



Martin® QC1™ Cleaner PD

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***Operator's Manual
M3798***

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® QC1™ Cleaner PD combines effective removal of carryback with “quick-change” one-pin replacement of a long-lasting, one-piece blade. To introduce product back into the product flow, the Martin® QC1™ Cleaner PD is installed on the face of the head pulley. On a dual-cleaner system, the 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, the Secondary Cleaner is installed alone. 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, a Martin® Inspection Door should be installed. Martin® Inspection Doors are available from Martin Engineering or a representative.

Belt cleaner blades

Martin® QC1™ Cleaner PD Blades are available in five different materials (see Table I for specifications). Only standard (orange) Martin® QC1™ Cleaner PD 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-IC-95/1, MSHA-IC-95/7).

Martin® High-Performance Urethanes

Martin Engineering is the leader in the development of high-performance urethanes for specialized applications. These color-coded urethanes can be supplied in blades for any Martin® Pre-Cleaner, as well as pre-cleaners from other manufacturers.

To specify high-performance urethane, add the appropriate suffix to the part number of the cleaner assembly or replacement blade.

References

The following documents are referenced in this manual:

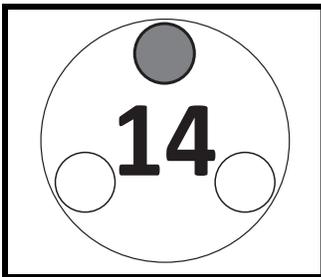
- American National Standards Institute (ANSI) z244.1-1982, *American National Standard for Personnel Protection - Lockout/Tagout of Energy Sources - Minimum Safety Requirements*, American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018.
- Federal Register, Volume 54, Number 169, 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.

Table I. Martin® QC1™ Cleaner PD 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 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.



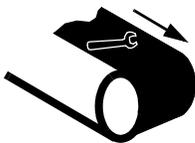
⚠ DANGER

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.

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

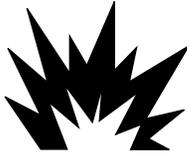
Before installing equipment, turn off and lock out/ tag out all energy sources to the conveyor and conveyor accessories according to ANSI standards. Failure to do so could result in serious injury or death.

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 and Tensioner

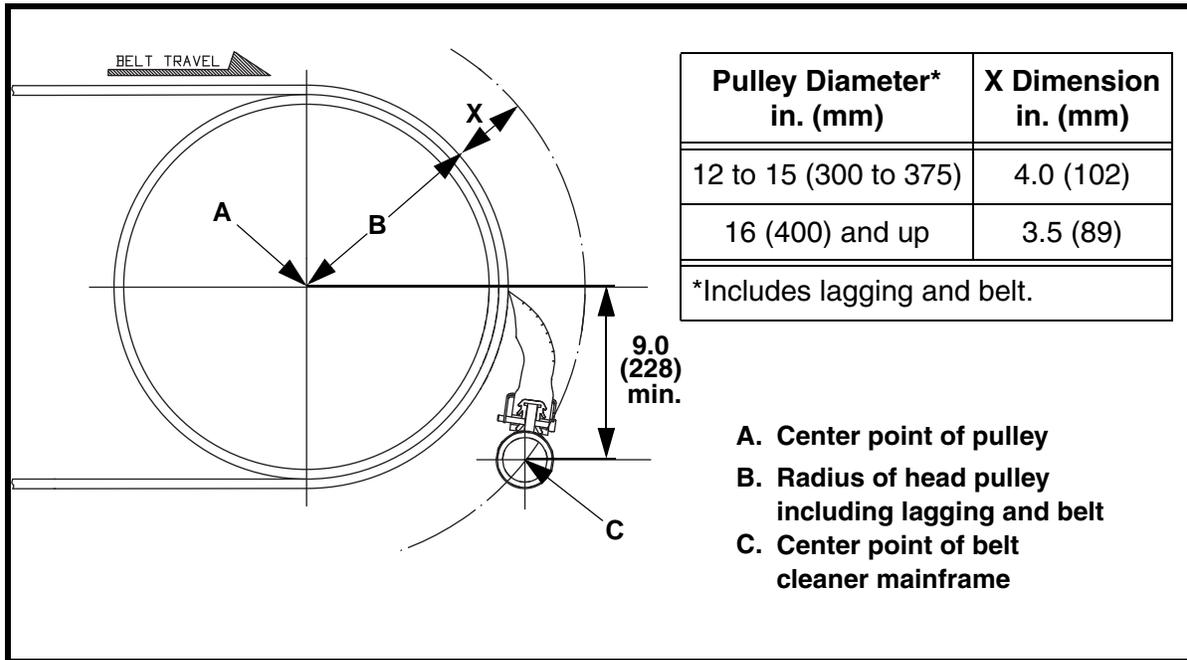


Figure 1. Belt Cleaner Mainframe Location

Finding center point of belt cleaner mainframe

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 dimension X from the Table in Figure 1.
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 from pulley's horizontal centerline the distance shown in Figure 1 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. Make sure blade tip is at or below pulley's horizontal centerline.
6. Repeat steps 1 through 5 for far side chute wall.
7. Using mounting plate as template, mark location of holes for belt cleaner mounting plates on both sides of chute.
8. Drill or cut hole for mainframe and four 9/16-in. (14-mm) holes for screws in both operator side and far side chute walls. Remove burrs and sharp edges.

