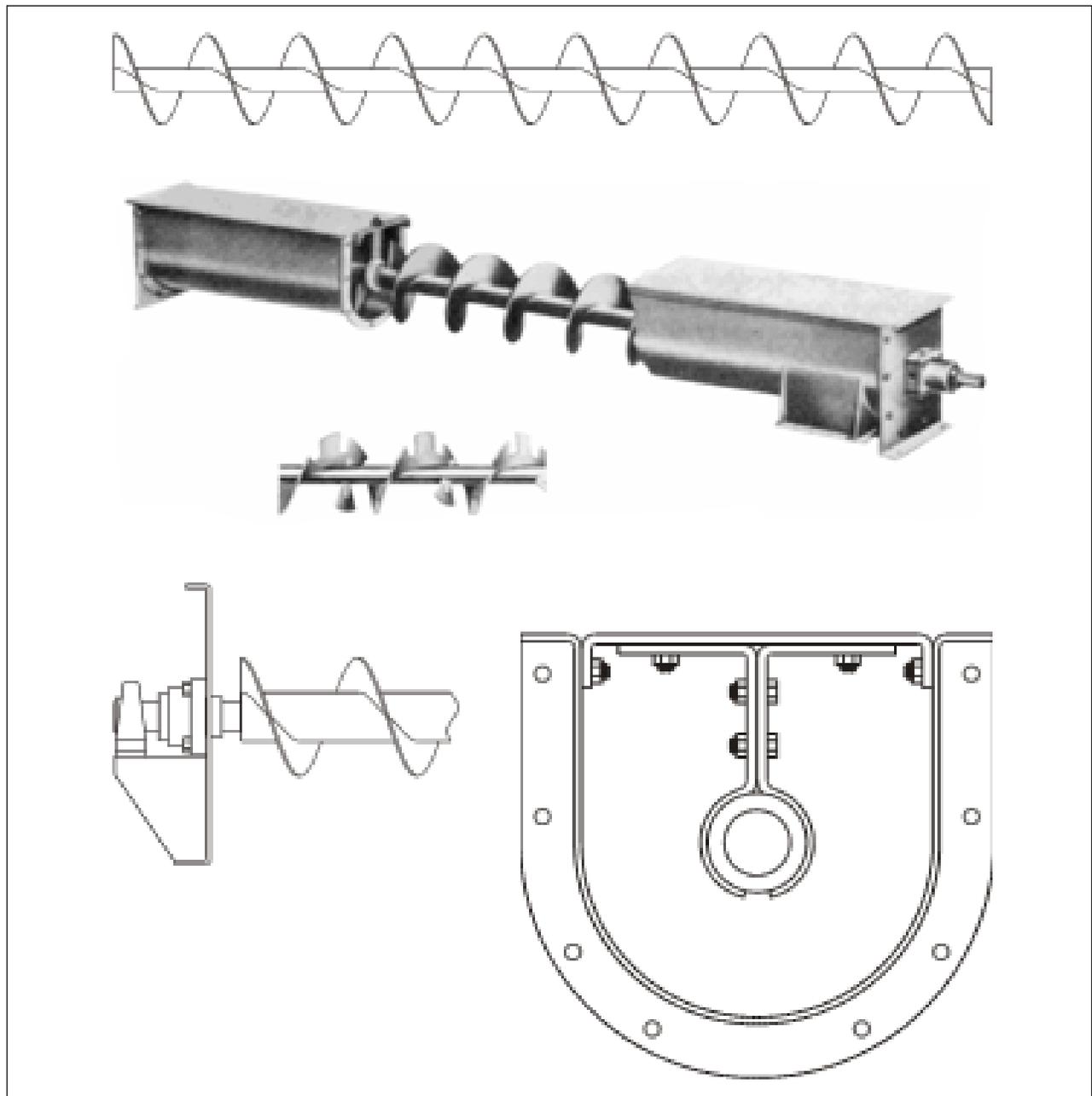


# UNION IRON

## SCREW CONVEYOR

ALL MODELS  
ASSEMBLY & OPERATION



Read this manual before using product. Failure to follow instructions and safety precautions can result in serious injury, death, or property damage. Keep manual for future reference.

**AGI**  
AG GROWTH INTERNATIONAL

Part Number: ISCM0308-R1

Revised: Jun/17



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# 1. Introduction

This manual contains complete instructions for the installation, operation, and maintenance of Union Iron Screw Conveyors. The reliable operation and long service life of these conveyors depends to a great extent on the care taken during installation and operation, and consistent maintenance.

Because of variations in length and installation conditions, screw conveyors are usually shipped as sub-assemblies. All components are manufactured to the standards of the Conveyors Equipment Manufacturers' Association (CEMA).

Union Iron will design and manufacture special components for unusual requirements. Conveyors can be ordered as complete units—shop assembled, and match-marked before shipping—or as individual components to be aligned and assembled in the field.

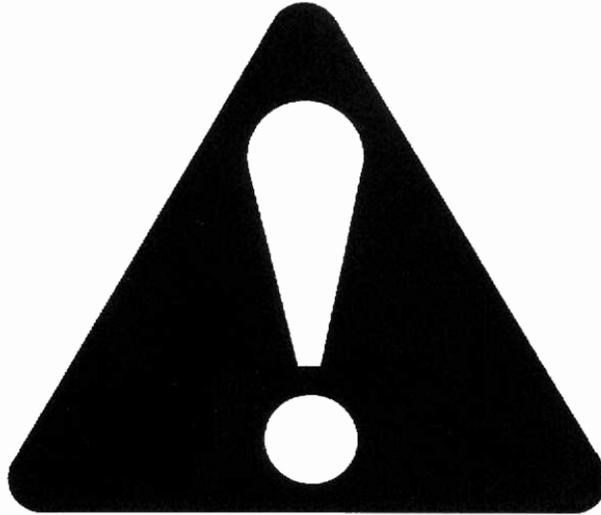
When Union Iron engineers the conveyor, complete specification drawings are furnished. Supplementary instructions should be followed for components not furnished by Union Iron. Components installed without the approval of Union Iron become the sole responsibility of the purchaser or final user.

Before using this equipment, this manual should be given to the people who will be operating and maintaining this equipment. Reading and understanding this manual will reduce downtime and equipment failure, as well as ensure safe and efficient operation. A sign-off form is provided on the inside front cover for your convenience.

The serial number plate is located on the side of the first trough section behind the drive. Please mark the number in the space provided for easy reference.

<b>Model#</b>	
<b>Serial #</b>	
<b>Production Year</b>	

## 2. Safety First



The Safety Alert symbol identifies important safety messages on the product and in the manual. When you see this symbol, be alert to the possibility of personal injury or death. Follow the instructions in the safety messages.

Why is SAFETY important to you?

Three big reasons:

- Accidents disable and kill.
- Accidents cost.
- Accidents can be avoided.

