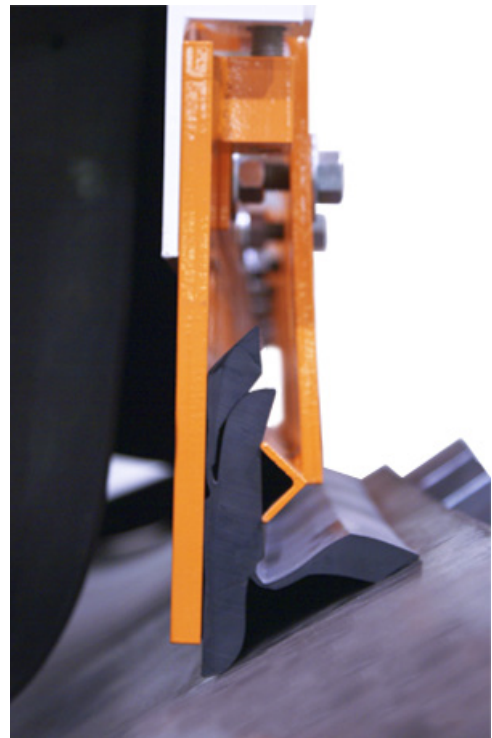


martin®

Martin®
ApronSeal™
Skirting



Operator's Manual
M3248

Important

MARTIN ENGINEERING HEREBY DISCLAIMS ANY LIABILITY FOR: DAMAGE DUE TO CONTAMINATION OF THE MATERIAL; USER'S FAILURE TO INSPECT, MAINTAIN AND TAKE REASONABLE CARE OF THE EQUIPMENT; INJURIES OR DAMAGE RESULTING FROM USE OR APPLICATION OF THIS PRODUCT CONTRARY TO INSTRUCTIONS AND SPECIFICATIONS CONTAINED HEREIN. MARTIN ENGINEERING'S LIABILITY SHALL BE LIMITED TO REPAIR OR REPLACEMENT OF EQUIPMENT SHOWN TO BE DEFECTIVE.

Observe all safety rules given herein along with owner and Government standards and regulations. Know and understand lockout/tagout procedures as defined by American National Standards Institute (ANSI) z244.1-1982, *American National Standard for Personnel Protection - Lockout/Tagout of Energy Sources - Minimum Safety Requirements* and Occupational Safety and Health Administration (OSHA) Federal Register, Part IV, 29 CFR Part 1910, *Control of Hazardous Energy Source (Lockout/Tagout); Final Rule*.

The following symbols may be used in this manual:



Danger: Immediate hazards that will result in severe personal injury or death.



Warning: Hazards or unsafe practices that could result in personal injury.



Caution: Hazards or unsafe practices that could result in product or property damages.



Important: Instructions that must be followed to ensure proper installation/operation of equipment.



Note: General statements to assist the reader.

Table of Contents

Section	Page
List of Figures	ii
Introduction	1
General	1
Martin® ApronSeal™ Skirting System materials	1
References	1
Safety	2
Materials required	2
Before Installing Skirting	3
Installing Skirting	4
Installing urethane seals	4
Installing rubber secondary seal, and 1-piece seals	7
After Installing Skirting	9
Monthly Maintenance	9
Part Numbers	10
Appendix A. Martin® ApronSeal™ Skirting Mounting Dimensions	A-1
Appendix B. Martin® ApronSeal™ Selection Guide	B-1

List of Figures

Figure	Title	Page
1	Locating Chute Wall and Wear Liner	4
2	Urethane Primary Seal	4
3	Urethane Secondary Seal	5
4	Inserting Dovetail into Dovetail Groove	5
5	Staggering Splices.	6
6	Installing Urethane Seals.	6
7	Installing Rubber Secondary Seal	7
8	Installing 1-Piece Seal.	7
9	Martin® ApronSeal™ Skirting Assemblies	11
10	Conveyor Products Warning Label, P/N 23395	12

Introduction

General

Martin® ApronSeal™ Skirting is a self-adjusting conveyor belt skirting system that prevents spillage without requiring regular service to maintain an effective seal.

Martin® ApronSeal™ Skirting is a dual sealing system composed of a urethane skirt (primary seal) and apron (secondary seal), or a 1-piece dual sealing system that combines the benefits of the primary and secondary seal in one seal. The primary seal prevents the majority of the material being loaded onto the conveyor belt from leaking past the chute walls. The secondary seal follows the flexing of the conveyor belt edge to trap material that has escaped from the primary seal. The double seal is a 1-piece dual sealing system in a dual-sided single elastomer.

Martin® ApronSeal™ Skirting can be used with Martin® Angle Clamps or most existing clamps. See Appendix A for mounting dimensions. For a comparison of the different types of Martin® ApronSeal™ Skirting, see the Selection Guide in Appendix B.

Martin® ApronSeal™ Skirting materials

Materials and specifications for the Martin® ApronSeal™ Skirting are shown in Table I.

Table I. Martin® ApronSeal™ Skirting Materials and Specifications

Type	Material	Durometer (Shore A)	Service Temperature Range
Dual Seal (Primary 3-in.)	Urethane	85	-20 to 160°F -29 to 71°C
Dual Seal (Primary 5-in.)	Urethane	85	-20 to 160°F -29 to 71°C
Rubber Secondary	SBR Rubber	75	-20 to 160°F -29 to 71°C
Single Skirting	EPDM Rubber	70	-20 to 250°F -29 to 121°C
Double Skirting	EPDM Rubber	70	-20 to 250°F -29 to 121°C

References

The following documents are referenced in this manual:

- American National Standards Institute (ANSI) z244.1-1982, *American National Standard for Personnel Protection - Lockout/Tagout of Energy Sources - Minimum Safety Requirements*, American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018.
- Federal Register, Volume 54, Number 169, Part IV, 29 CFR Part 1910, *Control of Hazardous Energy Source (Lockout/Tagout); Final Rule*, Department of Labor, Occupational Safety and Health Administration (OSHA), 32nd Floor, Room 3244, 230 South Dearborn Street, Chicago, IL 60604.

Safety

All safety rules defined in the above documents and all owner/employer safety rules must be strictly followed when working on this equipment.

Material required

In addition to standard hand tools, a knife and Martin® Angle Clamps or equivalent are required to install this equipment.

Before Installing Skirting

IMPORTANT

The delivery service is responsible for damage occurring in transit. Martin Engineering CANNOT enter claims for damages. Contact your transportation agent for more information.

1. Inspect shipping container for damage. Report damage to delivery service immediately and fill out delivery service's claim form. Keep any damaged goods subject to examination.
2. Remove skirting system from shipping container. Equipment in container should include the following:
 - Martin® ApronSeal™ Skirting.
 - Two Conveyor Products Warning Labels, P/N 23395.
3. If anything is missing, contact Martin Engineering or representative.



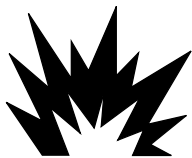
⚠ DANGER

Before installing, servicing, or adjusting conveyor equipment, turn off and lockout / tagout / blockout / testout all energy sources to the conveyor and conveyor accessories according to ANSI standards. Failure to do so could result in serious injury or death.

4. Turn off and lockout / tagout / blockout / testout all energy sources according to ANSI standards (see "References").

⚠ WARNING

If equipment will be installed in an enclosed area, test gas level or dust content before using a cutting torch or welding. Using a cutting torch or welding in an area with gas or dust may cause an explosion.



5. If using a cutting torch or welding, test atmosphere for gas level or dust content.

Installing Skirting

IMPORTANT

For maximum skirting effectiveness, Martin Engineering recommends using Martin® Wear Liners with skirting (see “Part Numbers” for ordering information). Make sure chute wall and wear liners are straight and well-supported.