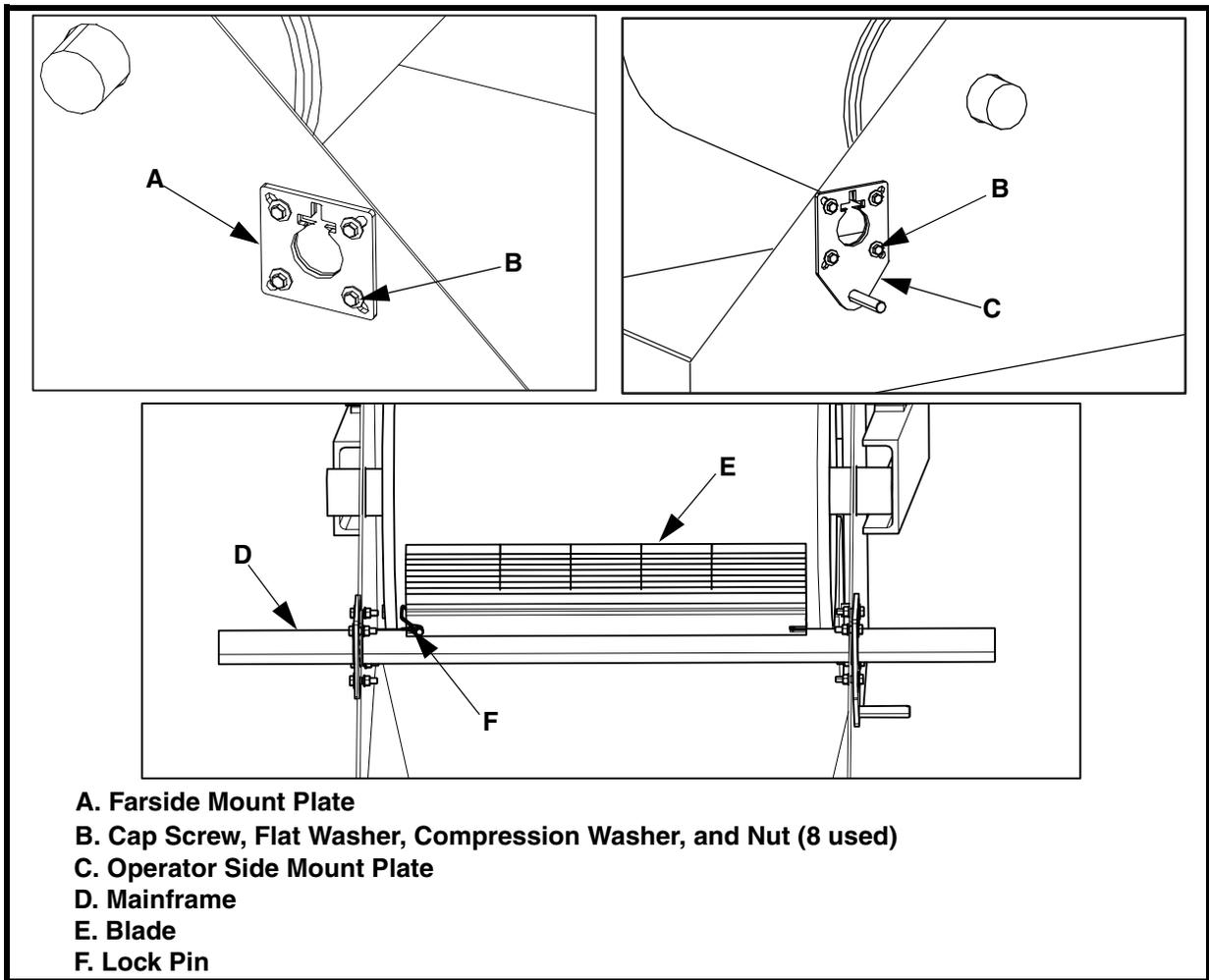


Figure 2. Mounting Plate and Mainframe Installation

NOTE

***Belt Cleaner and
Martin® Spring
Tensioner
Installation***

Tensioner may be bolted or welded to chute wall. Martin Engineering recommends bolting for ease of maintenance and accessibility.

1. Install mount plates (A and C) onto chute wall with cap screws, flat washers, compression washers and nuts (B).
2. If using Martin® Inspection Door, install according to *Martin® Inspection Door Operator's Manual*, P/N M3891.
3. Remove lock pin (F) from end of blade (E).
4. Remove blade from mainframe. Make sure lock pin remains attached to mainframe.
5. Slide mainframe (D) through mounting plates and into position.
6. Reinstall blade and lock pin.
7. Center blade on belt and make sure mainframe is parallel to belt.

