

# “FC” Belt Conveyor

**Galvanized Formed Channel Belt Conveyor**

## **INSTALLATION & OPERATING INSTRUCTION MANUAL**

Manufactured in the U.S.A. by



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A minimum charge of Fifty Dollars (\$50.00) net, exclusive of transportation charges, will be made on all orders, unless otherwise noted on invoice for the value of such material as less than this amount.

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## TABLE OF CONTENTS

<b>INTRODUCTION .....</b>	<b>1</b>
<b>CHECK &amp; INSPECT YOUR ORDER .....</b>	<b>1</b>
<b>MODEL IDENTIFICATION .....</b>	<b>2</b>
<b>GENERAL - INSTALLATION AND ASSEMBLY OF STANDARD CONVEYORS.....</b>	<b>3-5</b>
<b>CARRYING IDLER AND RETURN ROLL INSTALLATION .....</b>	<b>6</b>
<b>BELT INSTALLATION .....</b>	<b>7</b>
<b>TOP COVER INSTALLATION .....</b>	<b>8</b>
<b>LOAD SKIRTING INSTALLATION AND ADJUSTMENT .....</b>	<b>8-9</b>
<b>BELT SCRAPER ADJUSTMENT .....</b>	<b>10</b>
<b>TRACKING THE BELT .....</b>	<b>10-12</b>
<b>DRIVE ASSEMBLY INSTALLATION .....</b>	<b>13-14</b>
<b>ELECTRICAL EQUIPMENT .....</b>	<b>14</b>
<b>CONVEYOR BELT TROUBLE-SHOOTING GUIDE .....</b>	<b>15</b>
<b>REMEDIES FOR COMMON CONVEYOR PROBLEMS .....</b>	<b>15</b>
<b>MAINTENANCE .....</b>	<b>16-17</b>
<b>SAFETY .....</b>	<b>18</b>

Purchase Date \_\_\_\_\_ Model \_\_\_\_\_

Serial Number \_\_\_\_\_

## **INTRODUCTION**

The purpose of this Owner's Manual is to advise and instruct owners of "FC" Belt Conveyors and accessories in the recommended installation, operation and maintenance of the equipment. You have purchased a product which has been manufactured with utmost care and the finest materials, reflecting many years of engineering knowledge.

You now have the task of installing your equipment, either by yourself, under your supervision, or by hiring the work done. Regardless of who does the installation, this manual is designed for you. The instructions and drawings give a step-by-step method of recommended installation procedures. Methods will vary among millwrights, but if you are not sure which is best, we suggest that you follow instructions in this manual.

The following information will aid you in the installation and operation of your new "FC" Belt Conveyor. To ensure long life and trouble-free operation, you should read these instructions and provide regular, periodic maintenance. **IT IS THE INSTALLER'S RESPONSIBILITY TO BE AWARE OF AND COMPLY WITH ALL FEDERAL, STATE AND SAFETY CODES, BUT NOT BE LIMITED TO SAFETY AND ELECTRICAL CODES.**

## **CHECK & INSPECT YOUR ORDER**

Each order or shipment is double checked before leaving the factory. All parts, pieces and components are listed item by item on our packing list, which accompanies each order. The number and description of each item, package, container, skid, etc., is listed on the bill of lading. **IN SIGNING THE BILL OF LADING, THE CARRIER ASSUMES FULL RESPONSIBILITY FOR SAFE DELIVERY OF ALL GOODS TO DESTINATION IN THE SAME ORDER A CARRIER WAS TENDERED BY THE SHIPPER.** In the event of damage or shortage, have the transportation company note the same on the freight bill. You should then file claim against the carrier for such loss and/or damage.

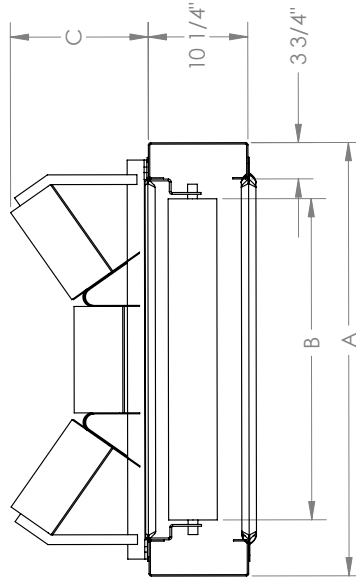
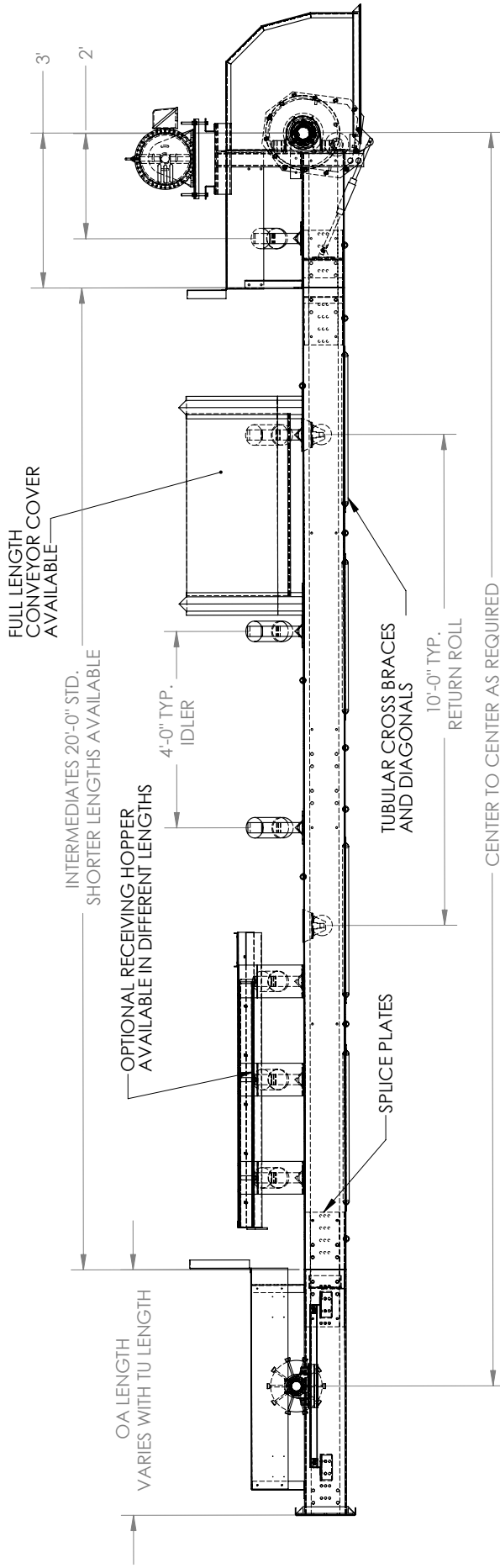
You will find a packing list attached to one of the items in the shipment. Check each item against the list. Check by description, specification, quantity, count, etc. Should there be any discrepancies, notify us immediately. If an order or shipment includes more than one "FC" Conveyor, the parts for each conveyor will be keyed or marked on the packing list for easy identification.

Small parts and items such as bolts, washers, bushings and keys are just as important to an installation as the larger parts. Make sure these are located and checked before disposing of any containers or packing. We cannot be responsible for loss of items that are listed and included on our packing list.

Should there be some delay between the time an order is received and the ensuing installation, store parts in a protected area so they may be easily located and identified. **RETAIN PACKING LISTS FOR THIS REASON, AS WELL AS FOR FUTURE PARTS REFERENCE.**

## MODEL IDENTIFICATION

Use the charts below to identify the "FC" model:



## SPECIFICATIONS

Model	Belt Width	A	B	20°	Typical C 35°	45°	Idler CEMA Rating
FCS1014	14"	28 <sup>1</sup> / <sub>2</sub> "	17"	9-5/8"	10-7/8"	N/A	B
FCS1018	18"	32 <sup>1</sup> / <sub>2</sub> "	21"	9 <sup>1</sup> / <sub>2</sub> "	11-7/16"	12-7/16"	B
FCS1024	24"	38 <sup>1</sup> / <sub>2</sub> "	27"	10-5/8"	12-11/16"	13-15/16"	B
FCS1030	30"	44 <sup>1</sup> / <sub>2</sub> "	33"	10-3/8"	14"	15 <sup>1</sup> / <sub>2</sub> "	B
FCS1036	36"	50 <sup>1</sup> / <sub>2</sub> "	39"	12-1/8"	15-3/16"	17"	B
FCS1042	42"	56 <sup>1</sup> / <sub>2</sub> "	45"	13-1/8"	16-15/16"	18-7/8"	B
FCS1048	48"	62 <sup>1</sup> / <sub>2</sub> "	51"	13-7/8"	18"	20-3/8"	B
FCS1054	54"	68 <sup>1</sup> / <sub>2</sub> "	57-5/16"	15-3/8"	20"	22-3/8"	C
FCS1060	60"	74 <sup>1</sup> / <sub>2</sub> "	63-5/16"	16-3/16"	21-3/16"	24-1/16"	C

\* Other CEMA idlers available. NOTE: All dimensions subject to change without notice.

## GENERAL

Only proper installation can offer the performance intended by the manufacturer. Therefore, a good installation should be of prime concern to the customer and to the construction firm responsible for the same. A MANUFACTURER CANNOT BE RESPONSIBLE FOR THE INSTALLATION OF A CONVEYOR. The suggestions and information contained herein are offered solely as a convenience, for we assume no liability for installation, either expressed or implied.

