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Lineshaft Conveyor



INSTALLATION, MAINTENANCE AND PARTS MANUAL

For additional copies of this manual, please visit our website at
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Go to Info Center, Select the Maintenance Manual tab
and select the manual for your model conveyor.

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SERIAL NO.



(A) Seller warrants that the material in and the workmanship on the equipment manufactured by TITAN will be free from defects at time of shipment. If during the first year from the date of shipment, the Buyer establishes to the seller's satisfaction that any part or parts manufactured by TITAN were defective at the time of shipment, TITAN will, at its own expense, repair or replace (but not install) replacement parts. For a time purpose of this warranty, one year will constitute 2080 hours of operation based on an 8 hour day. Sellers liability under this warranty is limited to replacement parts only and the seller will make no allowance for corrective work done unless agreed to by the seller in writing. Charges for correction of defects by others will not be acceptable, unless so authorized in writing, prior to the work being performed, by an officer of the company. Damage caused by deterioration due to extraordinary wear and tear (including, but not in limitation, use said equipment to handle products of a size, weight and shape or at speeds or methods which differ from information originally provided), chemical action, wear caused by the presence of abrasive materials or by improper maintenance or lubrication or improper storage prior to installation, shall not constitute defects. Failure to install equipment properly shall not constitute defects. Warranty does not cover consumable items.

(B) Seller has made no representation, warranties, or guarantees, expressed or implied, not expressly set forth on above paragraph. Seller shall not be liable hereunder for any consequential damages included but not in limitation, damages which may arise from loss of anticipated profits or production or from increased cost of operation or spoilage of material.

(C) The components used in manufacture of said equipment which were manufactured by others will carry such manufacturers' customary warranty, which seller will obtain for buyer upon request.

(D) No representative of TITAN has been conferred with any authority to waive, alter, vary or add to the terms of warranty state herein, without prior authorization in writing executed by an officer of the company.

(E) The foregoing is in lieu of any and all other warranties, expressed or implied, or those extending beyond the description of the product.

TITAN LINESHAFT MANUAL

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Safety

The Safety alert symbol is used with the signal words

 **DANGER**,  **WARNING** and  **CAUTION** to alert you to safety messages.

They are used in safety decals on the unit and with proper operation and procedures in this manual. They alert you to the existence and relative degree of hazards.

Understand the safety message. It contains important information about personal safety on or near the conveyor.



POTENTIALLY HAZARDOUS SITUATION which if not avoided, could result in death or serious injury.



POTENTIALLY HAZARDOUS SITUATION which if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.



POTENTIALLY DESTRUCTIVE SITUATION which if not avoided, may result in damage or reduce the longevity of the equipment.

Safety Decals

ALWAYS replace missing or damaged Safety Decals.

Operational Safety



Keep Hands, feet, hair and loose clothing **away** when conveyor is running



NEVER climb, sit, walk or ride on conveyor



ALWAYS lock out power before servicing to avoid electrical shock.



ALWAYS keep hair and loose clothing away.



ALWAYS keep hands away from conveyor while moving.



Never run conveyor without guards in place.



WARNING TO PREVENT SERIOUS INJURY

NEVER Start Conveyor until Personnel are Clear
NEVER Run Conveyor with Guard Off
NEVER Attempt Maintenance or Repair While Conveyor is Running
NEVER Place Hands by Belt Pulleys or Sprockets While Conveyor is Running
NEVER Allow Personnel to Rest or Walk on Conveyor
NEVER Wear Loose Fitting Clothing, Gloves, Rings, Etc., Which Could Get Caught in Running Conveyor
IT IS THE EMPLOYER'S RESPONSIBILITY TO IMPLEMENT THE ABOVE AND TO COMPLY WITH O.S.H.A. REQUIREMENTS.
This Warning Label Must Not be Removed

- Your Lineshaft Conveyor (LSR) is motor powered and can be stopped only by turning off power to the motor. As with all powered machinery, the drive and driven sprockets, chains, line-shafts, universal joints and pneumatically actuated devices present the danger of entangling hair, hands, fingers, jewelry or clothing. We have installed guards or provided guards to be installed to prevent contact with these components. We have also installed warning labels to identify the hazard to your personnel. After maintenance, REPLACE the guards immediately and keep the warning labels clean and clear of any obstructions. It is equally important to instruct your personnel in the proper use of conveyor. Inform them of the potential hazards involved in its use. Establish work procedures and access areas which do not permit any part of their person to be under the conveyor. Require that caps or hair nets be worn and prohibit the wearing of loose clothing or jewelry when working at or near the conveyor.
- Before working on a unit, protect yourself from unexpected starts by locking or tagging the control panel or disconnect switch that applies power to the unit.
- Make sure personnel are clear of the system before starting.
- Maintain enough clearance on each side of the unit for safe adjustment and maintenance of components.
- Provide crossovers or powered gates at sufficient intervals to eliminate the temptation to climb over or under an operating unit.
- Remove the coupler sprocket at the end of the line.

INTRODUCTION

The management and employees of Titan Conveyors thank you for specifying Titan equipment. This manual will give you the basic information to install and maintain your equipment. If special circumstances or questions come up call Titan at 920-982-6600.



I. RECEIVING & UNPACKING

LSR units are shipped in a series of subassemblies. These subassemblies are packaged to ensure against damage in shipment.

LSR beds thru 22" are always shipped with rollers assembled in frame. Wider frames may necessitate having rollers shipped separately.

TAKE CARE DURING THE REMOVAL OF EQUIPMENT FROM THE CARRIER.



Remove small items and boxes first. Pull and lift only on the skid, not on the frame, crossmember, or any part of the equipment. Be sure the skid is free of other materials which may be on top or against the side of the skid to be removed.

Upon delivery of your Titan conveyor, check the packing slip or bill of lading accompanying the unit. If any components are missing, contact Titan IMMEDIATELY with a description of the missing components along with the conveyor serial number(s). The serial number is found on the serial plate normally positioned by the drive.

Check the unit(s) over carefully upon arrival for damage. If you find any damage note it on the bill of lading. **YOU MUST** also file a claim **IMMEDIATELY** with the carrier.

Return Goods Authorization Policy

Titan Conveyors has a **RETURN GOODS AUTHORIZATION** Procedure for **all** returned items. With this procedure, we are able to streamline our process and expedite your return.

This will require you to call a Titan salesperson prior to your sending back the item to get a RGA number and receive instructions on how to return the item. Other information needed at this time would be your original purchase order number, Titan serial number, job number or invoice number. This will give our salesperson the pertinent information needed for tracking your part or component. After receiving your RGA number, you will have ten working days to return the item to us for processing. All returned goods must have this RGA number clearly marked on the outside of the box or crate and all paperwork pertaining to the return. Any return without a RGA number, will be refused and returned to you at your cost. Anytime you want to inquire about your return, please reference the Titan RGA number.

INVENTORY AND IDENTIFICATION OF PARTS

Take an inventory of primary subassemblies and parts. The illustrations in this manual will assist you with your inventory. You must have all frames and supports for a particular unit before starting to install that unit. It is cost effective to identify parts before they are needed for assembly. Small items like nuts and bolts are not practical to inventory and are easily obtained if necessary. Loose parts are boxed and shipped separately. The box may include the following items for LSR.

TYPICAL LOOSE PARTS

ITEM	USE	ILLUSTRATION
Connectors and devices	Per Application	
Cross Pipe	Ceiling Hanger	Page 13
Electrical Components	Per Application	
Floor Support	Line-shaft coupling	Page 10
Knee Brace	Mounting conveyor	Page 11
Siderail Arm	Adjustable Channel G.R.	Page 28
Siderail Clamps	Adjustable Channel G.R.	Page 28
Hardware	Per Application	
Spacer Channel	Ceiling Hanger	Page 13
Special Mounts	Per Application	
"V" Bracket	Ceiling Hanger	Page 13

II. INSTALLATION

- ✓ **WEAR SAFETY GLASSES, SAFETY SHOES, AND GLOVES.**
- ✓ **HAVE AREA AROUND INSTALLATION SITE CLEARED OF DEBRIS.**
- ✓ **LOCKOUT POWER TO CONVEYOR(S) UNTIL START-UP.**
- ✓ **LOOK OUT FOR SHARP EDGES WHILE HANDLING CONVEYOR COMPONENTS.**
- ✓ **BE CAREFUL IN AND AROUND THE CONVEYOR(S) DURING INSTALLATION. ALSO, BE AWARE OF OTHERS IN THE AREA.**
- ✓ **ONLY ALLOW QUALIFIED PERSONNEL TO ASSEMBLE AND INSTALL CONVEYORS.**

INTRODUCTION TO LINESHAFT CONVEYORS GENERAL

THIS SERVICE MANUAL IS INTENDED TO BE USED BY PERSONNEL WHO ARE KNOWLEDGEABLE OF SAFE WORKING CONDITIONS ON LIVE ROLLER CONVEYOR SYSTEMS.

Not all applications and components can possibly be covered; therefore, use this manual as a guide only. Specific questions relating to your conveyor should be addressed to your local Distributor. The Distributor is familiar with your specific system and can render immediate assistance if required.

Understand the WARNINGS at the beginning of this manual. Danger, Warnings and Cautions are included in appropriate places throughout this manual and are defined on pages 3 and 4 in this manual.

A thorough understanding and compliance with these Warnings and Cautions will greatly reduce the possibility of personnel injury and equipment damages.

LSR CONCEPTS

LSR Live Roller Conveyor is a unique concept in powered conveyors. Polyurethane belts individually power carrier rollers from a common line-shaft. Pretensioning the polyurethane drive belts drives the LSR rollers by the friction forces created between the line-shaft and drive pulleys.

The basic elements of LSR are: See FIGURE 1.

1. **A frame** consisting of formed channel rails bolted together with square tubing crossmembers and supported with either ceiling hangers or floor supports.
2. **Powered rollers:** each have a circumferential groove near one end for the belt.
3. **Lineshaft** provides power to length of the conveyor.
4. **Drive belts**, pretensioned polyurethane, connect the line-shaft to the individual rollers.
5. **A line-shaft guard** is provided to help prevent entanglement of hair, fingers or clothing in rotating parts.
6. The **WARNING** label alerts personnel to:



NEVER START CONVEYOR UNTIL PERSONNEL ARE CLEAR;
NEVER RUN CONVEYOR WITH GUARDS OFF;
NEVER ATTEMPT MAINTENANCE OR REPAIR WHILE CONVEYOR IS RUNNING;
NEVER ALLOW PERSONNEL TO REST OR WALK ON CONVEYOR;
NEVER WEAR LOOSE FITTING CLOTHING, GLOVES, RINGS, ETC., WHICH COULD GET CAUGHT IN RUNNING CONVEYOR;

7. **A coupler sprocket and Delrin coupler chain** connects the line-shafts of adjoining sections.

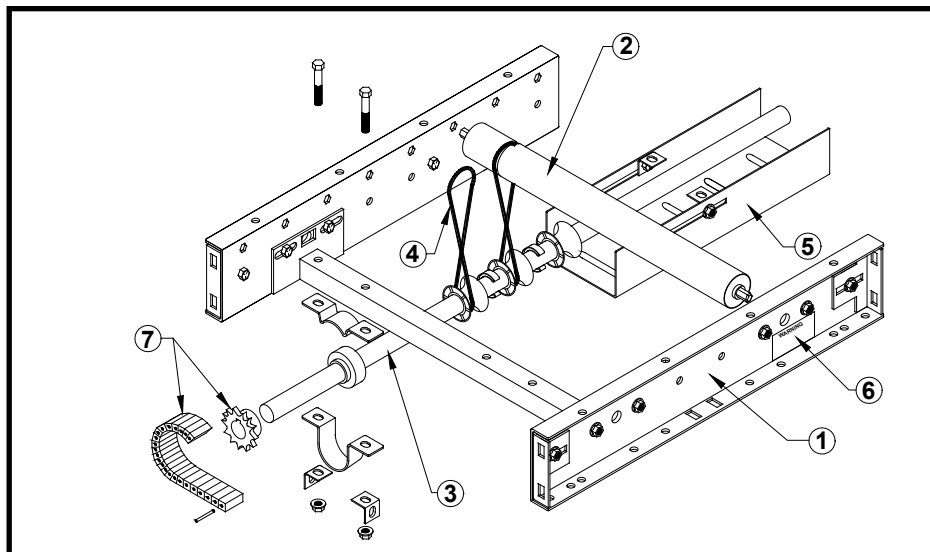


Figure 1

PREPARATION OF SITE

Prior to starting the assembly, carefully check the installation path to be sure there are no obstructions that will cause an interference problem. Check for access along the route to bring the bed sections and components closest to the point where they are needed. It is often necessary to give the area along the system path a general cleanup to improve efficiency, access and accuracy.

With ceiling-hung conveyors, header steel should be up well ahead of the conveyor frames to minimize congestion and waiting. In addition to having header steel up ahead of time, you will be able to locate holes in the header steel for the drop angles.



Consult the building architect or a structural engineer regarding ceiling loading or structural limitations of the building and for sizing header steel.

Floor-mounted units should be installed to a snapped chalk line or a stretched wire.

All installation procedures using ceiling hangers and floor supports will be covered in the following text.

GENERAL PROCEDURES

The installation should be supervised by an experienced installation supervisor.



This person must be qualified in the mechanics of the equipment and enforce safe working procedures for the protection of his people, the customer, and the customer's property.

The following procedures are to be used as guidelines for LSR conveyor installation.

1. Dimensional reference points

- a. The path of each conveyor in the system is determined by establishing a reference point at each end. The center line of the conveyor is established and a chalk line is snapped between these points.
- b. Conveyor should be installed with the center line of the bed matching the center line of the conveyor path. Use a template and plumb line or other acceptable means to ensure accuracy.