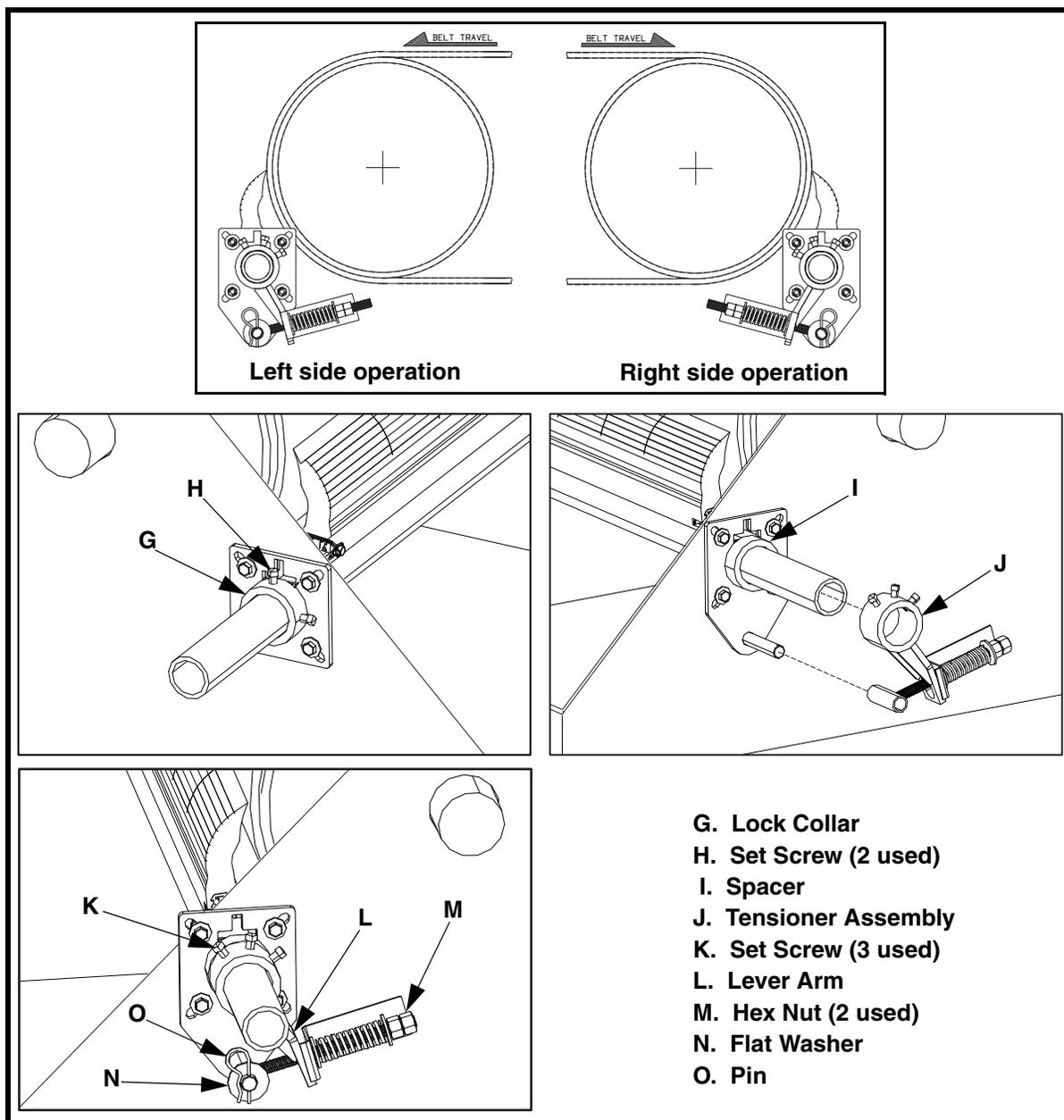


Figure 3. Martin® Spring Tensioner Installation

8. Determine the direction to install the tensioner on the mount plate depending on the belt direction. Then install the tensioner as required for your application.
9. Install lock collar (G) on far side of mainframe and tighten set screws (H).
10. Install spacer (I) on mainframe.
11. Install tensioner assembly (J) on mainframe and mounting plate.
12. Install washer (N) and cotter pin (O).
13. Make sure proper spring is installed for the application. The green spring should be used for belt widths 24–48 in. and the purple spring should be used for belt widths 54–84 in. (See Table IV).
14. Loosen nuts (M) to the end of the threaded rod.

15. Push blades tight against conveyor belt while holding lever arm (L) against spring and tighten three set screws (K).
16. To tension the belt cleaner, turn the hex nuts (M) and compress spring until bottom of washer is aligned with correct belt width (inches) on label.
17. Lock the two nuts together to hold spring at proper tension.
18. Install cover over spring and tighten hose clamp.

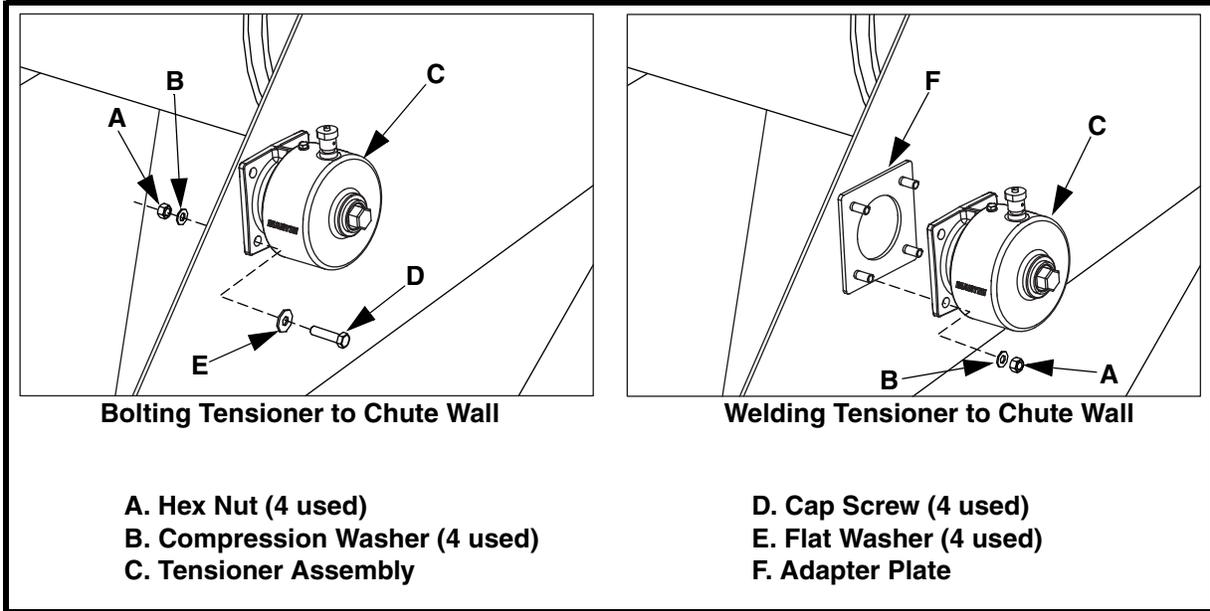


Figure 4. Martin® Twist Tensioner Installation

***Belt Cleaner and
 Martin® Twist
 Tensioner
 Installation***

1. If you will be bolting tensioner to chute wall, mount tensioner assembly (C) on chute wall using cap screws (D), flat washers (E), compression washers (B), and nuts (A).
2. If you will be welding tensioner to chute wall, do the following:
 - a. Position adapter plate (F) over hole and weld onto chute wall.
 - b. Mount tensioner assembly (C) on adapter plate (F) using compression washers (B) and nuts (A).

