

Field Manual

Floor Supports and Ceiling Hangers

Installation Procedures, Maintenance, and
Spare Parts



To contact Intelligrated:
For service: Customer Service and Support (CSS)
Hotline 1-877-315-3400
On the World Wide Web: www.intelligrated.com

By mail:

Intelligrated
7901 Innovation Way
Mason, OH 45040

(513) 701-7300

Read these documents thoroughly before attempting to perform maintenance or repairs to the applicable Intelligrated conveyor system components or devices. Exercise extreme caution when working around moving and rotating conveyor equipment. Wear the proper clothing and safety equipment. DO NOT attempt to perform any maintenance until the equipment is de-energized, locked out and tagged out in accordance with established company procedures.

The information presented in these documents are correct at the time of publication. Intelligrated has made every effort to ensure that the information presented is correct and free from error. However, some errors or misprints may occur. Please contact Intelligrated with any corrections.

This document is copyrighted © 2010 by Intelligrated, all rights reserved. No Part of this manual may be reproduced and/or distributed to parties other than the customer and the customer's employees for whom it was originally produced.

The following terms are trademarks™ of Intelligrated; Accuglide™, BOSS™ UniSort™, EZ-set™. The following terms are registered trademarks® of Intelligrated; Accuzone®, UniSort®, E-Z Set®. Intelligrated® is a registered trademark.

Direct questions and comments concerning the information contained in this manual to:

Documentation Department
Intelligrated
7901 Innovation Way
Mason, OH 45040

Ph (513) 701-7300
Fax (513)701-7349

customerservice@intelligrated.com

Section G Installation Procedures

Codes and Standards	G - 1
Warning Signs	G - 1
Safety Features	G - 1
Parts Replacement	G - 1
Factory Assistance	G - 2
Installing a Conveyor With Floor Supports	G - 3
Preparation	G - 3
Mount the Floor Supports	G - 3
Position the Conveyor	G - 4
Connect Conveyor Sections Together	G - 5
Merge, Diverge & Crossover Conveyors	G - 8
Knee Braces	G - 10
Level the Conveyor	G - 11
Installing Mobile Floor Supports	G - 13
Installing a Conveyor with Ceiling Hangers	G - 15
Preparation	G - 15
Install Ceiling Hangers	G - 16
Position the Conveyor	G - 16
Merge, Diverge & Crossover Conveyors	G - 19
Adjust Partial Cross Pipes	G - 21
Trash Belt Conveyors – Intermediate Sections	G - 22
Level the Conveyor	G - 23

Section H Maintenance

Scheduled Maintenance	H - 1
-----------------------------	-------

Section I Spare Parts

General Information	I - 1
---------------------------	-------

SECTION G:INSTALLATION PROCEDURES

Codes and Standards

The conveyor equipment is designed and manufactured to comply with the American National Standard Institute's *Safety Standards For Conveyors and Related Equipment* (ANSI B20.1) and with the National Electrical Code (ANSI/NFPA70).

The Purchaser shall be familiar with, and responsible for, compliance with all codes and regulations having jurisdiction regarding the installation, use, and maintenance of this equipment. Appropriate lockout and tagout policies and procedures shall comply with the minimum safety requirements outlined in the American National Standard Institute's current publication (ANSI Z244.1).

Warning Signs

Warning signs and labels posted on or near the conveyor equipment shall not be removed, painted over, or altered at any time. All safety devices, warning lights, and alarms associated with the conveyor system should be regularly tested for proper operation and serviced as needed. If the original safety item(s) become defective or damaged, refer to the conveyor parts list(s) or bill(s)-of-materials for replacement part numbers.

Safety Features

- Do turn off conveyor power source(s) and affix appropriate lockout/tagout device(s) to operating controls before servicing the equipment. ONLY trained and qualified personnel who are aware of the safety hazards should perform equipment adjustments or required maintenance while the conveyor is in operation.
- Do observe all warning signs, lights, and alarms associated with the conveyor operation and maintenance, and be alert at all times to automatic operation(s) of adjacent equipment.
- Do use extreme caution near moving conveyor parts to avoid the hazard of hands, hair, and clothing being caught.
- Do not sit on, stand on, walk, ride, or cross (over or under) the conveyor at any time except where suitable catwalks, gates, or bridges are provided for personnel travel.
- Do not attempt to repair any equipment while the conveyor is running, replace any conveyor component without appropriate replacement parts, or modify the conveyor system without prior approval by the manufacturer.
- Do not operate the conveyor until all safety guards are securely in place, all tools and non-product materials are removed from or near the conveying surfaces, and all personnel are in safe positions.
- Do not remove or modify any safety devices provided on or with the conveyor.
- Do not clear jams or reach into any unit before first turning off the equipment power source(s) and affixing appropriate lockout/tagout device(s).

Parts Replacement

To minimize production downtime, selected conveyor spare parts should be stocked for replacement of defective components when required. Refer to the equipment bill(s)-of-materials where quantity requirements or code numbers are not indicated on the conveyor parts list. For added convenience, a list of selected spare parts for standard products is included in this manual (see Section I).

Factory Assistance

Contact Field Service for installation, operation, or maintenance assistance, or Customer One Protection (COP) for replacement parts.

Installing a Conveyor With Floor Supports

Note The following instructions are provided as a guide to procedure and apply to a typical installation. Instructions indicated on project layout drawings and in project specifications always take precedence over the instructions presented herein.

While the following instructions apply specifically to the installation of single-level floor supports, they also apply in general to the multiple-level floor supports. For application-specific information, refer to the installation section of the corresponding product manual.

Preparation

To locate base lines, and for any other project-specific information, refer to the project layout drawings and specifications. Measure from the base lines to the centerline and location of each conveyor. Snap a chalk line on the floor to establish the centerline for each conveyor. To protect the chalk lines throughout the installation process, spray over them with a clear shellac.

Note that each section of conveyor has a label showing the conveyor number. The location for each conveyor number is shown in the project layout drawings. Arrange the conveyor sections and the corresponding floor supports alongside the chalk line near their respective installation locations according to the project layout drawings. Check that all components are complete and ready for installation.

Mount the Floor Supports

Make sure that each conveyor section is squared up by measuring diagonally from corner to corner across the conveyor in both directions. Both measurements should be equal.

Mount the floor supports to the underside of the conveyor sections and adjust the floor supports to their approximate correct heights. Mount any floor support that must straddle two adjoining sections to whichever section of the two will be installed first.

Check whether Unisorb pads are specified for the installation. Note that Unisorb pads are always required with Unisort V and Unisort X conveyors. If Unisorb pads are specified, be certain to insert a Unisorb pad between each support and the bottom flange of the conveyor side rail.

To attach a floor support to a conveyor, use two fastener sets per floor support (see Figure G - 1). Insert a 3/8-16 x 1" hex head bolt with a flat washer through the bottom flange of the conveyor side rail and through the flange of the support top. From the underside of the support-top flange, fasten a 3/8-16 flanged hex nut to the bolt. Do not use a washer between the flange of the support top and the flanged hex nut. Tighten the fasteners.

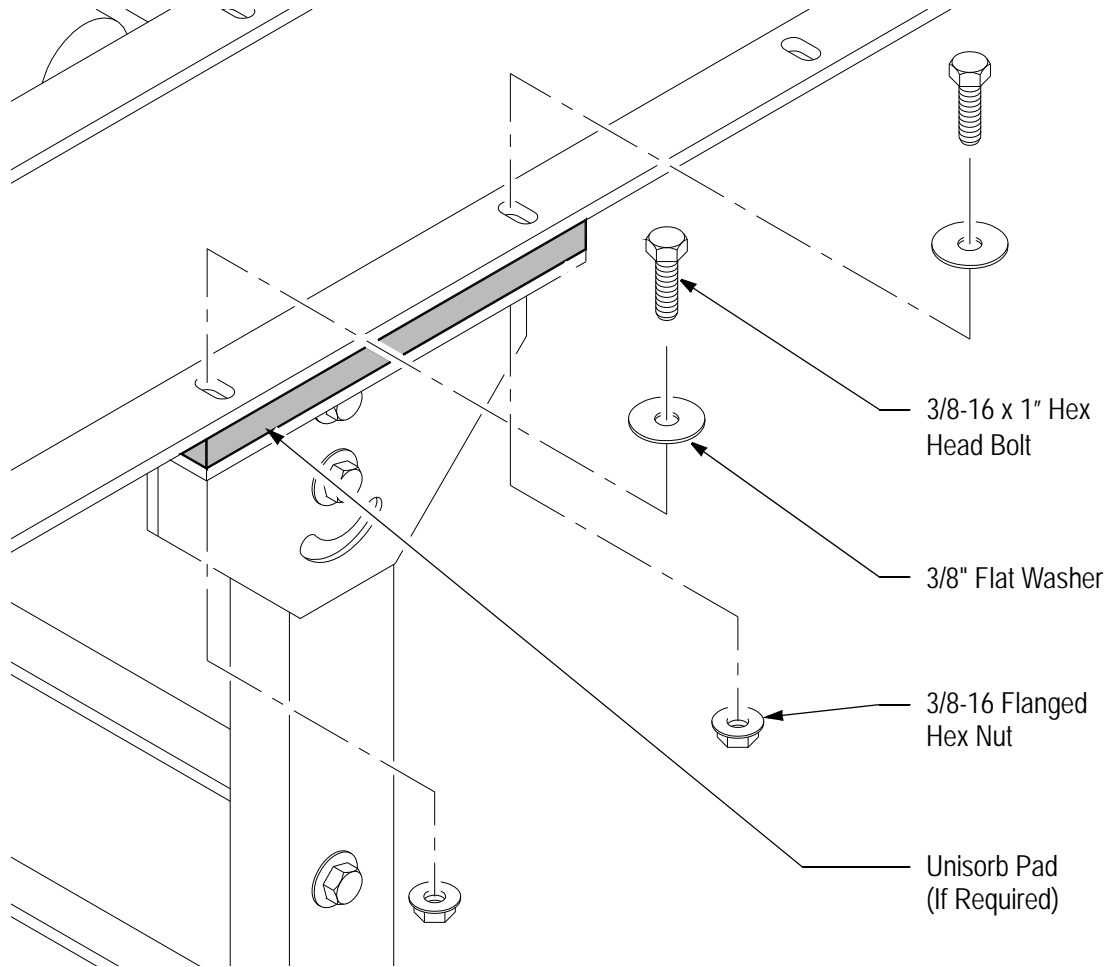


Figure G - 1 Mounting a Floor Support

Position the Conveyor

Position the first section of conveyor in its proper location according to the project layout drawings. Make certain that the direction of product flow is oriented correctly.

