



**AGENDA OF THE CEMA ENGINEERING CONFERENCE
BULK CONVEYOR ACCESSORIES COMMITTEE MEETING
Tuesday, June 27, 2017 – 1:00 PM**

1. Call to order
2. Update status of Committee Chair & Vice Chair
3. Attendance and introductions – recognize new attendees
4. Review and Approval of Previous Minutes (attached)
5. Old Business
 - a. Review Best Practices Document from Skirtboard Sealing Sub-Committee (Attached)
 - i. Have we incorporated information brought to EC 2016?
 - ii. Are there sufficient graphics?
 - iii. Metric units included where applicable?
 - b. Belt Tracking & Training best practices discussion
 - i. Belt Book has placement guidelines and type descriptions
 - ii. Ideas for best practices document
 1. Define performance & measurement technique
 2. Create load or capacity categories
 3. Other?
 - c. CEMA Standard 575-2013 update for high speed, high tonnage belts? (Attached)
6. New Business – any new topics for Accessories Committee?
7. Nomination and Election of Vice Chair
8. Next Meeting – June 26, 2018 – La Playa Hotel, Naples, FL
9. Adjourn



MINUTES OF THE CEMA ENGINEERING CONFERENCE

BULK HANDLING CONVEYOR ACCESSORIES MEETING

Tuesday, June 21, 2016 – 1:00 PM

1. Call to order – The meeting was called to order by Chair John Barickman at 1:00 P.M.
2. The Agenda was Approved
3. The minutes from 2015 Engineering Conference (attached) were approved
4. Old Business
 - i) Discussed Skirtboard Sealing Best Practices. Reviewed work and data gathered to date.
 - (1) Discussed 2/3 belt width. Most folks used this criteria however, sometimes 2/3 isn't enough for belts <36" and too much for belts > 72". Double check book for 5% criteria.
 - (2) Discuss 2 ft for every 100 ft/min. Suggested to make sure you start after load zone.
 - ii) Suggest survey minimum skirt board height. Need to canvas OEMS
 - iii) Other considerations. Would like to understand better how the following applications are handled: multiple load points, moving hoppers, trippers, sealing pressure, tolerance installation, sealing catenary idlers.
 - iv) Important to consider both hardness and tensile strength when selecting an elastomer for sealing.
 - v) Additional content: Best practices in sealing catenary idlers
 - vi) Reviewed illustrations
 - vii) Subcommittee expanded to include OEM's new members include
 - (1) Todd Hollingsworth
 - (2) Matt Koca
 - viii) Plan teleconference prior fall meeting
5. New Business

- a. Brainstormed new topics for Accessories Committee
 - i. Belt tracking and training best practices
 - 1. How many trackers require?
 - 2. How far apart?
 - 3. Where do you place them?
 - ii. Need guidance on dealing with impact in load zone on high speed high tonnage belts. Not a lot of guidance on impact energy.
 - iii. Chord. Belt wear, rip monitoring. Possibly more discussion on this in emerging technologies committee.
- b. Discussed whether a best practices document is required or should we compile information for next belt book. Decision was to create usable documents that could be incorporated into next belt book as applicable.
- c. It's ok to start working on improving existing chapters to 7th edition.
 - i. Judd Rosebury volunteered to start work on accessories chapter.
 - ii. Todd Swinderman volunteered to provide some guidance on pulley diameter requirements when fitting multiple cleaners

6. Next Accessories meeting June 27th, 2017

7. Meeting adjourned

Greg Westphall, Vice Chair

Attendance Sheet EC 2016
Bulk Belt Conveyor Accessories Committee

Name	First Meeting	COMPANY	Belt Cleaner Mfg.	e-mail	Tel	Check Attendance
Lee Williams		ASGCO® "Complete Conv. Solutions"	Yes	lwilliams@asgco.com	610-821-0216	AW
Jim Mickelson		Baldor Electric Company		james.mickelson@baldor.abb.com	864-297-4800	JM
David Keech		Baldor Electric Company		david.keech@baldor.abb.com	864-297-4800	DK
Avinash Bhalariao		Bechtel Corp.	UBS	abhalaria@bechtel.com	713-235-3679	AB
Luis Estay		Bechtel Mining & Metals		lrestays@bechtel.com	56-2-27956663	LE
Barry Voorhees		Bunting Magnetics Co.		bvoorhees@buntingmagnetics.com	316-284-2020	BV
Philip Hannigan		CEMA		phil@cemanet.org	239-514-3441	PH
Robin Steven		ContiTech North America, Inc.		robin.steven@contitech.us	888-899-6354	RS
Andrew Jennings		Conveyor Dynamics, Inc.		jennings@conveyor-dynamics.com	360.671.2200	AJ
Marcus Dos Santos		Dos Santos International, LLC		marc@dossantosintl.com	770-423-9895	MS
Benjamin Brewer		Douglas Manufacturing Co., Inc.		bbrewer@douglasmanufacturing.com	205-884-1200	BB
Paul Ross		Douglas Manufacturing Co., Inc.		pross@douglasmanufacturing.com	205-884-1200	PR
Todd Hollingsworth		Engineered Conveyor Systems LLC		tth@engconsys.com	208.377.9331	TH
Greg Westphal		FLEXCO	Yes	gwestphal@flexco.com	630-971-0150	GW
Carl Hessler	Yes	FLEXCO	Yes	chessler@flexco.com	616-459-3196	CH
John Cieplak	Yes	FLEXCO		jcieplak@flexco.com	630.410.2000	JC
Matthew Koca	Yes	FLEXCO		mkoca@flexco.com	630.410.2000	MK
Brett DeVries		FLEXCO	Yes	bdevries@flexco.com	616-459-3196	BD
Edwin McDonald		Joy Global		edwin.mcdonald@joyglobal.com	205-487-6492	EM
Bob Hawkins		Joy Global		bob.hawkins@joyglobal.com	205-487-6492	BH
Derek Tatum		Kinder Morgan Engineering & Conveying		derek_tatum@kindermorgan.com	281-886-1701	DT
David Jesse	Δ	Lassing Dibben Consulting Engineers Ltd.		djesse2@lassingdibben.com	613-398-0007	DJ
Harold Dibben		Lassing Dibben Consulting Engineers Ltd.		hdibben2@lassingdibben.com	613-398-0007	HD
Jet LaBarge	Yes	Machine Guard & Cover Co.		jlabarge@machineguard.com	616-392-8188	JL
John Barickman		Martin Engineering Company	Yes	johnb@martin-eng.com	309-594-2384	JB
Paul Wehrle	Yes	MECO Seal Div., Woodex Bearing		bird@mecoseal.com	207-371-2210	PW
Jerry Weir		PEER Bearing Company		jweir@peerbearing.com	847-578-1000	JW
Violeta Stanojevic	Yes	Precision Pulley and Idler Co., RAS Div.		violetas@raspulleys.com	604.560.8176	VS
Joshua Stoll	Yes	Richwood	Yes	jstoll@richwood.com	304-525-5436	JS
Judd Roseberry		Richwood	Yes	jroseberry@richwood.com	304-525-5436	JR
Todd Swinderman		RTodds Engineering, LLC		rtodds.eng@gmail.com	386.589.4384	TS
Lucas Morse		Rulmeca Canada Limited		lmorse@rulmeca.com	519.627.2277	LM
David Ackels		Sandvik Mining		david.ackels@sandvik.com	+491722014790	DA
Adam Miles		SEW-Eurodrive, Inc.		amiles@seweurodrive.com	864.439.7537	AM
Nate Evans	Yes	SEW-Eurodrive, Inc.		nevans@seweurodrive.com	480-268-1944	NE
Dr. Andrew Hustrulid		Shaw Almex Industries Ltd.		andrew.hustrulid@almex.com	905-643-7750	AH
Keith Meyers	Yes	SKF USA, Inc.		keith.e.meyers@skf.com	267.436.6000	KM
James Wright		Stephens-Adamson	Yes	jamie.wright@metso.com	613-962-3411	JW
Stephanie Berry	Yes	Stober Drives, Inc.		stephanie.berry@stober.com	606.759.5090	SB
Mike Clark	Yes	Sumitomo Machinery Corp. of America		mclark@suminet.com	757.485.3355	MC
Jarrod Felton		Superior Industries	Yes	jarrod.felton@superior-ind.com	320-589-7576	JF
Eric Jackson		TAKRAF USA, Inc.		eric.jackson@tenova.com	303.714.8050	EJ
Fabian Rubio		TAKRAF USA, Inc.		fabian.rubio@tenova.com	303.714.8050	FR
Tony Wheeler	Yes	TAKRAF USA, Inc.		tony.wheeler@tenova.com	303.714.8050	TW
Jeremy Watts		TAKRAF USA, Inc.		jeremy.watts@tenova.com	303.714.8050	JW
Preston Hofer		Universal Industries, Inc.		phofer@universalindustries.com	319-277-7501	PH
Sergey Vaysfigel		Van Gorp Corporation		svaysfigel@vangorp.biz	641-628-9212	SV
Naylu Garcia		CEMA		naylu@cemanet.org	2395143441	NG
RANDY COLLOTT		RULMECA CANADA		RcolloTT@Rulmeca.com		RC
LUCAS MORSE		RULMECA CANADA		LMorse@Rulmeca.com		LM

Jim Masek PPI
 AKIKO WAKATSUKI Fenner Dunlop

j.masek@ppi-pella.com
 akiko.wakatsuki@fennerdunlop.com

Mark Wilbur OCC
 (NS)

Wilbur@overlandconveyor.com MW



MINUTES OF THE CEMA ENGINEERING CONFERENCE BULK BELT CONVEYOR ACCESSORIES COMMITTEE MEETING

Tuesday, June 23, 2015 – 1:00 PM

1. The meeting was called to order at 1:00 PM by Judd Roseberry. Roll call and contact info is at the end of these minutes.
2. Reviewed and approved minutes from June 24, 2014. The 2015 agenda was presented and approved.
3. Old Business

Skirtboard sealing- Compile a list of suggested items from skirtboard manufacturing companies for proposed best practices document.

