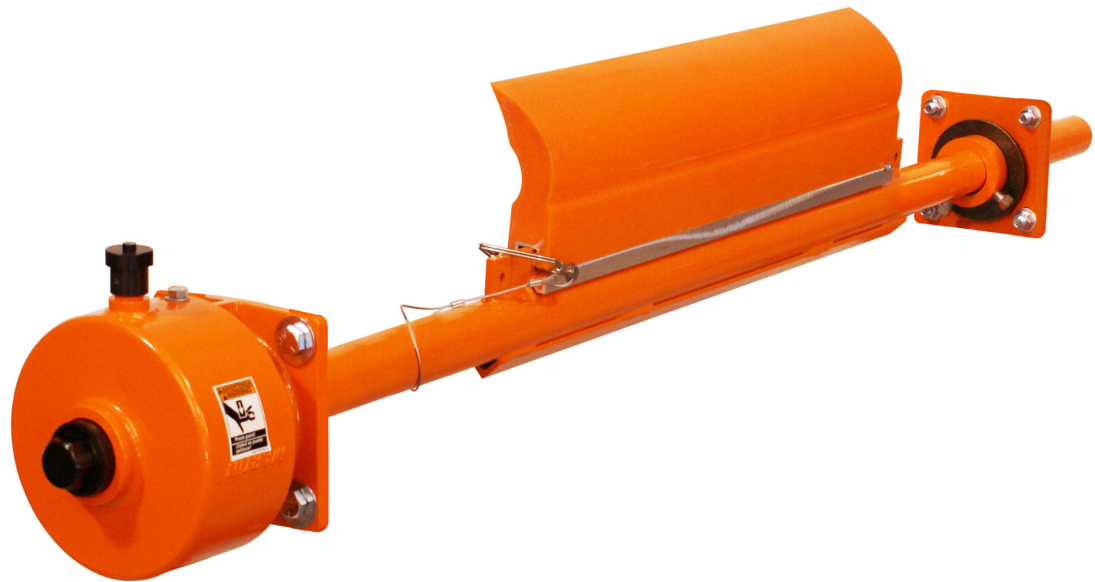


martin®

Martin®
PV Cleaner

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Operator's Manual
M3735

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.

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Introduction

General

To introduce product back into the product flow, the Martin® PV Cleaner is installed on the face of the head pulley. On a dual-cleaner system, a Secondary Cleaner is installed immediately following the Pre-Cleaner to remove stubborn material left on the conveyor belt. If a Pre-Cleaner cannot be used because of space limitations, Secondary Cleaners can be installed alone. Multiple Pre-Cleaners and/or Secondary Cleaners may be required to clean the belt. If the material-handling process or product could be affected by contamination from the use of these belt cleaners, the user is responsible for taking the necessary steps to prevent contamination. Consult Martin Engineering or a representative for alternate belt cleaners or belt cleaner locations to use where contamination may be an issue.

Installations without chutework

These procedures were written for equipment that is being installed on enclosed pulley chutework. If the pulley is not enclosed, the equipment should be installed using the best available field resources and methods to ensure that the critical dimensions are followed for proper installation.

Belt cleaner inspection access

If the belt cleaner is installed on enclosed pulley chutework, at least one Martin® Inspection Door should be installed. Martin® Inspection Doors are available from Martin Engineering or a representative.

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.
- *Martin® Inspection Door Operator's Manual*, P/N M3891
- *Martin® Twist Tensioner Operator Manual*, P/N M3837
- *Martin® Spring Cable Tensioner Operator Manual*, P/N M3734

Materials required

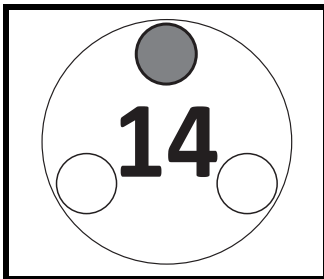
Installation of this equipment requires the use of standard hand tools, grinder, welder, and cutting torch.

Table I. Martin® PV Cleaner Blade Colors, Materials and Specifications

URETHANE SELECTION	APPLICATION DESCRIPTION	TYPICAL MATERIALS	CONTINUOUS TEMPERATURE
Orange	Standard Martin® Urethane Suitable for 80% or more of all belt cleaner applications, including abrasive conditions.	Bauxite, Coke, Coal, Overburden Refuse	-20° to 160°F (-29° to 71°C)
Brown (BR)	Chemical-Resistant Urethane Improves resistance to chemicals; reduced absorption of water in high-moisture environments.	Limestone	-40° to 160°F (-40° to 71°C)
Green (GR)	High-Temperature Urethane For exposure to intermittent temperatures up to 350°F (177°C).	Clinker	-40° to 300°F (-40° to 149°C)
Clear (CL)	Low-Rigidity Urethane For dry products such as sand and gravel.	Gravel, Dry Sand	-20° to 160°F (-29° to 71°C)
Navy Blue (NB)	Low-Adhesion Urethane For sticky or tacky materials.	Cement, Glass, Wood Chips	-20° to 160°F (-29° to 71°C)

IMPORTANT*Urethane shelf life*

Urethane put in service after exceeding its shelf life may wear differently and deteriorate quicker than normal urethane.

