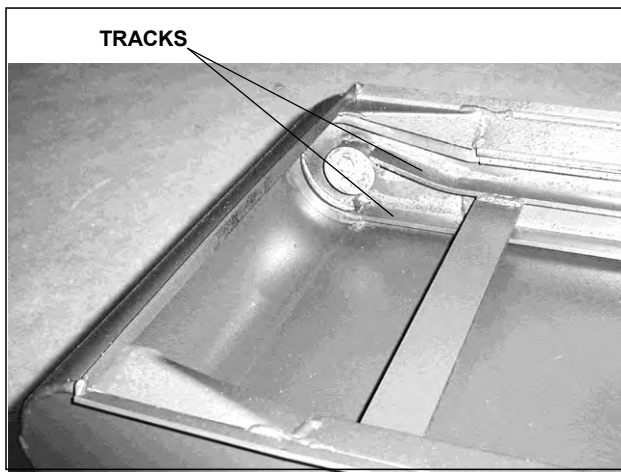


Figure 2. Conveyor Casing Construction

### 1.2.6 Overload Devices

These conveyors are equipped with either of two devices to prevent damage or injury due to overloading: 1) a ratcheting slip clutch, or 2) a current limiter. Each is discussed below.

**Ratcheting Slip Clutch (if provided – indirect drive only).** This unit is designed to limit the torque transmitted by the drive system when the torque exceeds a preset value as a result of overload, shock load, or jamming of the conveyor. The clutch includes an adjustable tension spring that provides pressure on a pair of ratchet-tooth plates.

When a severe overload occurs, the ratchet-tooth plates, engaged on the driven sprocket, push the driven sprocket against the spring and slip on the ratchet-tooth plate until the overload is cleared. After clearing the overload, resetting is not necessary. The ratcheting slip clutch is shown in Figures 1B. and 1I.

**Current Limiter (if provided).** The current limiter is a safety device used to protect the conveyor in the event of a jam or overload. This device is an electronic alternative to the mechanical ratchet clutch or other mechanical devices.

The current limiter senses motor current and, within milli-seconds, shuts down the conveyor if the current rises above a preset level. (Contacts can also be provided for an audible or visual alarm when shutdown occurs.)

Depending on user preference, the current limiter option can be purchased in two different configurations:

1. Mounted in a separate electrical box along with a set of contactors.
2. Mounted in a control ordered with the conveyor and supplied by Jorgensen Conveyors.

Functionally, both configurations operate in the same manner. The current limiter is always used on the direct drive system, but it can also be used on the indirect drive system; the current limiter replaces slip clutch, although the driven sprocket is still used.

## 2.0 INSTALLATION

### 2.1 GENERAL

The Filterveyor is shipped fully assembled. As a safety precaution, be sure to use the proper lifting device to unload the unit.

Uncrate the unit carefully, and inspect for damage that may have occurred during transit. If damage has occurred, notify the carrier immediately. Review this manual in its entirety before beginning installation. If you have any questions, call Jorgensen Conveyors immediately.

This unit has been lubricated, run-in, and tested in Jorgensen Conveyor's facility. However, transportation can affect factory settings. Check for correct tensioning of the conveyor belt, and verify that all bolts in the take-up assembly and drive unit are tight. If necessary, adjust the unit as directed in this manual.

- A. Check for, and remove, any loose material in the unit, especially from the base of the load section of the unit.
- B. A final assembly drawing, specific to your Filterveyor, has been provided. Refer to this drawing and use the following discussion as a guide on how to proceed with installation.
- C. Move the unit into position.
- D. Place blocking and shimming under the full width of the load section and clean tank of the unit to distribute weight uniformly. Be sure that the unit is level and that the unit interfaces correctly with the machine.

**NOTE: Some units are equipped with adjustable casters to allow movement of the unit. Others may be equipped with adjustable articulated leveling bolts. Do not move the filterveyor if filled with coolant.**

## 2.2 ELECTRICAL CONNECTIONS

Refer to wiring diagrams and appropriate control drawings before wiring the unit. Insure that voltage rating for the unit is known before connecting the unit to any power source.

Electrical leads may have become loose during shipment. Verify that all connections are secure, or reconnect as required.

## 2.3 PIPING CONNECTIONS

Both the backflush pump and the machine supply pump are provided as options.

If the back flush pump is supplied by the manufacturer, no piping connections are required at time of installation. Otherwise the user will need to install a pump, plus a line from the pump's discharge to the Banjo filter. This line should also contain a valve for adjustment of flow to the spraybar. Pipe diameter should be the same as the pump discharge connection port.

If the machine supply pump is included, the user will have to make the piping connections from the pump to the machine. In other cases, the user will have to install a pump as well as the piping. Pipe diameter for this line is the customer responsibility, to ensure that pressure drop does not cause low pressure at the machine.

## 3.0 START-UP

Initially (and after prolonged shutdown) be sure that the conveyor drives have been correctly wired and that all covers and shrouds are in place.

1. Verify that all piping is tight, and leak proof.
2. Verify that drive motors run in the proper direction. The top run of the belt in the first stage should move toward conveyor discharge. The lower run of the drag chain in the second stage should also move toward the discharge. Refer to installation drawings.
3. Verify that all guards and safety devices are installed.
4. Verify that all pumps rotate in correct direction.
5. Insure that coolant has been added and that tank level is as per installation drawing. Fill only with pre-mixed coolant.

6. Insure that the bowl of the policing filter (Banjo) for the spraybar is secure, and that the valve upstream of the filter is open.
7. Operate the Filterveyor for approximately 15 minutes to observe and confirm trouble-free operation before placing the unit in service. (The unit is usually operated through pushbuttons located on the machine, although, when requested, controls can be mounted on the Filterveyor.)
8. The spraybar valve has been adjusted at the factory but may need to be adjusted after installation. Observe the spray pattern, through the access window, and adjust the valve (if necessary) to obtain forceful streams of coolant through the media, without causing coolant misting or foaming in the second stage. This adjustment may be optimized by the operator over time.

If the Filterveyor has been shut down for a prolonged period, proceed as follows:

1. Check for correct tensioning of the conveyor belt and drag chain assembly, as described later under "Metal Belt/Drag Tension Adjustment," Section 4.4.
2. Verify that all bolts in the take-up assemblies and drive units are tight.
3. Be sure that the roller chain on the indirect drive unit(s) has been properly lubricated (brushed with light-weight oil).

## 4.0 SERVICE AND MAINTENANCE

The Filterveyor requires regular maintenance, including lubrication, in order to sustain trouble-free operation.

### 4.1 GEARMOTOR DRIVE ASSEMBLY

#### 4.1.1 Direct Drive Units

**General.** With this arrangement, the gearmotor is mounted directly on the headshaft (Figure 1E) there is no drive chain between the gearmotor and headshaft.

**Removal/Replacement** Proceed as follows:

1. Open the gearmotor terminal box and disconnect the power leads. Using the appropriate wrench, loosen the Seal-Tite connection until the leads can be disengaged from the terminal box.
2. Loosen the setscrews that hold the gearmotor onto the headshaft and pull the gearmotor off of the shaft and place it on a bench.

3. Replace the gearmotor by reversing steps 1 and 2 above.

#### 4.1.2 Indirect Drive Units

**General.** Optionally, conveyors may be equipped with a roller chain in conjunction with a gearmotor (Figure 1I).

**Removal/Replacement.** Proceed as follows:

1. Lock out and tag out electrical power to the conveyor unit
2. Open the gearmotor terminal box and disconnect the power leads. Using the appropriate wrench, loosen the Seal-Tite connection until the leads can be disengaged from the terminal box.
3. Relieve tension on the drive chain by loosening the gearmotor mounting bolts so the gearmotor can be moved toward the headshaft.
4. Remove the chain guard cover exposing the drive chain. Disconnect the drive chain by removing the master link.
5. Remove (4) Hex. Nuts and lockwashers securing the gearmotor to the mounting plate. Remove the gearmotor.
6. Reinstall the gearmotor by reversing the above steps.

**Drive Chain Adjustment** Proceed as follows:

1. Using the gearmotor mounting bolts, tension the drive chain according to Figure 3 and Table 1. Check sprocket alignment using a straight edge or taut cord stretched across the faces of the drive sprocket and the driven sprocket (Figure 3). The tolerance is 1/8" per foot ( $\pm 0.5$  degrees or 3.5 mm per 0.3 m).
2. Check sprockets and components. Be sure that all are in good condition and free of contamination. The roller chain should be lubricated and free from chips or turnings.
3. Be sure all setscrews, bolts, and nuts are tight.
4. Lubricate the roller chain by brushing with light-weight oil.

#### 4.1.3 LUBRICATION

The gearmotor is factory lubricated and sealed. It therefore requires no further lubrication. The motor

bearings are also sealed and do not require further lubrication.

## 4.2 OVERLOAD PROTECTION

### 4.2.1 Ratcheting Slip Clutch (if provided - indirect drive only)

This unit is preset at Jorgensen Conveyors, and should only require resetting if clearing the overload does not stop the ratcheting. Refer to Figure 4 and proceed as follows, for either the first stage and/or second stage as appropriate:

1. Clear the conveyor of any jamming material or overload.
2. Load the conveyor with the maximum expected chip load.

**WARNING Failure to follow safety procedures can cause personal injury! Disconnect all electrical power from the conveyor unit before servicing the ratchet slip clutch.**

3. Lock out and tag out electrical power to the conveyor unit.
4. Remove all drive guards and/or covers.
5. Loosen the setscrew on the clutch-adjusting nut. Tighten the adjusting nut 1/4 turn.

**NOTE: The ratchet slip clutch is preset at Jorgensen Conveyors to 1-5/8" (41.3 mm) (A, Figure 4). Do not compress the spring to anything less than 1-1/2" (38.1 mm) as this will disable the clutch.**

6. Apply electric power, restart the conveyor, and observe operation of the clutch. If the overload (ratcheting) continues, check to determine if the conveyor is jammed by running the conveyor in reverse to clear the jam. If there is no jam, re-start the conveyor and continue with Step 7.
7. Repeat steps 5 and 6 until the conveyor runs continuously without ratcheting.
8. After final adjustment, lock the adjusting nut in place with the setscrew.
9. If the conveyor is now functioning properly, replace the guards and covers, and return the unit to service.
10. The only maintenance required for the ratchet slip clutch is periodic inspection for wear, rust, corrosion, or binding between the ratchet-tooth plates.

