

martin®

Martin® ***Compact Cleaner***

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Operator's Manual
M3400

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

The Martin® Compact Cleaner is specially designed for applications where clearance is a problem, requiring only 5-1/2 in. (140 mm) from mainframe center to blade tip. Its internal spring tensioner uses a tensioner spring that is tightened and locked into position to supply cleaning pressure against the conveyor belt. The Martin® Compact Cleaner should not be used on reversing belts.

If the material-handling process or product could be affected by contamination from the use of this belt cleaner, 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, a Martin® Inspection Door should be installed. Martin® Inspection Doors are available from Martin Engineering or a representative.

Belt cleaner blades

Martin® Compact Cleaner blades are available in four different materials (see Table I for specifications). Only standard (orange) blades are made of materials that meet Mine Safety and Health Administration (MSHA) requirements under “Interim Fire and Toxicity Criteria for Products Taken Into Underground Mines,” March 22, 1977 (MSHA acceptance number MSHA-C-95/1).

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

Assy/Blade Part No. Suffix	Blade Color	Blade Type	Blade Shore Hardness	Max. Operating Temperature	
				Continuous	Intermittent
None	Orange	Standard	90A	150°F (65°C)	180°F (82°C)
BL	Blue	Abrasion resistant	85A	150°F (65°C)	180°F (82°C)
BR	Brown	Chemical resistant	95A	150°F (65°C)	180°F (82°C)
GR	Green	High temperature	95A	250°F (121°C)	300°F (149°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.
- *Martin® Inspection Door Operator’s Manual*, P/N M3891.

Materials required

Only standard hand tools are required to install and service this equipment.

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.



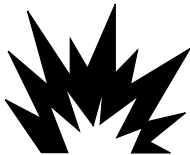
⚠ DANGER

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 lock out/tag out all energy sources to the conveyor and conveyor accessories according to ANSI standards. Failure to do so could result in serious injury or death.



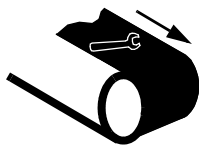
⚠ DANGER

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.



⚠ 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.



⚠ 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.



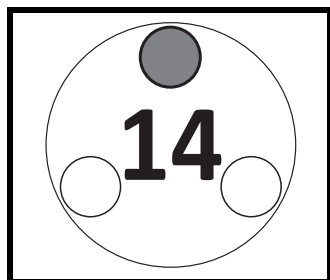
⚠ WARNING

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.

Urethane Shelf Life

IMPORTANT

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

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.



WARNING

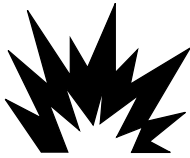
Before installing equipment, turn off and lock out/ tag out all energy sources to the conveyor and conveyor accessories according to ANSI standards. Failure to do so could result in serious injury or death.

4. Turn off and lock out/tag out 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.

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.")

6. Determine which side of chute is easiest to access. Locate the tensioner on the most accessible chute wall.

Installing Belt Cleaner

IMPORTANT

Read entire section before beginning work.

To install the belt cleaner and tensioner, follow the procedures in this section corresponding to the following steps:

1. Find center point of belt cleaner mainframe.
2. Install mounting plates.
3. Install internal spring tensioner.

Finding center point of belt cleaner mainframe

1. On operator side of chute wall, mark vertical and horizontal center line of head pulley to find pulley center point (A).
2. Measure radius of head pulley including lagging and belt thickness (B). To this dimension, add dimension X from the table in Figure 1.

