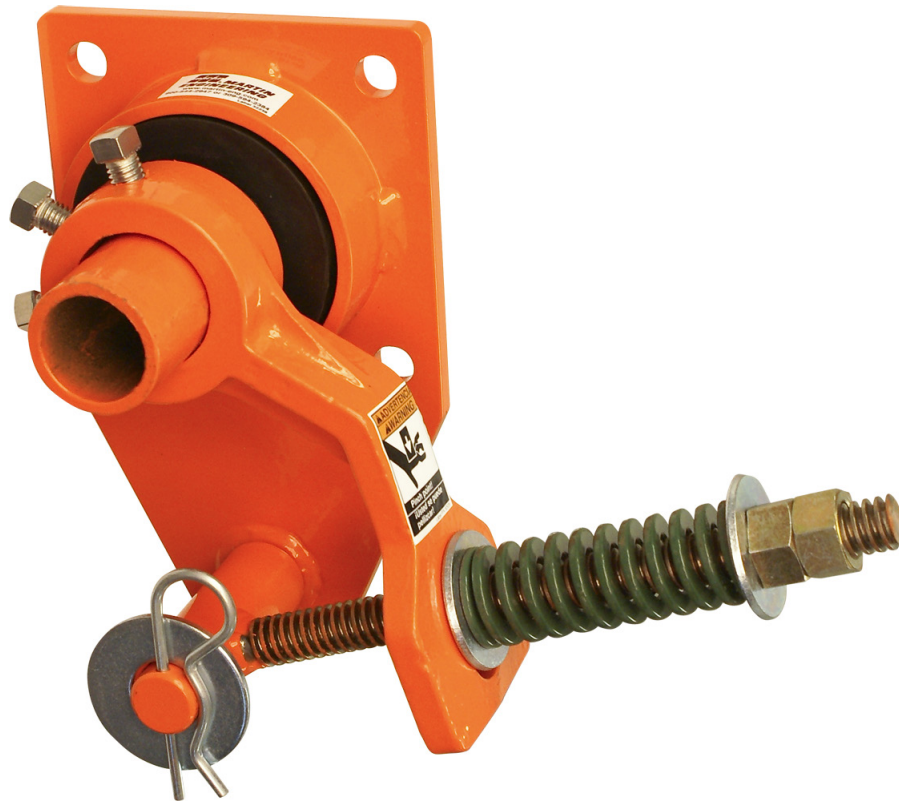


# ***Martin<sup>®</sup> Spring & Air Tensioners***



## ***Operator's Manual M3263***

## 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® Spring and Air Tensioners were designed for use with Martin® Belt Cleaning Systems. The Spring Tensioner maintains efficient cleaning with a rugged coil spring, while the Air Tensioner is designed to hook directly to your plant's air supply.

## ***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.

## ***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® Chevron Cleaner Operator's Manual*, P/N M3266.
- *Martin® QCI™ Cleaner HD Operator's Manual*, P/N M3618.
- *Martin® QCI™ Cleaner XHD Operator's Manual*, P/N M3504.
- *Martin® QCI™ Pre-Cleaner with Metal Tipped Blade Operator's Manual*, P/N M3814.
- *Martin® High Temperature Cleaner Operator's Manual*, P/N M3389.
- *Durt Hawg® DH2 Cleaner Operator's Manual*, P/N M3619.

## ***Materials required***

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

## 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.



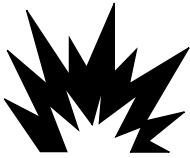
### **⚠ DANGER**

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 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.



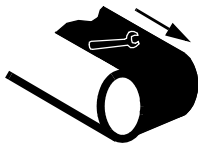
### **⚠ DANGER**

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.

## 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.

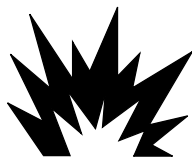
1. Inspect shipping container for damage. Report damage to delivery service immediately and fill out delivery service's claim form. Keep any damaged goods subject to examination.
2. Remove spring or air tensioner from shipping container.
3. If anything is missing contact Martin Engineering or a representative.