NOTE

Code Date is written near bottom of blade as mm/dd/yy-x. In addition to or in place of this date, you may see an imprinted date medallion similar to the example shown. In this example, “14” stands for the year 2014. The small circles represent the quarter of the year. If three circles are “punched” the blade was produced in the first quarter. If none of the circles are “punched” the blade was produced in the fourth quarter. If code date on your blade(s) is not legible or is missing, contact Martin Engineering or a representative.

Table II. Urethane Shelf Life

Blade Color	Shelf Life
Blue	1 Year from Code Date
Brown	2 Years from Code Date
Clear	1 Year from Code Date
Green	2 Years from Code Date
Orange	1 Year from Code Date

Safety

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



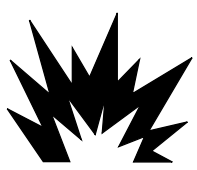
⚠ DANGER

Do not touch or go near the conveyor belt or conveyor accessories when the belt is running. Your body or clothing can get caught and you can be pulled into the conveyor, resulting in severe injury or death.



⚠ DANGER

Before installing, servicing, or adjusting the belt cleaner, 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.



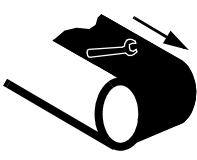
⚠ DANGER

If this equipment will be installed in an enclosed area, test the gas level or dust content before using a cutting torch or welding. Using a torch or welding in an area with gas or dust may cause an explosion resulting in serious injury or death. Follow local confined space procedures.



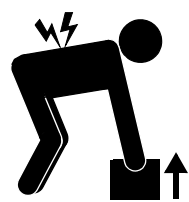
⚠ WARNING

Before using a cutting torch or welding the chute wall, cover the conveyor belt with a fire retardant cover. Failure to do so can allow the belt to catch fire. Follow local fire watch procedures.



⚠ WARNING

Remove all tools from the installation area and conveyor belt before turning on the conveyor. Failure to do so can cause serious injury to personnel or damage to the belt and conveyor.



⚠ WARNING

Mainframe with blade can be heavy and may require two people to lift. Attempting to lift the belt cleaner without assistance could result in injury.

Before Installing Belt Cleaner

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 belt cleaner assembly from shipping container.
3. If anything is missing contact Martin Engineering or a representative.

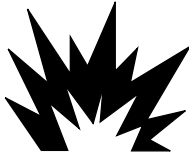


⚠ DANGER

Before installing, servicing, or adjusting the belt cleaner, 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 energy source according to ANSI standards (see "References").

⚠ DANGER



If this equipment will be installed in an enclosed area, test the gas level or dust content before using a cutting torch or welding. Using a torch or welding in an area with gas or dust may cause an explosion resulting in serious injury or death. Follow local confined space procedures.

5. If using a cutting torch or welding, test atmosphere for gas level or dust content. Cover conveyor belt with fire retardant cover.

IMPORTANT

Center the belt cleaner blades to clean an area narrower than the conveyor belt width. This allows for side-to-side movement of the belt and prevents damage to the belt edge.

NOTE

The chute wall that the tensioner will be located on is referred to as the "operator side." The other side of the chute is referred to as the "far side." (If installing dual tensioners, side that is most accessible is "operator side.")