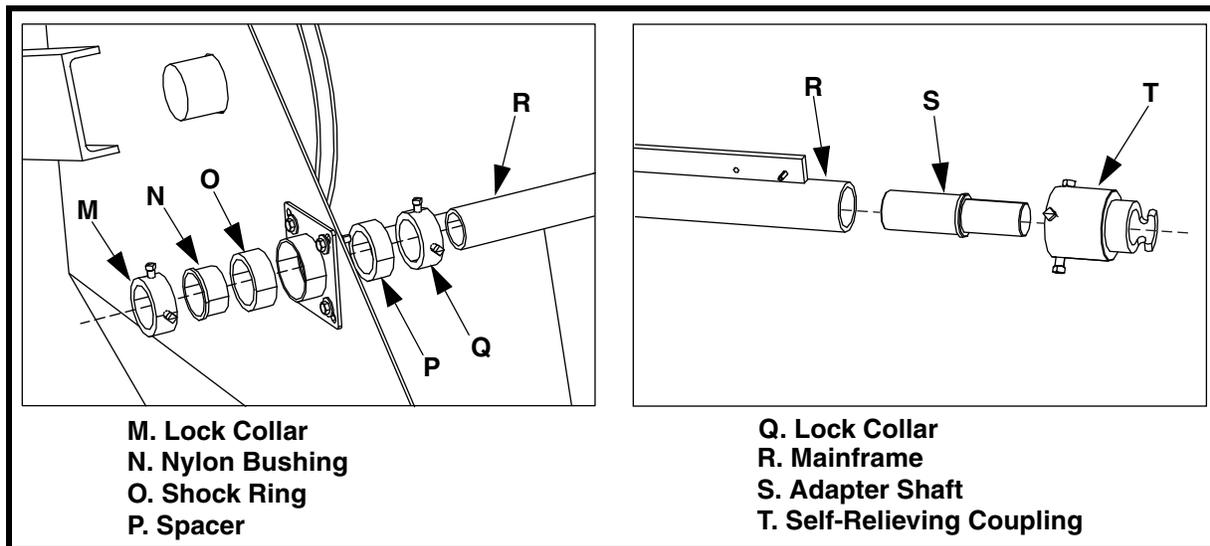


Figure 5. Mainframe Installation

3. Slide lock collar (M) and spacer (P) onto far side end of mainframe (R).
4. Slide mainframe through far side mount.
5. Install shock ring (O) and bushing (N) onto mainframe and into far side mount.
6. Slide lock collar (M) onto mainframe.
7. Slide adapter shaft (S) into operator side of mainframe.
8. Install self-relieving coupling (T) over shaft and onto mainframe.
9. Tighten set screws on coupling.
10. Reinstall blade onto mainframe.
11. Align self-relieving coupling with coupling in tensioner and slide mainframe into tensioner assembly. Make sure coupling is fully engaged in tensioner.
12. Make sure blades are centered on belt and mainframe is parallel to belt.
13. Slide lock collar (Q) against spacer (P) and lock collar (M) against nylon bushing (N). Tighten two square head set screws on each lock collar.

⚠ DANGER

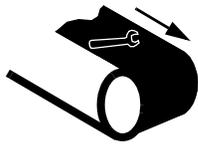
Ensure that ratchet adjusting knob is engaged allowing cleaner to rotate into head pulley only. If ratchet adjusting knob is not engaged, mainframe will rotate freely. Unsafe practices while ratchet adjusting knob is not engaged could result in personal injury or death.

14. Engage ratchet adjusting knob so cleaner will rotate into head pulley only.
15. Turn tensioning gear toward head pulley until you feel resistance of blades against belt. The ratchet mechanism will allow mainframe to rotate one direction only. If tensioning gear will not turn, pull out ratchet adjusting knob, turn it 180°, and release.
16. Turn tensioning gear until you feel resistance of blades against belt. Refer to *Martin® Twist Tensioner Operator's Manual*, P/N M3837 for installation and tensioning instructions or *Martin® Twist Tensioner Label*, P/N 33383 on tensioner.

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.”

Weekly Maintenance

NOTE

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



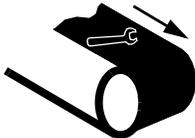
⚠ DANGER

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 installation 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.
✓ Blades are centered on belt.

Part Numbers

This section provides product names and corresponding part numbers for Martin® QC1™ Cleaners and related equipment. Please reference part numbers when ordering parts:

***Martin® QC1™
Cleaner PD***

Martin® QC1™ Cleaner PD Mainframe Assembly:
P/N 38556-XXXXXXXXXX. See Figure 6.

***Recommended
Tensioners***

Belts 24 to 48 in. wide:

Martin® Spring Tensioner: P/N 38555-1.

Martin® Twist Tensioner: P/N 38554.

Belts 54 to 84 in. wide:

Martin® Spring Tensioner: P/N 38555-2.

Martin® Twist Dual Tensioners: P/N 38554-2.

***Operator's
manuals***

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

Martin® Inspection Door Operator's Manual: P/N M3891.