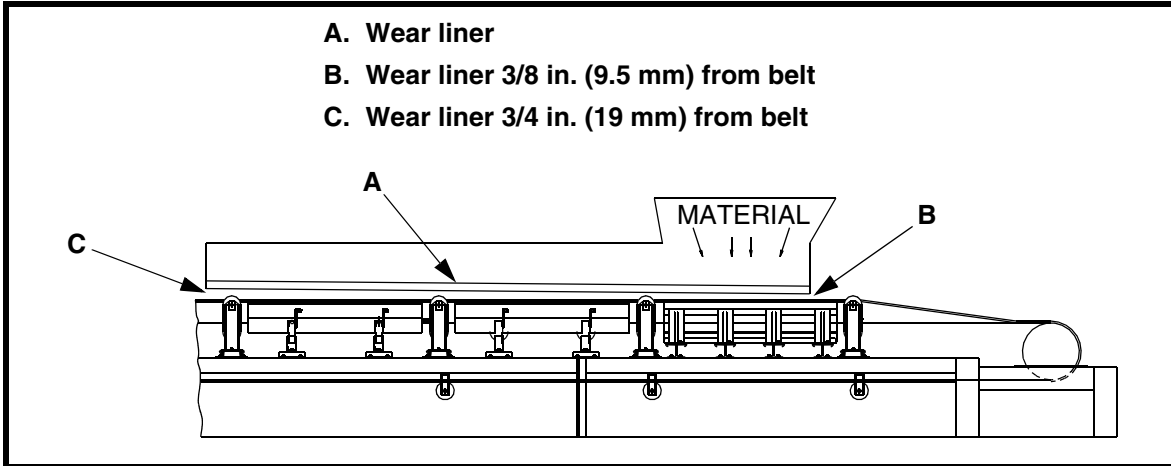


Figure 1. Locating Chute Wall and Wear Liner

1. Make sure wear liner (A, Figure 1) is 3/8 in. (9.5 mm) from belt at transfer point entry (B), and gradually increases to 3/4 in. (19.1 mm) at transfer point exit (C).
2. To install Skirting System, follow the procedures under “Installing urethane seals” or “Installing rubber and secondary seal, and 1-piece seals,” as applicable.

Installing urethane seals

1. Connect primary seal and secondary seal as follows:
 - a. Lay primary seal on flat surface with dovetail grooved side facing up and correct belt angle on bottom (see Figure 2).

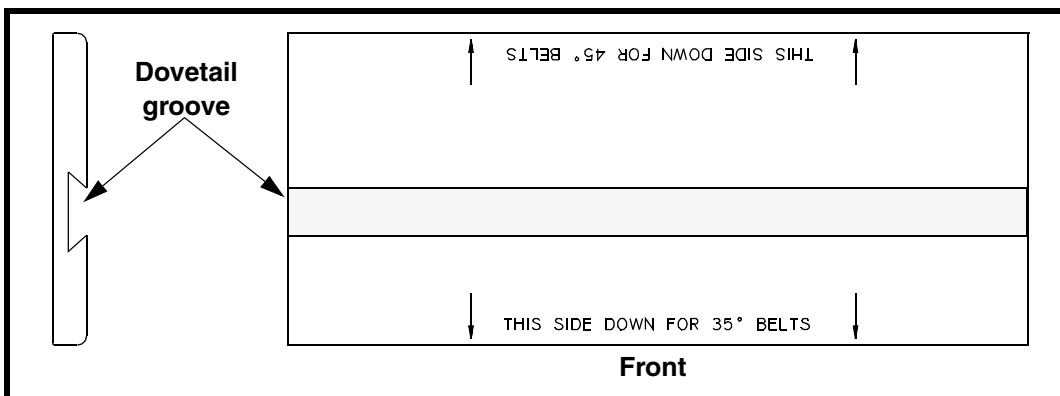


Figure 2. Urethane Primary Seal

- b. Lay secondary seal on top of primary seal with dovetail and ribs facing down and dovetail on top (see Figure 3).

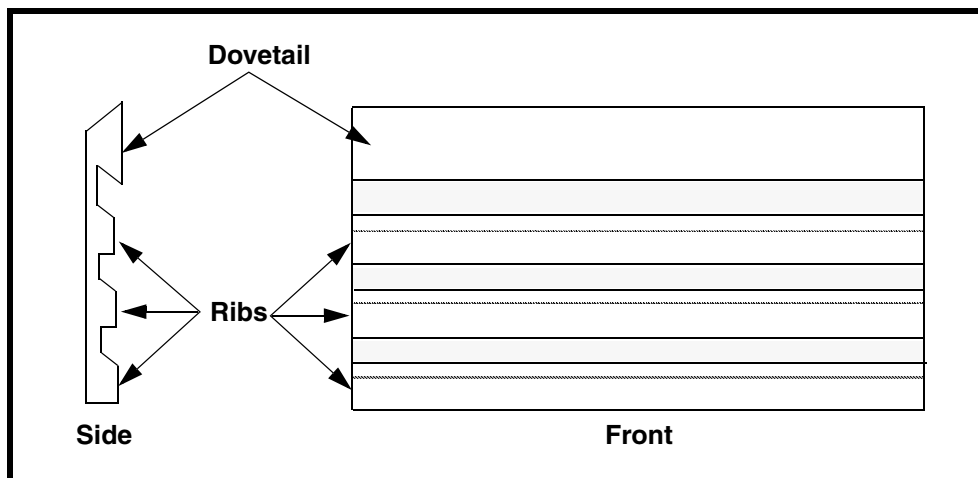


Figure 3. Urethane Secondary Seal

- c. Starting at one end, slide secondary seal dovetail into primary seal groove (see Figure 4).

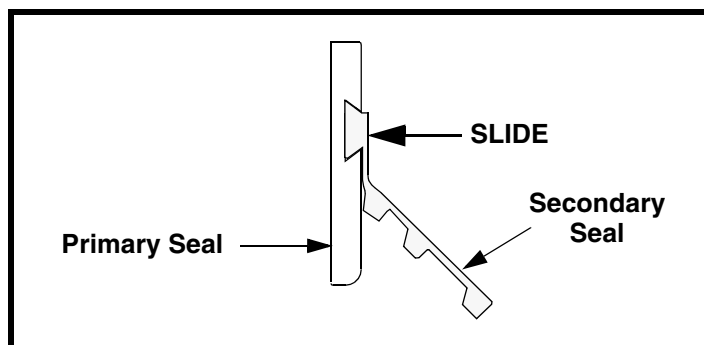


Figure 4. Inserting Dovetail into Dovetail Groove

2. If you need to splice two or more lengths of urethane seals together, do the following:
 - a. Use the Urethane Martin® ApronSeal™ Splice Kit, P/N 34146.
 - b. Cut both ends to be bonded together at a 90° angle and clean both ends.
 - c. Apply Permabond 268 to one end and Permabond QFS 16 Accelerator to the other end. Hold ends together for 1 minute.
 - d. Stagger primary seal splice and secondary seal splice so splices are not located at same point (see Figure 5).