## ⚠ 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. 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.

## 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 Tensioner

## IMPORTANT

Read entire section before beginning work.

To install the tensioner, follow the procedures corresponding to the following steps:

1. Locate center point of belt cleaner mainframe according to appropriate belt cleaner manual (see “References”).
2. Install tensioner mounting plates.
3. Install spring or air tensioner.

## NOTE

### Installing mounting plates

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

1. Mark location of holes for belt cleaner mounting plates on chute walls. Use flange weldment as template. (See Figure 1 for pre-cleaners and Figure 2 for secondary cleaners.)

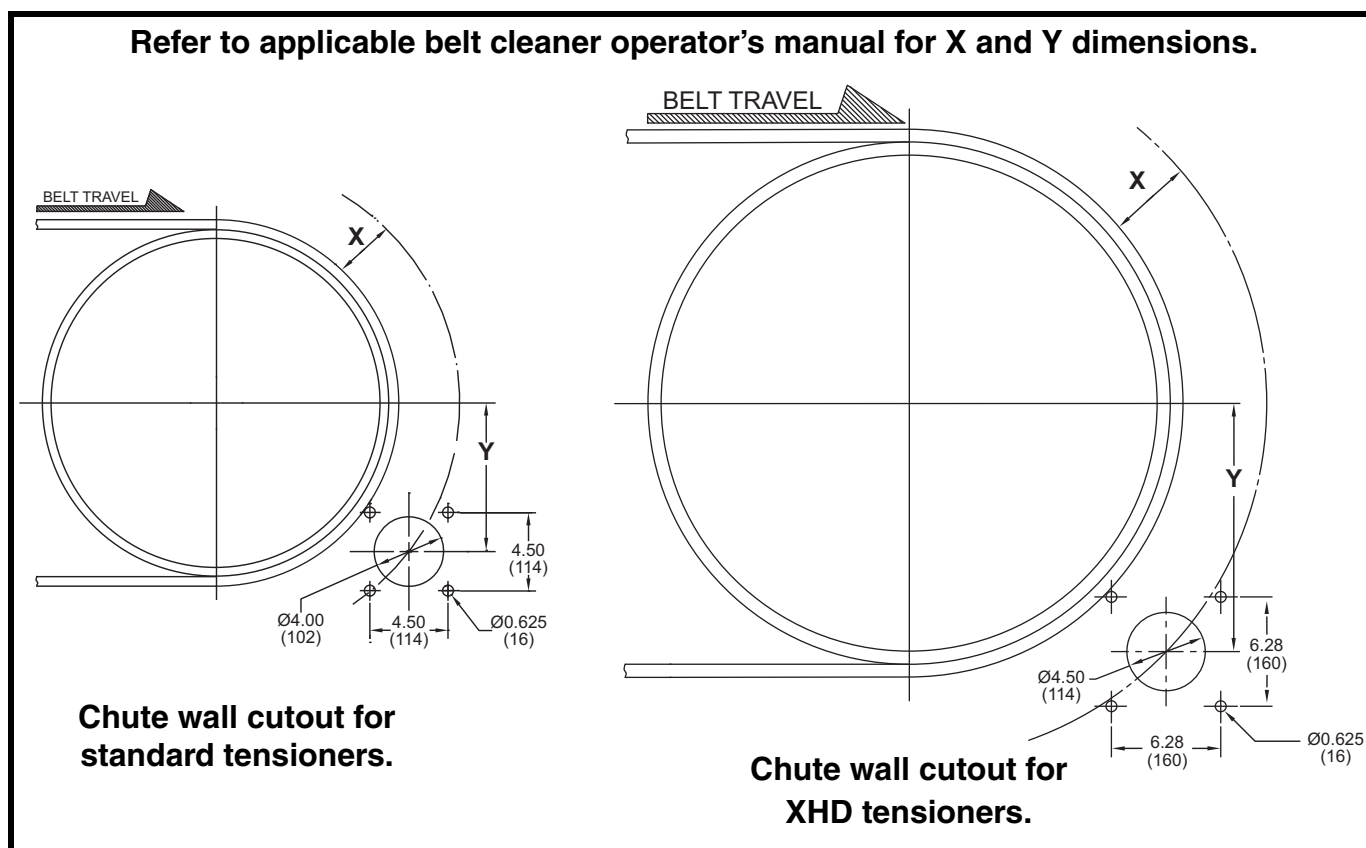
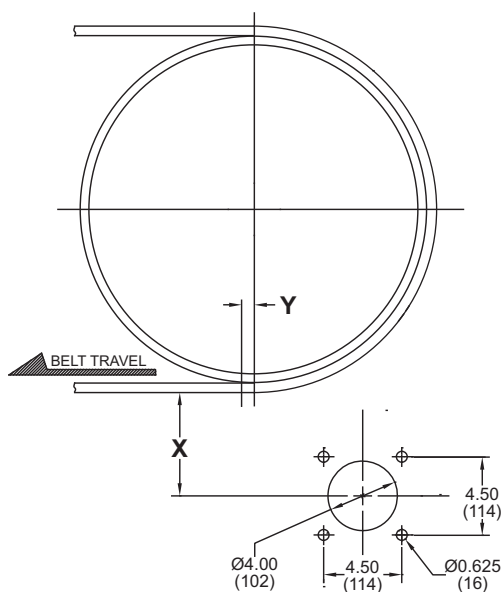