- To install sorters, begin at the infeed end.
- To install presort conveyors, begin at the discharge end, where the conveyor abuts the sorter.
- To install after-sort conveyors, begin at the infeed end, where the conveyor abuts the sorter.

To center a section of conveyor, find the center point at each end by measuring between the side rails. From each center point, suspend a plumb bob down to the chalk centerline on the floor. Adjust the position of the conveyor section as necessary until the plumb bob is directly above the chalk centerline. Anchor the floor-support feet to the floor (see Figure G - 2).

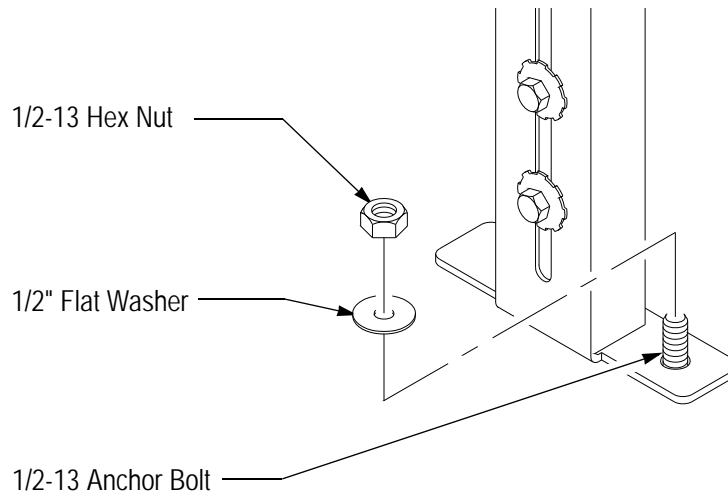


Figure G - 2 Anchoring Floor Supports

Connect Conveyor Sections Together

Position the sections of the conveyor sequentially. Make certain that the direction of product flow is oriented correctly. Center each section on the centerline, making certain that side rails of adjoining sections align properly. Anchor the floor-support feet to the floor.

When connecting adjoining conveyor sections, observe the following guidelines (see Figure G - 3 through Figure G - 5):

- If a section of roller conveyor adjoins a downstream section of belt conveyor, insert a fill flat between the bottom flange of the roller conveyor and the support top.
- If a section of conveyor has shallower side rails than the adjoining conveyor section, insert a fill channel between the shallow side rails and the support top.
- If a section of roller conveyor adjoins a downstream section of belt conveyor and one of the conveyors has shallower side rails, use both fill flats and fill channels as required.
- At adjoining sections of T/C chain-powered conveyor, mount a splice flat to the underside of the top flange of the side rails, straddling the section joint.
- Connect adjoining sections of Trash Belt conveyor using a boxbed-to-boxbed splice plate inside the boxbed frame.
- At adjoining sections of Powered Belt conveyor and at adjoining sections of E-Z Set conveyor, mount a coupling strap to the web of the side rails, straddling the section joint.
- If a section joint cannot be located directly over a support, mount a splice angle or trapezoidal coupling straddling the section joint.

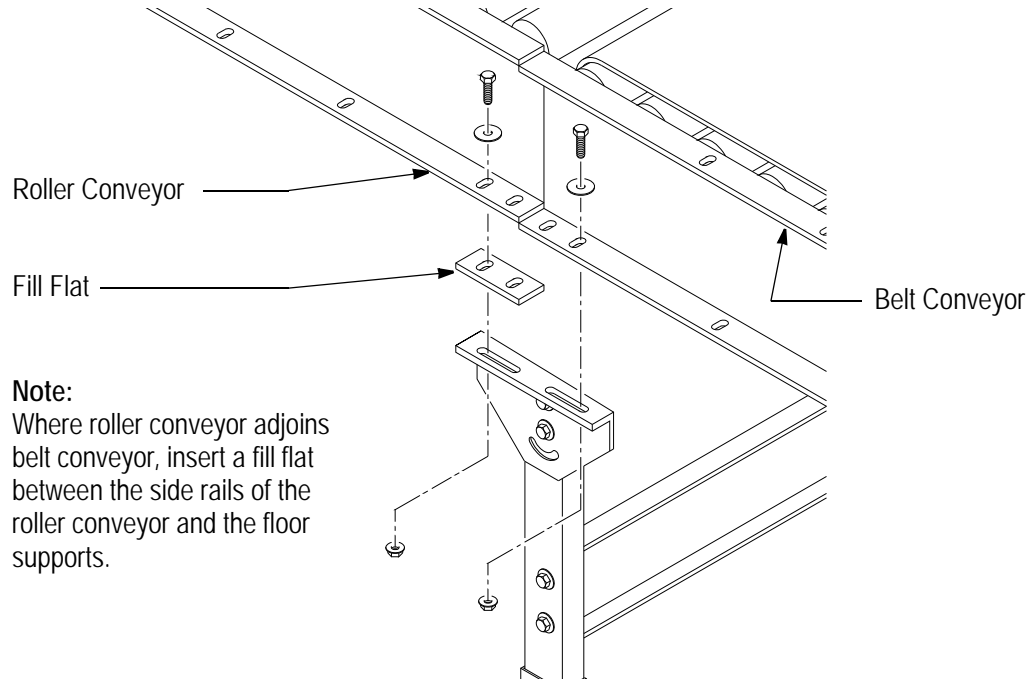


Figure G - 3 Roller-to-Belt Junctions

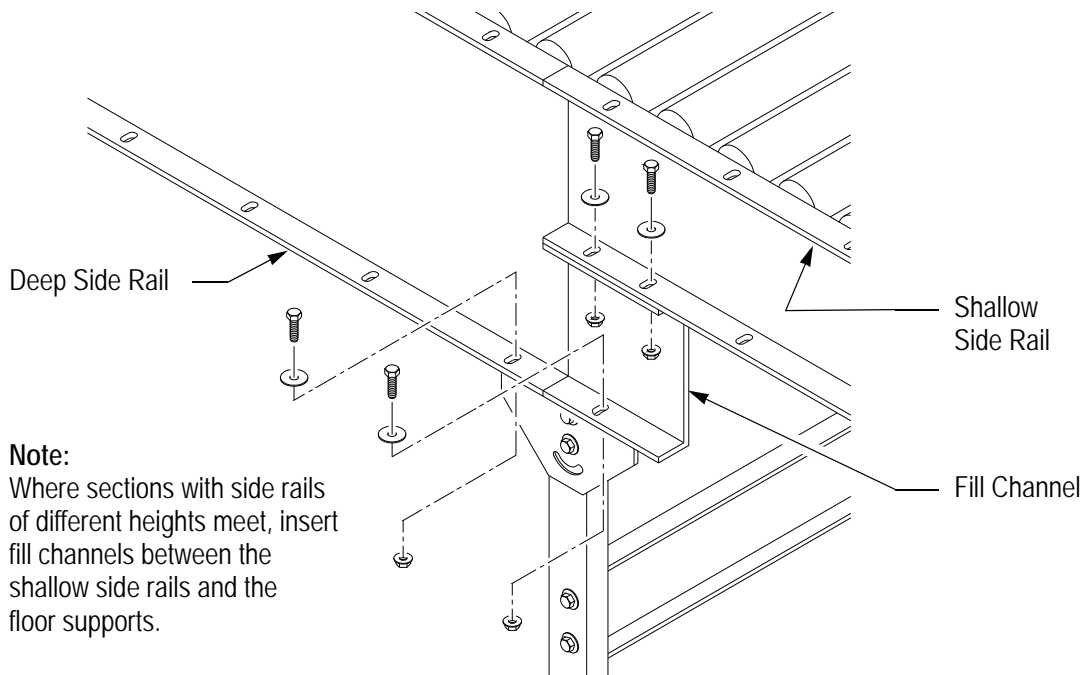
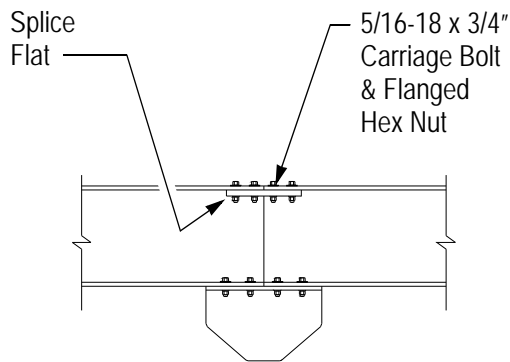
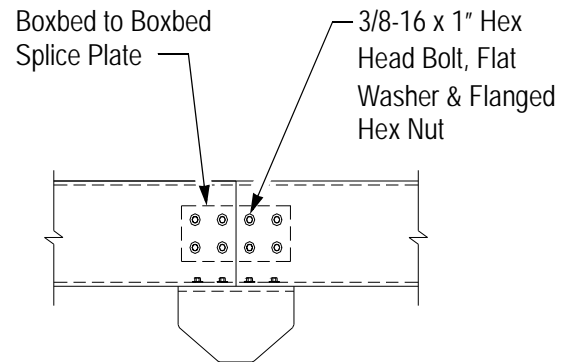