4. New Business- None to report
5. Committee Elections: Chair- John Barickman (Martin Engineering)
Vice Chair- Greg Westphall (Flexco)
6. Next Meeting – June 21, 2016 – LaPlaya Hotel, Naples, FL
7. Meeting adjourned at 1:24 PM

CEMA EC 2015 - Conveyor Accessories Committee Meeting

Name	Company	Initial Attendance
Benjamin Brewer	Douglas Manufacturing Co., Inc.	BBB
Benjamin Roberts	Tenova TAKRAF, USA	BR
Bob Robbins	Martin Sprocket & Gear, Inc.	BR
Bret DeVites	FLEXCO	BD
Chat Foy	Jim Myers & Sons Inc.	CF
David Jesse	Lesing Dibben Consulting Engineers Ltd.	
David Keech	Baldor Electric Company	DK
David Stronczek	Martin Sprocket & Gear, Inc.	DS
Dean Ikemoto	Baldor Electric Company	
Derek Tatum	Kinder Morgan Engineering & Conveying	DT
Donald Suderman	Bunting Magnetics	DS
Dr. Andrew Hustrald	Shaw Almax Industries Ltd.	AH
Dr. Robin Steven	Continental ContiTech	RS
Edwin McDonald	Jay Global	EM
Erik Matheson	Raymond	
Fabian Rubio	Tenova TAKRAF, USA	FR
Frank Sunset	Applied Conveyor Technology, Inc.	FS
Gerhard Schmidt	Tenova TAKRAF, USA	
Greg Westphal	FLEXCO	GLW
Harold Dibben	Lesing Dibben Consulting Engineers Ltd.	HD
James Wright	Stephens-Adamson	JW
Janod Felton	Superior Industries	JF
Jeff Mensch	Kinder Morgan Engineering & Conveying	
Jeremy Watts	Tenova TAKRAF, USA	JW
Jim Masak	Precision Pulley and Idler Co. (PPI)	JM
John Barickman	Martin Engineering Company	JB
Joseph Dos Santos	Dos Santos International, LLC	JD
Joseph Fruchtbaum	Bechtel Corp.	JF
Judd Roseberry	Richwood	JR
Karys Mota	Tenova do Brasil	KM
Kimberly MacLaren	CEMA	
Lee Williams	ASCO-Complete Conveyor Solutions	LW
Lucas Morie	Rulmeca Canada Limited	
Luis Estay	Bechtel Mining & Metals	LE
Michael Wohletz	Automatic Systems, Inc.	MW
Mayra Garcés	CEMA	
Nicholas Tebbe	FLSmidth USA, Inc.	NT
Paul Ross	Douglas Manufacturing Co., Inc.	PR
Philip Hannigan	CEMA	
Ramon "Chito" Magaña	Bechtel Corp.	RM
Randy Collett	Rulmeca Canada Limited	
Richard McConnell	FLEXCO	RM
Rick Techantz	Imperial Technologies, Inc.	
Robert Reinhard	CEMA	
Sergey Vaysligel, P.E.	Van Gorp Corporation	SV
Stephen Dunlap	Peerless-Winsmith, Inc.	
Terry Olson	Jim Myers & Sons Inc.	
Tim Wolf	Precision Pulley and Idler Co. (PPI)	TW
Todd Hollingsworth	Engineered Conveyor Systems	
Travis Jarvis	Applied Conveyor Technology, Inc.	TJ
Tom Hubbert	Symstien M.H.	TH
Rob Haukeles	Jay Global	RH
DALE GENGLER	BALDOR ELECTRIC	DG
ALAN McLELLAND	STORCK BELT I/O	AM
JOHN SCHUBERT	STORCK I/O	JS
Jason Hahn	SEW Eurodrive	JH
Eric Jackson	Tenova TAKRAF	EJ

Skirtboard Sealing

Best Practices Approach

Draft 1

The primary purpose of a skirtboard is to keep the load on the conveyor, preventing material spillage over the belt edge, while the load is settling onto the belt and material has reached belt speed. Best practices in chute and skirtboard design now provide the opportunity for much cleaner and more efficient material handling system.

The skirtboard and the wear liner placed inside the skirtboard combine with an elastomer sealing system to form a multiple-layer seal. The elastomer seal should not be expected to withstand material side pressures or pieces of material larger than small fines. The skirtboard and wearliner form the first line of defense intended to contain fugitive material and prevent material head pressure from contacting the sealing system. To avoid entrapment of material between skirtboards, wear liner, and belt, skirtboards should be installed so they taper upwards providing increased clearance from the belt (vertical).

Inadequately sized skirtboard always leads to poor conveyor performance in form of material spillage, excessive dust, and higher operating cost by the end user.

Proper Skirtboard Size:

Length- Refers to additional length of steel beyond the impact zone. Skirtboard should extend past point where material fully settles onto the profile. The length needed for the bulk material to reach receiving belt speed and settle into the surcharge profile is calculated in the equation below (Eq. 12.45 p.513 Belt Book).

$$L_a = \frac{V_b^2 - V_{ey}^2}{2g (\mu_b - \tan(\theta))}$$

L_a = distance to accelerate bulk material to receiving belt speed

V_b =velocity of receiving belt

V_{ey} =vertical velocity of bulk material as it leaves discharge chute

g =gravitational constant

μ_b =effective coefficient of friction between bulk solids, skirtboards and belt

θ =inclination angle of receiving belt

If difference between V_b and V_{ey} is small and receiving belt flat, $L_a = 2$ ft. per 100 ft./min belt speed, with minimum 3 feet past loading chute

It is good practice to terminate skirtboards above an idler rather than between idlers to prevent spillage or belt damage.

Width- CEMA recommends distance between skirtboards is $2/3$ width of troughed belt. May be more effective to recommend amount of free belt edge distance **minimum** required for belt edge seal and belt wander; acceptable amount of belt wander is 1.00" (25mm).

Height- Contributing factors effecting height of skirtboard include belt width and speed, material lumps and air speed at discharge. Skirtboard should be tall enough to contain the material load when belt is operating at normal capacity and to pass two of largest lumps stacked on top of each other without jamming. CEMA has published a table specifying minimum height for uncovered skirtboards ([Table 12.47 p.515 Belt Book](#)). For dusty materials, it is a good practice to increase height of skirted area to create an added space to reduce positive air pressure. This area serves to "still" dust laden air so particles can fall back onto the cargo of the conveyor. To control dust, the cross sectional area of the chute should be sized to keep the exit air velocity below 200-250 feet/minute. If this maximum exit velocity cannot be achieved, then mechanical dust suppression or collection is necessary.

Purpose of Wear Liner

- A. Provides sacrificial, easily replaceable wear surface protecting wall of the chute and skirtboard
- B. Helps center the material load
- C. Prevents material load from applying high side forces to sealing strips
- D. Can reduce friction, impact, noise, and degradation of bulk material

Wear Liners-4 styles: straight, spaced, deflector, tapered

Straight Wear Liner- Real benefit is it provides improved life and improved sealing effectiveness without closing down the effective load area. Best for belts with multiple load points.

Spaced Wear Liner- Variation of straight where a space is created between the skirtboard and liner used as a negative pressure area. Fines and dust can be pulled from this space by a dust collection system.

Deflector Wear Liner- Bend inward at bottom half of liner- provides free area between elastomer seal and liner for collecting fines for the outer seal to handle without the outward forces of material load. Reduces effective cross-sectional area of the skirtboard area.

Tapered Wear Liner- Cast from Molybdenum steel for use in heavy duty applications. The cross section is trapezoidal to reduce the gap where the bottom edge meets the belt, skirtboard, and

skirting seal. They are heavy and supplied in short lengths, therefore difficult to keep bottom edges in a smooth straight line.

Edge Sealing Systems

Effective sealing at the edge of a belt requires a properly supported belt, wear liners, skirtboards, and an edge seal. A number of engineered sealing systems are now commercially available. These systems consist of a strip of elastomer attached to the lower portion of the skirtboard by an arrangement of clamps. Effective sealing requires an adequate amount of free belt distance. Free belt distance, amount of belt outside the skirtboard on both sides of the conveyor, provides space for the sealing system and belt wander. A good practice is to use a minimum of 3.50" (90mm) for the sealing system and 1.00" (25mm) for belt wander. The seal should start in the loading area and continue to the end of the settling zone.

There are a number of different approaches to skirtboard sealing. The best way to define these systems is to describe where each contacts the belt.

Vertical Sealing- This type of sealing arrangement uses a single rubber or elastomer sealing strip attached to the skirtboard with some type of clamp.

Advantages:

1. Low in cost
2. Minimal free belt edge required
3. Can be self-adjusting

Disadvantages:

1. Difficult to adjust accurately
2. Easily over adjusted causing premature wear
3. Prone to material entrapment
4. Susceptible to leakage of dust and fines

Inward Sealing- This type of seal contains an elastomer seal clamped to the outside of the skirtboard with the lower portion curled back under the steel.

Advantages:

1. Self-adjusting
2. Require limited free belt edge distance
3. Handle light fluffy and fine non-abrasive materials
4. Handle high internal chute pressure
5. Handle severely mistracking belts

Disadvantages:

1. Shorter seal life due to being in material flow

2. Prone to material entrapment under sealing strip-leads to premature belt wear
3. Reduced carrying capacity due to space taken up by the seal where the load could be carried

Outward Sealing- Type of system that seals on the outside of skirtboard. The most effective is a multi-layered seal containing a primary strip which contains most of the material escaping past wear liner and secondary seal containing fines and dust.

Advantages:

1. Long lasting- positioned away from material flow and protected by skirtboard and wear liner
2. Can be self-adjusting
3. Low required sealing pressure due to multiple layered sealing design
4. Adapt to existing clamp system

Disadvantages:

1. Require greater free belt edge distance
2. Susceptible to damage if belt mistracks underneath seal

The skirtboard seal should not be the first line of defense in preventing material spillage, but rather a last chance to contain fugitive material and prevent its release. The better job done by the belt support and wear liner systems to contain material and keep it away from the belt edge, the better the performance will be of the belt's edge sealing system. A multi-layer flexible seal incorporating some self- adjustment will provide effective material containment for a transfer point. Maintenance and periodic inspection are also important to extend the life of the conveyor's sealing system.