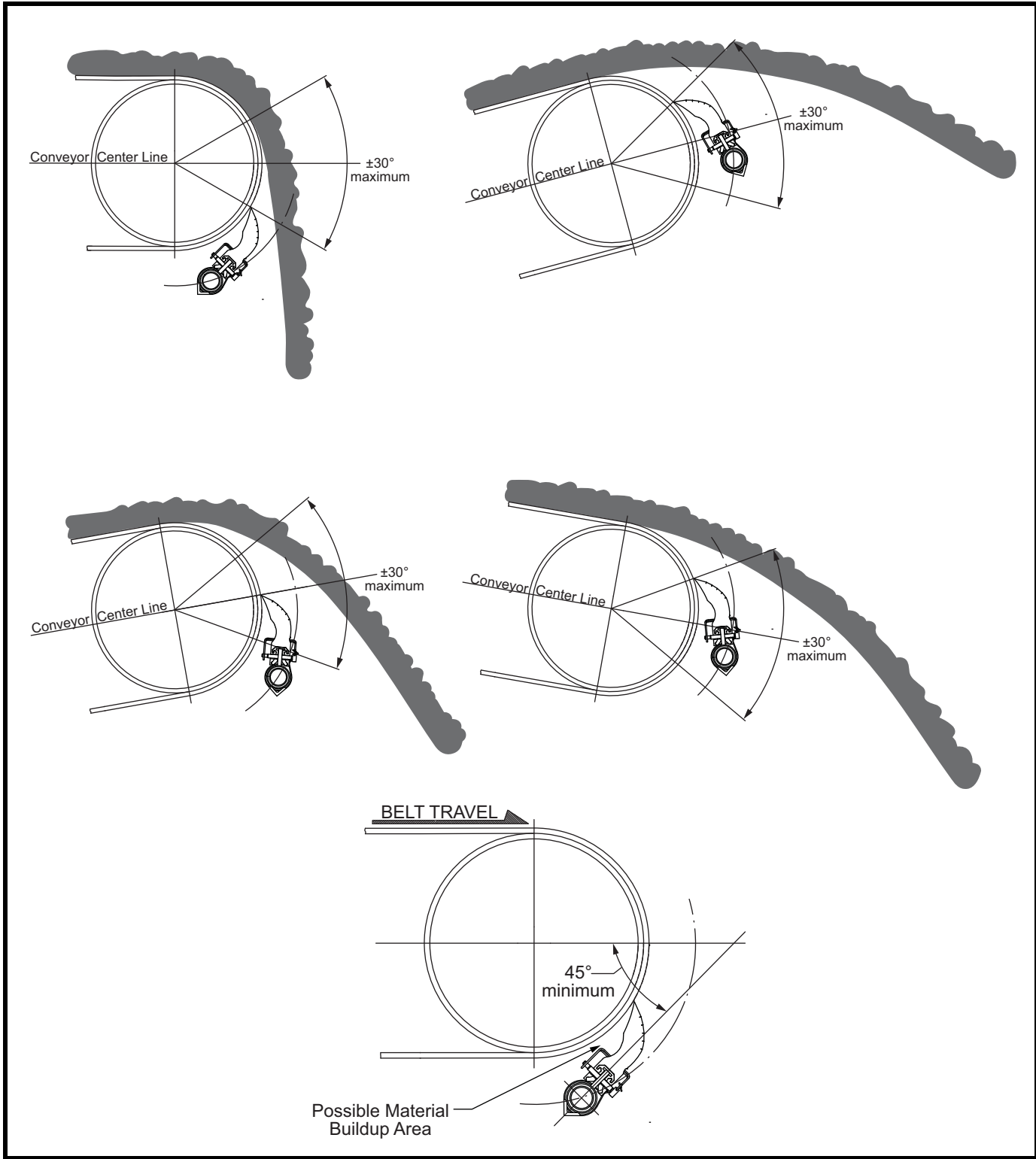


Figure 1. Belt Cleaner Mounting Locations

6. Inspect belt cleaner mounting area for possible obstructions that could interfere with proper mounting. Refer to following guidelines:
 - a. The cleaner can be mounted anywhere on the arc from +30 degrees to -30 degrees from a center line parallel to the belt line as long as:
 - (1) The blade is not in the direct flow of discharging material causing premature blade wear.
 - (2) The diameter of the pulley is big enough that the blade does not trap or hold material between the inside of the blade and the belt.
 - (3) There is at least the equivalent of a 45 degree angle between the blade and belt to prevent material buildup in this space.
 - b. Lack of service is the main cause of poor belt cleaning performance. Follow CEMA guidelines for access:
 - (1) Clearance for service outside the chute must be at least equal to the belt width.
 - (2) Cleaners must have service platforms. CEMA recommends cleaners be mounted at least 24 in. (600 mm) above the work platform.
 - (3) If the belt width is 54 in. (1400 mm) or larger consider access doors on both sides of the chute.
 - c. Refer to “Installing Belt Cleaner and Tensioner” and “Part Numbers” sections of this manual for specific mounting and cleaner dimensions.

