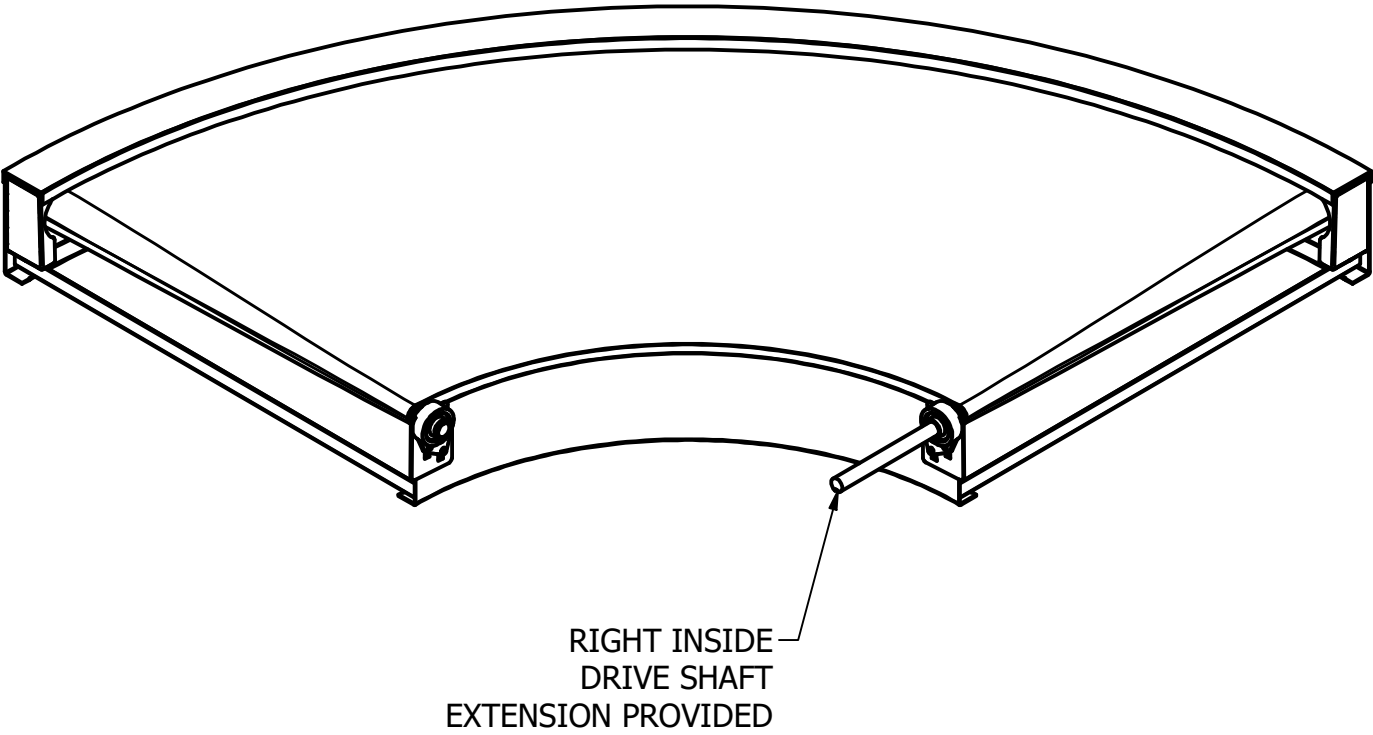
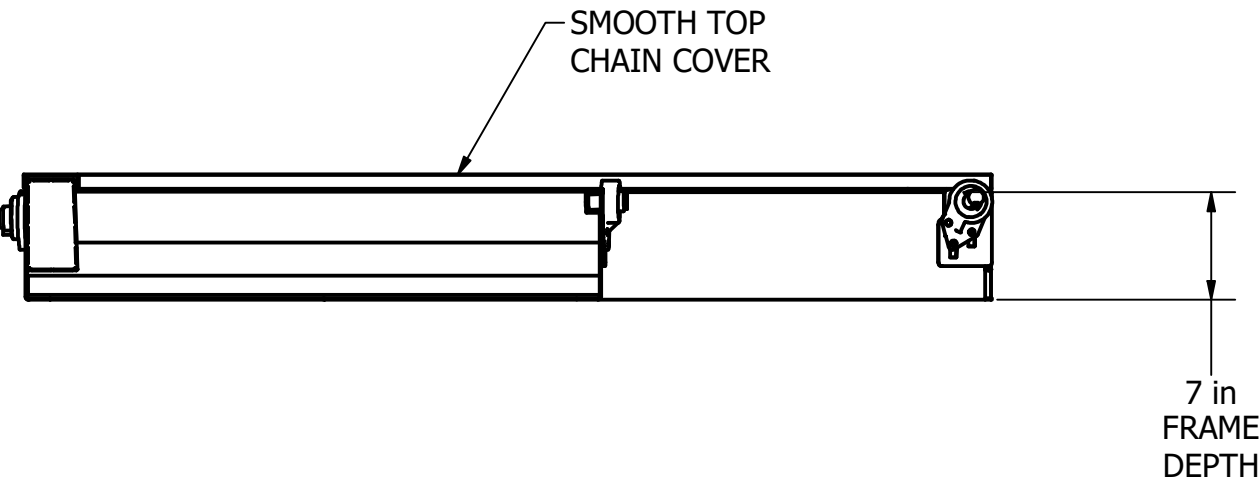
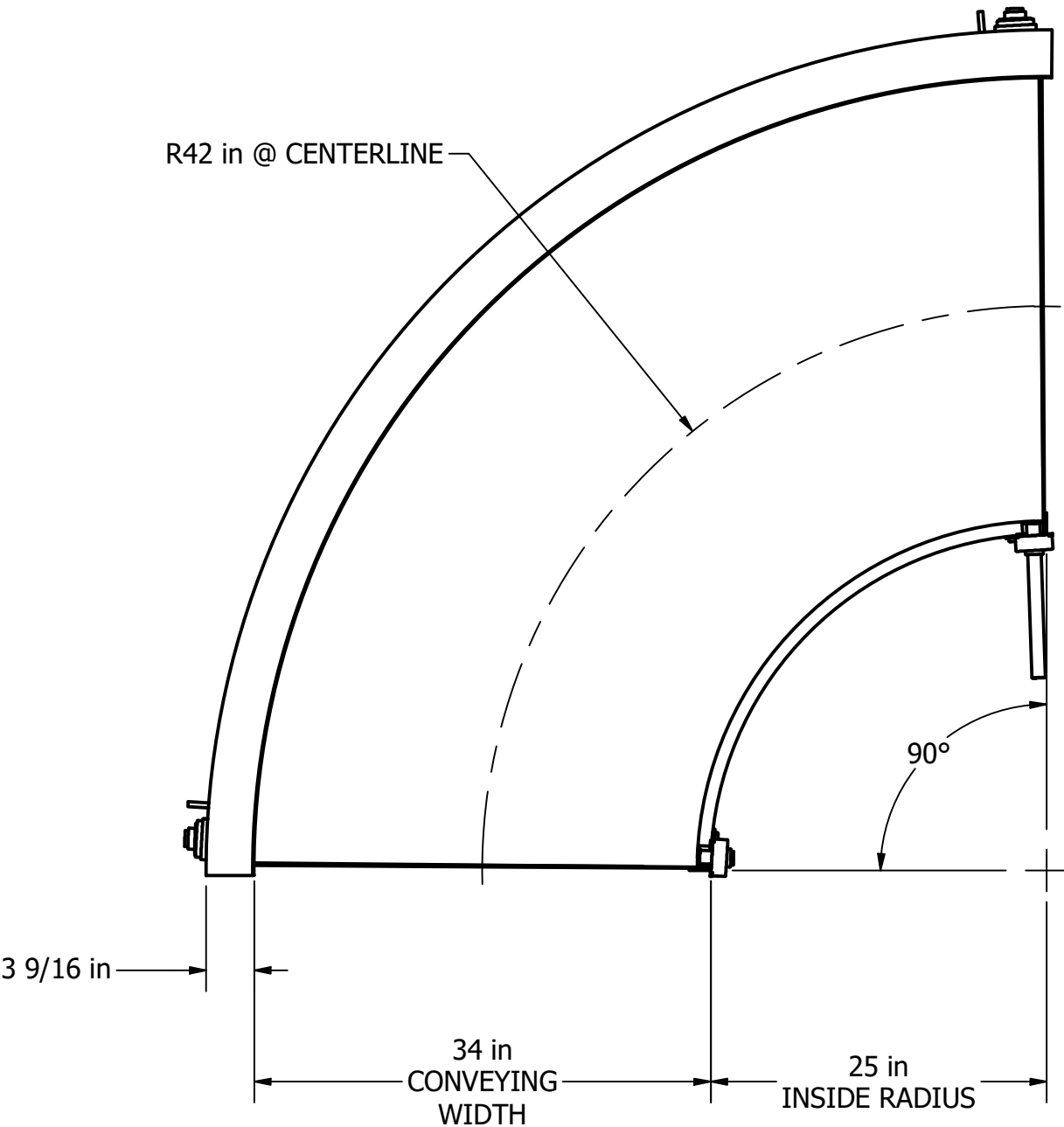


NOTE: VULCANIZED BELT OPTION,
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REVISION HISTORY			



Interroll Portec SG/SL Belt Power Curve

Installation and Owner's Manual



Conveyor Location: _____

Model Number: _____

Serial Number: _____

Year of Manufacture: _____

Interroll Engineering West, Inc.

(formerly known as PORTEC)

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Belt power curve**Tool list for installation, maintenance and belt replacement**

Tool	Used For
10 mm, 15 mm, 17 mm or 9/16" wrench	Bearing tensioners
15 mm, 1/2" or 9/16" wrench or socket	Bearing housing 1-3/16" (30 mm) shaft or smaller
18 mm or 3/4" wrench or socket	Bearing housing 1-7/16" (35 mm) shaft or larger
13 mm or 1/2" wrench or socket	Chain cover—Sideguards—End caps
13 mm or 1/2" wrench or socket	Return guide extrusion
15 mm, 17 mm, 9/16" or 3/4" wrenches 5/16" Allen wrench (2" sq. tubing connector)	Floor supports
Socket wrench set	Drive and mount
Small powered drill with 1/8" (3.2 mm), 5/64" (1.98mm) and 7/64" (2.8 mm) drill bits and rivet gun with 1/8" (2.8 mm) rivets	Upper chain guide strips
5/32" (4 mm) Allen wrench	End rolls
3/16" (5 mm) Allen wrench	Sprocket set screws
5/32" (4 mm) Allen wrench	Bearing set screws 1-7/16" (35mm) shaft or larger
1/8" (3 mm) Allen wrench	Bearing set screws 1-3/16" (30mm) shaft or smaller
3/32" (2.5 mm) Allen wrench	Return wheels
Electricians nut driver set or adjustable wrench	Electrical motor connections
Flat blade screwdriver	Chain guide strips
Needle nose pliers and side cutters	Conveyor belt lacing
Rubber mallet	Chain tension adjustment
Grease gun	Lubricate chain
Seam lacing machine	Seam lacing
Chain breaker tool	Attachment links

Note: Only trained personnel should perform all required work on the conveyor to prevent any danger to the operators or other persons, and to prevent damage to the conveyor.

WARNING: Disconnect and lock-out power before performing any installation or maintenance procedures. All guards must be in place before startup of con-

Note: Do not lift a conveyor by the drive shaft extension. This can cause damage, such as a bent shaft.

WARNING: Observe all safety precautions when working under hoisting equipment.

Note: To ensure proper installation and safety, only qualified mechanics and electricians should install conveyors.

Portec does not install conveyors, therefore, it is the responsibility of the contractor, installer, owner and user to install, maintain and operate the conveyor, components and conveyor assemblies in such a manner as to comply with all national, state and local laws and ordinances, including all National Occupational Safety and Health Codes and applicable Lockout/Tagout codes.

In order to avoid an unsafe or hazardous condition, the conveyors or parts must be installed and operated in accordance with the following minimum provisions.