Figure G - 4 Adjoining Conveyors With Different Side Rail Heights

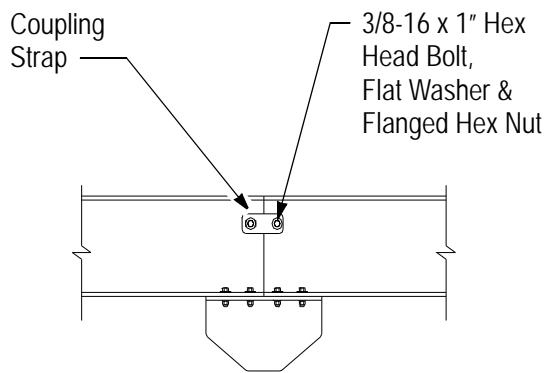
T/C Conveyor



Trash Belt Conveyor



Powered Belt & E-Z Set Conveyor



Any Conveyor Not At A Support

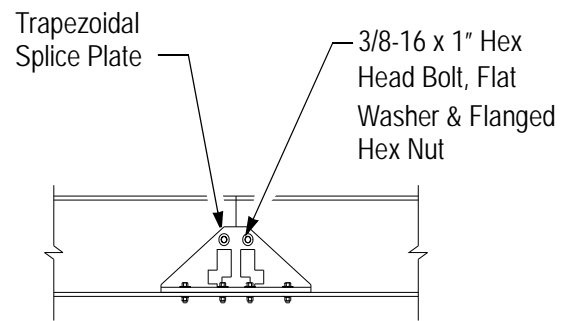


Figure G - 5 Intermediate Section Splice Connections

Merge, Diverge & Crossover Conveyors

Support a double-wide merge, diverge or crossover conveyor at the infeed and discharge ends and at each section joint (see Figure G - 6).

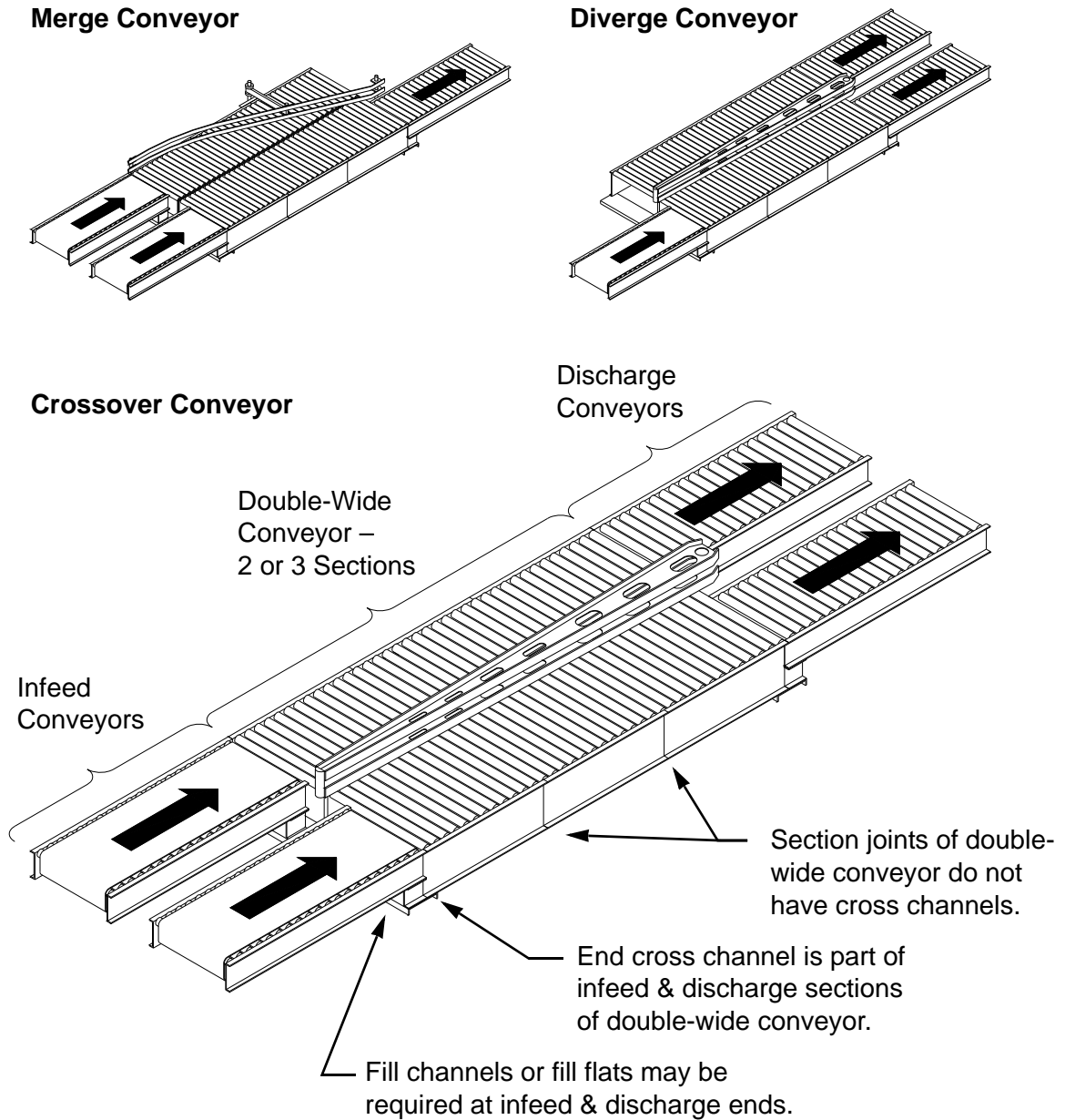


Figure G - 6 Merge, Diverge & Crossover Conveyors

Note that the double-wide conveyor is furnished with a cross channel at the infeed and discharge ends. If the infeed or discharge conveyors have shallower side rails than the double-wide conveyor, then fill channels are required.

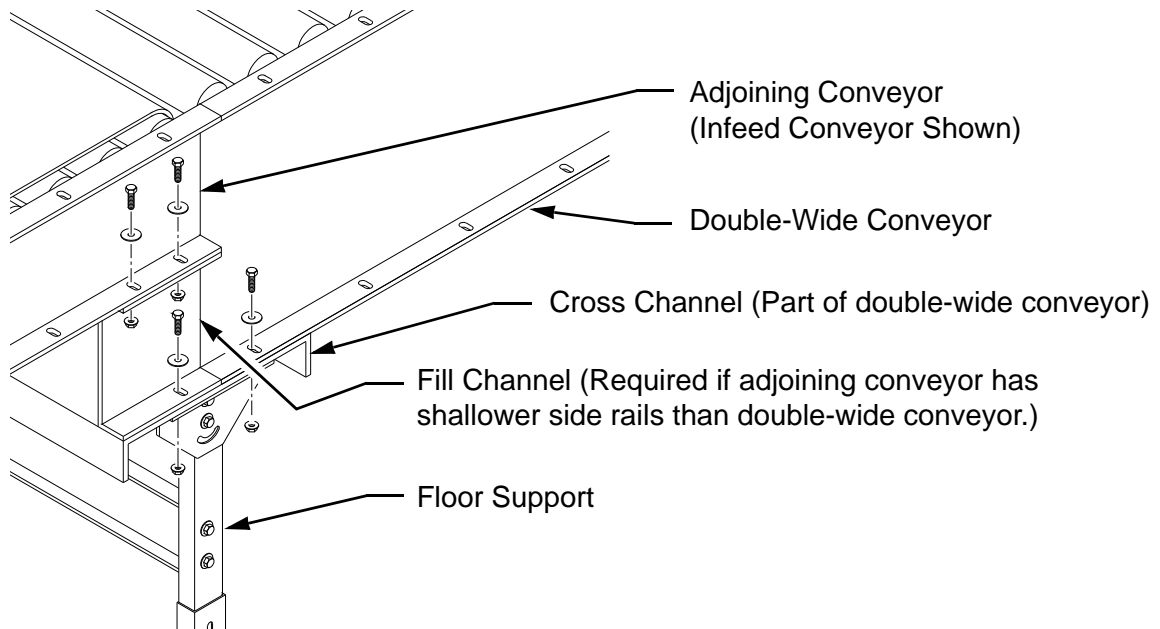


Figure G - 7 Merge, Diverge & Crossover Conveyors – Infeed & Discharge Ends

At section joints of the double-wide conveyor, install an assembly consisting of a support top, a support leg, and a foot to the bottom flange of each of the outside side rails. It is not necessary to use a cross tie between support legs under the double-wide conveyor.

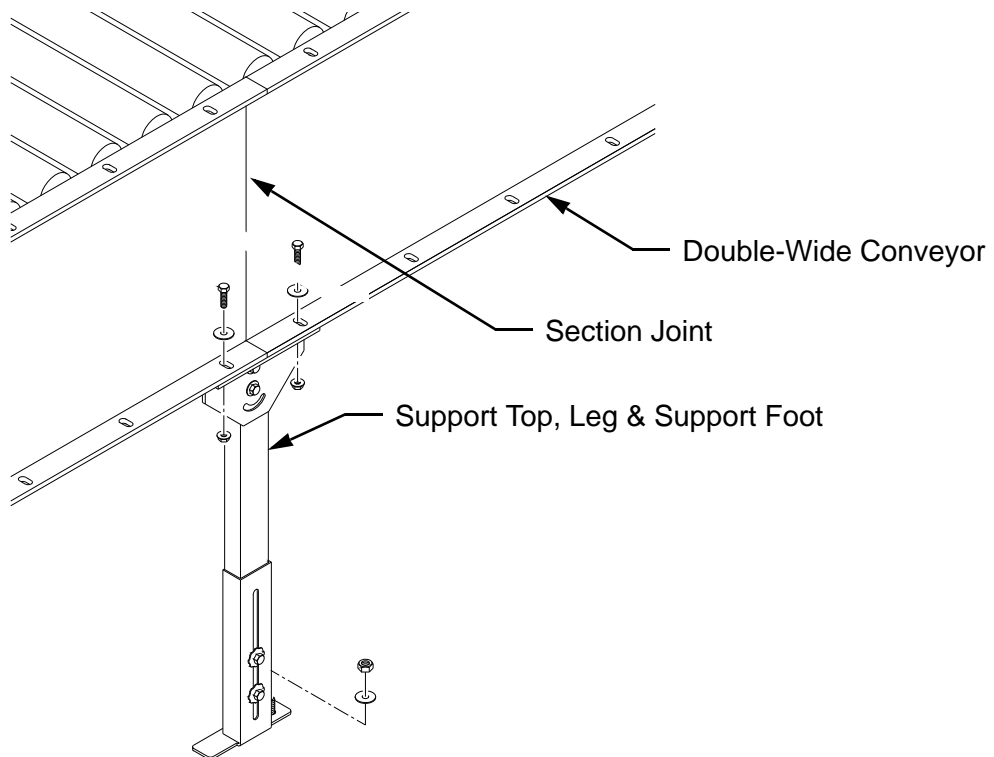


Figure G - 8 Section Joint of Double-Wide Conveyor

Knee Braces

Install a pair of knee braces between the conveyor side rail and the floor support as follows (see Figure G - 9):

- On long, straight runs, about every 50 feet.
- At the ends of straight runs.
- Before case stops.
- At each end of a gate section.
- Near drive units.