Table 1. Deflection of Roller Chain Between Sprockets

Drive Center	5"	10"	15"	20"	30"	40"	60"	80"	100"
Horizontal	.25"	.50"	.75"	1.00"	1.50"	2.00"	3.00"	4.00"	5.00"
Vertical	.12"	.25"	.38"	.50"	.75"	1.00"	1.50"	2.00"	2.50"

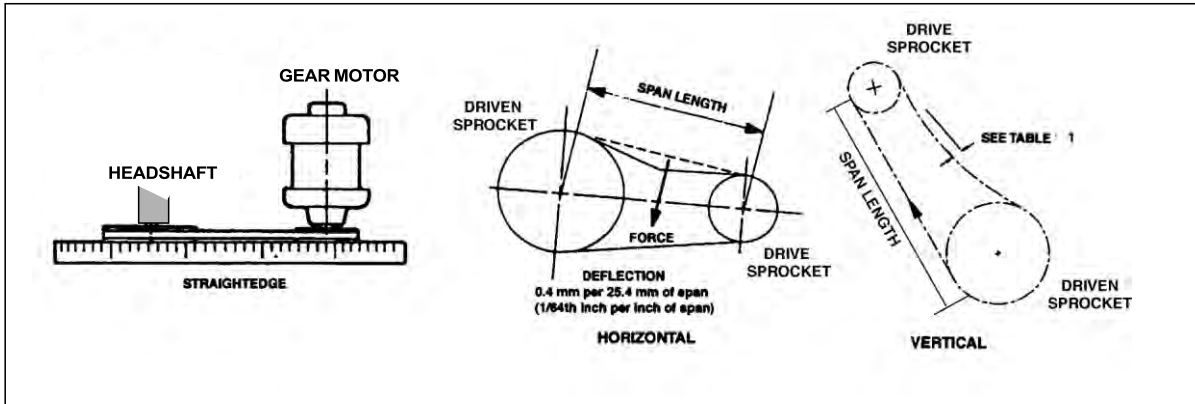


Figure 3. Gearmotor Alignment and Drive Chain Tension Adjustment

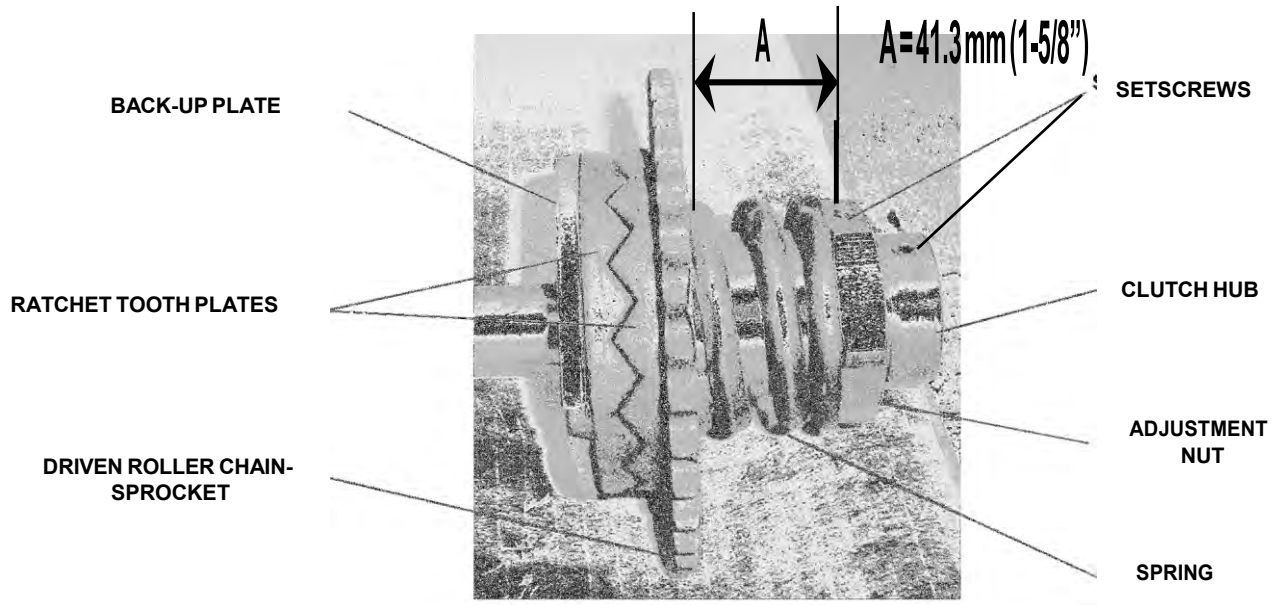


Figure 4. Ratchett Slip Clutch

#### 4.2.2 Current Limiter

**WARNING: When the current limiter stops the conveyor, there may be residual torque on the drive system. It is essential that the conveyor be operated in reverse momentarily to relieve the residual torque. Never attempt to clear a jam or work on the conveyor without first relieving the torque.**

The current limiter can best be adjusted with the conveyor (first and/or second stage) operating under typical load:

1. With the conveyor running, gradually turn the adjustment screw on the limiter counter-clockwise until the limiter trips out and stops the conveyor.
2. After the conveyor has stopped, turn the adjusting screw a small amount higher and restart the conveyor. If the conveyor runs without being shut down by the current limiter, you are ready to begin normal operation.
3. If the limiter still trips, repeat the above procedure until the conveyor runs continuously without trip-



ping out. This setting will be a good starting point; through experience with the specific chips and load procedures, you may want to adjust the limiter accordingly.

### 4.3 INSPECTION AND ADJUSTMENT OF THE HEADSHAFT

**WARNING: Failure to follow safety procedures can cause personal injury. Disconnect all electrical power from the conveyor unit before removing the headshaft cover or servicing the headshaft assembly.**

Proceed as follows:

**NOTE: This procedure is applicable to both the first and second stage conveyors.**

**NOTE: Check the sprockets annually for indications of wear.**

1. Lock out and tag out electrical power to the Filterveyor.
2. Remove the discharge hood (Figure 1) and any drive system covers as necessary.
3. For the indirect drive:
  - Move the gearmotor assembly on its adjustment screws to relieve tension on the roller chain (Section 4.1.2).
  - Disconnect the master link from the roller chain and remove the chain from the headshaft drive sprocket. Remove covers, as necessary, to expose the headshaft.
4. For the direct drive, remove the gearmotor from the headshaft (Section 4.1.1)
5. The headshaft can now be inspected as follows:

A. If the metal belt (or drag chain) runs against the sides of the conveyor or wanders from side to side:

a) Measure the distance between the headshaft sprocket face (or chain face) and the inside of the sidewall on both ends of the shaft to verify that the metal belt (or drag chain) is centered in the discharge section (Figure 5). If not, proceed as follows:

- Loosen the setscrews on the flange bearing or pillow block bearing so that the headshaft can be moved laterally. (See Figure 6.)
- Move the shaft and sprocket towards the side of the machine having the greatest clearance.

- Measure the distance between the chain face (or sprocket face) and the inside of the sidewall (Figure 5). Be sure that the sprockets are centered (distance is equal for both sides).

- Retighten the bearing block setscrews.

b) If the metal belt or drag chain still runs against the side of the conveyor, or if the chain or belt “climbs” the sprockets:

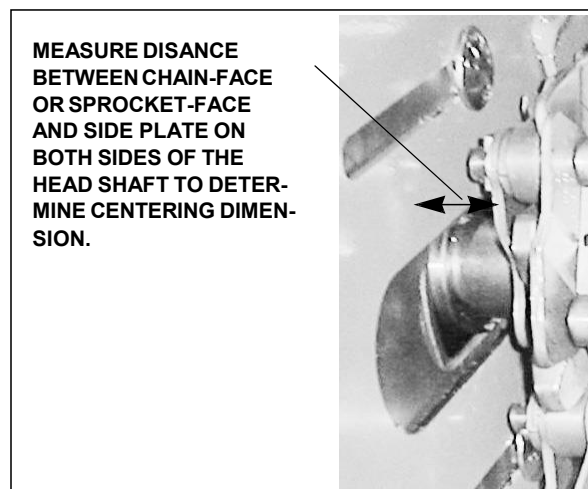
- Measure the distance between the bearing and the front edge of the sidewall (Figure 7) to verify that the headshaft is not cocked (skewed).

- If the shaft is skewed, loosen the gearmotor mounting bolts on the lagging side and, using the take-up bolts, balance the position of the headshaft in the discharge section.

- Tighten the gearmotor mounting bolts.

C. If the metal belt (or drag chain) climbs the sprockets even after steps (a) and (b) have been completed, metal belt (or drag chain) tension may be too loose. Check tension as described under “Metal Belt/Drag Chain Tension,” Section 4.4.

D. If the headshaft turns, but the metal belt or drag chain does not move, inspect the headshaft sprocket pins or keys. See Figure 1b. (In some cases, a sprocket key is used instead of a pin.) If the pins or keys are damaged, refer to “Removal of Headshaft Assembly” below, Section 4.5.1 and 4.5.3.



**Figure 5. Headshaft Centering Measurement**

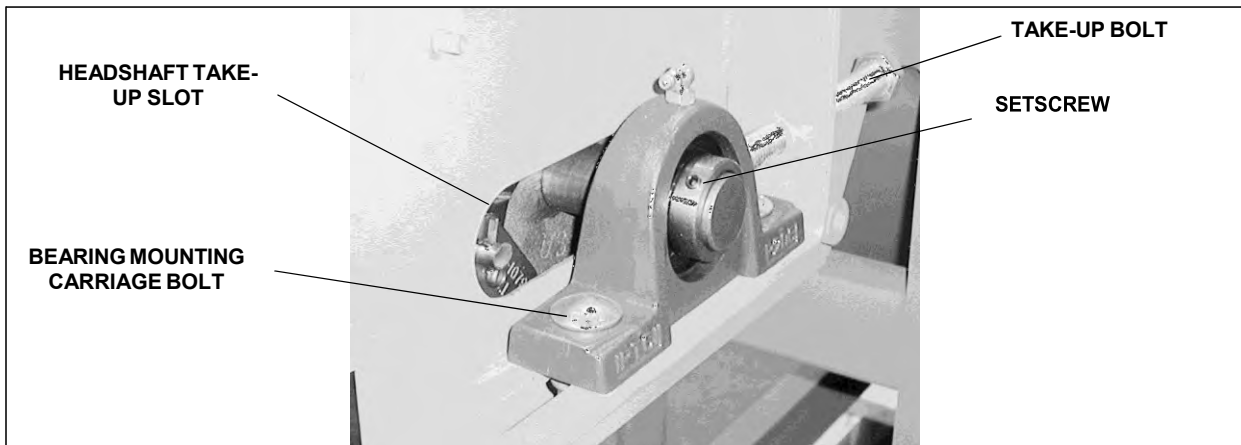


Figure 6. Headshaft Take-Up Slot and Flange Bearing



Figure 7. Checking for Headshaft Skew

E. If the headshaft has lateral movement in the bearings: Check the setscrews and the headshaft bearing mounting bolts for tightness (Figure 6). If either is loose, proceed as follows:

- Adjust the headshaft so that the chain is equal distant between the chain and the inside of the side plate on each side (Figure 5).
- Tighten the headshaft-bearing mounting bolts.