Installing Belt Cleaner and Tensioner

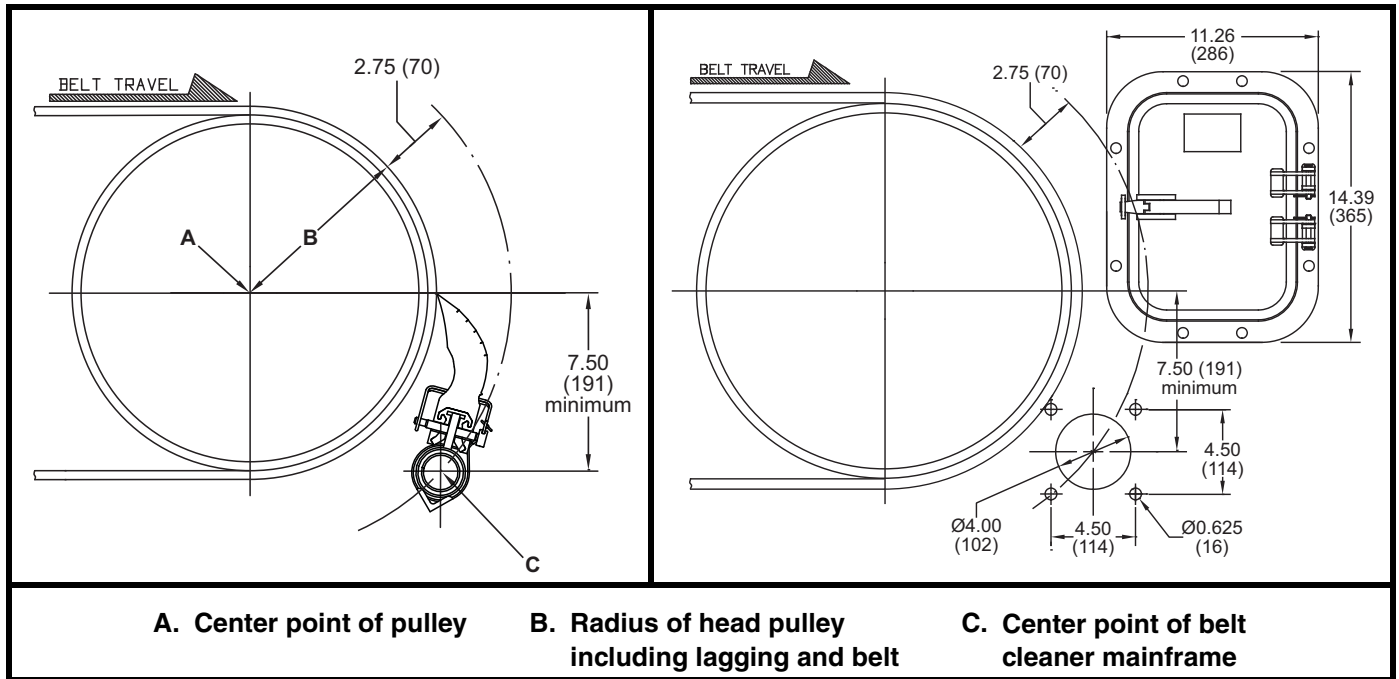


Figure 2. Belt Cleaner Mainframe Location & Chute Wall Cutouts for Martin® PV Cleaner with Martin® Twist Tensioner

Locating belt cleaner mainframe—Twist Tensioner

1. On operator side of chute, find pulley center point (A).
2. Measure radius of head pulley including lagging and belt thickness (B). To this dimension, add 2.75 in. (70 mm).
3. Starting from center point (A), measure the total distance calculated in step 2 (B + 2.75) and draw an arc on chute wall.
4. Measure down from pulley's horizontal centerline the distance shown in Figure 2 and draw a horizontal line parallel to it. Locate center point of belt cleaner mainframe (C) where this line intersects the arc on the chute wall.
5. Make sure mainframe and blade do not lie in path of material unloading from conveyor belt.
6. Repeat steps 1 through 5 for far side chute wall.
7. Drill or cut holes for tensioner mounting plates on chute walls as follows:
 - a. If bolting tensioner mounting plates to chute walls, do the following:
 - (1) Drill or cut one 4-in. hole for mainframe and four 5/8-in. holes for screws in both operator side and far side chute walls. Remove burrs and sharp edges.
 - b. If welding tensioner mounting plates to chute walls, do the following:
 - (1) Drill or cut one 4-in. hole for mainframe in both operator side and far side chute walls. Remove burrs and sharp edges.
8. If using Martin® Inspection Door, cut access door opening and mounting holes according to *Martin® Inspection Door Operator's Manual*, P/N M3891.

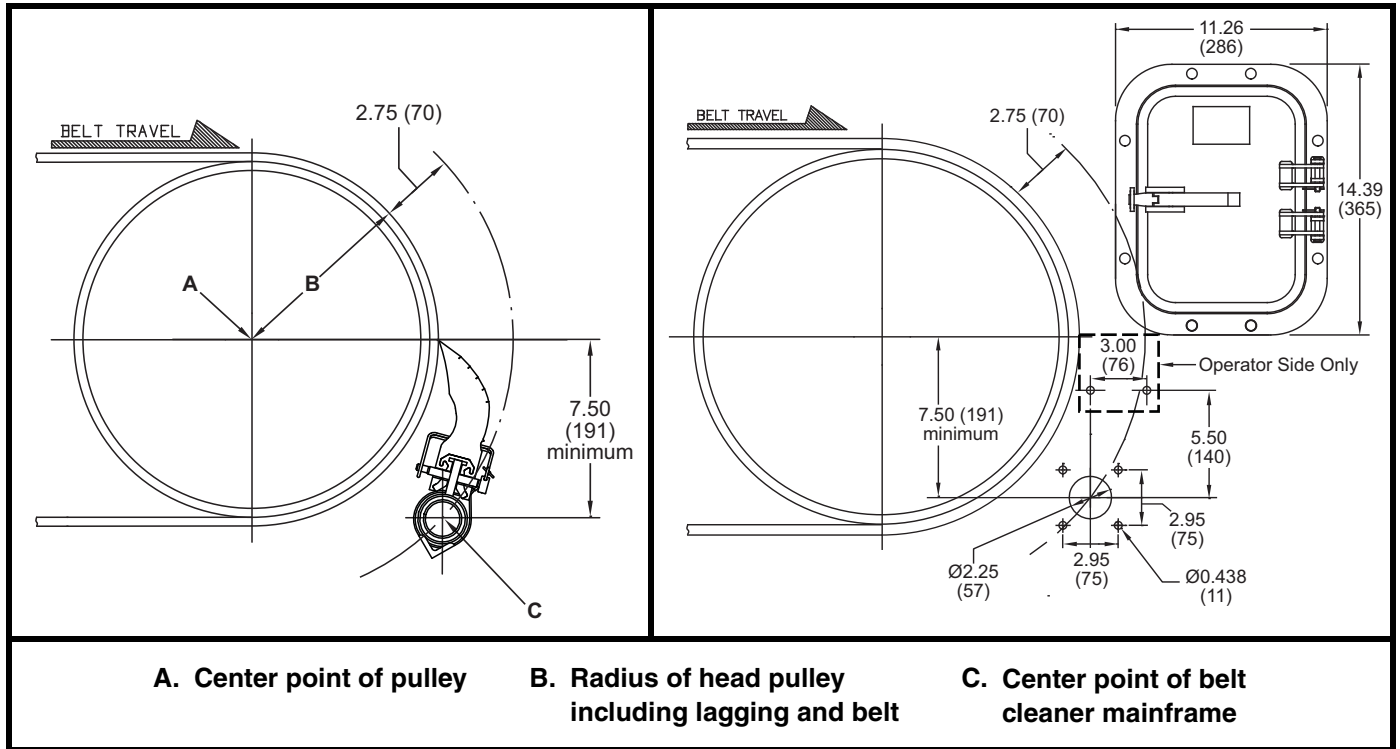


Figure 3. Belt Cleaner Mainframe Location & Chute Wall Cutouts for Martin® PV Cleaner with Martin® Spring Cable Tensioner