Locate knee braces as necessary to put them in tension, normally on the downstream side of a support. For best results, the support-leg-to-brace angle should be not less than 30° and not greater than 45°. On short supports requiring an angle less than 30°, knee braces may be shortened.

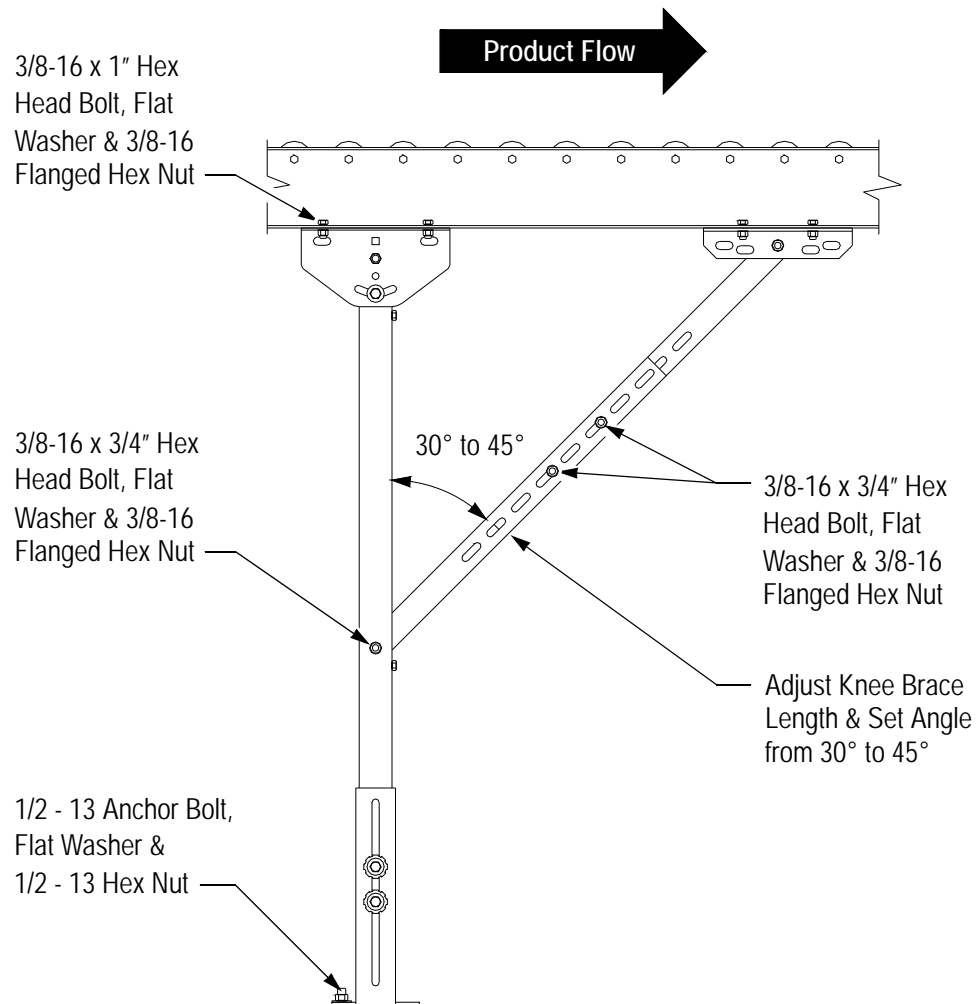


Figure G - 9 Installing a Knee Brace

Level the Conveyor

After the sections of conveyor are anchored in their correct locations, adjust the levelness of the conveyor. A laser-leveling method is recommended.

Determine the starting point for leveling the conveyor. Select one side rail as a starting point according to the following guidelines:

- For a sorter, the starting point is normally at the infeed end.
- For presort conveyors, the starting point is at the junction at the sorter. The conveying surface of the presort conveyor should be 1/16" above the conveying surface of the sorter.
- For after-sort conveyors, the starting point is at the junction at the sorter. If the after-sort conveyor is gravity-operated, the conveying surface should be 1/4" below the conveying surface of the sorter. If the after-sort conveyor is powered, the conveying surface should be 1/16" below the conveying surface of the sorter.

Mount the laser leveler to a column using a column clamp (or use a tripod if applicable). Turn the laser level "On," and level the unit as described in the manufacturer's documentation.

While the project layout drawings specify the elevation of the conveying surface, as a matter of practicality, conveyor height should be adjusted by measuring the height of the top flange of the side rails. Determine the correct height of the side rails as follows:

- For standard roller conveyor, subtract 5/16 inch from the specified elevation of the conveying surface.
- For standard belt conveyor, subtract the sum of 5/16 inch plus the thickness of the belt from the specified elevation of the conveying surface.
- If the rollers are set in the side rails lower than the standard depth, make the corresponding adjustment to determine the adjusted side-rail height.

At the starting point for leveling the conveyor, use a tape measure to set the height of one of the side rails. Adjust the side-rail height as follows:

- Place a jack under the bottom flange of the side rail adjacent to the floor support to be adjusted. Use a filler block between the jack and the side rail if necessary. Adjust the jack height until it touches the bottom flange of the side rail.
- Loosen the fasteners connecting the leg to the support foot, but do not remove them.
- Use the jack to raise or lower the side rail as necessary, and measure the height of the top flange of the side rail.
- When the correct height is set, tighten the fasteners connecting the leg to the support foot.
- Remove the jack.

Place the laser receiver on the top flange of the side rail at the point where the height was set. Adjust the height of the laser leveler until the laser beam strikes the receiver at the center photocell, and tighten the height-adjustment mechanism at the adjusted level. The adjusted laser height will be used for leveling the rest of the conveyor.

Place the laser receiver on the top flange of the side rail across from the starting point, on the opposite side rail. Place the jack under the bottom flange of the opposite side rail. Adjust the height of the side rail until the laser beam strikes the receiver at the center photocell.

- If the laser beam strikes the receiver above the center photocell, raise the side rail.
- If the laser beam strikes the receiver below the center photocell, lower the side rail.

Adjust each of the floor supports successively from the starting point to the opposite end until the height of all of the side rails is properly adjusted.

After the conveyor has been leveled, make certain that all support fasteners are tight.

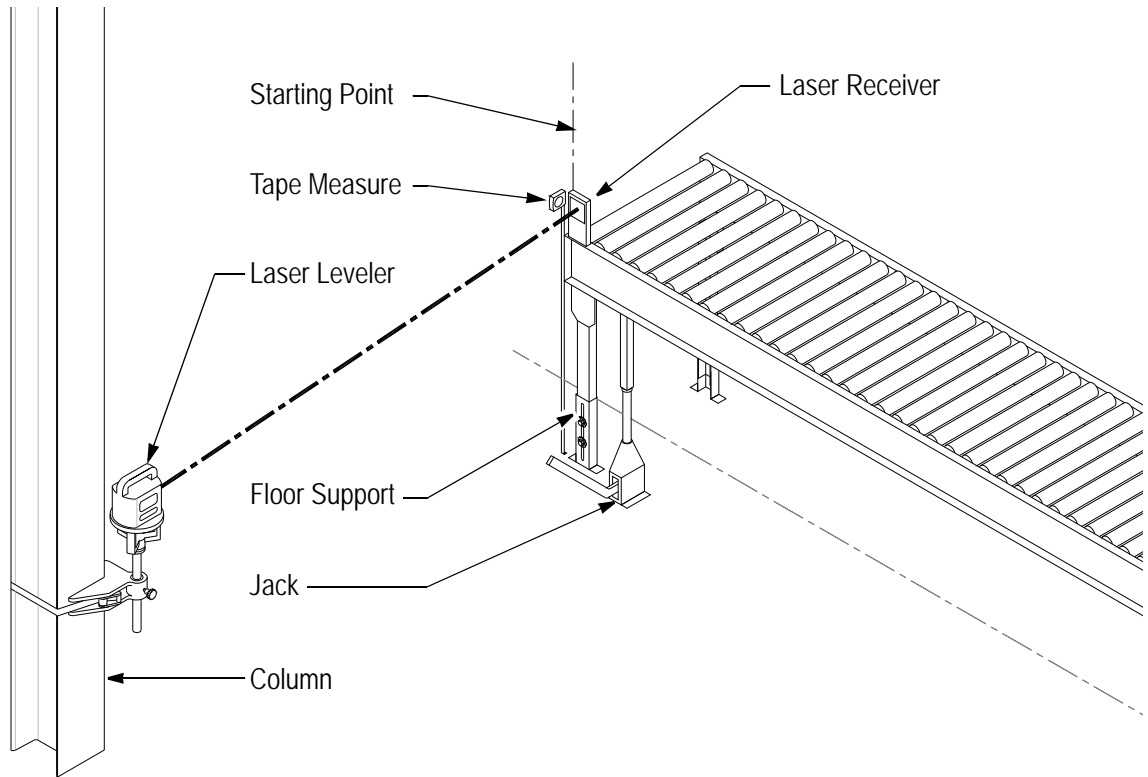


Figure G - 10 Laser Leveling

Installing Mobile Floor Supports

Portable conveyor sections may be straight or curved. Mount mobile floor supports to the portable conveyor section as follows:

- Mount an MSS series floor support to the bottom flanges of both side rails at each end of the conveyor (see Figure G - 11). Attach the knee-brace bracket to the bottom flange of the side rail of the conveyor. Adjust the length of the knee brace as necessary, and set the knee-brace angle at 45°. Tighten all fasteners.
- Mount an MSC series floor support to the bottom flange of the outside side rail of a curved conveyor section at the center of the curve (see Figure G - 12). Attach the knee-brace bracket to the bottom flange of the opposite side rail of the conveyor. Adjust the length of the knee brace as necessary. Tighten all fasteners.