F. If the headshaft is seized and does not rotate: refer to “Removal of Headshaft” below, Section 4.5.1 and 4.5.3.

7. Reinstall the gearmotor assembly, or roller chain (indirect drive), refer to Section 4.1. Adjust tension at the headshaft using the take-up bolts and jam nuts as described under “Metal Belt/Drag Chain-Tension Adjustment.”, Section 4.4.
8. Reinstall all covers and shrouds.
9. Apply electrical power.

10. Operate the conveyor for approximately 15 minutes to observe and confirm trouble-free operation

#### 4.4 METAL BELT/DRAG CHAIN TENSION ADJUSTMENT

**NOTE:** Check conveyor metal belt and drag chain every six months for indications of wear and damage.

**NOTE:** Check the tail hubs on the first stage (or sprockets on larger units) for wear. (See Figure 11.) Normally, this is not a problem and need only be performed when the conveyor is being completely disassembled.

Proceed as follows:

Conveyor chains eventually stretch with operation so that tension must occasionally be adjusted using the take-up mechanism as follows (refer to Figures 8 and 9):

1. Lock out and tag out the conveyor.
2. Remove the discharge hood and all other necessary covers and guards.
3. Loosen the jam nuts and take-up bolts.

**NOTE:** On indirect drive units, remove the roller chain between the speed reducer and headshaft sprocket to free the headshaft for movement using the take-up device. Remove the master link on the roller chain to remove the chain.

4. Adjust the take-up bolts to shift the headshaft to either increase or decrease tension. Be sure that both sides are tensioned uniformly so that the headshaft is not askew, which would increase wear on the chains and sprockets. Refer to Section 4.3.

**WARNING:** Never check belt or chain tension using your hand while the conveyor is

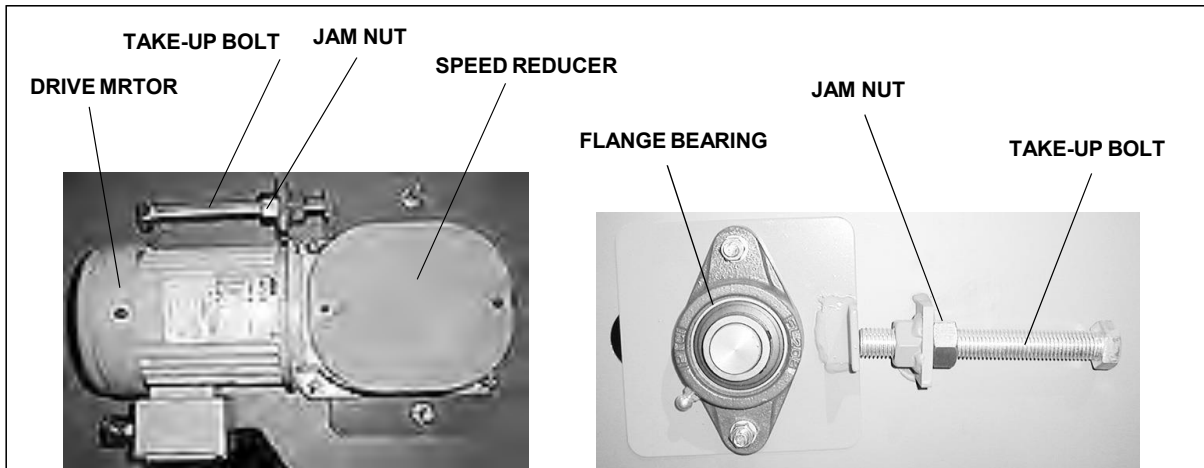


Figure 8. Direct Drive and Take Up Mechanism

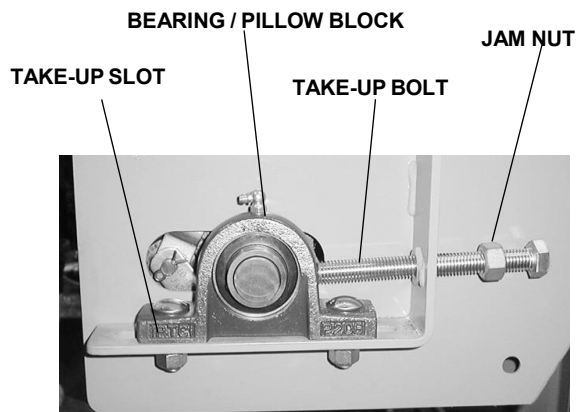


Figure 9. Indirect Drive Take Up Mechanism

**operating. Failure to observe this warning can result in severe injury to your hand.**

5. Check belt tension with your hand as shown in Figure 10. Belt slack at this position should be approximately 1/2 to 3/4 inch (13 to 19 mm). The same criteria apply for the drag chain on the second stage, except that the slack should be measured on the top run of the chain.
6. Tighten the take-up retaining bolts and jam nuts. Check drive chain tension, and adjust as necessary per Section 4.1.
7. Install and secure all covers and guards.
8. Remove the tagout and restart the Filterveyor. Allow it to operate for 15 minutes and observe that

the belt and/or drag chain do not drift sideways, which would indicate skewing.

## 4.5 REPLACING THE HEADSHAFT

### 4.5.1 Removal of Headshaft Assembly- First stage

Proceed as follows:

1. Carefully jog the conveyor until an axle is accessible through the take-up slots, Figures 6 and 9.

**WARNING: Failure to follow safety procedures can cause personal injury. Disconnect all electrical power from the conveyor unit before removing the headshaft cover or servicing the headshaft assembly.**

2. Lock out and tag out electrical power to the conveyor unit.
3. Remove all the discharge hood and all necessary covers and shrouds.

**NOTE: On the direct drive system remove the gearmotor assembly.**

4. On indirect drive units, remove the roller chain between the gearmotor and driven sprocket to free the headshaft for movement. Remove the master link on the roller chain to remove the chain. Figure 12.
5. Loosen the jam nuts and take-up bolts, and loosen the bearing mounting carriage bolts.

**NOTE: If the unit is equipped with a ratchet slip clutch, loosen the setscrew on the clutch hub and remove the slip clutch.**



6. Standing at the discharge end, move the headshaft toward the tail end of the unit, relieving tension on the metal belt.
  7. Remove the cotter pin or axle pin from the drive side of the axle aligned with the take-up slot (Figure 13). Because the axle pins are press fit, it will be necessary to use a hammer and drive pin to remove the axle pin.
  8. Remove the axle from the non-drive side as shown in Figure 14. Install the axle and roller back into the top half of the metal belt to avoid losing the axle, pin, side wings and roller.
  9. Facing the discharge opening, pull on the lower half of the metal belt until the upper run clears the headshaft; lower the lower run to rest on the upper curve (Figure 15).
  10. Loosen the setscrews securing the bearings to the headshaft (Figure 16).
  11. Remove the non-drive side bearing from the headshaft.
  12. If a key is used, remove the driven sprocket from the drive side of the conveyor by removing the setscrew in the sprocket hub.
  13. If a sprocket pin is used, drive out the sprocket pin on the drive end of the headshaft via the discharge opening,(Figure 15). With the sprocket now free to move, slide the sprocket toward the non-drive side of the headshaft. (Or remove the sprocket key if the unit is so equipped.)
  14. Push the headshaft towards the drive side, moving it out of the non-drive side bearing plate. Then lower the non-drive end of the headshaft and remove the entire headshaft to a safe working area.
3. Install the bearings and bearing blocks/flanges and the sprocket/ratcheting slip clutch on the head shaft.
  4. Install the clutch-hub-mounting setscrew, but do not tighten the bearing mounting bolts at this time.
  5. Refer to "Inspection and Adjustment of the Headshaft," Section 4.3 above, and center the sprocket/headshaft assembly in the conveyor.
  6. After the sprocket has been aligned, tighten the bearing mounting bolts, and the bearing setscrews.
  7. Reinstall the metal belt in accordance with Section 4.6.2.
  8. Reconnect the belt as described in Section 4.6.2.
  9. Reinstall the gearmotor and roller chain (indirect drive), and adjust tension per Section 4.1. Adjust tension at the headshaft using the take-up bolts and jam nuts as described under "Metal Belt/Drag Chain Tension Adjustment.", Section 4.4.
  10. Operate the conveyor for approximately 15 minutes to observe and confirm trouble-free operation before placing the unit in service.

#### 4.5.2 Installation of Headshaft Assembly-First Stage

Installation of the headshaft assembly is basically the reverse of the removal process. Upon completion of installation, refer to "Metal Belt/Drag Chain Tension Adjustment" Section 4.4.

1. Slide the headshaft into the drive side of the conveyor and then into the non-drive side.
2. Drive the press fit sprocket pin into the hole provided in the headshaft (Figure 17), or install the sprocket key if the unit is so equipped.

#### 4.5.3 Removal of Headshaft Assembly-Second Stage

Proceed as follows:

1. Carefully jog the second stage conveyor until the master links of the drag chain are accessible through the access openings.