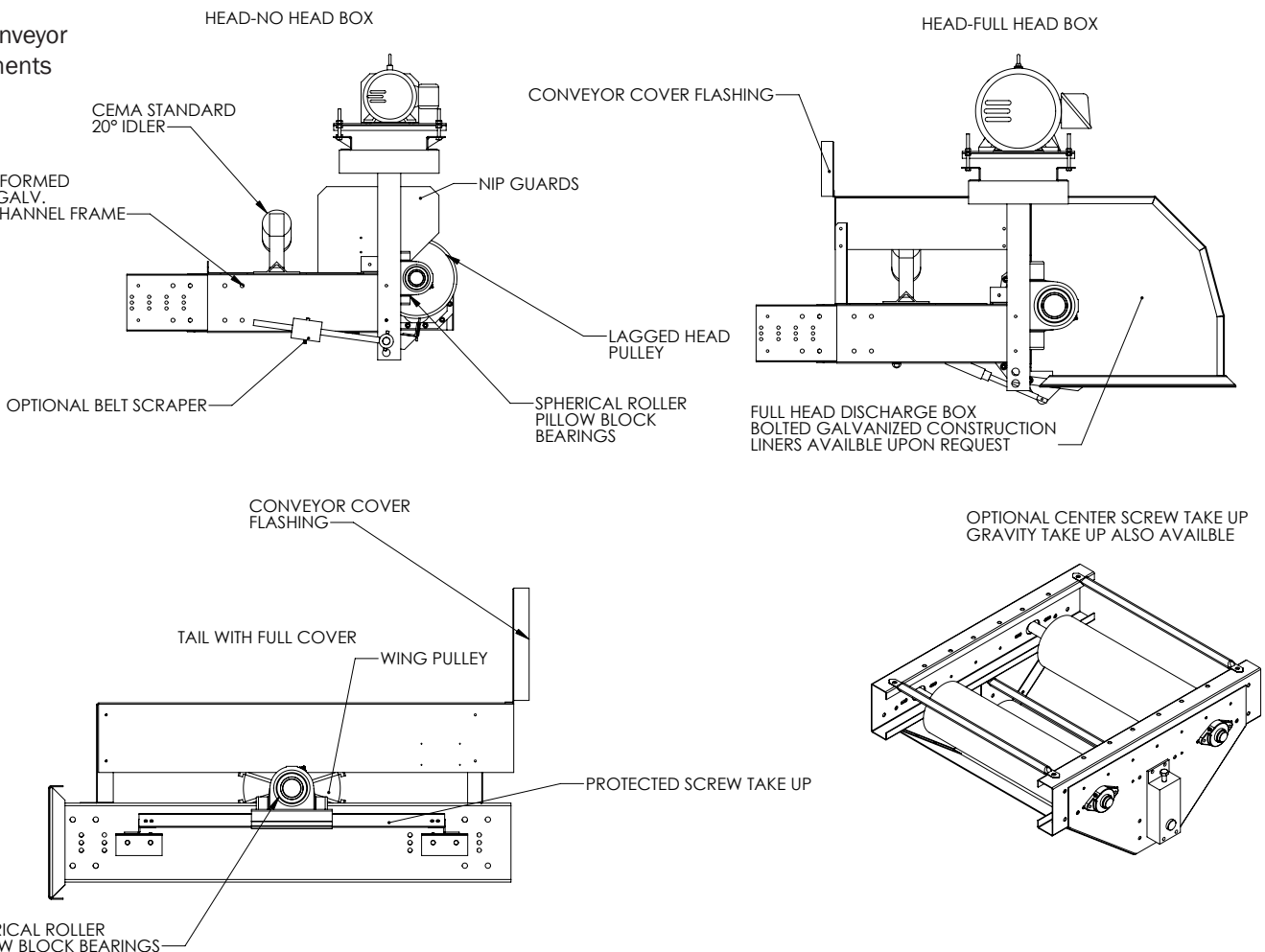
When an "FC" Belt Conveyor is used in conjunction with other conveyors or equipment, provisions must be made for clearances to allow for drive assemblies, discharges, chutes, etc., on all of the equipment. Also, enough clearance should be provided to allow for proper maintenance of equipment after it has been installed. Additionally, better results are achieved if the load dropped on to the belt is traveling in the same direction as the belt itself. Thought given to such matters prior to installation can prevent later problems in the flow plan and avoid possible "bottlenecks."

## INSTALLATION AND ASSEMBLY OF STANDARD CONVEYORS

The "FC" Belt Conveyor has been shipped to you as a component kit with an assembled head, tail, and intermediate sections in lengths of 20' or less. One of the intermediate sections may include a gravity or center screw type take-up assembly (see Figure A). If ordered, a head box will be installed on the head terminal.