1. Conveyors shall not be operated unless all covers and/or guards for the conveyor and drive unit are in place. If the conveyor is to be opened for inspection cleaning, maintenance or observation, the electric power to the motor driving the conveyor must be LOCKED OUT/TAGGED OUT in such a manner that the conveyor cannot be restarted by anyone; however remote from the area, until conveyor cover or guards and drive guards have been properly replaced.
2. If the conveyor must have an open housing as a condition of its use and application, the entire conveyor is then to be guarded by a railing or fence in accordance with the current National Safety Standard.
3. Do not attempt any maintenance or repairs of the conveyor until power has been LOCKED OUT/TAGGED OUT.
4. Always operate conveyor in accordance with these instructions and those contained on the caution labels affixed to the equipment.
5. Do not place hands, feet, or any part of your body, in the conveyor.
6. Never climb, sit, stand or work from a conveyor, or walk on conveyor covers or guards. When requested by the customer, some conveyors are equipped with safety handrails, which are to be used for maintenance purposes only. If the safety handrails are necessary for maintenance, they are to be used only after ensuring that the power has been LOCKED OUT/TAGGED OUT. The safety handrails must be removed before restoring power to the conveyor.
7. Do not use conveyor for any purpose other than that for which it was intended.
8. Do not poke or prod material into the conveyor with a bar or stick inserted through the openings.
9. Keep the area around conveyor drive and control station free of debris and obstacles.
10. Eliminate all sources of stored energy (materials or devices that could cause conveyor components to move without power applied) before opening the conveyor.
11. Do not attempt to clear a jammed conveyor until power has been LOCKED OUT/TAGGED OUT.
12. Do not attempt field modification of conveyor or components without prior approval of Portec.
13. Conveyors are not normally manufactured or designed to handle materials that are hazardous to personnel. These hazardous materials include those that are explosive, flammable, toxic or otherwise dangerous to personnel. Conveyors may be designed to handle these materials. If hazardous materials are to be conveyed, Portec should be consulted prior to any modifications.
14. When two or more conveyors are interfaced or joined together, make sure there is adequate guarding, pinch point protection and safety devices.
15. Only trained operators should be permitted to operate and maintain conveyors. Training needs to include instruction in operation under normal conditions and emergency conditions.
16. All starting and stopping devices should be clearly marked and the immediate area kept clear of obstructions to permit ready access.
17. The areas around loading and unloading points should be kept clear of any obstructions.
18. A person should NOT BE PERMITTED TO RIDE on any conveyor not specifically designed and approved to convey people.
19. Workers working around or operating conveyors should be shown the location of the starting and stopping devices and instructed how to use them to stop the conveyor in an emergency.

20. Do not use a conveyor for any purpose other than that for which it was intended. A conveyor should only be used to transport material it is capable of handling safely. Under no circumstances should safety guarding or labels attached to the conveyor be altered or removed without written permission from the owner/manufacturer. If the labels attached to the equipment become illegible, order replacement warning labels from Portec.
22. Routine inspections and Preventive and Corrective maintenance programs should be conducted to ensure that all safety features and devices are in place and functioning properly.
23. Employees should be alerted to the potential hazard of entanglement in conveyors caused by items such as long hair, loose clothing, and jewelry.
24. As a general rule, conveyors should not be cleaned while in operation. Where proper cleaning requires the conveyor to be in motion and a hazard exists, personnel should be made aware of all associated hazards as indicted above and take proper precautions.

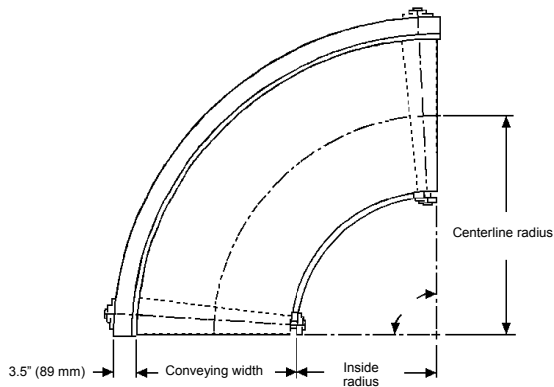
Additional Safety Notes:

Disconnecting and locking out the power to the motor driving the unit provides the only real protection against injury. Secondary safety devices are available; however, the decision as to their need and the type required must be made by the owner-assembler as Portec has no information regarding plant wiring, plant environment, the interlocking of the conveyor with other equipment, extent of plant automation, etc. Other devices should not be used as a substitute for locking out the power prior to removing guards or covers. We caution that use of the secondary devices may cause employees to develop a false sense of security and fail to lock out power before removing covers or guards. This could result in a serious injury should the secondary device fail or malfunction.

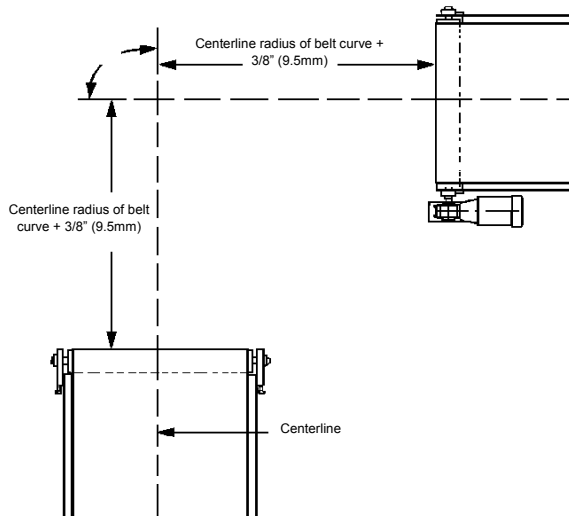
Electrical controls, machinery guards, railings, walkways, arrangement of installation, training of personnel, etc., are necessary ingredients for a safe working place. It is the responsibility of the contractor, installer, owner and user to supplement the materials and services provided by Portec to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

Examples of Safety Labels used on conveyors:

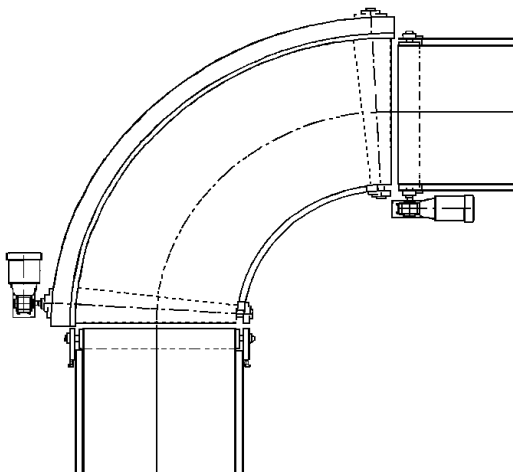




The objective is to get the sideguards to match up. The "Conveying Width" on a belt curve is equivalent to the "Between Sideguard Width" on a straight belt conveyor. The outside radius frame, chain cover and both sideguards on the belt curve extend 3/8" (9.5 mm) past the true angle. The inside radius frame length matches the true angle.



The ends of two straight conveyors should be positioned so they are both the same distance from the centerline intersection point as the "Centerline Radius" of the belt curve plus 3/8" (9.5 mm). The outside arc of the two belt centerlines should be identical to the arc of the belt curve.



When the following factors are correct, the belt curve will fit perfectly:

1. "Conveying Width" of the belt curve is equal to the "Between Sideguard Width" of the straight conveyors.
2. The arc of the belt curve is the same as the outside arc of the two straight conveyor centerlines.
3. The two straight conveyors are set back the same distance from the belt centerline intersection as the "Centerline Radius" of the belt curve plus 3/8" (9.5 mm).



Belt curves are normally built with a one-piece frame. Large-sized belt curves may be built in multiple sections and will require additional assembly during installation.

Notes:

Minor inspection is suggested during uncrating of a conveyor. Contact the shipping carrier immediately if shipping damage is suspected. **Please carefully check the crate or skid to ensure all parts are removed before beginning installation.**

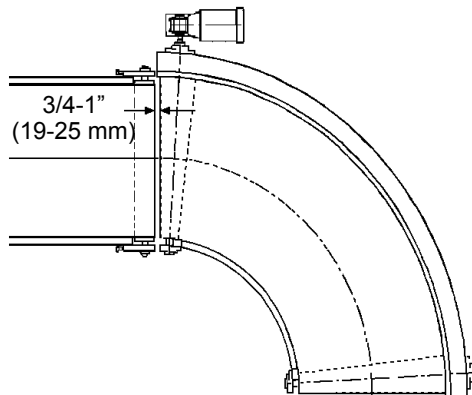
If floor supports, sideguards (12" (305mm) or higher), or drive unit are provided by Portec, they are normally removed from the belt curve for shipping. The brackets or holes for mounting to the frame are provided. All hardware and fasteners for mounting are included.

Section 5: Belt Curve Installation Instructions



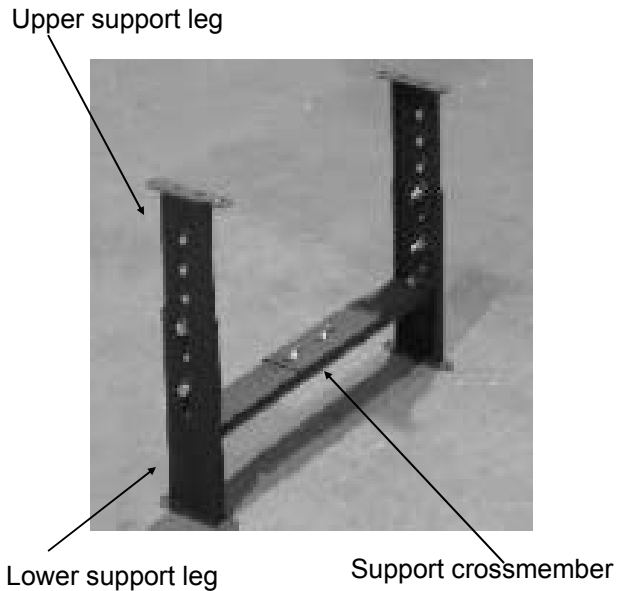
1. Position the conveyor between the adjoining conveyors.
2. Attach floor supports or ceiling hangers under the conveyor. See Section 5 (Floor Supports) or Section 6 (Ceiling Hangers) for instructions.
3. Attach sideguards (if required). See Section 7 for instructions.
4. Install underguarding. See Section 8 for instructions.
5. Install drive unit. See Section 9 for Shaft-Mount Gear-motor Installation Instructions.
6. Visually inspect:
 - Motors
 - Sideguard to belt clearance
 - Belt tension
 - Drive mounting and alignment
 - Return wheel assembly
7. Connect power to the drive unit and test run to assure the proper belt movement direction.

During the initial 40-hour run-in period, listen for any noises that may indicate that something is out of alignment or loose in the conveyor.



Note: The belt curve end rolls are adjusted at the factory so there is an approximately 3/4-1" (19-25 mm) gap between the belt on the end roll of the curve and the adjoining conveyor frame. The gap between end rolls can be less than 3/4" (19 mm) if the end roll on the adjoining conveyor is extended beyond the conveyor frame.

Low Floor Support

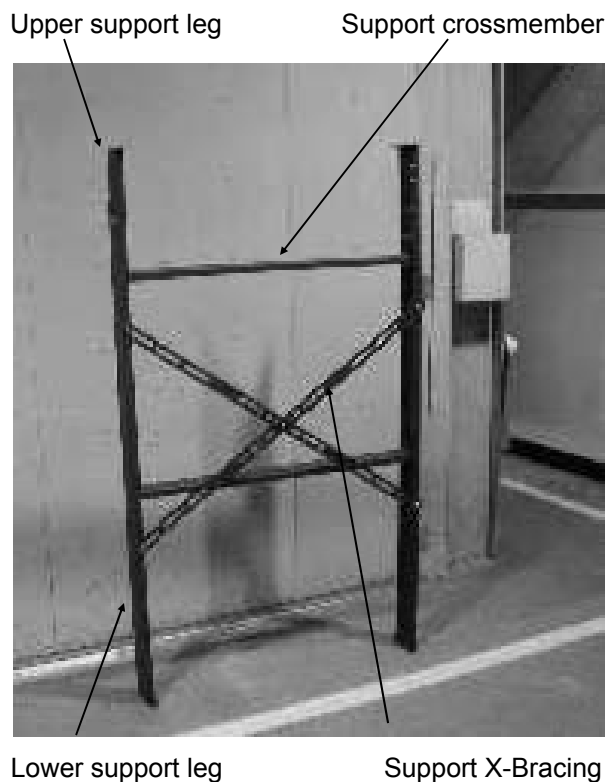


Assembly Instructions for Adjustable Height Supports

The support assemblies are adjustable for height and width using slots and holes.

1. Assemble the upper and lower support legs. Ensure that the support leg is the proper length before tightening the fasteners. Two heavy duty flange bolts and nuts must be used on each vertical leg to ensure support of the conveyor.
2. Assemble the support crossmembers using two heavy duty flange bolts and flange nuts. Ensure that the support crossmembers are the proper length before tightening the fasteners.
3. Assemble the support assembly using two legs and one or two crossmembers.
4. High supports may require an X-brace. Attach the X-brace to both the vertical legs and the crossmembers.

High Floor Support with X-Bracing





Installation Instructions for Adjustable Height Floor Supports

1. Stand the assembled floor supports under the conveyor. Attach to the bottom flange of the conveyor. Leave the fasteners slightly loose.
2. Lower the conveyor into position with the support feet on the floor.
3. Check to ensure that the conveyor is level across and along the belt surface (end to end). It is acceptable for one end to be slightly higher than the opposite end, but the conveyor frame must not be twisted.
4. Check to ensure that the support legs are vertical.
5. Check the conveyor height in relation to the adjoining conveyors. To make slight adjustments to the height, loosen the bolts that hold the upper and lower legs together. For large height adjustments, remove the bolts that hold the upper and lower legs together. Slide the upper and lower legs until the leg is at the required height and install and tighten the bolts.
6. Tighten all fasteners in the support legs, including the fasteners that attach the support legs to the conveyor.
7. Fasten the conveyor to the floor using floor anchors.