**WARNING: Failure to follow safety procedures can cause personal injury. Discon-**

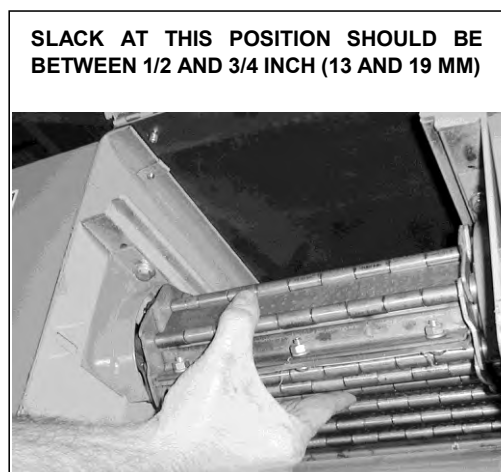
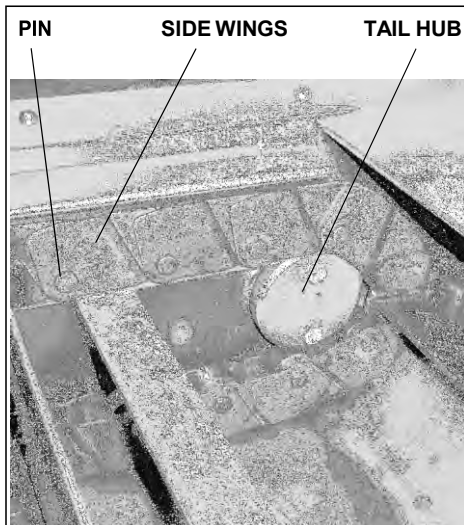


Figure 10. Checking Metal Belt Tension



**Figure 11. Tail Hub (Note that a drag chain unit is shown here for clarity. The hub is identical on the metal belt unit)**

**Disconnect all electrical power from the conveyor unit before removing the headshaft cover or servicing the headshaft assembly.**

2. Lock out and tag out electrical power to the conveyor unit.
3. Remove the discharge hood, access covers, and all other necessary covers and shrouds.

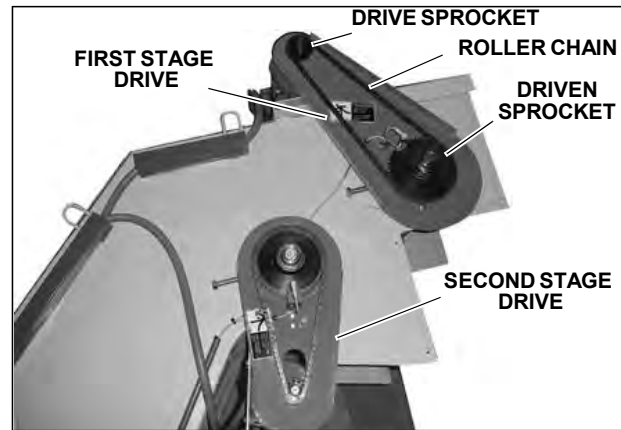
**NOTE: On the direct drive system, remove the gearmotor assembly.**

4. On indirect drive units, loosen mounting bolts as necessary and remove the roller chain between the gearmotor and driven sprocket to free the headshaft for movement. Remove the master link on the roller chain to remove the chain.
5. Loosen the jam nuts and take-up bolts, and loosen the bearing mounting bolts.

**NOTE: If the unit is equipped with a ratchet slip clutch, loosen the setscrew on the clutch hub and remove the slip clutch.**

6. At the discharge section, push the headshaft to relieve tension on the drag chain.
7. Remove the master link from both strands of the drag chain assembly. Pull the bottom run of the drag chain up the incline until the top run is free of the headshaft pulleys.
8. Loosen the setscrews securing the bearings to the headshaft (Figure 16).
9. Loosen setscrews in the headshaft sprockets and move the sprockets toward the non-drive end of headshaft.

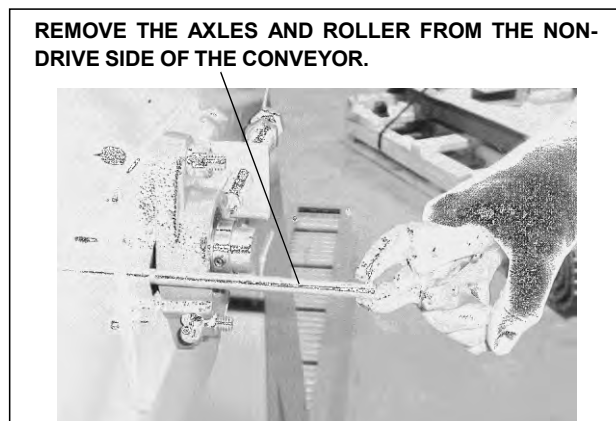
10. Remove the driven sprocket from the drive side of the secondary conveyor by removing the setscrew or drive pin in the sprocket hub.



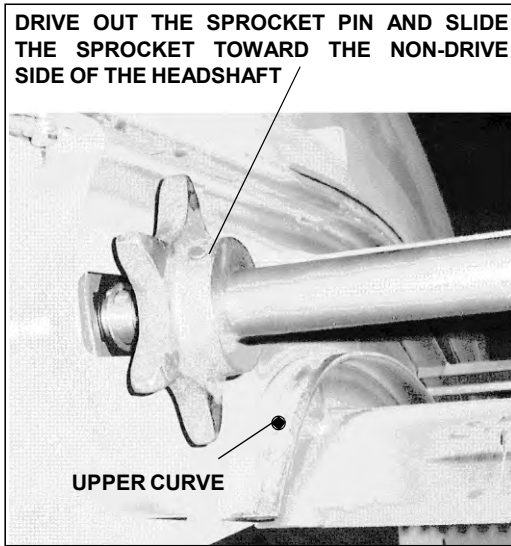
**Figure 12. First Stage Drive**



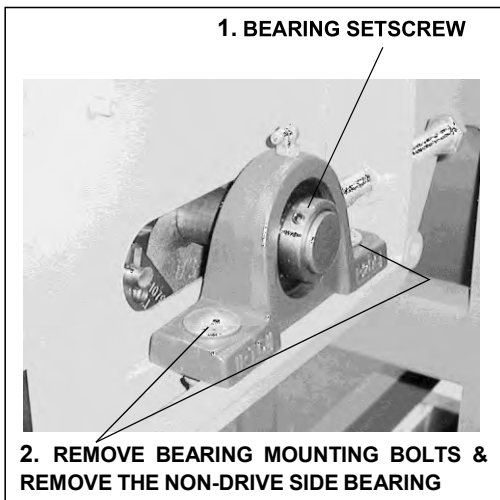
**Figure 13. Removing the Axle Pin**



**Figure 14. Removing the Axle**



**Figure 15. Removing the Sprocket Pin**



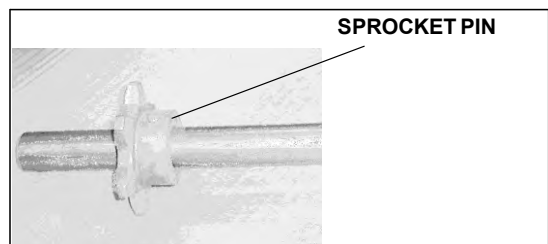
**Figure 16. Loosening the Bearing Setscrew**

11. Remove hex nuts securing flange-type headshaft bearings to mounting flange. Remove bearings.
12. Push the headshaft towards the drive side, moving it out of the non-drive side bearing plate. Then lower the non-drive end of the headshaft and remove the entire headshaft to a safe working area.

#### 4.5.4 Installation of Headshaft Assembly-Second Stage

Installation of the headshaft assembly is basically the reverse of the removal process. Upon completion of installation, refer to "Metal Belt/Drag Chain Tension Adjustment", Section 44 to complete installation.

1. Slide the headshaft through the drive side frame of the second stage, slip the headshaft sprockets onto the shaft, before sliding it into the non-drive side frame.
2. For those units equipped with pillow block style bearings, slip the bearings onto the shaft, and fasten to the bearing mounts with carriage bolts. Do not tighten the pillow block fasteners at this point.
3. For units fitted with flange style bearings, slip the bearings onto the shaft and bearing mount studs. Using the proper lock washers and hex nuts, fasten the bearings to the bearing mounting plate.
4. After bearing installation, align the headshaft and tension the belt/drag chain per Sections 4.4 and 4.5. Tighten the bearing setscrews, locking the shaft onto the bearing inner races.
5. Slip the headshaft sprockets onto the keys provided, and adjust the center distance as required by the drag chain width. Tighten the setscrews in the sprocket hubs, locking them to the headshaft. Refer to Section 4.3 "Inspection and Adjustment of the Headshaft".
6. Re-install the drag chain by sliding it down the incline, and wrapping it around the drum. Insure that cleats are down against the surface of the incline. Wrap the other end of the drag chain around the headshaft sprockets and slide the end of the chain down the incline on the upper tracking. Working through the access openings, attach the drag chain ends together above the drum at the upper run of the chain by installing a master link on each chain strand.
7. Adjust the drag chain tension as described in Section 4.4. For those units with pillow block bearings, tighten the bearing mounting bolts after the correct belt tension has been made. If locknuts have been provided on the tensioning bolt, lock them down at this point. For those units with flange bearings, tighten the locknuts on the tensioning bolt.



**Figure 17. Installing the Headshaft**

8. If a ratchett clutch is used, install the clutch on the drive end of the headshaft. Align the sprockett with that on the drive motor (see Figure 3), tighten the setscrews securing the device to the headshaft, and install the drive chain.
9. For those units equipped with a direct drive, install the shaft-mounted gearmotor on the headshaft drive end. Insure that the key is present and engaged with the gearmotor quill shaft. Attach the gearmotor to its mounting bracket.
10. Re-install the drum access covers. Connect power and run the drive motor to insure that the drive system runs properly, the belt tracks correctly, and that the drum is rotating. Adjust as necessary.
11. Install the Head Section cover and the drive guard.

## 4.6 METAL BELT REMOVAL AND INSTALLATION-FIRST STAGE

**NOTE: It is recommended that the conveyor metal belt and drag chain be removed annually to clean the casing and to check the casing for wear and damage.**

### 4.6.1 Removal

Proceed as follows:

1. Carefully jog the conveyor until an axle is accessible through the take-up slots, Figure 9.
 

**WARNING: Failure to follow safety procedures can cause personal injury. Disconnect all electrical power from the conveyor unit before removing the headshaft cover or servicing the headshaft assembly.**
2. Lock out and tag out electrical power to the conveyor unit.
3. Remove the discharge hood and all necessary covers and shrouds.
4. On the direct drive unit, remove the gearmotor assembly. On indirect drive units, remove the roller chain between the gearmotor and headshaft sprocket to free the headshaft for movement. Remove the master link on the roller chain to remove the chain.
5. Loosen the jam nuts and take-up bolts.
6. Loosen the pillow block bearing-mounting carriage bolts if applicable.

7. Standing at the discharge end, move the headshaft toward the tail end of the unit, relieving tension on the metal belt.

**NOTE: In the following instructions, the metal belt will be removed and lowered to the floor. This may require two persons or even an overhead lift.**

8. Remove an axle pin or cotter pin from the drive side of any axle (Figure 13). Because the axle pins are press fit, it may be necessary to use a hammer and drive pin to remove the axle pin.
9. Remove the axle from the non-drive side as shown in Figure 14. Install the axle and pins, and rollers back into the top half of the metal belt to avoid losing the parts.
10. Facing the discharge opening, pull on the lower half of the metal belt and remove the entire metal belt out of the discharge section. Lower the belt and allow it to fold on the floor beneath the discharge section.
11. Remove all foreign objects from the casing.
12. Inspect the metal belt assembly and casing for worn or damaged parts and repair/replace as required.