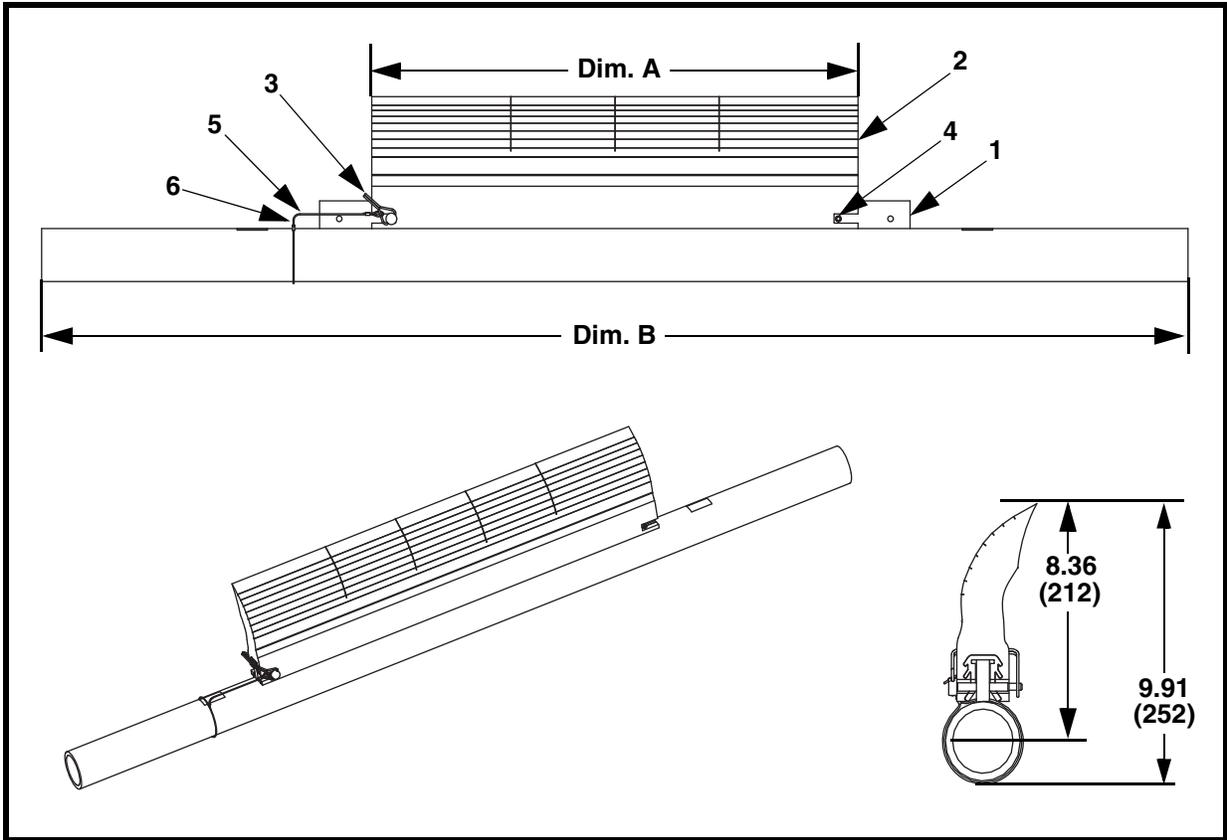


Figure 6. Martin® QC1™ Cleaner PD Assembly, P/N 38556-XXXXXXXXXX

Item	Description	Part No.	Qty.
1	Mainframe Weldment	Table III	1
2	Blade	Table III	1
3	Pin Wire Lock 1/4 x 2-1/2	32772	1
4	Pin Slotted Spring 5/16 x 2 ZP	32774	1
5	Cable Aircraft 1/16 Dia.	102249	2.0
6	Cable Clip 1/16	28112	2
7 (NS)	Label Martin® Products	38048	2
8 (NS)	Label Conveyor Products Warning	23395	2
9 (NS)	Manual Operator's	M3798	1
10 (NS)	Martin® Spring Tensioner Assembly	Table III	1
11 (NS)	Martin® Twist Tensioner Assembly	Table III	1

NS = Not Shown

Table III. Part Numbers and Dimensions for Martin® QC1™ Cleaner PD Assembly

Standard Blade Assy. Part No.	Dim. A	Dim. B	Item No. 1	Item No. 2	Item No. 10	Item No. 11	Weight (lbs.) w/o Tensioner
38556-18XX10XXX	10 (254)	48(1219)	38551-18	35381-18XX10XX	38554	38555-1	38.7
38556-18XX12XXX	12 (305)	48 (1219)	38551-18	35381-18XX12XX	38554	38555-1	40.5
38556-18XX16XXX	16 (406)	48 (1219)	38551-18	35381-18XX16XX	38554	38555-1	42.6
38556-24XX16XXX	16 (406)	54 (1372)	38551-24	35381-24XX16XX	38554	38555-1	47.9
38556-24XX22XXX	22 (559)	54 (1372)	38551-24	35381-24XX22XX	38554	38555-1	51.0
38556-30XX22XXX	22 (559)	60 (1524)	38551-30	35381-30XX22XX	38554	38555-1	56.1
38556-30XX28XXX	28 (711)	60 (1524)	38551-30	35381-30XX28XX	38554	38555-1	59.3
38556-36XX28XXX	28 (711)	66 (1676)	38551-36	35381-36XX28XX	38554	38555-1	64.4
38556-36XX34XXX	34 (864)	66 (1676)	38551-36	35381-36XX34XX	38554	38555-1	67.6
38556-42XX34XXX	34 (864)	72 (1829)	38551-42	35381-42XX34XX	38554	38555-1	72.7
38556-42XX40XXX	40 (1016)	72 (1829)	38551-42	35381-42XX40XX	38554	38555-1	75.9
38556-48XX40XXX	40 (1016)	78 (1981)	38551-48	35381-48XX40XX	38554	38555-1	81.0
38556-48XX46XXX	46 (1168)	78 (1981)	38551-48	35381-48XX46XX	38554	38555-1	84.2
38556-54XX46XXX	46 (1168)	84 (2134)	38551-54	35381-54XX46XX	38554-2	38555-2	89.3
38556-54XX52XXX	52 (1321)	84 (2134)	38551-54	35381-54XX52XX	38554-2	38555-2	92.4
38556-60XX52XXX	52 (1321)	90 (2286)	38551-60	35381-60XX52XX	38554-2	38555-2	97.6
38556-60XX58XXX	58 (1473)	90 (2286)	38551-60	35381-60XX58XX	38554-2	38555-2	100.7
38556-66XX58XXX	58 (1473)	96 (2438)	38551-66	35381-66XX58XX	38554-2	38555-2	105.8
38556-66XX64XXX	64 (1626)	96 (2438)	38551-66	35381-66XX64XX	38554-2	38555-2	109.0
38556-72XX64XXX	64 (1626)	102 (2591)	38551-72	35381-72XX64XX	38554-2	38555-2	114.1
38556-72XX70XXX	70 (1778)	102 (2591)	38551-72	35381-72XX70XX	38554-2	38555-2	117.3
38556-78XX70XXX	70 (1778)	108 (2743)	38551-78	35381-78XX70XX	38554-2	38555-2	122.4
38556-78XX76XXX	76 (1930)	108 (2743)	38551-78	35381-78XX76XX	38554-2	38555-2	125.6
38556-84XX76XXX	76 (1930)	114 (2896)	38551-84	35381-84XX76XX	38554-2	38555-2	130.7
38556-84XX82XXX	82 (2083)	114 (2896)	38551-84	35381-84XX82XX	38554-2	38555-2	133.8