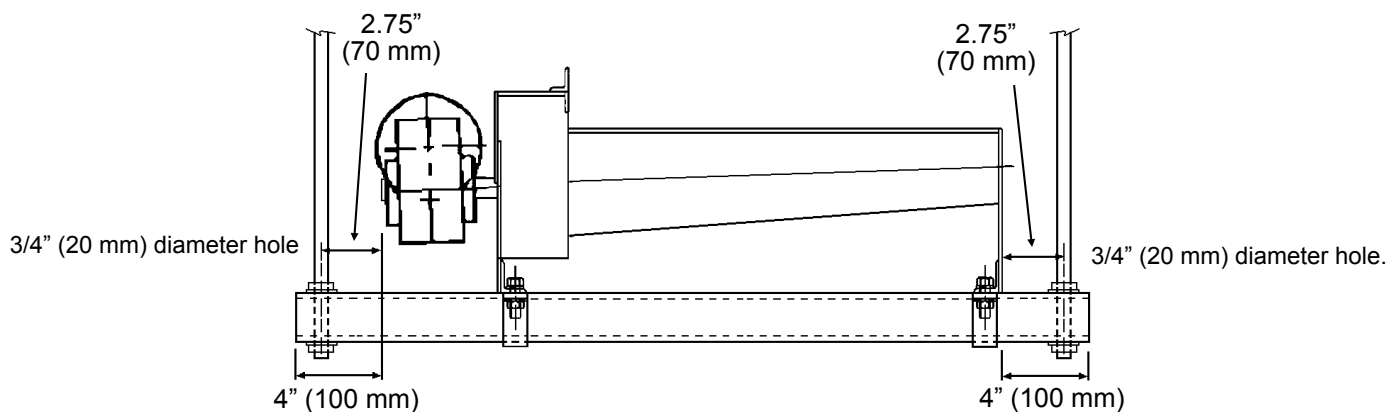
WARNING: Observe all safety precautions when working under hoisting equipment.

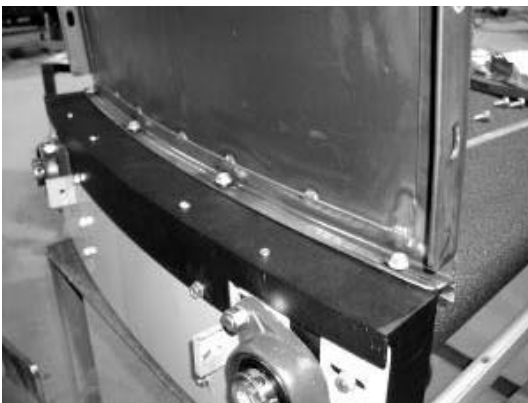
1. Raise the conveyor and attach the ceiling hanger supports to the bottom flange of the conveyor.
2. Move the conveyor to the required position.
3. Hang threaded rods securely from an overhead structure. Install jam nut near the bottom end of each threaded rod.
4. Insert the ends of the threaded rods through the pre-drilled holes in the ceiling hangers and install a second jam nut on each rod under the support hangers.
5. Adjust the jam nuts until the conveyor is positioned correctly at the right elevation. Check to ensure that the conveyor is level across and along the belt surface (end to end). It is acceptable for one end to be slightly higher than the opposite end, but the conveyor frame must not be twisted. Tighten all jam nuts to secure the conveyor in position.

Standard ceiling support hanger extends 4" (100 mm) past the conveyor frame. The hole center for the hanger rod is 2.75" (70 mm) from the frame.

A ceiling support hanger under a drive unit is longer. The support hanger extends 4" (100 mm) beyond the drive shaft extension. The hole center for the hanger rod is 70 mm beyond the end of the drive shaft extension.

The standard hole diameter for the hanger rod is 3/4" (20 mm).





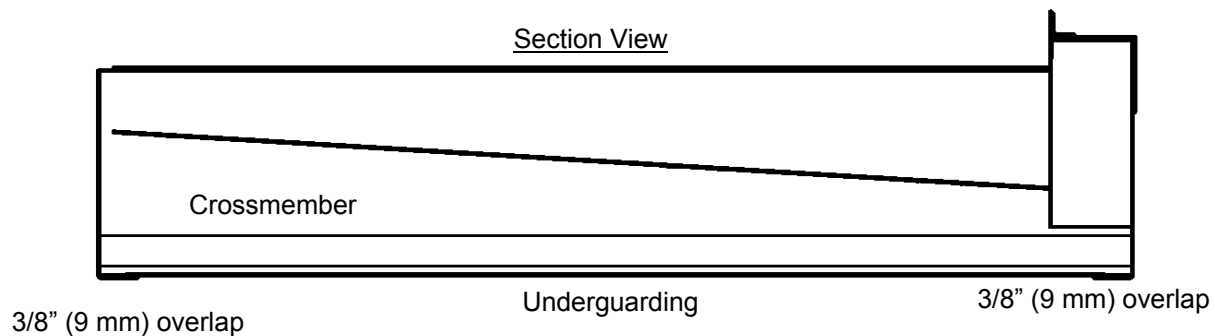
Sideguards for Portec curves are designed for quick, easy installation. Sideguards are installed at the factory prior to shipment. The sideguards may be removed for shipment. Portec uses cage nut inserts and slots to avoid loss of loose fasteners and to make installation and adjustment fast and easy.

1. Begin installation of the inside radius sideguard by loosening the bolts on the inside radius side frame. The bolts should be backed out 1/8-3/16" (3-5 mm).
2. Place the inside radius sideguard against the inside radius curved side frame above the loosened bolts. Align the slots in the lower edge of the sideguard with the bolts and lower the sideguard down onto the bolts.
3. Align the sideguard so it extends past the frame by an equal amount on each end of the side frame. The inside radius sideguard is designed to extend 3/8" (10 mm) past the end of the inside radius frame. Tighten the bolts.
4. Place the outside radius sideguard on top of the outside radius curved chain cover. Align the slots in the lower mounting flange with the studs in the top of the chain cover.
5. Align the outside radius sideguard so the end is flush with the end of the chain cover.
6. Fasten the sideguard to the chain cover.
7. Check the clearance between the bottom of the sideguard and the top of the conveyor belt. There should be 1/8-3/16" (3-5 mm) of clearance. Do not allow the sideguard to contact the belt.
8. If the sideguards are equipped with end flanges, attach the end flanges to the end flanges on the ad-

WARNING: Sideguards are not designed to support any weight from above. If the outside radius sideguard is pushed down, it may contact and damage the conveyor belt. It is extremely dangerous to temporarily support a conveyor by hanging it from its sideguards. The sideguards can be pulled loose and allow the conveyor to drop.

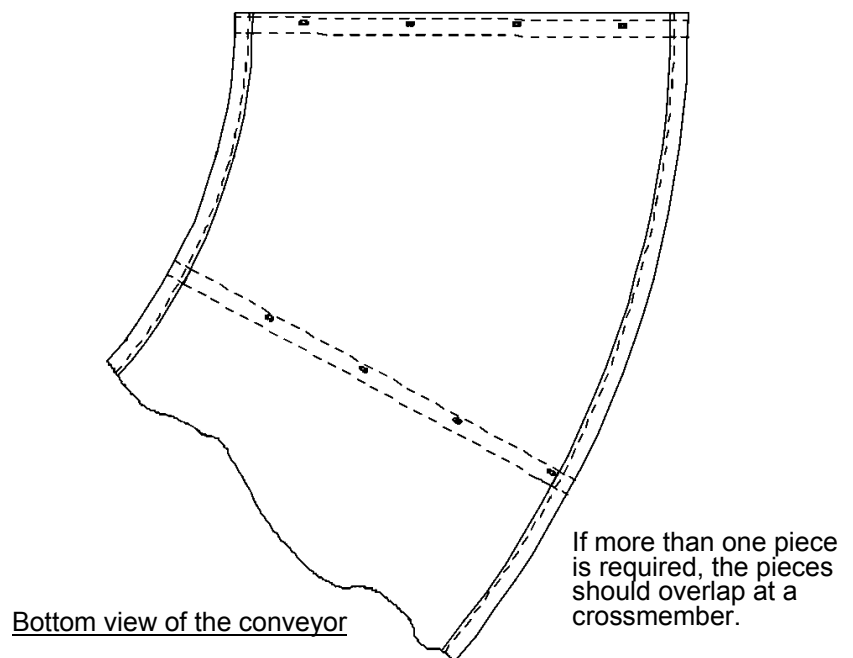
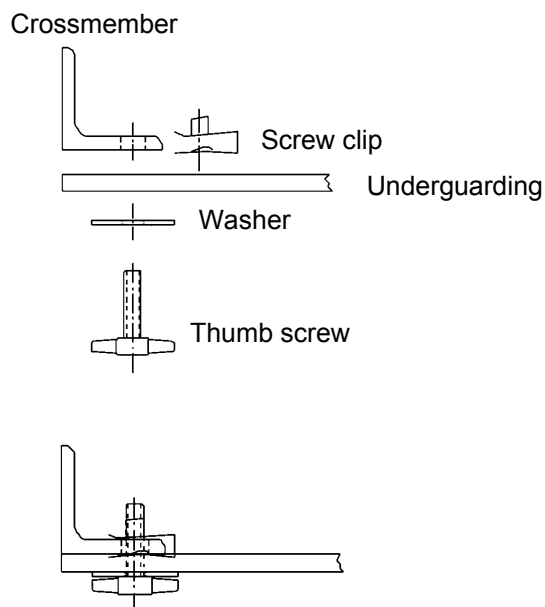
Section 8: Solid Metal or Plastic Mesh Underguarding

- The underguarding is attached with thumb screws to the angle steel crossmembers under the conveyor frame.
- If more than one piece is required, the pieces should overlap over a crossmember.
- Underguarding should be above the bottom flange of the conveyor frame and overlap by 3/8" (9 mm).



Align the holes in the underguarding with the slots in the crossmembers before attaching with fasteners.

Fasteners for underguarding

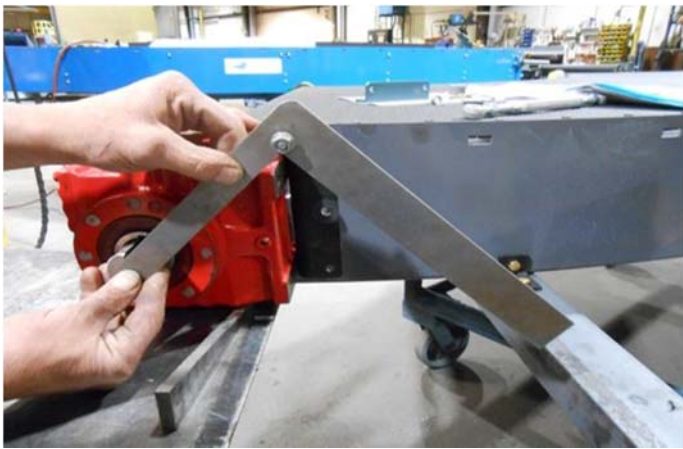


Section 9: Shaft-Mounted Gearmotor Installation Instructions (SEW used as typical example)

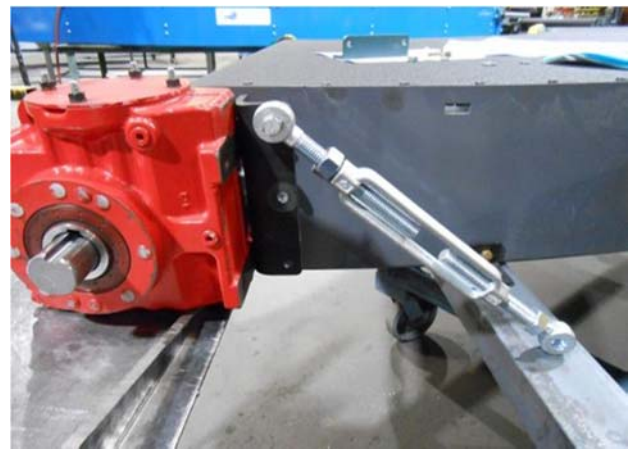


SEW gearmotors have a torque arm that requires a special bracket to enable the arm to be fastened to the conveyor.

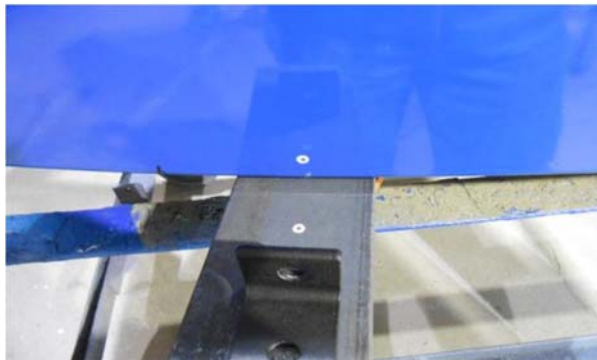
The photo shows an SEW gearmotor in the vertical position. It also may be mounted in a horizontal position.



Install the gearmotor onto the drive shaft and level from side to side.