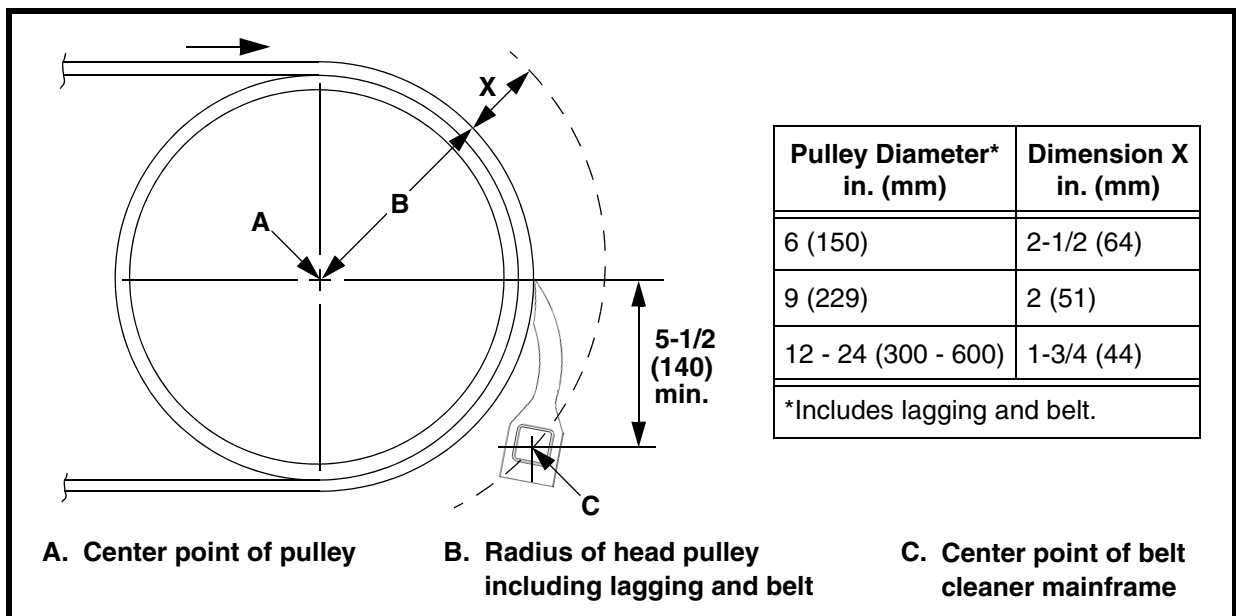


Figure 1. Belt Cleaner Mainframe Location

3. Starting from center point (A), measure the total distance calculated in step 2 (B + X) and draw an arc on chute wall.
4. Measure down a minimum of 5-1/2 in. (140 mm) from pulley's horizontal center line 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. If using Martin® Inspection Door, install according to *Martin® Inspection Door Operator's Manual*, P/N M3891.

Installing mounting plates

1. Loosen two square head set screws (A, Figure 2) on tensioner spring weldment (B).
2. Using a screwdriver, pry tensioner spring weldment off internal mount weldment (C). Make sure tensioner bearing (D) and O-ring (E) stay on internal mount weldment.