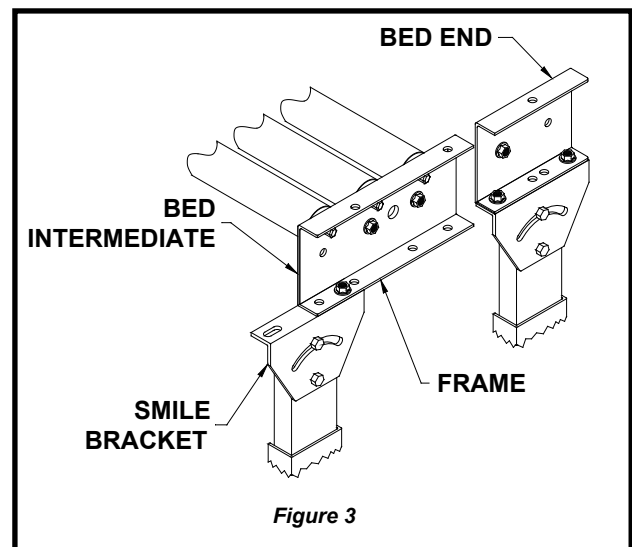
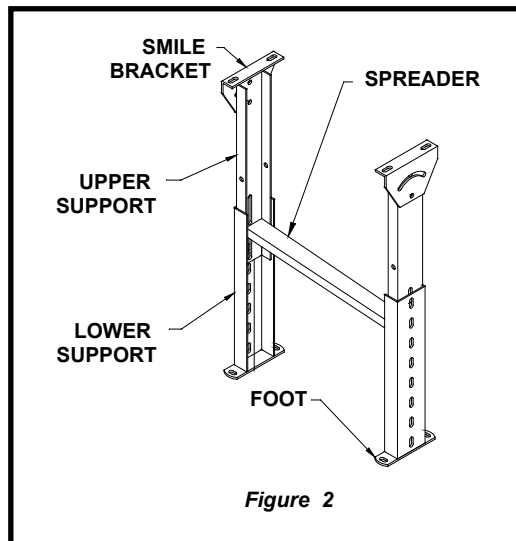
2. Elevations

- a. All conveyors should be installed in accordance with the elevations shown on the layouts. In addition, all units must be level across the conveyor width.
- b. After the first elevation is established at a critical point, the elevation of all other points shall be related to this first point. Dimension elevations from the floor at each point of support. As a system proceeds to an upper or lower floor, into another building or room, a new elevation will be dimensioned from the floor at that point. The new elevation will then become the reference for subsequent elevations.
- c. When installing an overhead system, the first end is dimensioned from the floor and becomes the elevation point until a change in elevation if shown in the layout. This new elevation is then dimensioned from the floor and becomes the new reference point. This process is repeated each time an elevation occurs.

SUPPORT ASSEMBLY

1. Floor Supports See FIGURE 2.

Install the bolts so the nut is on the bottom of the support smile bracket. Bolts should be left finger tight on the frame while the conveyor is being assembled. See FIGURE 3.



Insure beds are oriented so that the line-shafts are on the proper side.

Install one support completely on the frame at bed ends with holes provided.

All intermediate supports should be installed centered on the joint between beds. If a floor support cannot be centered on two adjoining beds, place the support as close as possible to the joint, but not more than two (2) feet from the joint.

Install supports directly to the bottom flange of the bed frame as shown.

Adjust the vertical height of the support at this time. Minor adjustment may be necessary for floor irregularity.

Recommended methods for securing is as follows:

1. Concrete or Masonry Floors

- Anchoring will be accomplished by drilling into the floor and inserting the suitable bolt anchor.
- Anchor all floor supports with minimum 3/8" diameter bolts, two staggered per floor support.

2. Wood Floors

Anchoring will be accomplished using suitable lag bolts. Lag bolt diameters should be the same as the bolt diameters used in concrete or masonry floors described above.

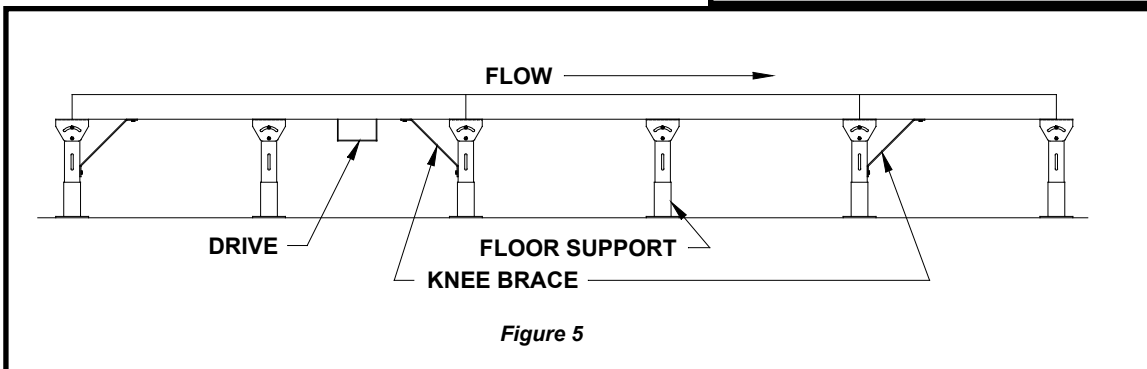
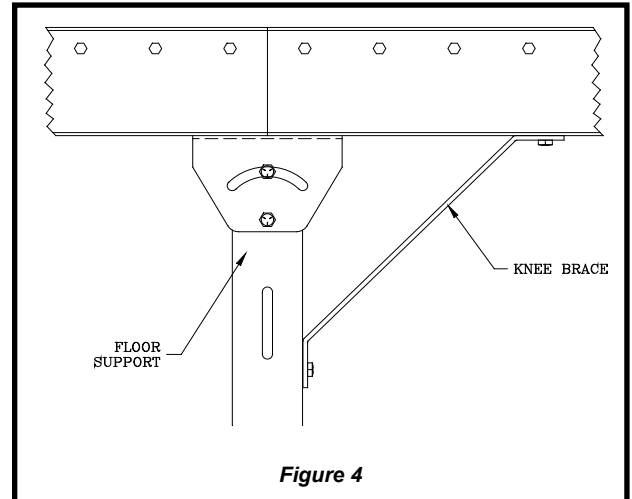
2. Knee Braces

Longitudinal stability is achieved with knee braces. See FIGURE 4. Braces resist stresses caused by flow direction, stops and starts. Every support does not require bracing.

Knee braces should be used at:

- the ends of straight runs,
- preceding case stops,
- near the drive, and
- approximately every 50 feet on a long straight run.

Normally, the braces must be located on the "DOWNSTREAM" side of the supports, putting them in tension. See FIGURE 5.



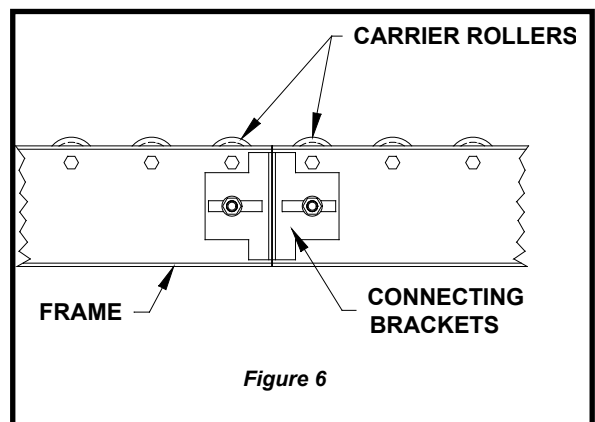
However, the starting of the conveyor puts opposite stresses on the legs to that of stopping. Stresses are resisted by installing braces near the drive, back toward the receiving end (UPSTREAM).

For the best results the strap to frame angle should not exceed 45 degrees or be less than a 30 degree angle. On short supports where a small angle results, the brace strap may be shortened.

3. Connecting Brackets

All frame ends use connecting brackets to connect the bed and strengthen the joint. See FIGURE 6.

Attach the Butt Couplings to the frame ends and to each other as shown.



4. Ceiling Mounting



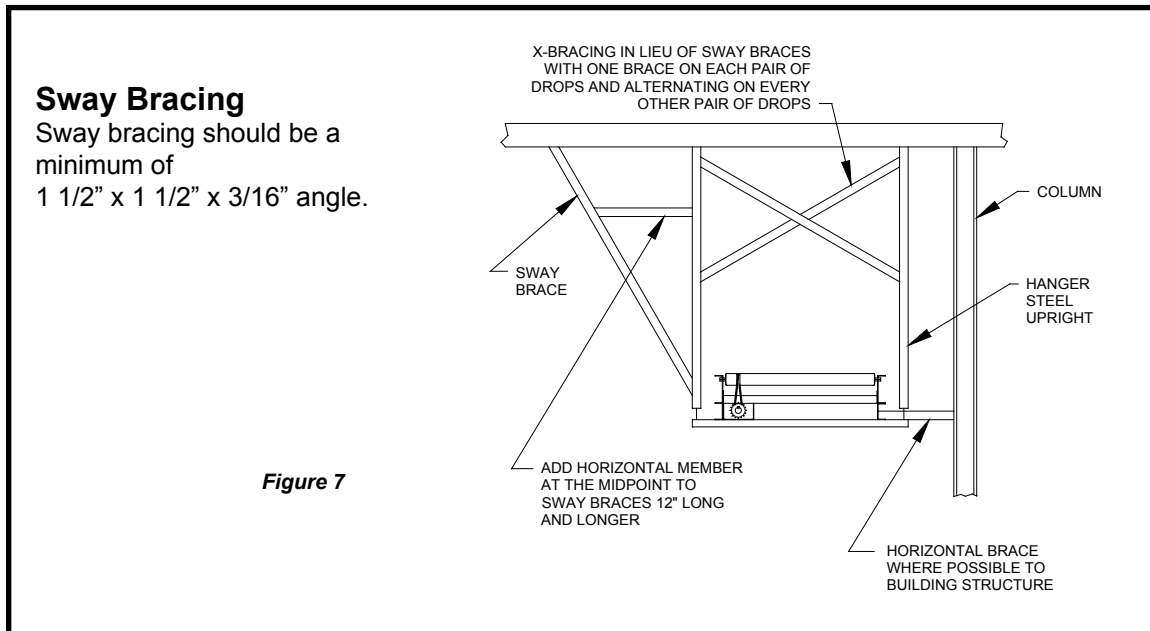
WARNING

CEILING OR WALL MOUNTED LINESHAFT CONVEYORS MUST BE BRACED TO KEEP THEM STABLE. CONSULT YOUR ENGINEERS TO ENSURE THAT ADEQUATE BRACING IS USED TO AVOID SWAYING MOTION WHILE THE CONVEYOR IS RUNNING.



CAUTION

Before adding braces between upright, check for adequate product clearance.

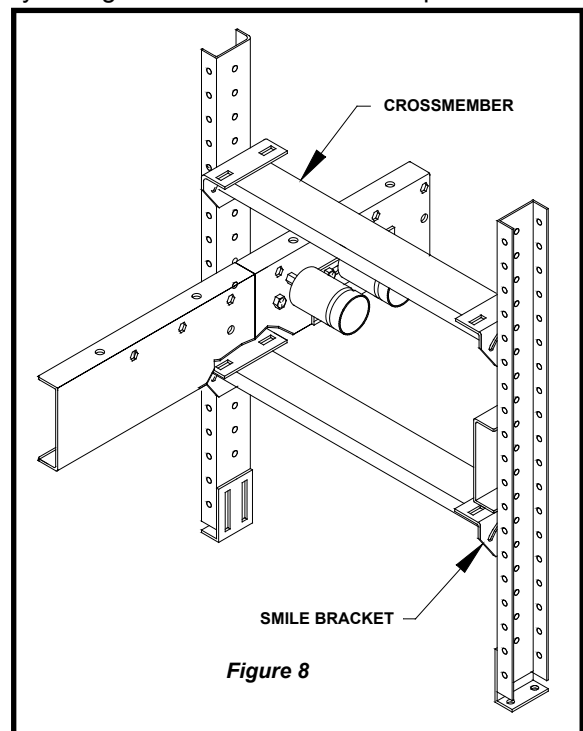


5. Multiple Deck Supports

To mount LSR to multiple deck supports measure from the floor to the top of the support bracket and set the crossmember to the desired elevation. Tighten the crossmember bolts only enough to hold crossmember in place. See FIGURE 8.

Set up two multiple deck supports, and starting with the lower line, bolt the ends of a frame to the smile bracket. On end beds, install on support completely on the frame so the center of the upright is 6" from the end. All intermediate supports are installed centered on the joint at the opposite end of the next frame.

After 3 supports are held up and the beds are installed, make final elevation adjustments and level the beds lengthwise and side to side. Securely tighten the crossmember bolts. Continue for the length of the conveyor.



STRAIGHT BEDS

Straight bed sections are installed using any of the standard support methods (see "SUPPORTING ARRANGEMENTS" Page 10) As each bed is installed in the system, level the bed lengthwise and from side-to-side. See FIGURE 9.

On drive beds, intermediate beds, merge, diverge and switch assemblies, the bed frame should be checked for square; measure from corner to opposite corner. Then measure the opposite corners in the same manner. If the bed is square, the two measurements will be the same. If the measurements are not the same, the bed must be squared before the bolts are tightened. This procedure should be followed on every bed.

If it becomes necessary to shorten a bed frame, cut the end bed where a coupler is not needed. If a line continues around a curve, and drive must be continued the coupler sprocket must be field welded to the cut end of the shaft. This is because the keyway was lost when the shaft was shortened.

Care must be taken to make sure the rollers are flush (level) from bed to bed.