### 4.6.2 Installation

Installing the metal belt assembly is essentially the reverse procedure discussed under "Removal." Proceed as follows:

1. Be sure that the headshaft is positioned to the rear of the take-up slot.
2. Feed the end of the metal belt assembly into the lower run of the conveyor casing through the discharge section. Be sure that the wings face downward; i.e. the bottom of the conveyor.
3. Feed (push) the metal belt assembly through the casing, past the tail hub, and up the incline until it comes up to the headshaft sprockets.
4. Pull the top run of the metal belt assembly over the headshaft until the end is centered in the take-up slots.
5. Pull the bottom run of the metal belt assembly to remove any slack.
6. Refer to Figures 14 and 15 and install the axle, rollers, axle pins and side wings as per Steps 7-9.



7. Install the axle through the take-up slot and roller as shown in Figure 15.
  8. The axle pin is press fit. Using a vice grips or press, press the axle pin into the hole provided.
  9. Push the axle all the way through the belt and through the roller on the drive side of the belt.
  10. Install the drive side pin using a drift pin. Lightly drive the pin into the axle until seated, as shown in Figure 13.
  11. Be sure that all metal belt assembly parts are in their proper position.
  12. Reinstall the gearmotor assembly, roller chain (indirect drive), and adjust drive chain tension per Section 4.1. Adjust tension at the headshaft using the take-up bolts and jam nuts as described under "Metal Belt/Drag Chain Tension Adjustment.", Section 4.4.
  13. Secure the pillow block mounting carriage bolts, and reinstall all covers and guards.
  14. Operate the conveyor for approximately 15 minutes to observe and confirm trouble-free operation before placing the unit in service.
5. Rotate the headshaft or drum until the drag chain master links are accessible from both of the access openings.
  6. Loosen the bolts securing the headshaft bearings to the conveyor, Figure 19 or 1H as applicable.
  7. Turn the headshaft take-up bolts counter-clockwise to allow the headshaft to drop back, creating slack in the filter drag chain assembly.
  8. Remove the master links from the drag chain assembly. and pull the free end of the top run of the drag chain assembly out of the casing, allowing it to drape down in front of the second stage. Using a gantry or other suitable lifting device, pull the remainder of the drag chain assembly out of the filtration unit, Figure 20.
  9. Place the drag chain assembly on the floor and inspect for chain or cleat wear or damage.

## 4.7 DRAG CHAIN ASSEMBLY REMOVAL AND INSTALLATION- SECOND STAGE

**Warning: Lock Out and Tag Out the electrical power source to the system during maintenance.**

### 4.7.1 Removal

1. Lock out and tag out electrical power to the conveyor unit.
2. Remove the inspection window and the access cover from the Filterveyor sides to gain access to the filter drum.
3. Remove the discharge hood from the front of the Filtration unit. Figure 18.
4. Disconnect the drive chain that connects the gearmotor and headshaft. (If a shaft-mounted gearmotor is used, the gearmotor will have to be removed from the headshaft.) This allows the drum to be rotated by hand. The procedure for disconnecting these drive components is described in Section 4.1.

### 4.7.2 Installation

1. Position the drag chain assembly on the floor directly in front of the second stage discharge and fully extend it. The cleats should be on top of the chain, with the scraping edge facing away from the unit ("laying back").
2. Using a gantry or other suitable lifting device, lift the chain assembly and place the leading edge of the drag chain assembly on top of the headshaft sprockets, Figures 20 and 21. Feed the drag chain assembly down the incline to the filter drum.
3. Position the first chain link (roller link) so that it is on top of the drum and engaged on a tooth on the drum end disk sprocket (both sides) Figure 22.
4. Manually rotate the drum and continue to feed the drag chain assembly into the filter unit, until the first links are laying on the bottom of the casing.
5. Pull this end of the drag chain up the incline until it is opposite the access openings.
6. Remove the drag chain assembly from the lifting device and place the free end of the drag chain assembly under the head shaft sprockets. Allow the free end of chain to slide down the incline, Both chains in the assembly should be aligned link-for-link on the headshaft sprockets.
7. Working through the access openings, bring both ends of the drag chain assembly together and connect them with master links.

8. Using the take-up bolts, readjust the position of the headshaft so that there is approximately 0.50" slack in the drag chain assembly mid-point on the upper (return) run. See Figure 10, which shows the principle for this adjustment, based on the metal belt and the lower run. Refer to Section 4.4.
9. Re-install the drive components (drive chain or shaft-mounted gearmotor) using the procedures outlined in Section 4.1.
10. Re-install the discharge hood and access door covers and all other guards and covers that have been removed.
11. Connect power and run the unit. Make adjustments as necessary to insure that the drag chain assembly and drive system move freely, and that the drag chain assembly tracks properly.

## 4.8 DRUM MEDIA REMOVAL AND REPLACEMENT

The filtration media fastened to the drum assembly is a permanent type of media and should provide service for an extended period of time, depending on the severity of service. Refer to Figures 22 and 23 for photographs of the Drum Assembly.

### 4.8.1 Drum Media Removal

The media should be replaced if it is torn, or if is blinded-off to the point that it is not cleaned by the spraybar. In either of these cases, replace the media, by following steps outlined below.

**Warning: Lock Out and Tag Out the electrical power source to the system during maintenance.**

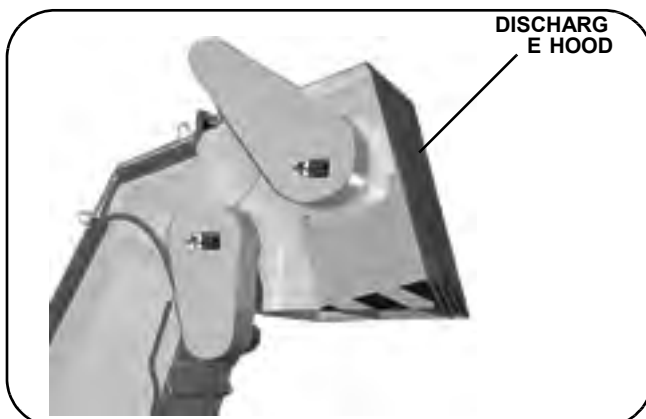


Figure 18. Discharge Hood

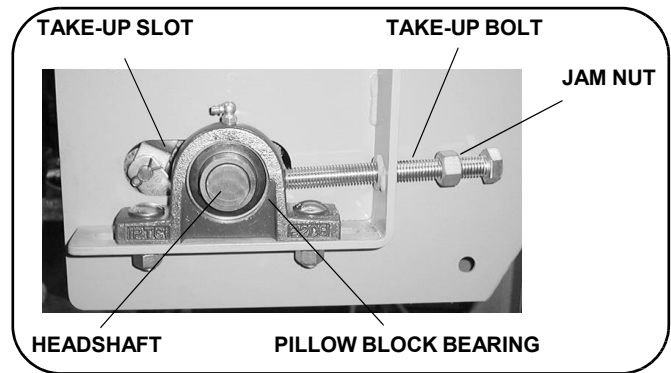


Figure 19. Pillow Block Bearing

1. Lock out and tag out electrical power to the conveyor unit.
2. Remove the covers from the access openings: inspection window (Plexiglas) and access cover (metal). These openings provide access to the Drum Assembly. Figure 24.
3. Refer to Figure 25 and disconnect the drive chain that connects the gearmotor and headshaft, (If a shaft-mounted gearmotor is used, the gearmotor will have to be removed from the headshaft.) This allows the drum to be rotated by hand.
4. The media is held onto the drum with large band clamps (hose clamp) on either end, Figure 26.

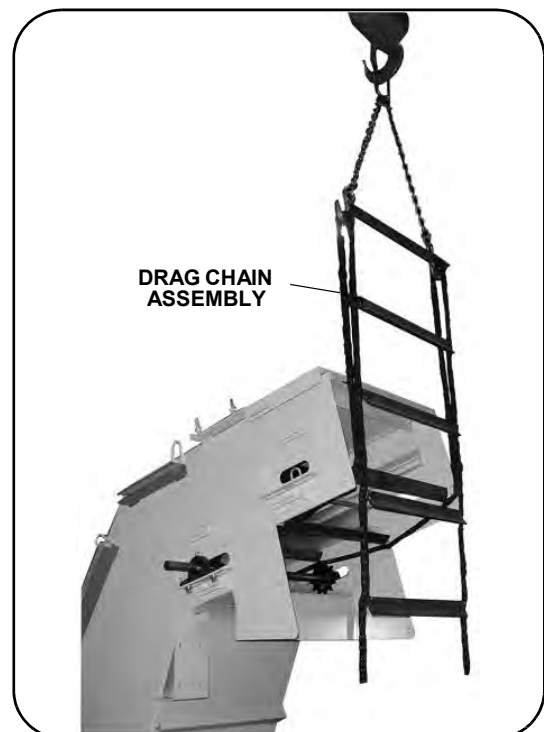
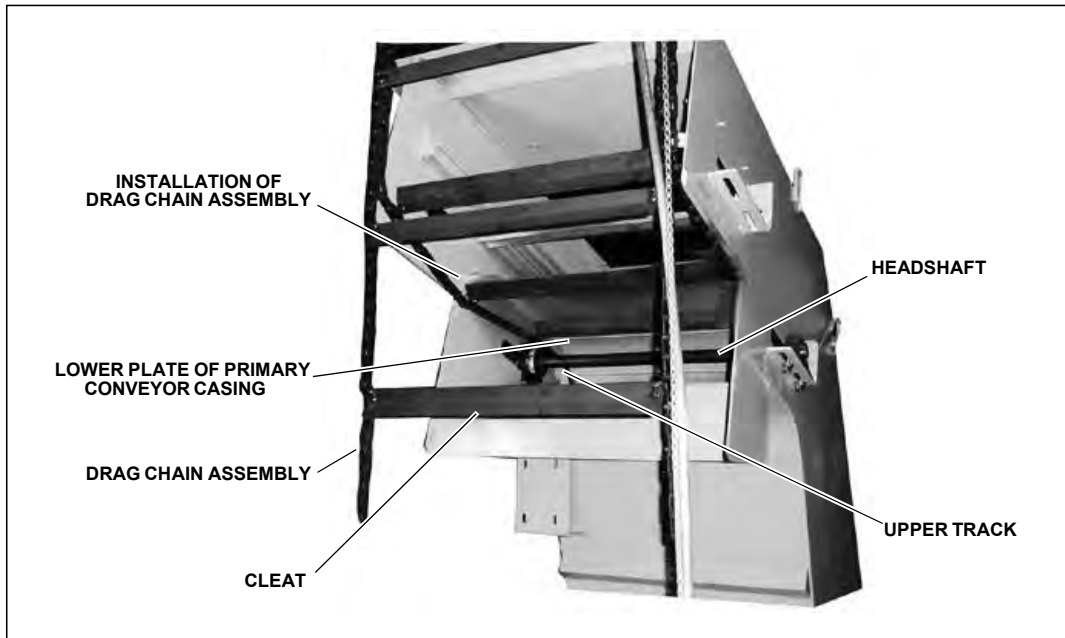


Figure 20. Removing the Drag Chain



**Figure 21. Installing the Drag Chain (Discharge Hood Removed)**

Manually rotate the drum until the adjustment screws of the band clamps are accessible through the access openings. Loosen and remove the clamps.