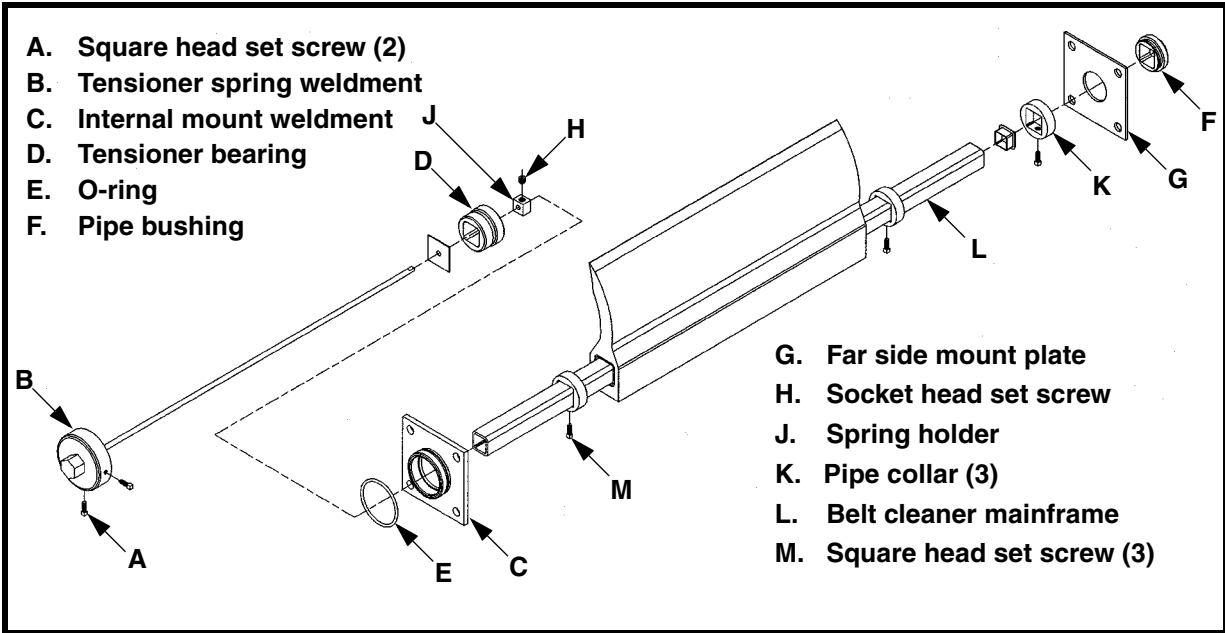


Figure 2. Internal Spring Tensioner Installation

3. Use belt cleaner center point to mark location of holes for mounting plates. Use tensioner mounting plates as templates.

NOTE

For easier maintenance, Martin Engineering recommends bolting rather than welding tensioners to chute walls.

4. Bolt or weld mounting plates to chute walls as follows:
 - a. If bolting mounting plates to chute walls, do the following:
 - (1) Drill or cut mounting holes as follows:
 - (a) Four 7/16-in. (11-mm) holes for screws in both operator side and far side chute walls.
 - (b) One 2-1/8-in. (54-mm) hole for mainframe in operator side chute wall.
 - (c) One 1-3/4-in. (44-mm) hole for mainframe in far side chute wall.
 - (2) Remove burrs and sharp edges.
 - (3) Install each mounting plate onto outside chute wall with four hex head cap screws, flat washers, compression washers, and hex nuts.
 - b. If welding mounting plates to chute walls, do the following:
 - (1) Drill or cut one 2-1/8-in. (54-mm) mainframe hole in operator side chute wall, and one 1-3/4-in. (44-mm) mainframe hole in far side chute wall. Remove burrs and sharp edges.

- (2) Remove tensioner bearing and O-ring from internal mount weldment. Remove pipe bushing (F) from far side mount plate (G). Use a mallet to pound off the tensioner bearing and pipe bushing.
- (3) Position each mounting plate over hole, and weld onto wall. Make continuous weld around entire mounting plate.
- (4) Install tensioner bearing and O-ring onto internal mount weldment.

Installing Internal Spring Tensioner

1. Snap pipe bushing (F, Figure 2) into hole in far side mount plate (G).
2. Make sure one pipe collar (K) is on operator side end of belt cleaner mainframe (L) and two pipe collars are on far side end of mainframe.
3. Insert mainframe into pipe bushing (F) in far side mount plate (G), then into tensioner bearing (D) in internal mount weldment (C).
4. Remove end cap (if present) from operator side end of mainframe.
5. Insert tensioner spring weldment (B)—spring holder (J) end first—into mainframe.
6. Press tensioner spring weldment against internal mount weldment until it snaps securely into place.
7. Center the blade on the belt. Measure from center point of pulley to each outside edge of the blade to make sure blade is centered.
8. Slide operator side and one far side pipe collar against blade. Slide remaining far side pipe collar against far side mount plate. Tighten square head set screws (M) on pipe collars.
9. Tension belt cleaner as follows:
 - a. Loosen two square head set screws (A) on tensioner spring weldment (B).
 - b. Turn belt cleaner mainframe until blade touches belt.
 - c. Using torque wrench, tighten tensioner spring weldment according to Table III. While holding spring weldment at recommended torque, tighten two square head set screws.

Table III. Internal Spring Tensioner Recommended Torque

Blade Coverage in. (mm)		Recommended Torque ft-lb (N•m)	
10	(254)	7	(9.3)
12	(305)	8	(11.1)
14	(356)	10	(13.0)
16	(406)	11	(14.9)
22	(559)	15	(20.4)
28	(711)	19	(25.5)
34	(864)	23	(31.6)
40	(1016)	27	(37.1)
43	(1092)	29	(39.9)
46*	(1168)	16	(21.4)

* Dual tensioners required.