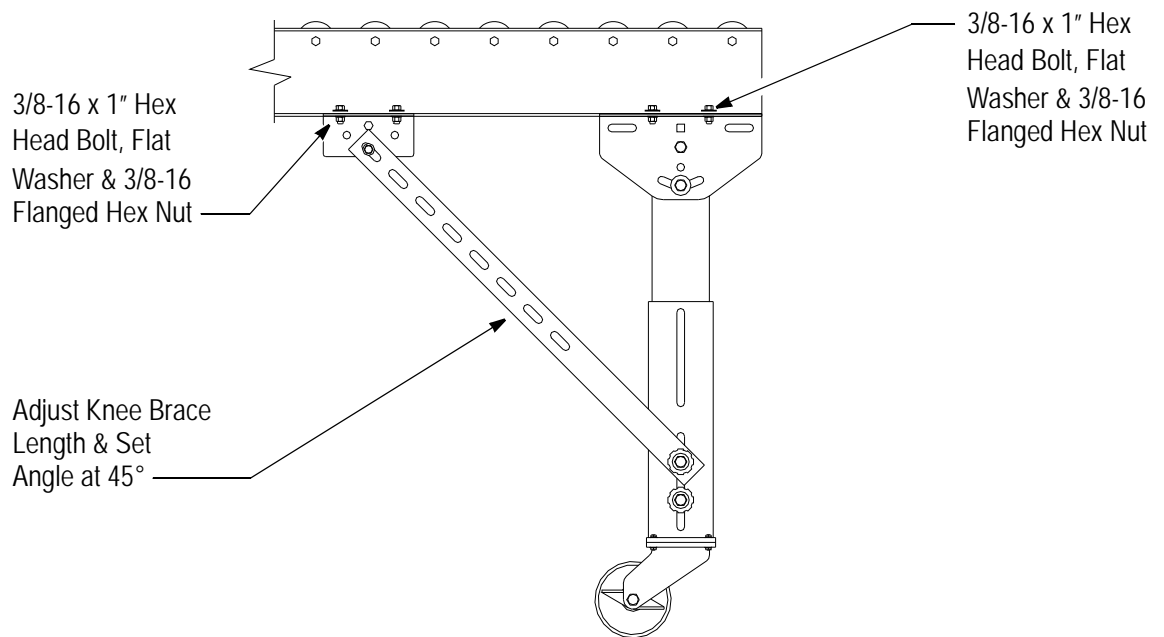


Figure G - 11 MSS Series Mobile Floor Supports

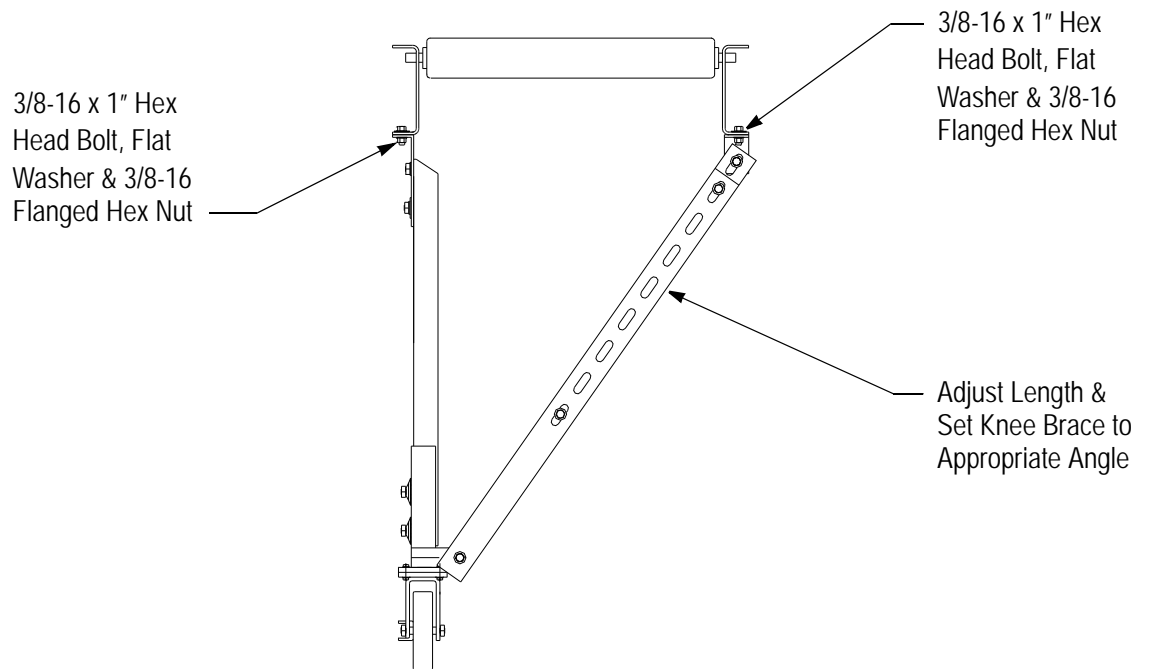


Figure G - 12 Model MSS Mobile Floor Supports

Installing a Conveyor with Ceiling Hangers

Note The following instructions are provided as a guide to procedure and apply to a typical installation. Instructions indicated on project layout drawings and in project specifications always take precedence over the instructions presented herein.

Ceiling hangers must be attached to the existing building structure (see Figure G - 13). Structural features vary from site to site, and method of installation varies accordingly. The instructions provided therefore apply to the installation of conveyors with ceiling hangers generally. For application-specific information, refer to the "Installation Procedures" section for the model of conveyor to be installed.

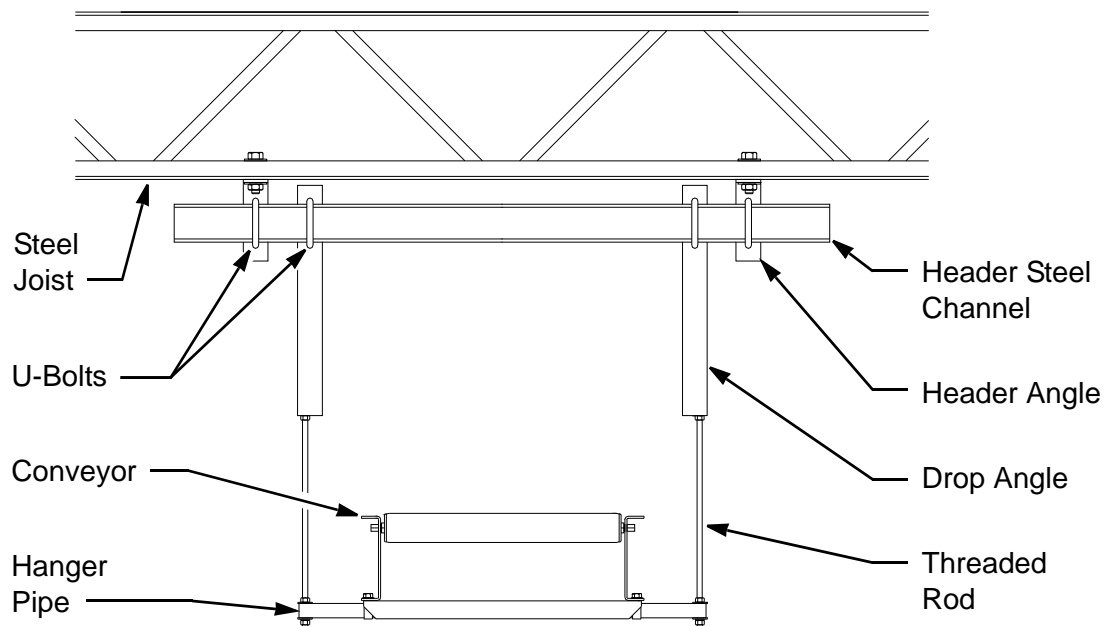


Figure G - 13 Typical Ceiling Hanger Installation (CH2-A Series Shown)

Preparation

To locate base lines, and for any other project-specific information, refer to the project layout drawings and specifications. Measure from the base lines to the centerline and location of each conveyor. Snap a chalk line on the floor to establish the centerline for each conveyor. To protect the chalk lines throughout the installation process, spray over them with a clear shellac.

Note that each section of conveyor has a label showing the conveyor number. The location for each conveyor number is shown in the project layout drawings. Arrange the conveyor sections and the corresponding ceiling hangers alongside the chalk line near their respective installation locations according to the project layout drawings. Check that all components are complete and ready for installation.

Install Ceiling Hangers

Attach the ceiling hangers to the steel joists or other structural features using header steel channels and header angles or other mounting devices, according to the specifications shown in the project layout drawings. Adjust the hanger-pipes to the approximate height required. Make certain that the ceiling hangers are attached to the building structure securely.