When joining bed frames, leave a gap of $9/32"$ between the coupler sprockets before tightening the support attaching bolts. It is more important to align the line-shaft than the frame channels within the limits of the support attaching bolts.

Alignment can be checked with a straight edge placed on the two sprockets. Alignment should be checked in at least two places, at 90 degree intervals. See FIGURE 10.

If the line-shaft cannot be aligned horizontally by moving the frame on the supports, loosen the bearings on the crossmember to finger tight. Starting at the motor and working toward each end, align the coupler sprockets.

If the coupler sprockets do not align vertically, adjust either or both of the following:

1. Loosen the crossmember mounting bolts in the side channel and adjust the height of the crossmember.
2. Insert shims between the bearing housing and the bearing hanger of the crossmember.



WARNING Remove the coupler sprocket at the end of the line.

DRIVE SHAFT COUPLING CHAIN

When the shafts are properly aligned, the chain will easily wrap the sprockets for final coupling assembly.

Final assembly of the coupling is accomplished with a press fit groove pin. Caution must be exercised when installing the press fit groove pin to ensure that the Delrin link is not damaged. Support the link immediately adjacent to the pin by means of a C-clamp, vice grip pliers or other similar device. See FIGURE 11.

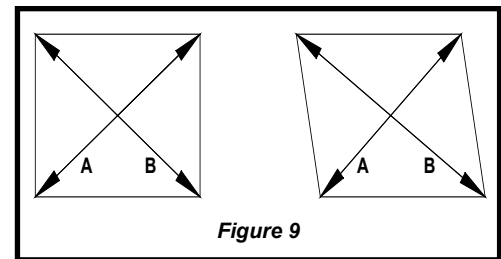


Figure 9

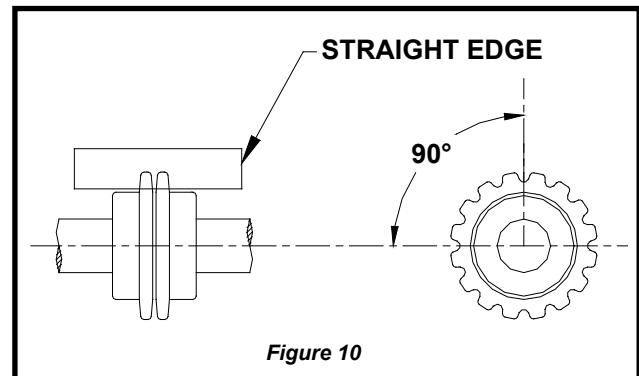


Figure 10

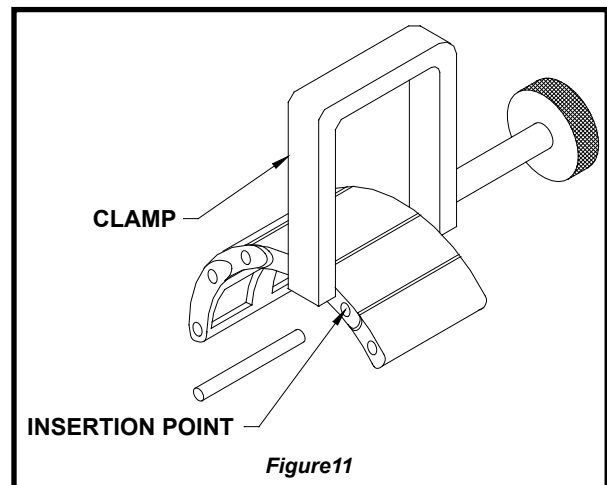


Figure 11

CURVES

Curves are installed the same as straight sections. In addition to end supports, 90 degree curves should have an additional support in the center of the outside frame channel. Curve center leg supports are available for this purpose. Close attention must be made to proper roller location, coupler alignment and universal joint angle.

See FIGURE 12.



Whenever a curve section is preceded or followed by an incline or decline, a 1 foot minimum length straight bed section must be installed between the curve and the incline or decline.

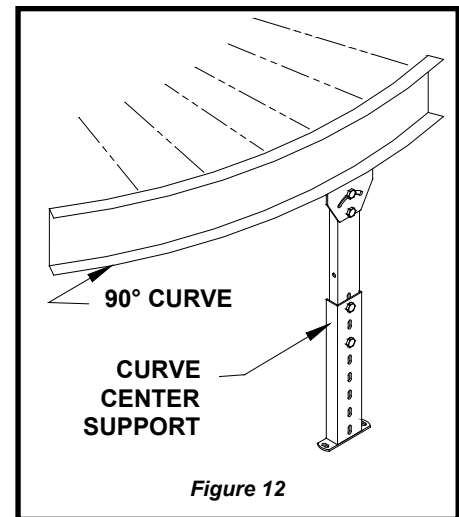


Figure 12

Pulsating effect of Powered Curves:

During the operation of the powered curves a slight pulsating or jerking effect may be noticed in the rollers powered off that portion of the drive shaft connecting the universal joints. This is caused by the intermittent speedup and slowdown effected by the universal joints. It is most noticeable as the universal joints approach operation at 30 degrees as on a 60 degree curve, and virtually unnoticeable as the universal joints approach operation a 0 degrees. This pulsating has NO detrimental effect on the performance of the powered curve. The pulsating effect of one universal joint is eliminated by the reverse effect of the other provided the angle bend is equal.

NOTE

When using U-joints for small angle inclines or declines be sure that the U-joints are installed "*in phase*", i.e., both ends must be identically situated in line on the connecting shaft or shafts. If more than one shaft is located between the U-joints, phase the U-joints before installing the couplers. See FIGURE 13.

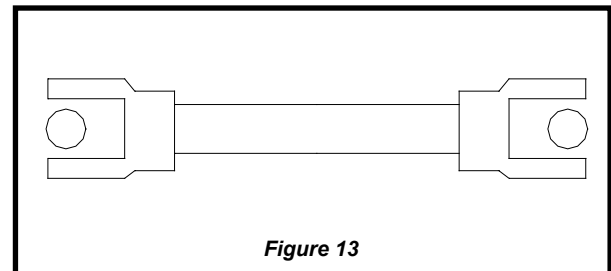


Figure 13

90 DEGREE BELT TRANSFER

Make sure the mainline LSR conveyor is in line with the 90 degree transfer unit and the carrier rollers of the lineshaft beds match in height. See FIGURE 14.

Note that the feed conveyor bed is not attached to the transfer unit.

Support the end of the transfer conveyor with one of the standard supporting methods (see SUPPORTING ARRANGEMENTS on page 10).

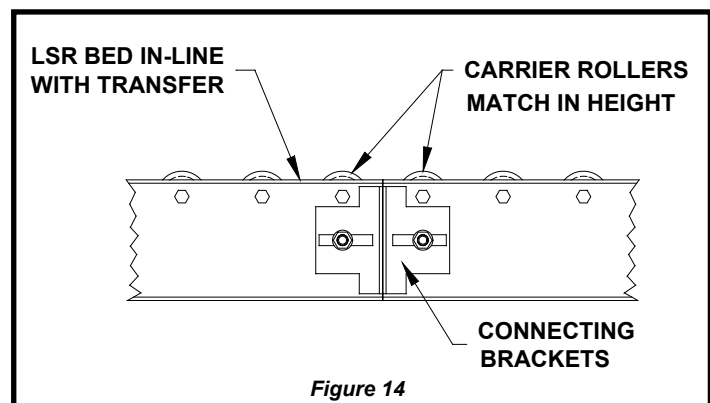
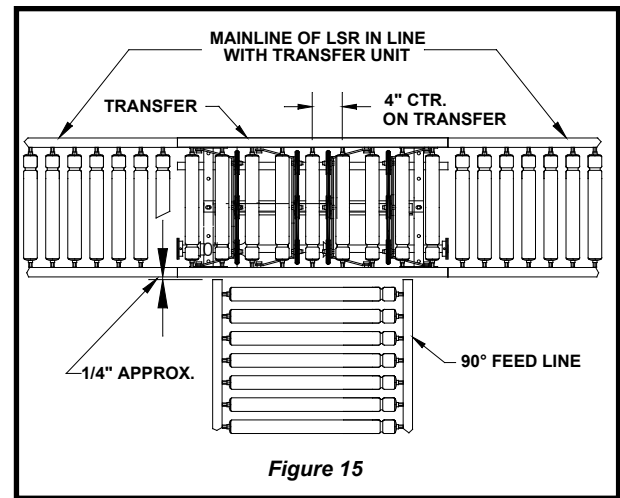
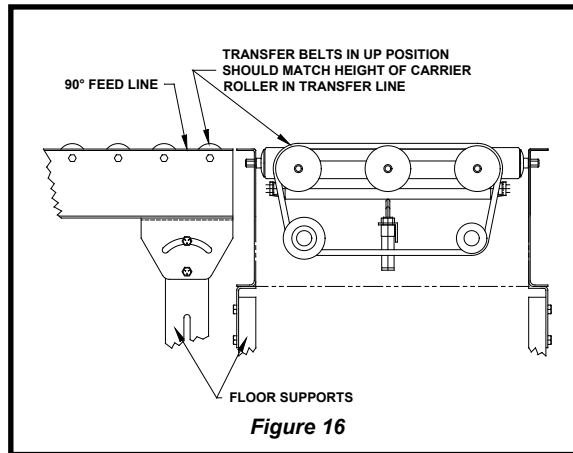


Figure 14

Leave a 1/4" gap between the end of the transfer conveyor and the side channel of the mainline of the LSR conveyor. See FIGURE 15.

The Transfer Belts in the up position should match the height of the rollers in the transfer line. See FIGURE 16.



Attach the air supply line to the brass air fitting. To properly seat the air line into the fitting, observe the following procedure:

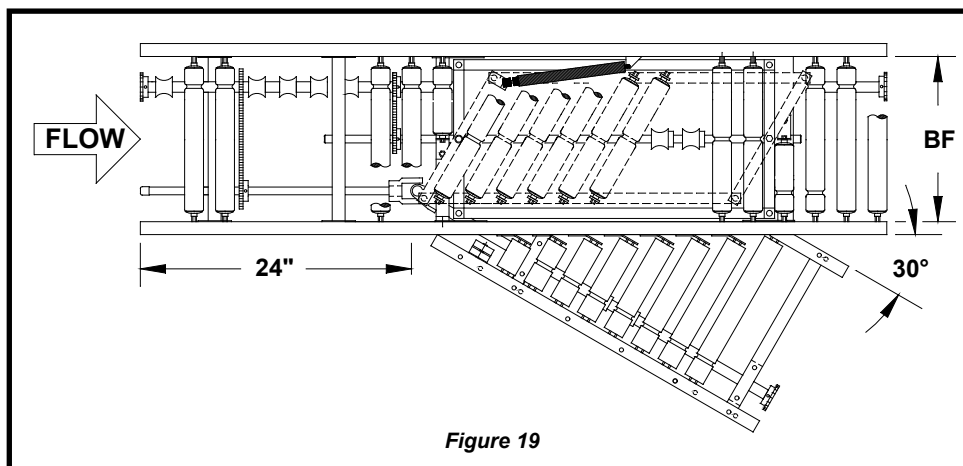
1. Insure the end of the air line is cut square.
2. Insert the end of the air line on the barbed brass fitting until snug.
3. Adjust flow control for smooth operation.



For proper operation, maintain air pressure between 50 and 60 pounds of air pressure at the transfer.

30 DEGREE DIVERT ASSEMBLY ROLLERS OR WHEELS

The Divert (See FIGURE 17) is assembled at the factory and consists of a switch bed with installed switch frame, containing rollers or wheels, air cylinder and power connections, an attached spur and a mounting angle which connects the spur to the switch bed. The roller tab mounts also allows vertical adjustment of the spur or Divert bed to assist product from the switch bed to the spur.



The Divert assembly is installed in the conveyor system using any of the standard supporting arrangements.

After the Divert assembly is installed and the line-shaft coupler sprockets are connected, install line-shaft guard to all exposed sections of line-shaft. (See "Safety Guard" section Page 27).

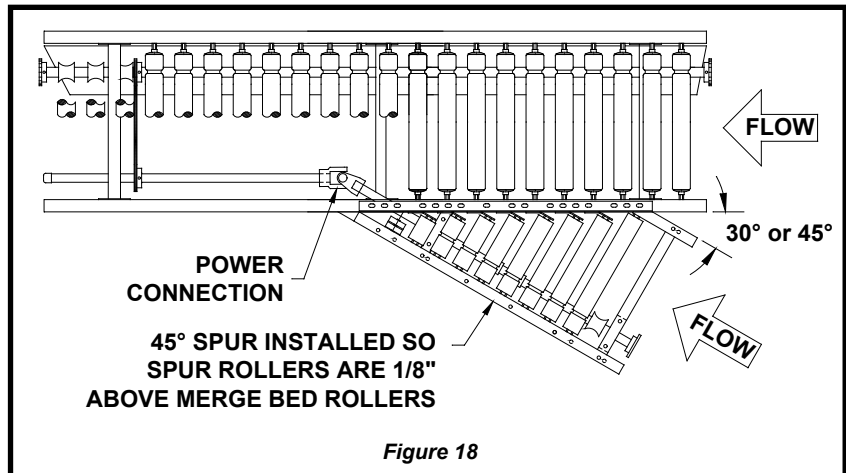


For proper operation, use a minimum of 60 psi air pressure at the switch cylinder.