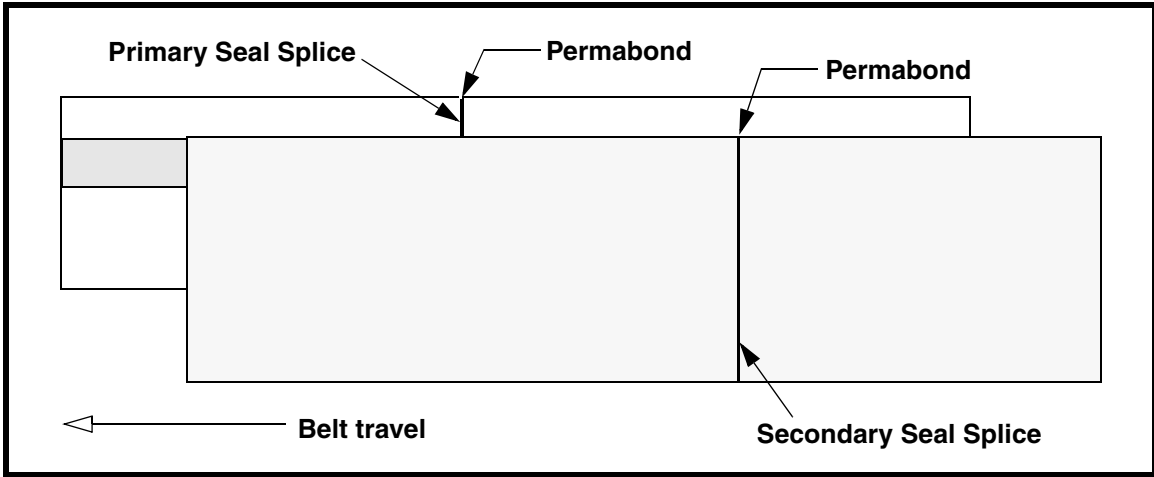


Figure 5. Staggering Splices

3. Install primary seal and secondary seal onto chute wall as follows:
 - a. Place primary seal (A, Figure 6), with secondary seal (B) connected, against chute wall (C).

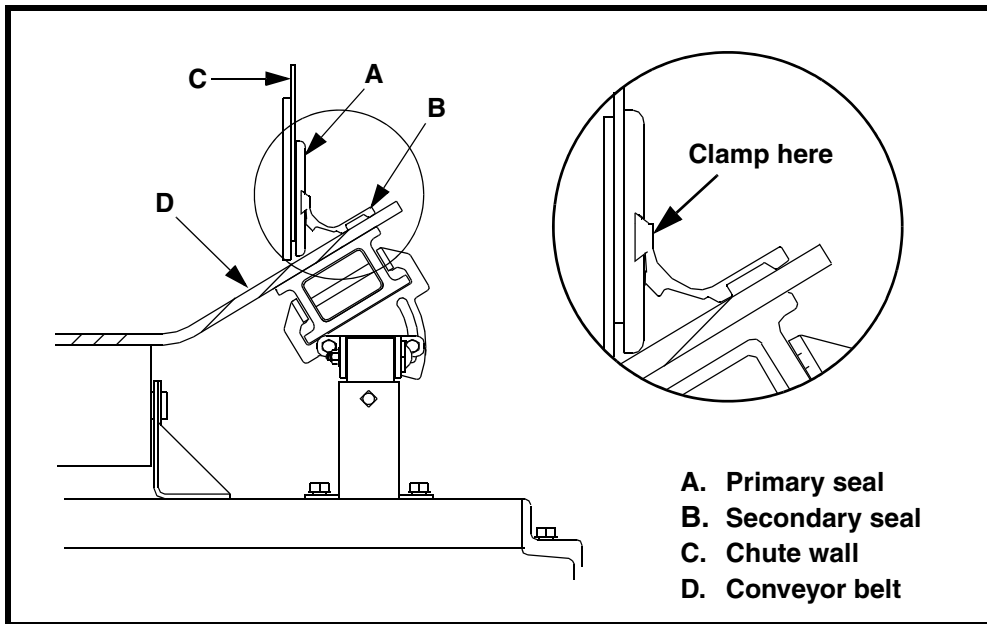


Figure 6. Installing Urethane Seals

- b. Adjust primary seal so that it rests on conveyor belt (D). Do not force primary seal onto belt. If secondary seal extends past belt edge, cut secondary seal with knife so it is even with belt edge. Make sure at least two ribs are left on secondary seal, and seal is touching belt.

IMPORTANT

If primary seal has a splice, additional clamps may be required at splice to maintain seal.

- c. Clamp seals to chute wall at dovetail using Martin® Angle Clamps (see Appendix A and Figure 6). Refer to drawings that were included with clamps for installation instructions. If you are not using Martin® Angle Clamps, space clamps at 12-in. (305-mm) centers so that primary seal does not move while conveyor belt is running (loaded or unloaded).

NOTE

Installing rubber secondary seal and 1-piece seal

Existing slab rubber may be used as primary seal and Martin® Rubber Secondary Seal may be used as secondary seal. Install as described under “Installing urethane seals.”

1. Place rubber seal or 1-piece seal (A, Figure 7 or 8) against chute wall (B).

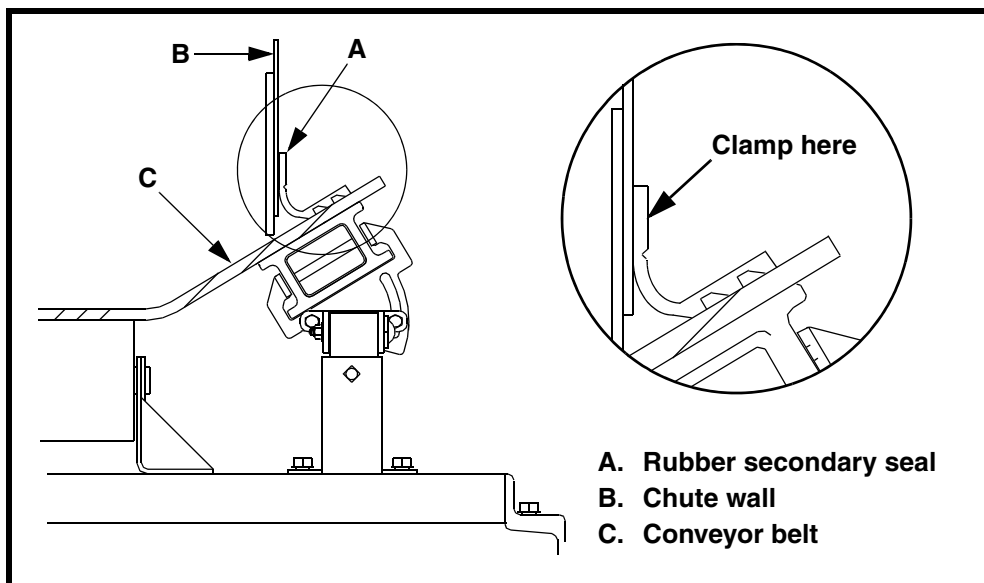


Figure 7. Installing Rubber Secondary Seal

2. Make sure wear liner (A, Figure 1) is 3/8 in. (9.5 mm) from belt at transfer point entry (B), and gradually increases to 3/4 in. (19.1 mm) at transfer point exit (C).

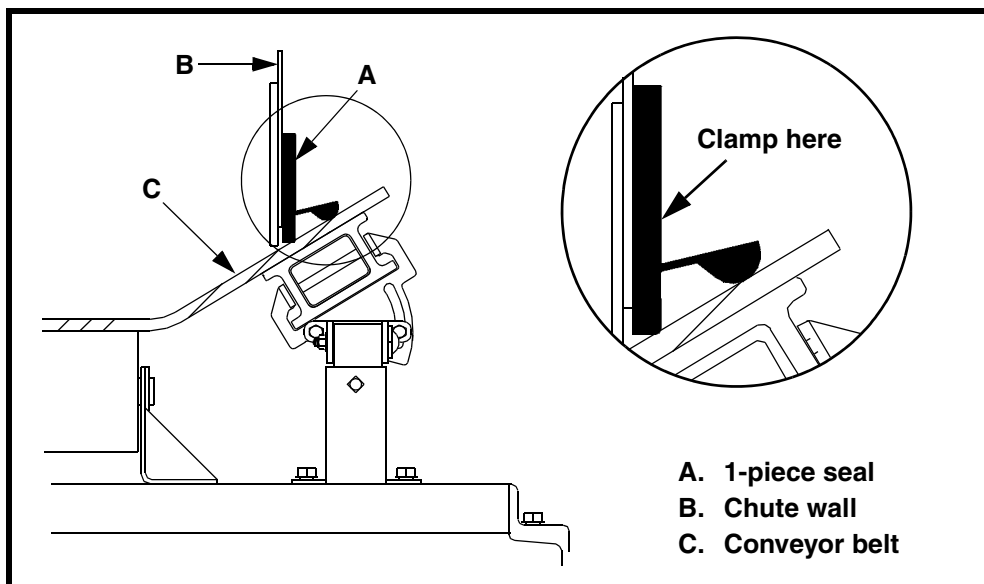


Figure 8. Installing Martin® ApronSeal™ Skirting

3. Place rubber seal (A) against chute wall (B).
4. Adjust seal so that it rests on conveyor belt (C). Do not force seal onto belt.