Position the Conveyor

Determine the most appropriate location to begin installation. Installing ceiling-hung conveyor from an upper level to a lower level is recommended. For example, if inclined ceiling-hung conveyor is to extend from a sorter located on a mezzanine to floor-supported conveyor at a shipping dock on the lower level, beginning with the divert junctions at the sorter would be appropriate.

Hoist the first section of conveyor, and gently guide it onto the hanger pipes of the corresponding ceiling hangers. Lower the conveyor section until the bottom flanges of the side rails rest on the hanger pipe.

Check whether Unisorb pads are specified for the installation. Note that Unisorb pads are always required with Unisort V and Unisort X conveyors. If Unisorb pads are specified, be certain to insert a Unisorb pad between each ceiling hanger and the bottom flange of the conveyor side rail.

Attach the conveyor side rails to the hanger pipes by installing pipe straps from under the hanger pipes. Use two fastener sets per pipe strap (see Figure G - 1). Insert a 3/8-16 x 1" hex head bolt with a flat washer through the bottom flange of the conveyor side rail and through each tab of the pipe strap.

- If the ceiling hanger is to be centered on a section joint, insert a splice flat between the cross pipe and the bottom flanges of the adjoining side rails (see Figure G - 14).
- If the ceiling hanger is to be offset from a section joint (to accommodate the guard for an underhung end drive), insert a splice channel between the cross pipe and the bottom flanges of the adjoining side rails (see Figure G - 15).
- If a section of conveyor has shallower side rails than the adjoining conveyor section, insert a fill channel between the shallow side rails and the splice flat or splice channel (see Figure G - 16).
- If a section of roller conveyor adjoins a downstream section of belt conveyor, insert a fill flat between the bottom flange of the roller conveyor and the splice flat or splice channel.
- If a section of roller conveyor adjoins a downstream section of belt conveyor and one of the conveyors has shallower side rails, use both fill flats and fill channels as required.

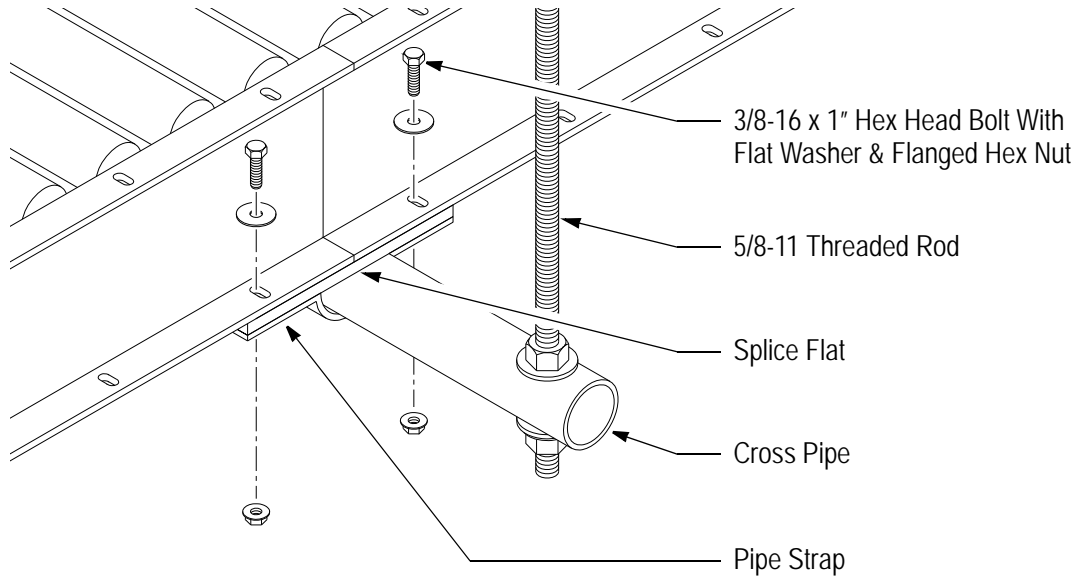


Figure G - 14 Installing a Ceiling Hanger Centered on a Section Joint

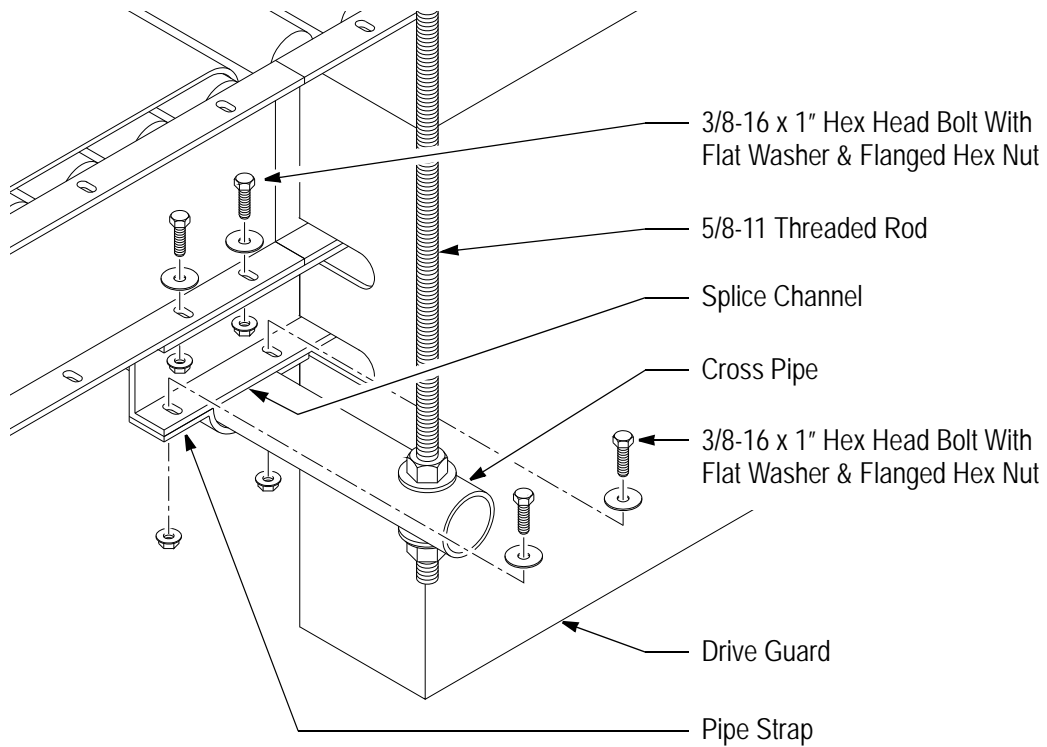


Figure G - 15 Installing a Ceiling Hanger Offset from a Section Joint

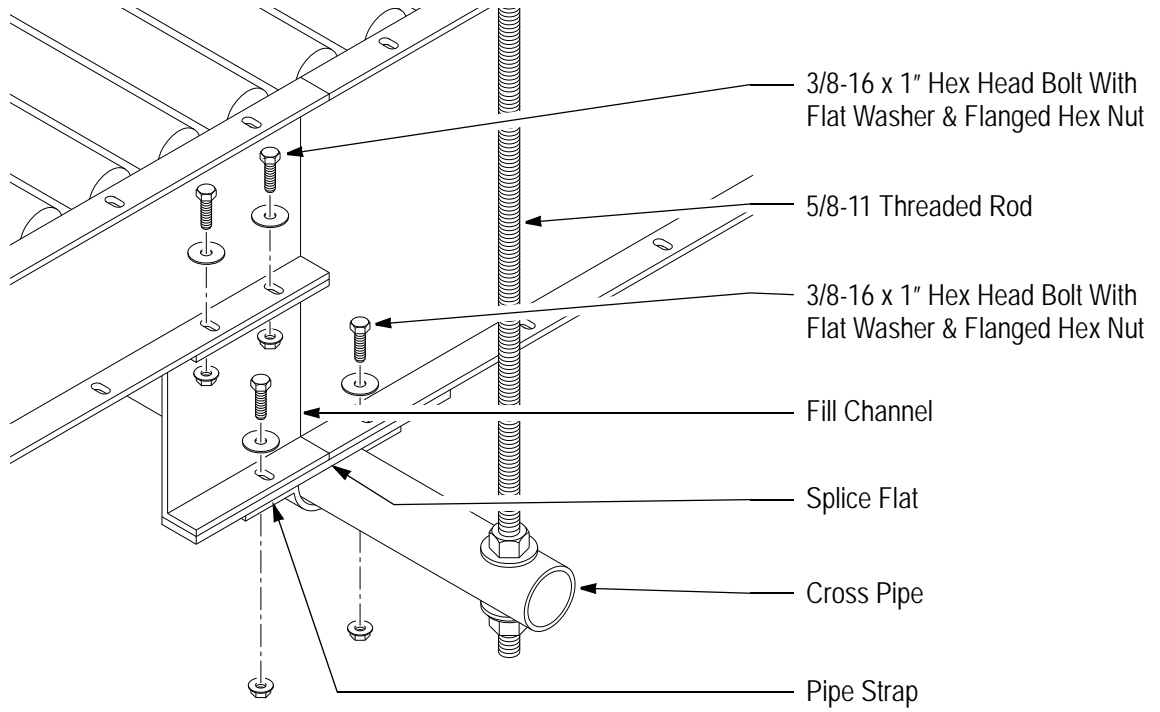


Figure G - 16 Adjoining Conveyors With Side Rails of Different Heights

Merge, Diverge & Crossover Conveyors

Support a double-wide merge, diverge or crossover conveyor at the infeed and discharge ends and at each section joint (see Figure G - 17).