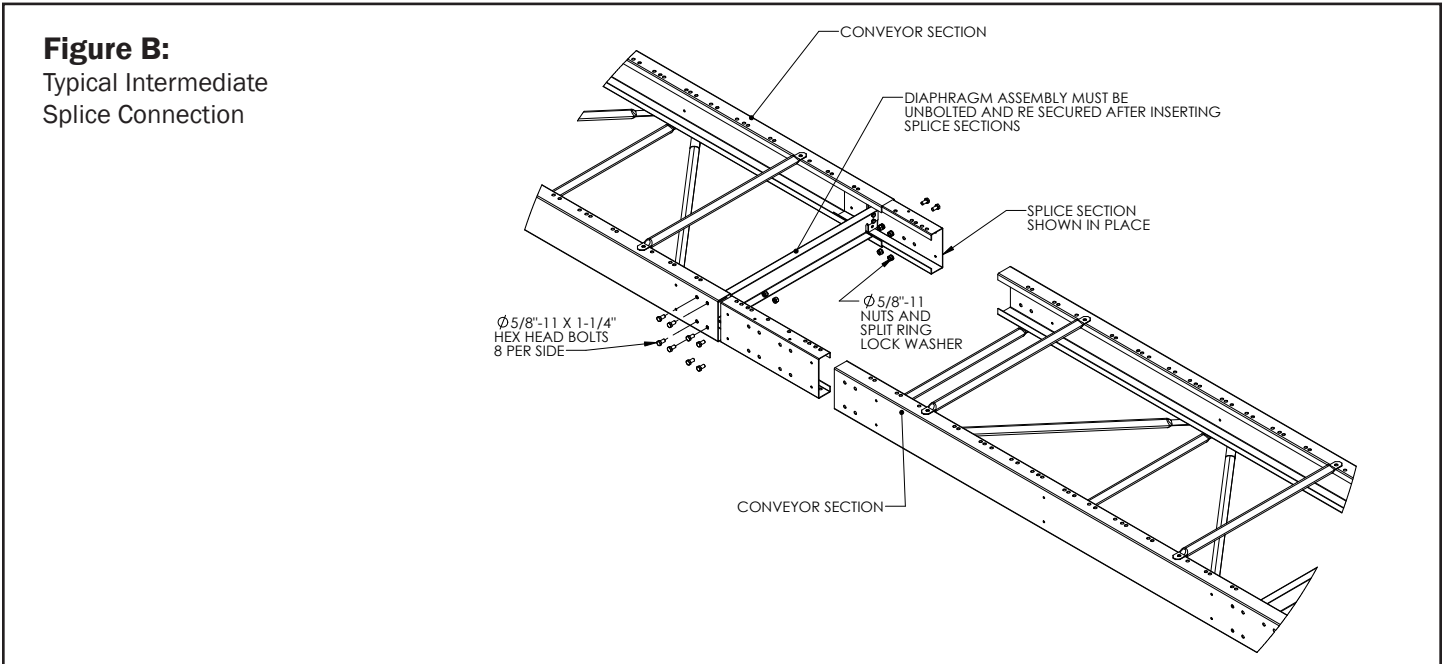
**Figure A:**

Typical  
"FC" Conveyor  
Components

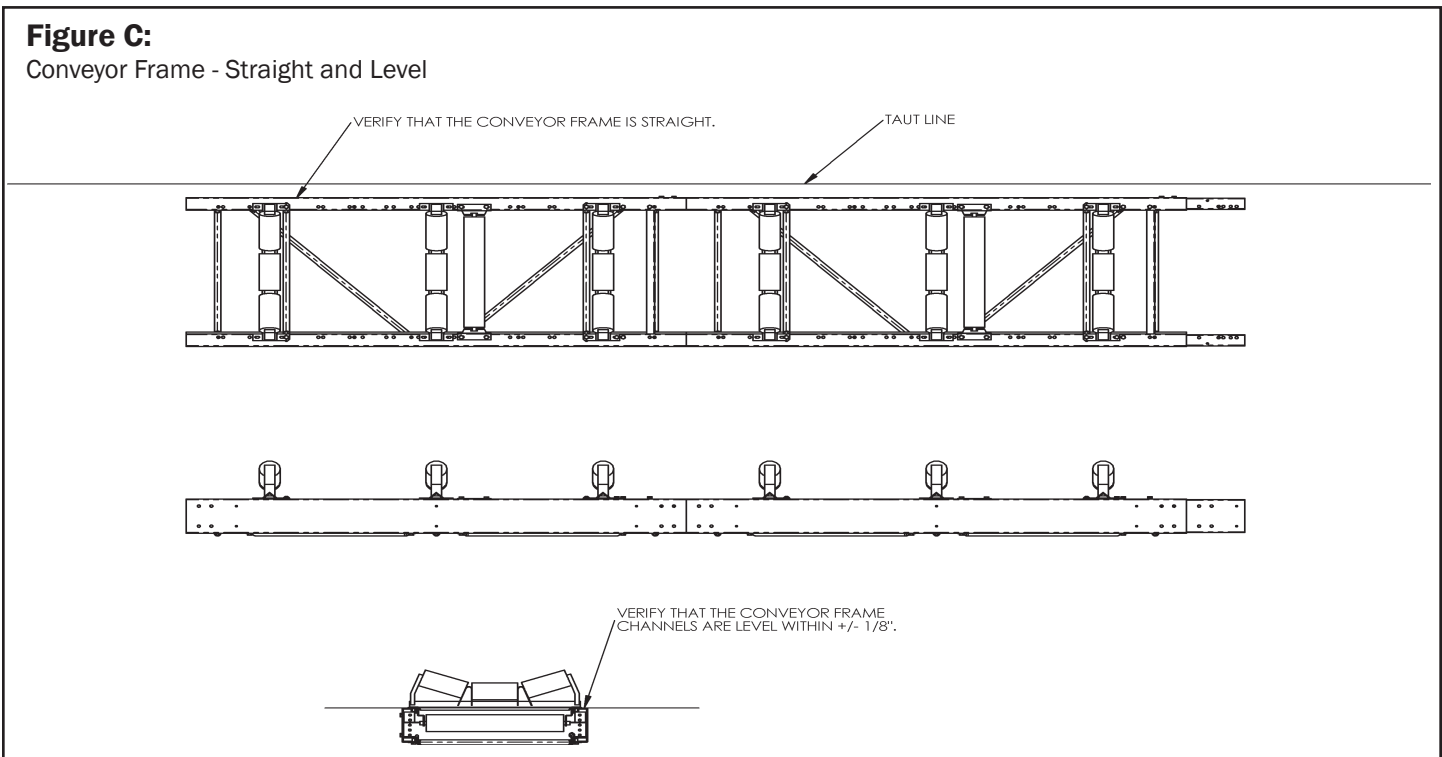


Lay out the unit as it is to be used, including the head and tail sections. Walkway, if provided, may be attached at this time. See instructions provided with the walkway. Do not lift intermediate lengths greater than 60'. Maintain a maximum of 20' between lift points. Supports should be located under the conveyor frame. Support centers should not exceed manufacturers recommendations which are normally 20'. Consult manufacturer for future details.

See Figure B for typical intermediate splice connections. Note that the splice channel slips inside of the two frame sections that butt together. It may be necessary to loosen nuts and bolts to allow the sections to splice together.

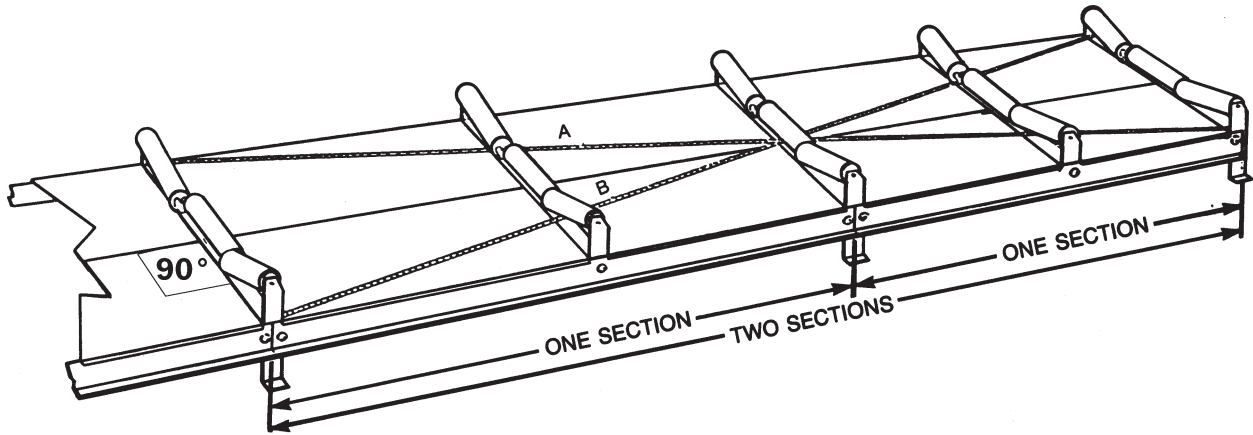


Loosely install splice plates, nuts and bolts, but do not tighten. Use a wire or line to make sure that the conveyor is square and level to make sure the conveyor is level from side to side. Shim supports as required to obtain correct alignment. Take diagonal measurements to check for squareness of the frame (see Figures C and D).



**Figure D:**

Checking squareness of frame and/or idlers

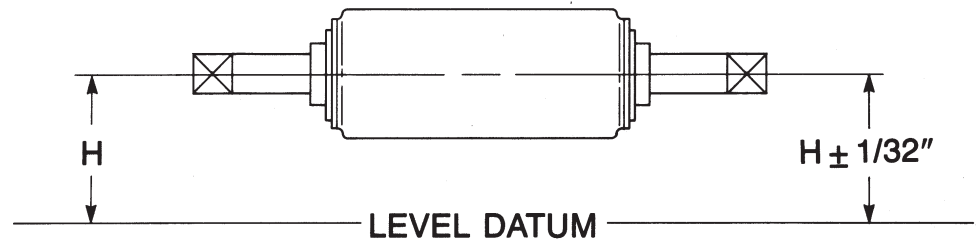


Tighten the connecting hardware and any hardware that was loosened to assist with the installation of the splices. At this time, check the tightness of all the hardware in the conveyor to ensure that all are properly tightened, including items such as the set screws in the bearing and bushings.

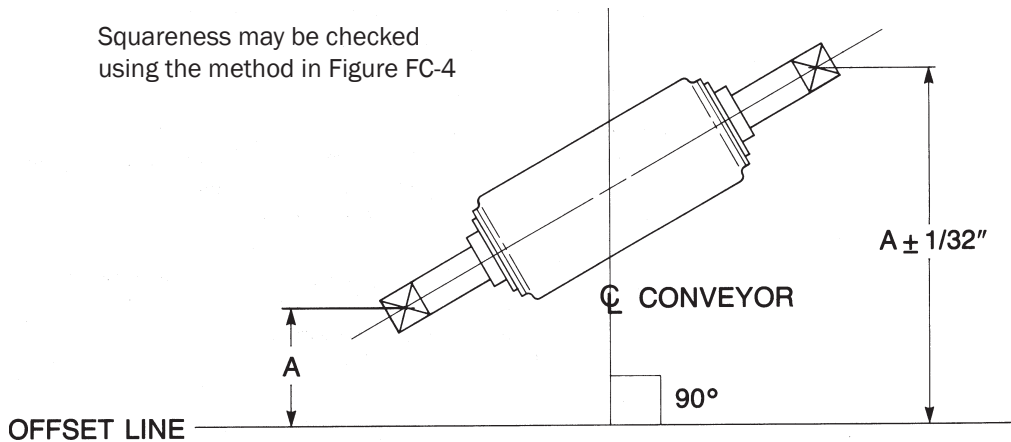
Check that the head pulley is level and square to the frame or centerline of the conveyor (see Figure E). Corrections may be made by adjusting and/or shimming the head bearings. It may be beneficial to match mark the bearings and supporting angles for later reference. NOTE: Because of manufacturing tolerances and the center crown which aids in belt tracking, alignment measurements should be taken on the shaft and not on the pulley itself.

**Figure E:**

Head Pulley -  
Square and Level



Squareness may be checked  
using the method in Figure FC-4



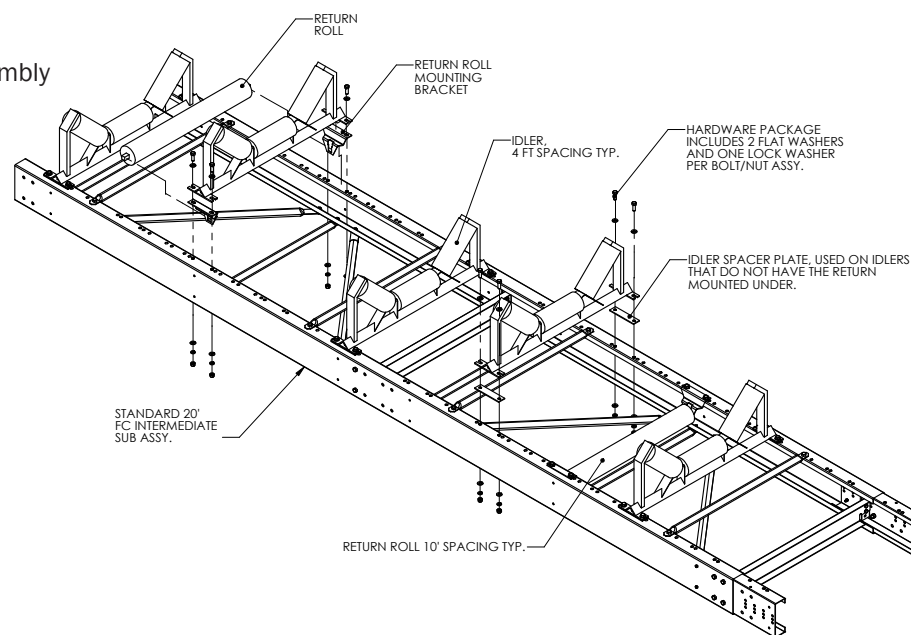
## CARRYING IDLER AND RETURN ROLL INSTALLATION

A good installation of carrying idlers and return rolls will greatly aid with the belt tracking properly. Indeed, if these items are not installed correctly, it will be almost impossible to make the belt track. In some cases, improper installation may cause permanent damage to the belt.