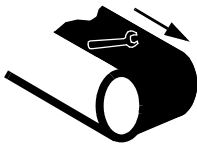
After Installing Belt Cleaner



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.

⚠ 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.



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

⚠ DANGER

Before installing, servicing, or adjusting the belt cleaner/tensioner, turn off and lock out/tag out 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. Make sure all fasteners are tight. Tighten if necessary.
5. Inspect belt cleaner for the following:
 - Wear. (A small amount of “break-in” wear may be found. This will stop once blades wear to conveyor belt contour.)
 - Material buildup. (No material between blades and return side of conveyor belt should be found.)
6. 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/tensioner, turn off and lock out/tag out 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

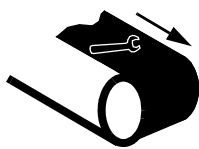
Failure to remove tools from maintenance area and conveyor belt before turning on energy source can cause serious injury to personnel and damage to belt.

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.



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.
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.
✓ Pre-Cleaner blade tip is at or below horizontal center line of pulley and does not lie in path of material flow.

Part Numbers

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

Martin[®] Compact Cleaner

Martin[®] Compact Cleaner Mainframe Assembly:
P/N 33464-XXXXXX. See Figure 3.

Martin[®] Internal Spring Tensioner Assembly:
P/N 33036-XX. See Figure 4.