Notes:

All dimensions are given in inches (mm). All dimensions are for reference only. The first XX indicates belt width. The third X indicates a blade with (0) or without (1) slits. The next X indicates a blade with (0) or without (1) segments. The next XX indicates blade coverage. The next XX indicates blade color and the last X indicates if a tensioner is included.

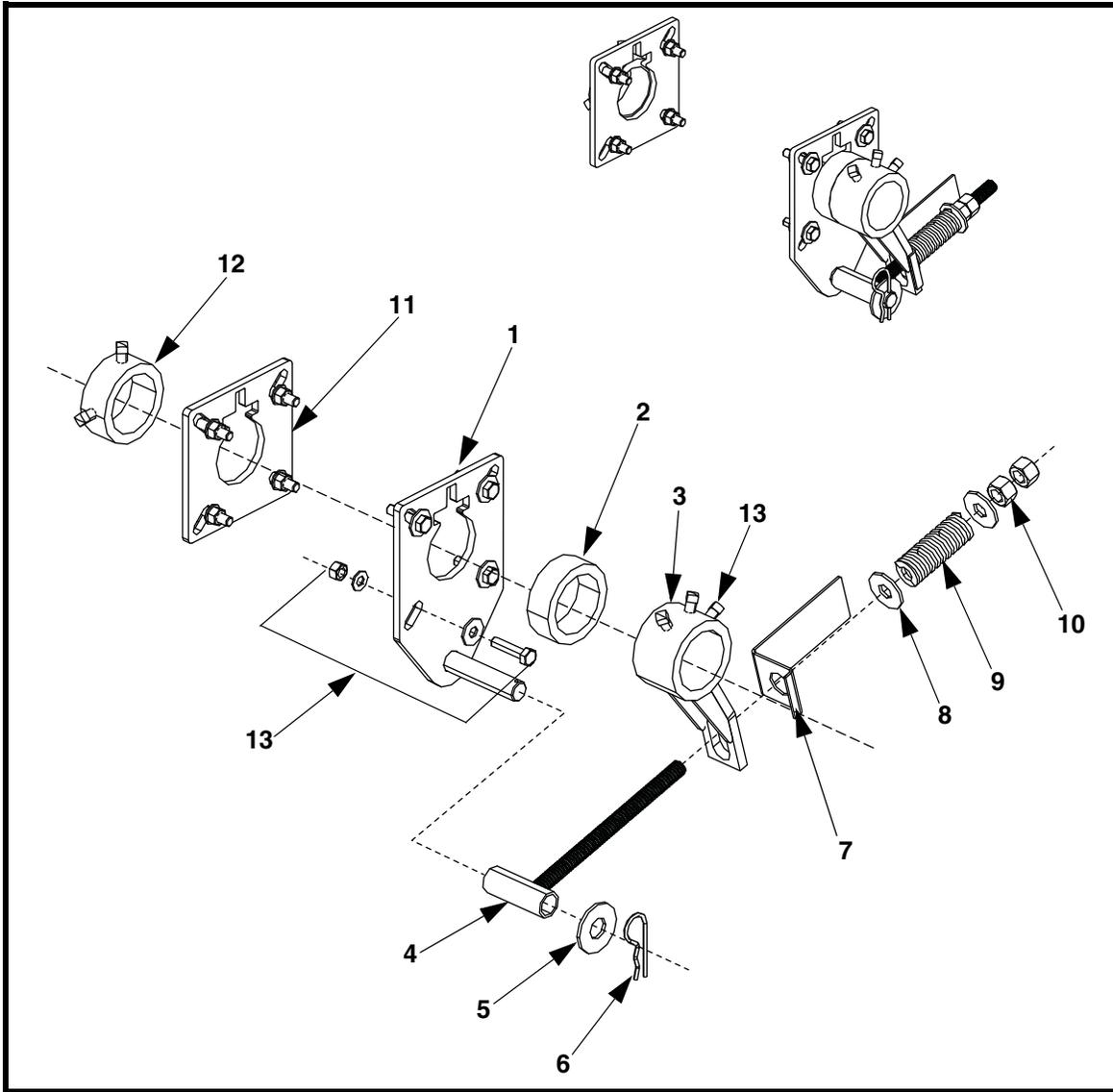


Figure 7. Martin® Spring Tensioner, P/N 38555-X

Item	Description	Part No.	Qty.
1	Mount Plate Weldment	38559	1
2	Spacer Tube	38560	1
3	Lever Arm Weldment	37855	1
4	Rod Weldment w/SS Rod	38176	1
5	Washer Flat 1 Regular ZP	32315	1
6	Hairpin Cotter .18 Dia. x 3.56 ZP	35171	1
7	Tensioning Gauge	36051	1
8	Washer Flat 3/4 Wide ZP	20164	2
9	Medium-Duty Spring	Table IV	1
10	Nut Hex 3/4-6 ACME ZP	38170	2
11	Flange Plate	38557	1
12	Locking Collar	32341	1
13	Mounting Hardware Kit	35284	1
14 (NS)	Label Martin Products	32238	1
15 (NS)	Label Pinch Point Warning	30528	1
16 (NS)	Label Conveyor Products Warning	23395	2
17 (NS)	Label Spring Tensioner	38561	1
18 (NS)	Manual Operator's	M3798	1
19 (NS)	Protector Pinch Point	30446-03	1

NS = Not Shown

Figure 7. Martin® Spring Tensioner, P/N 38555-X

Table IV. Martin® Spring Tensioner Part Numbers

Part No.	Belt Width in. (mm)		Part No. Item 9	Color
38555-1	24 to 48	(610 to 1219)	32244-M	Green
38555-2	54 to 84	(1372 to 2134)	32244-MH	Purple