POWERED MERGE ASSEMBLY

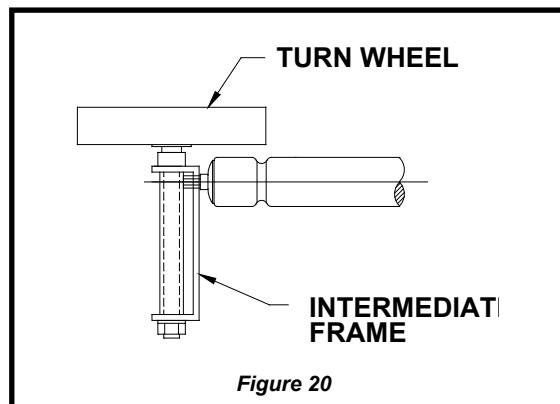
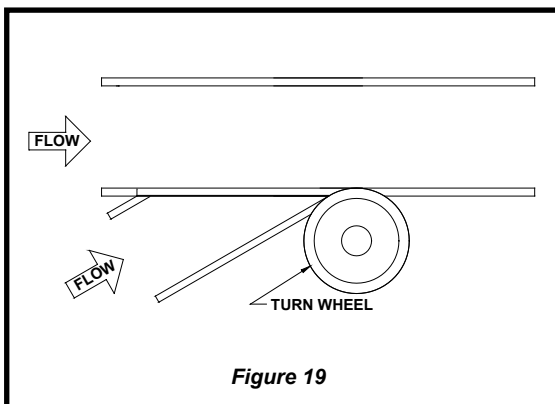
The powered merge is assembled at the factory and consists of a merge bed, an attached spur and a mounting angle which connects the spur to the merge bed. The roller tab mounts allow vertical adjustment of the spur to assist product feed from the spur to the merge bed. See FIGURE 18.

The powered merge assembly is installed in the conveyor system using any of the standard supporting arrangements.



NOTE

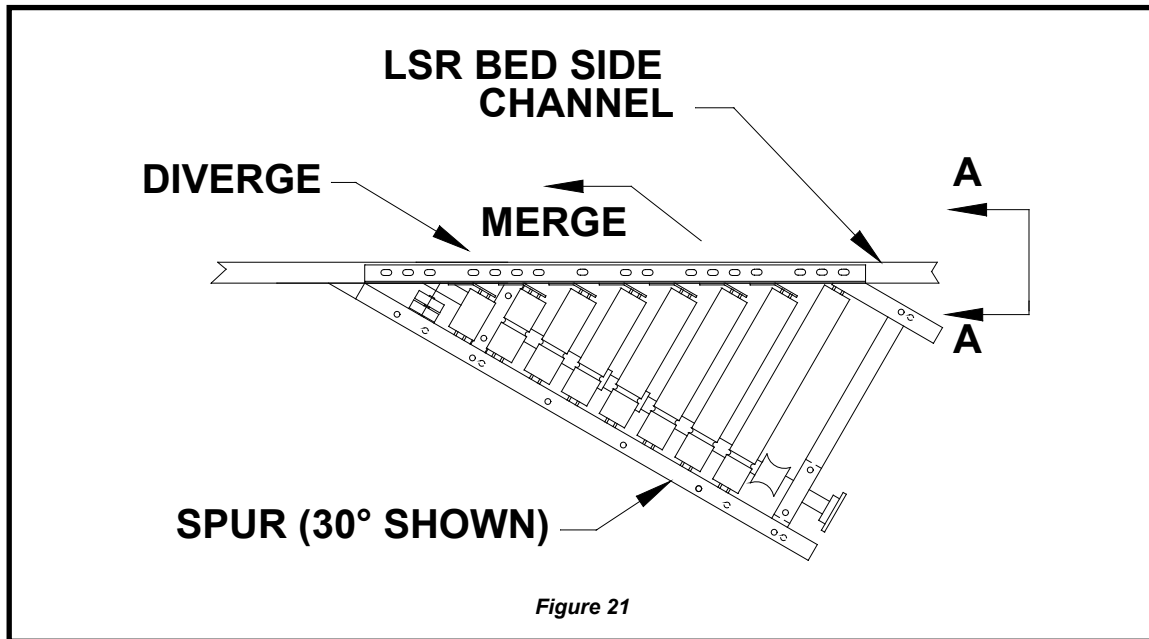
It may be necessary to install a turning post at the inside junction of the merge and spur to guide the product into the merge bed. See FIGURES 19 & 20.



After the merge assembly is installed and the line-shaft coupler sprockets are connected, install line-shaft guard to all exposed sections of line-shaft. (See "Safety Guard" section Page 25.)

SPURS

Spurs provide a means of diverting or merging from or to an intermediate bed without a power connection to the main line (See Figure 21). Spurs may be placed anywhere along a bed length. Support the spur with any of the standard supporting methods (see SUPPORTING ARRANGEMENTS Page 10).



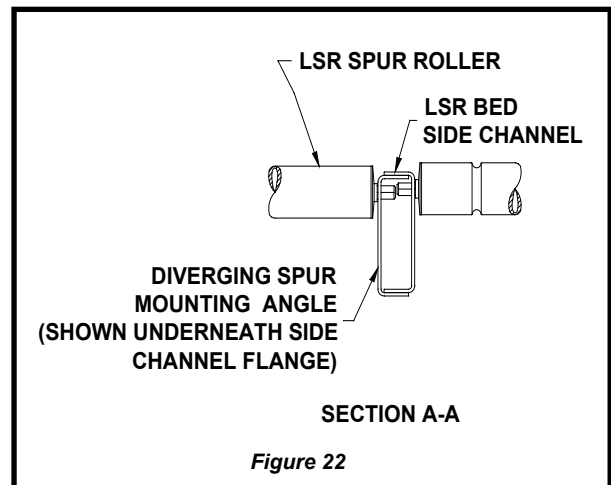
To install the spur, proceed as follows:

Place the mounting angle of the spur against the side channel of the bed in the desired location. See FIGURE 22.



If diverging, place mounting channel underneath side channel flange. If merging, place mounting angle on top of side channel flange. Insert bolts and tighten nuts.

Drill holes in bottom flange of side channel if necessary.



POWERED GATE ASSEMBLY

Powered gate assemblies are normally one of the last major subassemblies to be installed. At every location where a powered gate is to be installed, leave a gap between the conveyor beds of gate length plus length of attached intermediate section plus 1/2".

Prepare the system for gate installation as follows: See FIGURE 23.

1. Install 2 Pivot End Brackets (from the loose parts box) to the adjoining section of the conveyor so that approximately 6 3/4" of the pivot end bracket extends past the end of the bed.
2. Attach to upper supports and lower supports to the pivot end bracket, centered on the end of the bed.

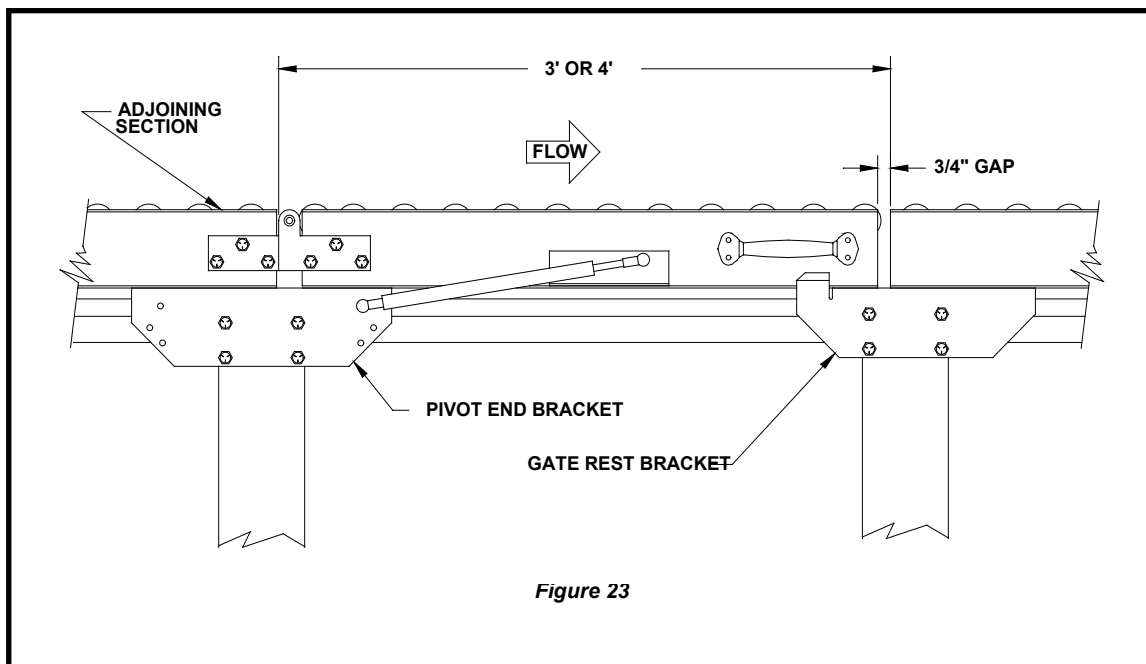


Figure 23

3. Install 2 gate rest brackets (from the loose parts box) to the adjoining bed on the discharge end so that 5 1/2" extends past the end of the bed.
4. Mount upper and lower supports to the gate rest brackets at the discharge end.
5. Install the gate by resting the gate assembly on the pivot end bracket and gate rest bracket. Make sure there's approximately 1/2" gap between the hinged bed and the discharge end of the adjoining bed.
6. Attach hinges by bolting to frame.

NOTE

The line-shaft of the 3' or 4' hinge bed is not connected to the charge end of the next bed. (at the 1/2" gap).

BRAKE ASSEMBLY INSTALLATION

See FIGURES 24 & 25.

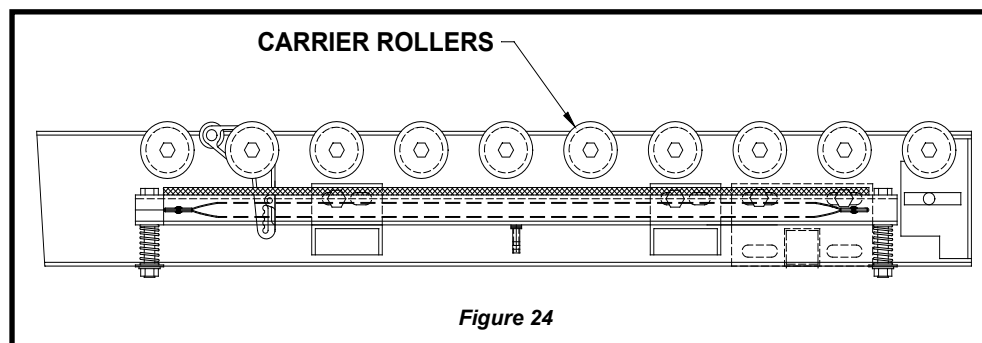


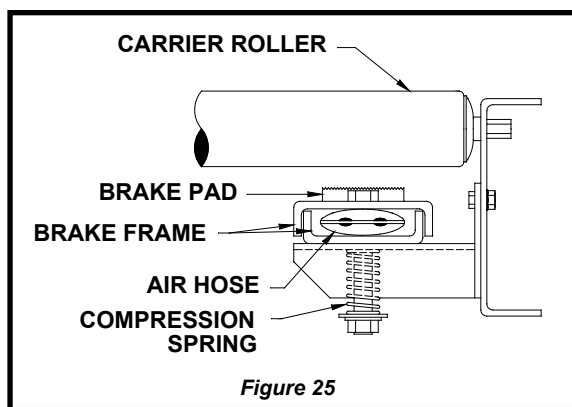
Figure 24

Normally Brakes are factory mounted, but in some cases field mounting may be necessary. The brake is preassembled at the factory and only requires attachment to the bed, and air line hookup.

The brake mounting bracket holes on a 3' brake match up with the holes between the crossmembers in the side channel. Bolt the mounting brackets to the side channel through these holes. Otherwise, drill holes in side channels to suit mounting position required.

Attach the air supply line to the air fitting. To properly seat the air line into the fitting, observe the following procedure

1. Insure the end of the air line is cut square.
2. Insert the end of the air line on the brass air fitting until snug.
3. Adjust flow control for smooth operation.



For proper operation the air pressure at the brake should be between 20-30 PSI.

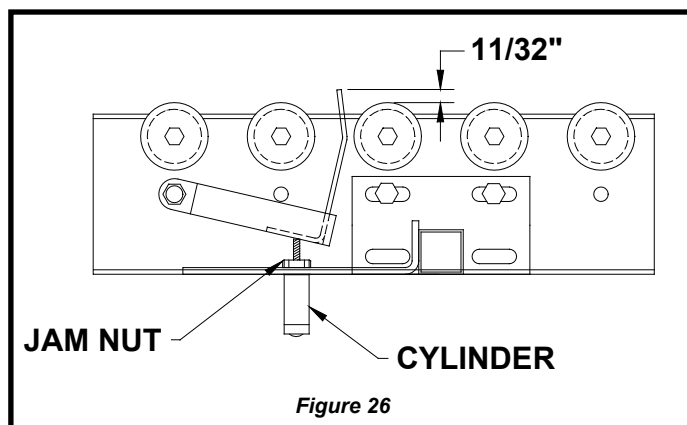


PERSONAL INJURY CAN RESULT IF FINGERS ARE PLACED BETWEEN THE ROLLERS AND BRAKE PAD WHILE AIR IS APPLIED TO THE BRAKE.

AIR OPERATED BLADE STOP

The air operated blade stop is factory assembled in a 4 1/2" channel frame assembly and can be mounted directly in a drive bed or intermediate bed. To install an air operated blade stop, proceed as follows: See FIGURE 26.

1. Locate blade stop to desired location between two rollers.
2. Use existing holes if available, otherwise field drill.
3. Bolt the blade stop to the frame as illustrated.



Attach the air supply line to the air fitting. To properly seat the air line into the fitting, observe the following procedure

1. Insure the end of the air line is cut square.
2. Insert the end of the air line on the brass air fitting until snug.
3. Adjust flow control for smooth operation.



For proper operation the air pressure at the blade stop should be between 30-60 PSI.