Locating belt cleaner mainframe—Spring Cable Tensioner

1. On operator side of chute, find pulley center point (A).
2. Measure radius of head pulley including lagging and belt thickness (B). To this dimension, add 2.75 in. (70 mm).
3. Starting from center point (A), measure the total distance calculated in step 2 (B + 2.75) and draw an arc on chute wall.
4. Measure down from pulley's horizontal centerline the distance shown in Figure 2 and draw a horizontal line parallel to it. Locate center point of belt cleaner mainframe (C) where this line intersects the arc on the chute wall.
5. Make sure mainframe and blade do not lie in path of material unloading from conveyor belt.
6. Repeat steps 1 through 5 for far side chute wall.
7. Drill or cut holes for tensioner mounting plates on chute walls as follows:
 - a. If bolting tensioner mounting plates to chute walls, do the following:
 - (1) Drill or cut one 2.25-in. hole for mainframe and four 1/2-in. holes for screws in both operator side and far side chute walls. Remove burrs and sharp edges.
 - b. If welding tensioner mounting plates to chute walls, do the following:
 - (1) Drill or cut one 2.25-in. hole for mainframe in both operator side and far side chute walls. Remove burrs and sharp edges.
8. If using Martin® Inspection Door, cut access door opening and mounting holes according to *Martin® Inspection Door Operator's Manual*, P/N M3891.

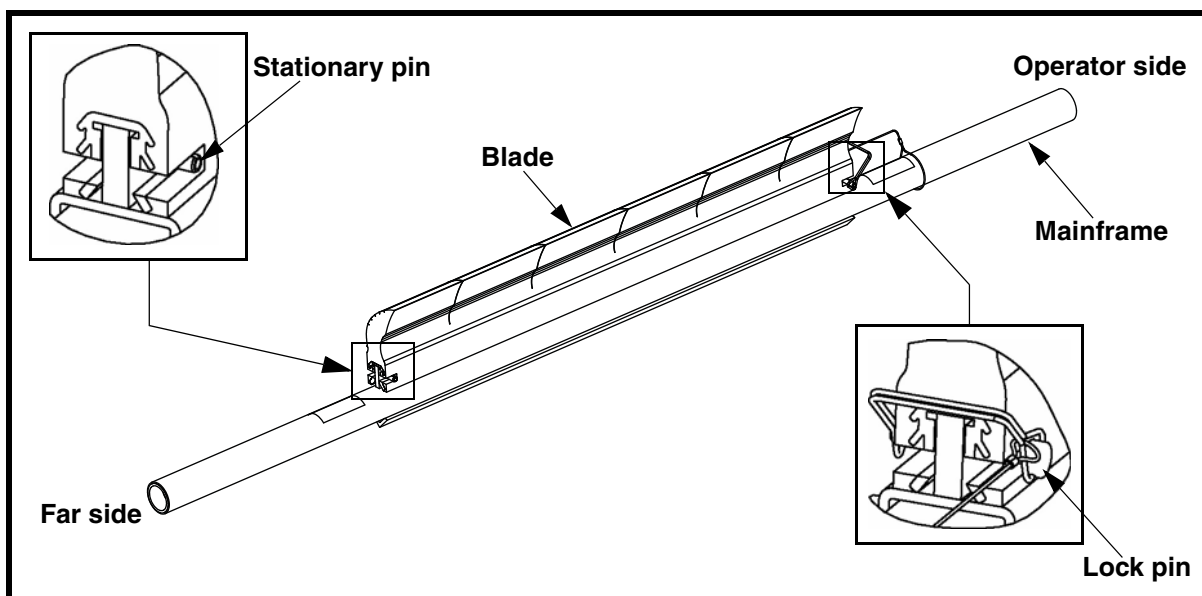


Figure 4. Removing and Installing Blade

Removing blade

1. Disengage lock pin from operator side of mainframe and blade.
2. Pull blade away from stationary pin on far side of mainframe, and remove from mainframe. Make sure lock pin lanyard remains attached to mainframe.

Installing tensioner

1. Install tensioner according to applicable tensioner's manual.
2. If using Martin® Inspection Door, install according to *Martin® Inspection Door Operator's Manual*, P/N M3891.

Installing blade

1. Position blade on mainframe with blade curve facing conveyor belt. Push far side end of blade against stationary pin until it locks.
2. Insert lock pin in mainframe and blade.
3. Make sure blades are centered on belt and mainframe is parallel to belt.
4. Tension belt cleaner according to applicable tensioner's manual.

After Installing Belt Cleaner



1. Thoroughly wipe chute wall clean above tensioner.
2. Place Conveyor Products Warning Label (P/N 23395) on outside chute wall visible to belt cleaner operator.
3. Additional safety labels are available from CEMA. For more information regarding CEMA safety labels visit www.cemanet.org.