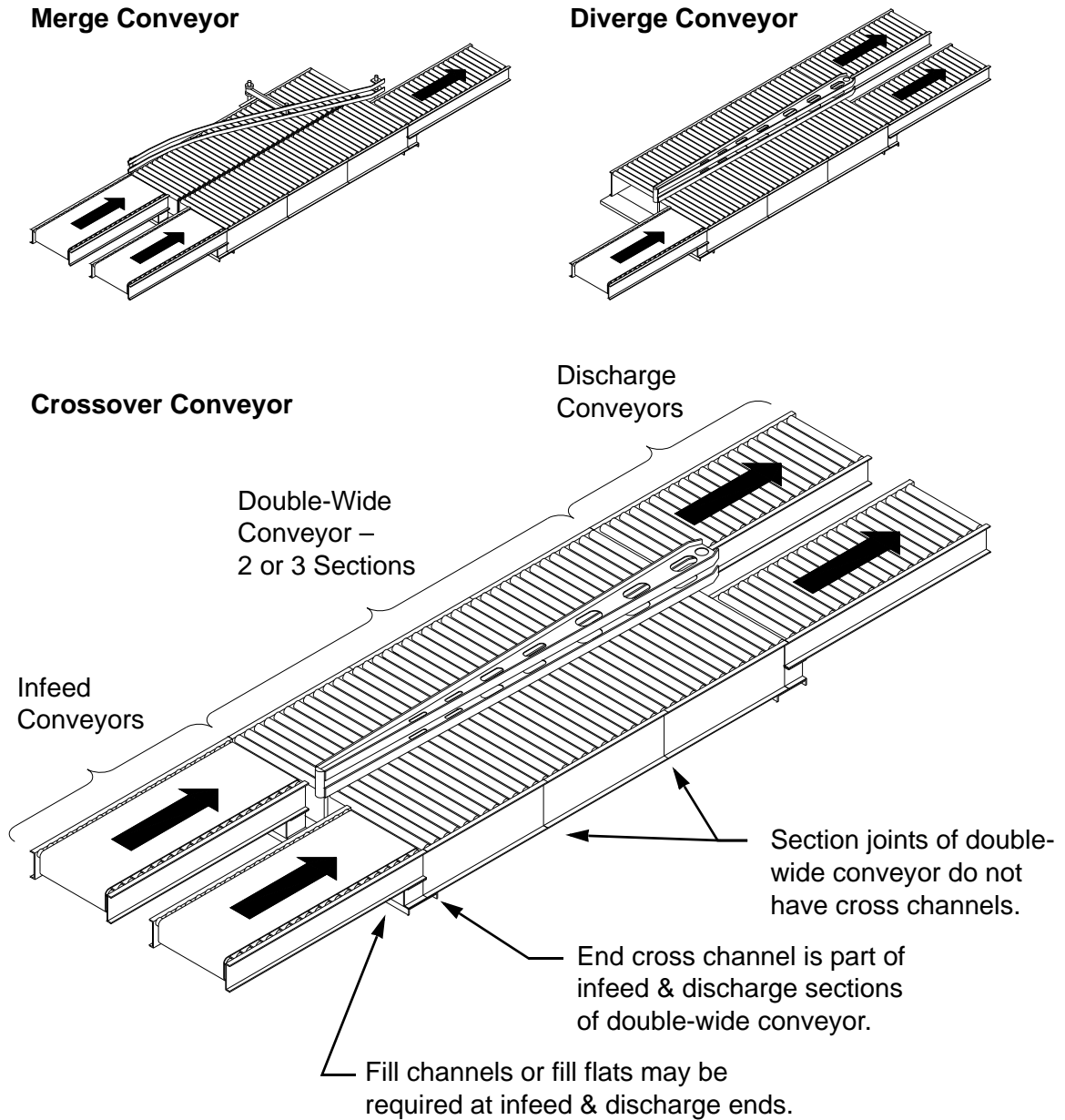


Figure G - 17 Merge, Diverge & Crossover Conveyors

Since the infeed and discharge ends of the double-wide conveyor are furnished with cross channels, use a CM1-B, CM2-B, or CM3-B ceiling hanger at both ends (see Figure G - 18).

- Mount each partial cross pipe to the cross channel using a pipe strap at two points – under the side rail and at the inside end of the partial cross pipe. Be certain to tighten the fasteners securely.

- If infeed or discharge conveyor sections have side rails shallower than the side rails of the double-wide conveyor, insert a fill channel between the cross channel and each side rail of the infeed or discharge conveyor.
- If the ceiling hanger is to be offset from a section joint (to accommodate the guard for an underhung end drive), insert a splice channel between the cross channel and the bottom flanges of the adjoining side rails.

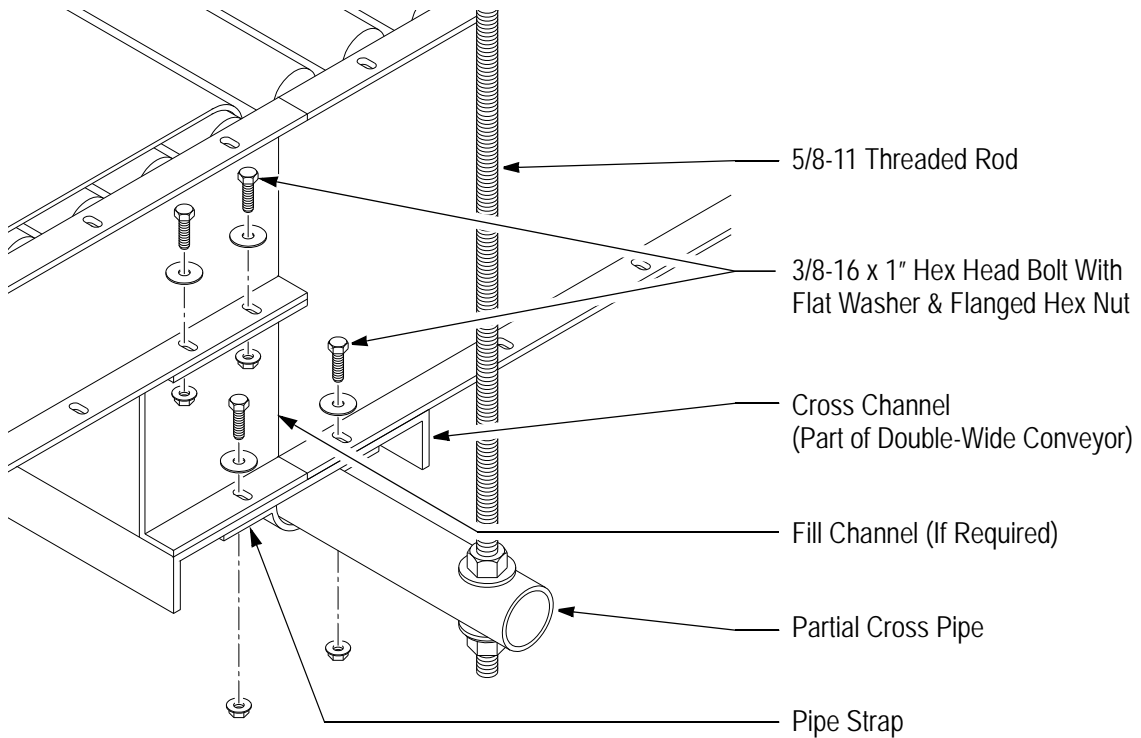


Figure G - 18 Merge, Diverge & Crossover – Infeed & Discharge Ends

At each section joint within the double-wide conveyor, use a CM1-A, CM2-A or CM3-A ceiling hanger, which is furnished with a cross channel (see Figure G - 19).

- If the drive unit for a deflector arm is not located at the section joint, center the ceiling hanger on the section joint.
- If the drive unit for a deflector is located at the section joint, locate the cross channel offset from the section joint, and mount splice angles to the bottom flanges of the side rails, straddling the section joint.

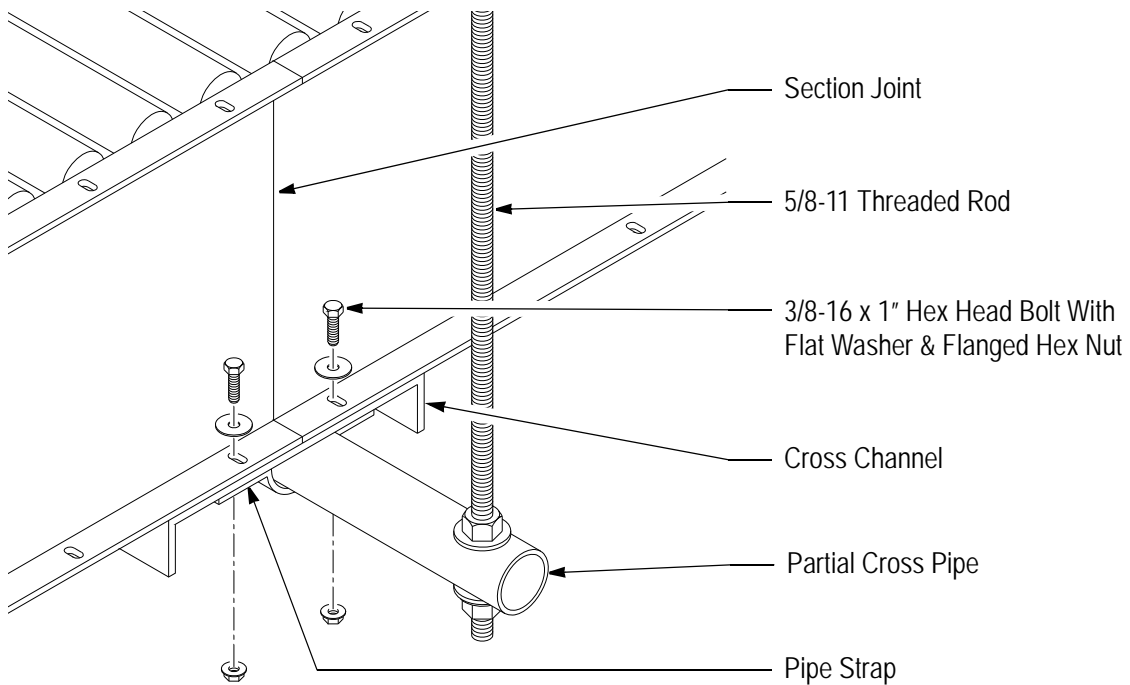


Figure G - 19 Installing a Ceiling Hanger at a Double-Wide Conveyor Section Joint

Adjust Partial Cross Pipes

Make certain that the partial cross pipes are positioned properly at both ends (see Figure G - 20). The centerline of the threaded rod should be 8 inches from the inside surface of the adjacent side rail, and the outside end of the partial cross pipe should be 8 3/4 inches from the inside edge of the pipe strap. When the partial pipes are properly positioned, make certain that all pipe-strap fasteners are tight.