The carrying idlers provided with your “FC” belt conveyor are either three-roll troughing or single roll flat idlers. Roll diameter is either 4” or 5”. Return idlers are single roll flat type. All of the idlers are manufactured to CEMA standards. The holes in the conveyor frame have been made to accept both CEMA B and CEMA C idlers. You may have received some carrying idlers with rubber discs. These are to be installed at the loading point to absorb shock. Standard spacing for troughed carrying idlers is 4’C/C with closer spacing at loading points specified for some applications. You may reference the text on the packing slip that provides specifications for your conveyor for the idler spacing. Return rolls are normally spaced 10’C/C. Training idlers, if provided, should be spaced 75’-100’C/C. All installation hardware, including two “drop” brackets for each return roll, has been included with your conveyor. See Figure F for an assembly diagram.

**Figure F:**

Typical Idler and Return Roll Assembly



Troughing type carrying idlers are manufactured as standard with outside rolls on 20°, 35°, and 45° angles. If your conveyor has 35° idlers, we have also included some 20° idlers which are to be used as transitional units from the head and tail pulleys. If your conveyor has 45° idlers, you will have received some 20° and 35° idlers to be installed in the same manner. The purpose is to provide a gradual supported increase in trough from the flat pulley surface.

The objective in installing idlers is to achieve settings which are square and in line with the conveyor centerline and parallel to each other (see Figure D).

Idlers should be set from a previously squared and level terminal pulley, preferably the head pulley. A suggested method is to use a tight wire or line on the conveyor centerline or offset to it, stretched to form a “true” centerline reference. This line should be at least 100’ long for conveyors over 100’, and referenced to the “squared” starting pulley.

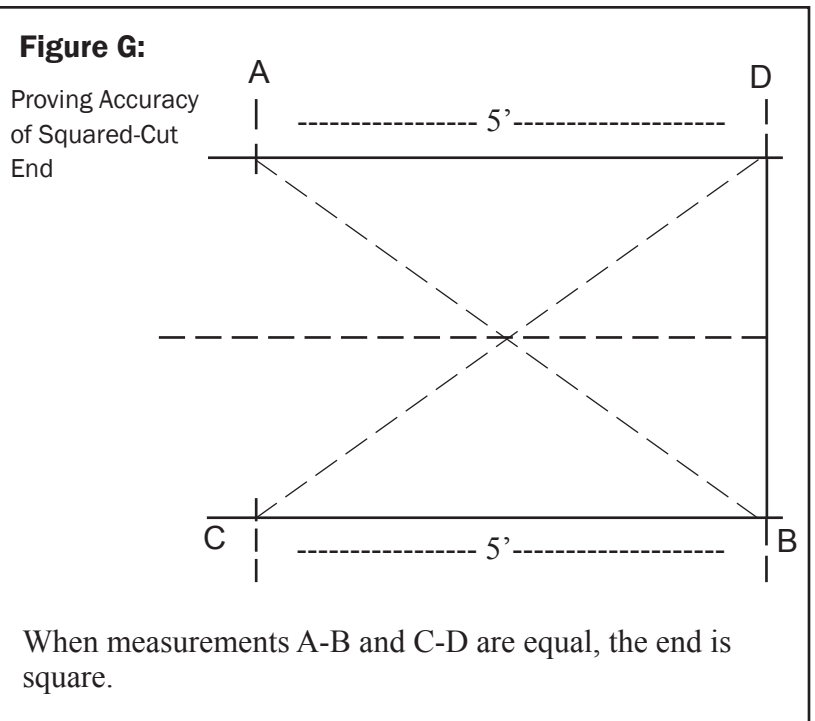
Install the idlers at design spacing and squared to the tight line. After a span of about 50’ has been filled with idlers, the line should be relocated so that there is 50’ of overlap on the first position. Repositioning of the tight line should continue until the entire conveyor length is filled with idlers.

## BELT INSTALLATION

Before beginning, read and understand the belt splice instructions included with the splice kit. It is of the utmost importance that the ends of the belt are cut square (see Figure G). Belts with outside covers of different thicknesses should be installed with the thinner cover to the inside. Make sure that cleated belts are installed in the proper direction to maximize material movement.

Adjust all take-up pulleys including the tail pulley and intermediate take-up, if included, so that they are positioned to take full advantage of their purpose after the belt is installed. Pull belt through conveyor frame and down, around, and back up intermediate take-up pulley, if provided, then continue through the conveyor frame and around the tail pulley back toward the head pulley. If your conveyor has a snubbing pulley located next to the head pulley, make sure that the belt goes over the top of this pulley. The snubbing pulley provides increased surface contact of the belt to the head pulley, thereby increasing head pulley traction. When measurements A-B and C-D are equal, the end is square.

Splice the belt following the instructions with the mechanical splices included with your conveyor.



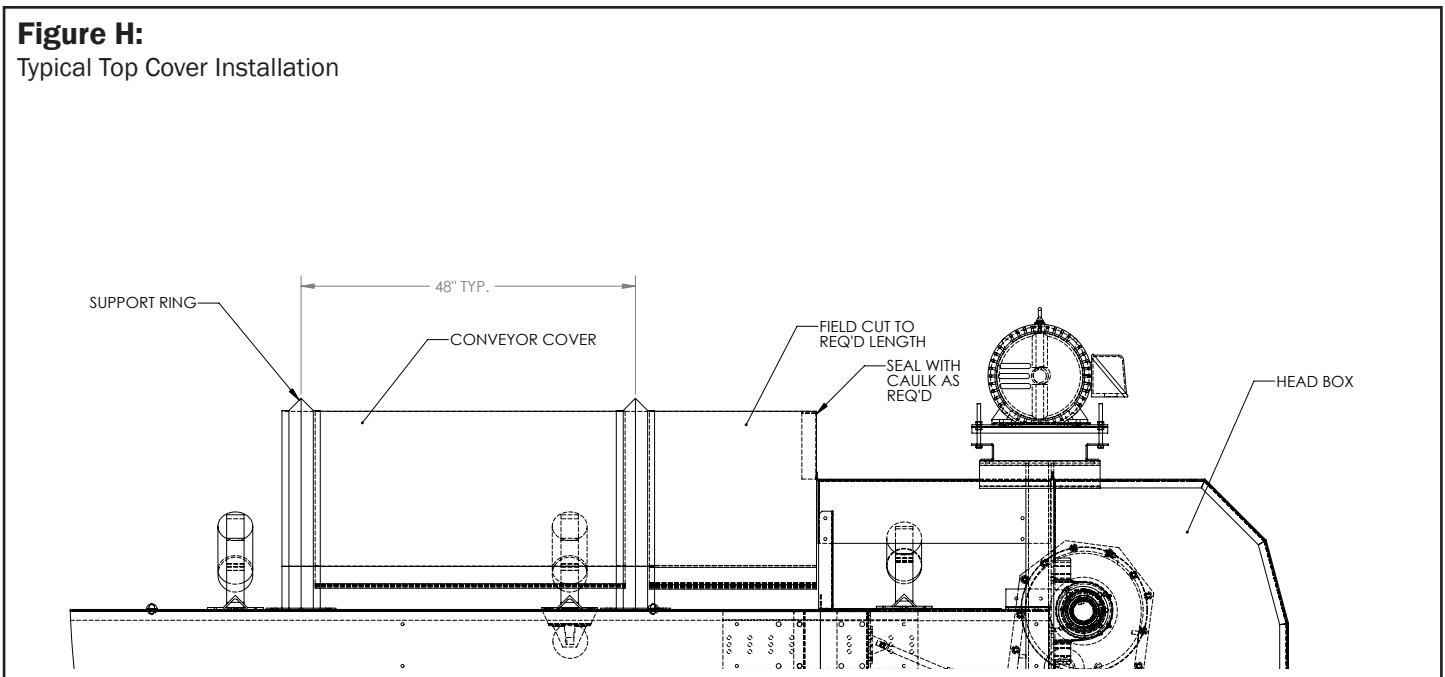
**NOTE:** Instead of using mechanical splices, you may have the belt splice vulcanized by an outside firm. Vulcanizing is a process that makes the splice by melting the two ends of the belt together, and is more common for conveyors that have a belt scraper installed.

## TOP COVER INSTALLATION

Top covers are an optional accessory for your “FC” conveyor, and installation instructions are included from the Original Equipment Manufacturer. Typically, these covers are a series of 4’ long units and hinged to open on one side. You may wish to install the covers in conjunction with the carrying idlers as typical idler spacing is 4’C/C. As these covers are designed solely to provide weather protection on the top of the belt and do not extend all the way down to the frame, wind skirting may also be installed for extra protection. Wind skirting is optional and also comes with installation instructions from the OEM.

Depending on the length of the conveyor, one of the covers may need to be shortened if the covers are to be installed the full length of the conveyor. Cover flashing may also need to be installed at each end of the conveyor. Cover flashing serves to cover the open areas that exist due to the differences in shape of the tail covers and head boxes with the half round covers. (See Figure H for further detail.)

**Figure H:**  
Typical Top Cover Installation



If suitable for the application, covers may be omitted where the conveyor is to be loaded. Otherwise, an opening will need to be field fabricated through the covers.

