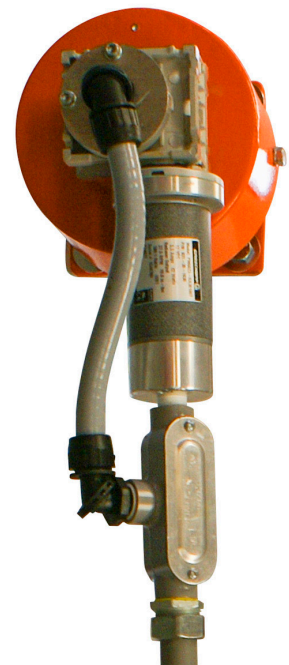


martin®

Martin® N2 Twist Tensioner



***Operator's Manual
M4107***

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 and Tables	ii
Introduction	1
General	1
Installations without chutework	1
Belt cleaner inspection access	1
References	1
Materials required	1
Data Policy	2
Safety	3
Before Installing Tensioner	4
Installing load cell mounting plate	6
Changing motor position	7
Installing Tensioner and Belt Cleaner	8
Installing mounting plates	8
Cutting belt cleaner mainframe	10
Installing tensioner and belt cleaner	11
Mounting control panel	12
Wiring control panel	13
Operating Tensioner	15
Changing belt cleaner blade	16
After Installing Tensioner and Belt Cleaner	17
Maintenance	18
Troubleshooting	19
Part Numbers	21

List of Figures

Figure	Title	Page
1	Determining Tensioner Orientation	5
2	Load Cell Mounting Plate Installation	6
3	Motor Orientation	7
4	Locating Mounting Plates	8
5	Martin® N2 Twist Tensioner Assembly	9
6	Cutting Belt Cleaner Mainframe	10
7	Installing Martin® N2 Twist Tensioner	11
8	Tensioner Electrical Connections	13
9	Control Panel Electrical Connections	14
10	Control Panel Push Button Operations	16
11	Martin® N2 Twist Tensioner Assembly, P/N EC1TQA01012S	22
12	Martin® N2 Twist Tensioner Assembly, P/N EC1TQP04012S	24
13	Martin® N2 Twist Tensioner Dimensions	26

List of Tables

Table	Title	Page
I	Martin® N2 Twist Tensioner Assembly Part Numbers	23

Introduction

General

The Martin® N2 Twist Tensioner supplies consistent pressure against the conveyor belt regardless of blade wear. Once the tensioner has been rotated into position, it maintains effective cleaning through the entire life of the blade. The Martin® N2 Twist Tensioner can be monitored and controlled using the Martin® Smart Device Manager App.

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.

The Martin® Hanger Mount, P/N 27382, can be used for installations without chutework.

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 your 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® Smart Device Manager Operator's Manual*, P/N M4114.

Materials required

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

Data Policy

The Martin® N2 Twist Tensioner (“Product”) automatically collects and transmits to Martin Engineering (“we,” “us,” and “our”) information related to the Product and its operation, including data on consumable components, process parameters such as Product settings and configurations, and environment such as temperature and operating times and durations (the “Information”).

Martin Engineering uses the Information to:

- provide services to you, including identifying and providing preventative maintenance such as the replacement of consumable components;
- send communications we believe may be of interest to you;
- research and improve our products and services, including by aggregating and combining the Information with comparable information obtained from other Product owners;
- provide information regarding the Product (such as average replacement time for consumable components) to potential Product purchasers, provided that such information shall be provided only in aggregated, de-identified form; and
- share with select third parties in connection with any of the purposes above

Martin Engineering may also disclose any Information if: (1) the disclosure is necessary or useful to our provision of services; (2) we believe in good faith that disclosure is necessary to protect our rights, interests, or property; (3) we are acting in good faith to protect the safety of the Product owner or operator or the safety of others, to investigate fraud, or to respond to a government request; (4) we believe in good faith the disclosure is required by law, such as to comply with a subpoena, search warrant, court order, or similar legal or administrative process; and (5) a third party purchases or otherwise acquires our company, in which case the Information will likely be among the assets transferred.

By purchasing or using the Product, you consent to the collection and use of the Information by Martin Engineering. From time to time, we may use the Information for new, unanticipated uses not previously disclosed in this Data Policy. If our information practices change materially at some time in the future, we will post the policy changes to our website so you always have information regarding what information we collect, how we use it, and under what circumstances we disclose it. By continuing to use the Product after such changes, you consent to the changes in the Data Policy.

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



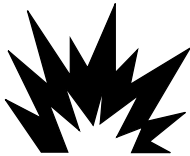
⚠ DANGER

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 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.



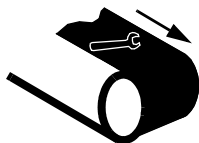
⚠ DANGER

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.

Before Installing Tensioner

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



⚠ DANGER

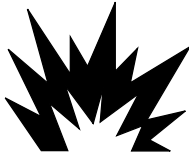
Before installing, servicing, or adjusting conveyor equipment, turn off and lockout / tagout / blockout / testout all energy sources to the conveyor and conveyor accessories according to ANSI standards. Failure to do so could result in serious injury or death.

4. Turn off and lockout / tagout / blockout / testout 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.



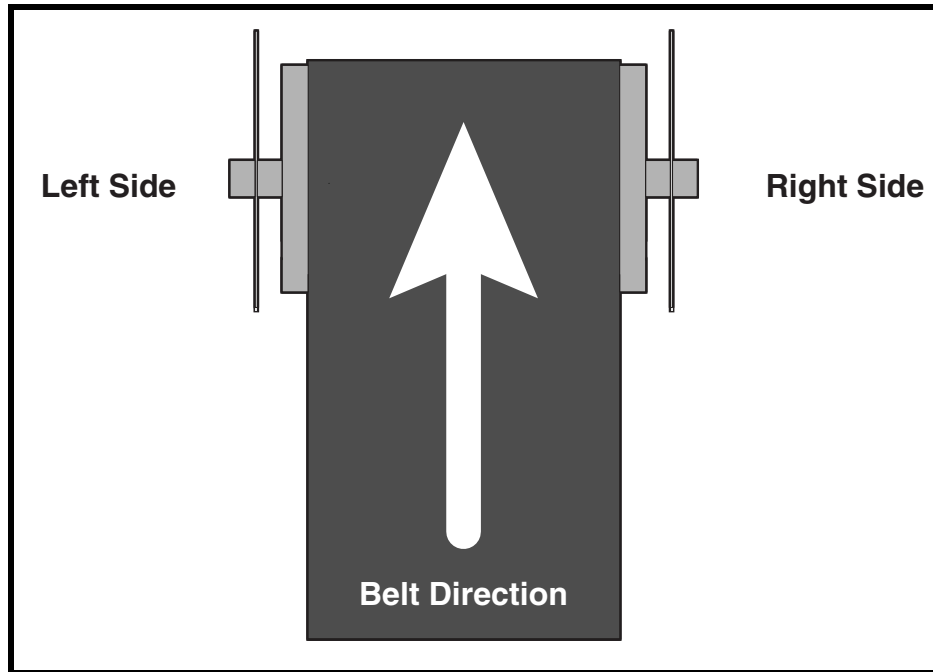


Figure 1. Determining Tensioner Orientation

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.
7. Right hand side or left hand side is determined by standing at the tail pulley and looking toward the head pulley as shown in Figure 1.