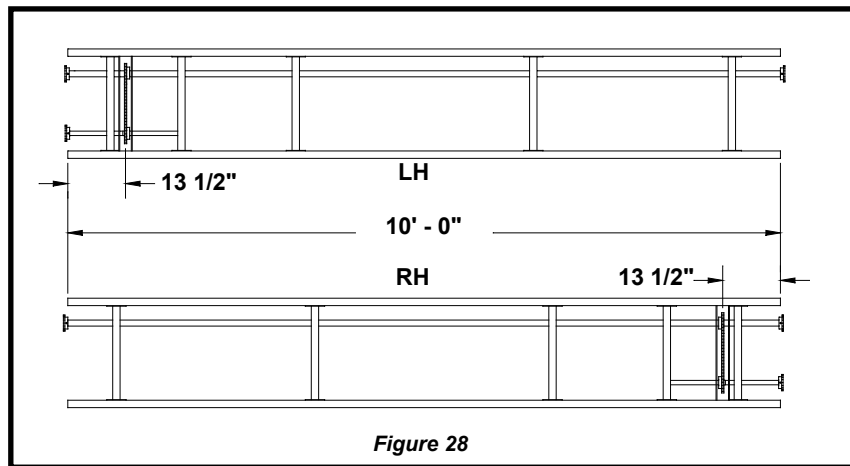
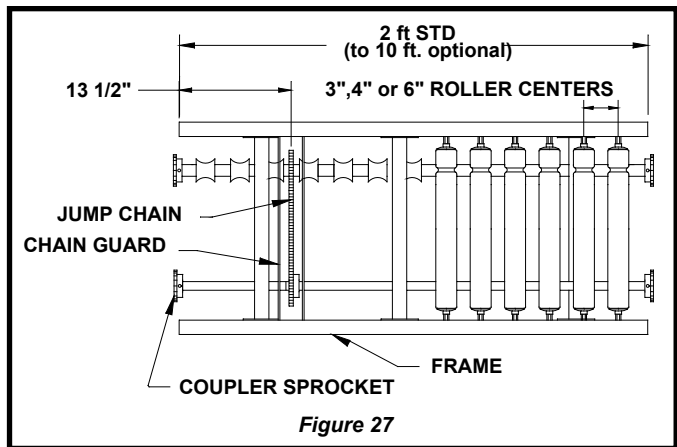


PERSONAL INJURY CAN RESULT IF FINGERS ARE PLACED BETWEEN THE ROLLERS AND BRAKE PAD WHILE AIR IS APPLIED TO THE BRAKE.

CROSSOVERS

INTERNAL CROSSOVER

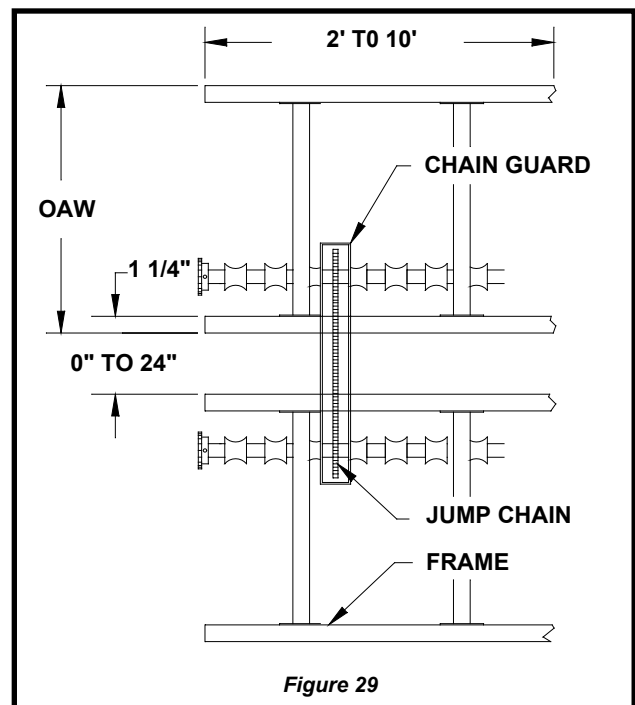
Internal jump chains are factory assembled in 2' to 10' intermediate beds and are normally used to relocate the line-shaft to the opposite side of the conveyor. See Figures 27 & 28.



EXTERNAL CROSSOVER

See FIGURE 29.

External jump chains are factory assembled in intermediate beds and are used to supply line-shaft power to a parallel conveyor run. External jump chain assemblies are installed using any of the standard support methods (see SUPPORTING ARRANGEMENTS Page 10).



ROLLERS

STRAIGHT ROLLERS

There are two types of rollers used in straight sections, single grooved and double grooved. Single grooved rollers are used when connecting the line-shaft directly to the roller. Double grooved rollers are used with roller to roller “transfer belts” to power the next single grooved roller. This is done in areas over the drive sprockets and jump chain sprockets where it is not possible to have a drive pulley on the line-shaft. Place a single grooved roller over the obstruction with the groove opposite the line-shaft and place the double grooved roller next to it. The single grooved rollers complete the bed section. See Figure 30.

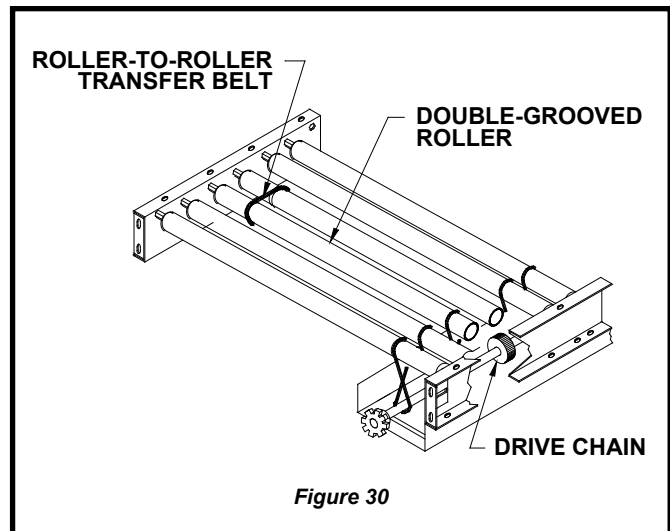


Figure 30

IMPORTANT

Rollers are installed at the factory for bed widths through 24” wide. Rollers are shipped loose for bed widths greater than 24”.

TAPERED ROLLERS

Tapered rollers are used in curves and are double grooved to provide roller to roller power over universal joints. See Figure 31.

NOTE

All rollers are installed in curves at the factory for all widths.

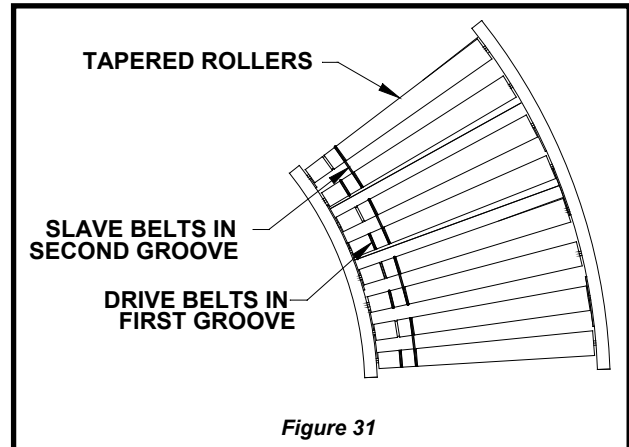


Figure 31

ROLLER INSTALLATION



WARNING

USE A BLUNT OBJECT TO PUSH ON THE ROLLER AXLE. POINTED TOOLS CAN SLIP AND CAUSE PERSONAL INJURY.

To install the rollers proceed as follows:

1. Lay the rollers on the conveyor frames with the grooved end over the line-shaft. Lift “O” belt off the spool and place roller thru the “O” belt.
2. After placing the belt over the roller, put the axle on the line-shaft end into the hex hole in the conveyor side channel.
3. Since rollers have spring loaded axles, depress the roller axle opposite the line-shaft with blunt object, align the shaft with the hole in the frame and release the axle. The spring in the roller will push the axle into the frame.

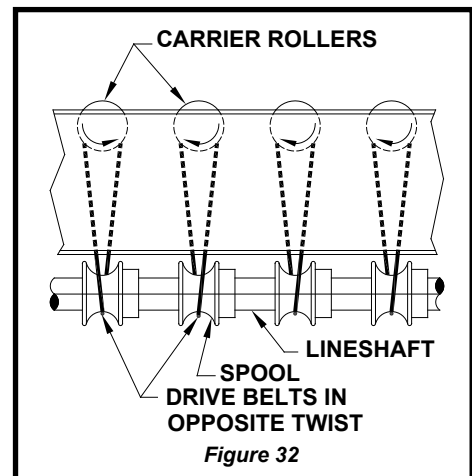


Figure 32



CAUTION

Note how “O” belt twist over roller determines carrier roller rotation. See FIGURE 32.

SAFETY GUARDS

See Figure 33.



Chain guards are normally installed at the factory as is the line-shaft guarding on switches, merges and other accessories. Sometimes the straight line-shaft guards must be installed by you; failure to do so will expose your personnel to the possibility of hair entanglement and scalping or other serious injury.

SIDERAILS

Straight siderail sections are shipped in 10' 0" lengths only. Therefore, start installing from one end and cut off as required for ends of lines, at curves, etc.

A smoother and stronger joint is obtained, if the siderail is shifted down the frame to the next set of matching holes, so the siderail joint is offset from the frame joint.

With all siderail sections, care must be given to the joint, to insure a smooth transition without catch points. With angle siderail on one direction conveyor, set the siderail with a small offset at the joint by setting the downstream siderail slightly wider. If the mounting holes will not allow enough movement to accomplish this, use a rubber mallet or clamping pliers on the vertical leg of the downstream rail to flare it back, behind the upstream rail. With two direction conveyor care must be taken to butt the angle siderail sections together exactly. In this case a tack weld across the joint on the outside is very helpful.

When installing angle siderail on the curve sections, special attention must be taken. The siderail for curves is first cut from straight rails and the rolled to fit each particular curve. The mounting holes may not always align.

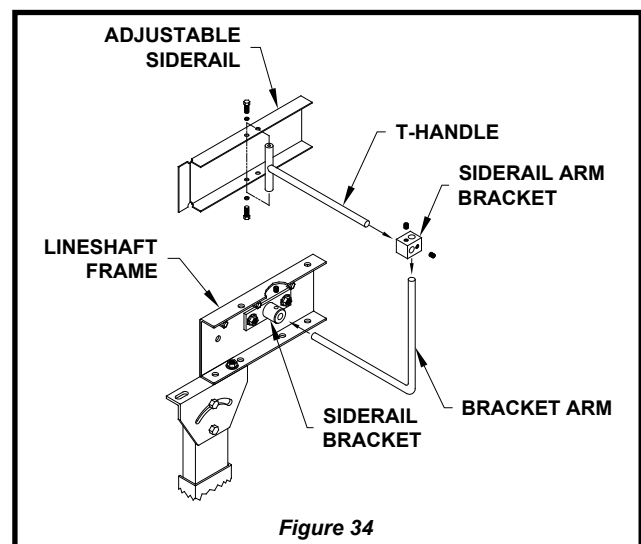
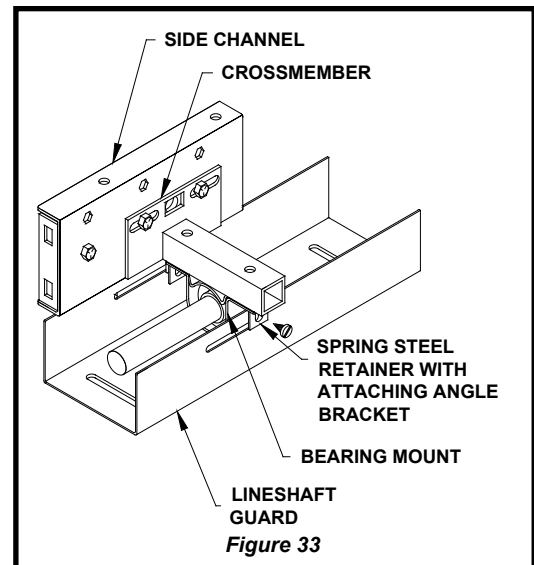
Install curved siderails as follows:

1. Bolt one end of the siderail to the top flange of the curve bed.
2. Bolt the opposite end of the siderail to the top flange. If the holes do not align, clamp the siderail in place and drill end and intermediate holes.
3. Bolt the siderail to the curve with the appropriate number of truss head bolts.

ADJUSTABLE CHANNEL SIDERAIL

The adjustable channel siderail components are shipped from the factory as loose parts. To install the adjustable siderail: See Figure 34.

1. Position the adjustable siderail on the lineshaft frame in the position desired.
2. Bolt the side rail bracket to the lineshaft frame, lining the center hole approximately under the attachment holes in the siderail.
3. Insert the Bracket Arm into the siderail bracket and tighten the setscrew with the bracket arm in a vertical position.
4. Place the aluminum block on the bracket arm.



5. Bolt the T-Handle onto the adjustable siderail with 1/4" bolts and lock washers.
6. Slide the T-Handle into the aluminum block on both ends of the adjustable siderail.
7. Set the siderail to the desired vertical and horizontal position and tighten the setscrews in the aluminum block.

BELT SPLICING

TITAN INDUSTRIES recommends the purchase of a belt splicing kit as a maintenance tool.

Suggested procedure for using this kit is as follows: See Figure 35.