## LOAD SKIRTING INSTALLATION AND ADJUSTMENT

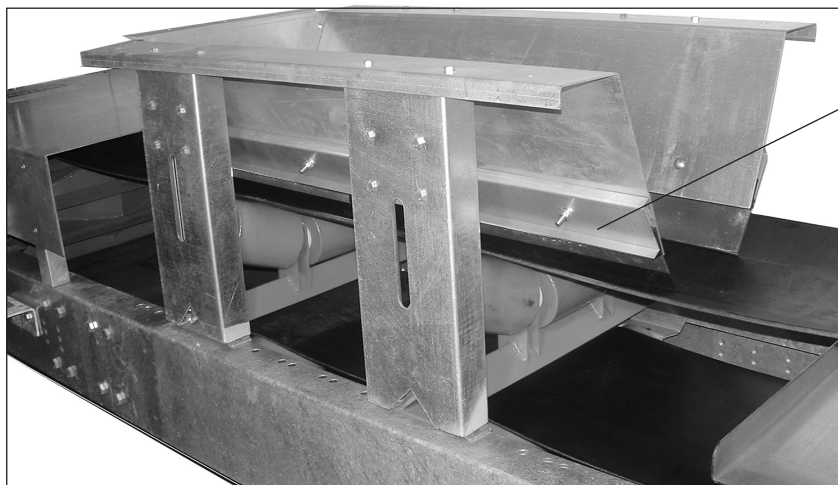
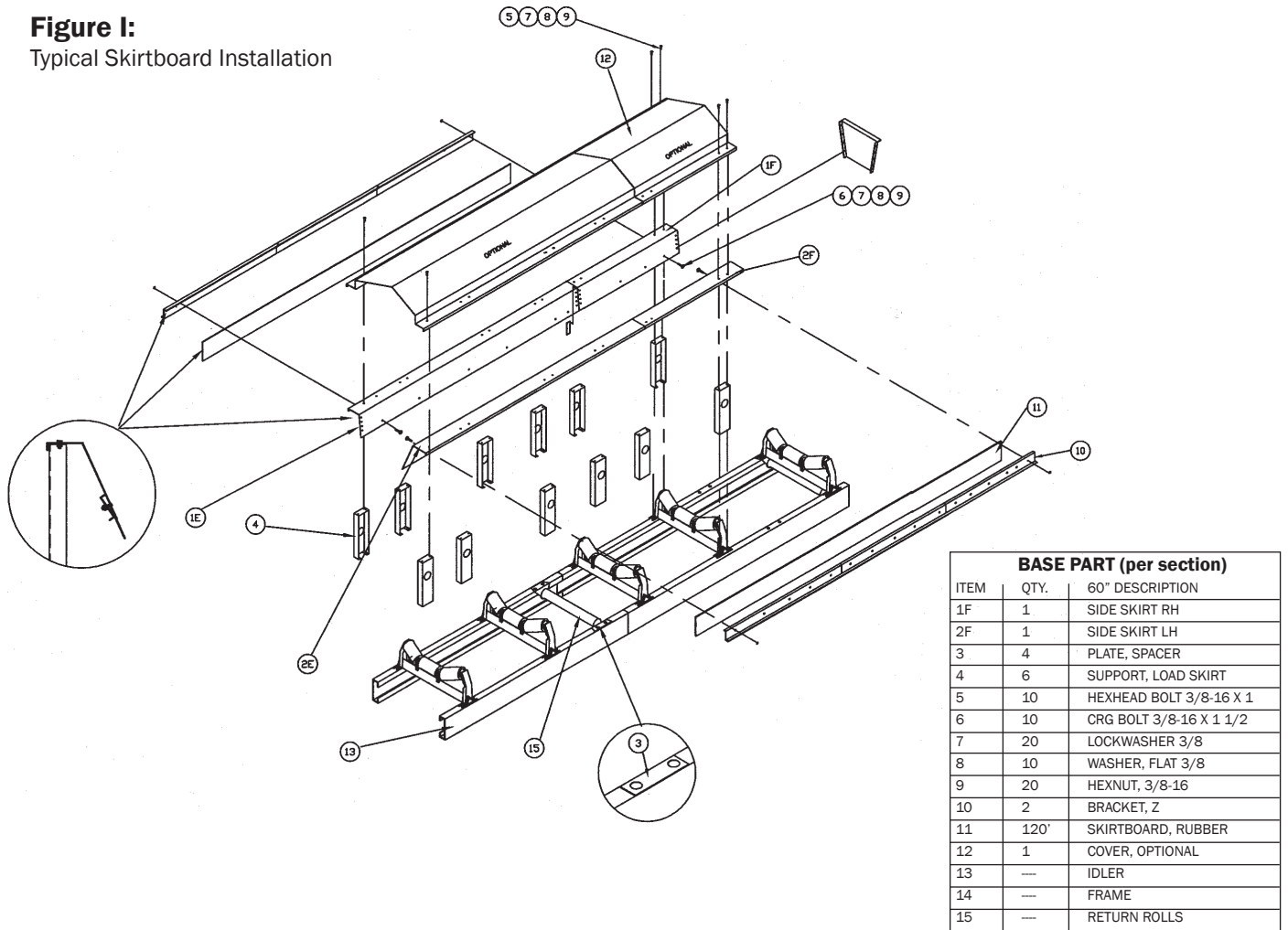
Load skirting is an optional accessory for your “FC” belt conveyor. Its primary function is to avoid spillage over the belt edges. It is often installed at load points to center the material on the belt and retain dust, but also may be the full length of the conveyor depending on the type of carrying idlers and application. “FC” load skirting is available in a variety of lengths from Sweet Manufacturing and ships as base units and extension units. Base units have a third side that extends across the belting to aid in keeping material from rolling backward in the opposite direction of belt travel. Our load skirting utilizes the idler mounting holes on the channel top for installation. To ensure that the skirt assembly is parallel with the belting, install plate spacers under the skirt supports that are not installed in conjunction with idlers as those that are will be 3/16” higher. See Figure I for further detail.

The skirtboard rubber seal is adjustable and replaceable. When properly adjusted, it should retain light contact with the belt, thus minimizing friction while retaining material within its boundaries. Hand pressure under the rubber should be adequate to flex the rubber. Excessive pressure will burn grooves in the belt cover and therefore must be avoided.

## LOAD SKIRTING (CONT.)

A slight gap between skirt rubber and the belting can be expected to occur as the belt is loaded. This gap cannot be totally eliminated, and excessive adjustment will cause accelerated wear.

**Figure 1:**  
Typical Skirtboard Installation

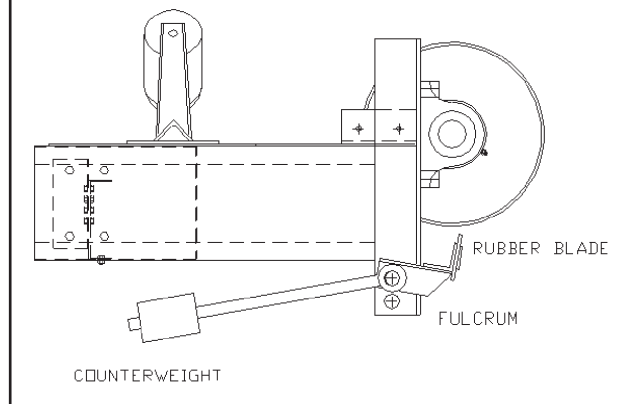


“Z” channel retains skirtboard rubber and is used for height adjustment.

## BELT SCRAPER ADJUSTMENT

A belt scraper is an optional accessory whose purpose is to clean the belt of material that may stick after the belting has passed the head pulley. The blade is a replaceable rubber piece that extends the width of the belt. The blade's pressure against the belt should be just enough to clean the material off. As with the skirtboard rubber, excessive pressure will cause accelerated wear to the belting and scraper. Pressure is controlled by the location of counterweights mounted with one each on two arms attached to a fulcrum. To adjust the weights, loosen the set screws and slide the weights away from the fulcrum for increased pressure and toward the fulcrum for decreased pressure (see Figure J). Fully retighten the set screws when adjustment is complete. Monitor the blade for excessive wear as a blade that is worn to the base will cause rips and tears in the belting.

**Figure J:**  
Typical Belt Scraper



## TRACKING THE BELT

“Tracking” or training the belt is the procedure required to make the belt run “true” when empty and loaded. It consists of a process of adjusting the rollers/idlers and manner of loading. Belt training is usually minimized if the following are double checked and corrected before beginning:

- The conveyor has been installed straight, level, and square.
- All pulleys and idlers are square with the conveyor centerline.
- Belt splices are correct and square.
- All rollers and pulleys rotate freely.
- All rollers and pulleys are clean.
- There are no defects in the belting itself.

NOTE: BELT TRACKING IS USUALLY BEST ACCOMPLISHED UNDER THE SUPERVISION OF ONE PERSON OR A QUALIFIED INDIVIDUAL, AND SHOULD FIRST BE PERFORMED WITH THE BELT RUNNING EMPTY.

**WARNING!** For safety reasons, before adjustments are made, the motor must be locked out / tagged out electrically in such a way so that it may not be restarted by anyone in the vicinity or remote of the conveyor! Failure to do so may result in personal injury!