### SIGNAL WORDS

Note the use of the signal words **DANGER**, **WARNING**, **CAUTION**, and **NOTICE** with the safety messages. The appropriate signal word for each message has been selected using safety as a guideline.

This Safety Alert symbol means ATTENTION, BE ALERT!, YOUR SAFETY IS INVOLVED.

**DANGER**

**DEFINITION:** Indicates an imminently hazardous situation that, if not avoided, will result in serious injury or death. This signal word is limited to the most extreme situations.

**WARNING**

**DEFINITION:** Indicates a hazardous situation that, if not avoided, could result in serious injury or death.

**CAUTION**

**DEFINITION:** Indicates a hazardous situation that, if not avoided, may result in minor or moderate injury.

**NOTICE**

**DEFINITION:** Indicates a potentially hazardous situation that, if not avoided, may result in property damage.

**YOU** are responsible for the **SAFE** use and maintenance of your product. **YOU** must ensure that you and anyone else who is going to work around the product be familiar with all procedures and related **SAFETY** information contained in this manual.

Remember, **YOU** are the key to safety. Good safety practices not only protect you, but also the people around you. Make these practices a working part of your safety program.

- Product owners must give instructions to employees before allowing them to operate or use the product.
- The most important safety device on this product is a **SAFE** user or operator. It is the user/operator's responsibility to read and understand

**ALL** safety instructions in the manual and to follow them. All accidents can be avoided.

- A person who has not read and understood all safety instructions is not qualified to operate or use the product. Untrained users/operators expose themselves and bystanders to possible serious injury or death.
- Do not modify the product in any way. Unauthorized modification may impair the function and/or safety, and could affect the life of the product. Any modification to the product voids the warranty.
- Use this product for its intended purposes only.
- Think SAFETY! Work SAFELY!

## 2.1. GENERAL SAFETY

**Important:** *The general safety section includes instructions that apply to all safety practices. Any instructions specific to a certain safety practice (e.g. assembly safety), can be found in the appropriate section.*



- Read and understand all safety instructions, safety decals, and manual(s) before operating equipment.
- Only trained, competent people shall operate or use the product. An untrained operator is not qualified to operate equipment.
- Have a first-aid kit available for use should the need arise, and know how to use it.
- Provide a fire extinguisher for use in case of an accident. Store in a highly visible place.
- Do not allow children, spectators, or bystanders within the work area.
- Wear appropriate protective gear. This list includes, but is not limited to:



- a hard hat
- protective shoes with slip-resistant soles
- protective goggles
- hearing protection



- For powered products: before servicing, adjusting, or repairing, unplug, place all controls in neutral or off position, stop the engine or motor, remove ignition key or lock out power source, and wait for all moving parts to stop.
- Review safety information initially and annually with all personnel who will be using the product.
- Follow good shop practices:
  - Keep service area clean and dry.
  - Be sure electrical outlets and tools are properly grounded.
  - Use adequate light for the job at hand.



## 2.2. ASSEMBLY SAFETY

---

- Have 2 people handle the heavy, bulky components.
- All equipment should be checked for damage immediately upon arrival. Do not attempt to install a damaged item.
- If the equipment must have an open housing as a condition of its use and application, it must be guarded by a railing or fence.
- Use **rugged gratings** where necessary. If the distance between the grating and moving elements is less than 4", the grating opening must not exceed 1/2" x 1" (or 1/2" x 2" for hopper gratings). Covers, guards, and gratings at inlet points must be such that personnel cannot be injured in any way.
  - Solid covers should be used at all other points and must be designed and installed so that personnel will not be exposed to accidental contact with any of the equipment's moving parts.
  - Inlet and discharge openings shall be connected to other equipment in order to completely enclose the equipment.
- As required by applicable laws, standards, and good practice, the purchaser/owner is responsible for:
  - guarding all rotating equipment such as drives, gears, shafts, and couplings
  - purchasing and providing safety devices and controls
- Before power is connected to the drive, a pre-start-up safety check shall be performed to ensure the equipment and area is safe for operation and all guards are in place and secure.
- Electrical equipment must conform to the National Electric Code or National Electrical Safety Code, including requirements for the environment. Also consider:
  - *Overflow devices* (electrical interlocks) to warn personnel and shut off power when discharge from conveyor is interrupted.
  - *Overload protection* for devices (shear pins, torque limiters, etc.) and *no-speed protection* (zero-speed switches) to shut off power in the event of an incident that might cause the conveyor to stop operating.
  - *Safety shut-off switch* with power lockout provisions at conveyor drive.
  - *Emergency stop switches* readily accessible.
  - *Electrical interlocking* to shut down feeding conveyors whenever a receiving conveyor stops.
  - *Signal devices* to warn personnel of imminent start up of conveyor, especially if started from a remote location.

## 2.3. OPERATIONAL & MAINTENANCE SAFETY

---

Electrical controls, machinery guards, railings, walkways, arrangement of installation, training of personnel, etc., are necessary for a safe working environment. It is the responsibility of the contractor, installer, owner, and user to supplement the materials and services furnished with the necessary items to make the conveyor installation comply with the law and accepted standards.

- Conveyors are not to be operated unless all covers/guards are in place.
- Keep all operating personnel advised of the location and operation of all emergency controls and devices. Clear access to these controls and devices must be maintained.
- Do not place hands, feet, or any part of your body or clothing in the conveyor.
- Never walk on conveyor covers, gratings, or guards.
- Do not use conveyor for any purpose other than that which it was intended.
- Do not poke or prod material into the conveyor with a bar or stick inserted through the openings.
- Conveyors are not normally manufactured or designed to handle materials that are hazardous to personnel. Materials that are hazardous include those that are explosive, flammable, toxic, or otherwise dangerous to personnel. Conveyors may be designed to handle these materials. Conveyors are not manufactured to comply with local, state, or federal codes for unfired pressure vessels. If hazardous material is to be conveyed, or if the conveyor is to be subjected to internal or external pressure, Union Iron should be consulted prior to any modifications.
- Be aware of hazardous locations: where, without protection, people may be injured by contact with conveyor or material. If conveyor blocks a walkway, provide a crossover stairway or ramp for passage of personnel. If installed overhead, minimum clearance should be 7" for safety.
- Handling foodstuffs subjects conveyors to special codes for construction, location, and accessibility. Investigate before ordering standard components! Food conveyors often require hinged access doors for drop-bottom trough cleaning; such doors require special safety controls and procedures by customer to prevent personnel injuries. Extensive use of padlocks, with keys in the hands of only management personnel, is one means frequently used.
- Do not attempt a field modification of conveyor or components.
- Perform frequent inspections of these controls and devices, covers, guards, and equipment to ensure proper working order and correct positioning.

The Conveyor Equipment Manufacturer's Association (CEMA) has produced an audiovisual presentation entitled "Safe Operation of Screw Conveyors, Drag Conveyors, and Bucket Elevators." Union Iron encourages acquisition and use of this source of safety information.