IMPORTANT

If seal has a splice, additional clamps may be required at splice to maintain seal.

5. Clamp seals to chute wall using Martin® Angle Clamps (see Appendix A). Refer to drawings that were included with clamps for installation instructions. If you are not using Martin® Angle Clamps, space clamps at 12-in. (305-mm) centers so that seal does not move while conveyor belt is running (loaded or unloaded).

IMPORTANT

Do not use Permabond to splice thermoplastic rubber seals for food-grade applications. Permabond is not a food-grade adhesive.

6. If you need to splice two or more lengths of rubber seals together, do the following:
 - a. Use the 1-Piece Martin® ApronSeal™ Splice Kit (Rubber), P/N 34147.
 - b. Cut both ends to be bonded together at a 90° angle and clean both ends. (This 90° angle is critical because both pieces of skirting must be straight after bonding.)
 - c. Apply Permabond 268 to both ends and hold ends together for 1 minute.
7. If you need to splice two or more lengths of thermoplastic rubber together for food-grade application, do not apply Permabond. Instead, clamp seals in place with ends touching.

After Installing Skirting

Thoroughly wipe chute wall clean above Martin® ApronSeal™ Skirting on both sides of chute. Place Conveyor Products Warning Label (P/N 23395) on outside chute walls visible to conveyor belt operator.

Monthly Maintenance



⚠ DANGER

Before installing, servicing, or adjusting conveyor equipment, turn off and lockout / tagout / blockout / testout all energy sources to the conveyor and conveyor accessories according to ANSI standards. Failure to do so could result in serious injury or death.

1. Turn off and lockout / tagout / blockout / testout all energy sources according to ANSI standards (see “References”).

⚠ WARNING

Do not lift up secondary seal while conveyor belt is running or injury could result.

2. Check seals for wear. Replace if necessary.
3. Make sure clamps are tight.
4. Make sure primary seal section is resting on conveyor belt and does not move.

Part Numbers

This section provides product names and corresponding part numbers for Martin[®] ApronSeal[™] Skirting and related equipment. Please reference part numbers when ordering parts:

Martin[®] ApronSeal[™] Skirting

See Figure 9.

Martin[®] Clamps

Angle Clamp Weldment (6 ft long): P/N 32049.

Angle Clamp Weldment With Hardware: P/N 32049-H.

Angle Clamp Weldment with Quick-Release Clamp and Hardware:
P/N 32049-QRH

Low-Profile Angle Clamp Weldment: P/N 32600.

Low-Profile Angle Clamp Weldment With Hardware: P/N 32600-H.

Low-Profile Angle Clamp Weldment with Quick-Release Clamp and Hardware: P/N 32600-QRH

Heavy-Duty Angle Clamp Weldment: P/N 34339.

Heavy-Duty Angle Clamp Weldment With Hardware: P/N 34339-H.

Miscellaneous

Martin[®] Wear Liners: P/N WL-XXXXXXXXXXXXX.

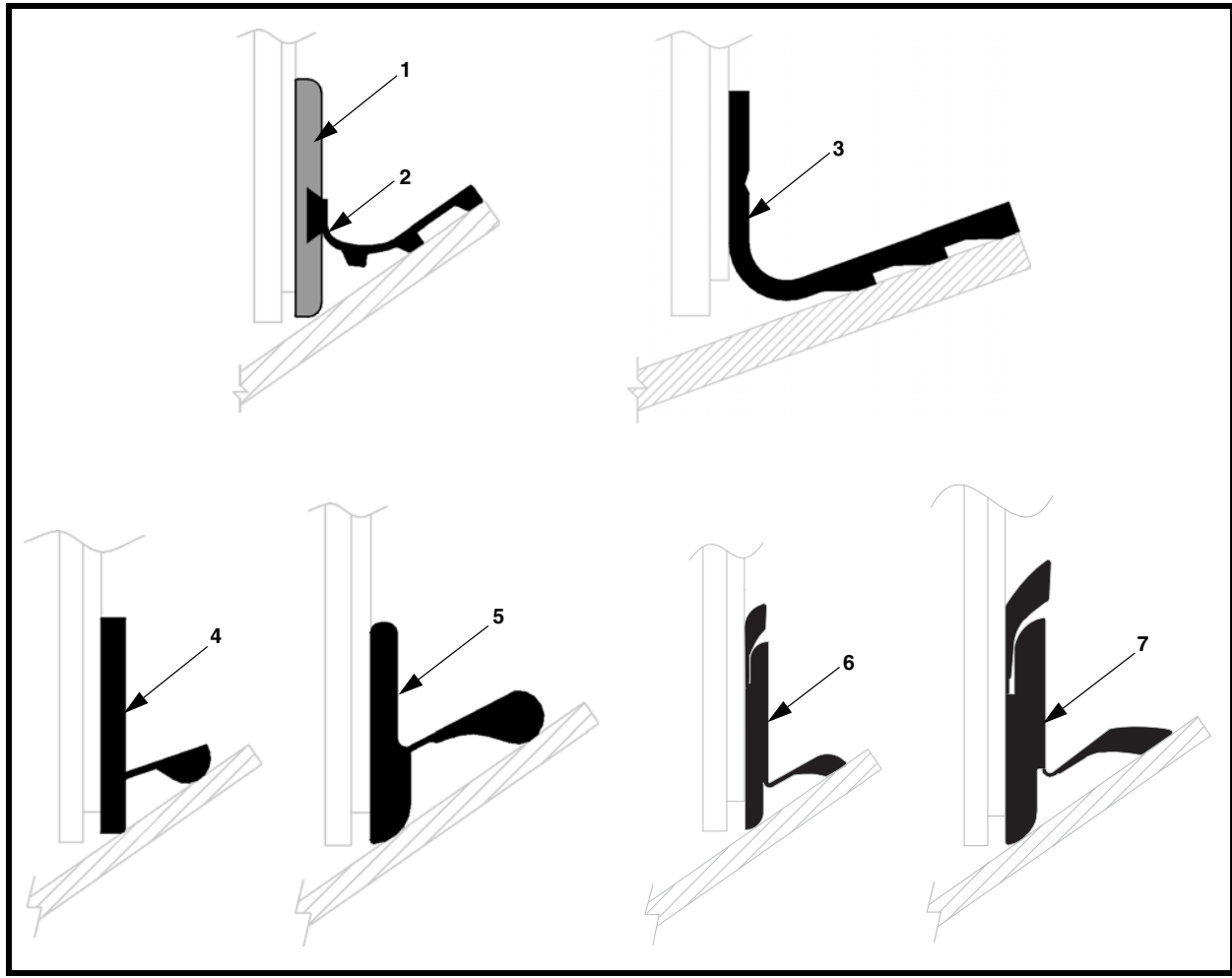
First four Xs indicate the height of wear liner in inches; next four Xs indicate length of wear liner in inches; next three Xs indicate thickness of wear liner in inches; last X indicates wear liner material.