CEMA Skirtboard Sealing

FLEXCO Commentary

June 10, 2016

WIDTH

- In favor of maintaining the 2/3rd belt width specification. Concern was that changing standard to reference an offset from the edge of the belt would restrict the throat of the chute too severely for material flow on the narrower belt sizes ($\leq 36''$).
- Would consider a rule stating skirt width is 2/3rd belt width or 12'' of freeboard from edge of belt, whichever results in a larger chute opening.

BELT WANDER

- While 1'' maximum of belt wander is a laudable goal, we feel that it does not represent general practice. Standard return idler widths assume approximately 1-1/2'' of belt wander before the belt runs off the end of the idler, and frequently belts are even beyond this point.
- Transfer points should be designed conservatively so that spillage is not occurring under typically conditions. To that end, we suggest that skirting be designed to accommodate belt mistracking of 2'' or 5% of belt width, whichever is greater, without spillage.

SKIRTING TYPES

- Inward – We refer to this as tangential skirt. Are there are names/descriptions for this design?
 - Excellent seal against dust
 - Dips and moves as the belt traverses idlers (Slider beds not needed)
 - Slow wearing
 - Choose durometer to be softer than belt (60A typically)
 - Excessive belt wander will disengage this skirting rendering it inoperable.
 - Lack of freeboard prevents use on belts $\leq 36''$
- Vertical
 - "Standard" skirting predominate in the industry
 - Requires least amount of freeboard
 - Can be fixed position or self-adjusting
 - Usually suffers from uneven wear against belt rendering it less effective at containing dust and material
 - Frequently wears a shallow groove in the top cover of belt

- Outward
 - Include multiple seal skirting designs in the category?
 - Requires more freeboard than vertical skirting

WEAR LINER

- Clearly define and distinguish “skirt wall”, “skirt board”, “wear liner”, “canoe liner”, etc.
- Types & materials
- Intended to contain material (lumps), not dust?
- Application guidelines

BELT TRANSITION

- Do not load belts in the transition zone
- Effective skirting systems are very difficult to design in this zone. Subpar material containment is likely

MINIMUM HEIGHT

- If a minimum chute opening of $2/3^{\text{rd}}$ belt width is maintained, we favor a minimum 8” tall wear liner and a minimum 15” skirt wall for covered skirting systems.

PERPENDICULAR SKIRTING

- The chute wall is bent outward to make 90° intersection with the troughed belt surface.
- Flat skirt rubber is used. (Not tangential or outboard)
- When multiple chutes load onto the same belt, the downstream chutes need perpendicular skirting
- The inlet is usually AR steel and flared
- This skirting is less likely to disturb already loaded material

SKIRT MATERIAL DUROMETER & ABRASION INDEX

- Conventional wisdom says the skirt material should be of a softer durometer than the belt
- We typically use 60A rubber
- Do not know what the abrasion index is or have experience with higher durometer skirt materials

SKIRT PRESSURE

- We do not have a specification or target value for skirt pressure

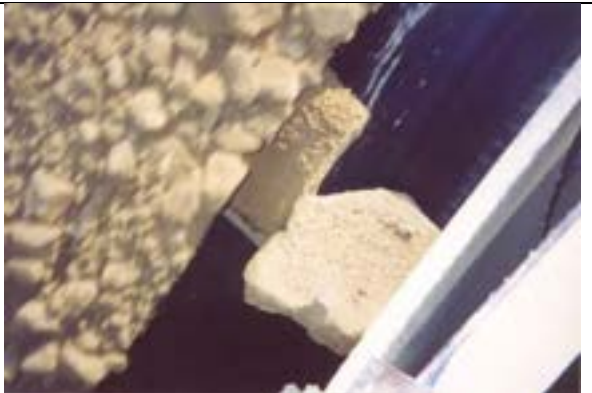
DIN & ISO

- I was unable to locate any DIN or ISO standards regarding conveyor skirting.

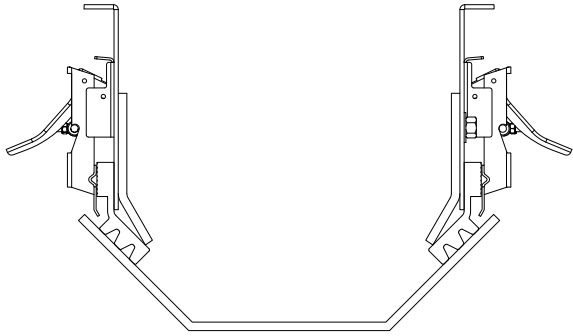
SIX STEP METHODOLOGY FOR MATERIAL CONTAINMENT ON A CONVEYOR BELT

- I. Achieve constant and consistent belt elevation
 - A. Full idler / belt contact both empty and full loading conditions
 - B. Full trough transition
 - C. Belt fully troughed to final conveyor trough angle
 - D. Avoid catenary curves near the load zone
- II. Provide impact protection
 - A. Absorb impact
 - B. Protect belt
 - C. Reduce material bounce
- III. Provide proper belt support
 - A. Continuous bed under seal area
 - B. Belt support stands between idlers at seal location prevent belt sag between components which allow gaps
- IV. Containment of bulk material
 - A. Proper size skirt board
 1. Length (0.02 X Belt speed or equation?)
 2. Width : Free edge distance may be problematic for walking conveyors, narrow conveyors (outward seal design may limit loading width), or different types of skirt manufacturers while 2/3 BW may be problematic for narrow conveyors (may not have enough room for sealing components)
 3. Height
- V. Wear liners
 - A. Straight
 - B. Spaced
 - C. Deflector
 - D. Tapered
- VI. Sealing of dust and fines
 - A. Edge sealing (I believe we should remove the advantages/disadvantages portion as different manufacturers may develop components to mitigate disadvantages)
 1. Vertical
 2. Inward
 3. Outward
 4. Skirt liners (similar to wear liners but on outside of skirt boards)
 - B. Covered conveyor sections
 - C. Stilling chambers
 - D. Dust curtains
 - E. Vacuum systems

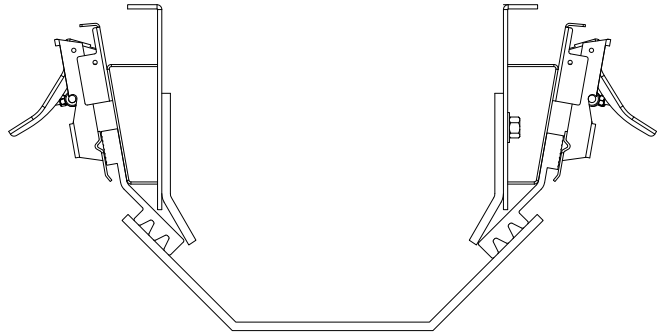
BELT DAMAGE EXAMPLES







ASGCO MultiSeal Skirting
With Double Handle Clamps,
and angled wear liners.



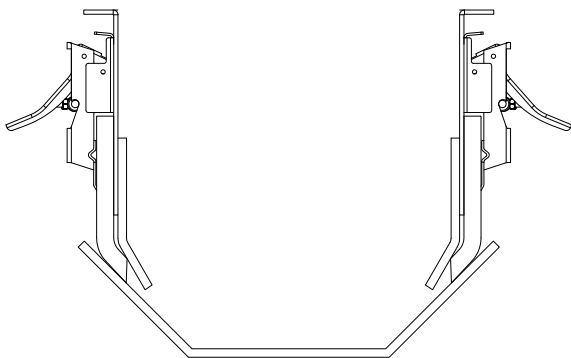
ASGCO MultiSeal Skirting
With support plate, Double Handle Clamps,
and angled wear liners.



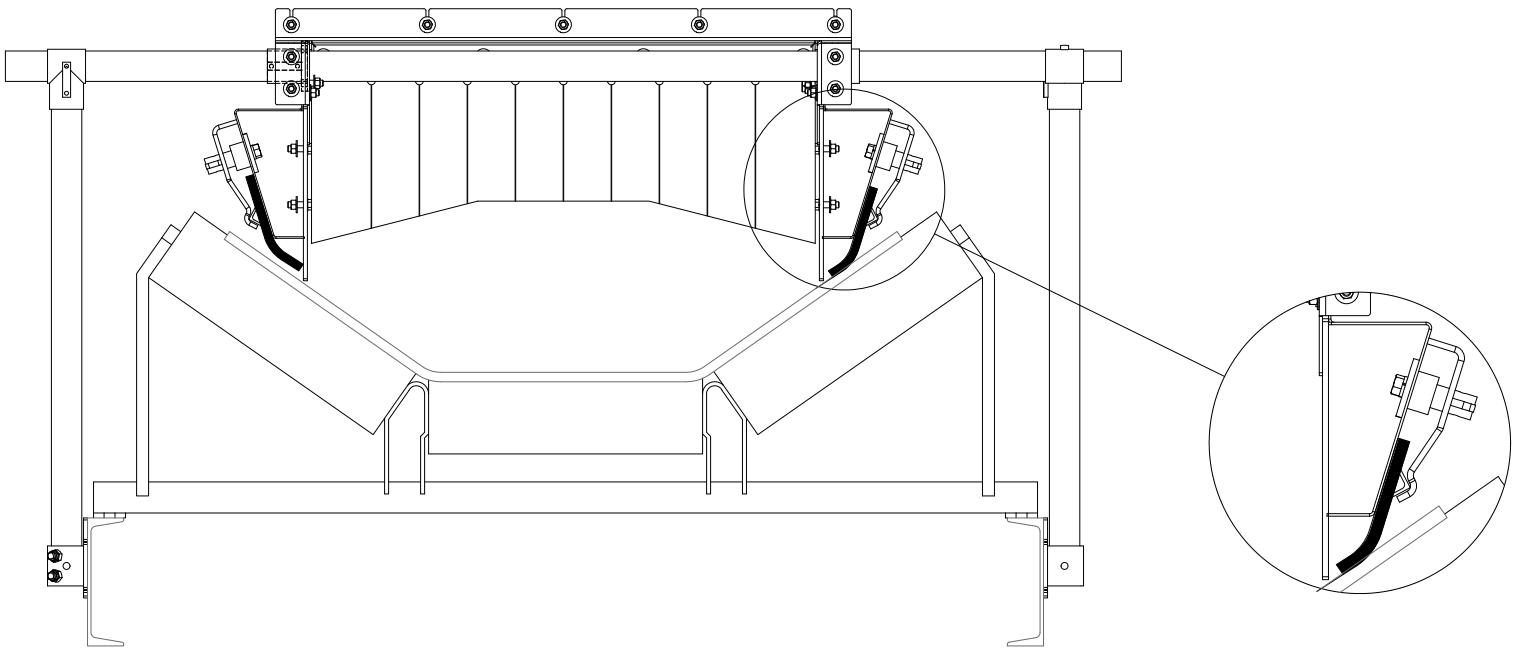
ASGCO straight Dura-Seal ORG Skirting
With Double Handle Clamps,
and straight wear liners.