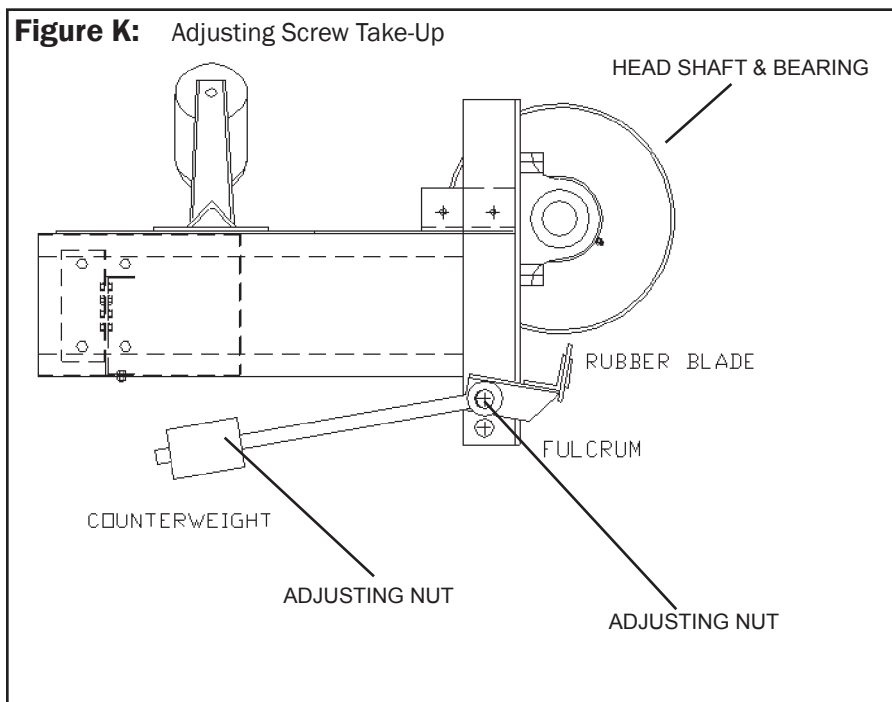
The first step in the operation of the belt is to properly tension the take-up mechanism(s). Your “FC” conveyor may be equipped with: (see Figure A):

- A manual screw type take-up at the tail only.
- Manual take-up screws in the tail and an intermediate section.
- Manual take-up screws on the tail and an automatic take-up with weight box in an intermediate section.

The purpose of the take-up is to: 1) establish and preferably maintain a pre-determined tension in the belt. 2) remove the accumulation of slack in the belt at startup or during momentary overloads; 3) provide sufficient reserve belt length to enable re-splicing if necessary; and 4) provide a means by which to square up the tail pulley with the conveyor centerline.

Screw take-ups should be adjusted so that the pulleys they control are square with the centerline of the conveyor and there is just enough tension applied to the belt so that there is no slippage at the drive pulley and the belting conforms to pulley crowns. Slippage will cause friction between the pulley lagging and belting resulting in permanent damage to both. Too much tension may cause premature wear to all conveyor components, including the belt and bearings.

The typical screw take-up consists of a bearing plate mounted on a screw with a nut assembly on each end. The nut assembly may be a single nut with a set screw or a standard nut with a secondary standard nut on the outside of the assembly as a locking nut. Adjustments are made on the end that one wishes the pulley shaft to travel toward (see Figure K). Start by loosening the set screw or locking nut. Turn adjusting nut clockwise until desired position is obtained. Retighten set screw or locking nut. It may be necessary to back off the nut on the opposite end.

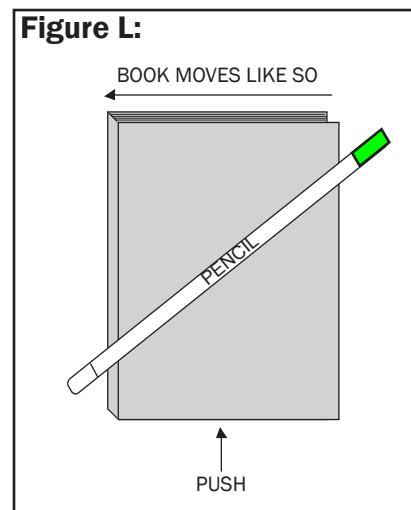


A gravity take-up should be allowed to hang freely and checked to make sure that it moves freely and the take-up pulley is square with the centerline of the conveyor.

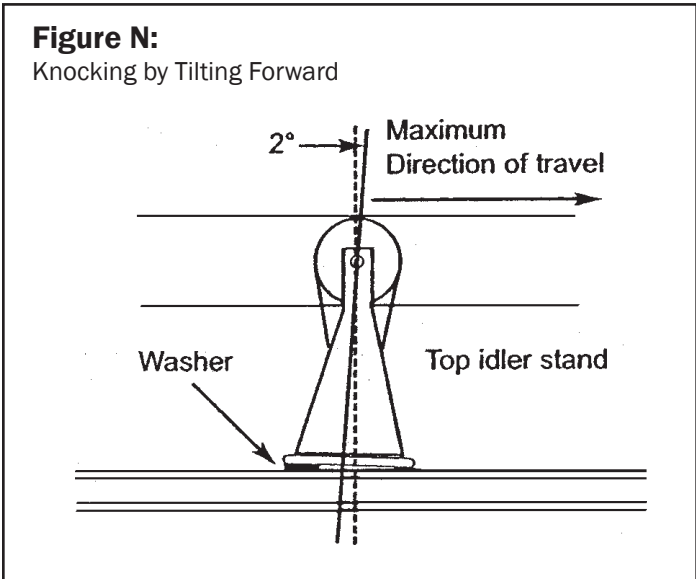
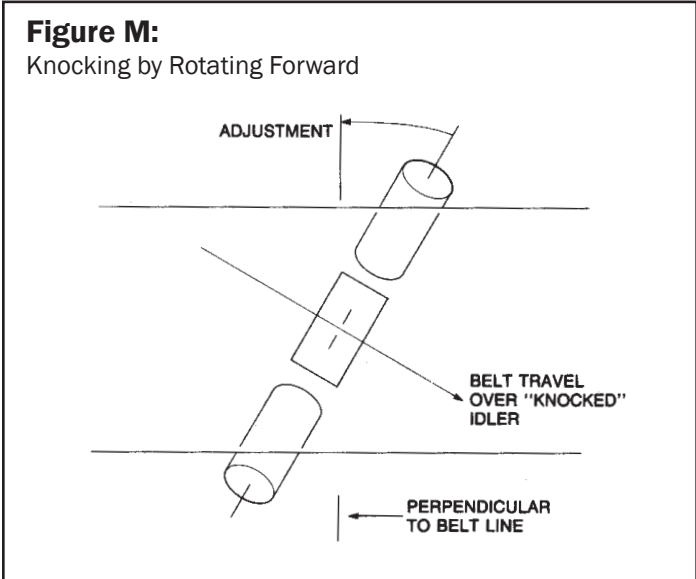
Normally, when a new belt is installed, the initial starting position for the gravity take-up is at a point about 25% along its line of travel, leaving about 75% of the take-up area available for elongation. The weight box should be loaded with an amount of sand, steel slugs, or other heavy material to achieve the proper weight. Consult the factory for the proper amount of weight.

The next step is to actually track or train the belt. The belt should be “inched” along at first and watched for corrections that should be made because the belt is in danger of being damaged. After these corrections are made, one should start on the return side just after the head pulley and make any necessary corrections while working toward the tail pulley, and then on the carrying side until work has completed back at the head pulley.

The basic principal in tracking a belt is simply “THE BELT MOVES TOWARD THE END OF THE ROLLER/IDLER THAT IT CONTACTS FIRST.” You may demonstrate this for yourself by laying a round pencil on a flat surface in a skewed orientation. Next lay a book on top of the pencil and use one finger to push the book in a line directly away. The book will move to the left or right depending on which end of the pencil it comes into contact with first. (See Figure L.)



Making corrections by the shifting of the axis of the idlers/rollers with respect to the path of the belt is commonly known as “knocking idlers.” Knocking may be by one of two methods. One method is to move forward (in the direction of belt travel) that end of the roller/idler to which the belt runs (see Figure M). Idlers shifted ahead in this manner should not be knocked ahead more than  $\frac{1}{4}$ ”. The other method is to use washers to shim under the idler end, thereby tilting forward (in the direction of belt travel) that end of the roller/idler to which the belt runs (see Figure N). Idlers should not be tilted forward more than two degrees. Knocking of idlers should be spread ahead in the area preceding the point in which the belt runs off. Compensation by “knocking” may have adverse effects on reversible belts. Therefore, it should be avoided on reversing belts. Instead, extreme care should be taken with initial alignment.



A belt might be made to run straight with half of the idlers knocked one way and half the other, but this increases rolling friction between the belt and rollers resulting in premature wear. For this reason, idlers should be set initially square with respect to the path of the belt in order to minimize knocking. IF THE BELT IS OVER-CORRECTED BY KNOCKING IDLERS, READJUST THE KNOCKED IDLERS AND DO NOT KNOCK MORE IDLERS.

If all corrective measures have been applied, and a particular section of belt continues to run to one side along the entire conveyor length, it may be concluded that the belt may be cambered at the point or may have a splice that is not properly squared. The only corrective measure for a splice out of square is to re-splice. On the other hand, slight camber in a belt may remove itself after an adequate run-in period under load.

After the belt is trained while empty, load may be added. If the belt fails to run loaded, the loading chute or method should be corrected by repositioning or adding baffles to direct the force of the load to not adjust belt position. Ideal loading is: uniform, centered on the belt and directed toward the direction of belt travel. Also, all scrapers, plows and skirt seals should be adjusted for uniform pressure against the belt.

The belt may be considered properly aligned if after eight hours of continuous operation under design load, the belt edges remain within the edges of the pulley face and/or within confines of the carrying idlers and rollers. Disc return idlers are exempt from this rule as the standard roll faces are approximately the same as the belt width. In this case, the belt should track within  $1\frac{1}{2}$ ” of the conveyor centerline. Idler brackets should not restrict this movement.

Carrying and return training idlers should be considered in correcting belt alignment problems before rejecting the belting.

After the belt is run-in, an electrician should take readings on voltage, amperes or wattage. This information can be used for future comparison and a quick trouble check. Higher readings in the future may indicate excessive drag due to belt misalignment or frozen idler rolls.

## DRIVE ASSEMBLY INSTALLATION

The typical drive assembly includes a shaft-mount speed reducer with torque-arm, motor mount, sheaves with bushings, V-belts, and belt guard. Also provided is a torque-arm mounting channel which bolts to the conveyor frame just behind the head section. See Figure O. The standard drive assembly is provided to mount on the left hand side of the conveyor as viewed from the tail section. The drive assembly may be mounted on the right side by remounting the head pulley.