5. Rotate the drum until the Velcro strip securing the media edges is accessible. Pull the Velcro apart, Figure 27. The media is now loose and can be slipped around the drum and out one of the access openings.

#### 4.8.2 Drum Media Installation

Proceed as follows:

1. Remove the old media as per the preceding instructions, Section 4.8.1.
2. Rotate the drum until the metal closure plate is accessible Figure 27. This plate provides a surface against which to close the Velcro strips.
3. Insert the media through one of the access openings (Figure 24) and thread it around the drum. An optional method of installing the media around the drum is to temporarily secure one end of the media to the closure plate and manually rotate the drum until the media is wrapped around the drum. It is not necessary to loosen or remove the drag chain for this procedure.

**Note: When installing media, ensure that the Velcro strips are properly orientated so that they may be closed after installation**

**around drum, and that the lapping edge faces the front of the unit, against the direction of rotation. See Figures 26 and 27.**

4. Insure media edges are against the drum end disks the entire circumference of the drum. Stretch the media and secure the Velcro closure. The Velcro seam should be evenly closed the entire length of the joint as shown in Figure 26.
5. Reinstall the band clamps. Insure that the clamp is placed between the ridge on the drum cylinder and the seam cord on the media, Figure 26. Tighten the clamps.
6. Re-install the drive components (drive chain or shaft-mounted gearmotor) using the procedures outlined in Section 4.1.
7. Re-install the access door covers, and all other guards and covers that have been removed.
8. Connect power and run the unit. Make adjustments as necessary to ensure that the drag chain assembly and drive system move freely, and that the drag chain assembly tracks properly.

#### 4.9 SPRAYBAR MAINTENANCE

The spraybar should be maintained on a regular basis to insure proper cleaning of the drum media. Remove the spraybar at least once per year for cleaning; however a more frequent schedule may be beneficial.