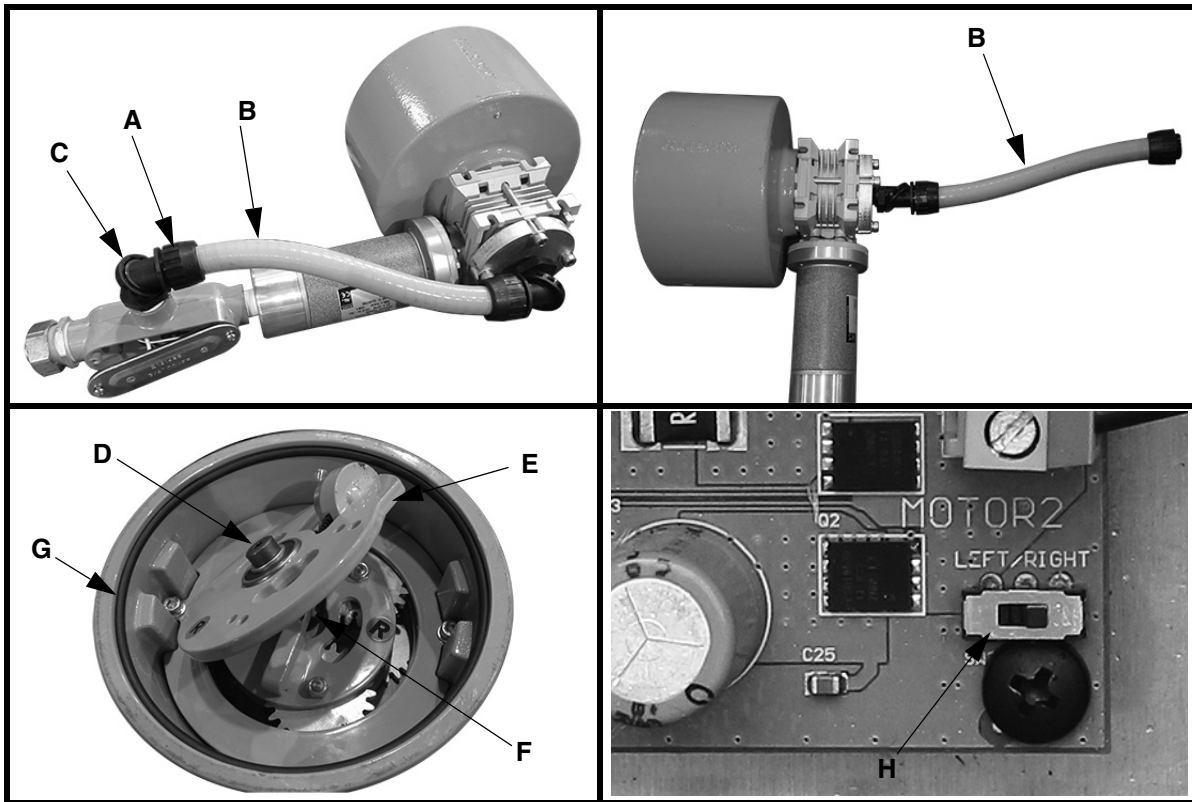


Figure 2. Load Cell Mounting Plate Installation

Installing load cell mounting plate

1. Loosen nut (A) and remove conduit (B) from fitting (C). Rotate conduit 90 degrees.
2. Orient load cell mounting plate (E) according to tensioner location. For right hand mounted tensioner, make sure label with "R" is facing up. For left hand mounted tensioner, make sure label with "L" is facing up
3. Route wire (F) into center hole of tensioner. Make sure wire is started on the same side as corresponding label. For a right hand mounted tensioner, route wire on same side as "R" label. For a left hand mounted tensioner, route wire on same side as "L" label. Route wire through conduit.
4. Apply Loctite to threads of screw (D) and install load cell mounting plate.
5. Apply grease to o-ring (G).
6. Install tensioner onto base plate. Make sure o-ring (G) maintains proper position.
7. Route wire through fitting (C). Rotate conduit (B) and install into fitting (C).
8. Tighten nut (A).
9. Move switch (H), in control panel, to position corresponding with tensioner.

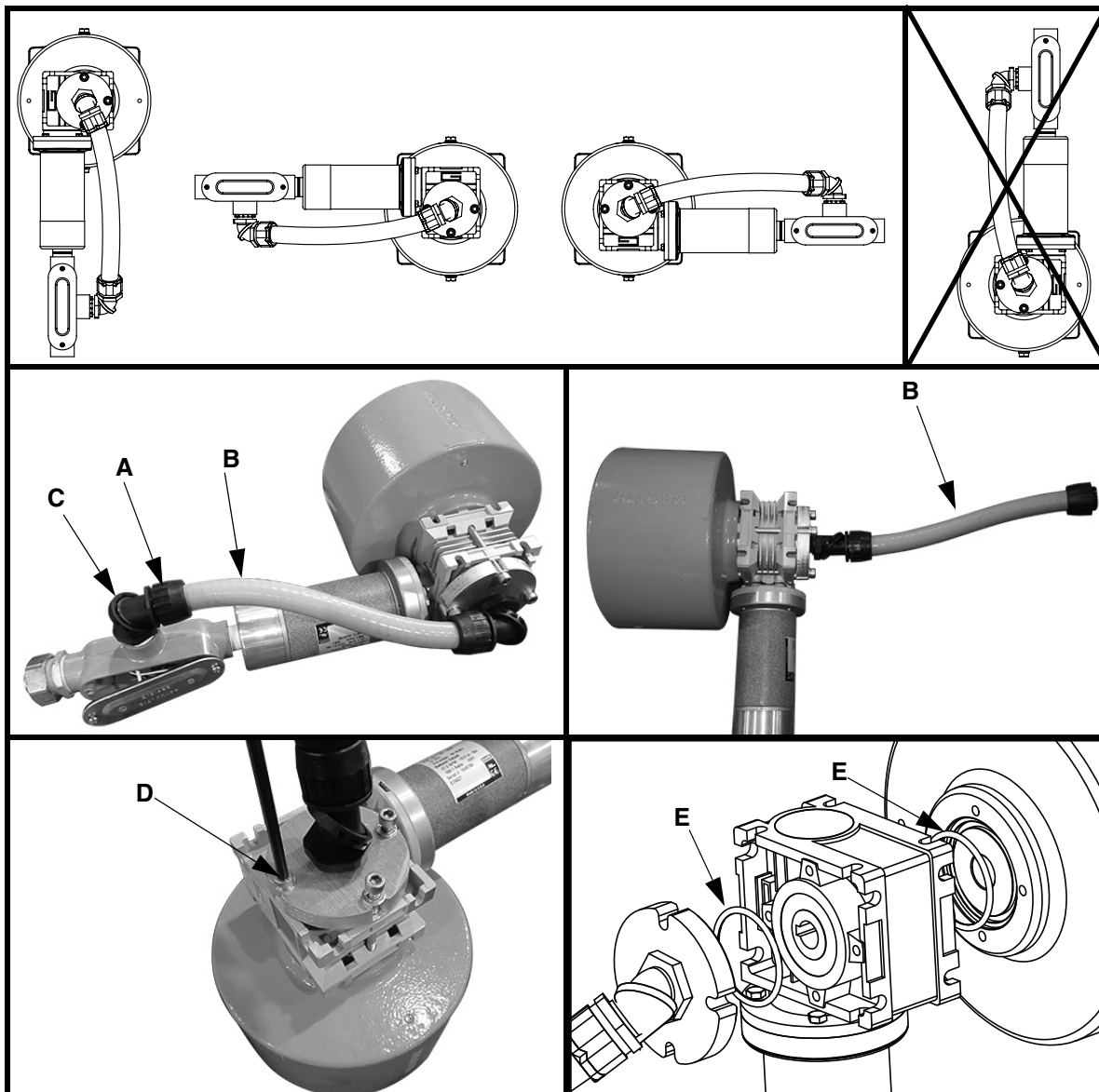


Figure 3. Motor Orientation

IMPORTANT

Changing motor position

The drive motor can be rotated to accommodate tensioner installation, but do not install motor in a vertical position with motor up. Moisture may enter motor causing damage.

1. Loosen nut (A) and remove conduit (B) from fitting (C). Rotate conduit 90 degrees.
2. Loosen and remove screws (D).
3. Rotate motor to desired position. Make sure o-rings (E) stay in position when rotating motor.
4. Install and tighten screws (D) to 10 ft-lbs (13.5 Nm).
5. Rotate conduit (B) and install into fitting (C).
6. Tighten nut (A).