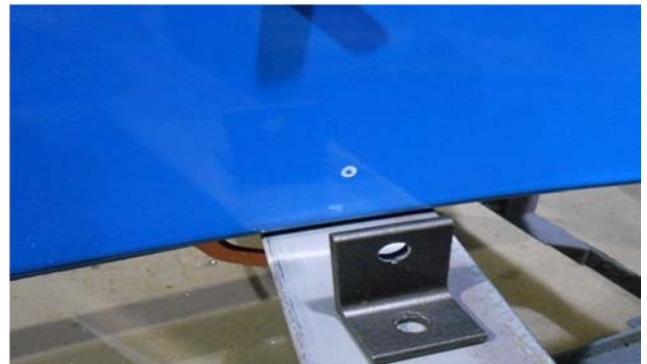


Install the turn buckle to the gearmotor. Position the cross angle under the conveyor so the turn buckle aligns on top of it.



Temporarily secure the cross angle to the conveyor foot rail with clamps.

Position the mounting angle and mark the mounting locations on the frame side and cross angle.

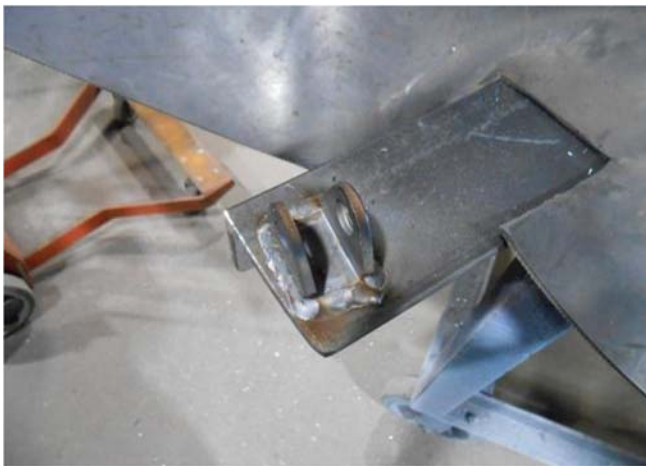




Install the saddle onto the turn buckle and clamp into position centered from side to side on the cross angle.



Weld all sides of the saddle onto the cross angle.



Radius all sharp edges.



Deburr and remove all debri.



Paint all bare metal.



Reassemble the drive mount.

After installing a Portec curve conveyor, check the following:

- ◆ Sideguards match up with adjoining conveyors.
- ◆ Elevation of conveyor belt match up with adjoining conveyors. They should be level or a small water-fall in the direction of travel.
- ◆ No guards or other metal edge contacting the conveyor belt.
- ◆ Floor supports anchored to the floor.
- ◆ Floor supports all are equally carrying the weight of the conveyor.
- ◆ All fasteners properly tightened.
- ◆ The conveyor belt is loose around the end roll.
- ◆ Drive mount is not rigid.
- ◆ Rotating shafts and pinch zones are protected with a guard.

PORTEC CURVE INSTALLATION- CRITICAL ITEMS

Review the Portec installation manuals regarding system layout. It is critical to have the BSG (between side guards) centerline in alignment with adjoining conveyor centerlines.

- When staging curves for installation do not stack unless there is blocking from curve slider-bed on lower unit to bottom frame on upper unit. No weight must reside on the side guards or chain cover.
- Insure that side guards are square to slider-bed and that **spacing between belt and side guard** on the outside radius, has not been altered from factory setting (1/8"-3/16"), before connecting to adjoining conveyors. If this factory setting has been altered, typically this means that excessive force has bent the chain cover. Place a pry bar between the belt and the side guard and lift up until the spacing is back to the factory setting.
- Portec either furnishes or can provide standard recommendations for the number of supports for a curve. In no case should the quantity of supports be less than 2 per curve located at the entry and exit. This applies to floor supported and ceiling hung curves.
- When using a forklift to position curves for installation the forks must extend from inside radius frame to outside radius frame. This may require the use of extensions for larger curves. Damage to critical components will occur if forks enter into the under side of the curve.
- Do not lift curves using the drive shaft extensions. Use the frame and a minimum of 4 points for even safe lifting.
- When mounting the inside and outside radius side guards to the conveyor ensure that the guard is centered on the conveyor prior to tightening them down. (Ref: TB-1223)
- Make sure that the spirals are installed at the correct entry and exit elevations from the floor. Also confirm that the conveying surface of the curve is level from side to side.
- Do not alter the position of the chain cover by raising it up to achieve a different side guard top of belt height. Leave the chain cover mounted in its correct position from the factory and loosen up the side guard end flange bolts and raise the side guard up off of the belt. Tighten the end flange mounting bolts.
- Insure that the return wheels/rolls are operating at the proper position prior to start up of the conveyor. If the return wheel/roll assembly has been pushed up severely into the belt at the outside radius, pull down on the shaft until the wheels/rolls are clear of the belt, then push up slightly until the wheel makes contact with the belt. (Ref: TB-1222 for set screw torque on wheels)
- Make sure that there is proper wear guide lubrication and chain tension during the commissioning phase and prior to turning the equipment over to the end user. (Ref. TB-1208 for lubrication/ TB-1212 for chain tension)
- Ensure that there is sufficient clearance between curve and straight conveyors to allow for future curve end pulley/bearing adjustment. Conveyors too close to the curve ends will impede the end user from adjusting to the proper belt chain tension as chain and guides wear. Do not adjust factory set bearings to achieve smaller gap at transfer. This may result in chain and/or belt tension being too high and curve failure.

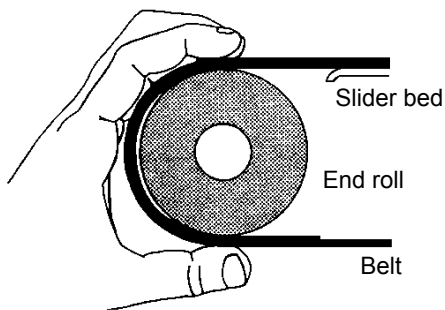
Perform a complete curve inspection after the first 40 hours of operation.

- Check belt drive chain alignments to the sprockets and guides, and check the chain slack.
- Check drive components for alignment and check that all fasteners are secure.

A Portec belt curve may be provided with regreaseable bearings (4) at the drive and idler end rolls. Lubricate these bearings at the same time as other system conveyors, which are typically on a quarterly service interval. A lithium based grease of a NLGI #2 consistency is recommended for most situations. Maintain the lubrication of the gearbox and drive chain (if equipped) according to the manufacturer's recommendations. Keep the area between the curve belt and bedplate relatively free from debris. Excessive debris may cause premature belt wear.

WARNING: Always disconnect the power and perform the appropriate lock-out/tag-out procedures before beginning service or maintenance on the curve.

Component(s)	Service Interval	Task(s)	Comments
Curve	Monthly	Check belt chain alignment to sprockets and guides. (listen for ticking noise at sprockets)	Adjust position if required and grease the chain.
		Check belt chain slack on unloaded side of sprocket. (listen for fluttering noise on entry end during operation)	To tighten chain, use jack bolt at outside radius.
		Visually check belt condition	Observe overall condition.
		Check drive components alignment/performance.	Adjust if required.
		Check that all fasteners and hardware are secure.	Tighten if required. Do not operate unless secure.
		Check that all guards are securely in place and properly adjusted.	Readjust for clearances and secure.
Belt & Components	Annually	Check for belt and seam damage. Check belt to chain attachments.	Repair or replace as needed.
End Roll Assemblies	Annually	Check end roll bearings for noise and lubrication.	Lubricate or replace as needed.
		Check end roll alignment in relation to sprocket and chain guide.	Adjust if required and grease the chain.
		Check end roll assembly set screws to ensure they are tight.	Adjust/tighten if required.
		Check that both end caps are non-damaged and properly adjusted.	Readjust for clearances and secure.
		Check shaft for condition with no visible damage.	If shaft is damaged from spinning in loose bearing collar or sprocket, replace as needed.
		Check sprockets for tooth wear.	Adjust or replace as needed.
Drive Arrangement	Quarterly	Check drive sprockets/chain or belt for wear.	Replace as needed.
		Check motor/reducer or gearmotor for noise.	Adjust if required or replace as needed.
		Check chain or belt tension.	Adjust if required.
		Check gear box lubrication level.	Refer to manufacturer's specifications.
Chain Guides	Annually	Check upper and lower chain guide strips for wear.	Lubricate and/or replace as needed.
Return Wheels	Semi-Annually	Check return wheels for noise.	Replace as needed.
		Check to ensure that return wheels are in contact with belt.	Adjust if required.
		Check that return wheels turn freely when in contact with belt.	Replace as needed.

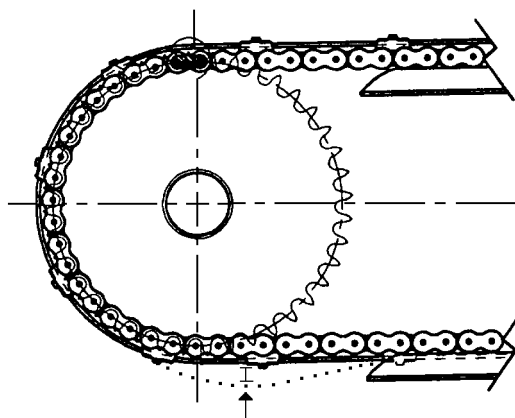


Squeeze and pull -- 1/8-1/4" (3.2-6.35 mm) gap
(AT THE INSIDE RADIUS END OF THE END ROLL)

NOTE: The belt should **NEVER** be adjusted tight against the end roll. **HIGH** belt tension is **NOT** required for optimum performance and can cause damage or premature failure.

1. Check the belt tension at the inside radius of the end roll by the "squeeze-pull" method as shown.
2. If belt is too tight or too loose, adjust the belt tension at the inside radius by moving the end roll bearing.
3. Loosen the bearing housing fasteners on the inside radius end of the end roll.
4. Tighten (or loosen) the belt by tapping against the bearing housing with a rubber mallet.
5. Tighten the fasteners of the bearing housing and check the gap by the "squeeze-pull" method.

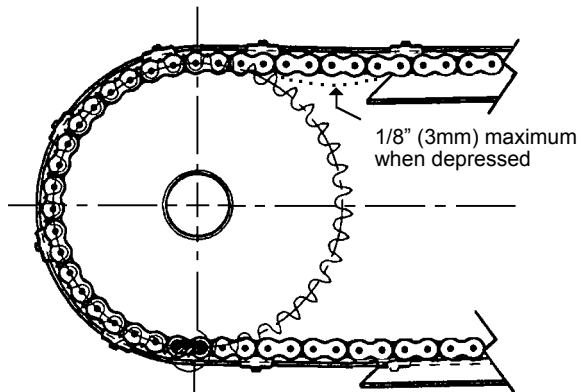
Section 11C: Belt Chain Tension Adjustment



1/8" (3.2mm) minimum 3/8" (9.5mm) maximum
CHECK TENSION

NOTE: Chain slack may develop during the initial run-in period while the chain seats on the chain guides or after a long period of operation.

1. Check chain slack on the bottom of the sprocket on the discharge end of the conveyor. Chain slack within the 1/8-3/8" (3.2-9.5 mm) range is acceptable.
2. Loosen the bearing housing fasteners on the outside radius end of the end roll. Chain tension can be adjusted at either end of the conveyor.



ADJUST TENSION

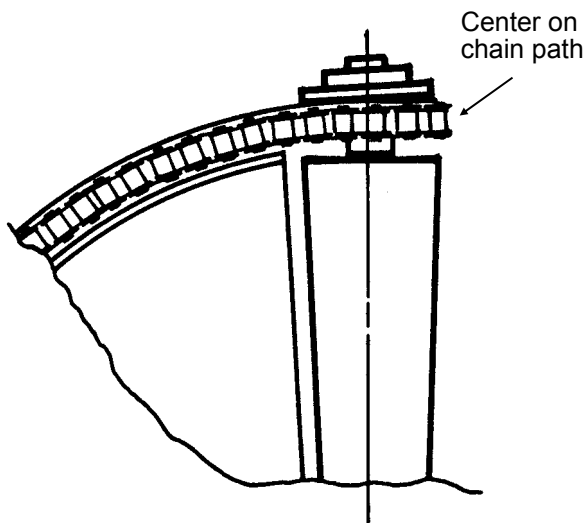
4. Use the jack bolt next to the bearing housing to move the end roll assembly. Move the outside radius end of the end roll assembly until the chain may be depressed 3 mm between the sprocket and the chain guide.

5. Tighten the backing nut used on the jack bolt and the bearing housing fasteners.

6. Check the alignment of the chain sprocket and the chain guides. If adjustment is necessary, see the Chain Sprocket Adjustment Procedures.

7. Replace the chain cover, end caps, and sideguard. Move the end caps close to the end roll without touching the conveyor belt.

Section 11D: Belt Chain Sprocket Alignment



NOTE: Chain “rattle” or “popping” as the chain engages or disengages the end roll sprocket may indicate that the sprockets need to be aligned.