⚠ WARNING

Failure to remove tools from installation area and conveyor belt before turning on energy source can cause serious injury to personnel and damage to belt.

⚠ DANGER

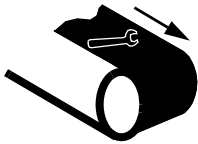
Do not touch or go near conveyor belt or conveyor accessories when conveyor belt is running. Body or clothing can get caught and pull body into conveyor belt, causing severe injury or death.

4. Turn on conveyor belt for 1 hour, then turn off.

⚠ DANGER

Before installing, servicing, or adjusting the belt cleaner, 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.

- a. Make sure all fasteners are tight. Tighten if necessary.
- b. Inspect belt cleaner for the following:
 - (1) Wear. (A small amount of “break-in” wear may be found. This will stop once blades wear to conveyor belt contour.)
 - (2) Material buildup. (No material between blades and return side of conveyor belt should be found.)
- c. If wear, material buildup, or some other problem exists, see “Troubleshooting.”



IMPORTANT

Read entire section before beginning work.

NOTE

Maintenance inspection should be performed no less than weekly. Some applications may require more frequent maintenance inspections.



⚠ DANGER

Before installing, servicing, or adjusting the belt cleaner, 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. Remove any material from belt cleaner.
2. Make sure all fasteners are tight. Tighten if necessary.
3. Check tension on cleaner. Re-tension if necessary.
4. Wipe all labels clean. If labels are not readable, contact Martin Engineering or a representative for replacements.
5. Check blades for excessive wear. Replace if necessary.
6. Remove equipment from service if there is any indication it is not functioning properly. Call Martin Engineering or a representative for assistance. Do NOT return equipment to operation until the cause of the problem has been identified and corrected.

⚠ WARNING

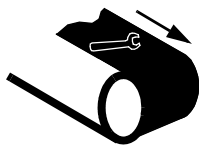
Failure to remove tools from maintenance area and conveyor belt before turning on energy source can cause serious injury to personnel and damage to belt.

7. Remove all tools from maintenance area.

⚠ DANGER

Do not touch or go near conveyor belt or conveyor accessories when conveyor belt is running. Body or clothing can get caught and pull body into conveyor belt, causing severe injury or death.

8. Start conveyor belt. Observe belt cleaner operation for several revolutions of the belt. Service or adjust belt cleaner as necessary to ensure proper belt cleaner operation.



Troubleshooting

Symptom	Corrective Action
Insufficient cleaning and carryback.	<ul style="list-style-type: none"> Tension of cleaner on belt is set too low or too high. Increase or decrease tensioner setting. Blades are worn. Check blades and replace if necessary.
Blade wears only in the center.	<ul style="list-style-type: none"> Use a segmented style blade for crown pulleys. Consider narrowing the blade width to clean the middle of the belt.
Noise or vibration.	Tension is not sufficient or is set too high. Correct tension as necessary. If this does not correct problem, blade urethane may not match application. Contact Martin Engineering or representative.
High blade wear rate.	Tension of cleaner on belt is set too high. Reduce tensioner setting.
Unusual wear or damage to blades.	Check belt splice(s) and repair as necessary.
Bent or broken mainframe or support frame due to blade slipping through.	If blades are worn to or past the wear line, replace blades. If blades are not worn, check mainframe location.
Corrosion or chemical degradation.	Blade urethane may not match application. Contact Martin Engineering or representative.

NOTE

Conveyor equipment such as conveyor belt cleaners are subject to a wide variety of bulk materials characteristics and often have to perform under extreme operating or environmental conditions. It is not possible to predict all circumstances that may require troubleshooting. Contact Martin Engineering or a representative if you are experiencing problems other than those listed in the “Troubleshooting” chart above. Do not return the equipment to operation until the problem has been identified and corrected.

Installation checklist

If after taking the corrective actions suggested under “Troubleshooting” you are still experiencing problems, check for the following:

Installation Checklist
✓ Pre-Cleaner mainframe is proper distance from belt surface on both ends of mainframe and parallel to the pulley shaft.
✓ Pre-Cleaner blade tip does not lie in path of material flow.
✓ Blades are centered on belt.

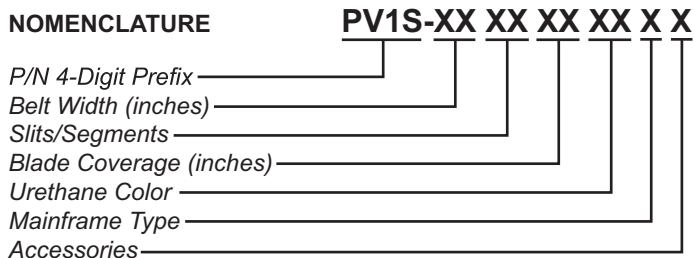
Part Numbers

This section provides product names and corresponding part numbers for Martin® PV Cleaner and related equipment. Please reference part numbers when ordering parts:

Martin® PV Cleaner and Blades

Martin® PV Cleaner Assembly: P/N PV1S-XXXXXXXXXX.

Martin® PV Cleaner Blade: P/N PV-XXXX(XX)XX.