Installing Tensioner and Belt Cleaner

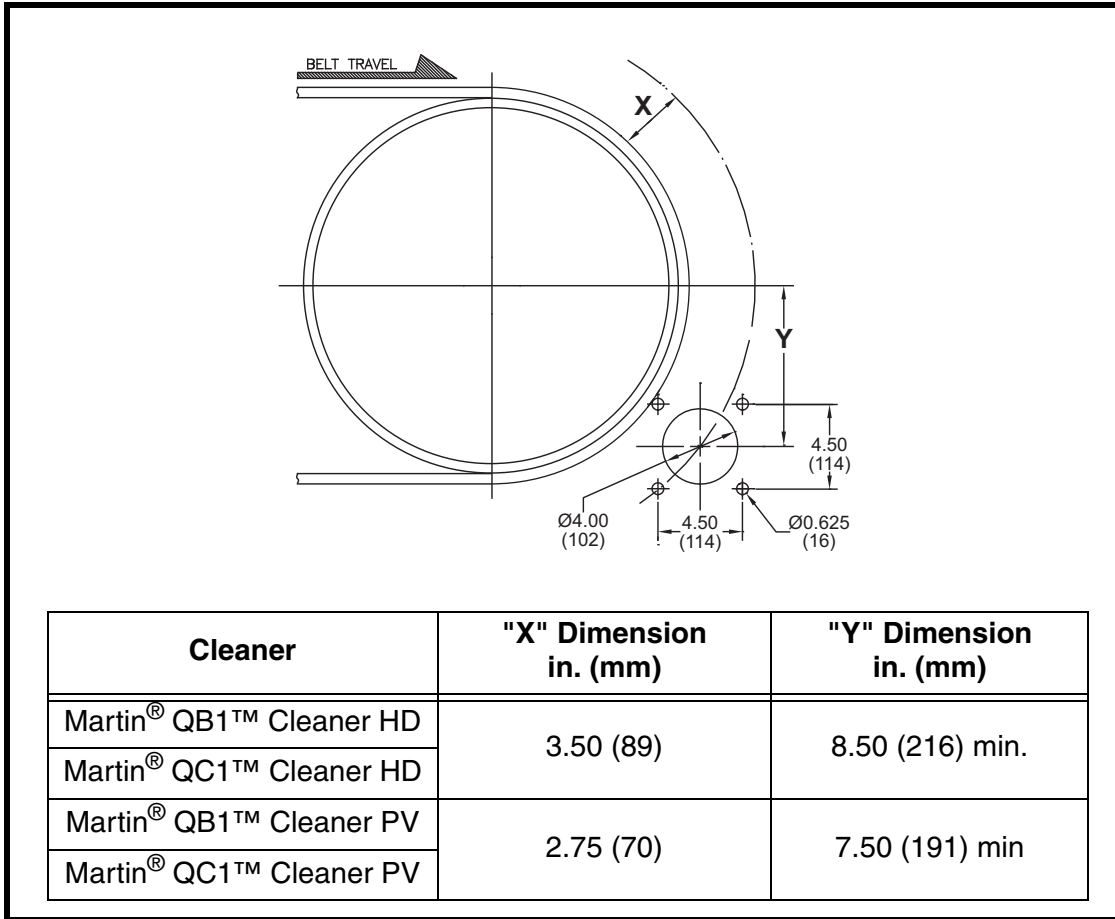


Figure 4. Locating Mounting Plates

Installing mounting plates

1. Mark location of holes for belt cleaner mounting plates on chute walls according to Figure 4. Use flange plate weldment (H, Figure 5) as template.
2. Position mounting plates parallel to pulley's horizontal center line.

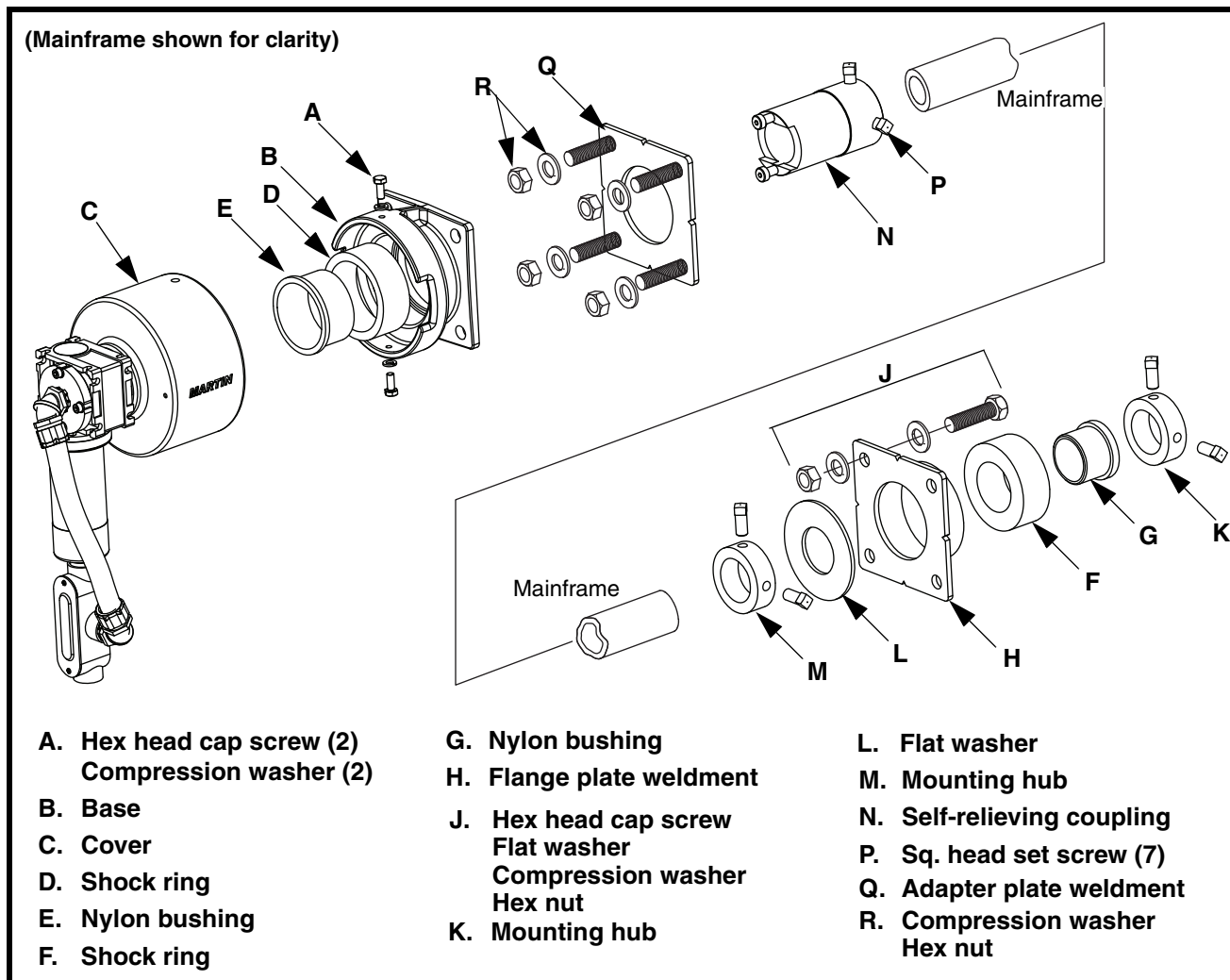


Figure 5. Martin® N2 Twist Tensioner Assembly

3. 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 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.
 - (2) Install tensioner assembly and mounting plate onto wall with cap screws, flat washers, compression washers, and nuts (J, Figure 5).
 - b. If welding 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.
 - (2) Position adapter plate weldment (Q) over hole on operator side and weld onto chute wall.
 - (3) Position mounting flange (H) over hole on far side and weld onto chute wall.
 - (4) Install tensioner assembly on adapter plate weldment (Q) and fasten with compression washers and nuts (R).