1. Remove the outside radius sideguard, chain cover and end caps.

2. Check the condition of the sprocket teeth. Excessive uneven wear on the teeth indicate misalignment of the sprocket. Replace sprocket.

3. Check the alignment of the chain, sprocket, and chain guides. The sprocket should be centered in the chain path.

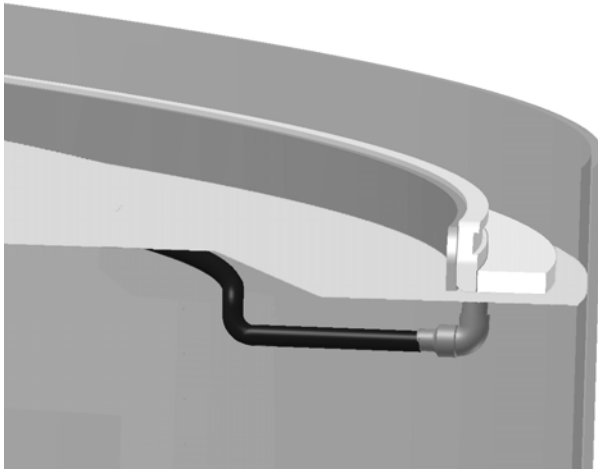
4. Loosen the set screws in the end roll bearings.

5. Move the end roll assembly with the shaft and sprocket until the sprocket is in the correct position. As the conveyor is operating, you should be able to see light between the sprocket side and the chain on each side of the bottom of the sprocket.

6. Tighten set screws in the end roll bearings.

7. Test run the conveyor and listen for the rattle or popping noise.

8. Install chain cover, end caps, and sideguard. Move the end caps close to the end roll without touching the conveyor belt.

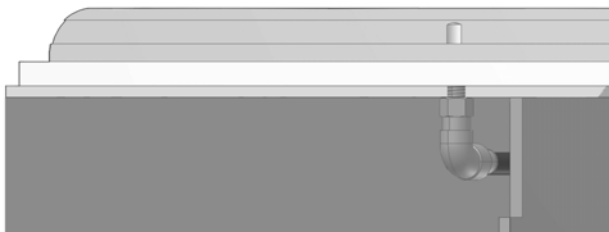


The belt attachment chain is a “lubricated for life” chain. Under normal operating conditions further lubrication should not be required. When chain tension is adjusted properly the chain guide strips have a long life expectancy without lubrication.

When replacing a belt assembly and/or the chain guides, a light film of grease can be applied to the guides. This will replicate the initial application of grease that is applied to new belt curves at the factory.

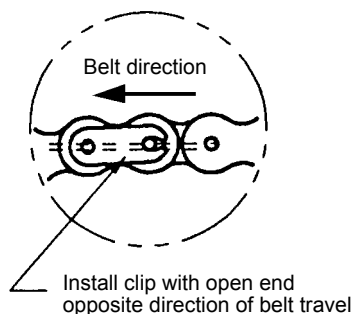
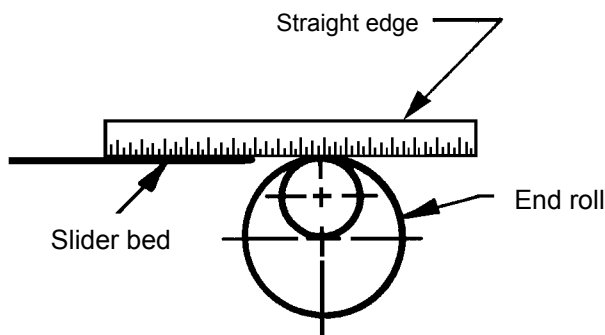
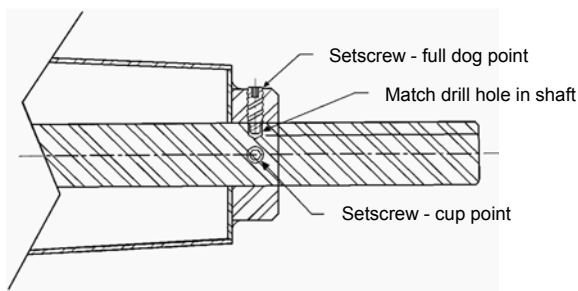
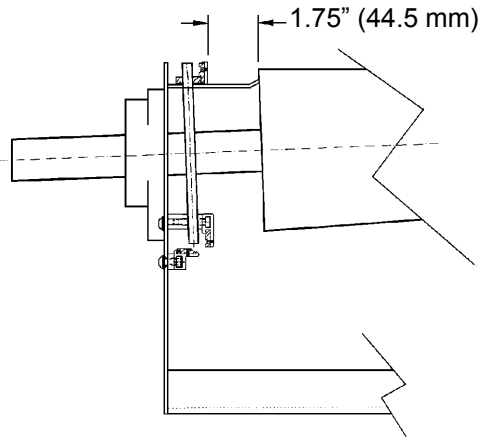
No more than a 1/8” bead should be applied. We recommend using Lubriplate Mo-Lith #2 grease or an equivalent moly-lithium, multi-purpose, extreme pressure, water resistant industrial grease.

Lubrication can be applied at other times as a fitting is supplied for this purpose. Typically it will be only needed on heavy loads, high speeds and certain environmental conditions.



The grease fitting is located at the charge (in-feed) end of the curve on the side of the conveyor frame. This can be used, as needed, to grease the chain guides while operating and between the changing of components.

Note: If the conveyor is operating in a food application, refer to the appropriate government regulation for the correct type of food-grade grease.



NOTE: The Portec engineered tapered end roll permits the belt to travel radially accommodating the differences in belt speed from the inside radius to the outside radius without scuffing (wearing) the bottom side of the belt as is common with cylindrical end roll variations of other systems. End roll lagging IS NOT required because the belt is powered by the positive mechanical belt/chain drive and NOT by a friction drive dependent on high belt tension against the end pulley common to other systems.

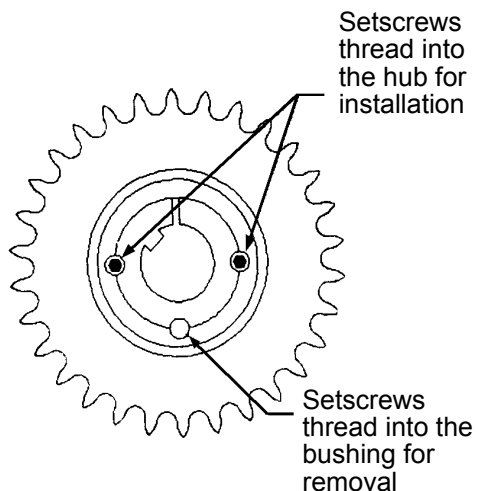
1. Remove the outside radius sideguard, chain cover, and end caps.
2. Move the belt assembly until the laced belt seam with the chain connecting link is on top of the conveyor bed and near the end roll that requires alignment.
3. Remove the chain connecting-link and clip, and the belt seam-lacing pin. Lay the belt back to expose the end roll.
4. The end roll position in relation to the sprocket is set at the factory (2.5" (63.5mm) to center of sprocket). The end roll should not be moved on the shaft. The end roll position in relation to the upper chain guide should only be set when the end roll is being replaced.
5. Loosen the bearing housing fasteners and raise (or lower) the end roll until the top of the end roll is at the same height as the slider bed. Tighten the bearing housing fasteners.
6. Install the chain-connecting link to reconnect the chain

NOTE: Install the connecting link clip on the outer side of the chain with the open end of the clip opposite the direction of belt travel.

7. Reinstall the lacing pin. Bend the lacing pin over on the outside radius and insert the end of the lacing pin into the lacing hooks. Ensure that at least 1/2" (13 mm) of lacing pin is inserted into the lacing hooks. Pull the lacing pin taut on the inside radius, bend the lacing pin back and insert the end of the lacing pin into the lacing hooks. The lacing pin may have to be cut to length so that about 1/2" (13 mm) of lacing pin is inserted into the lacing hooks.

8. Replace the chain cover, end caps, and sideguard. Move the end caps close to the end roll without touching the conveyor belt.

Section 11G: Taper-Lock Bushings in End Rolls and Sprockets (if equipped)



1. Loosening taper lock bushings: Remove the set screws and insert one into the hole which is threaded in the bushing only, using it as a jack screw. This will disengage the bushing for removal.

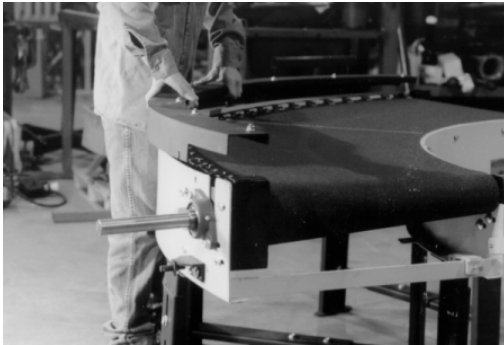
2. Tightening taper lock hubs: Insert both set screws in opposing half thread holes with the bushing hole pattern matching the hub pattern. Alternately tighten both set screws. Lightly tap the bushing to ensure proper seating and re-tighten both set screws.

Torque Required for Installation		
Bushing No.	Torque	
1610	175 Lb In	19.9 Nm
2012	280 Lb In	31.8 Nm
2517	430 Lb In	48.8 Nm



1. Disengage or remove the drive unit so the conveyor belt can move around the conveyor. A shaft-mount reducer will require complete removal. V-belt or chain/sprocket drive can be disengaged by removal of v-belt or chain.

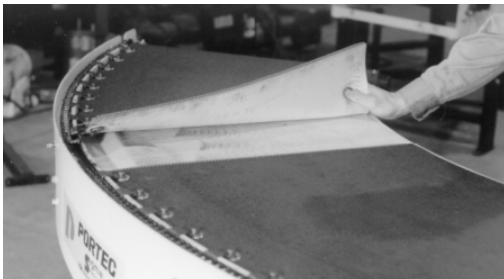
2. Remove the outside radius sideguard, chain cover, and end caps. Move the conveyor belt until the chain-connecting link is on top of the conveyor bed.



3. Loosen the bearing housing fasteners on the end rolls. Loosen the jack bolts on the outside radius frame. Push the end roll assemblies in towards slider bed to loosen the belt tension.

4. Remove the connecting-link and clip from the belt chain. Remove the seam-lacing pin from the conveyor belt.

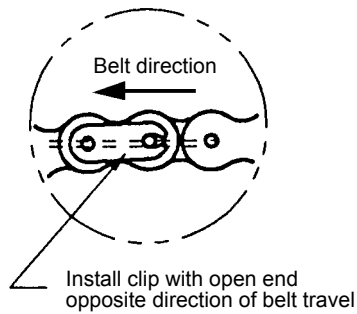
5. Lay one end of the belt back from the opened seam to expose the conveyor bed.





6. Place the new belt assembly on the exposed bed. Attach one end of the new belt to the end of the old belt using the connecting link and lacing pin.

7. Pull the old belt off the conveyor at the same time as the new belt is pulled around the bottom of the conveyor.



WARNING: Do not “power” the new belt onto the curve. This is extremely unsafe and can damage the chain guides and conveyor belt.

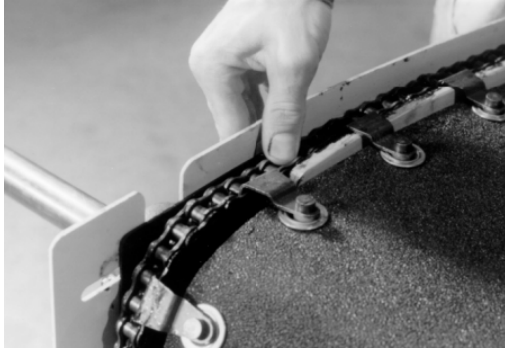
8. Disconnect the old belt from the new belt. Discard the old belt. Place the belt chain in the chain guide. Connect the two ends of the new belt chain together using the connecting-link and clip.



NOTE: Install the connecting link clip on the outer side of the chain with the open end of the clip opposite the direction of travel.

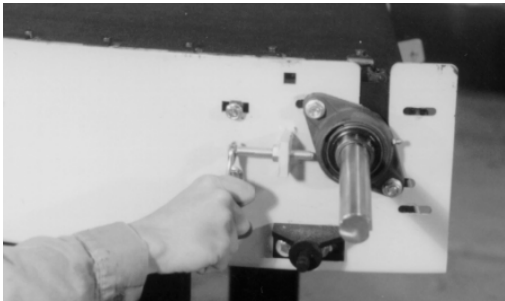
9. Put both ends of belt together, align the outside edges of the belt, and install the lacing pin. Bend the lacing pin over on the outside radius and insert the end of the lacing pin into the lacing hooks. Ensure that at least 13 mm of lacing pin is inserted into the lacing hooks. Pull the lacing pin taut on the inside radius, bend the lacing pin back and insert the end of the lacing pin into the lacing hooks. The lacing pin may have to be cut to length so that about 13 mm of lacing pin is inserted into the lacing hooks.





10. Adjust the chain tension so that the chain can be depressed 1/8" (3 mm) maximum between the end roll sprocket and the chain guide. Use the jack bolt next to the bearing housing to move the end roll assembly. The end rolls at the inside radius should remain loose.