Proper installation of the speed reducer is essential to provide efficient and economical operation of the drive assembly and to prevent damage. Some drive components (reducer, motor mount, backstop) include additional instruction sheets. Locate these when opening packages. The Dodge TXT torque-arm ships in the same box with the speed reducer. Models TAll ship separately.

1. Make sure the driven shaft, on which the reducer is to be mounted, is clean and free from burrs. Remove any protective coating on the drive shaft and in the hollow bore of the reducer. Coatings may be removed by using a non-flammable solvent.
2. Inspect and locate machine key in drive shaft.

**WARNING!** For safe handling of the reducer, use only proper lifting equipment having ample load carrying capacity. Hand lifting is dangerous. It is good practice to avoid excessive overhung load on both the drive shaft and the input shaft of the speed reducer by mounting the reducer as close as possible to bearing support, and V-belt sheaves as close as possible to the reducer and motor. Do not force reducer when mounting on shaft, as bearings may be damaged.

3. Install motor mount per manufacturer's instructions.
4. Slide the reducer assembly (reducer and motor mount) onto the head shaft.
5. When reducer has been properly positioned, secure bushings or set screws against drive shaft. Stake key-seat in driven shaft to prevent from moving. See bushing instructions for proper torque.
6. Install the torque arm on the torque-arm channel on the first frame section. (See Figure O.)

**CAUTION:** Speed reducers are shipped without oil. Be sure to lubricate properly before operation. Refer to nameplate and manufacturer's service manual for lubrication instructions. Too much oil may cause leakage or overheating. Too little oil may cause overheating or damage to internal parts. Do not use: lubricants of the EP (extreme pressure) type, those containing slippery additives, or heavy weight (90-140 wt.) gear lube.

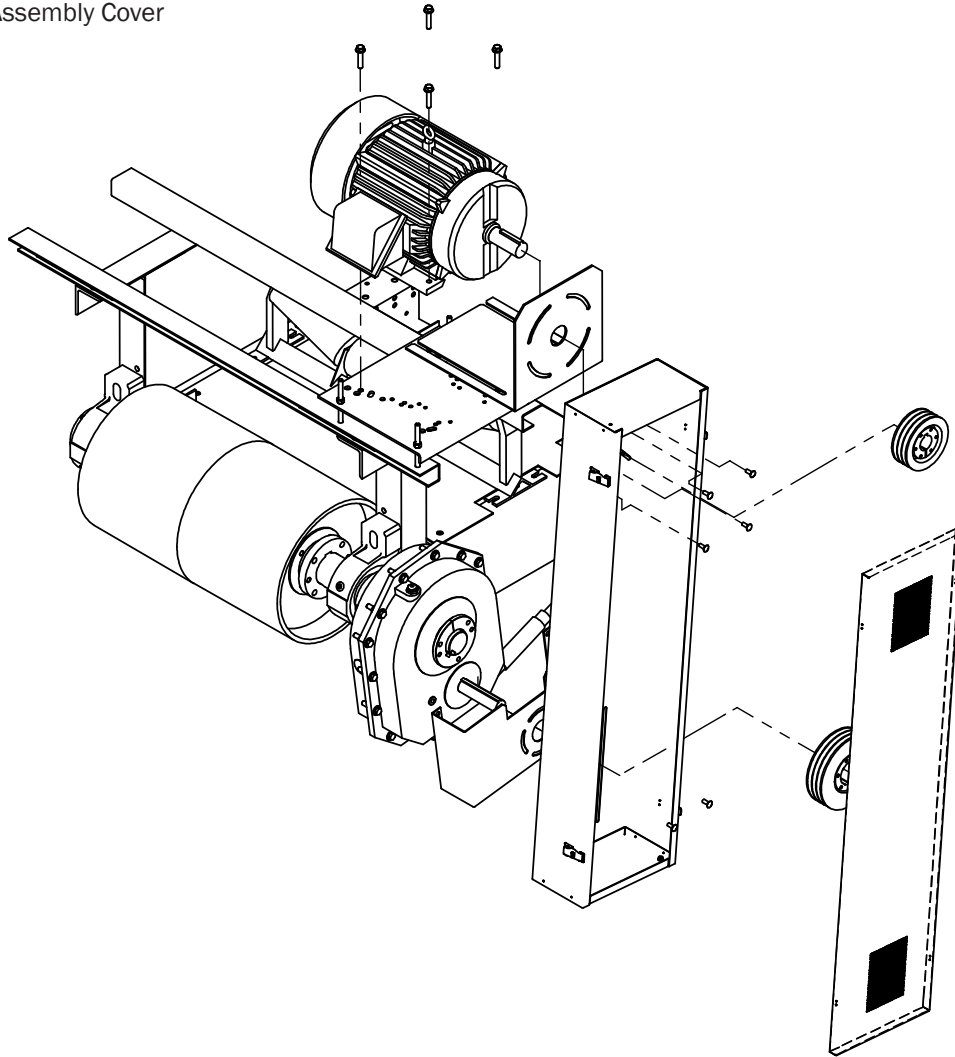
7. Install the rear or backside of drive cover and mounting brackets, following the instructions provided with the drive assembly hardware and Figure O. Mount motor when mounting the drive cover motor-end bracket.
8. Install proper sheaves on motor and reducer. Check packing list and sheave cartons for markings and identification. Interchanging sheaves will result in improper belt speed and unsatisfactory operation. Sheaves should be mounted to motor and reducer as close as possible to prevent overhung load. Align sheaves by using a straight edge across the outer faces of both sheaves. Be sure keys are properly installed and tighten set-screws firmly.

**CAUTION:** Keep breather holes in speed reducer clear at all times to prevent pressure buildup.

**WARNING!:** NEVER remove breather plug or oil level plug while drive assembly is in operation, or personal injury may result. Check these only when drive is not operating.

**Figure 0:**

Mounting of Torque Arm  
Installation of Drive Assembly Cover



## ELECTRICAL EQUIPMENT

Emergency stop switches, safety shut-off switches, zero speed switches, overflow and overload devices and other electrical controls are all necessary considerations for a safe conveyor installation (controls and switches are usually furnished by conveyor user.)

# CONVEYOR BELT TROUBLE-SHOOTING GUIDE

PROBLEM	PROBABLE CAUSES (most likely to least)						
Belt runs off at tail pulley .....	7	14	15	17	20	-	-
Belt runs off at all points of the line .....	25	17	14	20	3	16	-
One belt section runs off at all pts of the line	2						
Belt runs off at head pulley.....	14	22	20	16	-	-	-
Belt runs to one side throughout entire length at specific idlers.....	14	16	20	-	-	-	-
Belt slips .....	19	7	20	15	22	-	-
Belt slips on starting.....	19	7	22	10	-	-	-
Excessive belt stretch.....	13	10	20	6	8	9	-
Belt breaks at or behind fasteners, or fasteners tear loose.....	2	23	13	22	21	10	6
Vulcanized splice separation .....	23	10	20	14	19	2	-
Excessive top cover wear; gouges, rips, ruptures and tears .....	12	24	17	15	19	5	-

PROBLEM	PROBABLE CAUSES (most likely to least)						
Excessive bottom cover wear .....	20	15	5	19	21	22	9
Excessive edge wear, broken edges .....	25	3	17	9	1	20	2
Cover swells in spots of streaks.....	9	-	-1	-	-	-	-
Belt hardens or cracks.....	9	23	22	-	-	-	-
Cover checked or brittle.....	9	-	-	-	-	-	-
Longitudinal grooving or cracking of top cover.....	26	15	20	12	-	-	-
Longitudinal grooving or cracking of bottom cover .....	15	20	22	-	-	-	-
Fabric decay, carcass cracks, gouges, ruptures, soft spots.....	12	21	5	10	9	-	-
Ply separation.....	13	23	11	9	4	-	-