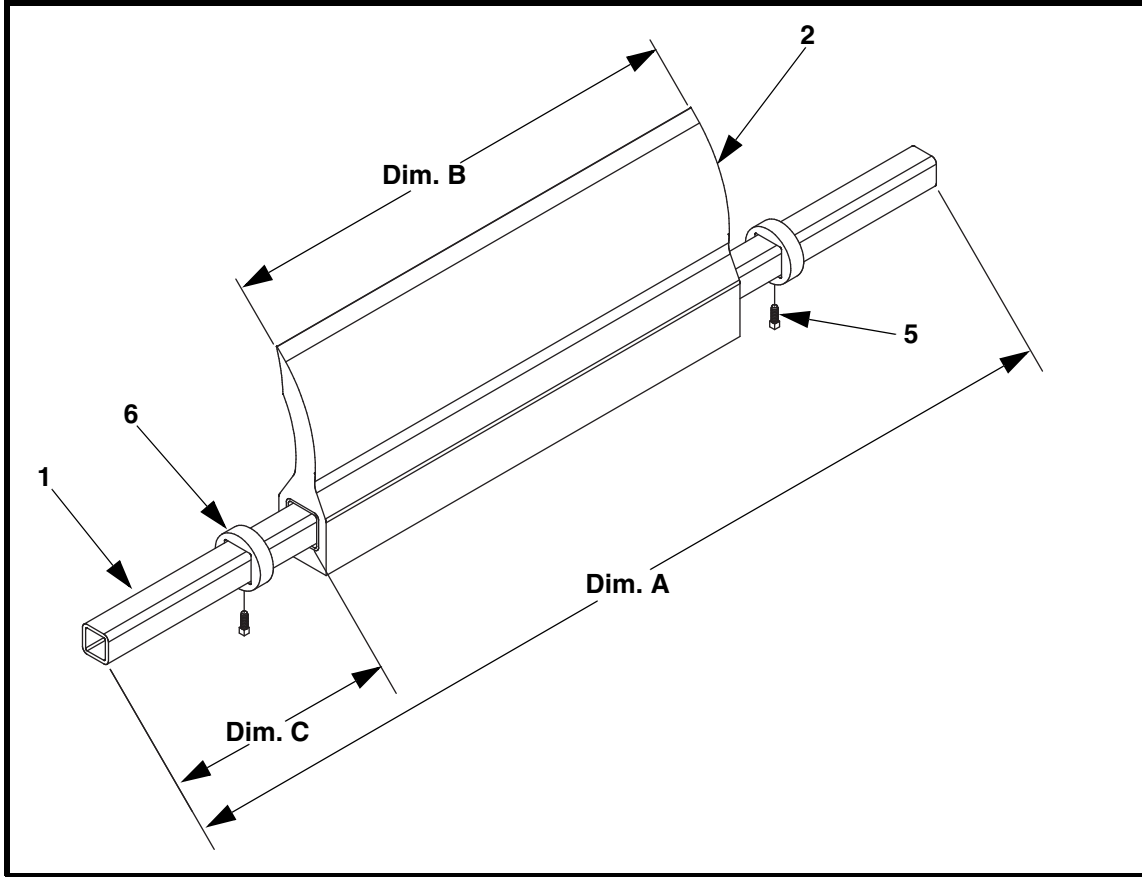


Figure 3. Martin® Compact Cleaner Assembly, P/N 33464-XXXXXX*

*First XX indicates belt width in inches, third X indicates blade without (1) slits (slitting blade is not an option), fourth X indicates blade with (0) or without (1) segments, last XX indicates blade material.

Item	Description	Part No.	Qty
1	Mainframe	Table IV	1
2	Blade	33463-XXXX	1
3 (NS)	Cap End Plastic	31833	Tbl IV
4 (NS)	Tensioner Assembly	Table IV	1
5	Screw SHS 1/4-20NC x 1/2	24298-04	2
6	Collar Pipe	33056	2
Fig. 5	Tensioning Label	33733	1
Fig. 6	Conveyor Products Warning Label	23395	2
NS	Manual Operator's	M3400	1

NS = Not Shown

Table IV. Martin® Compact Cleaner Assembly Part Numbers and Dimensions

Assembly Part No.	Item 1 Part No.	Item 4 Part No.	Qty Item 3	Dimensions—in. (mm)		
				A	B	C
33464-08XXXX	31350-08	33036-P	1	24.00 (610)	6.00 (152)	9.00 (228)
33464-12XXXX	31350-12	33036-P	1	28.00 (711)	10.00 (254)	9.00 (228)
33464-14XXXX	31350-14	33036-P	1	30.00 (762)	12.00 (305)	9.00 (228)
33464-16XXXX	31350-15	33036-P	1	31.00 (787)	14.00 (356)	8.50 (216)
33464-18XXXX	31350-18	33036-P	1	32.00 (813)	16.00 (406)	8.00 (203)
33464-24XXXX	31350-24	33036-P	1	40.00 (1016)	22.00 (559)	9.00 (228)
33464-30XXXX	31350-30	33036-P	1	44.00 (1118)	28.00 (711)	8.00 (203)
33464-36XXXX	31350-36	33036-P	1	52.00 (1321)	34.00 (864)	9.00 (228)
33464-41XXXX	31350-41	33036-P	1	56.00 (1422)	39.00 (991)	8.50 (216)
33464-42XXXX	31350-42	33036-P	1	56.00 (1422)	40.00 (1016)	8.00 (203)
33464-45XXXX	31350-44	33036-P	1	60.00 (1524)	43.00 (1092)	8.50 (216)
33464-48XXXX	31350-48	33036-2P	—	64.00 (1626)	46.00 (1168)	9.00 (228)