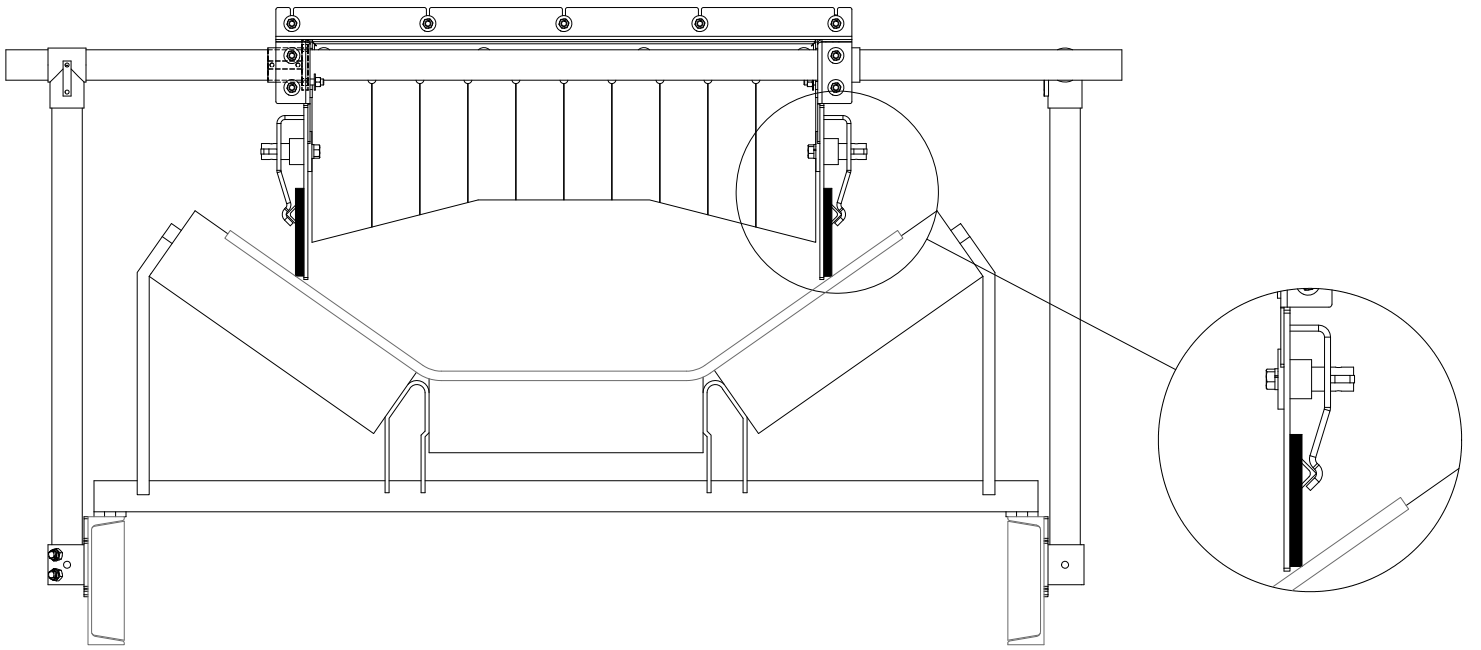


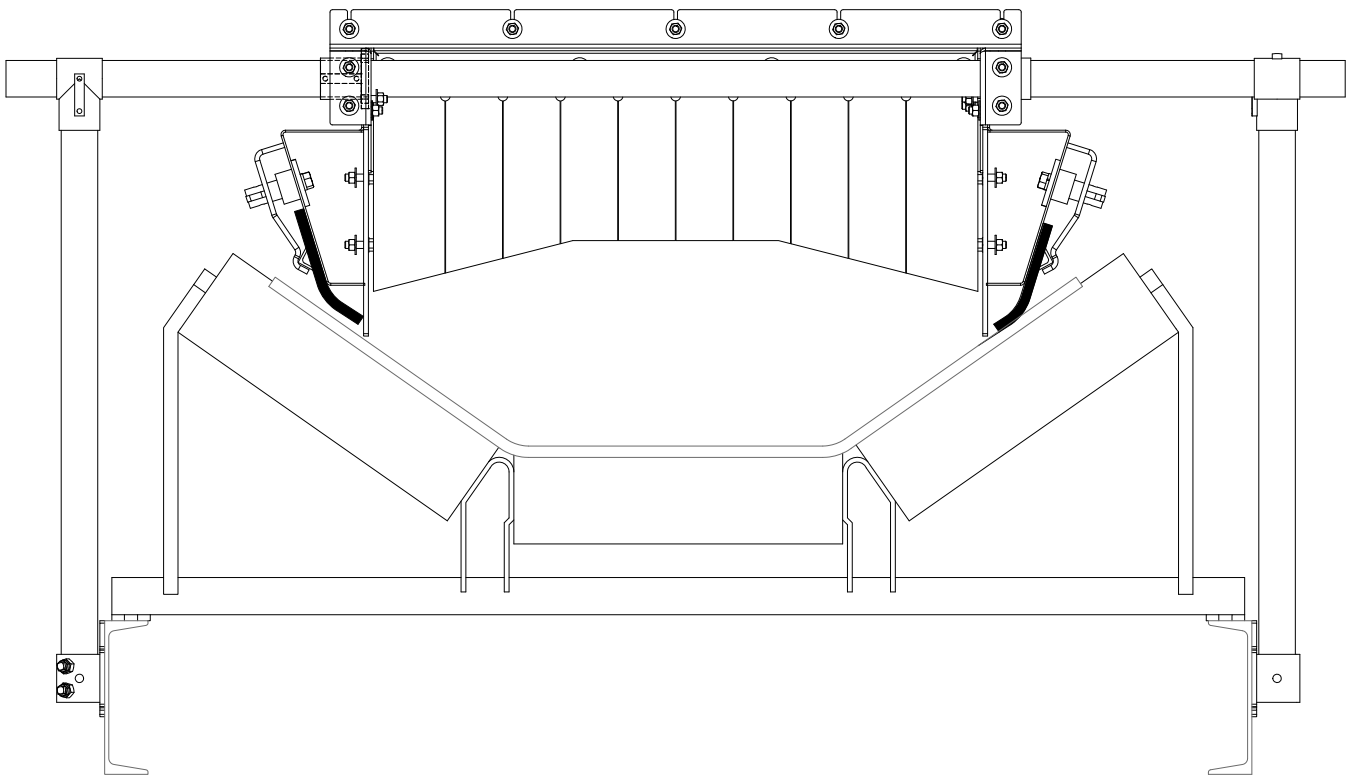
ASGCO straight Dura-Seal ORG Skirting
With Double Handle Clamps,
and angled wear liners.

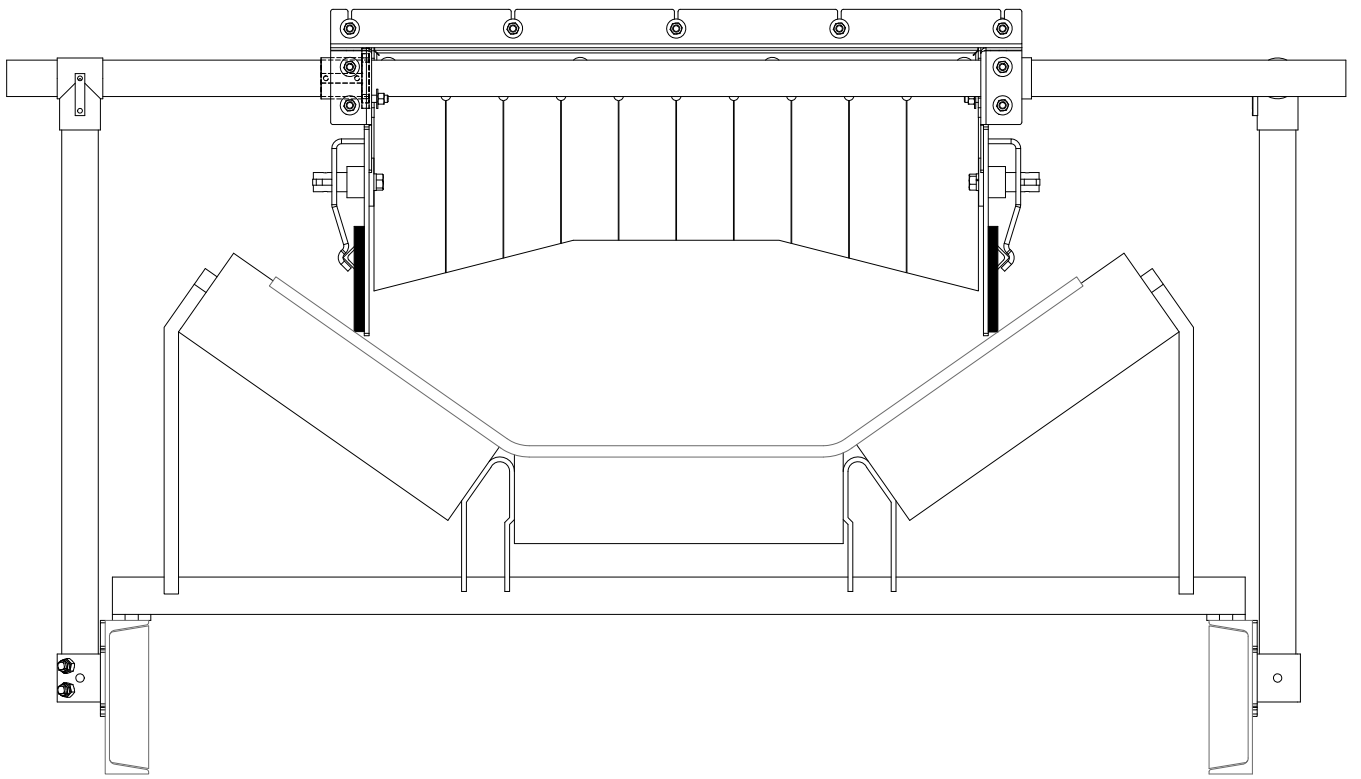


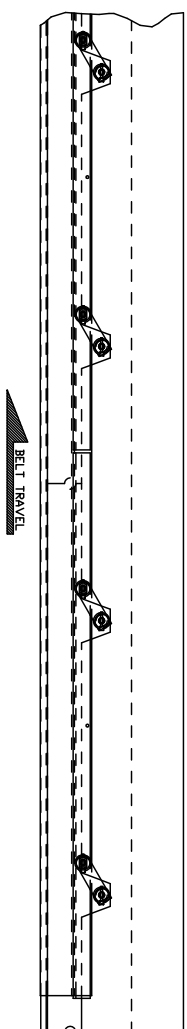
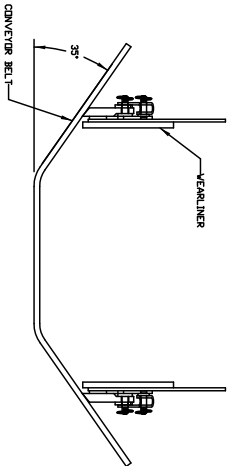
ASGCO angled Dura-Seal ORG Skirting
With Double Handle Clamps,
and angled wear liners.