1. Remove the roller above the missing belt by pushing the axle through the frame rail from the end opposite from the grooves in the roller.
2. Preheat the element of the splicer for ten minutes before using.
3. Wipe the heating surface of the element with a cloth. (this surface must be cleaned after each splicing operation to ensure good joints.)
4. Cut the belt to the correct length (13 1/2" STD).
5. Wrap the belt around the shaft and place the ends of the belt into the V groove on the clamps provided with the belt splicer. Extend the ends of the belts 1/8" over the ends of the clamps.
6. Apply the heating element between the ends of the belt and use hand pressure to pull both clamp sections together.
7. Leave the heating element in position until ends of the belt show melting of the polyurethane around the whole perimeter.
8. Release hand pressure on the clamp and withdraw the element. Reapply hand pressure immediately to keep cold air out of the splice. Hold pressure on clamp for one minute.
9. Remove belt from clamp. Do not pull or bend the belt excessively for a period of ten minutes. This allows the center of the splice area in belt to cool.
10. After cooling, trim the flash from the joint with a sharp knife.
11. Reinstall the roller after slipping it through the belt. Ensure that the belt has the correct twist to make the roller rotate in the correct direction (refer to an adjacent roller for direction of twist).

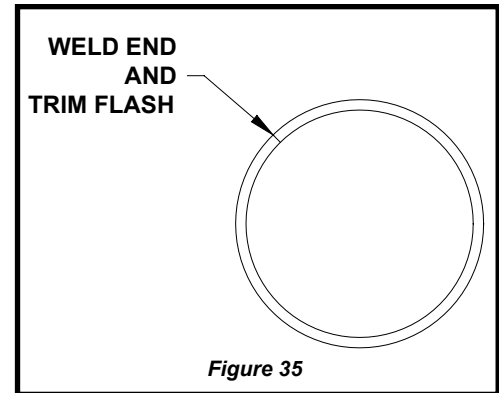


Figure 35

ELECTRICAL



DANGER

ALL ELECTRICAL CONNECTIONS SHOULD BE MADE BY QUALIFIED PERSONNEL ONLY.

Since the electrical codes vary from one area to another, be sure to check with the proper authorities before starting the electrical wiring. The electrical voltage of the motor will be stamped on the metal name plate. This voltage should be checked to see that it matches your available voltage.



DANGER

DO NOT CONNECT THE MOTOR TO ANY OTHER VOLTAGE THAN THAT ON ITS LABEL, OTHERWISE, PERSONNEL MAY EXPERIENCE ELECTRICAL SHOCK AND THE MOTOR MAY MALFUNCTION.

Consult the wiring diagram on the inside cover of the starter and push button for the proper electrical connections. Many motors, both single phase and three phase, are dual voltage. Consult the wiring diagram on the motor for the proper connections.

NOTE

Pay attention to the type, number and location of stop-start push-button controls. Should a malfunction or emergency condition develop, stop the conveyor immediately. Most three phase drives use transformers to reduce the push-button and control circuit to 110 volt. When primary voltage is changed, the transformer must be changed according to the wiring diagram found on the transformer. If additional information is required, contact your local distributor.

FINAL ASSEMBLY CHECK

At the final checkout time the unit should be completely installed. This means the unit should be in position with the siderail, line-shaft guard, etc. installed, and all electrical and pneumatic connection made.

At this time check elevations. The conveyor should be level from side to side and from end to end except at designated incline or decline areas.

All nuts, bolts and fasteners must be checked for security.

All electrical connections and wiring and any air fittings and lines should be checked for security and proper routing.

COMMISSIONING

This phase of the project is known by different descriptions\: run-in, commissioning, debug, etc. This is where the finishing touches are applied, and the unforeseen considerations corrected. During these test runs or preliminary operating runs, the following items will be checked:

- ✓ Security of all bolted connections and set screws.
- ✓ The functioning of the electrical controls.
- ✓ Proper travel direction (belt twist) of all rollers.
- ✓ Adequate clearances for product (siderail, bracing, etc.).
- ✓ Proper adjustment and lack of hang-up points of all siderails.
- ✓ Simulation of all operational functions with actual product.

III. MAINTENANCE

MOTORS

1. **CLEANING** - All motors should be kept free of dirt and grease accumulations. Open motors should be periodically vacuumed to remove dust and dirt from the windings.
2. **VENTILATION** - For best results motors should be operated in an area where adequate ventilation is available.
3. **TEMPERATURE** - Most of todays smooth body T.E.N.V. and T.E.F.C. Motors run hot to the touch. As long as ambient temperatures are not exceeded, and more importantly, ampere draw is within the allowable range, there should be no need to worry. (Both of these limits are found on the motor nameplate.)
4. **LUBRICATION** - Most electric motors are lubricated for life and under normal conditions require no more lubrication. Under severe conditions where additional lubrication is required, use the following chart as a guide.



THE FOLLOWING CHART IS BASED ON MOTORS WITH GREASE LUBRICATED BEARINGS, RUNNING AT SPEEDS OF 1750 R.P.M. OR LESS, AND OPERATING WITHIN AN AMBIENT TEMPERATURE RANGE OF BETWEEN 0 DEGREES F. TO 120 DEGREES F.

CONDITION	LUBRICATING FREQUENCY
Normal 8 hr. day Light Loads	2 to 3 years
Heavy 24 hr. Day Heavy Loads Dirty Conditions	1 Year
Extreme Shock Loads High Temperatures	3 to 6 Months

Typical lubricants that can be used:

Chevron Oil Co. - SRI#2

Gulf Refining Co. - Precision #2 or #3

Shell Oil Co. - Alvania #2, Dolium R

Mobile Oil Co. - Mobilux Grease #2

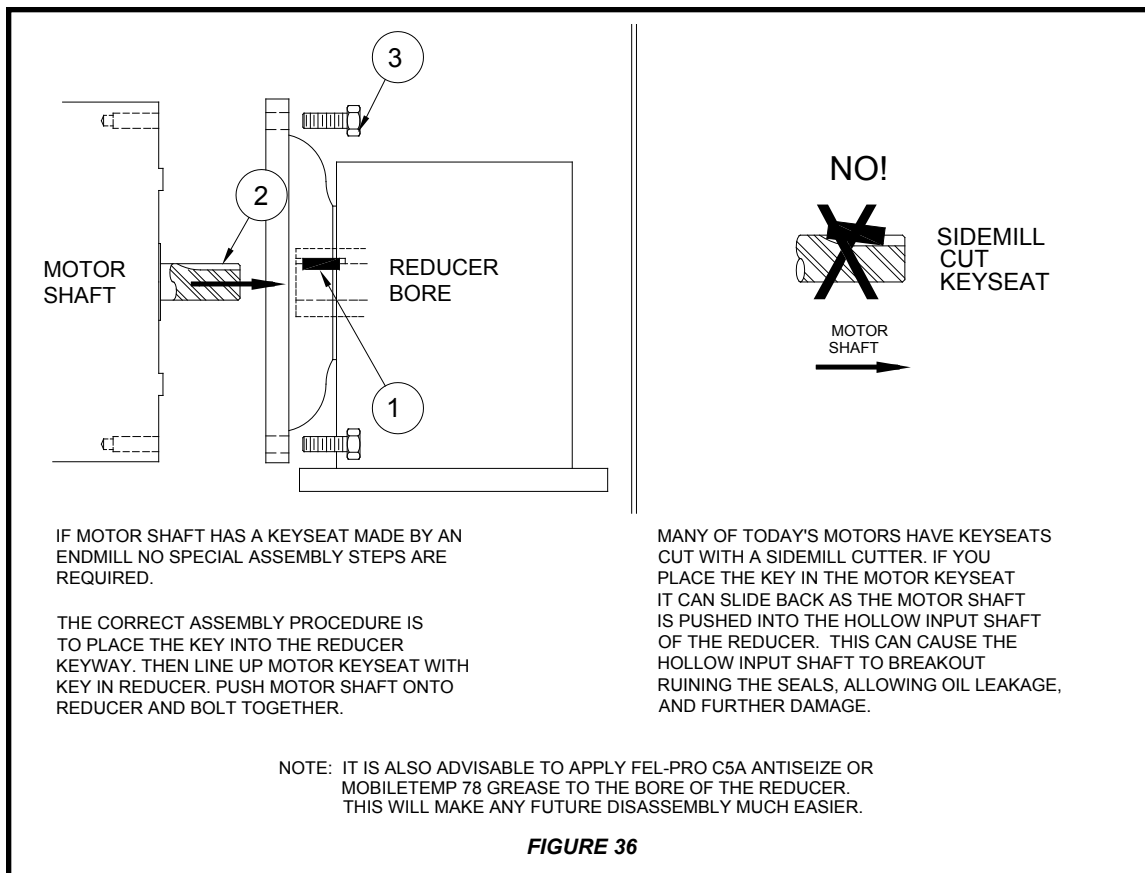
Texaco Inc. - Premium RB

Sinclair Refining Co. - A.F.#2

REDUCERS

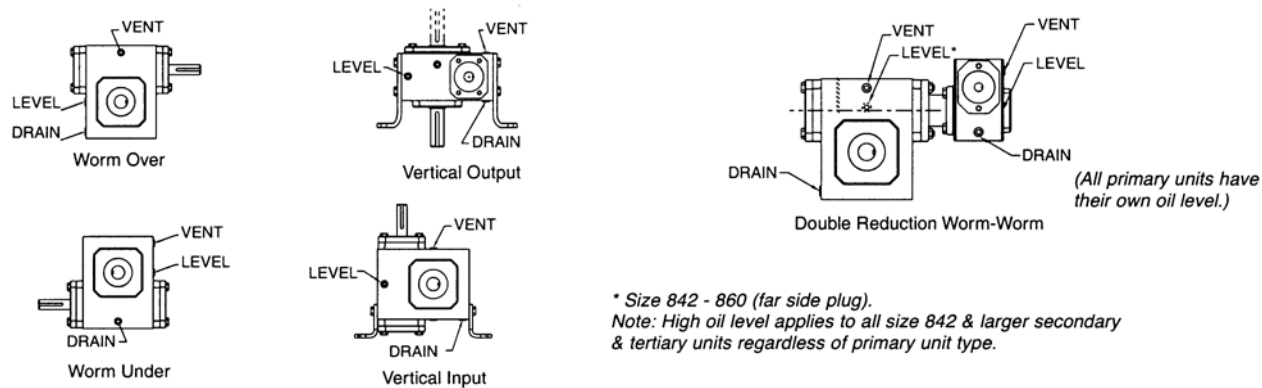
The following reducer information is concerned primarily with wormgear reducers. If your conveyor is equipped with another type, refer to the manufacturer's recommendations for installation and maintenance sent along at time of shipment.

1. ASSEMBLE / DISASSEMBLE MOTOR TO REDUCER - Because many of today's motor keyways are cut with a sidemill cutter, the following assembly instructions should be followed to insure a trouble-free fit between motor and reducer. First, place the key into the reducer keyway. Second, line up the motor keyseat with the key and push the motor shaft into the reducer bore. Third, finish assembly by bolting the motor to the reducer flange. This procedure should insure that the key does not slide back in the motor keyseat. See FIGURE 36.



2. **VENTILATION** - During normal operation gear reducers build up heat and pressure that **MUST** be vented to protect the seals and gears. If not installed at Titan, a brass vent plug contained in a small plastic bag, will be put in a box or larger bag along with fasteners sent loose for use during field installation. Remove the top most drain plug (refer to FIGURE 37) for the position of your reducer) and install the vent plug securely in place.

**Standard Gear Reducer Mounting Positions
& Vent Plug, Level and Drain Locations**



* Size 842 - 860 (far side plug).
Note: High oil level applies to all size 842 & larger secondary & tertiary units regardless of primary unit type.

Oil Capacities (ounces) - Standard Units

Mounting Position	UNIT SIZE													
	813	815	818	821	824	826	830	832	842	852	860	870*	880*	8100*
1 - Worm Over	4	12	12	20	24	40	56	72	112	188	312	35	48	72
2 - Worm Under	8	16	20	28	40	60	84	108	152	304	328	32-3/4	51-1/4	80

* Shipped Dry

16 Oz. = 1 pint
2 pints = 1 quart
4 quarts = 1 gallon
1 gallon = 128 oz. = 231 Cu. in.

FIGURE 37

3. **CLEANING** - After approximately two to three weeks of operation the reducer **MUST** be drained, flushed out, and refilled to the proper level with fresh oil. (This is done to remove brass particles caused during the normal wear-in period of the worm gear.) Afterwards, the oil should be changed in your reducer every 2500 hours or ever 6 months, which ever occurs first.



Where high temperatures and/or dirty atmosphere exists more frequent changes may be necessary. Periodically check reducer to ensure that the proper level of oil is in the reducer. Too little oil will cause accelerated wear on the gears. Too much oil can cause overheating, seal deterioration, and leakage.

4. **LUBRICATION** - The precision - made gears and bearings in our reducers require high-grade lubricants of the proper viscosity to maintain trouble- free performance. All standard reducers ordered from the factory are filled with ISO viscosity grade **Mobil Glygoyle 460 polyalkalene glycol (PAG)** lubricant. If oil needs to be added or changed, **ONLY** compatible polyglycol lubricants should be used. Contact the factory for more information.

5. **TEMPERATURE** - Most Titan Units are supplied with wormgear reducers. These units may run at temperatures between 100 degrees to 200 degrees F. (Higher temperatures are especially common during start up). There is NO NEED TO WORRY unless temperatures exceed 200 degrees F.

6. **GENERAL MAINTENANCE** - Regular inspection to insure the reducer bolts and screws are tight, correct alignment of shaft and/or coupling, no major oil leaks, no excessive heating and no unusual vibration or noise will insure maximum life and performance of the reducer.

BEARINGS


All bearings used in LSR (except U-joints) are sealed for life and do not require lubrication. If a defective roller bearing is found, replace the roller. All U-joint bearings require general purpose greasing every month or more frequently as required by operating conditions.