11. Tighten the backing nuts on the jack bolts and the bearing housing fasteners.



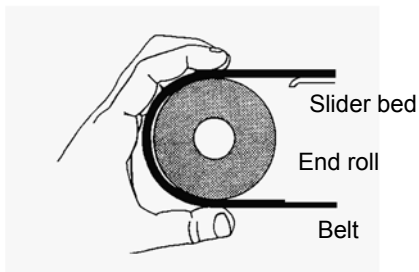
12. Check the alignment of the chain, sprockets, and chain guides. Pull chain out of upper guide and apply a 3 mm bead of Lubriplate Mo-Lith #2 grease or equivalent moly-lithium, multi-purpose, extreme pressure, water resistant industrial grease in the groove of the upper chain guide and chain.

13. Adjust the belt tension on the inside radius by moving the bearing housing of the end roll. Use a rubber mallet to move the bearing housing.

14. Tighten the bearing housing fasteners and recheck the gap between the end roll and belt by the "squeeze-pull" method.

15. Replace the chain cover, end-caps, and sideguard. Move the end caps close to the end roll without touching the conveyor belt.

16. Reengage or reinstall the drive unit. Install all safety guards and test run.

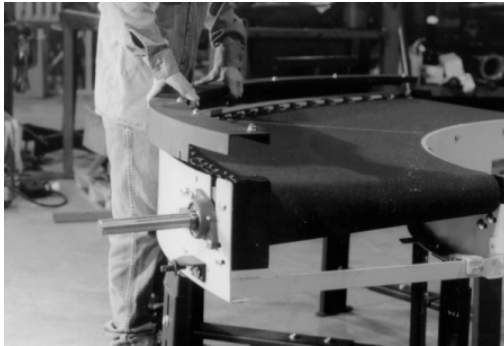


Squeeze and pull -- 1/8-1/4" (3.2-6.35 mm) gap
(AT THE INSIDE RADIUS END OF THE END ROLL)



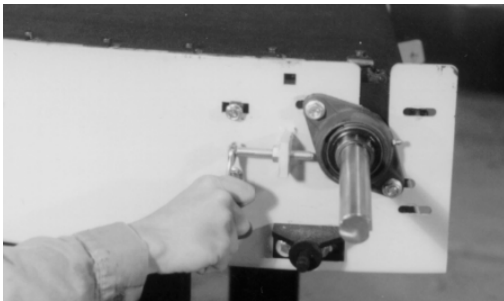
1. Disengage or remove the drive unit so the conveyor belt can move around the conveyor. A shaft-mount reducer will require complete removal. V-belt or chain/sprocket drives can be disengaged by removal of v-belt or chain.

2. Remove the sideguards, chain cover and end caps.



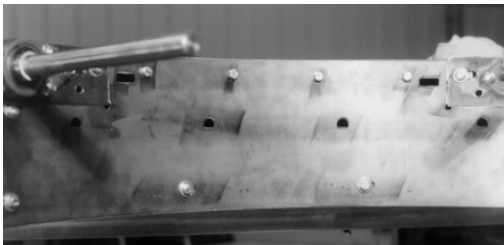
3. Move the conveyor belt until the connecting-link is on top of the conveyor bed.

4. Loosen all fasteners on the end roll bearings. Loosen the jack bolts on the outside radius frame. Push the end-rolls in to loosen the belt tension.



5. Remove the connecting-link from the belt chain.

6. Cut the conveyor belt from the outside radius to the inside radius using a sharp utility knife. Start the cut next to the chain ends.



7. Remove the old conveyor belt from the conveyor.

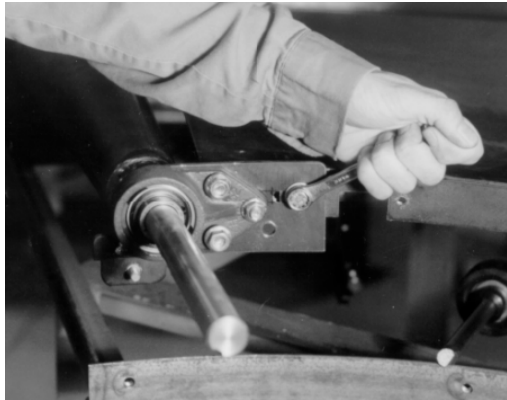
8. Remove the fasteners that attach the inside radius frame to the slider bed and foot rail.



9. Remove the nut from the stud that attaches the bearing plate to the inside radius frame.



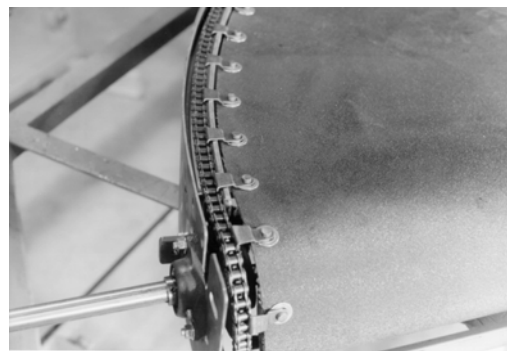
10. Remove the inside radius frame. The return roll assemblies will fall out when the inside radius frame is removed.



11. Loosen the bolt that attaches each bearing plate on the inside radius to the slider bed. Push the bearing plate as far as possible away from the end and tighten the bolts.



12. Install the new conveyor belt on the slider bed. Make sure one side of the belt is above the slider bed and one side is below the slider bed. The chain ends should be positioned near an end roll sprocket.



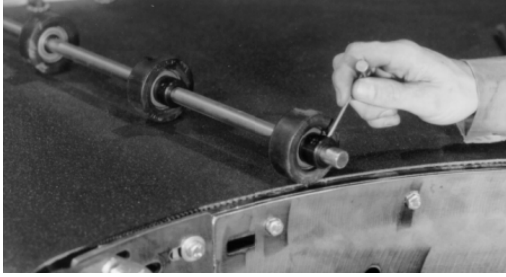
Note: Conveyor applications with food products may require a food-grade grease.

13. Pull the belt completely over the conveyor slider bed and put the belt chain into the upper chain guide and over the end roll sprockets. The lower side of the belt chain assembly will be outside of the lower chain guide.

14. Put the inside radius frame into position. Install the center fasteners that attach the inside radius frame to the slider bed. **DO NOT TIGHTEN AT THIS TIME.** Continue to install fasteners as you move from the center to the end roll.



15. Loosen the bolt holding each bearing plate on the inside radius. Move the bearing plates out and tighten the bolts.



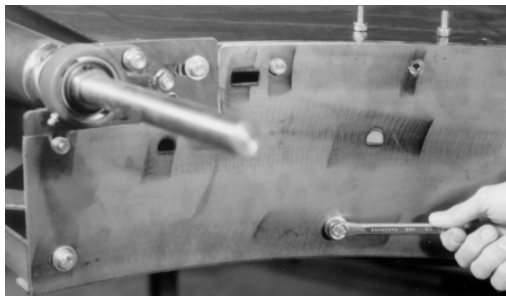
16. Move the return roller on the return roll shaft on the outside end of the shaft. The outside end of the shaft is opposite the end that has a flat side. Loosen the set-screw that attaches the return roller to the shaft and move the roller slightly away from the end.



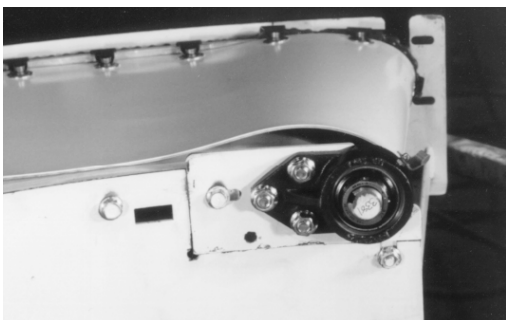
17. Put the outside end of each return roll shaft into its bracket on the outside radius. Put the inside radius end of the return roll shaft into the holes in the inside radius frame. When the return roll assembly is in position, move the return roller on the outside radius to the outside radius bracket. Tighten the set-screws on the hub of the return roll to hold the return roll assembly in position.



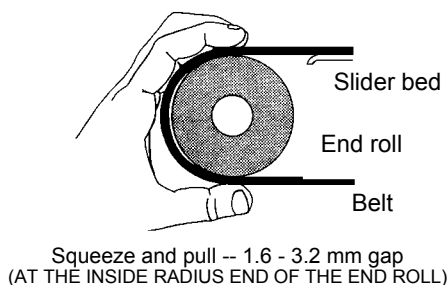
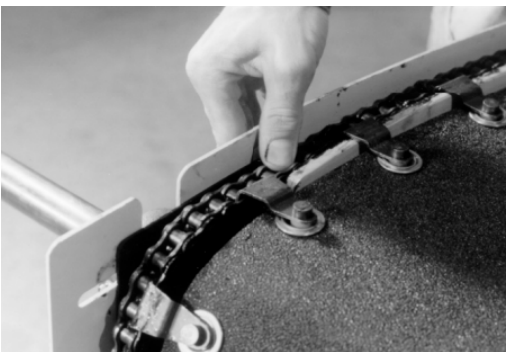
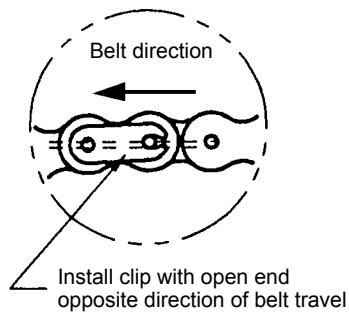
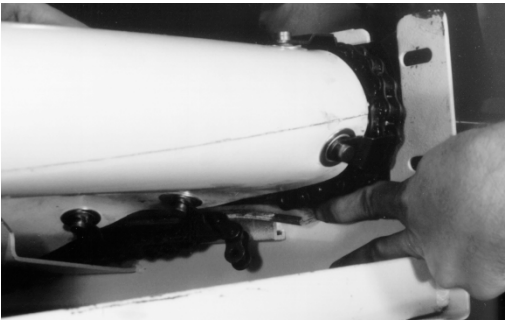
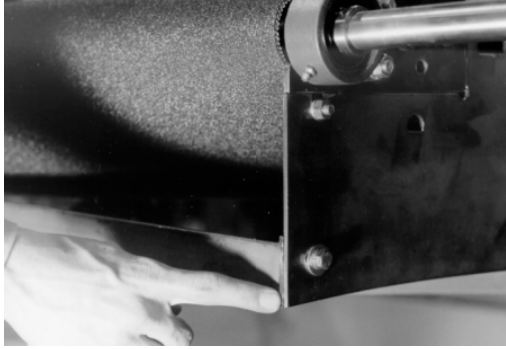
18. Put the fasteners through the bottom of the inside radius frame and into the foot rail. DO NOT TIGHTEN AT THIS TIME.



19. Loosen the bolts that attach the bearing plates on the inside radius to the slider bed. Align the stud with the slot in the inside radius frame. Install the nut on the stud. DO NOT TIGHTEN AT THIS TIME.



20. Align the inside radius frame so the distance from each end to the end of the slider bed is the same. Tighten the fasteners along the top of the inside radius frame and bearing plates.



21. Make sure that the end of the foot rail is even with the bottom of the inside radius frame. Tighten the fasteners along the bottom of the inside radius frame.

22. Move the disconnected ends of the belt chain to the lower side of the end-roll sprocket and put the end of the belt chain into the end of the lower chain guide. Pull the chain off of the upper guide and apply a 1/8" (3 mm) bead of Lubriplate Molith #2 grease or equivalent moly-lithium, multi-purpose, extreme pressure, water resistant industrial grease in the groove in the upper chain guide and chain

23. Move the conveyor belt around the conveyor and at the same time move the end of the belt chain through the lower chain guide. Move the conveyor belt until the end of the belt chain is on top of the conveyor.

24. Connect the two ends of the belt chain by installing the connecting-link

NOTE: Install the connecting link clip on the outer side of the chain with the open end of the clip opposite the direction of belt travel.

25. Adjust the chain tension so that the chain can be depressed 1/8" (3 mm) maximum between the end roll sprocket and the chain guide. Use the jack bolt next to the bearing housing to move the end roll assembly. As you move the end roll assembly inward, the chain tension will be reduced. The end rolls at the inside radius should remain loose.

26. Adjust the belt tension on the inside radius by moving the bearing housing to the end roll. Use a rubber mallet to move the bearing housing.

27. Tighten the bearing housing fasteners and recheck the gap between the end roll and the belt by the "squeeze -pull" method.

28. Install the chain cover, sideguards and end caps. Position the end caps close to the end roll without touching the conveyor belt.

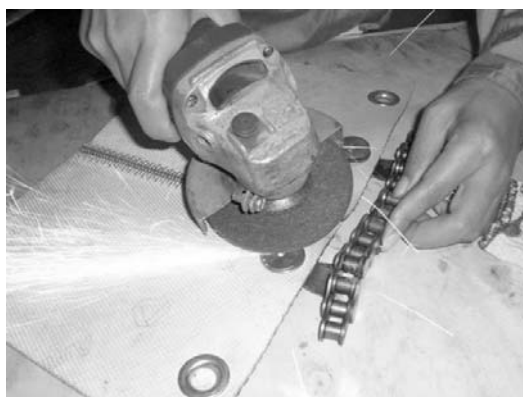
29. Reengage or reinstall the drive unit. Install all safety guards and test run.