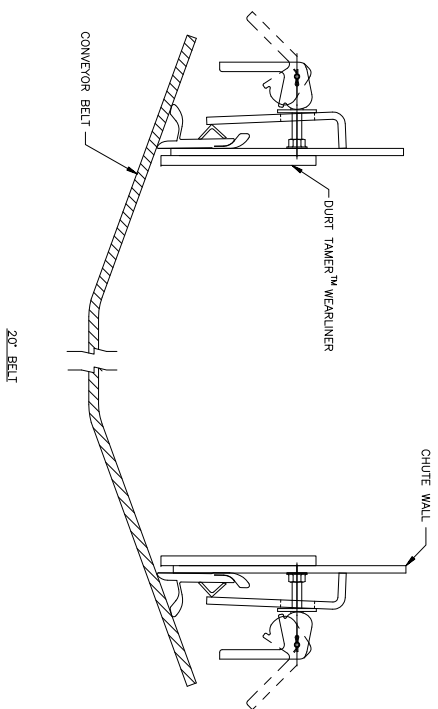
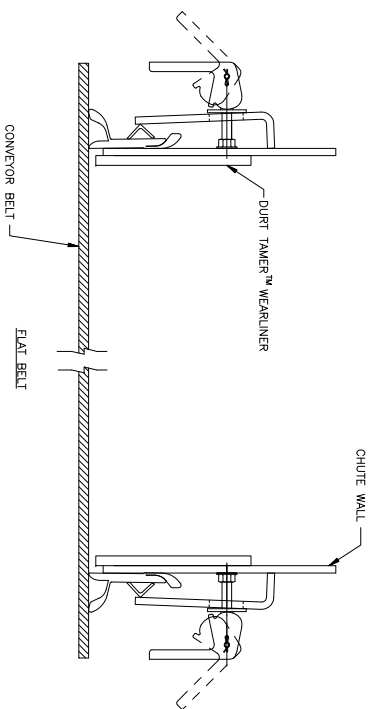
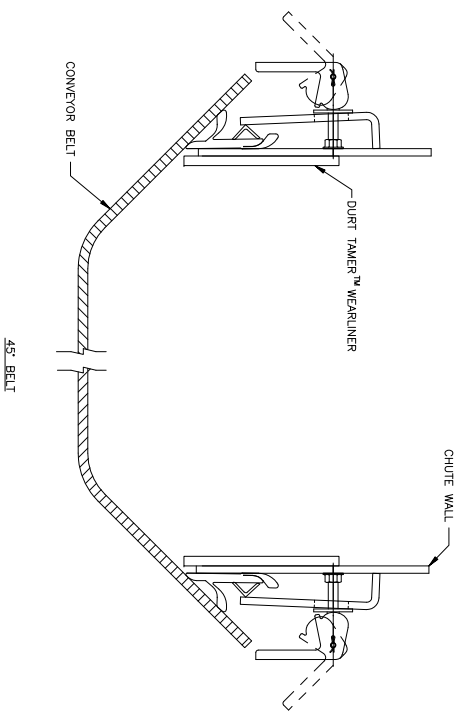
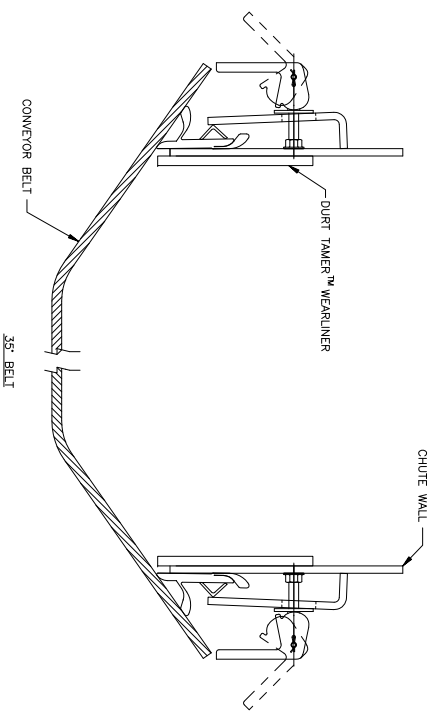


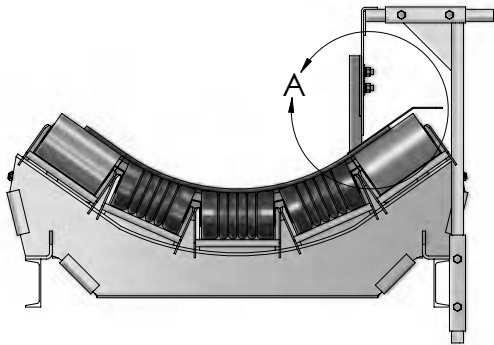
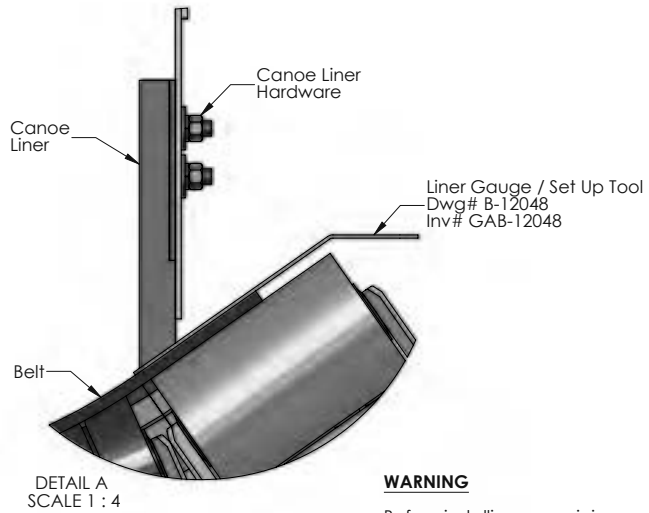
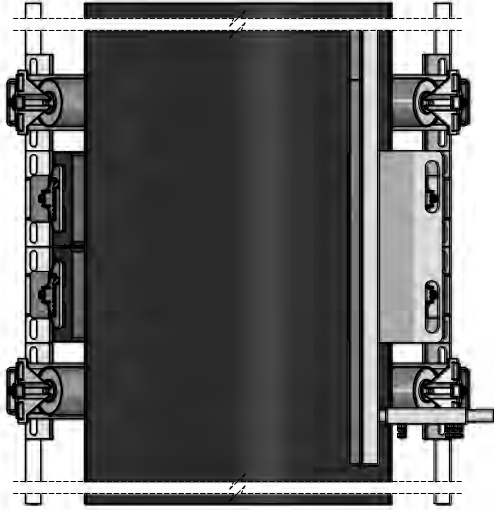












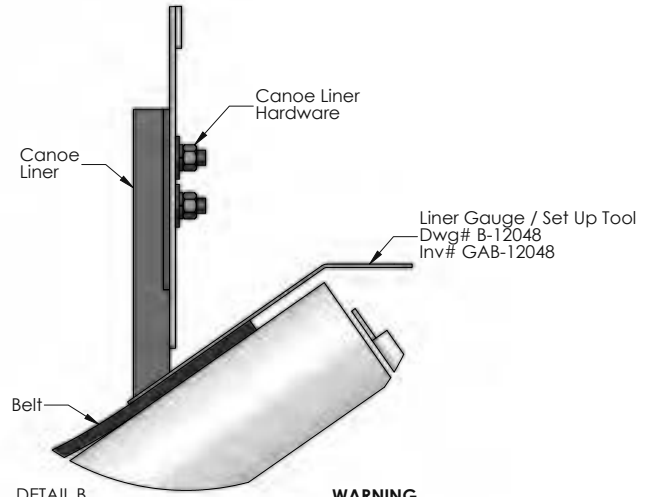
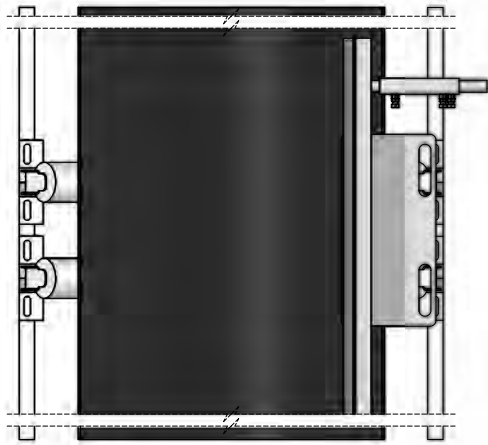
WARNING

Before installing or servicing equipment, turn off and lock out/tag out energy source to conveyor and conveyor accessories.