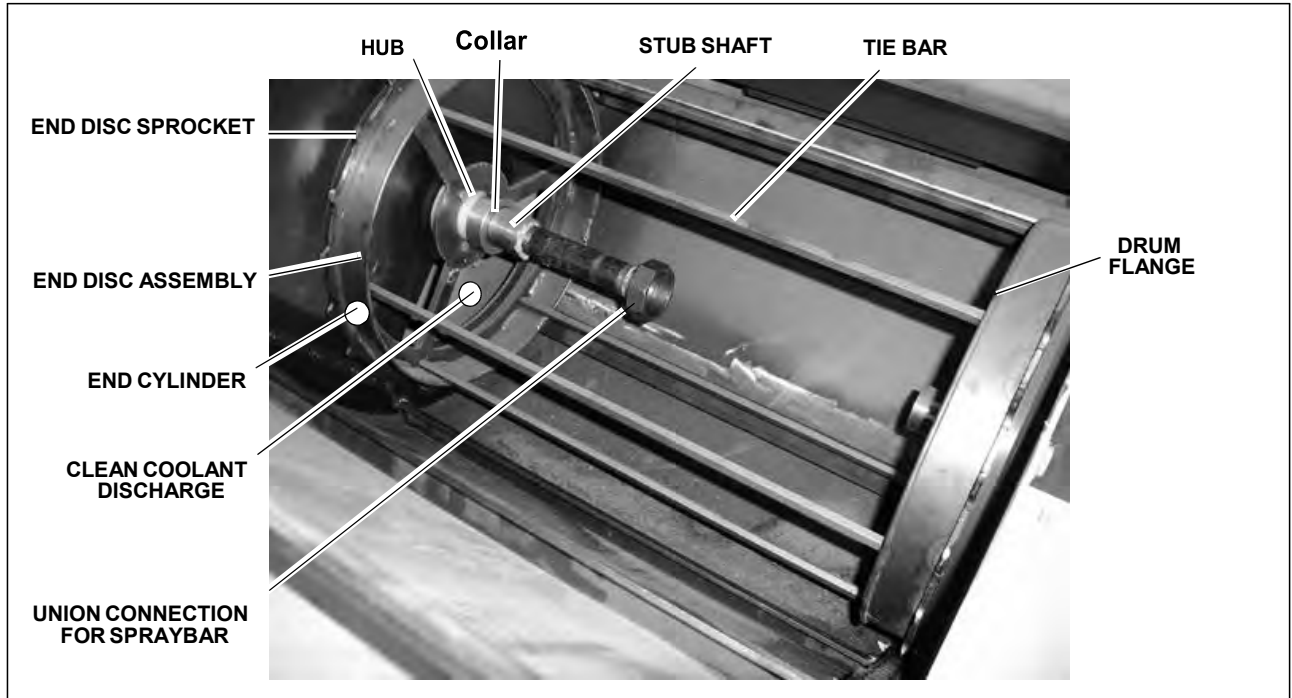


Figure 22. Drum With Media Removed

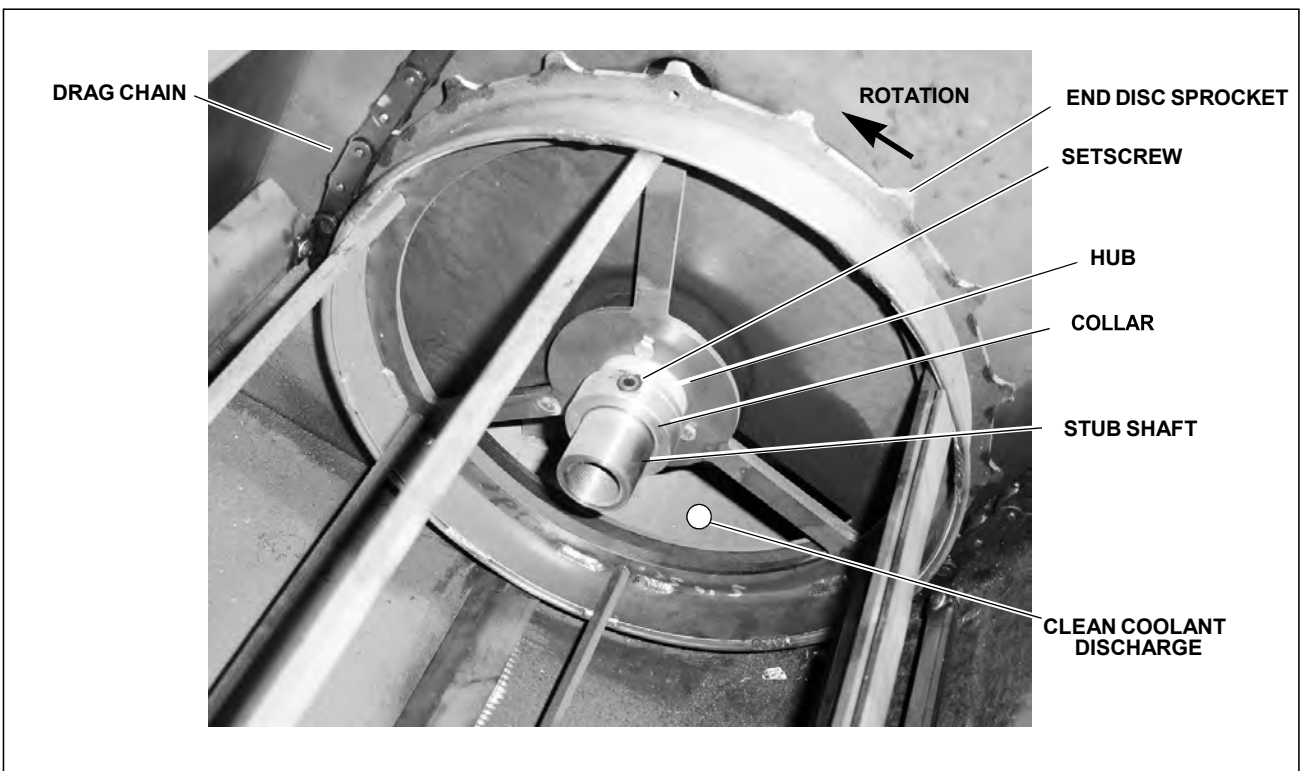


Figure 23. End Disc Assembly

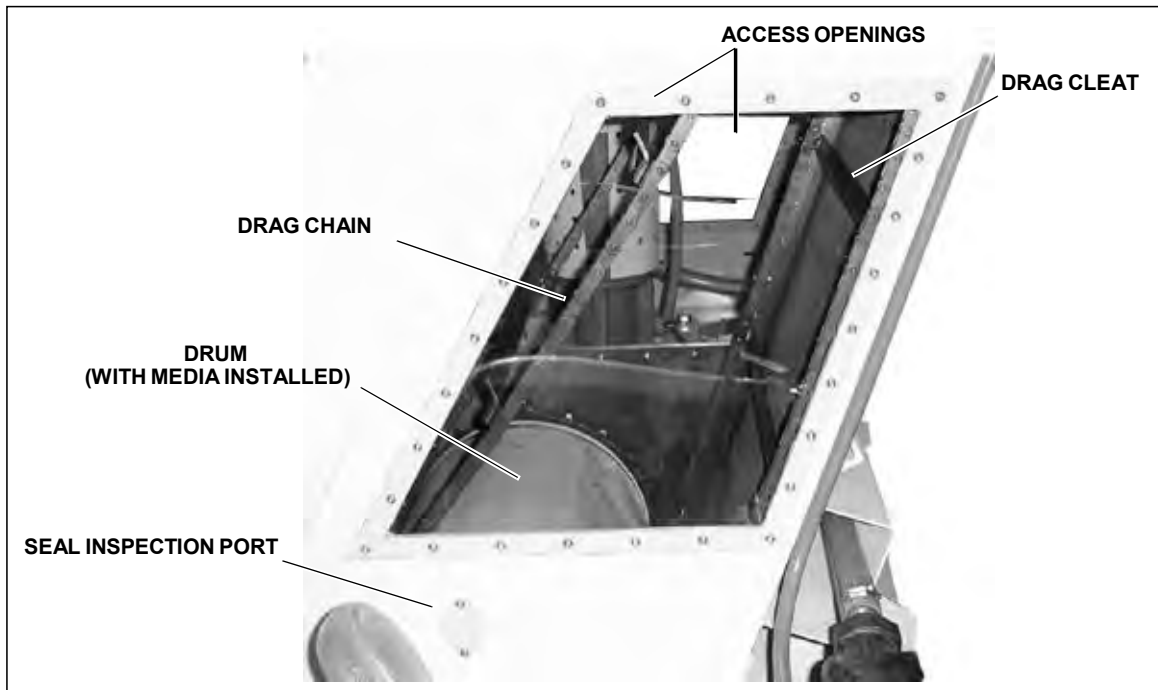


Figure 24. Access Opening

#### 4.9.1 Spray Nozzle Cleaning

**Warning: Lock Out and Tag Out the electrical power source to the system during maintenance.**

1. Run the unit and observe, through the inspection window, the spray pattern of coolant passing through the media. Low or non-existing spray indicate the location of nozzles that need to be cleaned or replaced.
2. Remove the filter drum media per instructions found in Section 4.8.1 of this manual.
3. Insert a fine wire or a Cutting Torch Tip Cleaning Tool into the nozzle to clear any obstruction from the nozzle(s) in question. The spraybar nozzles are shown in Figure 29.
4. If the nozzle is damaged or plugged to a degree where it cannot be cleared in this manner, remove the spraybar for more extensive cleaning as described in the following section.
5. After the spraybar nozzle(s) have been cleaned, reinstall the filter media as described in Section 4.8.2.

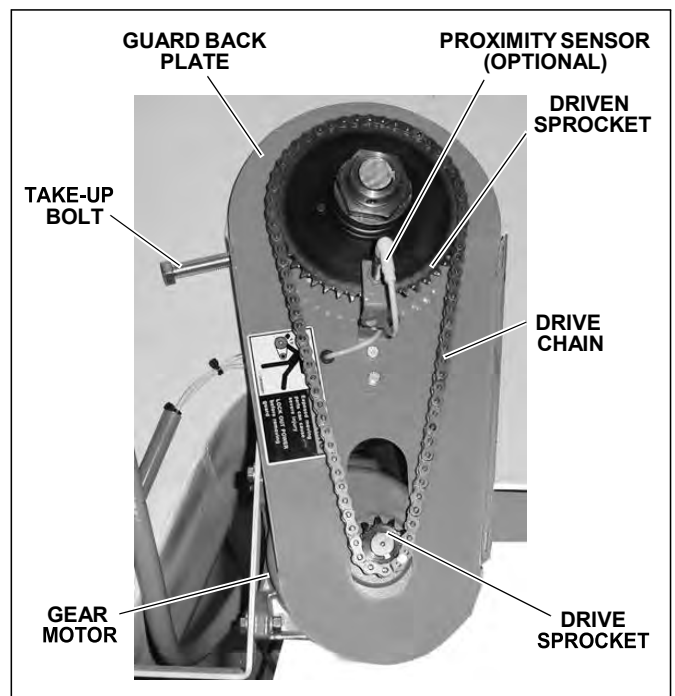


Figure 25. Second Stage Drive

#### 4.9.2 Spraybar Removal and Cleaning

**Warning: Lock Out and Tag Out the electrical power source to the system during maintenance.**

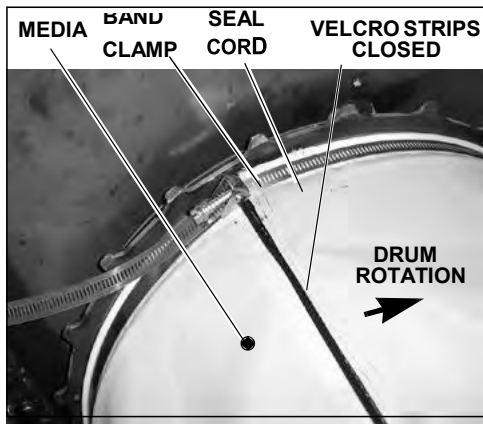


Figure 26. Media Installed on Drum

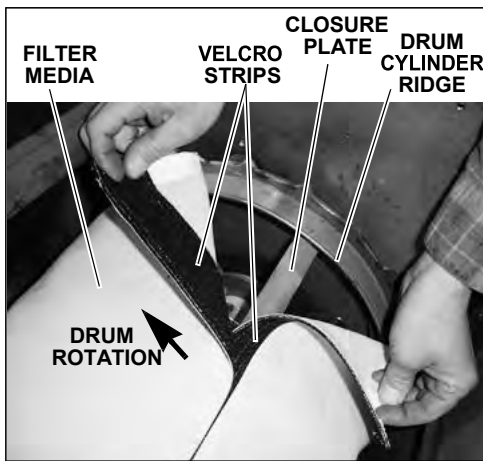


Figure 27. Media Being Removed/Installed on Drum

1. Remove the filter drum media per instructions found in Section 4.8.1 of this manual.
2. Reach inside of the drum and loosen the pipe union, Figure 28, with a wrench, separating the spraybar from the drum's internal piping.
3. Lift the spraybar out of the Drum Assembly and remove it from the unit through one of the access openings
4. The spraybar may now be serviced. This would be the time to clean all nozzles, replace damaged nozzles, and flush the spraybar assembly.
5. Using a 9/16 box end wrench or socket, remove all spray nozzles, Figure 29. Nozzles are 1/4" Std. Pipe thread.

6. With all nozzles removed, clean inside of spraybar to remove dirt or debris that could plug fresh nozzles when placed in service.
7. Inspect the nozzles and replace any that are no longer serviceable. Coat the threads of each new or removed nozzle with a non-permanent type Loc-Tite. Turn the nozzle into the spraybar and tighten. The groove in the nozzle face should be at about a 7° angle to the spraybar axis when tight. This setting can be made using a protractor, Figure 30.

### 4.9.3 Spraybar Installation

Proceed as follows:

1. Rejoin the two halves of the union located inside of the filter drum.
2. Set the spraybar such that it is oriented at a 10 – 15° angle off the horizontal centerline of the filter drum. This can be accomplished using a magnetic-base protractor, Figure 31.
3. Tighten the union adequately to insure that it will not leak or vibrate loose.
4. Reinstall the media on the drum following instructions provided in Section 4.8.2 of this manual. Reinstall the inspection window and access panel.
5. Re-install the drive components (drive chain or shaft-mounted gearmotor) using the procedures outlined in Section 4.1.
6. Re-install the discharge hood and access door covers.
7. Connect power and run the unit. Make adjustments as necessary to ensure that the drag chain assembly and drive system move freely, and that the drag chain assembly tracks properly.

### 4.10 REPLACEMENT OF FILTER DRUM V-SEALS

Inspect the V-seals every 90 days by removing the Seal Inspection Covers as described below. Chips on the face, or cuts/tears in seals, indicate that replacement is necessary.

**Warning: Lock Out and Tag Out the electrical power source to the system during maintenance.**

1. Lock out and tag out electrical power to the conveyor unit.



**Figure 28. Disconnecting the Union Connection**

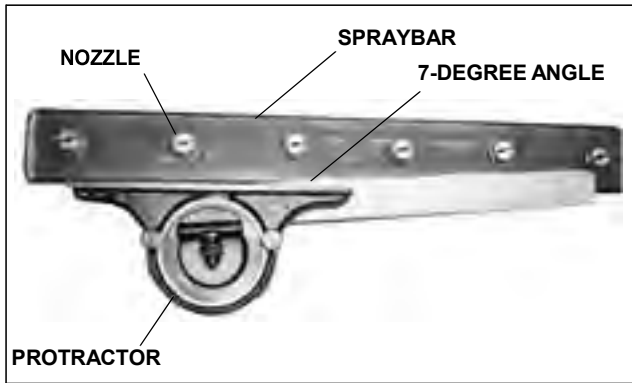
2. Remove the inspection window and the access cover from the Filterveyor sides to gain access to the filter drum.
3. Disconnect the drive chain that connects the gearmotor and headshaft. (If a shaft-mounted gearmotor is used, the gearmotor will have to be removed from the headshaft.) This allows the drum to be rotated by hand. The procedure for disconnecting these drive components is described in Section 4.7.1.
4. Loosen the drag chain assembly and remove it from the second stage. See instructions in Section 4.7.1 of this manual.
5. Remove the media per Section 4.8.1.
6. Remove the Seal Inspection Covers on both sides of the Filterveyor. Figure 32. These covers are the “football” shaped pieces located just below the access openings on either side of the Filterveyor. Removal of these inspection covers can be accomplished by removing the button head socket capscrews located on the ends of each cover. The Filterveyor side of the cover has a machined surface which mates with the second stage casing. Remove the covers by prying evenly and gently around the cover edges to prevent damaging the machined surface.



**Figure 29. Spray Nozzle and Bar**

7. After removing the Seal Inspection Covers, manually rotate the drum until one of the Tie Rods is in-line with the seal inspection opening. Push the seal upwards until the capscrew securing the tie rod is exposed, Figure 33. Remove the capscrew.
8. Using the procedure outlined above, remove all of the tie rod capscrews; after which all of the tie rods can be removed through the access openings.
9. Loosen the setscrew from the set-collars located on each of the stub axles. Figure 23.
10. Slide the drum end disks off of their respective stub shafts with V-seals in place.
11. Inspect the end disk hubs for serviceability. If wear is found replace with a new part.





**Figure 30. Setting the Spray Nozzle Angle**



**Figure 31. Setting the Spraybar Angle Using a Magnetic Base Protractor**

12. Remove the V-seal from each end disk and replace with a new seal. Lightly grease the seal lip.
13. Reinstall the end disks, with new V-seals in place, by sliding the end disks back onto the stub shafts.
14. Working through the seal inspection opening, push the seal upwards until the hole for the capscrew is exposed. Place a tie rod into position and secure it with a capscrew. Repeat this procedure for the other end of the tie-rod/drum and for the remaining tie rods. Use a non-permanent Loc-Tite on tie rod capscrews.
15. Adjust the end disks so that the tie rods are parallel to the axis of the drum. Tighten the capscrews. Re-install set collars on the spraybar to insure that seals contact inner surface of Filterveyor.