Chain Breaker



Angle Grinder



The belt attachment link is used to attach the belt chain to the belt along the outside radius. This provides a positive belt-driven system not attainable by other systems that use extreme belt tension of a friction drive.

Belt Attachment-Link Replacement

1. Remove the outside radius sideguard, chain cover and end caps.
2. Rotate the conveyor belt until the damaged attachment-link is on top of the conveyor bed.
3. Loosen the bearing housing fasteners on the outside radius at the non-drive end. Loosen the jack bolt and move the bearing assembly in to relieve the belt chain tension.
4. Lift the chain from the chain guide near the damaged attachment-link. Break the belt chain on each side of the damaged attachment-link. A chain breaker is a good tool to break the chain, but it is also possible to grind off the chain rivet head using an angle grinder to break the chain.
5. Bend the edge of the conveyor belt over to expose the bottom. Grind off the rivet head that attaches the attachment-link to the conveyor belt. Remove the damaged attachment-link.

WARNING: Observe all appropriate safety precautions while using grinding tools to avoid personal injury.

NOTE: Do not contaminate the chain guides with metal particles or damage the conveyor belt while grinding.

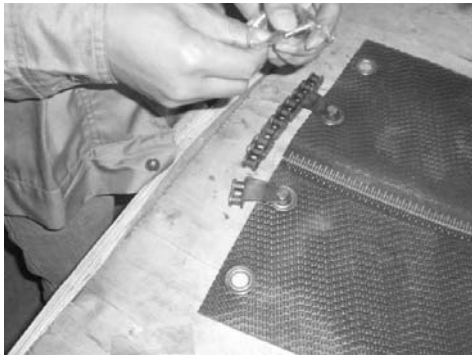


6. Install a new attachment-link in the belt chain using two connecting-links.

NOTE: Install the connecting-link clip on the outer side of the chain with the open ends of the clip opposite the direction of belt travel.



7. Inspect the condition of the belt grommet. Replace if worn or damaged.



8. Use a new rivet, washer, and bushing and attach the new attachment-link to the conveyor belt. Support the rivet with a flat metal block while peening the rivet "button" against the washer. Make sure the washer is tight and does not rotate on the rivet.

NOTE: Make sure you do not damage the bushing, the conveyor belt or the conveyor bed during the peening process.



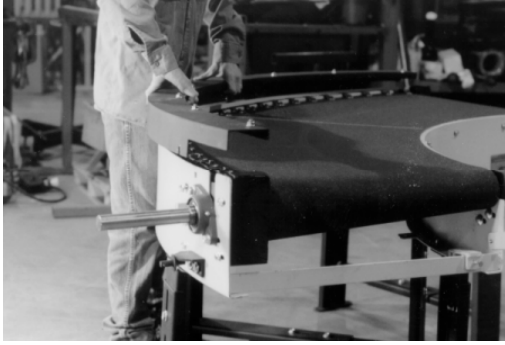
9. Put the belt chain into the chain guide.



10. Adjust the belt chain tension.

11. Install the chain cover, end caps, and sideguard. Move the end caps close to the end roll without touching the conveyor belt.

NOTE: A threaded rivet and cap screw is an alternative to the peened rivet head. They are available from the Portec Parts Department. Use Loctite® or equivalent permanent thread locking adhesive on the threads of a threaded rivet. Part #900808



Belt segment replacement (belt with laced seams):

If the belt is damaged in only one spot, it may be possible to replace only the damaged segment instead of the entire belt. Belt segments are specified by the required number of grommets. The segment is typically provided with lacing on both ends and two (2) master connecting links to fit into existing belt.

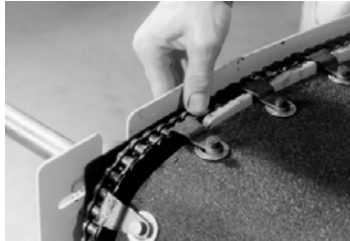
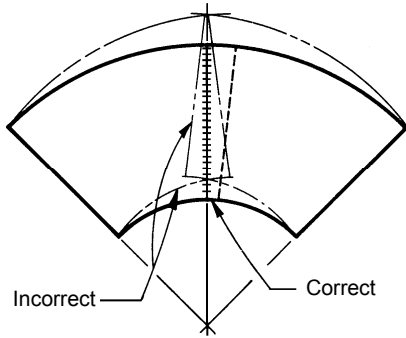
Replacement is as follows:



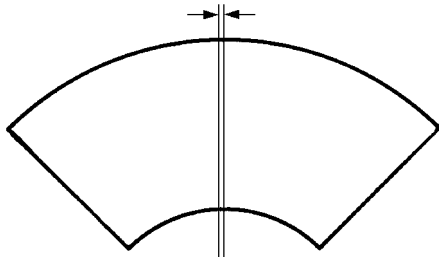
Chain Breaker

1. Remove the chain cover.
2. Disconnect the drive unit by removing the gearmotor (shaft mounted) or removing the chain between the drive shaft and gearmotor (chain or belt driven).
3. Loosen all end roll bearing mounting bolts and slide the end rolls to their minimum adjustment positions.
4. Move the belt assembly until the damaged area (segment) is on top side of the conveyor.
5. Break the chain at both sides of the damaged segment by using a chain breaker or grind off the chain rivet heads using an angle grinder.
6. Remove the damaged segment of belt by removing the lace pins.
7. Place the new belt segment on the conveyor and attach the ends of the new segment of chain to the old chain with two connecting links. Skip to step 14 to install lace pin on both sides connecting new segment to old belt.

Note: If belt segment is not laced follow steps 8-15.



5/16" (7.9 mm) space between ends of belt



8. Pull the inner radius ends of the belt together so that the ends overlap each other and the inside curvature matches along the lap. Usually, this will occur with the belt lying on the conveyor bed in a relaxed state.

Note: Sidebow connecting links must be used joining the chain ends. Standard roller chain links will not fit properly and will tend to work loose or stiffen the chain.

Note: The connecting link clip must be placed on the outer side of the chain with the open end facing away from the direction of travel.

9. Adjust the chain tension by moving both end rolls until the chain deflection is 1/8" (3 mm). The inside radius end of the end rolls should remain loose.

10. Using the end of one belt as a guide, draw a line on the end of the belt to be joined. Measure back 5/16" (7.9 mm) (to leave a 5/16" (7.9 mm) gap between ends) from that line and cut using a straight edge and razor knife.

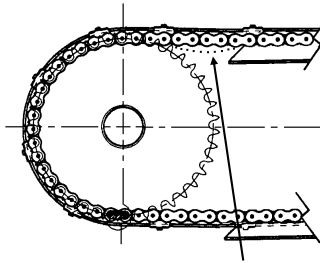
Note: Place a piece of scrap material under the belt to prevent the slider bed from being marred.

11. Disconnect the chain at the seam to be laced.

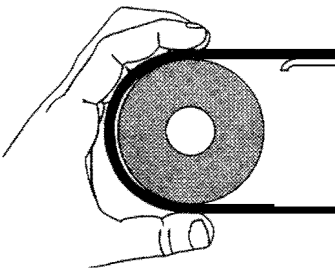
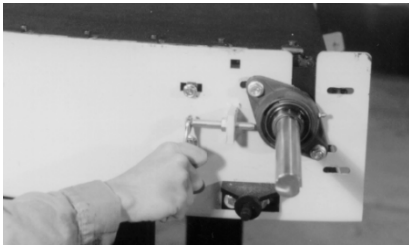
12. Install the belt lacing hooks in both belt ends using a vise lacing machine or other small lacing machine.

13. Rejoin the chain ends by reinstalling the chain connecting link.

14. Put both ends of belt together, align the outside edges of the belt, and install the lacing pin. Bend the lacing pin over on the outside radius and insert the end of the lacing pin into the lacing hooks. Ensure that at least 1/2" (13 mm) of lacing pin is inserted into the lacing hooks. Pull the lacing pin taut on the inside radius, bend the lacing pin back and insert the end of the lacing pin into the lacing hooks. The lacing pin may have to be cut to length so that about 1/2" (13 mm) of lacing pin is inserted into the lacing hooks.



Adjust chain tension until the chain can be depressed 1/8" (3 mm)



Squeeze and pull 1/8-1/4" (2.3-6.35 mm) gap

15. Repeat the process of cutting the belt and installing lacing on the second seam.

16. Adjust the chain tension so that the chain can be depressed 1/8" (3 mm) maximum between the end roll sprocket and the chain guide. Use the jack bolt next to the bearing housing to move the end roll assembly. As you move the end roll assembly inward, the chain tension will be reduced. The end rolls at the inside radius should remain loose.

17. Tighten the backing nuts on the jack bolts and the bearing housing fasteners.

18. Check the alignment of the chain, sprockets, and chain guides.

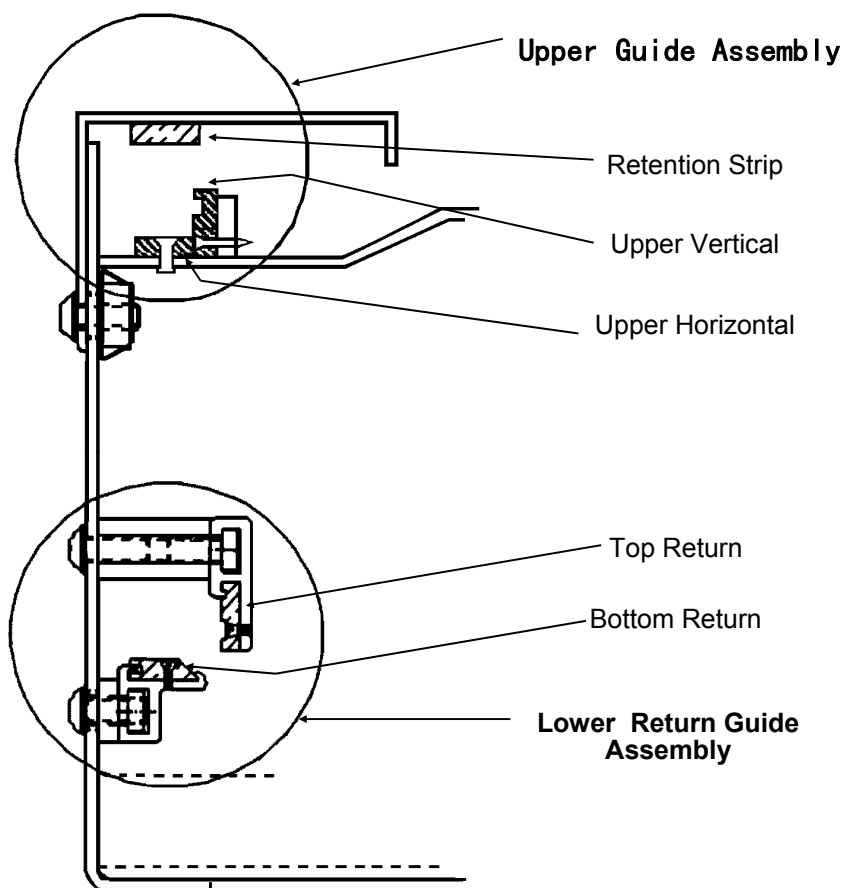
19. Adjust the belt tension on the inside radius by moving the bearing housing of the end roll. Use a rubber mallet to move the bearing housing.

20. Tighten the bearing housing fasteners and recheck the gap between the end roll and belt by the "squeeze-pull" method.