CHAIN & SPROCKETS

For longest chain life a constant film or oil is recommended. We recommend a good quality non-detergent petroleum base oil. Use the chart below

 **WARNING** SHUT OFF CONVEYOR BEFORE USING OIL CAN OR BRUSH TO APPLY OIL!

TEMPERATURE	RECOMMENDED OIL VISCOSITY
20 degrees - 40 degrees F	SAE 20
40 degrees - 100 degrees F	SAE 30
100 degrees - 120 degrees F	SAE 40
120 degrees - 140 degrees F	SAE 50

 **DANGER** REMEMBER - ALL GUARDS AND BOTTOM PANS, IF PROVIDED, MUST BE REPLACED BEFORE RUNNING CONVEYOR. TITAN INDUSTRIES IS NOT RESPONSIBLE FOR INJURIES CAUSED BY NOT COMPLYING WITH SAFETY INSTRUCTIONS.

MAINTENANCE SCHEDULE

Periodic maintenance intervals shown may vary with load, speed, hours of daily operation, ambient temperature, humidity, etc. Intervals can be established by fairly frequent maintenance at first, then lengthen the intervals as justified by observation of the need for maintenance and past history. Maintenance intervals are based on a 5 day work week, 8 hours per day.

WEEKLY (40 hours)

Inspect:

Bearings, Gear Reducers and Motors for excessive noise or heat. A motor may be 175 degrees F (hot to the touch) as normal. 1/2 HP motors may be slightly hotter.

Clean:

Breather Cap on Reducer (if used).

Check:

Operation of all electrical controls.

Oil in Air Lubricators (if used).

MONTHLY (160 hours)

Inspect:

Drive chains and sprockets for wear, alignment and proper chain tension-Clean and lubricate chain with SAE 30 weight oil or equivalent.

Drive Unit for leaking seals (and oil level in gearcase if applicable)

Condition of Drive Belts.

Lubricate:

Universal Joints with bearing grease.

SEMI-YEARLY (1040 hours)

Lubricate:

Drain and flush gearcase after each 2080 hours normal operation or at least every 6 months (if applicable)

YEARLY (2080 hours)

Inspect:

Security of all nuts and bolts. Adjust and retighten if necessary.

TROUBLESHOOTING

Trouble shooting is the process of looking at trouble symptoms and then relating these to the most likely cause. By carefully analyzing the problem, the experienced troubleshooter can quickly isolate the trouble and take appropriate corrective steps.

The following troubleshooting guide lists the most common problems, probable causes and possible corrections for problems related to **TITAN** LSR conveyor equipment. These procedures will help in identifying and correcting equipment problems. Some problems may have several probable causes with associated possible corrections. Read all causes and corrections before attempting repair procedures.



DO NOT PERFORM MAINTENANCE ON THE CONVEYOR UNTIL THE START-UP CONTROLS ARE LOCKED OFF AND CANNOT BE TURNED ON BY ANY PERSON OTHER THAN THE ONE PERFORMING THE MAINTENANCE. BEFORE DISASSEMBLING A VALVE OR OTHER PNEUMATIC COMPONENT OR REMOVING IT FROM THE INSTALLATION, SHUT OFF AND EXHAUST THE ENTIRE PNEUMATIC CIRCUIT.



The disassembly or repair of equipment under Warranty may void such Warranty (motor and reducer, for example). Check to be sure the warranty has expired or will not be voided before performing disassembly or repair.

TROUBLESHOOTING GUIDE

TITAN LINESHAFT

PROBLEM	PROBABLE CAUSE	POSSIBLE CORRECTIONS
1. Insufficient Drive	Not enough rollers being driven Poor bottoms on product Overloading of product Lubricant on line-shaft Lubricant on belts, rollers & drive pulleys Weak belt (see 5) Interference	Drive more rollers, if available Improve product conveyability Remove overload Clean Shaft with liquid degreaser Clean belts, rollers and pulleys Replace belts Locate and correct interference
2. Excessive Accumulation Pressure	Too many rollers driven Accumulating distance excessive	Drive fewer rollers Break up pressure with Brakes
3. Rollers not turning/turning slowly	Weak Belts (see 5) Bad bearing on rollers Interference with roller or belt Roller bent	Replace Belts Replace rollers Remove interference Replace roller
4. Broken Belt	Rubbing on interference Poor belt joint (replacement belt)	Correct cause Replace belt
5. Weak belts	Reaction to chemical Excessive temperature Ultraviolet rays (sun)	Correct cause Replace belt Replace belt
6. Belt out of groove	Lineshaft location Very dry condition Groove mislocated	Move shaft Lightly oil groove Replace roller
7. Vibration in lineshaft Bent shaft	Misalignment in bearings Replace shaft Misalignment in coupling Universals out of phase	Loosen bearing and readjust shaft realign coupling Key one end of center shaft in alignment with opposite key. Equalize angles.
8. Pulsation after curve or merge	Angle of universals not equal	Readjust shafts.
9. Lineshaft bearing noisy	Misaligned lineshaft Worn brushes Worn bearing	Loosen bearing Repair or replace part Repair or replace part
11. Broken coupler chain	Improper chain installation Misalignment	Replace chain Realign shafts
12. Excessive switch in place	Excessive air pressure Lack of speed control Improperly adjusted speed	Reduce pressure Add speed control Adjust speed
13. Product over brake won't hold against line pressure brake	Pad not contacting rollers Air pressure not sufficient Brake channel bent Accumulating distance to great Light product	Shim padded channel Increase air pressure Replace padded channel Add additional brakes Use plastisol coated rollers over

TROUBLESHOOTING GUIDE (continued)

14. Drive belt riding above roller	Roller groove too shallow (see 6)	Use smaller diameter belts
15. Bearing housing turning in roller shell	Insufficient swagging pressure shell	Tack weld outer bearing flange to
16. Roller will not fit in frame	Cross member too short Frame bent Roller too long	Shim cross member at frame Straighten from or replace Replace roller with shorter one
17. Reducer oil leakage	Over Filling Vent in wrong location Worn Seal	Drain lubricant to proper level Place Vent in uppermost position Extend vent with pipe nipple Tighten all bolts and fittings Replace seal
18. Sprocket wear	Loose chain Misalignment Running dry	Tighten chain Check alignment with straight edge along side of chain Lubricate
19. Starter overloads kicking out	Wrong size overloads Motor too small Defective motor	Use proper size overloads Replace motor with proper size Replace motor
20. Non-symmetrical wear on sprockets	Shafts out of parallel or not in same plane	Realign sprockets or rollers
21. Wear on inside of roller plates or side of sprocket teeth	Sprockets offset on shaft (misaligned), or out of parallel	Realign sprockets
22. Wear on tips of sprocket teeth	Chain elongated excessively Loose chain	Replace chain Tighten chain
23. Broken chain parts, sprocket teeth	Drive overloaded Excessive slack causing chain to jump teeth Foreign object Inadequate lubrication Corrosion	Avoid overloading Periodically adjust center distance Remove object and prevent entry Maintain proper lubrication intervals Remove source of corrosive or use noncorrosive chain
24. Excessive chain noise	Chain contacting fixed objects Inadequate lubrication Broken or missing rollers Check shaft and sprocket Chain jumping sprocket teeth	Remove objects Maintain proper lubrication intervals Repair or replace chain Realign Adjust center distance teeth

TITAN LINESHAFT REPLACEMENT PARTS LIST

GENERAL

For proper maintenance, we recommend an adequate stock of replacement parts. This is important where service becomes a critical factor or downtime is extremely expensive. The items to keep in stock will depend on the severity of duty cycle.

ORDERING MOTORS AND REDUCERS

The information you need to order motors and reducers is located on the data plate attached to that item.

For motors please include brand name, model or identification number, horsepower and RPM.

Reducers include the brand name, part or identification number and ratio .

ORDERING SPROCKETS

Order sprockets by the 5 digit number stamped on the hub and the diameter of the sprocket bore.

ORDERING DRIVE CHAIN

Drive chain may be ordered by the first 2 numbers from the 5 digit identification number on the sprocket hub and the length of the chain.

ORDERING MISCELLANEOUS PARTS

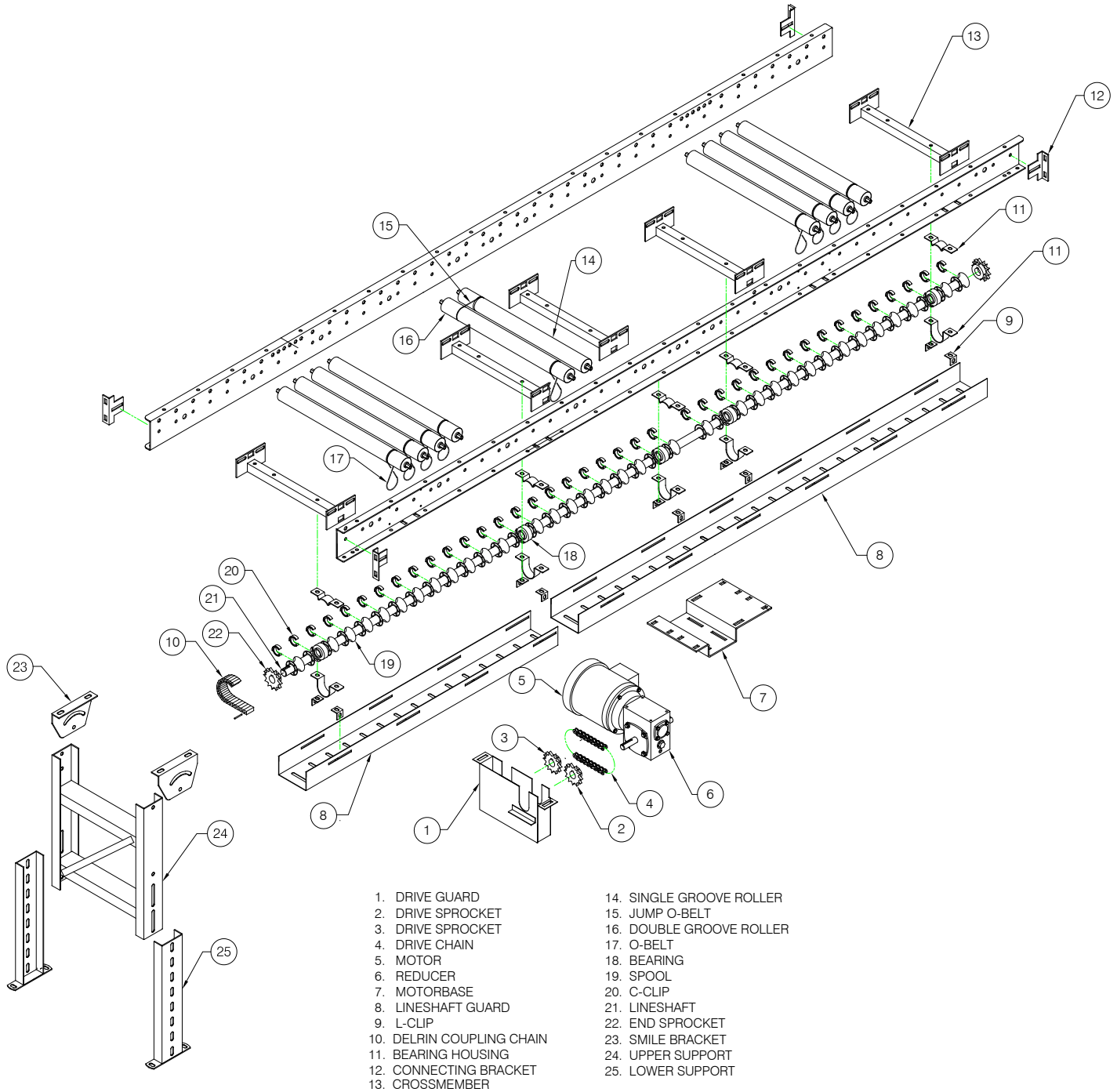
To find the correct part number for your unit from the following list, find the name of the part from the left side of the list and read across to the right for the proper part number. Please include the name of the part and conveyor width (if applicable) along with the part number when ordering.

TYPICAL REPLACEMENT PARTS

Rollers	Straight roller		Tapered Roller
	Single Groove	Double Groove	
13" between frames	LSRA02560	LSRA02566	LSRA02590
16" between frames	LSRA02561	LSRA02567	LSRA02591
22" between frames	LSRA02562	LSRA02568	LSRA02592
28" between frames	LSRA02563	LSRA02569	LSRA02593
34" between frames	LSRA02564	LSRA02570	LSRA02594
40" between frames	LSRA02565	LSRA02571	LSRA02595
Polyurethane"O" Rings			
Drive Belt Straight 3/16" STD Duty 1 3/8" Dia. roller			951759
Drive Belt Straight 3/16" STD Duty 1.9" Dia. roller			951761
Drive Belt Straight 3/16" Heavy Duty -92 1.9" Dia. roller			951762
Drive Belt Curve 3/16" STD Duty 1.9" Dia. roller			951757
Slave Drive Belt Straights and Curves 3/16" STD Duty			951758
Twist Belt with "S" hook			951763
Bulk Urethane Transfer Belting 3/8" Dia.			951765
Bulk O-Ring Material 3/16" Dia. STD Duty			951766
Splice Kit -Includes: Carrying case, weld splice fixture, heating tool, cutting tool, trimming tool			951767
"C" Clips			951772
Spool			951771
Coupler sprocket			611466
Nylon coupler chain			955548
Line shaft bearing	2 piece housing	151884	bearing
Guard "L" Clip			151001
Tinnerman Nut			LSRA02800
"U" Joint			441875
			953265

Consult your local distributor for current prices and minimum charge.