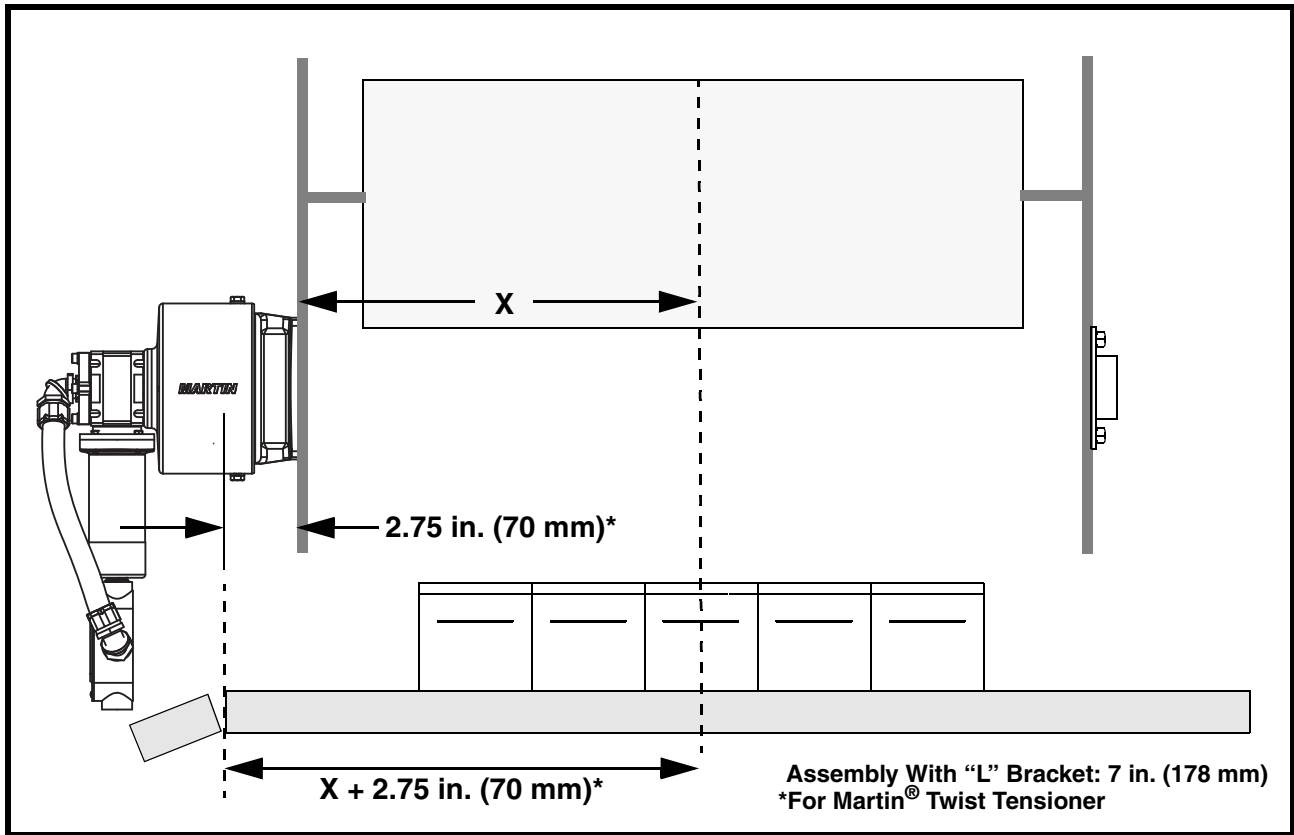


Figure 6. Cutting Belt Cleaner Mainframe

Cutting belt cleaner mainframe

IMPORTANT

The procedure in this section is only for belt cleaners with one-piece mainframes. Do not cut three-piece telescoping mainframes.

1. See Figure 6. Measure from center of conveyor belt to outside of operator side chute wall (X).
2. Add 2.75 in. (70 mm) to the measurement in step 1. (If installing Martin® Twist Tensioner Assembly With “L” Bracket, add 7 in. [178 mm] to the measurement in step 1.)
3. Starting from center of belt cleaner mainframe, measure toward operator end of the mainframe the distance found in step 2: X + 2.75 in. (70 mm). (If installing Martin® Twist Tensioner Assembly With “L” Bracket: X + 7 in. [178 mm].)

WARNING

Before cutting mainframe with torch, remove plastic plugs from ends of mainframe. Cutting mainframe with plugs intact can cause paint fumes inside mainframe to ignite.

4. Cut belt cleaner mainframe. Remove burrs and sharp edges.

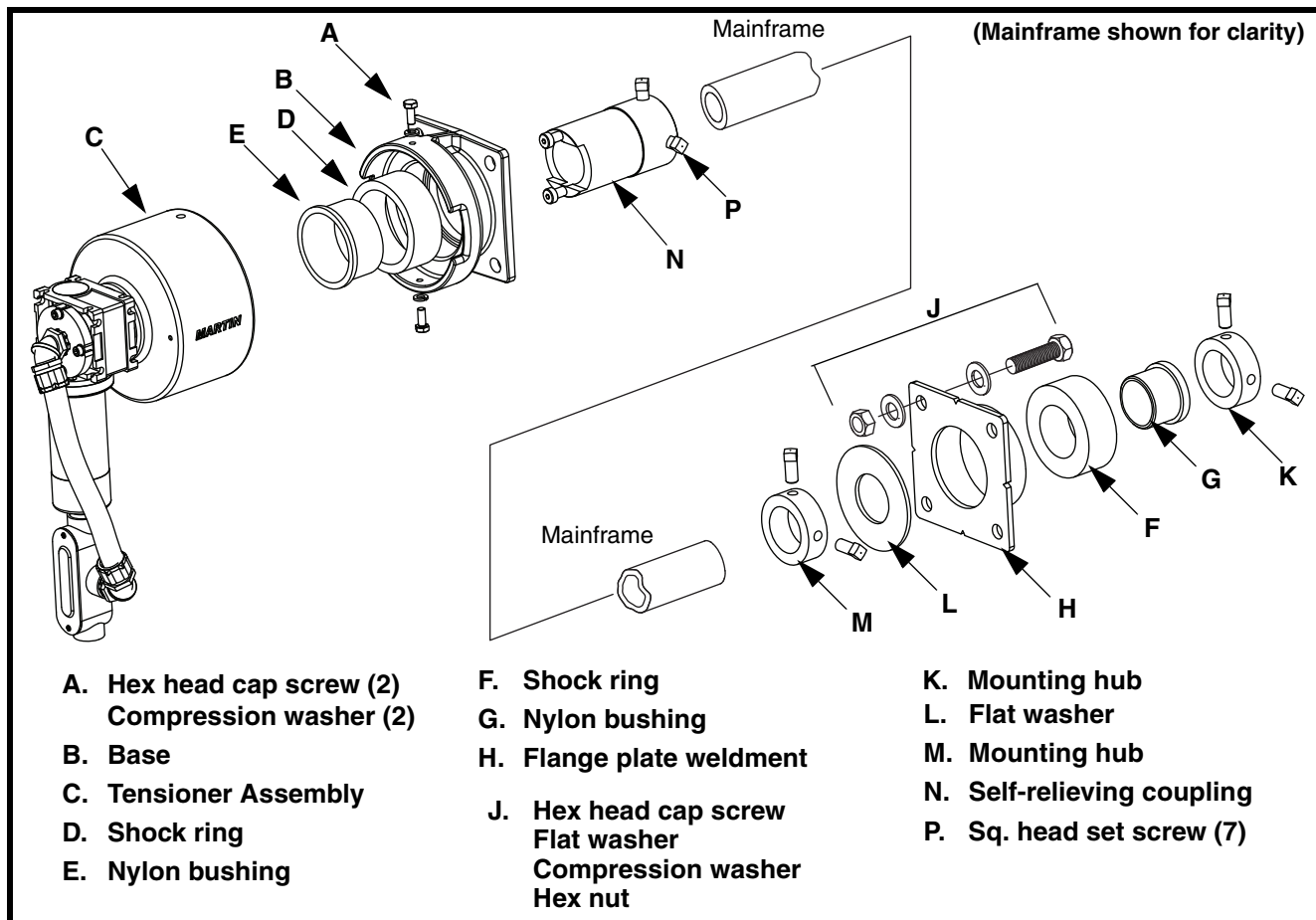


Figure 7. Installing Martin® N2 Twist Tensioner

Installing tensioner and belt cleaner

1. Slide mounting hub (M) and flat washer (L) onto far side end of belt cleaner mainframe. Insert far side end of mainframe through shock ring (F) and nylon bushing (G) in flange plate weldment (H). Slide mounting hub (K) onto far side end of mainframe.
2. Slide self-relieving coupling (N) onto operator side end of mainframe.
3. Insert operator side end of mainframe into shock ring (D) and nylon bushing (E) in base (B).
4. Install tensioner assembly (C) onto base (B) and install cap screws and washers (A).
5. Slide self-relieving coupling (N) into tensioner assembly and twist until the coupling fully engages. When coupling is fully engaged, mainframe should be able rotate approximately 45 degrees.
6. Adjust mainframe to center blades on belt.
7. Tighten three square head set screws (P) on self-relieving coupling to 40 ft-lbs (54 Nm).
8. Make sure blades are centered on belt and mainframe is parallel to belt.
9. Slide mounting hub (M) against flat washer (L) and mounting hub (K) against nylon bushing (G). Tighten two square head set screws (P) on each locking collar.
10. Refer to applicable belt cleaner operator’s manual to complete installation of belt cleaner.