## 2.3.1. LOCKOUT AND TAGOUT PROCEDURES

---

To minimize possibility of serious injury or death to workers from hazardous energy release (for example, when restarting the equipment) and prevent worker deaths from all forms of hazardous energy release (restarting of equipment), we recommend that you follow all lockout and tagout procedures when installing and servicing equipment. Ensure that all OSHA procedures are adhered to, for example:

- De-energize, block, and dissipate all sources of hazardous energy.
- Lock out and/or tag out all forms of hazardous energy.
- Ensure that only 1 key exists for each assigned lock, and that you are the only one that holds that key.
- After verifying all energy sources are de-energized, service or installation may be performed.
- Ensure that all personnel are clear before turning on power to equipment.

For more information on occupational safety practices, see [www.osha.gov](http://www.osha.gov).

## 2.4. SAFETY DECAL LOCATIONS

---

- Keep safety decals clean and legible at all times.
- Replace safety decals that are missing or have become illegible.
- Replaced parts that displayed a safety decal should also display the current decal.
- Safety decals are available from your distributor, dealer, or factory.

### 2.4.1. DECAL INSTALLATION

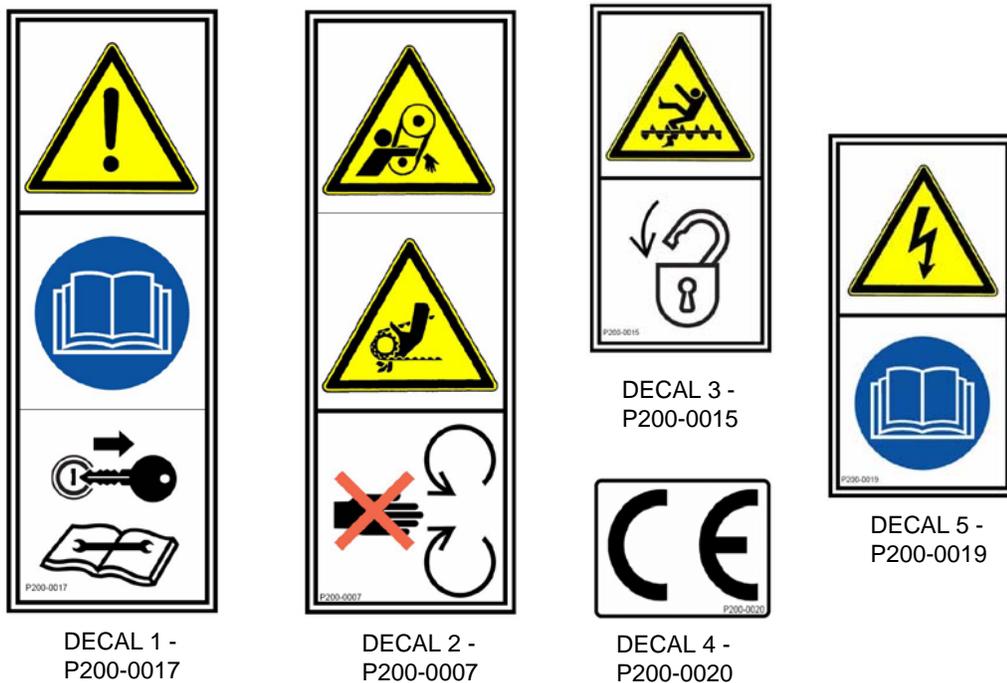
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1. Be sure that the installation area is clean and dry, and that the temperature is above 10°C (50°F).
2. Decide on the exact position before you remove the backing paper.
3. Align the decal over the specified area and carefully press the small portion with the exposed sticky backing in place.
4. Slowly peel back the remaining paper and carefully smooth the remaining portion of the decal in place.
5. Small air pockets can be pierced with a pin and smoothed out using the piece of sign backing paper.

## 2.4.2. DECAL LOCATIONS

The types of safety decals and locations on the equipment are shown below. Good safety requires that you familiarize yourself with the various safety decals, the type of warning, and the area or particular function related to that area that requires your **SAFETY AWARENESS**.

*If safety signs have been damaged, removed, become illegible, or parts were replaced without safety signs, new signs must be applied. New safety signs are available from your authorized dealer.*



- Decal 1 (General Equipment Warning) must be placed in a convenient location on the equipment.
- Decal 2 (Rotating Parts Hazard) is placed on and behind the belt or chain guard.
- 
- Decal 3 (Rotating Auger Hazard) is placed on all inspection and access opening covers, as well as trough covers.
- Decal 4 must be placed in a convenient location on the equipment.
- Decal 5 (Electrocution Hazard) must be placed on the motor conduit boxes.

# 3. Assembly

## WARNING

Before continuing, please reread the safety information relevant to this section at the beginning of this manual. Failure to follow the safety instructions can result in serious injury, death, or property damage.

## 3.1. PRE-ASSEMBLY

1. Check all assemblies and parts against shipping papers, and inspect for damage on arrival. Look for dented or bent trough, flanges, flighting, pipe, or hangers. Minor damage incurred in shipping can often be easily repaired in the field.
  - For severely damaged parts, file an immediate claim with the carrier.
2. Before proceeding with assembly, make sure that all supplementary instructions are included. If anything is missing, contact Union Iron.