Urethane Martin[®] ApronSeal[™] Splice Kit: P/N 34146.

1-Piece Martin[®] ApronSeal[™] Splice Kit (Rubber): P/N 34147.

Fabricated Chute Wall 12-in. Tall Assembly for Martin[®] ApronSeal[™] Skirt Seal: P/N 33564-XX. XX indicates troughing angle.

Fabricated Chute Wall 24-in. Tall Assembly for Martin[®] ApronSeal[™] Skirting: P/N 34620-XX. XX indicates troughing angle.



Item	Description	Part No.	Qty
1	Martin® ApronSeal™ Primary Seal (Part of assembly 32048-XXX*)	100441-XXX*	1
2	Martin® ApronSeal™ Urethane Secondary Seal (Part of assembly 32048-XXX*)	100442-XX*	1
3	Martin® ApronSeal™ Rubber Secondary Seal	32048-XXR*	1
4	Martin® ApronSeal™ Single Skirting	100724	1 ft
5	Martin® ApronSeal™ Single Skirting HD	100723	1 ft
6	Martin® ApronSeal™ Double Skirting	100873	1 ft
7	Martin® ApronSeal™ Double Skirting HD	100861	1 ft
Fig. 10	Conveyor Products Warning Label	23395	2

Figure 9. Martin® ApronSeal™ Skirting System Assemblies

*First XX indicates length (in feet) of Martin® ApronSeal™ Skirting (12 or 24). Third X indicates width (in inches) of primary Martin® ApronSeal™ Skirting (3 or 5).

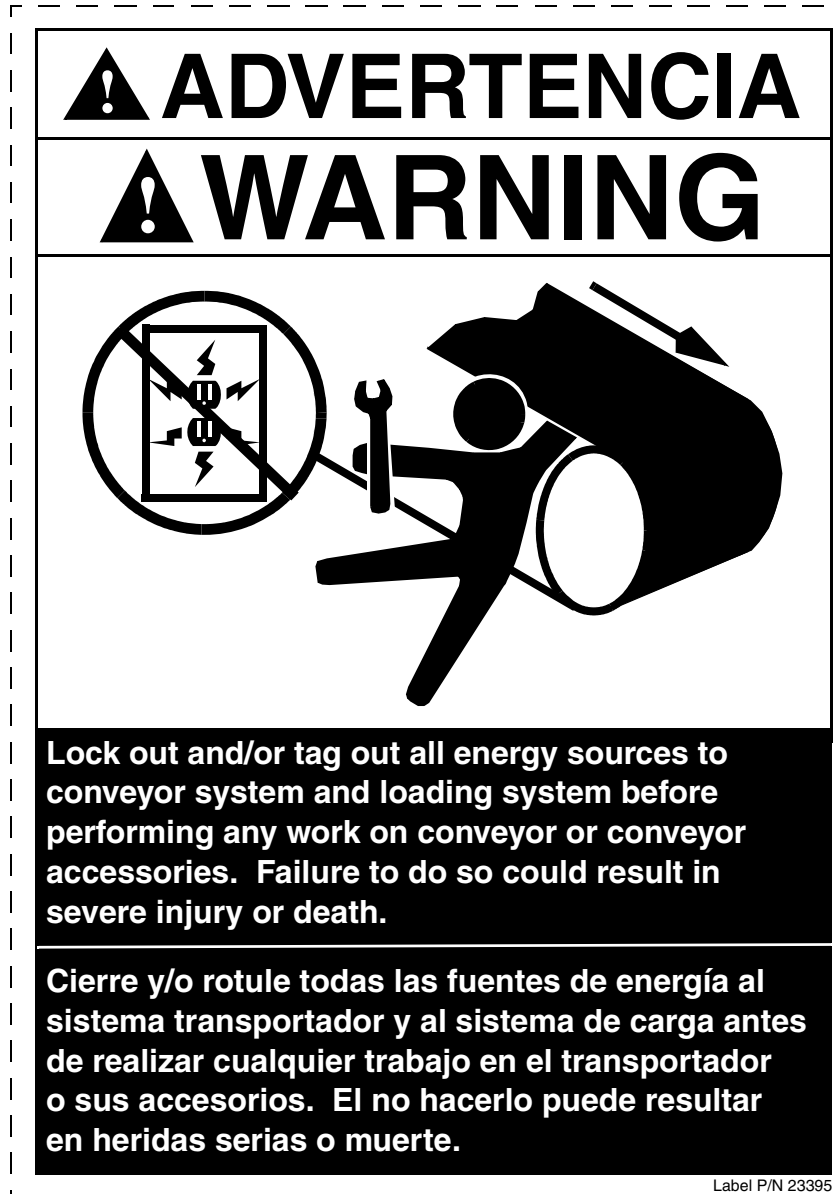
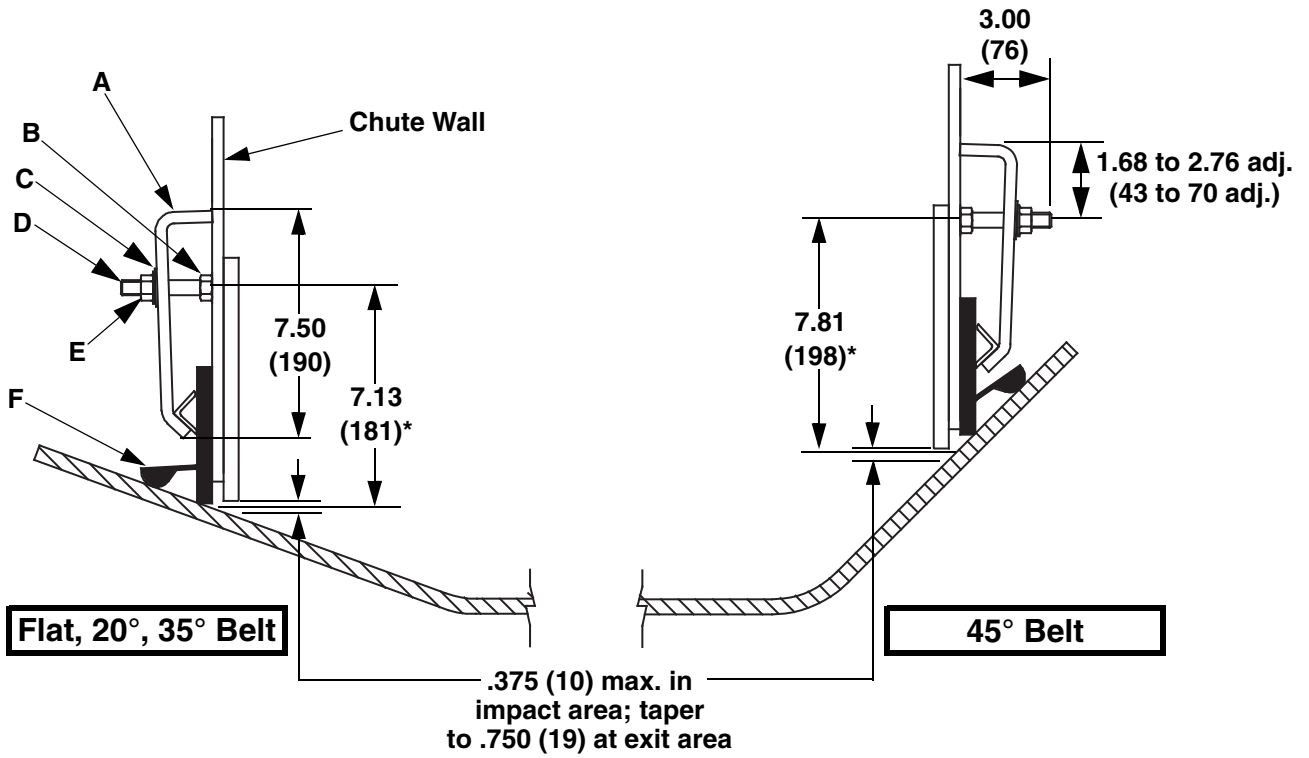