Mounting control panel

⚠ WARNING

Before making any connections, lockout / tagout / blockout / testout electrical supply to controller according to ANSI standards (see “References”).

⚠ WARNING

All electrical work must be done to National Electrical Code (NEC) standards.

1. Determine location for control panel.

⚠ CAUTION

Do not mount power supply cabinet in area subject to shock, vibration, temperatures exceeding 130°F (55°C), or explosion. Damage to control panel circuitry could result.

2. Mount control panel onto wall with fasteners.

Wiring control panel

⚠ WARNING

Before making any connections, lockout / tagout / blockout / testout electrical supply according to ANSI standards (see “References”).

⚠ WARNING

All electrical work must be done to National Electrical Code (NEC) standards.

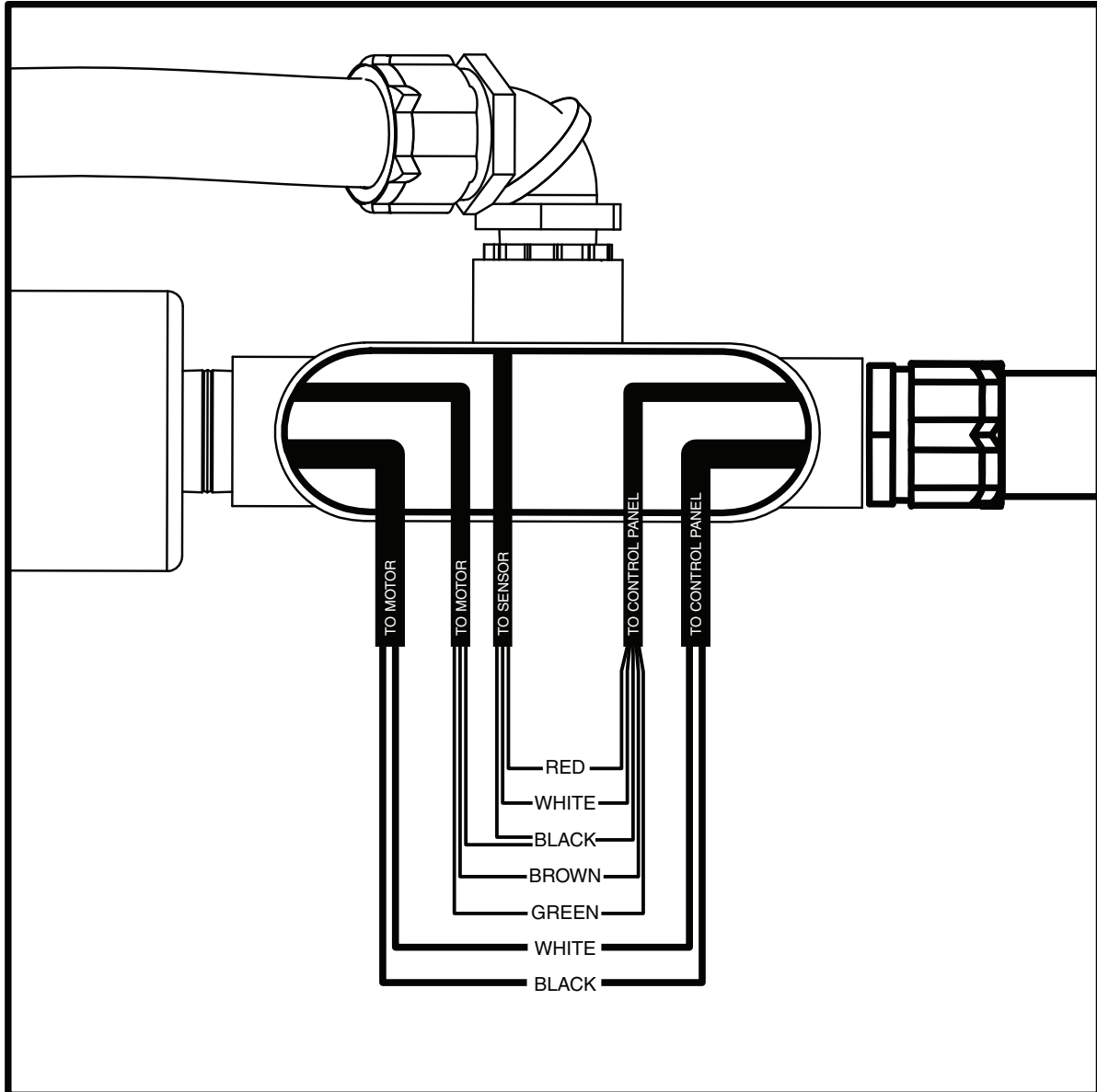


Figure 8. Tensioner Electrical Connections

1. Using electrical conduit and connectors, route power supply and sensor wires from control panel to tee on tensioner assembly.
2. Connect wires as shown in Figure 8 using supplied connectors.

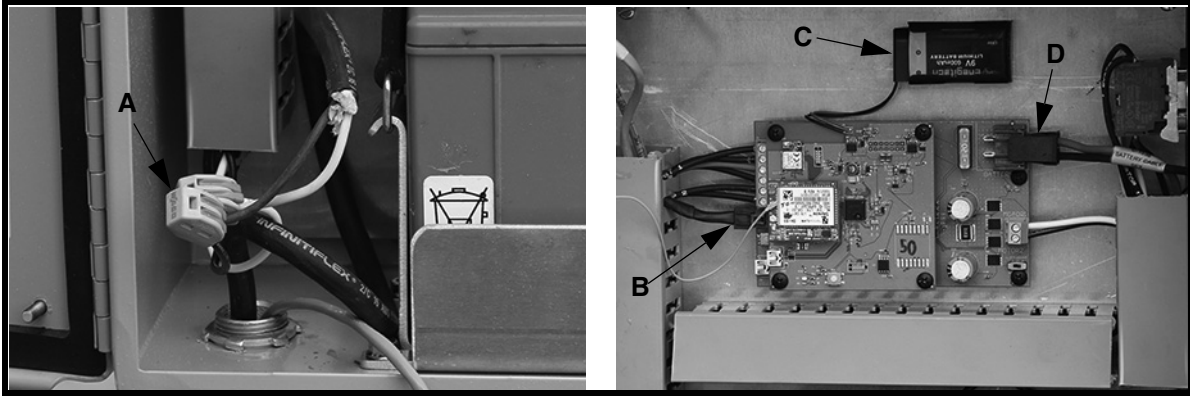


Figure 9. Control Panel Electrical Connections

3. Connect wires from motor to power supply wires in control panel using connectors (A).
 - a. Connect black wire to black wire.
 - b. Connect white wire to white wire.
4. Plug sensor cable (B) into connector on circuit board.
5. Install connector (C) onto 9 volt battery.
6. Install power supply cable (D) into connector on circuit board.

IMPORTANT

Do not retract blade from belt while belt is running. The blade may enter the material stream causing spillage and damage to cleaner and components.

IMPORTANT

After completing installation of tensioner, control panel and components, registration of the tensioner on the Martin[®] Smart Device Manager App must be completed to make the tensioner functional.