16. Install the media per Section 4.8.2.
17. Re-install the drag chain assembly and drive system per the procedure outlined in Section 4.7.2.
18. Re-install the inspection window and access cover, and the seal inspection covers.
19. Connect power and run the unit. Make adjustments as necessary to ensure that the drag chain assembly and drive system move freely, and that the drag chain assembly tracks properly.

## 4.11 LUBRICATION

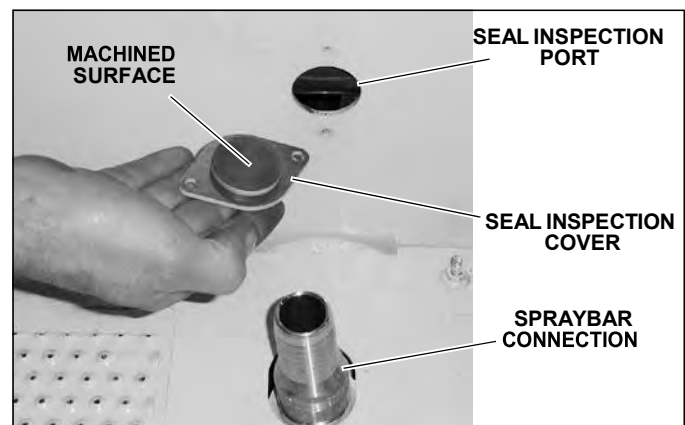
### 4.11.1 Grease Lubrication

There are a total of 4 grease fittings that require lubrication, one on either end of the headshafts, to lubricate the head shaft bearings. (See Figure 34) Grease all bearings as follows.

For normal operating conditions, apply No. 2 grease through the grease fittings every 90 days. Grease should conform to NLGI No. 2 consistency, and should be free of chemical impurities such as free acid or alkali, and mechanical impurities such as dust, rust, metal particles, or abrasives. Add grease slowly until a slight bead forms between the seals.

### 4.11.2 Oil Lubrication

- The roller chain should be brushed with light-weight oil at regular intervals.
- The garmotor on the direct drive and indirect-drive unit is factory lubricated and sealed. It therefore requires no further lubrication.



**Figure 32. Seal Inspection Opening**

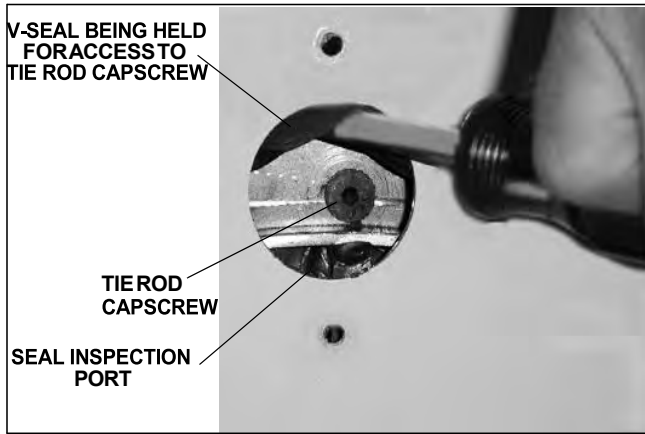


Figure 33. Seal Capscrew Removal

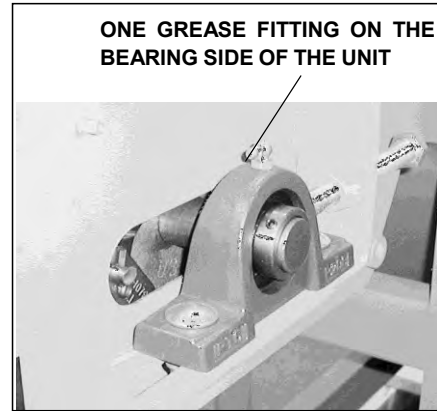


FIGURE 34. LUBE FITTING LOCATION

## 5.0 TROUBLESHOOTING FIRST AND SECOND STAGE CONVEYORS, AND FILTRATION CONVEYOR

Refer to Tables 2 and 3 for troubleshooting procedures.

Table 2. Troubleshooting First and Second Stage Conveyors

<b>PROBLEM</b>	<b>PROBABLE CAUSE</b>	<b>REMEDY</b>
Unit does not operate.	Blown Fuse.	Replace fuse. Determine cause and correct.
	Tripped overload relay(s).	Determine cause and correct. Reset relay.
	Main disconnect off.	Turn main disconnect on.
	No power to line side of disconnect.	Determine cause and correct.
Clutch ratcheting or skipping. Safety device tripping continuously.	Chain assembly misaligned or incorrect tension.	Align Chain and/or correct tension. Refer to maintenance section of this manual.
	Excessive or accumulated loading.	Avoid load buildup by running conveyor continuously. Do not manually surge material onto conveyor.
	Carry-back of material into conveyor.	Collection receptacle full. Replace / empty receptacle as required.
	Incorrect clutch setting.	Refer to "Ratcheting Slip Clutch" section of this manual.
	Damaged chain or belt.	Repair or replace belt or chain.
	Accumulation of conveyed material or foreign objects inside casing.	Clean out conveyor.
Excessive wear on chain or casing.	Conveyor not level or plumb.	Level and plumb conveyor.
	Chain assembly misaligned or incorrect tension.	Align chain and/or correct tension. Refer to maintenance section of this manual.
	Carry-back of material into conveyor.	Collection receptacle full. Replace / empty receptacle as required
	Damaged chain or belt.	Repair or replace chain or belt.
	Accumulation of conveyed material or foreign objects inside casing.	Clean out conveyor. See NOTE below.
Chain pulses or surges.	Chain assembly misaligned or incorrect tension.	Align Chain and/or correct tension. Refer to maintenance section of this annual.
	Carry-back of material into conveyor.	Collection receptacle full. Replace / empty receptacle as required.
	Damaged chain or belt.	Repair or replace belt or chain.
	Accumulation of conveyed material or foreign objects inside casing.	Clean out conveyor. See NOTE below.



Table 3. Trouble Shooting Filtration Section

PROBLEM	PROBABLE CAUSE	REMEDY
Low coolant level in first stage conveyor.	Insufficient coolant in system.	Add coolant (pre-mixed) to recommended running level.
Excessive fines in clean tank.	Filter media damaged.	Inspect media for tears or holes. Replace if necessary.
	Filter media loose,	Inspect band clamps and tighten if loose. See Section 4.9.
	V-Seals damaged or worn.	Replace seals if necessary.
	Incorrect media or application, too open.	Contact Jorgensen Conveyors.
	Coolant foams excessively.	Consult coolant supplier.
	First stage conveyor carrying excessive fines back into filter section.	Coolant viscosity too high. Consult coolant supplier. Metal belt damaged. Repair or replace.
Low coolant level in clean tank when level in first stage is high.	Backflush spraybar not functioning.	See spraybar maintenance, Section 4.9.
	Media is old, difficult to clean.	Replace media.
	Coolant foams excessively.	Consult coolant supplier.
	Coolant viscosity too high.	Consult coolant supplier, or contact Jorgensen Conveyors.
Backflush spraybar not functioning.	Valve in inlet line not set correctly.	Reset valve. See Section 3.
	Inlet policing filter (Banjo) dirty.	Clean filter per filter manufacturer's instructions.
	Spraybar nozzles plugged.	Clean or replace nozzles. See Section 4.
	Backflush pump not functioning correctly.	Check power supply to pump.
		Inspect impeller for excessive fines or foreign object.
Check seals. Repair or replace.		
Main pump does not supply adequate supply of coolant to machine.	No power to motor.	Inspect power supply circuit and repair.
	Impeller jammed or plugged.	Inspect impeller for excessive fines or foreign object.
	Blockage in main line plumbing or control valve(s) not functioning.	Refer to OEM equipment service manual.
	Worn or damaged pump seals.	Rebuild or replace pump.

## **A word about Jorgensen Conveyors . . . .**

Founded in 1950, Jorgensen Conveyors has evolved into a leading machine tool conveyor specialist, supplying high-quality, custom designed conveyor and coolant filtration systems to a variety of leading machine tool builders and end user manufacturers in the metal working industry.

A key factor in this growth was the development of our patented chain belt design. None of the parts are welded. Instead, each part, made of extra heavy gauge steel, is held by an axle that passes through the part. If a part should become damaged, the belt assembly is completely detachable so that the part can be replaced quickly. This design also features fewer parts, making it more cost effective.

What really sets Jorgensen apart today is our design capability across the broad range of chip removal applications for CNC (Computer Numerically Controlled) machine tools. Today, Jorgensen Conveyors supplies swarf and part conveyors and coolant filtration systems to machine tool builders and end users in manufacturing sectors such as automotive, heavy equipment, and aerospace, and to contract machine shops that supply parts to these manufacturers.

Jorgensen has also built its reputation in the industry with responsive warranty service. It is a service-oriented philosophy that worked in 1950, works today, and will keep working into the next century.

## WARRANTY

Jorgensen Conveyors, Inc. guarantees the material of our manufacture against defects in material or workmanship under normal and proper use for one year in service or eighteen months from shipment, whichever occurs first. Material which we purchase can be guaranteed by use only to the extent of the original manufacturer's guarantee. We shall not be held liable for damages or delay caused by defective material, or contingent claims of any kind arising from loss of production owing to failure of shipment. Our obligation under this warranty is limited to furnishing new or replacing defective material without charge F.O.B. factory. No allowance will be made for repairs or alterations unless made with our written consent.

Caution should be used in the care and application of our products as the guarantee recited above does not apply where lack of proper maintenance or misapplication exists. We will not be liable for improper storage or handling of our products prior to placement in service.

The within equipment will be specifically designed and manufactured for and will be sold to purchaser for the sole purpose of transporting and conveying raw materials, work in process and finished goods of purchaser. Purchaser does hereby agree to exonerate, indemnify, defend and hold seller harmless of and from all loss, liability and damages which may be suffered by or asserted against the seller, and all costs and expenses which seller may incur because of any claim or claims which may be asserted against seller by any person for death or injury to anyone sustained while riding or attempting to ride upon said equipment.

JORGENSEN CONVEYORS, INC. • 10303 N. Baehr Road • Mequon, Wisconsin 53092-0156  
P.O. Box 09156

Phone: 262-242-3089

Fax: 262-242-4382

[www.jorgensenconveyors.com](http://www.jorgensenconveyors.com)