Figure 10. Conveyor Products Warning Label, P/N 23395

Appendix A
Martin® ApronSeal™ Skirting Mounting Dimensions

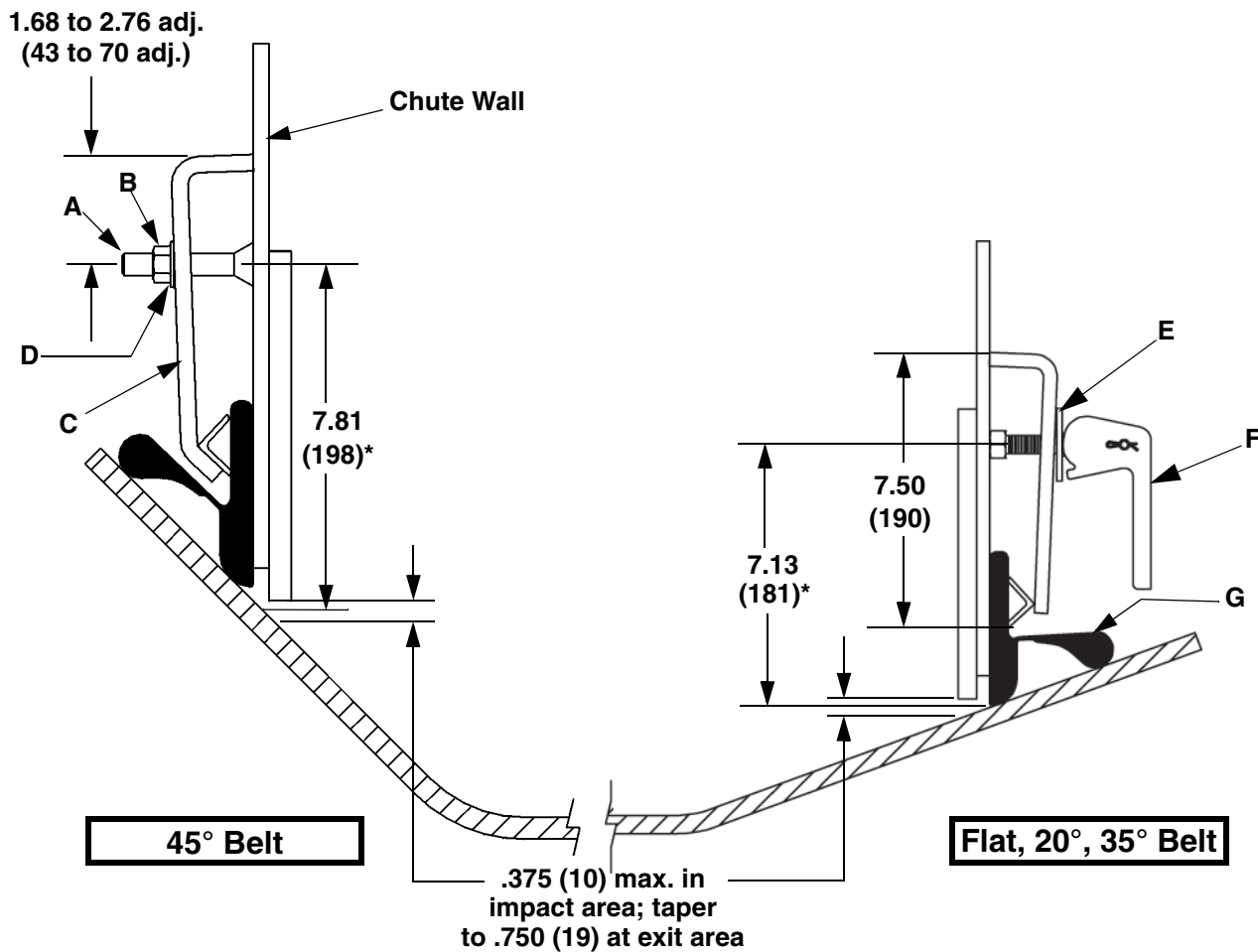
Appendix A



- A. Angle Clamp Weldment, P/N 32049
- B. 1/2-in. -13NC Hex Nut, P/N 34134
- C. 1/2 Flat Washer, P/N 17328
- D. 1/2-in. -13NC x 3-in. Threaded Stud, P/N 31189

- E. 1/2-in. -13NC Locking Flange Nut, P/N 18843
- F. Martin® ApronSeal™ Single Skirting, P/N 100724

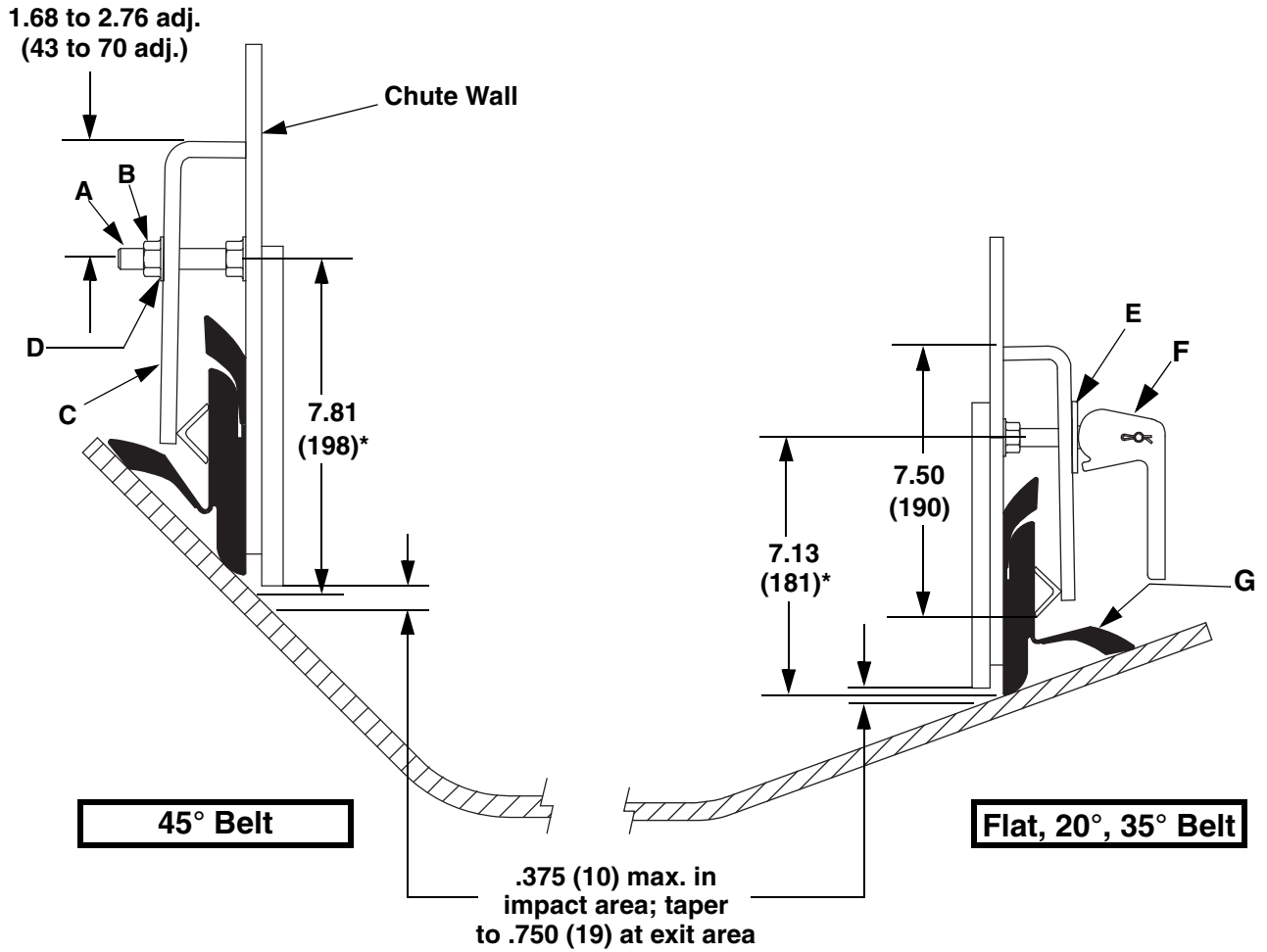
*Distance from center of mounting stud to point on belt directly below chute wall.