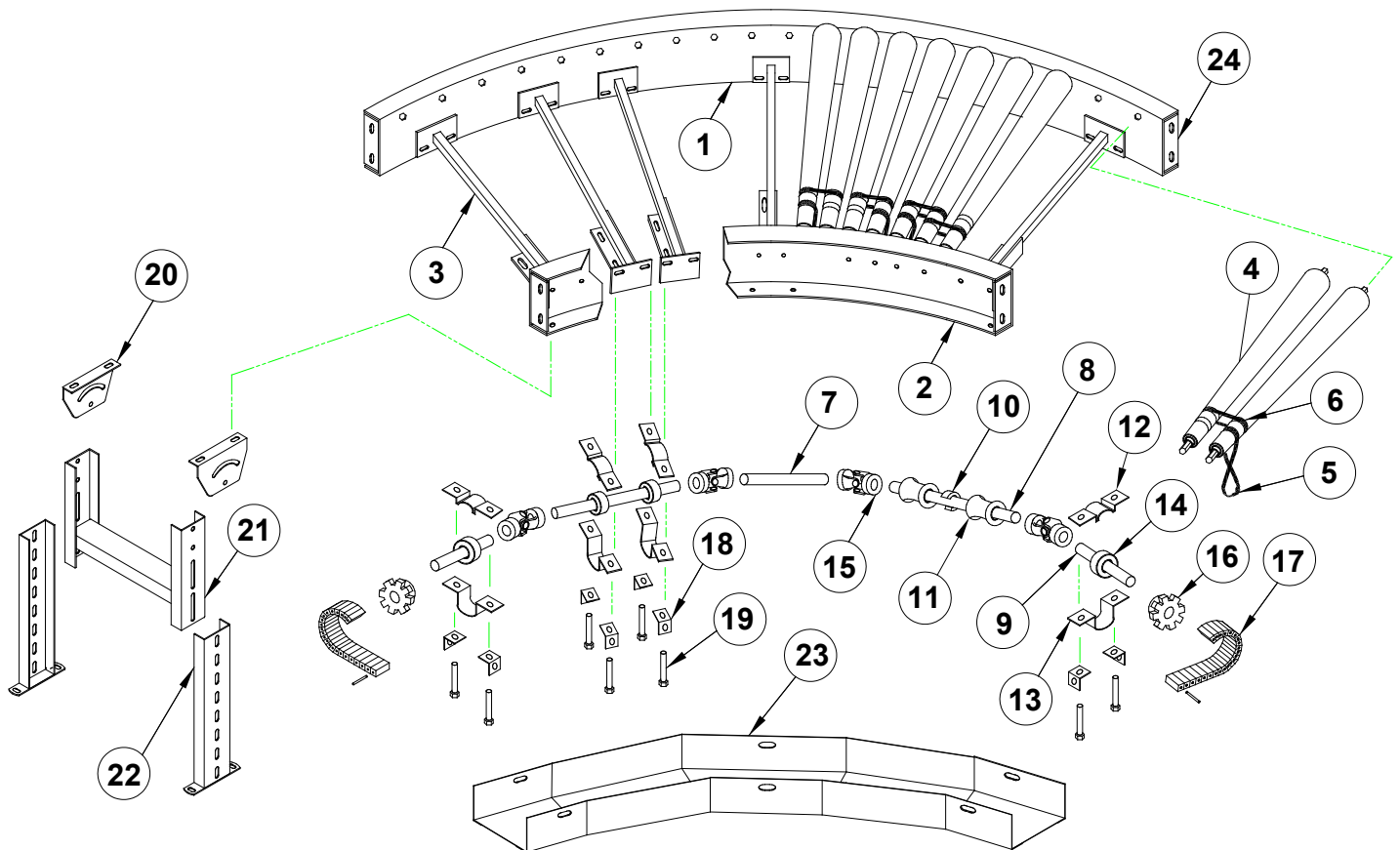
TITANTM CONVEYORS PATHWAYTM LINESHAFT CONVEYOR



TITAN CONVEYORS

PATHWAY™

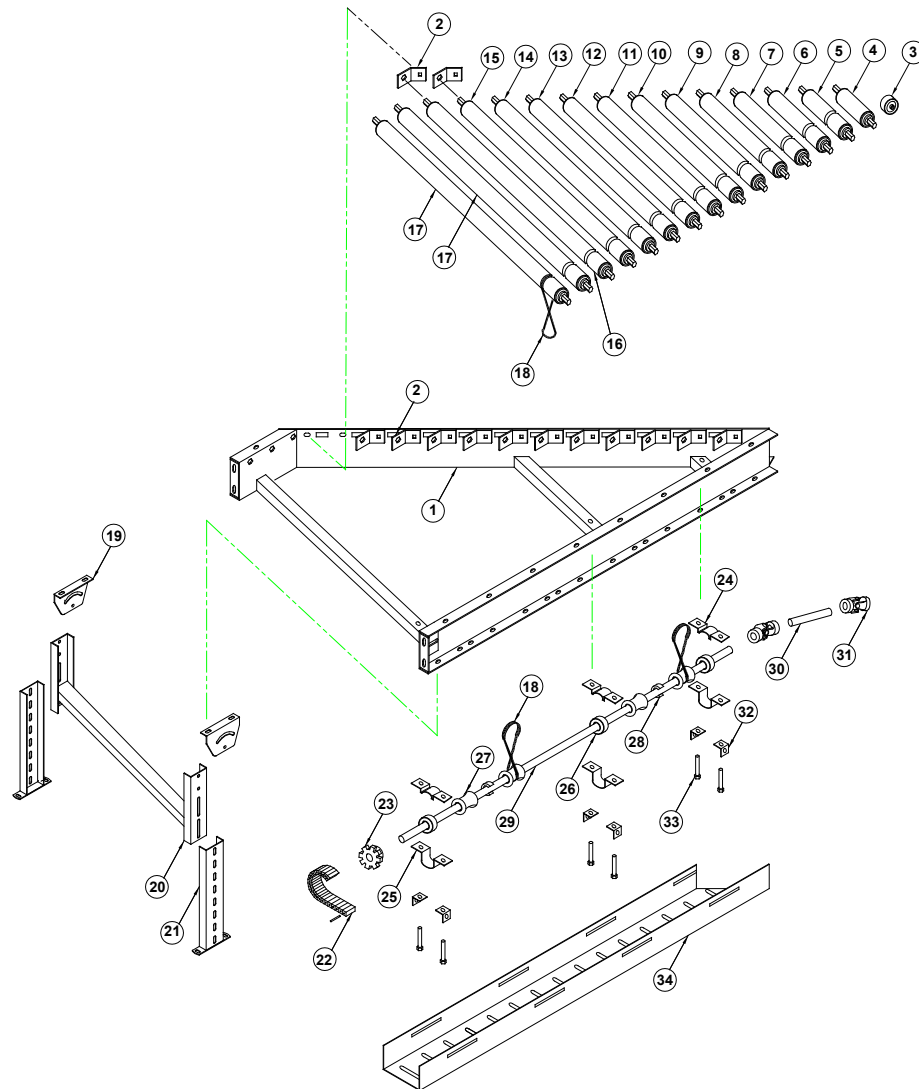
MODEL LSR 90° CURVE CONVEYOR



- | | |
|--------------------------|---------------------------|
| 1. OUTSIDE FRAME CHANNEL | 13. PRESSED STEEL HOUSING |
| 2. INSIDE FRAME CHANNEL | 14. BEARING |
| 3. CURVE CROSSMEMBER | 15. U-JOINT |
| 4. TAPERED ROLLER | 16. END SPROCKET |
| 5. CURVE O-BELT | 17. COUPLING CHAIN |
| 6. CURVE JUMP O-BELT | 18. L-CLIP |
| 7. CENTER LINESHAFT | 19. BEARING BOLT |
| 8. INNER LINESHAFT | 20. SMILE BRACKET |
| 9. END LINESHAFT | 21. UPPER SUPPORT |
| 10. C-CLIP | 22. LOWER SUPPORT |
| 11. SPOOL | 23. LINESHAFT GUARD |
| 12. PRESSED STEEL FOOT | 24. CURVE BUTT COUPLING |

TITANTM CONVEYORS PATHWAYTM

MODEL LSR 45 DEGREE MERGE CONVEYOR



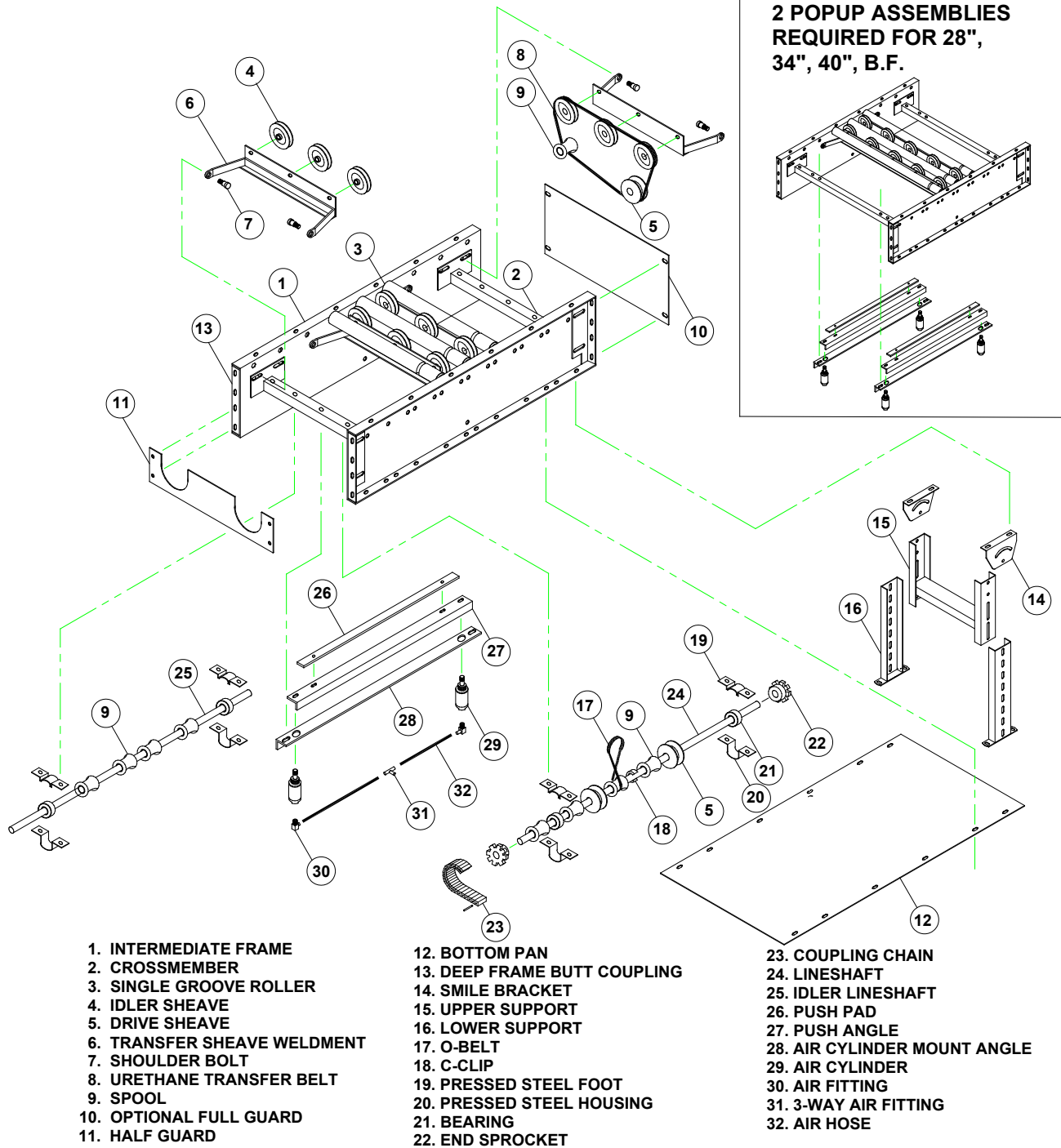
1. FRAME WELDMENT
2. ROLLER BRACKET
3. SKATE WHEEL
4. ROLLER #1
5. ROLLER #2
6. ROLLER #3
7. ROLLER #4
8. ROLLER #5
9. ROLLER #6
10. ROLLER #7
11. ROLLER #8
12. ROLLER #9

13. ROLLER #10
14. ROLLER #11
15. ROLLER #12
16. ROLLER #13
17. B.F. ROLLERS
18. O-BELT
19. SMILE BRACKET
20. UPPER SUPPORT
21. LOWER SUPPORT
22. COUPLING CHAIN
23. END SPROCKET
24. PRESSED STEEL FOOT

25. PRESSED STEEL HOUSING
26. BEARING
27. SPOOL
28. C-CLIP
29. LINESHAFT
30. CONNECTING LINESHAFT
31. U-JOINT
32. L-CLIP
33. BEARING BOLT
34. LINESHAFT GUARD

TITANTM CONVEYORS PATHWAYTM

MODEL LSR POPUP URETHANE BELT TRANSFER CONVEYOR



TITAN CONVEYORS
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800-558-3616 Toll Free
920-982-7750 FAX
E-MAIL: sales@titanconveyors.com
Website: www.titanconveyors.com

**Contact Your Distributor or Titan Directly
for Further Information on Other Titan Conveyor Products**

- ***Slider Bed Conveyors***
- ***Floor to Floor Belt Conveyors***
- ***Parts Conveyors***
- ***Gravity Roller Conveyors***
- ***Line Shaft Conveyors***
- ***Chain Driven Live Roller Conveyors***
- ***Belt Driven Live Roller Conveyors***
- ***Zone Accumulation & Special Applications***
- ***Hinged Steel Belt Conveyors***
- ***Slat Conveyors***
- ***Wire Mesh Conveyors***
- ***Multi-Strand Conveyors***
- ***Solid Waste Belt Conveyors***
- ***Bulk Handling Conveyors***
- ***Special Projects***