1. Download and install Martin[®] Smart Device Manager App to tablet, smart phone or other compatible device.
2. Refer to *Martin[®] Smart Device Manager Operator's Manual*, P/N M4114 to setup account and register conveyor on which tensioner is installed.
3. Conveyor registration requires the following information:
 - a. Conveyor Name
 - b. Belt Width
 - c. Head Pulley Diameter
 - d. Material being conveyed
 - e. Head Location (GPS location from app)
4. After the conveyor is registered, the correct tension for each application is calculated.
5. The tensioner can now be monitored and controlled using the Smart Device Manager App. The tensioner can also be controlled by using the push button on the control panel.

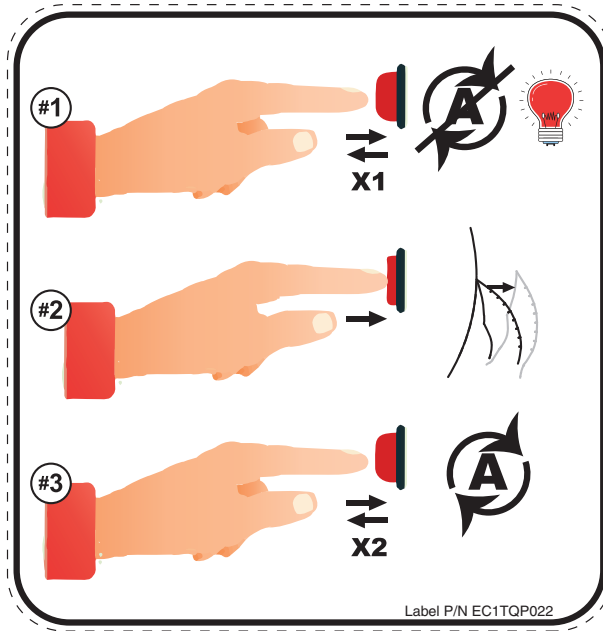


Figure 10. Control Panel Push Button Operations

6. The following functions can be performed using the push button:
 - a. Push button in and out to enter manual mode.
 - (1) In manual mode, push and hold button to retract blade from belt.
 - b. Push button in and out twice to enter automatic mode. Blade will automatically return to proper cleaning position and tension.

IMPORTANT

Replacement belt cleaner blade must be the same color, style, and width as the original; otherwise, contact Martin Engineering to reset proper tensioning values.

1. If the blade is more than 10° worn, push control panel button in and out to enter manual mode.
2. Push and hold button to retract blade from belt enough to service the blade safely.
3. Press the E-Stop on side of control panel.

⚠ 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. Change the belt cleaner blade according to applicable belt cleaner operator’s manual.
5. Release E-Stop.
6. Push button in and out twice to enter automatic mode. Blade will automatically return to proper cleaning position and tension.

Changing belt cleaner blade



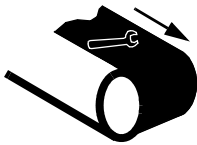
After Installing Tensioner and Belt Cleaner



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 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.



- 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.”

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 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. Inspect Martin® N2 Twist Tensioner.
2. Remove equipment from service if there is any indication it is not functioning properly. Call Martin Engineering or representative for assistance. Do NOT return equipment to operation until the cause of the problem has been identified and corrected.
3. Wipe all labels clean. If labels are not readable, contact Martin Engineering or representative for replacements.

⚠ WARNING

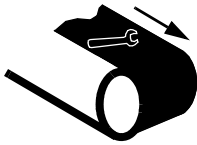
Failure to remove tools from maintenance area and conveyor belt before turning on energy source can cause serious injury to personnel and damage to belt.

4. 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.

5. Start conveyor belt. Observe belt cleaner operation for several revolutions of the belt. Service or adjust belt cleaner and tensioner 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. Adjust to recommended 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 a 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.

Notes

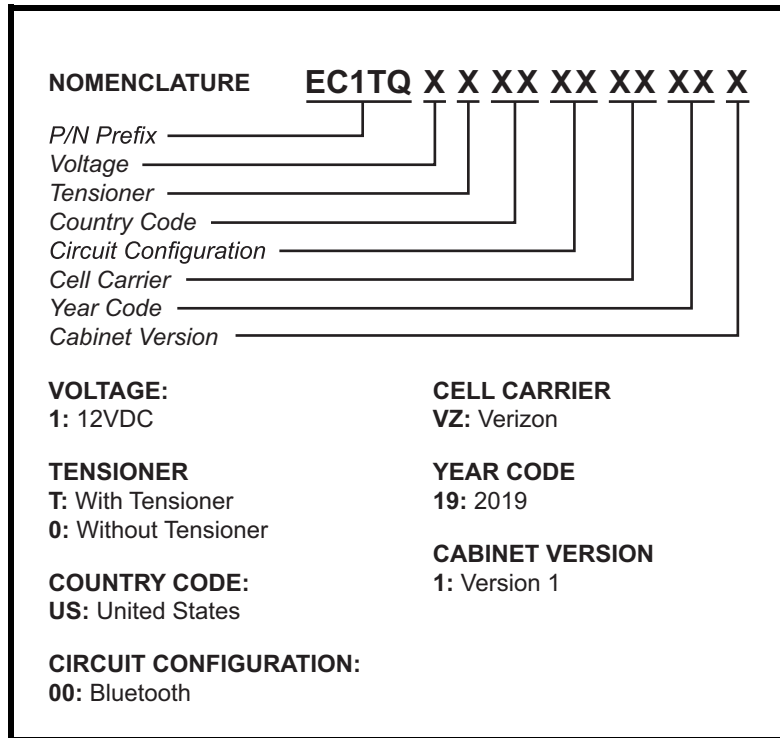
Part Numbers

This section provides product names and corresponding part numbers for the Martin® N2 Twist Tensioner and related equipment. Please reference part numbers when ordering parts.

Part Numbers

Martin® N2 Twist Tensioner: P/N EC1TQP04012S.

Martin® N2 Twist Tensioner Control Panel: P/N EC1TQ1XXXXXXXXXX



Optional equipment

Battery Charger: P/N EG10023.

Control Panel Mount: P/N EC1TQP02S.

"L" Bracket Mounting Kit: P/N 38844. Use to mount Martin® Twist Tensioner on chute wall with Martin® Inspection Door.

Hanger Mount Assembly: P/N 27382. Use to mount Martin® Twist Tensioner on stringer instead of on chute wall.