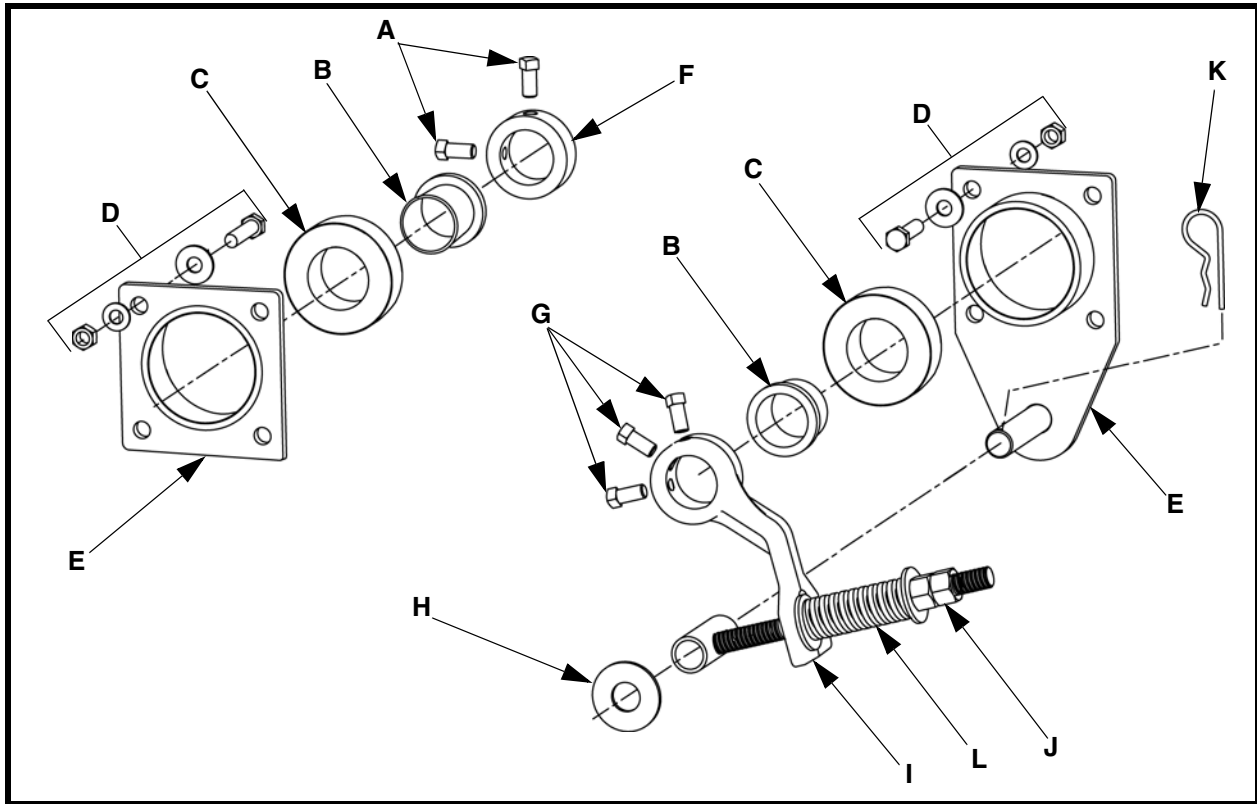
Figure 1. Pre-Cleaner Mainframe and Tensioner Location