BLADE TYPE

- Ø: No Blade
- 11: Solid Blade
- 10: Segments Only
- 01: Slits Only
- 00: Slits and Segments

URETHANE COLOR

- Ø: No Blade
- OR: Orange
- CL: Tan
- BR: Brown
- GR: Green
- NB: Navy Blue

MAINFRAME TYPE

- Ø: No Mainframe
- E: Extended Length Painted Mainframe
- P: Painted Mainframe
- S: Stainless Steel Mainframe

ACCESSORIES

- Ø: No Options
- C: Spring Cable Tensioner
- M: Spring Cable Tensioner with Mount Plate
- T: Twist Tensioner

Martin® Tensioners

Martin® Spring Cable Tensioner Assembly: P/N 37944.

Martin® Twist Tensioner Assembly: P/N 38850 or 38850-2X.

Martin® Cable Tensioner Adapter Mount Plate Kit: P/N 38100.

Operator's Manuals

Martin® Spring Cable Tensioner Operator's Manual: P/N M3734.

Martin® Twist Tensioner Operator's Manual: P/N M3837.

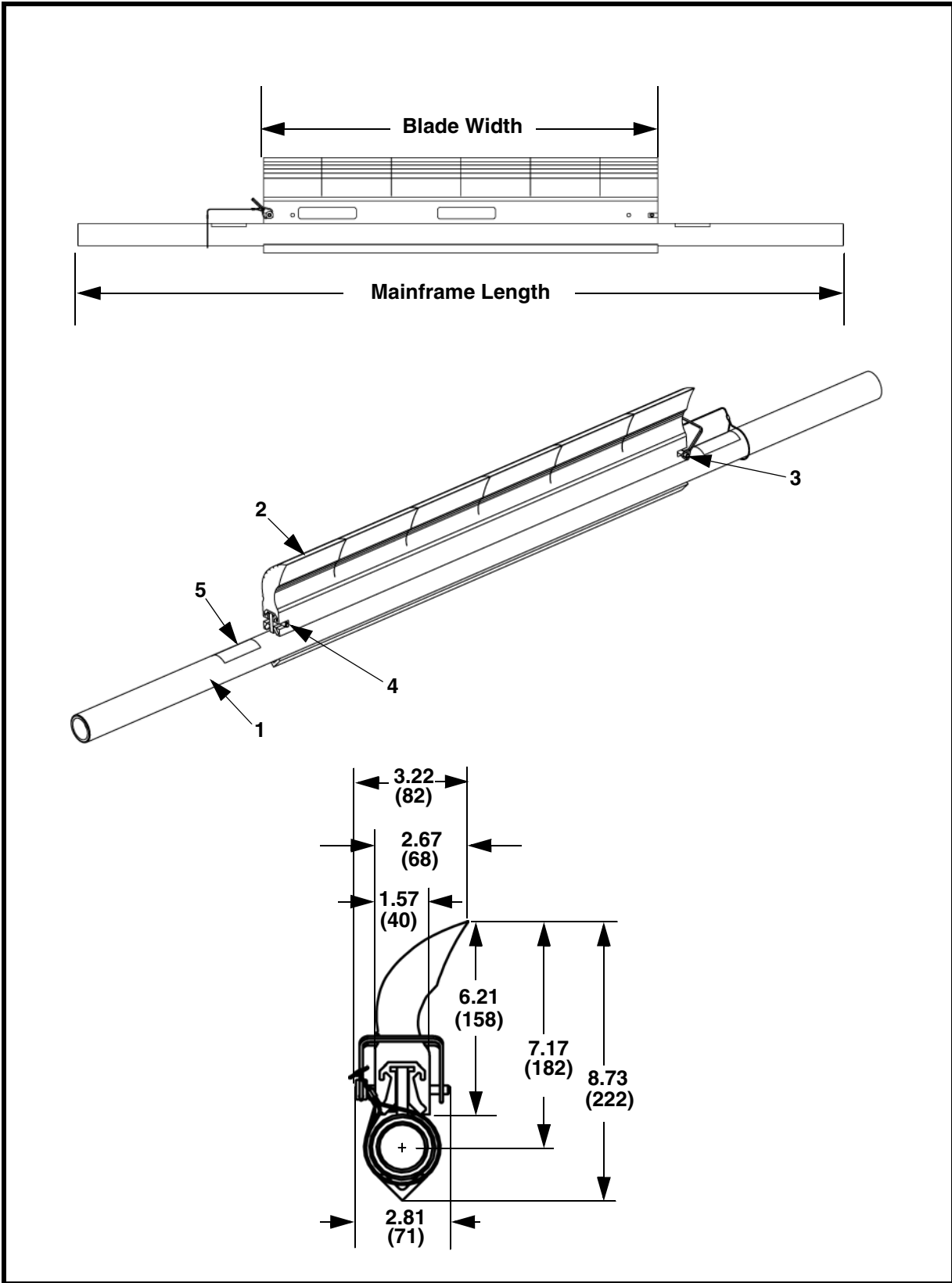


Figure 5. Martin® PV Cleaner Assembly, P/N PV1S-XXXXXXXXXX*

Item	Qty.	Description	Part Number
1	1	Mainframe Weldment	Table III
2	1	Blade	Table IV
3	1	Lock Pin Lanyard Assembly	38168
4	1	Pin Slotted Spring 5/16 x 2 ZP	32774
5	2	Label, Martin Products	38048
6 (NS)	2	Label, Conveyor Products Warning	23395
7 (NS)	1	Manual Operator's	M3735
8 (NS)	1	Spring Cable Tensioner Assembly	37944
9 (NS)	1	Martin® Twist Tensioner Assembly	Table III
10 (NS)	1	Spring Cable Tensioner Adapter Mount Plate Kit	38100