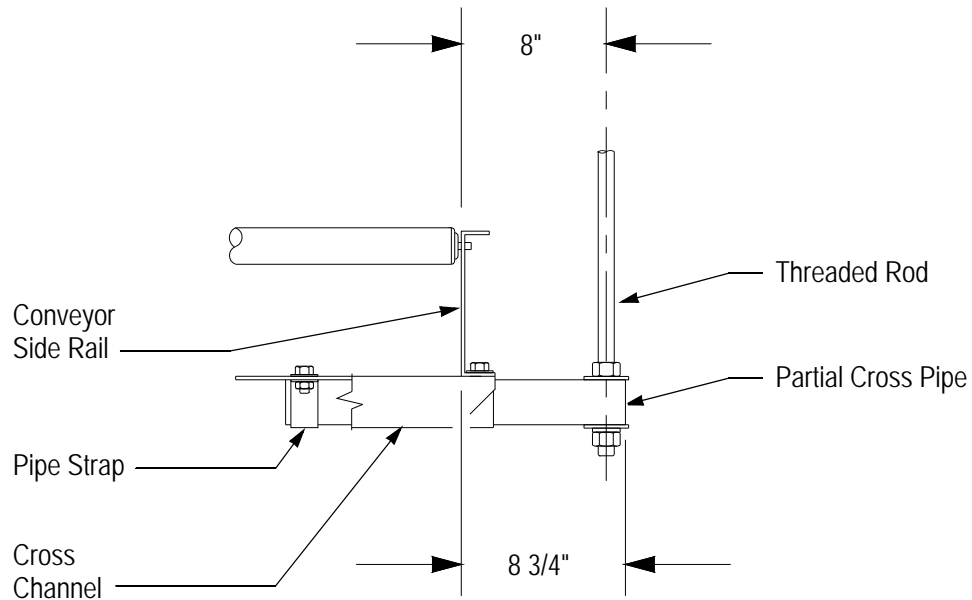


Figure G - 20 Locating the Partial Cross Pipe

Trash Belt Conveyors – Intermediate Sections

Install Trash Belt intermediate sections using CH1-T, CH2-T or CH3-T ceiling hangers. Remove the bottom guarding from the Trash Belt intermediate boxbed frames. Place four spreader pipes inside the boxbed frame in line with the mounting holes (see Figure G - 21). Mount one hanger bracket to each side of the boxbed frame. Insert one flanged hex bolt through each of the mounting holes in the hanger bracket base plate, through the corresponding mounting hole in the side of the boxbed frame, and into the tapped spreader pipe. Tighten the bolts. Replace the bottom guarding on the boxbed frames.

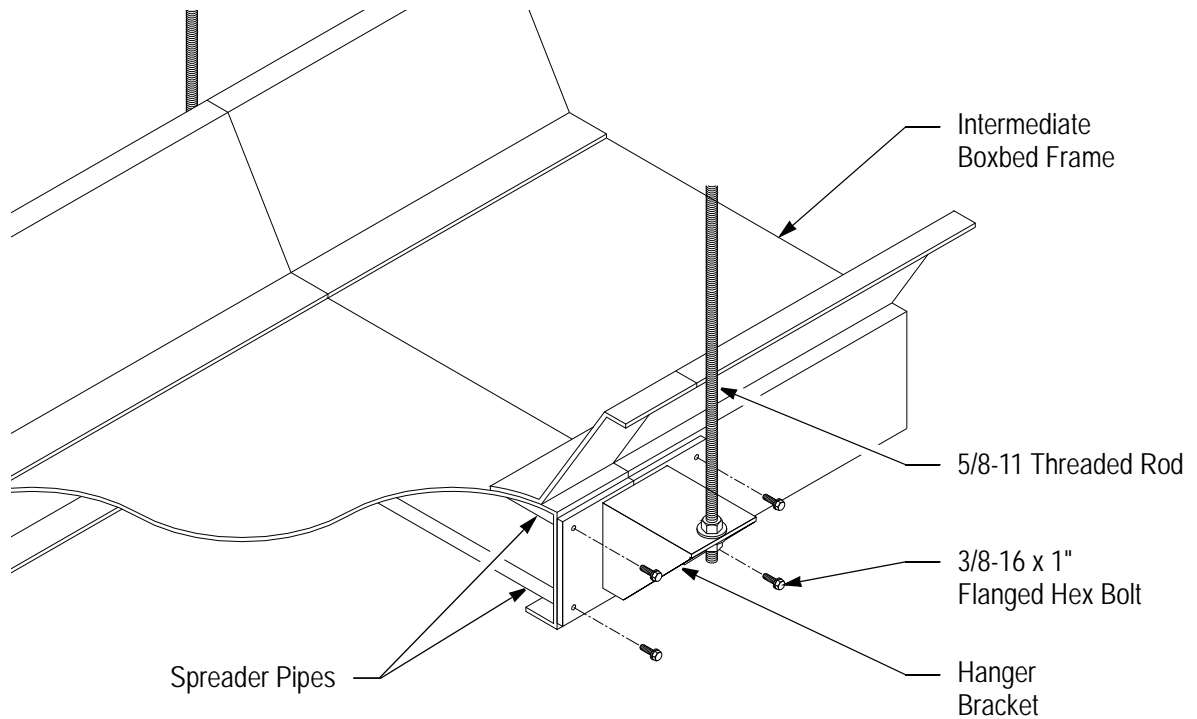


Figure G - 21 Connecting Trash Belt Intermediate Sections

Level the Conveyor

After the sections of conveyor are anchored in their correct locations, adjust the levelness of the conveyor. A laser-leveling method is recommended, as described under the heading "Level the Conveyor" in the previous section "Installing a Conveyor With Floor Supports."

Adjust the height of a ceiling hanger by using the hex nuts located on the threaded rod, one above the cross pipe, and the other underneath the cross pipe. To raise the cross pipe, loosen the top nut and tighten the bottom nut. To lower the cross pipe, loosen the bottom nut and tighten the top nut.

After the conveyor has been leveled, make certain that all ceiling-hanger fasteners are tight.

SECTION H: MAINTENANCE

Recommended service checks and equipment maintenance are outlined below for typical, intermittent-duty conveyor applications. Additional maintenance and servicing schedule adjustments may be required for continuous-duty operation or extreme environmental conditions.

All newly installed equipment should be frequently inspected and serviced as needed during the first 40 hours of operation; thereafter, an appropriate maintenance program should be established and followed (see Table H 1).

Maintaining separate service log sheets on each type of conveyor is recommended for plants operating more than one shift. Each log sheet includes dates, detailed inspection service information, and name or initials of person(s) performing the equipment inspection or service for future reference.

WARNING: Before performing maintenance on a conveyor, make certain that the conveyor’s power disconnect is locked in the "Open" position and tagged to prevent accidental or unexpected application of power. Do not perform maintenance while the conveyor is running unless specifically instructed to do so in this manual.

Note:

It is not necessary to have the conveyor turned ON in order to perform any of the work described in this section. Maintenance must be performed only by qualified personnel who are trained in normal and emergency operations of the conveyor and who are knowledgeable of all safety devices, their locations, and functions.

Before restarting a conveyor:

- Remove all foreign objects from the conveyor.
- Be sure that all guards and safety devices are properly installed and working.
- Make sure that all persons are clear of the conveyor and are aware that the conveyor is about to be restarted.

Scheduled Maintenance

Table H 1: Maintenance Schedule

Interval	Components	Item Check	
		Fasteners	Physical Condition
Monthly	Floor Supports	X	X
	Ceiling Hangers	X	X

The intervals for performing maintenance indicated in Table H 1 are based on eight hours per day operation. An application may subject the equipment to conditions that require more frequent maintenance. This may be determined by performing maintenance more frequently when the conveyor is first put into operation and lengthening the intervals based on experience.

SECTION I: SPARE PARTS

General Information

The purpose of this section is to identify parts for a quality preventive maintenance program and to minimize the chances for extended down time.

The following page illustrate the location of these parts as they apply to each particular unit. Keep in mind that this illustration applies to the standard product line only. These items will show on the bill-of-material as a coded item.

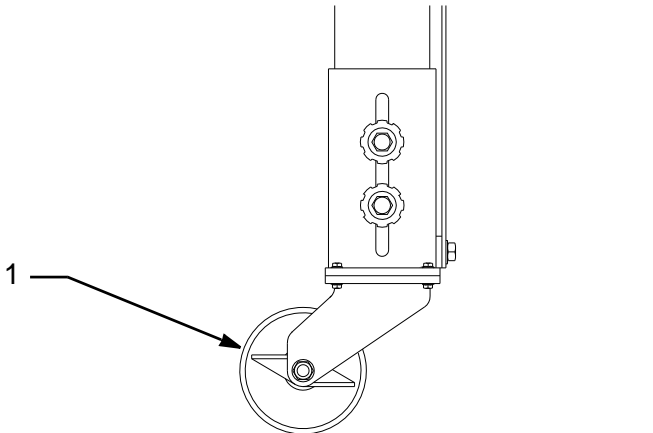


Figure I - 1 Caster for Mobile Supports

Key #	Part No.	Description	Qty.
1	240651	4" Dia. Swivel Caster Semi-Steel with Lock	1