Replacement Parts

9 Volt Battery: P/N EG10006.

12 Volt Battery: P/N EG10013

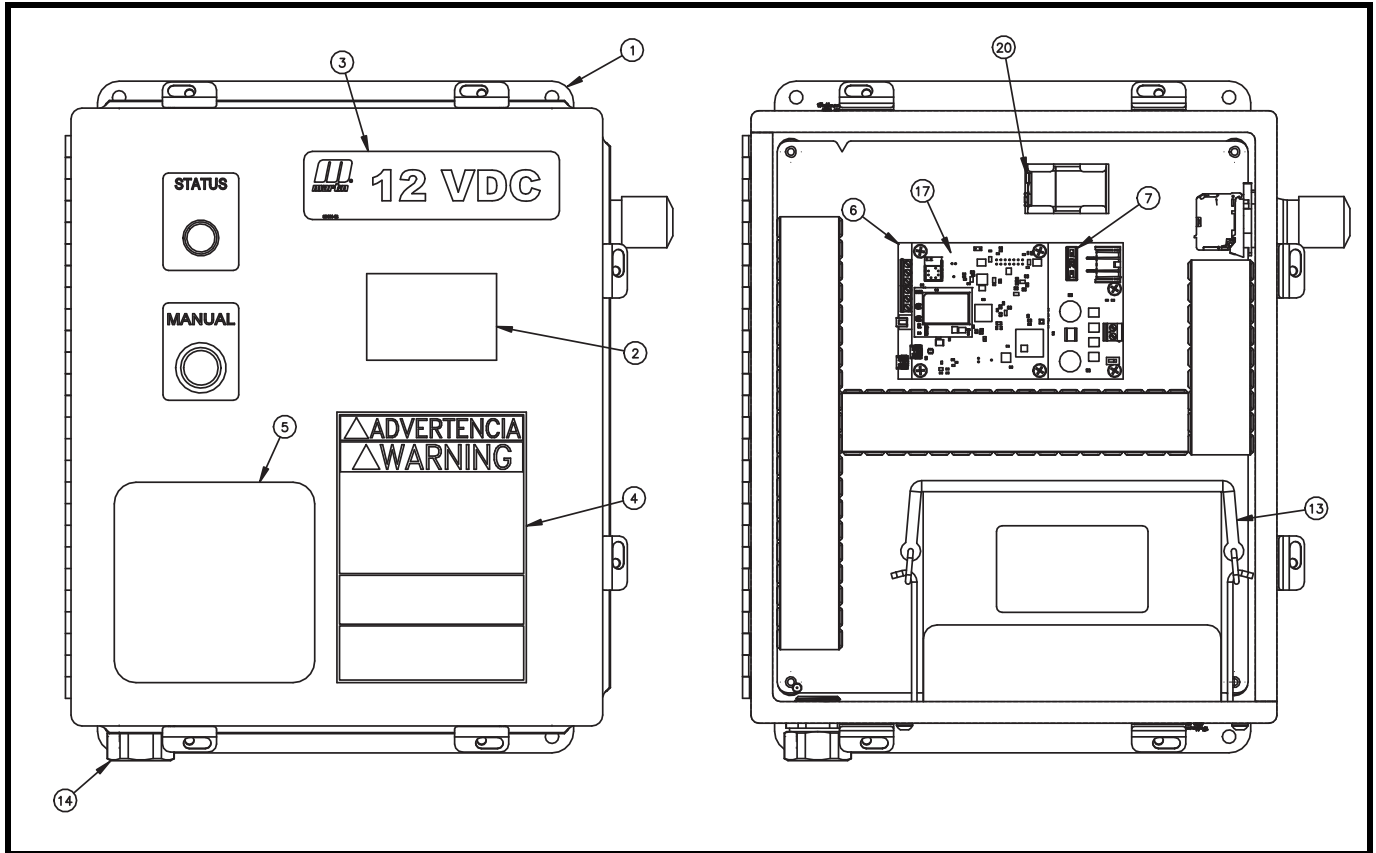


Figure 11. Martin® N2 Twist Tensioner Assembly, P/N EC1TQ1XXXXXXXX191 (Sheet 1 of 2)

Item	Description	Part No.	Qty
1	Control Cabinet	EC1TQP02312S02	1
2	Label	EG10022L	1
3	Label 12 Volt Warning	39414-12	1
4	Label Conveyor Product Warning	23395	1
5	Label Push Button Operation	EC1TQP022	1
6	Control Board 12V	EC1TQP019181	1
7	Fuse 20 Amp	EG1001220	1
8 (NS)	Signal Cable	EC1TQP026600	1
9 (NS)	Cord Electrical 16/2	105040	6 M
10 (NS)	Electrical Splicing Connector 2 Terminal	EG100112	9
11 (NS)	Electrical Splicing Connector 3 Terminal	EG100113	1
12	Battery and Battery Wire Cable Assembly	EG10013	1
13	Battery Strap	39465-S	1
14	Connector Conduit Straight 3/4-NPT	EG10016	1
15 (NS)	Conduit Non-Metallic Flexible 3/4	100955	5 M

Item	Description	Part No.	Qty
16 (NS)	Label Serial Number	EC1TQP1L	2
17	Communication Circuit Board	Table I	1
18	12mm Nylon Standoff	EG10014	4
19	Screw Phillips PHMS M4 x 0.7 x 8 Blk Nylon	EG10015	6
20	Battery 9V	EG10006	1
21 (NS)	Antenna Cable	Table I	1
22 (NS)	Antenna	Table I	1
23 (NS)	Martin N2 Twist Tensioner	Figure 12	
24 (NS)	Screw HHC 1/4-20NC x 1-1/4 ZP Full Thread	31285	4
25 (NS)	Screw HHC 1/4-20NC x 2 ZP	30793	4
26 (NS)	Washer Flat 1/4 ZP	39308	4
27 (NS)	Washer Compression 1/4 ZP	11521	4
28 (NS)	Nut Hex 1/4-20 ZP	11769	4

Table I. Martin® N2 Twist Tensioner Assembly Part Numbers

Part Number	Part No. Item 17	Part No. Item 21	Part No. Item 22	Cell Carrier
EC1TQ1TUS00VZ191	EGC004US00VZ191	EG10010015	EG10009	Verizon
EC1TQ10US00VZ191	EGC004US00VZ191	EG10010015	EG10009	Verizon
EC1TQ1TUS0000191	EGC002US00191	EG10018020	EG10019	None
EC1TQ10US0000191	EGC002US00191	EG10018020	EG10019	None

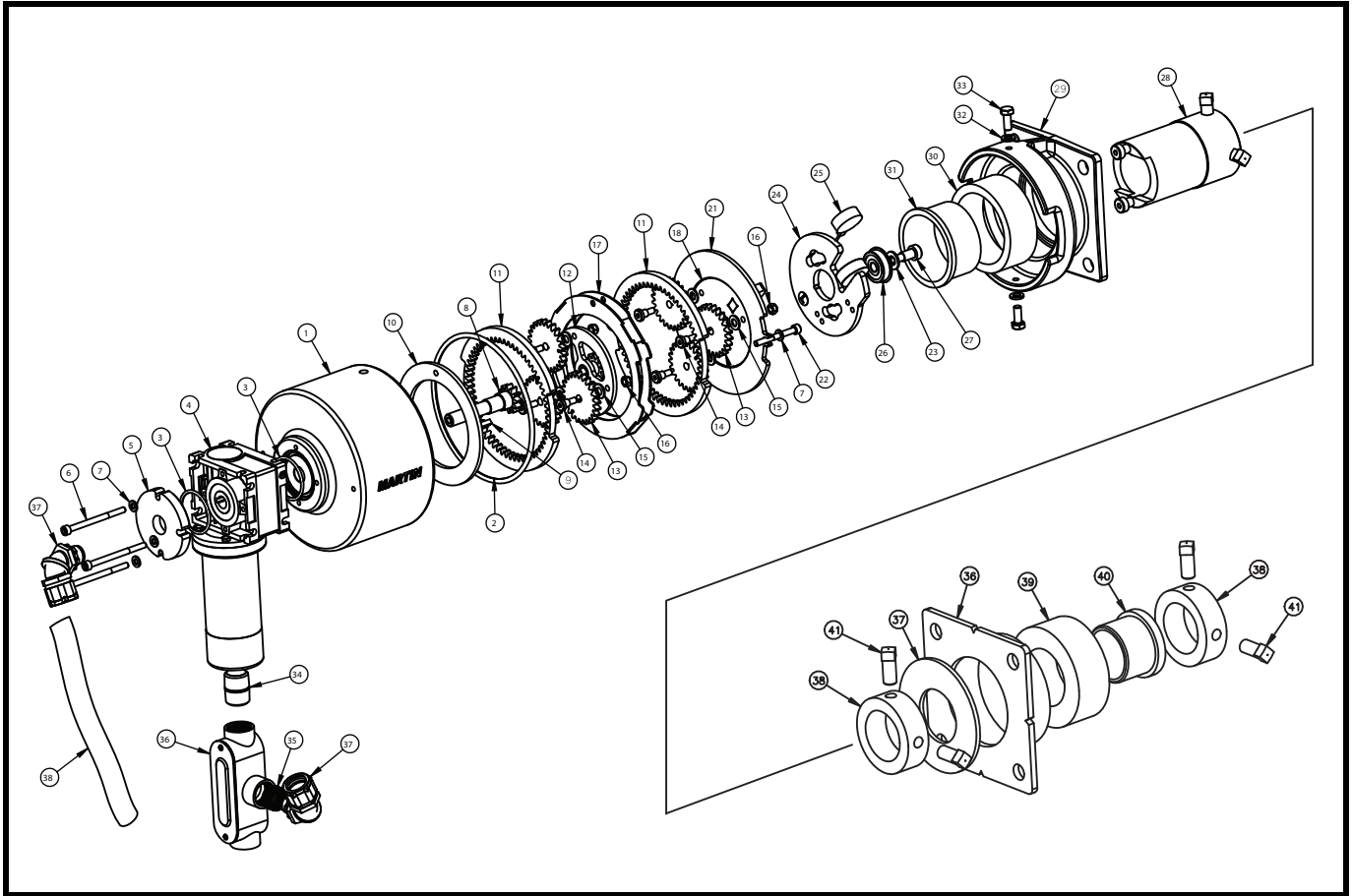


Figure 12. Martin® N2 Twist Tensioner Assembly, P/N EC1TQP04012S (Sheet 1 of 2)