NS = Not Shown

Figure 5. Martin® PV Cleaner Assembly, P/N PV1S-XXXXXXXXXX*

Table III. Martin® PV Cleaner Assembly Part Numbers

Assembly Part Number	Blade Width in (mm)	Mainframe Length in (mm)	Part Number Item 1	Part Number Item 9	Weight (lbs) w/o Tensioners
PV1S-18XX12XXXX	12.00 (305)	48.00 (1219)	32756-18	38850	22.8
PV1S-18XX16XXXX	16.00 (406)	48.00 (1219)	32756-18	38850	24.4
PV1S-24XX18XXXX	18.00 (457)	54.00 (1372)	32756-24	38850	28.3
PV1S-24XX22XXXX	22.00 (559)	54.00 (1372)	32756-24	38850	29.9
PV1S-30XX24XXXX	24.00 (610)	60.00 (1524)	32756-30	38850	33.8
PV1S-30XX28XXXX	28.00 (711)	60.00 (1524)	32756-30	38850	35.4
PV1S-36XX30XXXX	30.00 (762)	66.00 (1676)	32756-36	38850	39.2
PV1S-36XX34XXXX	34.00 (864)	66.00 (1676)	32756-36	38850	40.9
PV1S-42XX36XXXX	36.00 (914)	72.00 (1829)	32756-42	38850	44.8
PV1S-42XX40XXXX	40.00 (1016)	72.00 (1829)	32756-42	38850	46.3
PV1S-48XX42XXXX	42.00 (1067)	78.00 (1981)	32756-48	38850	50.2
PV1S-48XX46XXXX	46.00 (1168)	78.00 (1981)	32756-48	38850	51.8
PV1S-54XX48XXXX	48.00 (1219)	84.00 (2134)	32756-54	38850-2X	55.7
PV1S-54XX52XXXX	52.00 (1321)	84.00 (2134)	32756-54	38850-2X	57.3
PV1S-60XX54XXXX	54.00 (1372)	90.00 (2286)	32756-60	38850-2X	61.1
PV1S-60XX58XXXX	58.00 (1473)	90.00 (2286)	32756-60	38850-2X	62.8
PV1S-66XX60XXXX	60.00 (1524)	96.00 (2438)	32756-66	38850-2X	66.6
PV1S-72XX66XXXX	66.00 (1676)	102.00 (2591)	32756-72	38850-2X	72.2
PV1S-72XX70XXXX	70.00 (1778)	102.00 (2591)	32756-72	38850-2X	73.8

Table IV. Martin® PV Cleaner Blade Part Numbers

Assembly Part Number	Part Number Item 2	Blade Color
PV1S-XXXXXXBRXX	PV-XXXXXXBR	Brown
PV1S-XXXXXXCLXX	PV-XXXXXXCL	Tan
PV1S-XXXXXXGRXX	PV-XXXXXXGR	Green
PV1S-XXXXXXNBXX	PV-XXXXXXNB	Navy Blue
PV1S-XXXXXXORXX	PV-XXXXXXOR	Orange

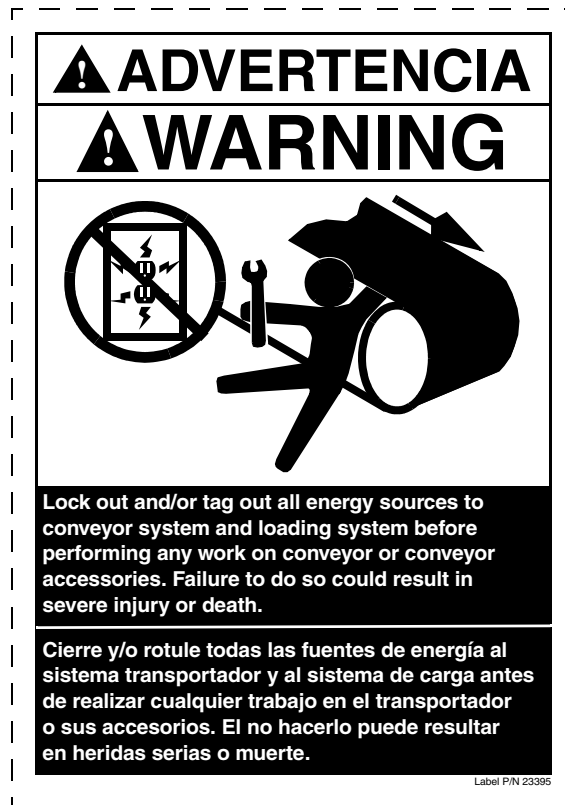
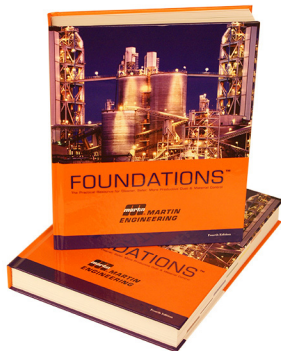


Figure 6. Conveyor Products Warning Label, P/N 23395

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