- A. Stud 1/2 x 13NC x 3.00, P/N 31189
- B. Nut Flange Locking 1/2 -13NC, P/N 18843
- C. Angle Clamp Weldment, P/N 32049
- D. 9/16 Flat Washer, P/N 17328
- E. 3/4 Flat Washer, P/N 20164
- F. Quick-Release Clamp, P/N 36273
- G. Martin® ApronSeal™ Single Skirting HD, P/N 100723

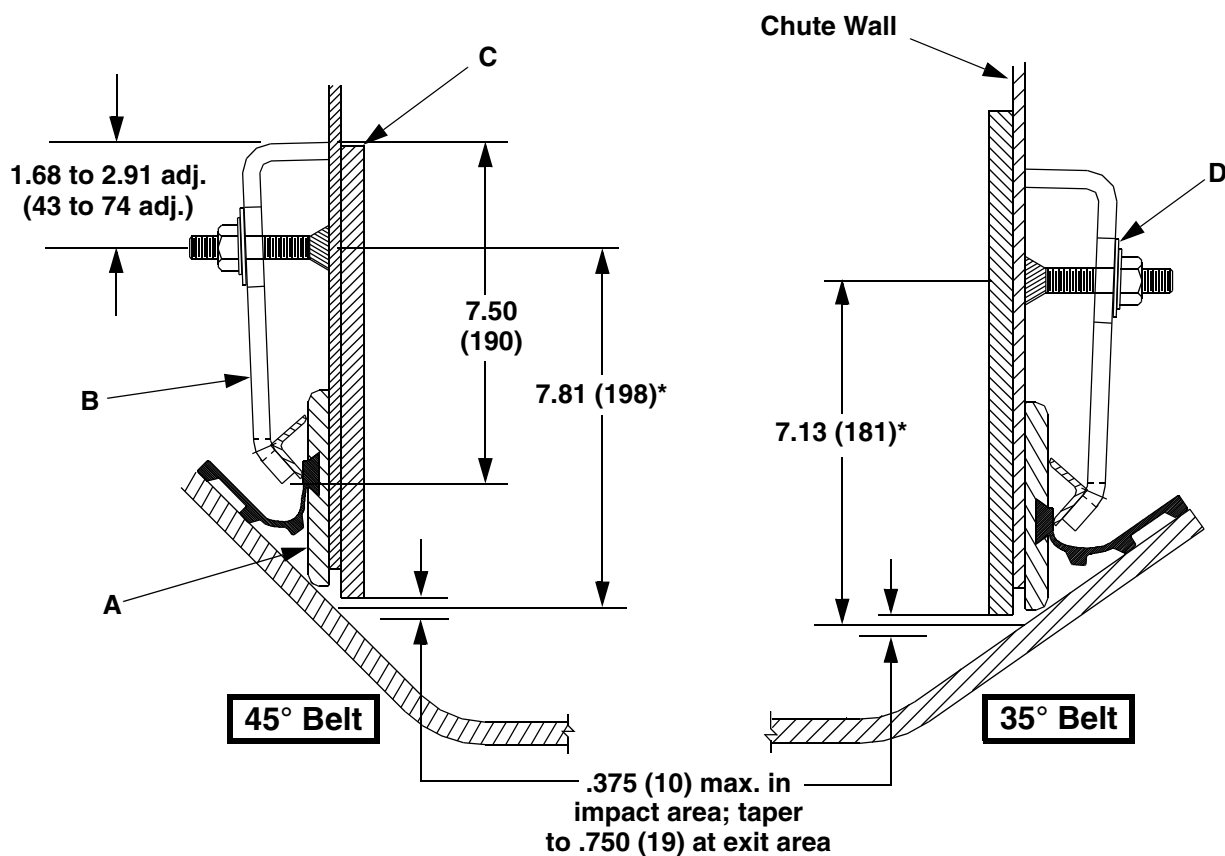
*Distance from center of mounting stud to point on belt directly below chute wall.

Appendix A

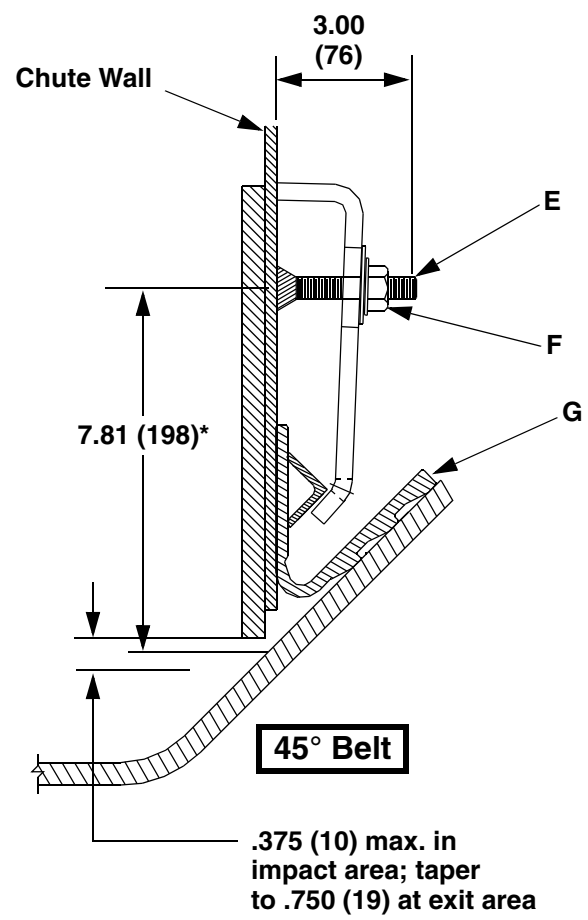


- A. Stud 1/2 x 13NC x 3.00, P/N 31189
- B. Nut Flange Locking 1/2 -13NC, P/N 18843
- C. Angle Clamp Weldment, P/N 32049
- D. 9/16 Flat Washer, P/N 17328
- E. 3/4 Flat Washer, P/N 20164
- F. Quick-Release Clamp, P/N 36273
- G. Martin® ApronSeal™ Double Skirting HD, P/N 100861