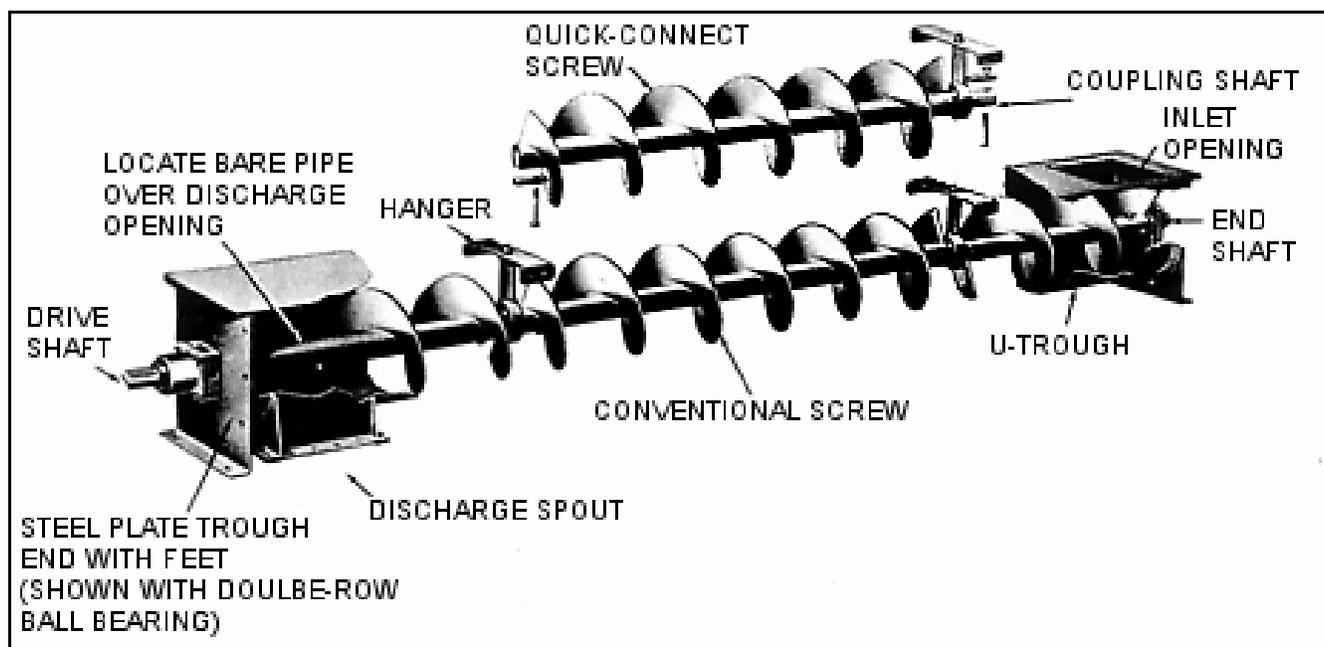
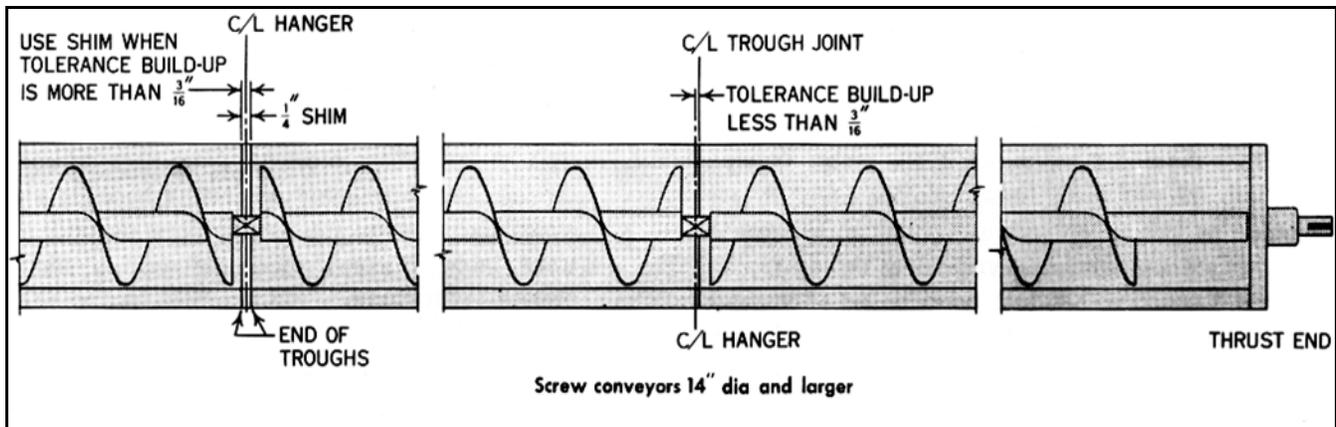


Figure 3.1

Figure 3.1 illustrates only of a few of the many types of components that are available for various applications and operating conditions. However, the basic function of each component remains the same, regardless of design variations.

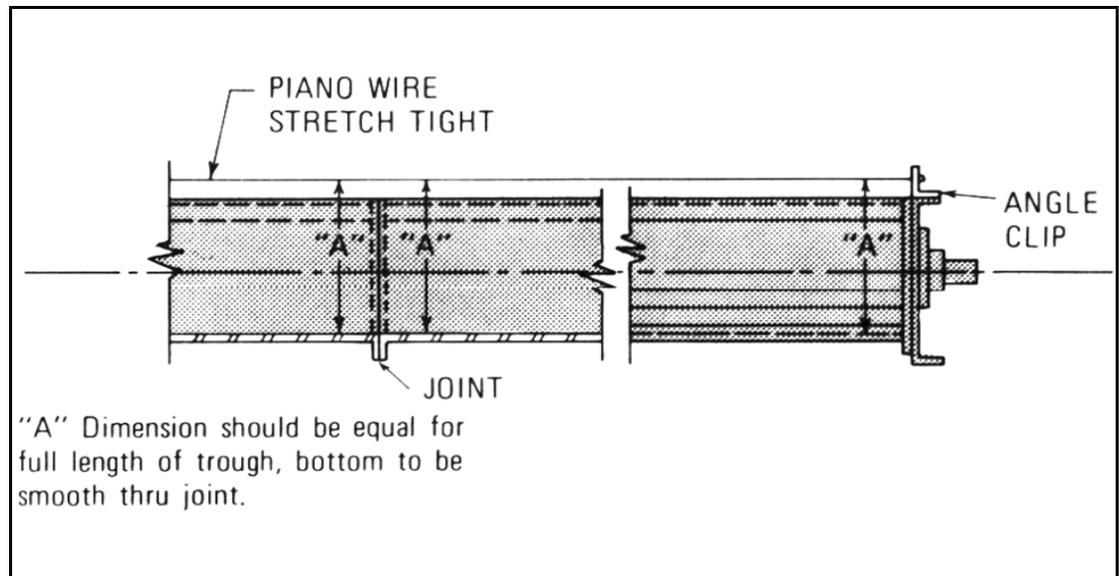


**Figure 3.2 Aligning Trough Joints and Couplings with Shims**

Screw conveyor troughs must be assembled straight and true with no distortion. If anchor bolts are not in line, either move them or slot the conveyor feet or saddle holes. Use shims as required to achieve correct alignment. Do not proceed with installation of shafts and screws until trough has been completely aligned and bolted down.