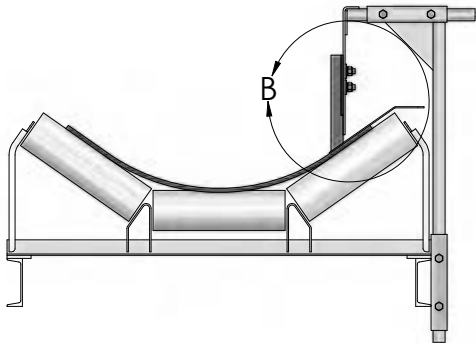
INSTRUCTIONS

1. Loosen Canoe Liner Hardware.
2. Lift Canoe Liner.
3. Insert Liner Gauge Between Canoe Liner and Belt while bridging Saddles or Idlers with gauge.
4. Fully lower Canoe Liner onto Liner Gauge to set gap.
5. Tighten Canoe Liner Hardware.
6. Remove and reposition Liner Gauge for next Canoe Liner section.

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Richwood Liner Gauge Instructions ~ Canoe Liner Only					
TOLERANCES UNLESS OTHERWISE SPECIFIED		DRAWN BY DEP	MODIFIED BY DEP	SCALE 1:12	DATE 11-10-2014
FRACTIONS ± 1/32" DECIMALS ± 0.005" ANGLES ± 1/2°		MATERIAL	B-12215		REVISION 0 SHEET 1 of 10
REVISIONS					
REV	DESCRIPTION	DATE	BY		



DETAIL B
SCALE 1 : 4



WARNING

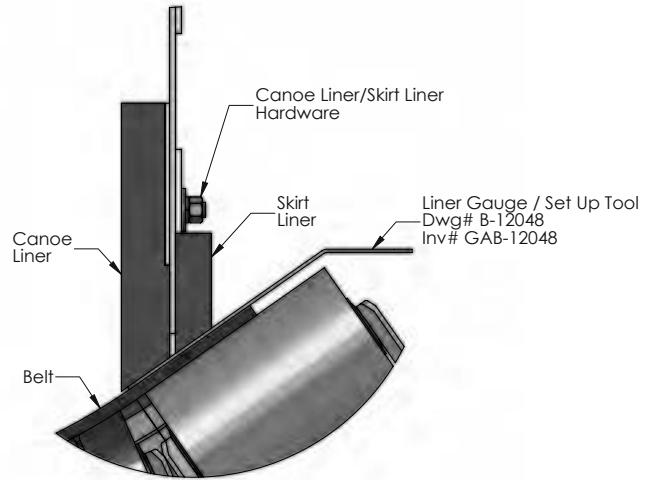
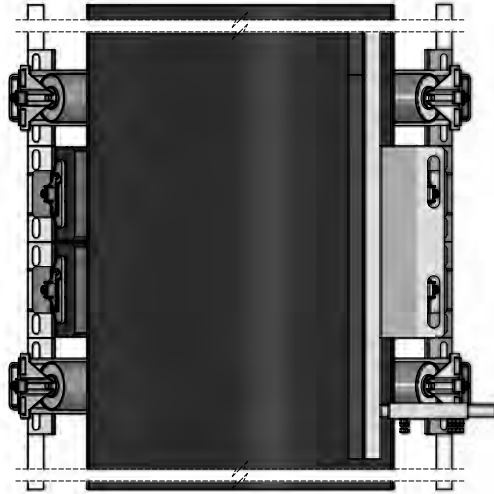
Before installing or servicing equipment, turn off and lock out/tag out energy source to conveyor and conveyor accessories.

INSTRUCTIONS

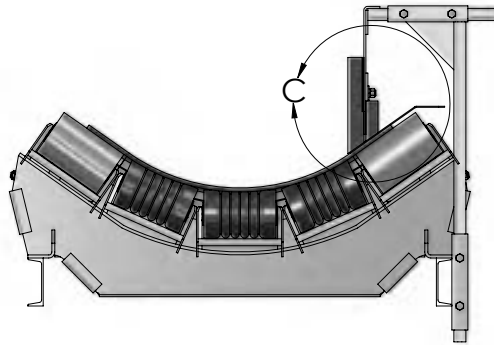
1. Loosen Canoe Liner Hardware.
2. Lift Canoe Liner.
3. Insert Liner Gauge Between Canoe Liner and Belt while bridging OEM Idlers with gauge.
4. Fully lower Canoe Liner onto Liner Gauge to set gap.
5. Tighten Canoe Liner Hardware.
6. Remove and reposition Liner Gauge for next Canoe Liner section.

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TITLE Liner Gauge Instructions ~ Canoe Liner Only over OEM Idlers				
TOLERANCES UNLESS OTHERWISE SPECIFIED FRACTIONS ± 1/32" DECIMALS ± 0.005" ANGLES ± 1/2°		DWN BY: DEP MOD BY: DEP MATERIAL: _____ INVENTORY NO.: _____	SCALE: 1:12 DATE: 11-10-2014	DRAWING NO.: B-12215 REVISION: 0 SHEET: 2 of 10

REVISIONS			
REV	DESCRIPTION	DATE	BY



DETAIL C
SCALE 1 : 4



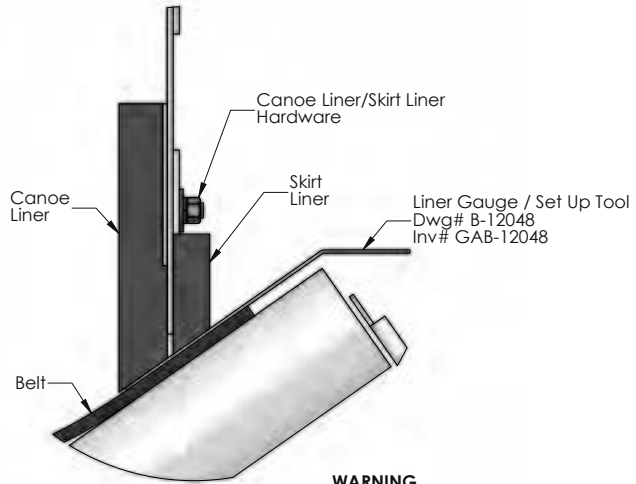
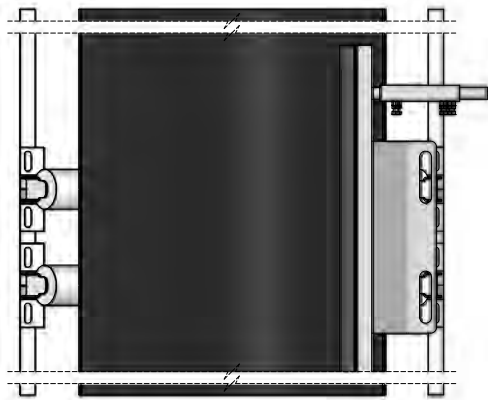
WARNING

Before installing or servicing equipment, turn off and lock out/tag out energy source to conveyor and conveyor accessories.

INSTRUCTIONS

1. Loosen Canoe Liner/Skirt Liner Hardware.
2. Lift Canoe Liner and Skirt Liner.
3. Insert Liner Gauge Between Canoe Liner/Skirt Liner and Belt while bridging Saddles or Idlers with gauge.
4. Fully lower Canoe Liner/Skirt Liner onto Liner Gauge to set gap.
5. Tighten Canoe Liner/Skirt Liner Hardware.
6. Remove and reposition Liner Gauge for next Canoe Liner/Skirt Liner section.

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TITLE Liner Gauge Instructions ~ Canoe Liner, Skirt Liner					
TOLERANCES UNLESS OTHERWISE SPECIFIED FRACTIONS ± 1/32" DECIMALS ± 0.005" ANGLES ± 1/2°		DWN BY DEP	MOD BY DEP	SCALE 1:12	DATE 11-10-2014
REVISIONS		MATERIAL		DRAWING NO. B-12215	
REV	DESCRIPTION	DATE	BY	REVISION 0 SHEET 3 of 10	



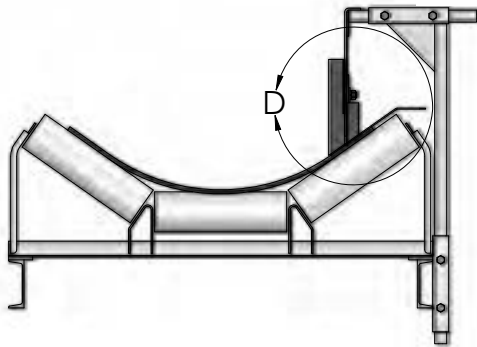
DETAIL D
SCALE 1 : 4

WARNING

Before installing or servicing equipment, turn off and lock out/tag out energy source to conveyor and conveyor accessories.

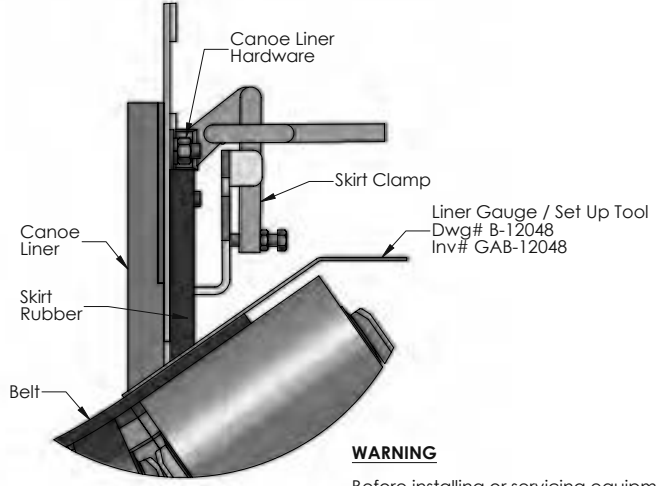
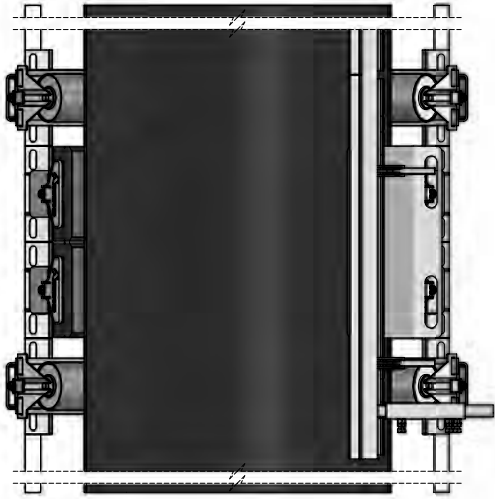
INSTRUCTIONS

1. Loosen Canoe Liner/Skirt Liner Hardware.
2. Lift Canoe Liner and Skirt Liner.
3. Insert Liner Gauge Between Canoe Liner/Skirt Liner and Belt while bridging OEM Idlers with gauge.
4. Fully lower Canoe Liner/Skirt Liner onto Liner Gauge to set gap.
5. Tighten Canoe Liner/Skirt Liner Hardware.
6. Remove and reposition Liner Gauge for next Canoe Liner/Skirt Liner section.