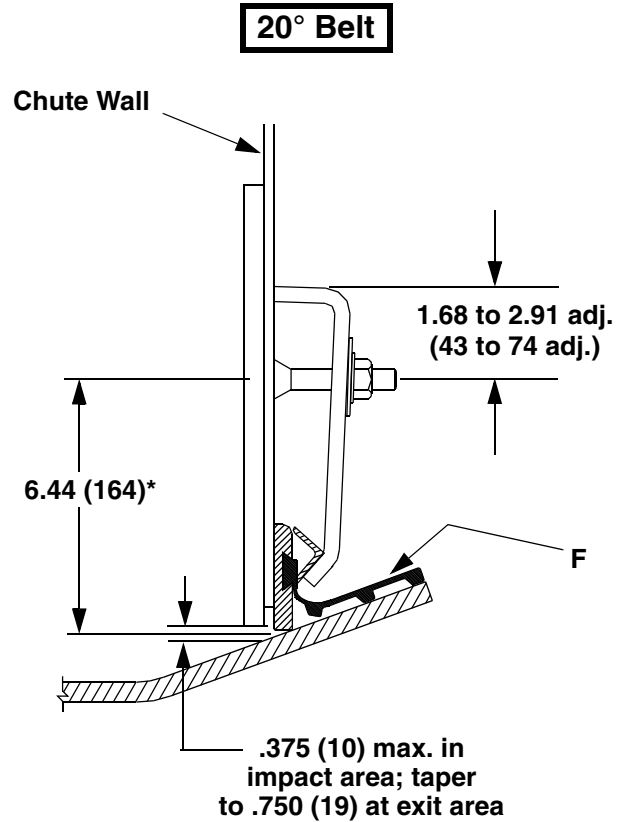
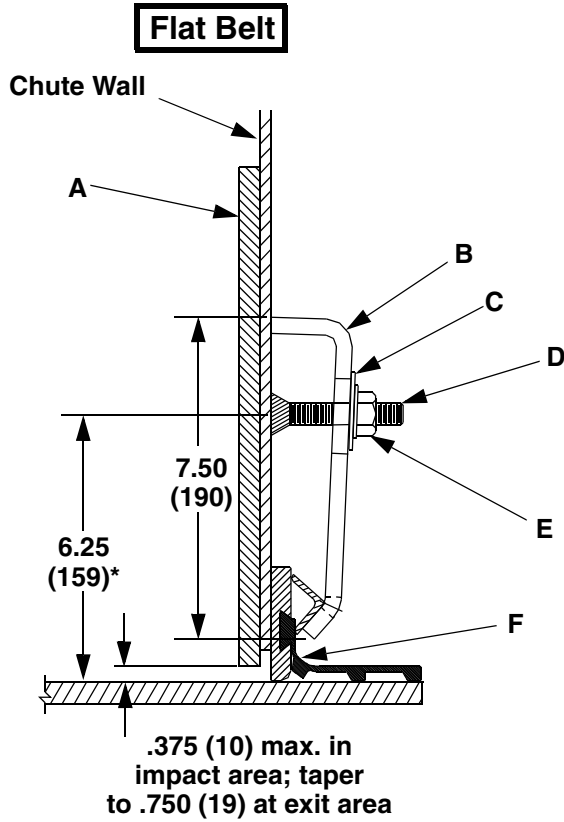
*Distance from center of mounting stud to point on belt directly below chute wall.



- A. Martin® ApronSeal™ 5-in. Assembly, P/N 32048-125
- B. Angle Clamp Weldment, P/N 32049
- C. Martin® Wear Liner (Straight), P/N 32055-XX
- D. 9/16 Flat Washer, P/N 17328
- E. 1/2-in. -13NC x 3-in. Threaded Stud, P/N 31189
- F. 1/2-in. -13NC Locking Flange Nut, P/N 18843
- G. Martin® ApronSeal™ Rubber Secondary Seal Assembly, P/N 32048-12R



*Distance from center of mounting stud to point on belt below chute wall.



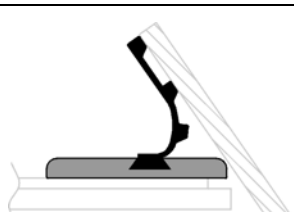
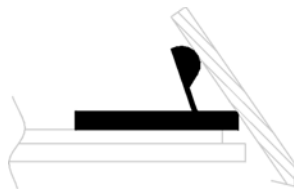


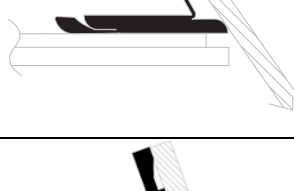
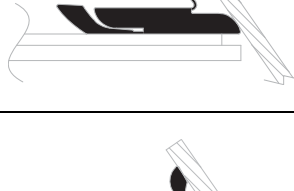
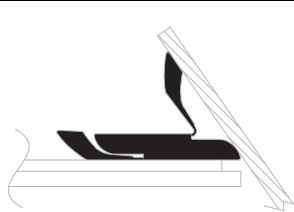
- A. Martin® Wear Liner (Straight), P/N 32055-XX
- B. Angle Clamp Weldment, P/N 32049
- C. 9/16 Flat Washer, P/N 17328

- D. 1/2-in. -13NC x 3-in. Threaded Stud, P/N 31899
- E. 1/2-in. -13NC Locking Flange Nut, P/N 18843
- F. Martin® ApronSeal™ 3-in. Assembly, P/N 32048-123

*Distance from center of mounting stud to point on belt below chute wall.

Appendix B
Martin® ApronSeal™ Skirting System Selection Guide

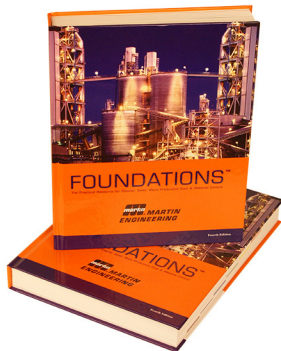
Selection Guide For Martin® ApronSeal™ Skirting System

	Standard 2-Piece	Single Skirting	Single Skirting HD	Rubber Secondary	Double Skirting	Double Skirting HD	
Material	Urethane 90 Durometer Shore A	EPDM Rubber 70 Durometer Shore A	EPDM Rubber 70 Durometer Shore A	SBR Rubber 75 Durometer Shore A	EPDM Rubber 70 Durometer Shore A	EPDM Rubber 70 Durometer Shore A	
							
	Flat Belt	2 in. (51 mm)	3 in. (76 mm)	4 in. (102 mm)	2.14 in. (54 mm)	2.97 in. (76 mm)	
	20° Trough	3.75 in. (95 mm)	3.5 in. (89 mm)	4 in. (102 mm)	4 in. (102 mm)	3.74 in. (95 mm)	
Skirtboard*	3.75 in. (95 mm)	3 in. (76 mm)	3.5 in. (89 mm)	4 in. (102 mm)	2.87 in. (73 mm)	4.18 in. (106 mm)	
	4 in. (102 mm)	3.25 in. (83 mm)	4.125 in. (105 mm)	4 in. (102 mm)	3.01 in. (77 mm)	4.38 in. (111 mm)	
Maximum Belt Speed	600 fpm (3 m/s)	600 fpm (3 m/s)	750 fpm (3.8 m/s)	600 fpm (3 m/s)	600 fpm (3 m/s)	750 fpm (3.8 m/s)	
Notes	Use 3-inch Primary Seal Strip on Flat or 20° trough belts.	Available in lengths up to 300 ft (91.5 m). High-temperature and food-grade materials available in lengths up to 24 ft (7.3 m).	Available in lengths up to 300 ft (91.5 m).	Install on outside of existing sealing strips to provide multiple-layer sealing barrier.	Available in lengths up to 300 ft (91.5 m). Double life sealing system in a one-piece construction.	Available in lengths up to 300 ft (91.5 m). Double life sealing system in a one-piece construction.	
	Use 5-inch Primary Seal Strip on 35° and 45° trough belts.						

* "Free Belt" is amount of belting visible outside the steel skirtboard on each side of the transfer point.

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For nearly 20 years, Martin Engineering's Foundations™ Books have taught industry personnel to operate and maintain clean and safe belt conveyors. The Foundations™ Book, fourth edition, focuses on improving belt conveyors by controlling fugitive material. "The Practical Resource for Total Dust and Material Control," is a 576-page hard cover volume that provides information of value to industries where the efficient handling of bulk materials is a key to productivity and profitability.

Expanding upon the book, our Foundations™ Training Program addresses the design and development of more productive belt conveyors, and is offered in three customizable seminars. Attendees gain a better understanding of conveyor safety and performance, helping to justify upgrade investments and increase profitability.



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