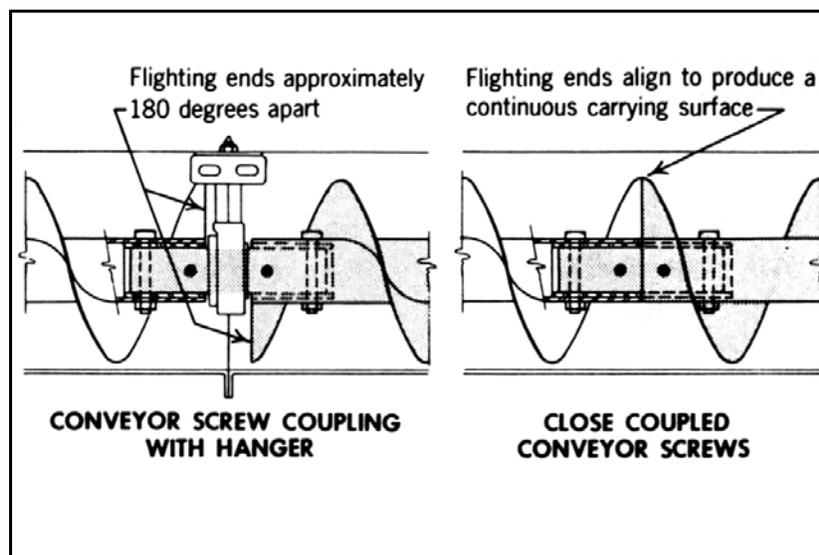
## 3.2. CONVENTIONAL CONVEYOR SCREWS

1. When shipped as loose parts, assemble bearings to trough end plates.
2. If trough ends are factory assembled with trough, check bearings and seals for possible misalignment that may have occurred during shipment. Realign if necessary.
3. Place troughs and trough ends in proper sequence with discharge spouts properly located. Connect the joints loose. Do not tighten the bolts. Align trough bottom and centerline perfectly using piano wire as shown in Figure 3.3. Then tighten joint bolts and all anchor bolts.



**Figure 3.3**

4. Begin assembly of screw sections, working from the thrust end. Drive shaft and thrust bearings are normally at the discharge end to place the conveyor screw in tension. If conveyor is fitted with quick-connect screws, follow instructions in Section 3.3..
5. Place the first screw section in the trough, fitting it onto the end shaft. Install coupling bolts. If reinforcing lugs are on ends of flighting, install screw so they are opposite the carrying side of the flight.



**Figure 3.4**

6. Insert coupling shaft into opposite end of conveyor pipe; install coupling bolts.
7. If screws are not close coupled, slide hanger over coupling and bolt to trough.

8. Pull conveyor screw away from discharge end of conveyor to seat the thrust connection and remove play in coupling bolts.
9. Place next screw section in trough and fit onto coupling so that flighting end is about 180° from end of flighting of first section. (See Figure 3.5.) Install coupling bolts.
  - For close coupled conveyors without hangers: Assemble screw so that flighting at adjoining ends of screw sections align to provide a continuous surface.
  - In the case of material supplied on orders for “components only,” the coupling bolt holes are drilled in only one end of the coupling shafts and it will be necessary to mark and drill the other end in the field. Remove shaft from screw before drilling
  - **Do not use screw pipe as drill jig.**
10. Insert coupling shaft into opposite end of pipe; install coupling bolts. Install hanger and pull out on pipe to remove play. (See Step 8.)
11. Go back to hanger installed previously; center the bearing between the ends of pipes and tighten hanger mounting bolts. Revolve screw to check alignment. If screw doesn't turn freely, adjust hanger mountings until it does. Then proceed with installation of next screw section.
12. Alternately assemble screw sections, couplings, and hangers (Steps 9-11) until all screw sections except the last one have been installed. Remove trough end to install last section.
13. Install tail shaft through end bearing and fasten into last screw section with coupling bolts. Check freedom of rotation of entire screw.
14. When trough end seals are used, be sure shafts are centered in seal openings.
15. Tighten collar set screws in any anti-friction bearings in trough ends and hangers. Check and tighten all hanger assembly and mounting bolts.
16. Tighten packing land type seals only enough to prevent leakage. If tightened excessively, they may impose a drag on the conveyor and wear rapidly.
17. Fill waste packed type seals with enough waste packing to loosely encircle the shaft and fill the corners. This will prevent packing from rotating with the shaft.
18. Remove all debris from trough (bolts, nuts, shipping materials, etc.). Install covers in proper sequence to locate inlet openings. Handle covers with care to avoid warping and bending, and attach them with the fasteners provided. Do not tighten excessively, especially when using gaskets, as leaks may occur when covers are permanently kinked.
19. Install drive at proper location in accordance with separate instructions provided. After electrical connections have been made and before handling any material, check screw rotation for proper direction of travel. Incorrect

screw rotation can result in serious damage to the conveyor and to related feeding, conveying, and drive equipment. If rotation is incorrect, have electrician reverse motor rotation.

20. Lubricate drive and all bearings in accordance with separate instructions.  
**DRIVE IS SHIPPED WITHOUT OIL.**
21. Firmly affix self-sticking caution markers to conveyor. Place a marker on each side of conveyor at drive end and a marker on each section of the conveyor trough.

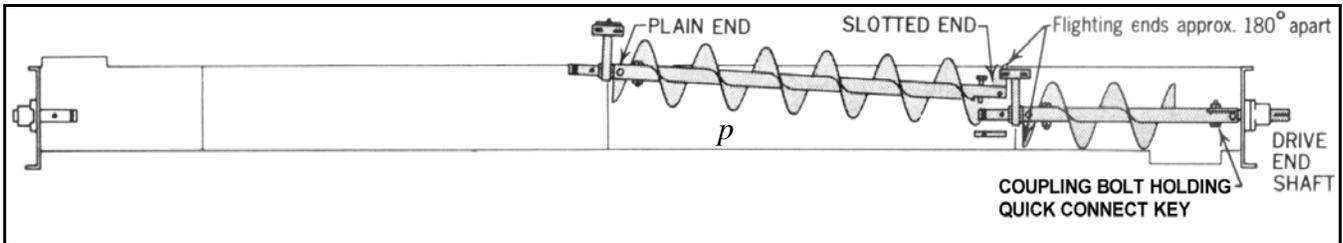


Figure 3.5

### 3.3. QUICK-CONNECT SCREW ASSEMBLY

When conveyor is shipped with quick-connect screw, follow steps 1 - 8 in Section 3.2. and then proceed as follows:

1. Start assembly at drive end of conveyor, with slotted ends of screw sections toward drive end.
2. Install end shaft in drive end bearing.
3. Remove and discard "throw-away" bolts and wood block (see Figure 3.6). For assembly, use coupling bolts provided.