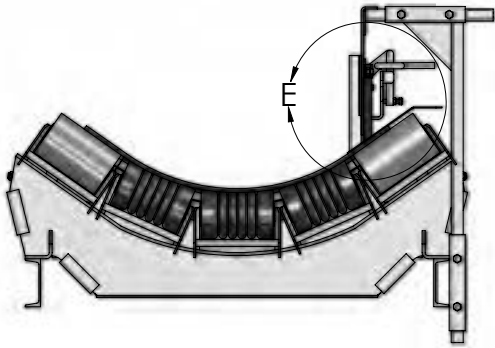


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TITLE Liner Gauge Instructions ~ Canoe Liner, Skirt Liner over OEM Idlers			
TOLERANCES UNLESS OTHERWISE SPECIFIED FRACTIONS ± 1/32" DECIMALS ± 0.005" ANGLES ± 1/2°	DRAWN BY DEP	MOD BY DEP	SCALE 1:12
REV	DESCRIPTION	DATE	BY
DRAWING NO. B-12215		DATE 11-10-2014	REVISION 0 SHEET 4 of 10

REVISIONS			
REV	DESCRIPTION	DATE	BY



DETAIL E
SCALE 1 : 4



WARNING

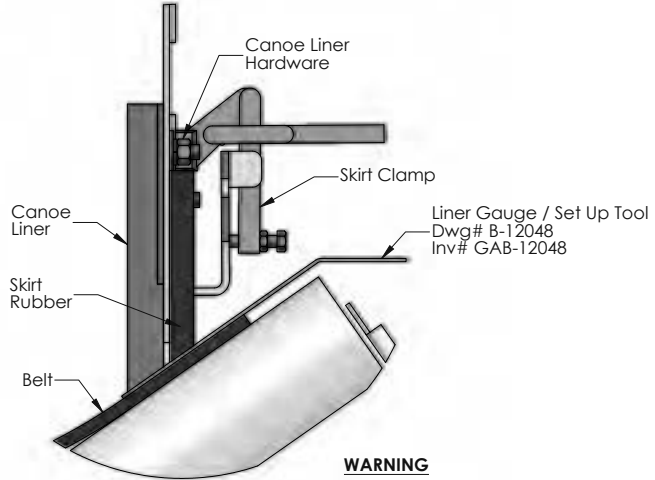
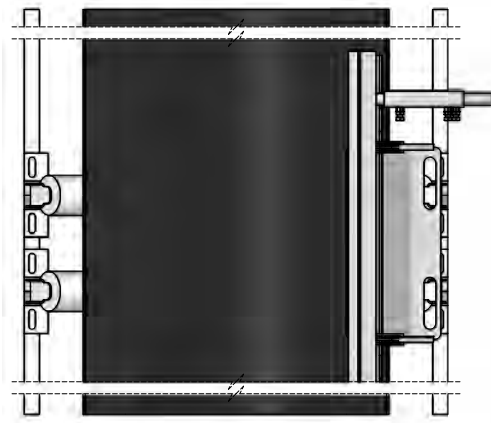
Before installing or servicing equipment, turn off and lock out/tag out energy source to conveyor and conveyor accessories.

INSTRUCTIONS

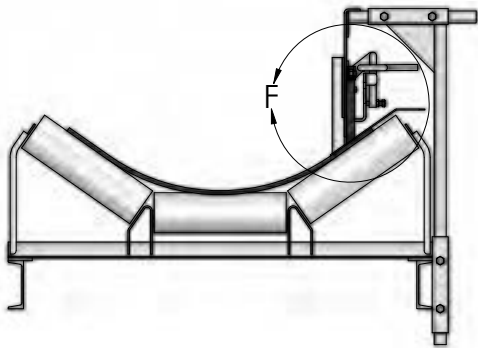
1. Loosen Canoe Liner Hardware.
2. Release Skirt Clamp.
3. Lift Canoe Liner and Skirt Rubber.
4. Insert Liner Gauge Between Canoe Liner/Skirt Rubber and Belt while bridging Saddles or Idlers with gauge.
5. Fully lower Canoe Liner/Skirt Rubber onto Liner Gauge to set gap.
6. Tighten Canoe Liner Hardware.
7. Engage Skirt Clamp.
8. Remove and reposition Liner Gauge for next Canoe Liner/Skirt Rubber section.

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TITLE Liner Gauge Instructions ~ Clamp, Notched Rubber, Canoe Liner			
TOLERANCES UNLESS OTHERWISE SPECIFIED	DRAWN BY DEP	MOD BY DEP	SCALE 1:12
FRACTIONS ± 1/32" DECIMALS ± 0.005" ANGLES ± 1/2°	DATE 11-10-2014	DRAWING NO. B-12215	REVISION 0 SHEET 5 of 10

REVISIONS			
REV	DESCRIPTION	DATE	BY



DETAIL F
SCALE 1 : 4



WARNING

Before installing or servicing equipment, turn off and lock out/tag out energy source to conveyor and conveyor accessories.

INSTRUCTIONS

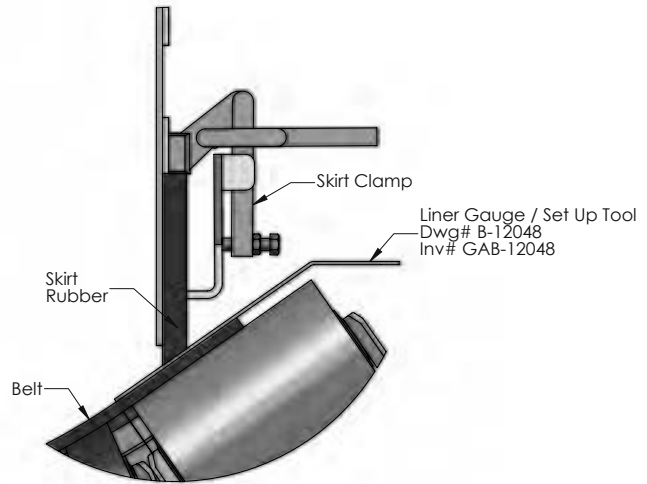
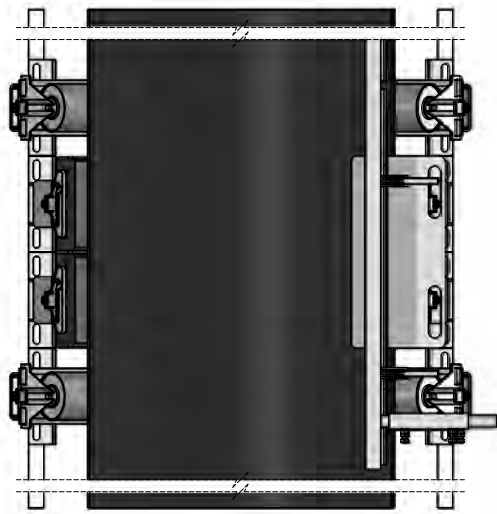
1. Loosen Canoe Liner Hardware.
2. Release Skirt Clamp.
3. Lift Canoe Liner and Skirt Rubber.
4. Insert Liner Gauge Between Canoe Liner/Skirt Rubber and Belt while bridging OEM Idlers with gauge.
5. Fully lower Canoe Liner/Skirt Rubber onto Liner Gauge to set gap.
6. Tighten Canoe Liner Hardware.
7. Engage Skirt Clamp.
8. Remove and reposition Liner Gauge for next Canoe Liner/Skirt Rubber section.

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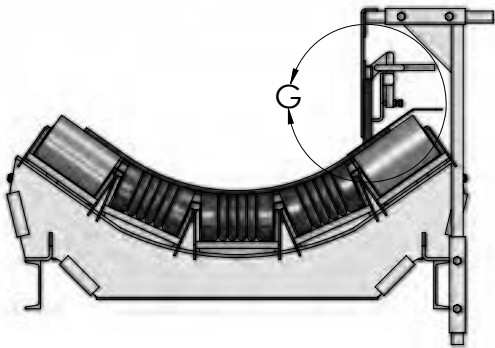
TITLE
Liner Gauge Instructions ~ Clamp, Notched Rubber, Canoe Liner over OEM Idlers

TOLERANCES UNLESS OTHERWISE SPECIFIED FRACTIONS ± 1/32" DECIMALS ± 0.005" ANGLES ± 1/2°		DWN BY: DEP MOD BY: DEP MATERIAL: INVENTORY NO.:	SCALE: 1:12 DATE: 11-10-2014	DRAWING NO.: B-12215 REVISION: 0 SHEET: 6 of 10
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REVISIONS			
REV	DESCRIPTION	DATE	BY



DETAIL G
SCALE 1 : 4



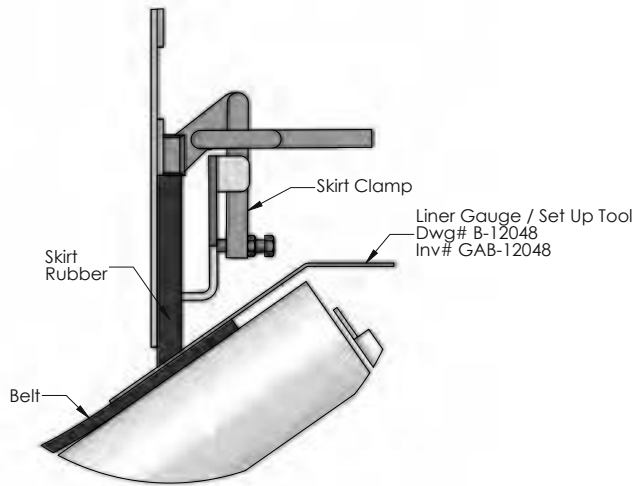
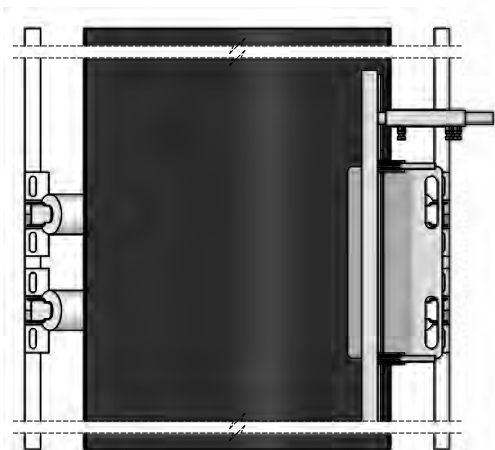
WARNING

Before installing or servicing equipment, turn off and lock out/tag out energy source to conveyor and conveyor accessories.