Refer to applicable belt cleaner operator's manual for X and Y dimensions.



**Figure 2. Secondary Cleaner Mainframe and Tensioner Location**

2. Position mounting plate parallel to pulley's horizontal center line.
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. (102-mm) 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.
    - (2) Install each mounting plate onto wall with four screws, flat washers, compression washers and nuts (B).
  - b. If welding mounting plates to chute walls, do the following:
    - (1) Drill or cut one 4-in. (102-mm) hole for mainframe in both operator side and far side chute walls. Remove burrs and sharp edges.
    - (2) Position mounting plates over holes and weld onto chute wall.
4. Insert belt cleaner mainframe into mounting plates.



**Figure 3. Installing Spring Tensioner**

## IMPORTANT

### *Installing Spring Tensioner*

**If installing pre-cleaner, spring should be pointing in direction of return belt travel. If installing secondary cleaner, spring should be pointing away from direction of return belt.**

1. See Figure 3. Make sure proper spring (L) is installed for the application. The green spring should be used for pre-cleaners and the blue spring should be used for secondary cleaners.
2. Install shock rings (C) and nylon bushings (B) over mainframe and into mounting plates (E).
3. Slide paddle arm assembly (I) onto mainframe and rod weldment onto mounting plate pin.
4. Install washer (H) and cotter pin (K).
5. If dual tensioners are required, repeat steps 1 through 4 for far side tensioner.
6. Push blades tight against conveyor belt. Push arm of spring tensioning paddle against spring and tighten three set screws (G).
7. Tension mainframe by adjusting nuts (J) according to Table I or Spring Tensioner label, P/N 32259. Tighten nuts against each other.
8. Install mounting hub (F) over mainframe on far side using two set screws (A).

**Table I. Spring Tensioner Recommended Tension**

**Martin® Spring Tensioners Recommended Tension**

Belt width in. (mm)	Martin® QC1™ Cleaner HD	Durt Hawg® DH2 Cleaner	Martin® QC1™ Metal Tipped
	Spring length †	Spring length †	Spring length †
18 (400-500)	3.63 (92)	3.38 (86)	3.85 (98)
24 (500-650)	3.50 (90)	3.25 (83)	3.85 (98)
30 (650-800)	3.38 (86)	3.00 (76)	3.85 (98)
36 (800-1000)	3.25 (83)	3.00 (76)	3.85 (98)
42 (1000-1200)	3.13 (79)	2.88 (73)	3.85 (98)
48 (1200-1400)	3.00 (76)	2.75 (70)	3.85 (98)
54 (1400-1600)	3.38 (86)*	3.38 (86)*	3.85 (98)*
60 (1600-1800)	3.38 (86)*	3.25 (83)*	3.85 (98)*
72 (1800-2000)	3.25 (83)*	3.00 (76)*	3.85 (98)*
84 (2000-2200)	3.13 (79)*	3.00 (76)*	3.85 (98)*
96 (2200-2400)	3.00 (76)*	2.75 (70)*	3.85 (98)*