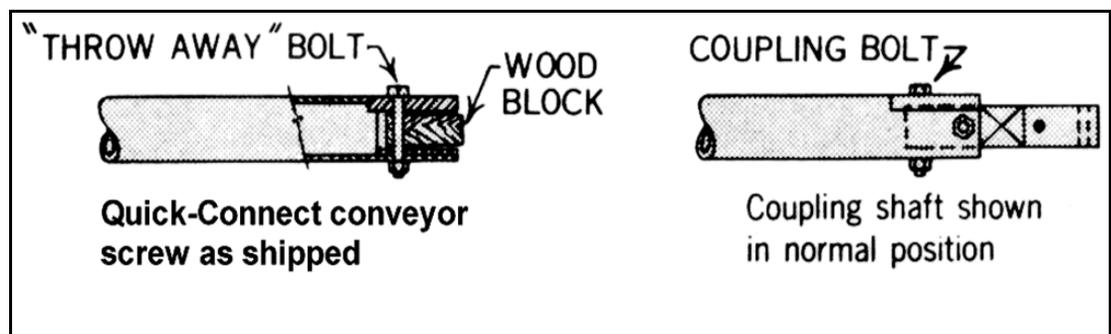


Figure 3.6

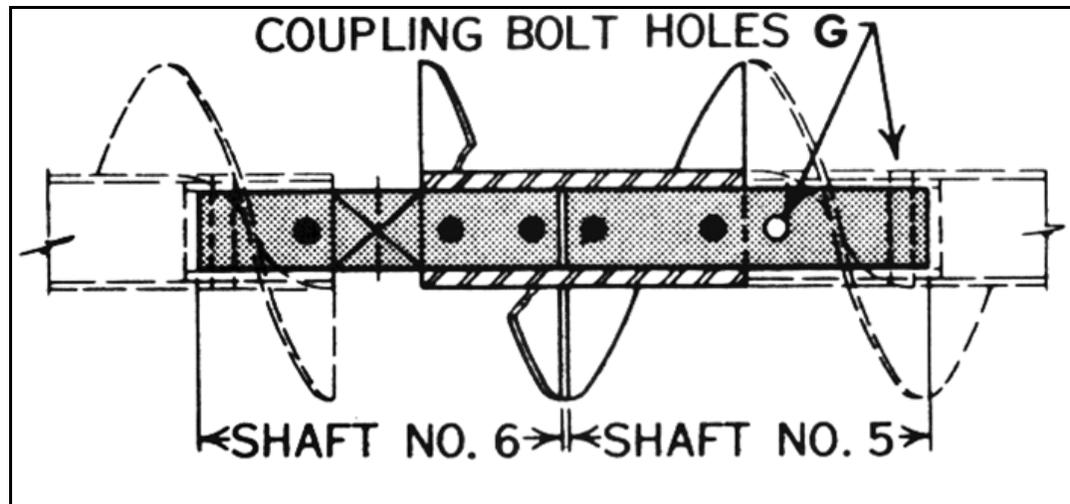
4. Lower screw section into place on shaft with quick-connect keyway downward as shown in Figure 3.5. Mount key and insert coupling bolts. Always tighten first the coupling bolt that holds key in place.
5. Install coupling shaft at plain end of screw.
6. Install hanger on coupling shaft at plain end of screw and bolt to trough.

7. Rotate screw sections that have been installed so that end of flighting at plain end of the last section installed will be about 180° from the end of the flighting at the Quick-Link end of the next section to be installed.
8. After installing each screw section, pull last screw to take play out of coupling bolts and center the hanger bearing between the ends of the pipes.
9. When all screw sections are in place, proceed with step 13 in Section 3.2.

### **3.3.1. SPLIT FLIGHT COUPLING AND SHAFTS**

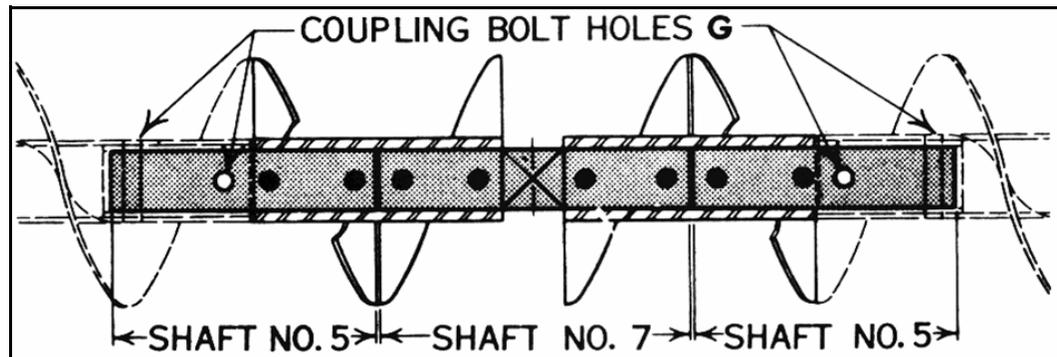
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1. Assemble split flight couplings and shafts in accordance with Assembly A (Figure 3.7) or Assembly B (Figure 3.8) depending on assembly furnished.
2. If Assembly A is furnished, assemble on proper side of hanger so that hanger will be located at a trough joint.
3. Coupling bolt holes G (Assemblies A and B) must be drilled in field for assembly.
4. Insert and bolt pre-drilled end of shaft number 5 into split flight coupling. Assembly B uses two Number 5 shafts.
5. Insert un-drilled end of shaft Number 5 into adjoining screw section.
6. Draw split flight coupling into close contact with end of conveyor screw.
7. Align ends of flighting on split flight coupling and adjoining screw section to produce a continuous surface.
8. Mark location of coupling bolt holes G from conveyor screw to Shaft Number 5.
9. Remove Shaft Number 5 and drill bolt holes. Do not drill holes in assembly since close tolerance bolt holes in conveyor screw pipe might be damaged or enlarged if used as guide holes for drilling.
10. Reassemble shaft Number 5 into conveyor on proper side of hanger to locate hanger at a trough joint. Insert coupling bolts and tighten.



**Figure 3.7 Split Flight Coupling Assembly A**

11. Insert and bolt shaft Number 6 into adjoining screw section.
12. Align shafts Numbers 5 and 6. Position split flight coupling over ends of shafts so flighting at one end is aligned with flighting at end of close coupled screw section to produce a continuous surface.
13. Insert coupling bolts and tighten.
14. Reassemble shaft Number 5 into conveyor screw.
15. Align conveyor screws with Number 5 Shafts in place and assemble split flight couplings and Shaft Number 7 so that ends of flighting at hanger bearing space are approximately 180 degrees apart.



**Figure 3.8 Split Flight Coupling Assembly B**

16. Adjust conveyor screws so that ends of flighting on screw sections and adjoining split flight couplings produce a continuous surface.
17. Insert coupling bolts and tighten.

# 4. Operation

## WARNING

Before continuing, please reread the safety information relevant to this section at the beginning of this manual. Failure to follow the safety instructions can result in serious injury, death, or property damage.

## 4.1. PRE-OPERATION

---

Only people completely familiar with the safety information contained in this manual should be permitted to operate the conveyor. The operator should thoroughly understand the instructions before attempting use.

### CAUTION



Before performing any internal inspections or maintenance, ensure that a mechanical lockout is in place on the motor starter.

Because the speed of a screw conveyor is generally predetermined and no variable speed controls are required, the only duties of a trained and competent operator are to:

- regulate the feeding of material into the unit in a uniform and continuous rate, and never to overfeed or overload the unit beyond its capacity;
- see that the material flows evenly and does not block the discharge point;
- observe the safety precautions for operators outlined above.

## 4.2. START-UP

---

### DANGER



Rotating parts hazard!

To avoid serious injury or death: Keep body, hair, and clothing away from rotating pulleys, belts, chains, and sprockets. Keep all guards in place and in good working order. Lock out power before removing guard.