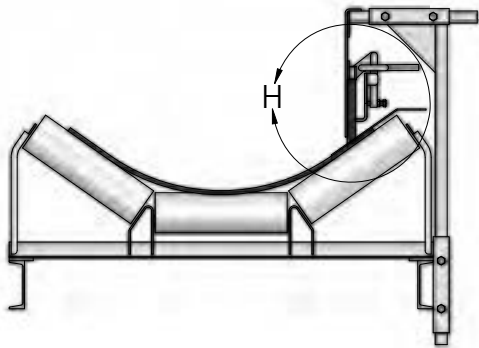
INSTRUCTIONS

1. Release Skirt Clamp.
2. Lift Skirt Rubber
3. Insert Liner Gauge Between Skirt Rubber and Belt while bridging Saddles or Idlers with gauge.
4. Fully lower Skirt Rubber onto Liner Gauge to set gap.
5. Engage Skirt Clamp.
6. Remove and reposition Liner Gauge for next Skirt Rubber section.

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TITLE Liner Gauge Instructions ~ Rubber, Clamps					
TOLERANCES UNLESS OTHERWISE SPECIFIED FRACTIONS ± 1/32" DECIMALS ± 0.005" ANGLES ± 1/2°		DWN BY DEP	MOD BY DEP	SCALE 1:12	DATE 11-10-2014
REVISIONS		MATERIAL		DRAWING NO. B-12215	
REV	DESCRIPTION	DATE	BY	REVISION 0 SHEET 7 of 10	



DETAIL H
SCALE 1 : 4



WARNING

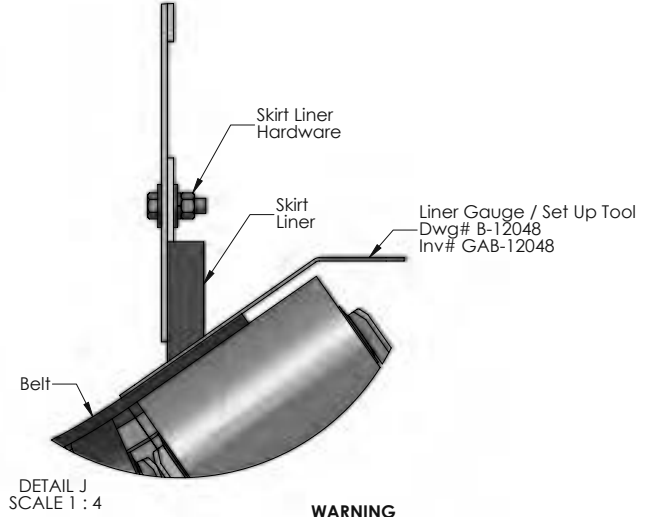
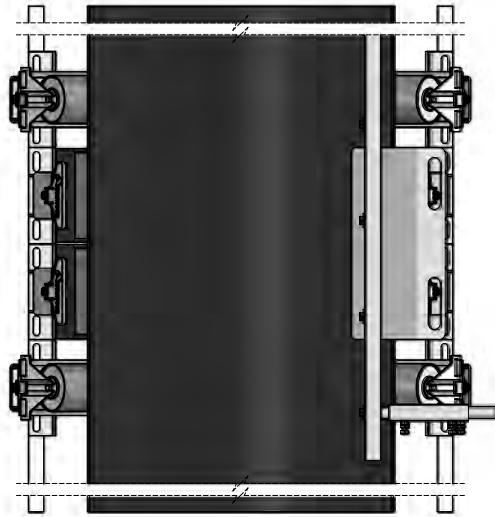
Before installing or servicing equipment, turn off and lock out/tag out energy source to conveyor and conveyor accessories.

INSTRUCTIONS

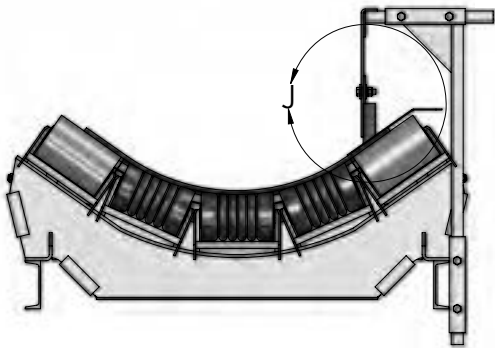
1. Release Skirt Clamp.
2. Lift Skirt Rubber.
3. Insert Liner Gauge Between Skirt Rubber and Belt while bridging OEM Idlers with gauge.
4. Fully lower Skirt Rubber onto Liner Gauge to set gap.
5. Engage Skirt Clamp.
6. Remove and reposition Liner Gauge for next Skirt Rubber section.

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TOLERANCES UNLESS OTHERWISE SPECIFIED FRACTIONS ± 1/32" DECIMALS ± 0.005" ANGLES ± 1/2°			
DWG BY DEP	MOD BY DEP	SCALE 1:12	DATE 11-10-2014
MATERIAL		DRAWING NO. B-12215	
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REV	DESCRIPTION	DATE	BY



DETAIL J
SCALE 1 : 4



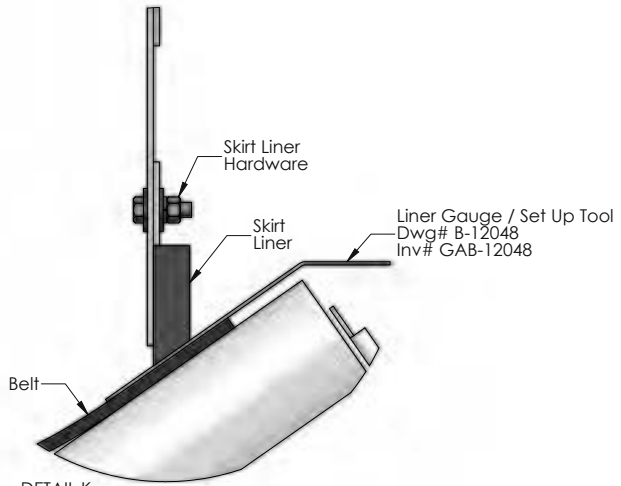
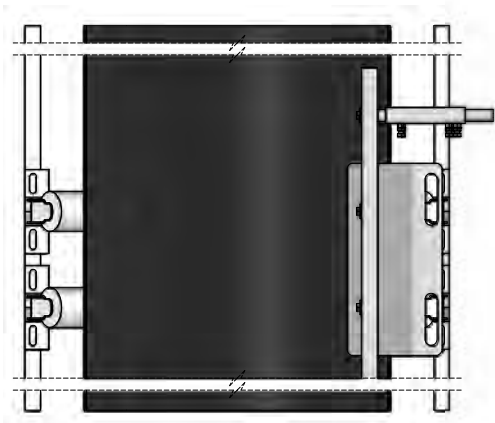
WARNING

Before installing or servicing equipment, turn off and lock out/tag out energy source to conveyor and conveyor accessories.

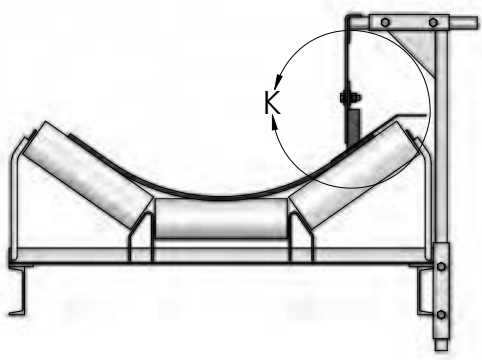
INSTRUCTIONS

1. Loosen Skirt Liner Hardware.
2. Lift Skirt Liner.
3. Insert Liner Gauge Between Skirt Liner and Belt while bridging Saddles or Idlers with gauge.
4. Fully lower Skirt Liner onto Liner Gauge to set gap.
5. Tighten Skirt Liner Hardware.
6. Remove and reposition Liner Gauge for next Skirt Liner section.

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Liner Gauge Instructions ~ Skirt Liner Only			
TOLERANCES UNLESS OTHERWISE SPECIFIED FRACTIONS ± 1/32" DECIMALS ± 0.005" ANGLES ± 1/2°	DWN BY: DEP	MOD BY: DEP	SCALE: 1:12 DATE: 11-10-2014
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DETAIL K
SCALE 1 : 4



WARNING

Before installing or servicing equipment, turn off and lock out/tag out energy source to conveyor and conveyor accessories.

INSTRUCTIONS

1. Loosen Skirt Liner Hardware.
2. Lift Skirt Liner.
3. Insert Liner Gauge Between Skirt Liner and Belt while bridging OEM Idlers with gauge.
4. Fully lower Skirt Liner onto Liner Gauge to set gap.
5. Tighten Skirt Liner Hardware.
6. Remove and reposition Liner Gauge for next Skirt Liner section.

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TITLE Liner Gauge Instructions ~ Skirt Liner Only over OEM Idlers			
TOLERANCES UNLESS OTHERWISE SPECIFIED FRACTIONS ± 1/32" DECIMALS ± 0.005" ANGLES ± 1/2°		DWN BY: DEP MOD BY: DEP SCALE: 1:12 DATE: 11-10-2014	REVISION: 0 SHEET: 10 of 10
DRAWING NO. B-12215			

REVISIONS			
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CEMA Skirt Width

Belt Width	Skirt Width
24"	16"
30"	20"
36"	24"
42"	28"
48"	32"
54"	36"
60"	40"
66"	44"
72"	48"
84"	56"
96"	64"