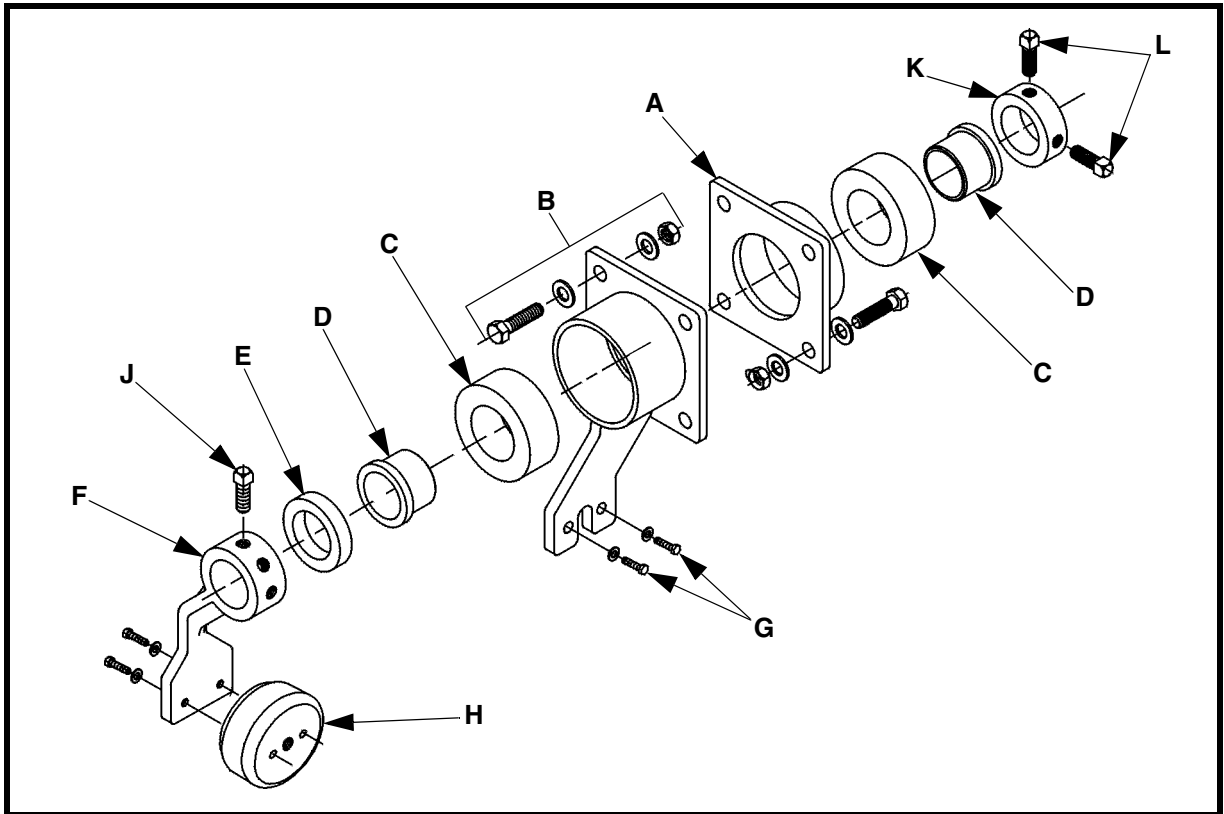
\*Per tensioner. Dual tensioners required

† Compressed

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Place label on chute wall,  
visible to tensioner user.