## REMEDIES FOR COMMON CONVEYOR PROBLEMS

- BELT BOWED:** Avoid telescoping belt rolls or storing them in damp locations. A new belt should be straightened out when "broken in" or complete system must be reinspected.
- BELT IMPROPERLY SPLICED OR WRONG FASTENERS:** Use fasteners recommended by the manufacturer. Retighten after running for a short while. If improperly spliced, remove old splice and resplice. Set up regular inspection schedule.
- BELT STRAINED (or elongated on one side):** Allow enough time for new belt to "break in." If belt does not break in properly or is not new, remove strained section and splice in a new piece.
- BELT SPEED TOO FAST:** Reduce speed.
- BREAKER STRIP MISSING OR INADEQUATE:** When service is lost, install belt with proper breaker setup.
- COUNTERWEIGHT TOO HEAVY:** Recalculate weight and adjust counterweight accordingly. Reduce take-up tension to point of slippage; retighten slightly.
- COUNTERWEIGHT TOO LIGHT:** Recalculate weight and adjust counterweight or screw take-up accordingly.
- DIFFERENTIAL SPEED WRONG ON DUAL PULLEYS:** Make necessary adjustment and observe operation closely.
- DAMAGE BY ACIDS, CHEMICALS OR OILS, OR DETERIORATION BY ABRASIVES, HEAT OR MILDEW:** Use belt designed for specific condition. For abrasive materials working into cuts and between plies, repair with cold patch or with permanent repair patch. Seal metal fasteners or replace with vulcanized step splice. Enclose belt line for protection against rain, snow or sun. Do not over-lubricate idlers.
- DRIVE UNDERBELTED:** Recalculate maximum belt tensions and select correct belt. If line is over extended, consider using two-flight system with transfer point. If carcass is not rigid enough for load, install belt with proper flexibility when service is lost.
- EDGE WORN OR BROKEN (permitting moisture penetration and belt shrinkage on one side):** Repair belt edge. Remove badly worn or out-of-square section and splice in new piece of belt.
- EXCESSIVE IMPACT OF MATERIAL ON BELT OR FASTENERS:** Use correctly designed chutes and baffles. Make vulcanized spllices. Install impact idlers. Where possible, load fines first. Where material is trapped under skirts, adjust skirtboards to minimum clearance or install cushioning idlers to hold belt against skirts.
- EXCESSIVE TENSION:** Recalculate and adjust tension. Use vulcanized splice within recommended limits.
- IDLER OR PULLEY SHAFT OUT OF SQUARE WITH CENTERLINE OF CONVEYOR:** Realign and install limit switches for greater safety. Check conveyor manufacturer's manual or guide.
- IDLERS FROZEN:** Free the idlers; then lubricate, but don't over do it.
- IMPROPERLY PLACED IDLERS:** Relocate idlers or insert additional idlers spaced to support belt.
- IMPROPER LOADING:** Feed should be in direction of belt travel and at belt speed, centered on belt. Control flow with feeders, chutes and skirtboards.
- IMPROPER STORAGE OR HANDLING:** Contact your representative for storage and handling tips.
- INSUFFICIENT TRACTION BETWEEN BELT AND PULLEY:** Increase wrap with snub pulleys. Lag drive pulley. In wet conditions, use grooved lagging. Install correct cleaning devices on belt and centrifugal switch for safety.
- MATERIAL BUILDUP (on pulleys and idlers):** Remove accumulation and install cleaning devices, scrapers and inverted "V" decking.
- MATERIAL FALLING BETWEEN BELT AND PULLEY:** Use skirtboards properly. Remove accumulation.
- PULLEY LAGGING WORN:** Replace worn pulley lagging. Use grooved lagging for wet conditions. Repair loose bolts protruding.
- PULLEYS TOO SMALL:** Go to a larger diameter.
- RELATIVE LOADING VELOCITY TOO HIGH OR TOO LOW:** Adjust chutes or belt speed. Consider use of impact idlers. Observe operation closely.
- SIDE LOADING:** Load in direction of belt travel.
- SKIRTS INCORRECTLY PLACED:** Install skirtboards so that they do not rub against belt.

## MAINTENANCE

**WARNING!: Before performing any maintenance, lubrication, or inspection, the motor must be locked out/tagged out electrically in such a way so that it may not be restarted by anyone in the vicinity or remote of the conveyor! Failure to do so may result in personal injury!**

**WARNING!: NEVER operate equipment with any safety guards removed! Personal injury may result!**

**WARNING!: NEVER touch or place body parts near moving conveyor and conveyor drive assembly parts! Personal injury may result!**

**WARNING!: NEVER wear loose fitting clothing near moving conveyor and conveyor drive assembly parts! Personal injury may result!**

A good maintenance program is essential to the operation and performance of any equipment and may prevent potential costly repairs. The frequency of maintenance activity will depend upon frequency of use, and severity of conditions (dusty/dirty environment, material conveyed, exposure to weather etc.). While the following are general guidelines, and maintenance intervals may be modified depending upon the installation and material conveyed, the #1 rule is...

### **MAINTENANCE AND OPERATIONAL PERSONNEL SHOULD ALWAYS COMPLY WITH SAFETY PROCEDURES AND A SAFETY PROGRAM**

After approximately ten (10) hours of initial use:

- Retighten all set screws on the bearings for the head and tail shafts, as well as the bushings on the drive sheaves and speed reducer.
- Check the conveyor belt tension and V-belt tension in the drive assembly. Check skirt board rubber and belt scraper adjustment.

Depending upon type of belting and length of conveyor, the conveyor belt itself may be the single most costly item associated with the conveyor. Therefore, maintenance of this item should be of prime concern and will be minimized if all other items are maintained properly. Inspect the belt and belt splice daily for rips and tears and periodically inspect the belt tracking throughout the work day.

**Every forty (40) hours, inspect or check the following:**

- Set-screw tightness in bearings
- Conveyor belt tension
- Drive assembly V-belt tension
- Drive pulley rubber lagging
- Skirt board rubber adjustment
- Belt scraper adjustment.
- Belt for rips, tears, and wear
- Check all safety labels. When they become illegible, contact Sweet Manufacturing Company's sales department to reorder at 800-334-7254 or sales@sweetmfg.com.

**The shaft mount speed reducer** is lubricated by an oil reservoir in the housing. Refer to nameplate and manufacturer's service manual for lubrication instruction and oil change periods. Too much oil may cause leakage or overheating. Too little oil may cause overheating or damage to internal parts. Do not use lubricants of the EP (extreme pressure) type, those containing slippery additives, or heavy weight (90-140 wt.) gear lube. Check shaft seals for leakage and shaft bushings for tightness when performing lubrication maintenance.

**The bearings on the head, tail, and other pulley shafts** are factory lubricated with a #2 lithium grease which is suitable for most applications. For applications with 8-16 Hours/Day operation, the bearings should be re-greased approximately every 12 weeks. However, the interval between lubrications is best determined by actual experience.

More frequent greasing is required for extreme environments including but not limited to:

- Conveyor belt tension
- Excessive moisture or weather exposure, extreme dust, and corrosive environment.

For these installations, more frequent lubrication up to daily regreasing may be necessary, and a reputable lubricant manufacturer may be consulted. **BEFORE GREASING, MAKE SURE THAT THE GREASE ZERK IS CLEAN.** A full bearing with slight leakage through the seals is the best protection against wear due to contaminants.

**Maintenance of the carrying and return idlers is of prime concern as failure of just one of these may cause irreversible damage to the conveyor belt. A frozen idler may be worn quickly to form a razor edge that may cut or tear the belt. All idlers should be inspected every forty (40) hours of operation. All idlers arrive factory lubricated. If the idlers are regreasable, they should be lubricated approximately every 800 hours of operation. Once again, frequency may be increased or decreased depending upon the application and environment. Use Shell Retinax HD grease or an equivalent. GREASE SHOULD BE INSERTED THROUGH ZERKS THAT HAVE BEEN CLEANED UNTIL IT IS NOTICED THAT THE GREASE IS STARTING TO DISCHARGE FROM THE PRESSURE RELIEF FITTING. DO NOT OVER GREASE AND DO NOT GREASE WHEN TEMPERATURES ARE BELOW FREEZING. BELOW FREEZING TEMPERATURE WILL NOT ALLOW THE GREASE TO TRAVEL PROPERLY AND THOROUGHLY THROUGHOUT THE GREASE TUBES.**

## SAFETY

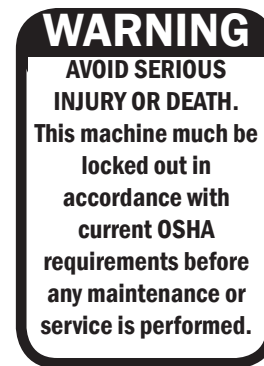
### WARNING!

Make inspections when all operations are stopped and lockout and tagout procedures are completed. The importance of exercising EXTREME CARE when erecting and maintaining a Flite-Veyor® cannot be over emphasized. Working at heights reached by even the smallest installations can be hazardous, unless safety precautions are taken. In any case, BE CAREFUL - DO NOT HURRY - AND REMEMBER WHERE YOU ARE AT ALL TIMES.

Your conveyor has been designed to comply with CEMA safety standards. These safety standards can be obtained through the American Society of Mechanical Engineers as ASME B20 (1993).

Operating and maintenance personnel should be thoroughly trained in safe operating procedures, recognition of possible hazards and maintenance of a safe area around the conveyor.

Shown at right is an example of the warning sign attached to conveyor covers: (Refer to pg. 16 under "Every forty hours" for instructions to reorders safety labels.)



The following safety guidelines should be followed:

THESE ARE GUIDELINES ONLY AND COMPLIANCE WITH SAFETY STANDARDS - LOCAL, STATE AND FEDERAL, INCLUDING OSHA - IS THE RESPONSIBILITY OF THE USER.

- 1) Maintain a safety program for all operating personnel.
- 2) All operating personnel should be advised of the location of all emergency controls and devices.
- 3) Good lighting, housekeeping and maintenance contribute to a safe work area.
- 4) Frequent inspections should be made on all conveyor equipment and all safety devices should be in position and in proper working order.
- 5) Conduct a pre-startup safety check of all conveyor equipment to determine that the machinery and area are safe for operation and that guards and warning devices are in place.
- 6) There should be absolutely NO reckless actions or horseplay in the vicinity of conveyors. Most accidents are caused by lack of proper safety training, carelessness, horseplay and lack of awareness of possible hazards.
- 7) Conveyors should not be operated unless the conveyor housing completely encloses the moving elements and power transmission guards are in place. If the conveyor cover or housing is to be opened, the motor must be locked out / tagged out electrically in such a way that it cannot be restarted by anyone in the vicinity or remote from the conveyor. Overflow cover sections or doors should not be opened while the conveyor is operating.
- 8) If, because of its application, the conveyor must have open housing, then the entire conveyor must be separated from personnel areas by a fence and warning signs posted.
- 9) Open feed hoppers or spouts for shovel, front end loaders or their manual or mechanical loading must incorporate a grating. If the characteristics of the material being handled are such that a grating cannot be used, then the exposed portion of the conveyor must be guarded by a fence and warning signs posted.
- 10) DO NOT walk or stand on the conveyor cover, grating or power transmission guards.





**Our Mission**

***To provide innovative quality solutions that create  
an extraordinary customer experience.***