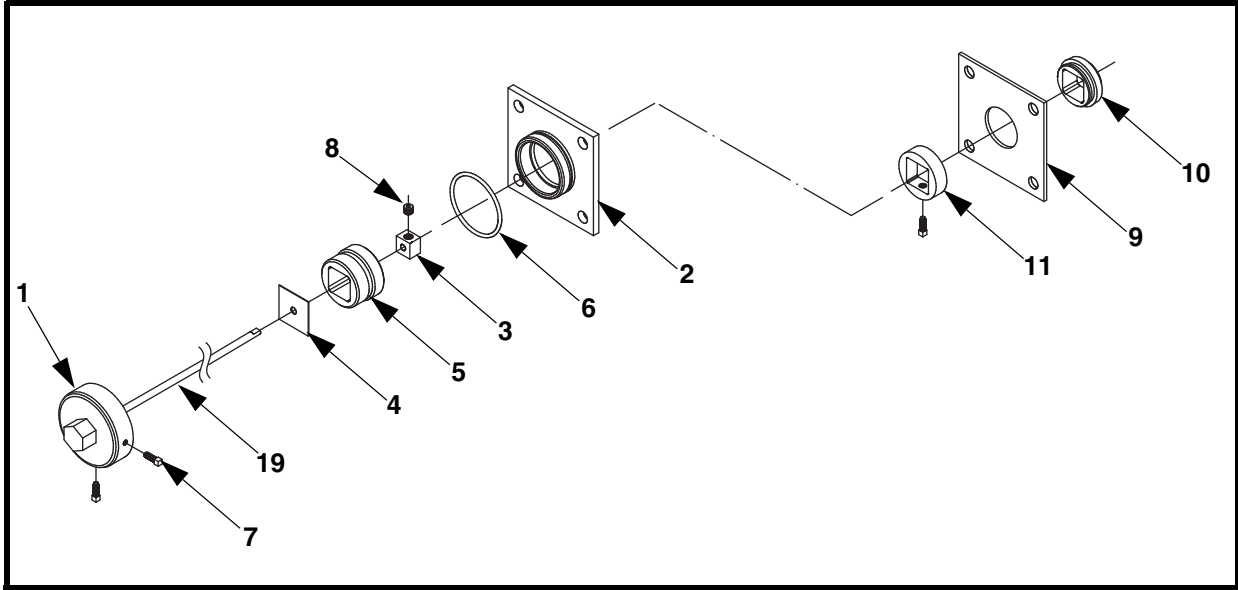


Figure 4. Martin® Internal Spring Tensioner Assembly, P/N 33036-XX

Item	Description	Part No.	Qty P/N 33036-P	Qty P/N 33036-2P
1	Cap Weldment	33041	1	2
2	Mount Weldment	33045-SS	1	2
3	Spring Holder	33038	1	2
4	Spacer	33049	1	2
5	Bearing	33042	1	2
6	O-ring 2-1/8 x 2-5/16	33047	1	2
7	Screw SHS 1/4-20NC x 1/2	24298-04	3	4
8	Screw HHS 5/16-18NC x 1/4 FL PNT	19933	2	4
9	Farside Mount Plate	31373-SS	1	–
10	Pipe Bushing	32051-P	1	–
11	Pipe Collar	33056	1	–
12 (NS)	Washer Flat 7/16 ID x 1 OD SS	16055	8	8
13 (NS)	Washer Compression 3/8	28565	8	8
14 (NS)	Nut Hex 3/8-16NC SS	16054	8	8
15 (NS)	Screw HHC 3/8-16NC x 1-1/2	25281	8	8
16 (NS)	Warning/Torque Label	33298	1	2
17 (NS)	Manual Operator's	M3215	1	1
18 (NS)	Tie Nylon Cable	30916	1	1
19	Spring	33048	1	2
20 (NS)	Silicone GE RTV	100584	.01	.02

NS = Not Shown

Recommended Tension for Compact Cleaner Assembly

Belt Coverage		Recommended Torque	
<i>in.</i>	<i>mm.</i>	<i>ft-lb</i>	<i>N-m</i>
10	254	7	9.3
12	305	8	11.1
14	356	10	13.0
16	406	11	14.9
22	559	15	20.4
28	711	19	26.0
34	864	23	31.6
40	1016	27	37.1
43	1092	29	39.9
46*	1168	16	21.4

To tension, loosen set screws, tighten spring weldment to recommended torque with torque wrench, then tighten set screws.

*Dual tensioners required

martin® 800-544-2947
309-852-2384

Label P/N 33733

Figure 5. Martin® Compact Cleaner Tensioning Label, P/N 33733

⚠ MUCHO CUIDADO

⚠ WARNING

Lock out and/or tag out all energy sources to conveyor system and loading system before performing any work on conveyor or conveyor accessories. Failure to do so could result in severe injury or death.

Cierre y/o rotule todas las fuentes de energía al sistema transportador y al sistema de carga antes de realizar cualquier trabajo sobre el transportador o sobre los accesorios del transportador. Si no se procede así, puede resultar en heridas serias o muerte.

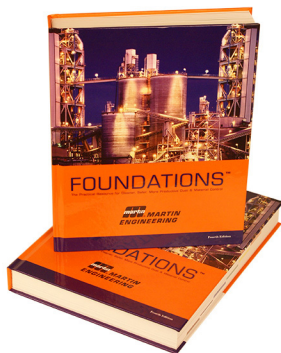
Label P/N 23395

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

Notes

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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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