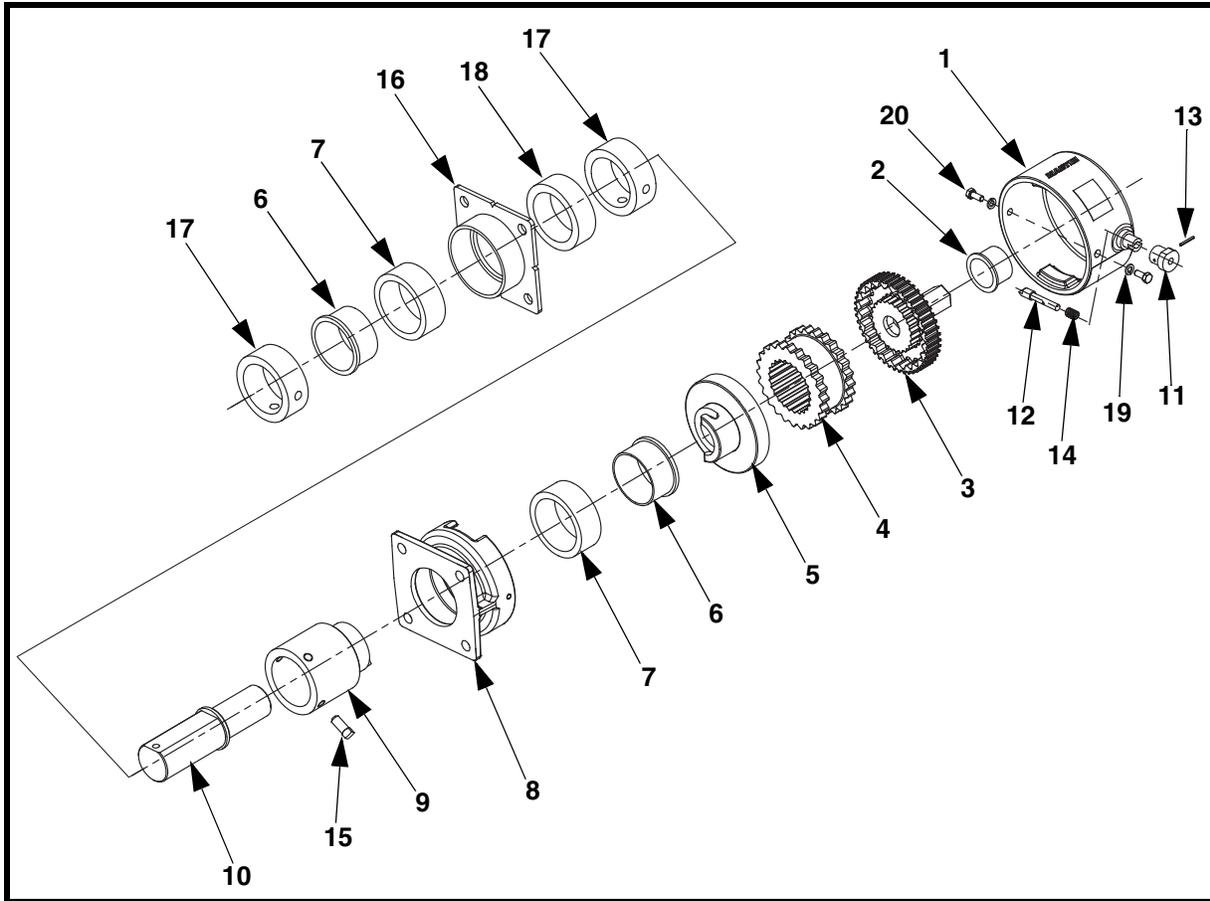


Figure 8. Martin® Twist Tensioner, P/N 38554

Item	Description	Part No.	Qty. P/N 38554	Qty. P/N 38554-2
1	Machined Cover	38712	1	2
2	Nylon Bushing with taper	33674	1	2
3	Tensioning Gear	33672	1	2
4	Sleeve	31398	1	2
5	Locking Gear	33673	1	2
6	Nylon Bushing	33675	2	2
7	Shock Ring	33681	2	2
8	Machined Base	38711	1	2
9	Coupling Self-Relieving	38562	1	2
10	Guide Shaft	38563	1	2
11	Ratchet Adjusting Knob	33570-TT	1	2
12	Plunger	33572	1	2
13	Pin Spring 1/8 x 1 ZP	33574	1	2
14	Spring Compression	33573	1	2
15	Mounting Hardware Kit	35284	1	1
16	Flange Plate Weldment	32496	1	—
17	Locking Collar	32341	2	—