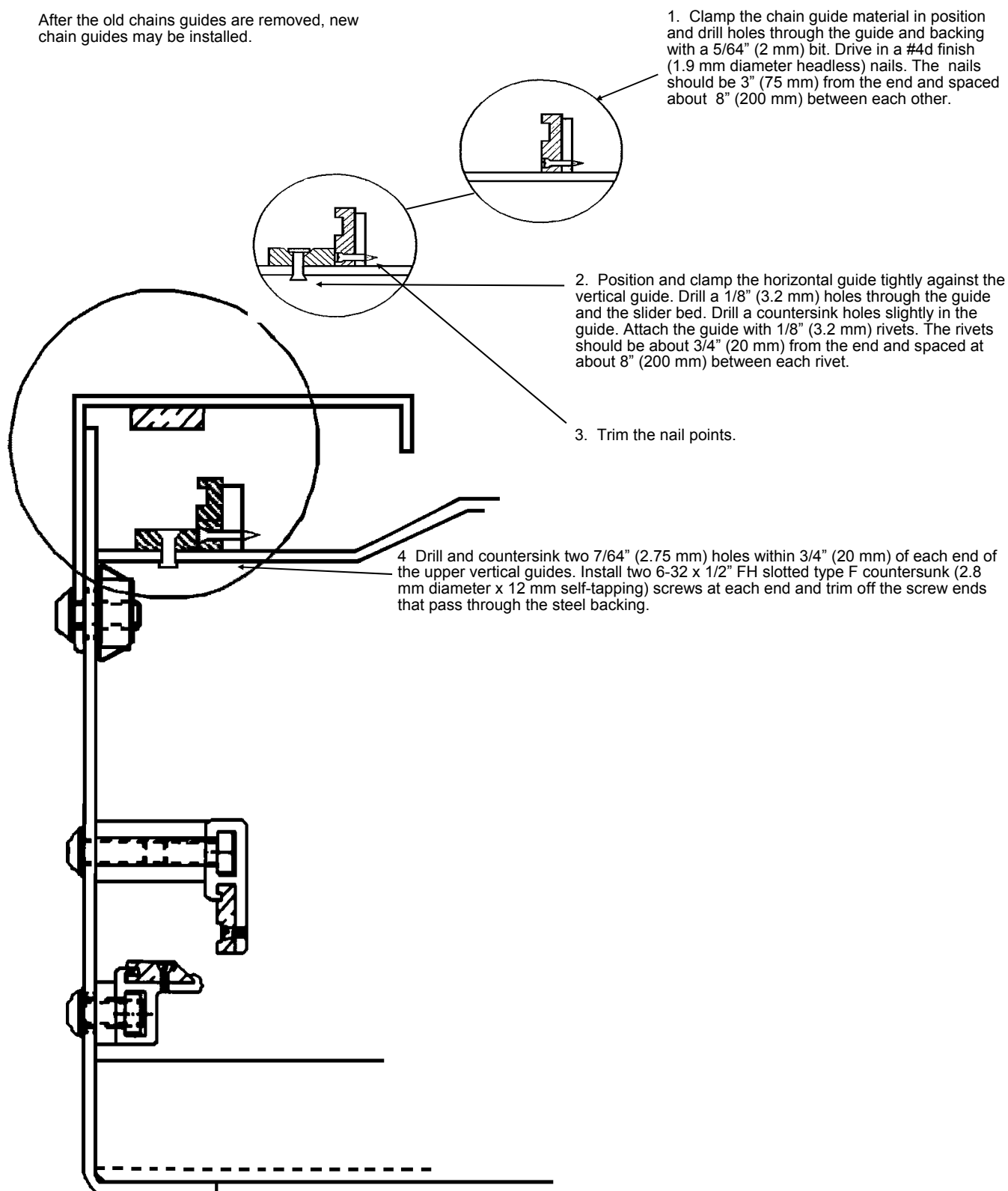
21. Replace the chain cover, end-caps, and sideguard. Move the end caps close to the end roll without touching the conveyor belt.

22. Reengage or reinstall the drive unit. Install all safety guards and test run.

Chain Guide Styles



After the old chain guides are removed, new chain guides may be installed.



Return Guide Replacement:

1. Remove upper row of fasteners along the lower side of the outside radius frame to disconnect the top return guide bracket. Slide the top return guide bracket out one end of the conveyor. The top return guide bracket with chain guide must be replaced as a unit.

2. Remove the M3.5-0.6 x 13mm flat head screws at both ends of the bottom return guides.

3. Slide the worn or damaged guide out of the guide bracket.

4. Slide the new guide(s) into the guide bracket(s) to the correct position and install one M3.5-0.6 x 13mm screw at each end.

5. If not already bent, slightly bend the ends of the bottom guide and bracket down to ease the entry or exit of the chain.

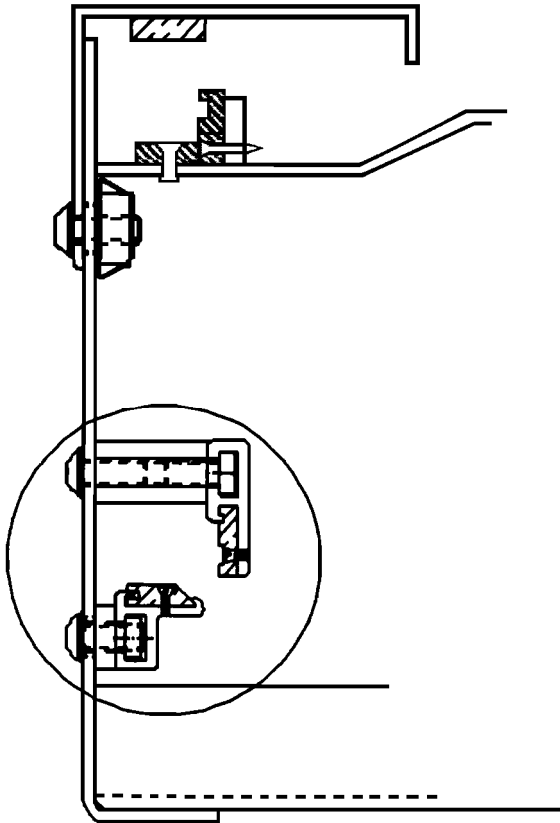
6. Slide the top guide bracket into position under the conveyor. Install the fasteners and tighten. Put the belt chain in this assembly.

7. Reassemble the belt chain using the connecting-link and the belt lacing pin.

8. Check the alignment of the belt chain and sprockets to the new chain guides. Adjust the sprocket position if necessary.

9. Replace chain cover and side guard. Move the end caps close to the end roll without touching the conveyor belt.

Note: For conveyors with endless belts — The belt does not need to be removed to replace the chain guides. Follow the above procedures except that the belt does not have a laced belt seam.



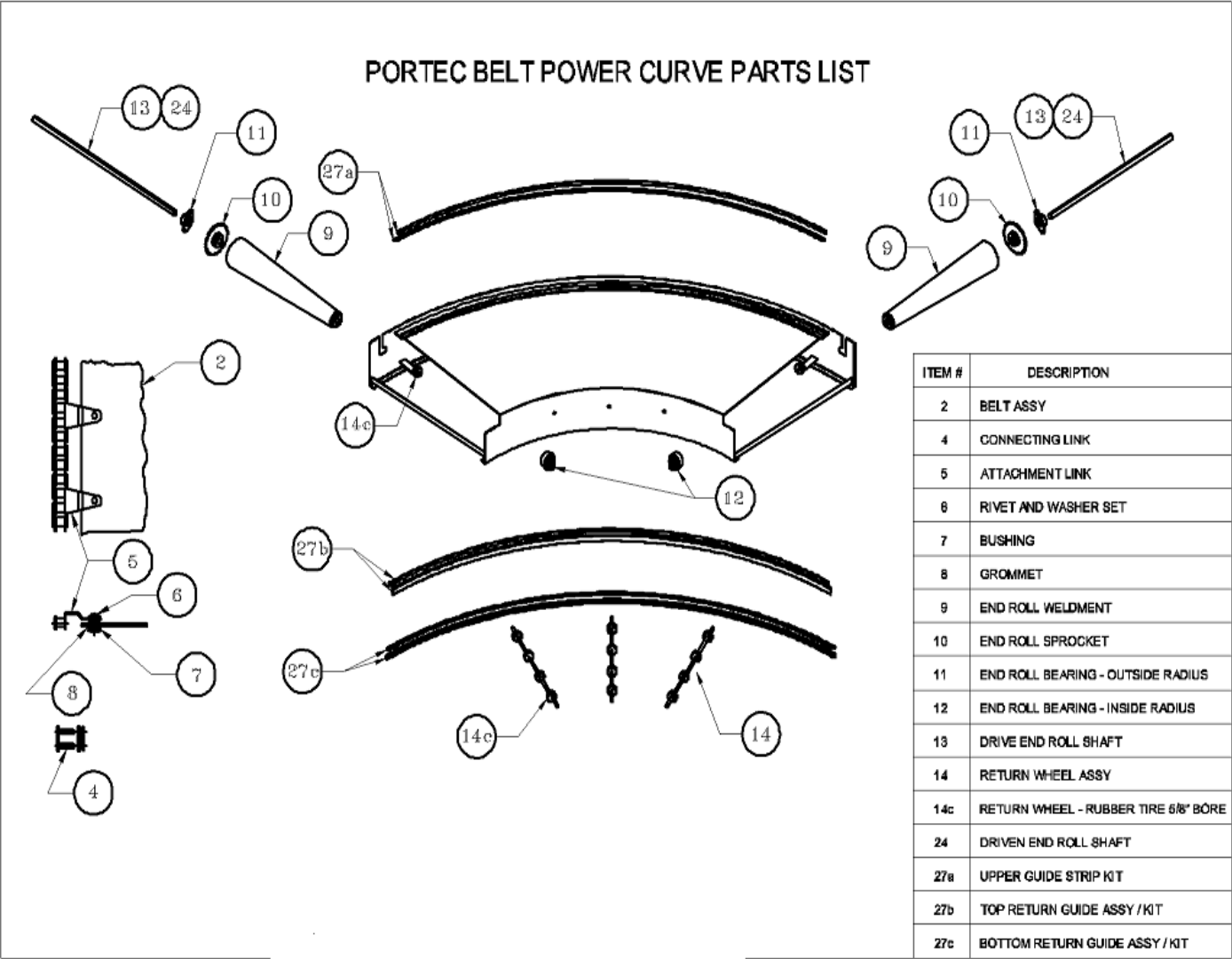
Problems	Causes - Solutions
Belt lacing pulling out at the inside radius	1) Belt tension on inside radius too tight SOLUTION: Adjust inside radius end roll position. 2) Damaged belt from jam. SOLUTION: Replace belt assembly. 3) Excessively worn belt SOLUTION: Replace belt assembly.
Grommets pulling out	1) Belt tension on inside radius too tight. SOLUTION: Adjust inside radius end roll position. 2) Foreign object rubbing against belt. SOLUTION: Remove foreign object. Repair grommet or replace belt.
Belt drive chain jumping the sprocket teeth	1) Chain tension too loose. SOLUTION: Adjust belt chain tension 2) Worn teeth on sprocket SOLUTION: Replace sprocket
Rumbling or ticking noise near end of conveyor	1) End roll sprocket out of position. SOLUTION: Adjust position of the sprocket. 2) Worn sprocket. SOLUTION: Replace sprocket. 3) Worn chain guides. SOLUTION: Replace chain guides.
Loose end roll and shaft	1) Loose end roll bearing collars. SOLUTION: Adjust end roll position and lock bearing collars. 2) End roll bearing failure. SOLUTION: Replace end roll bearing.
High frequency noise under the conveyor	1) Frozen return roll bearing. SOLUTION: Replace return roll. 2) Foreign object stuck between return roll and belt. SOLUTION: Remove foreign object.
Abnormal wear of return wheel rubber covers and curved marks on the top surface of the conveyor belt	1) Bent return wheel shaft or mounting bracket SOLUTION: Replace bent shaft and/or bend mounting bracket back into position. 2) Bearing failure SOLUTION: Replace return wheel.
Cut conveyor belt underneath the outside radius sideguard or chain cover	1) Heavy load on the top of the sideguard or chain cover pushed the bottom of the sideguard or chain cover down into the conveyor belt. SOLUTION: Replace the damaged chain cover.

- The list below is Portec's spare parts stocking recommendation for facilities with 1 to 5 Portec belt curves. The recommended quantities are for typical conveyor installations and provide the spare parts necessary to repair damage caused by a product jam. Portec belt curves are very durable and the components should not wear out for years. Actual service life of the conveyor components will depend upon the type of application.
- Use genuine Portec spare parts to ensure a perfect fit and top performance. Genuine Portec spare parts are supported by Portec's product warranty.
- When ordering, please provide the serial number and model number from the name plate on the inside radius of the curve (or the specific part number, if known) for accuracy in parts replacement.

Recom- mended Quantity	Portec Item #	Part Description
1	2**	Conveyor belt with chain
20	4*	Chain connecting link (#50)
10	5*	Chain attachment link (#50)
10	6*	Rivet and washer set
10	7*	Nylon bushing
10	8*	Grommet
1	9	End roll; tapered
1	10	Sprocket; end roll
1	11	End roll bearing; outside radius
1	12	End roll bearing; inside radius
1	13	End roll shaft; drive
1	14	Return wheel assembly
1	14c	Return wheel
1	27a	Upper chain guide strip set
1	27b	Top return guide assy/kit
1	27c	Bottom return guide assy/kit

* These parts are universal on all sizes. #4,5,6,7,8– can be purchased as set under p/n 452112

** Belts with laced seams will have lacing installed in both ends unless otherwise specified.



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2	Conveyor belt with chain
2b	Belt seam lacing with pin
4	Chain connecting link (#50)
5	Chain attachment link (#50)
6	Rivet and washer set
7	Nylon bushing
8	Grommet
9	End roll; tapered
10	Sprocket; end roll
11	End roll bearing; outside radius
12	End roll bearing; inside radius
13	End roll shaft; drive
14	Return wheel assembly
14a	Return wheel shaft
14c	Return wheel
24	End roll shaft; non-drive
25	Sideguard; outside radius
26	Sideguard; inside radius
27	Chain guide set
27a	Upper chain guide set
27b	Top return chain guide assembly
27c	Bottom return chain guide assembly