### 4.2.1. WITHOUT MATERIAL

---

1. Remember—screw conveyor drive is shipped **without** oil. Add oil to drive in accordance with separate instructions.
2. Make sure before initial startup that conveyor is empty, that end bearings and hangers are lubricated, and that all covers, guards, and safety equipment are properly installed.
3. If conveyor is part of a material handling system, make certain that conveyor controls are interlocked electrically with those for other units in the system.
4. Remove section of cover and check that the direction of screw rotation in each unite to ensure correct flow of material.
5. Operate conveyor while empty for several hours, making a continuous check for heating of bearings, misalignment of drive, and noisy operation. If any of these occur, proceed as follows:
  - a. If anti-friction bearings are used, check supply of lubricant. Either too little or too much lubricant can cause high operating temperatures.
  - b. Lock out power supply and check for misalignment in trough ends, screws, and hangers. Loosen, and readjust or shim as necessary. If unable to eliminate misalignment, check parts for possible damage during shipment.
  - c. Check assembly and mounting bolts.

### 4.2.2. WITH MATERIAL

---

1. Check that the conveyor discharge is clear before feeding material.
2. Increase feed rate gradually until rated capacity is reached.
3. Stop and start conveyor several times, and allow to operate for several hours.
4. Shut off conveyor and lock out power supply. Remove covers and check coupling bolts for tightness. Check hanger bearings, realign if necessary, and retighten mounting bolts.
5. Replace covers.

### 4.3. EXTENDED SHUTDOWN

---

If conveyor will not be operated for a long period of time, you should operate it for a period of time after the feed has been cut off in order to discharge as much material as possible from the trough. However, there is a nominal clearance of 1/2" between the screw and the trough, and this procedure will allow a small amount of material to remain in the trough. Therefore, if the

material is corrosive, hygroscopic, or has a tendency to harden or set-up, the trough should be cleaned completely after the conveyor is shut down and power locked out.

# 5. Maintenance

## **WARNING**

Before continuing, please reread the safety information relevant to this section at the beginning of this manual. Failure to follow the safety instructions can result in serious injury, death, or property damage.

- Establish routine periodic inspection of the entire conveyor to ensure continuous maximum operating performance.
- Practice good housekeeping. Keep the area around the conveyor and drive clean and free of obstacles to provide easy access and to avoid interference with the function of the conveyor or drive.
- Lock out power to motor before doing any maintenance work—preferably with a padlock on control.
- Do not remove padlock from control or operate conveyor until covers and guards are securely in place.

## **5.1. SERVICING OF CONVEYOR COMPONENTS**

---

In most cases, this involves removing an unserviceable part and installing a replacement. The installation procedures are outlined in “Assembly” on page 15.

Specific instructions for the removal of various conveyor components follow.

### **5.1.1. CONVENTIONAL CONVEYOR SCREWS**

---

1. To remove a section(s) of conventional conveyor screw, proceed from end opposite the drive.
2. Remove trough end, conveyor screw sections, coupling shafts, and hangers until all screw sections are removed, or until damaged or worn section is removed.
3. To reassemble, follow above steps in reverse order, or see “Assembly” on page 15.
4. Sections of conventional conveyor screw equipped with split flight couplings may be removed individually with a minimum of disturbance of adjacent sections.

### 5.1.2. QUICK-CONNECT CONVEYOR SCREWS

1. Removal of quick-connect screw sections includes removal of coupling shaft AA and hanger Y at plain end. See Figure 5.1 where section W is being removed.
2. Rotate entire screw so that quick-connect key of section X is on top, and key of section W is on bottom.
3. Remove coupling bolts from quick-connect end of section X.
4. Remove coupling bolts and key from section W.
5. Remove mounting bolts from hanger Y.
6. Lift conveyor screw W, hanger Y, and coupling shaft AA from adjoining screw section X. Shift position of screw section W to clear hanger Z, and remove from trough. To reassemble, follow above steps in reverse order or refer to the assembly instructions.

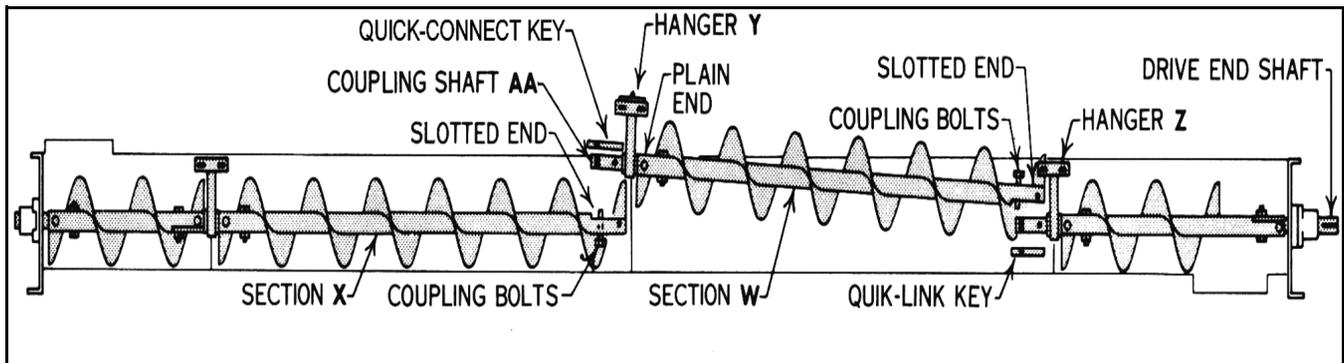


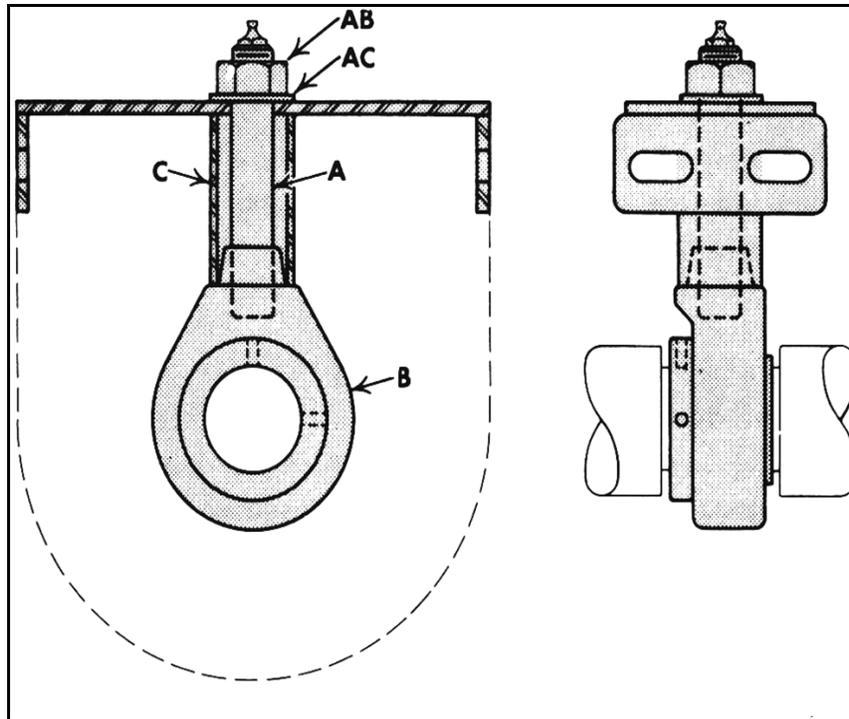
Figure 5.1 Removal of Quick-Connect Conveyor Screw

### 5.1.3. COUPLINGS AND HANGERS

Replace couplings and hanger bearings when wear in either part exceeds 1/8". Replace coupling bolts when excessive wear causes play.