18	Spacer Tube	38560	1	—
19	Washer Lock Helical Spring 5/16 ZP	M209	2	4
20	Screw HHC 5/16-18NC x 3/4 ZP	12250	2	4
21 (NS)	Label Pinch Point Warning	30528	1	2
22 (NS)	Label Martin® Twist Tensioner	33383	1	2
23 (NS)	Label Conveyor Products Warning	23395	2	2
24 (NS)	Manual Operator's	M3798	1	1

NS = Not Shown

Figure 8. Martin® Twist Tensioner, P/N 38554

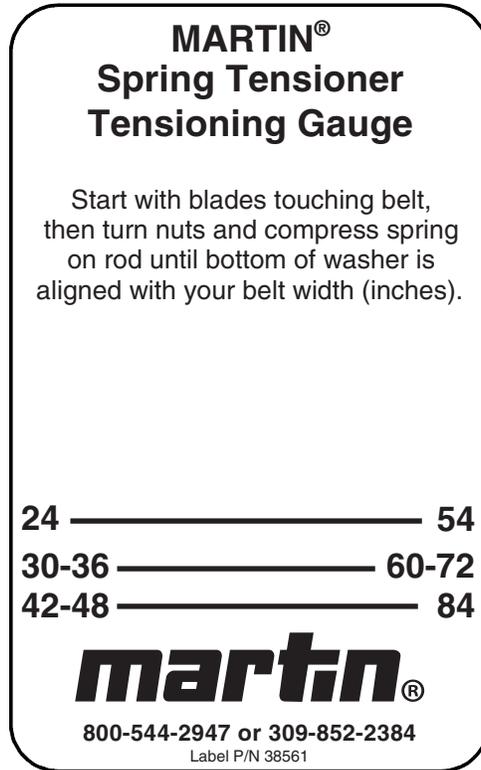


Figure 9. Martin® Spring Tensioner Label, P/N 38561



Figure 10. Pinch Point Warning Label, P/N 30528

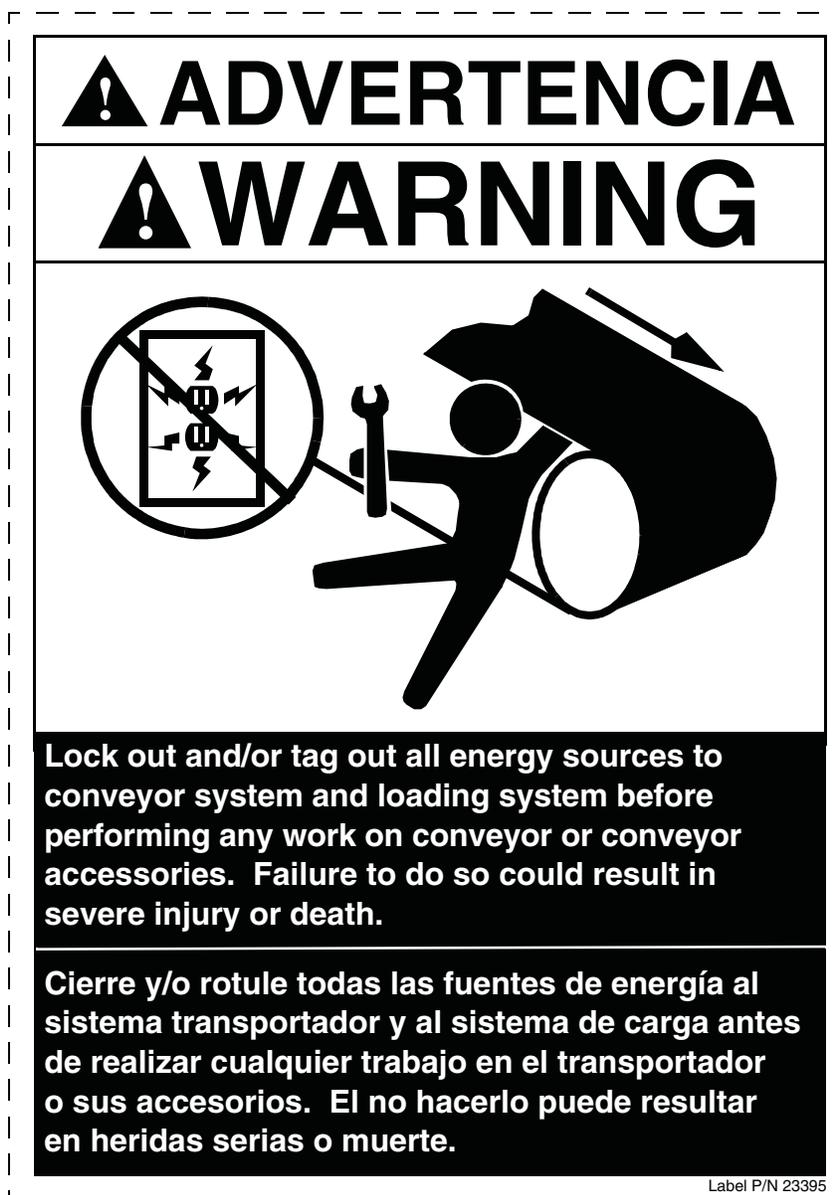


Figure 11. Conveyor Products Warning Label, P/N 23395

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