Item	Description	Part No.	Qty
1	Tensioner Shell Casting	EC1TQP001	1
2	O-Ring M5 x 160 Buna N DIN 3771	39545	1
3	O-Ring M3 x 44 Buna N DIN 3771	39544	2
4	Gear Motor 12V	EC1TQP1011201	1
5	Motor End Cap	EC1TQP002	1
6	Screw SHC M6 x 1.0 x 80 CL 12.9 ZP	39549	3
7	Washer Flat 6mm Narrow ZP	39546	5
8	Sun Gear Shaft Weldment	EC1TQP030	1
9	Key Square 5mm x 20mm	EC1TQP103	1
10	Back Spacer Ring	EC1TQP005	1
11	Ring Gear	EC1TQP007	2
12	Second Sun Gear Weldment	EC1TQP031	1
13	Planetary Gear	EC1TQP011	6
14	Screw SOC HD Shoulder 8 x 8	39550	6
15	Washer Flat 8mm Narrow ZP	39547	6

Item	Description	Part No.	Qty
16	Nut Elastic Lock M6 x 1.0 ZP	39543	6
17	Spacer Ring Weldment	EC1TQP032	1
18	Load Cell Arm Weldment	EC1TQP033	1
19	Label "R" for RT Direction Red Background	EG10004R	2
20	Label "L" for LT Direction Orange Background	EG10004L	2
21	Outer Gear Retaining Ring	EC1TQP006	1
22	Screw SHC M6 x 1.0 x 55 CL 12.9 ZP	39548	2
23	Washer Flat 10mm Narrow ZP	39553	2
24	Load Cell Mounting Plate Weldment	EC1TQP034	1
25	Load Cell with Wire Conn	EC1TQP105	1
26	Ball Bearing with Snap Ring	EC1TQP104	1
27	Screw SOC HD Shoulder 10 x 12	39551	1
28	Final Drive Tube	EC1TQP035	1
29	Tensioner Base	38711	1
30	Shock Ring	33681	1
31	Nylon Bushing 3.50 OD	33675	1
32	Washer Lock Helical Spring 5/16 ZP	M209	2
33	Screw HHC 5/16-18NC x 3/4 ZP	12250	2
34	Nipple Pipe 3/4-14 NPT x Close Sch 40	19238	1
35	Conduit Red Bushing 3/4-NPS x 1/2-NPS ZP	EG10002	1
36	Conduit Access Port Alum T 3/4 NPT	EG10001	1
37	Conduit Swivel Elbow 1/2 NPT Plastic	EG10003	2
38	Conduit Non Metallic Flexible 1/2	100743	0.9
39	Flange Plate Weldment	32496	1
40	Washer Flat 2 Plain	34802	1
41	Locking Collar	16845	2
42	Shock Ring	32501	1
43	Nylon Bushing	33335	1
44	Screw SHS 1/2-13NC x 1 SS	22763-03	4
45	Tie Nylon Cable	30916	2
46 (NS)	Label Martin Product	32238	1
47 (NS)	Mounting Hardware Kit	35284	1
48 (NS)	Loctite #263 Red Threadlocker 0.5ML Capsule	39552	1

Figure 12. Martin® N2 Twist Tensioner Assembly, P/N EC1TQP04012S (Sheet 2 of 2)

NS = Not Shown

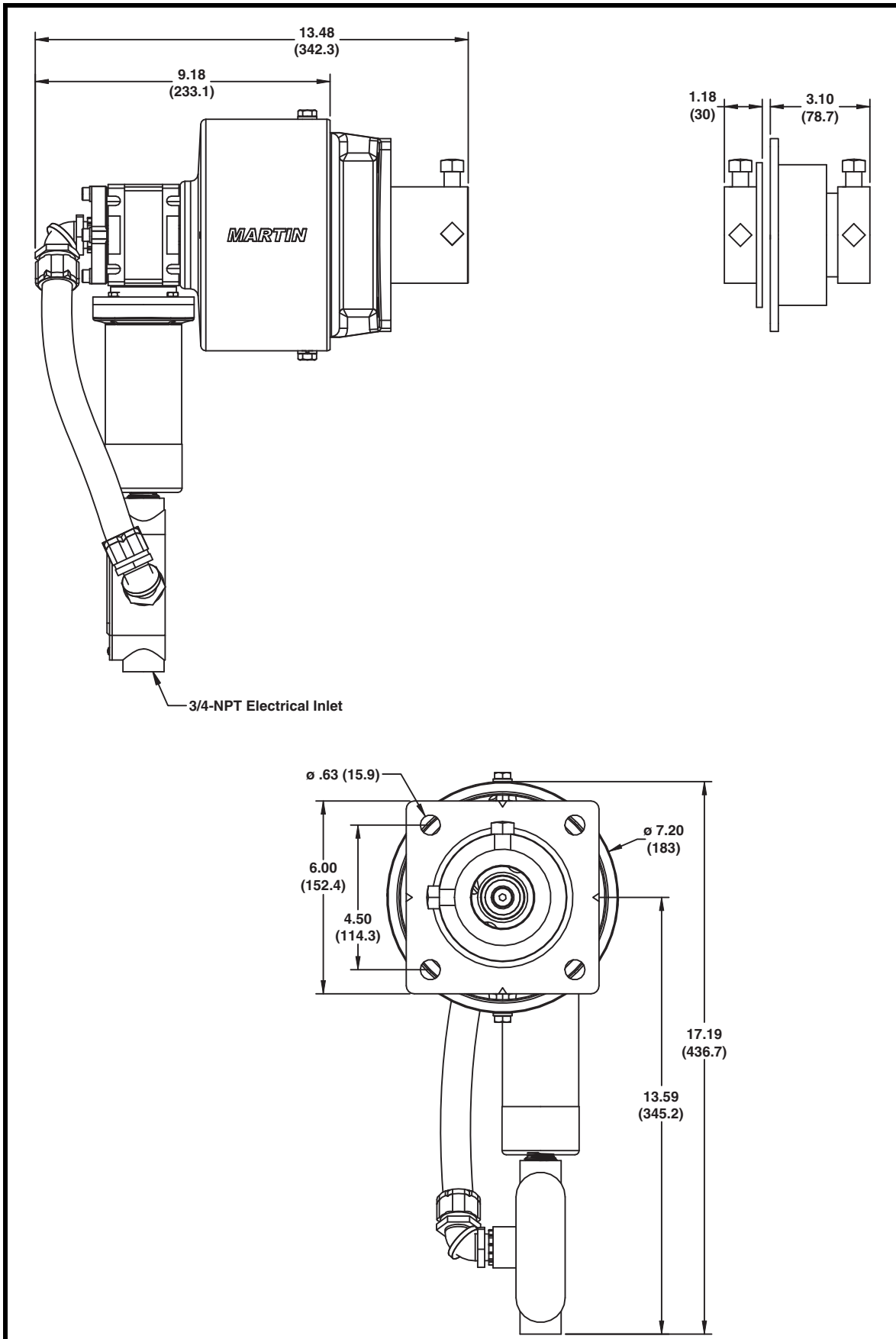
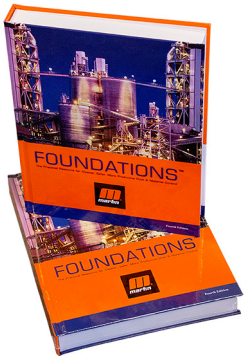


Figure 13. Martin® N2 Twist Tensioner Dimensions

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Martin Engineering USA

One Martin Place
Neponset, IL 61345-9766 USA
800 544 2947 or 309 852 2384
Fax 800 814 1553
www.martin-eng.com

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