To replace ball bearing hanger elements proceed as follows:

1. Remove screw sections as necessary in accordance with instructions until hanger to be replaced is reached and removed from trough.
2. Loosen set screws in bearing collar and remove hanger from coupling shaft. See Figure 5.2.



**Figure 5.2 Ball Bearing Hanger Assembly**

3. Remove assembly nut AB and washer AC.
4. Tap on end of grease pipe A to free bearing B from hanger frame C.
5. Remove grease pipe and bearing from hanger frame.
6. Remove grease pipe from bearing.

To reassemble, follow the above steps in reverse order. Tighten nut AB using torque values in the following torque table:

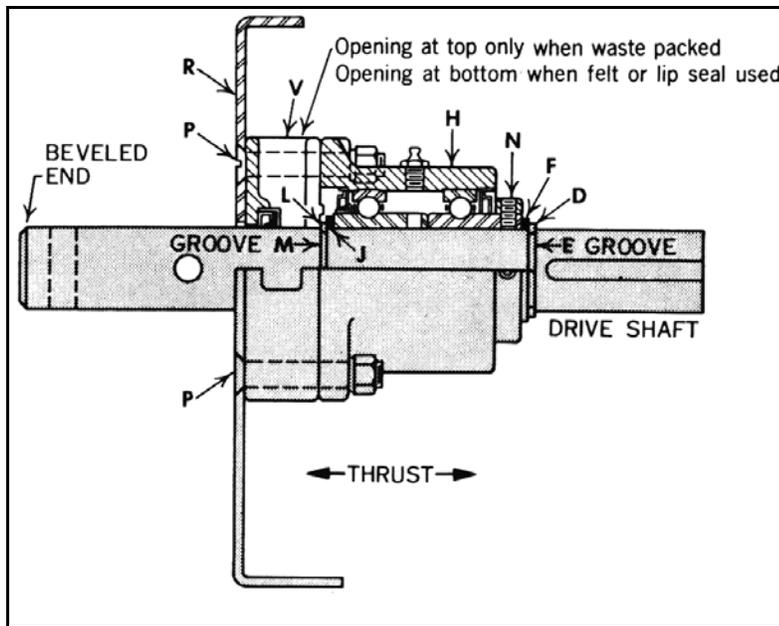
**Table 5.1 Tightening torque for nut AB**

Bearing Size, Inches	Torque, pound-feet *	
	Minimum	Maximum
1-1/2 to 2	100	110
2-7/16 to 3	160	180
3-7/16	240	270

\* Equivalent to pounds pull on wrench 12" from nut.

#### 5.1.4. DRIVE END BEARINGS

To replace elements of drive shaft trough ends with double ball bearings, proceed as follows, referring to Figure 5.3.



**Figure 5.3 Drive Shaft Trough End With Double Ball Bearing**

#### **ASSEMBLIES WITHOUT TROUGH END SEALS**

1. Thrust bearings are usually located at the drive end of conveyor. Remove drive components such as sprockets, couplings, speed reducers, etc., which would prevent removal of the bearing assembly.
2. Remove conveyor coupling bolts.
3. Support conveyor in trough and remove bolts P.
4. Remove driveshaft with bearing assembly H as a unit from the trough end plate R.
5. Remove snap ring L from groove M and slide from shaft at beveled end.
6. Remove washer J.
7. Loosen set screws N and slide bearing H from shaft at beveled end.
8. Remove washer F.
9. Remove snap ring D from groove E and slide from shaft at either end.

#### **ASSEMBLIES WITH TROUGH END SEALS**

1. Thrust bearings are usually located at the drive end of conveyor. Remove drive components such as sprockets, couplings, speed reducers, etc., which would prevent removal of the bearing assembly.
2. Remove conveyor coupling bolts.
3. Support conveyor in trough and remove bolts P.
4. Remove shaft with bearing assembly H and seal assembly V from trough end as a unit.
5. Remove trough end seal from shaft at beveled end.

6. Follow steps 5 through 9 in Section 5.1.4.
7. To reassemble, follow the above steps in reverse order.

### 5.1.5. COVERS

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Whenever the trough covers are removed, always check all coupling and hanger bolts for rightness. When remounting covers, fasten with clamps provided. Open spring-type cover clamps using a drift pin and close with a hammer. After repeated openings and closings, it may be necessary to restore firm grip of clamps by closing clamp jaws slightly. To do this, use a hammer as an anvil under one jaw and tapping the other jaw with another hammer.

## 5.2. LUBRICATION

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Frequency of lubrication will depend on factors such as the nature of the application, bearing materials, and operating conditions. Weekly inspection and lubrication is advisable until sufficient experience permits establishment of a longer interval.

### 5.2.1. DRIVE

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Lubricate the drive following separate instructions provided for the speed reducer and the other drive components requiring lubrication. Speed reducers are shipped **without** oil.

### 5.2.2. BALL OR ROLLER BEARINGS

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Ball and roller bearings may be furnished on trough ends or as hanger bearings. Lubricate in accordance with separate instructions provided.

### 5.2.3. BABBITTED OR BRONZE BUSHED BEARINGS

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Babbitted or bronze bushed bearings may be furnished in trough ends or hangers. When provision is made for grease lubrication, follow the table below for recommended grades.

Operating Temperatures (F)	Use Grease Equivalent to MLGI Number
32° to 200°	2 or 3
32° to -40°	2 or 1

For oilless or graphite bronze, hard or chilled iron, oil-impregnated wood, or plastic laminate hanger bearings, no lubrication is required.

## LIMITED WARRANTY

Seller warrants that all of the goods sold hereunder will conform to their description in Seller's published literature current at the time the Buyer's order is accepted, that Seller will use good material and workmanship in the manufacture of such goods, and that such goods will conform to applicable laws and regulations regarding purity.

Seller will repair or replace, at its discretion, any nonconforming goods (or refund their purchase price at Seller's option), but only if Seller receives written notice of nonconformity within 60 days after shipment and Buyer's remedies hereunder are expressly so limited.

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