Label P/N 32259

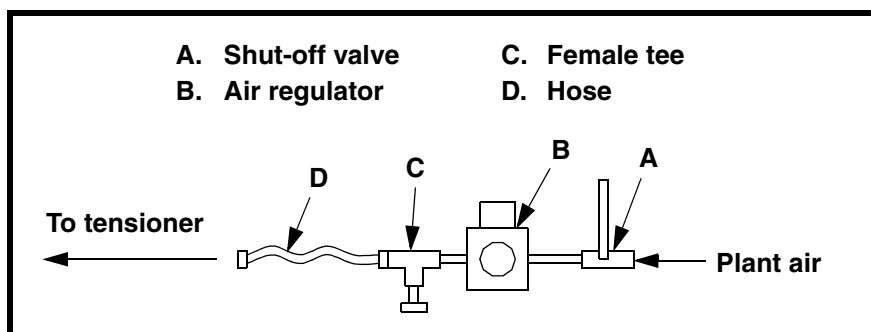


**Figure 4. Installing Air Tensioner**

## ***Installing Air Bag Tensioner***

1. Install shock rings (C) and nylon bushings (D) over mainframe and into mounting plates (A). Install shock ring spacer (E) into mounting plate on operator side tensioner.
2. Slide tensioning paddle (F) onto operator side mainframe.
3. Install screws and washers (G) through mounting plate and into air bag (H).
4. Install three square head set screws (J) on tensioning paddle but do not tighten.
5. Turn mainframe so blades are 1/16 in. (2 mm) from conveyor belt.
6. Compress air bag and tighten three square head set screws to 75 ft-lb (102 N-m).
7. If dual tensioners are required, repeat steps 1 through 6 for far side tensioner.
8. Install hub (K) on mainframe on far side of chute and tighten square head set screws (L).





**Figure 5. Plant Air Kit Detail**

9. Connect air supply. See Figure 5.
  - a. Secure shut-off valve (A), air regulator (B), and female tee (C) to chute wall.
  - b. Run hose (D) from female tee to air bag, and air lines from plant air supply (50 psi [3.45 bar] minimum) to shut-off valve on assembly.
  - c. Apply air to air bag according to Table II or Air Bag Tensioner Label, P/N 30480.

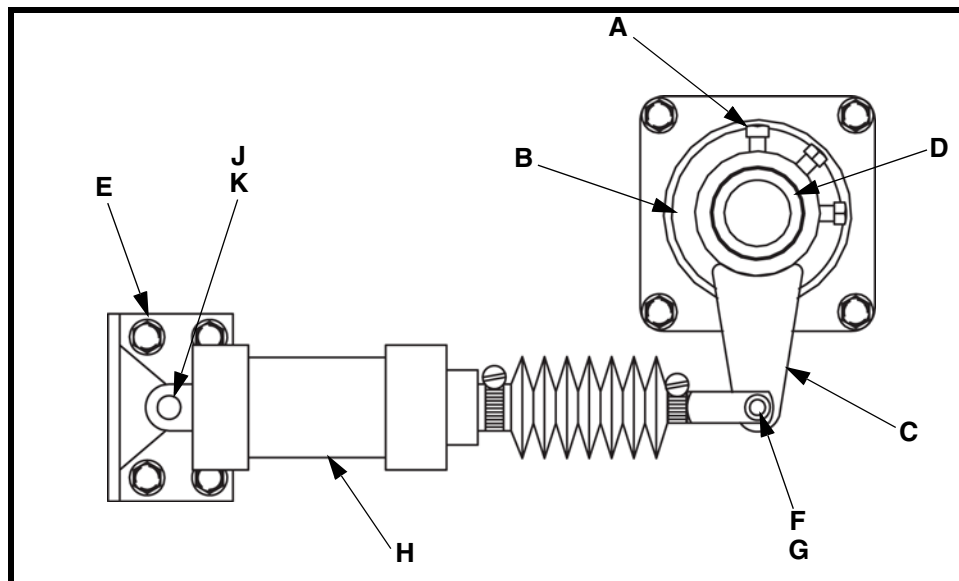
**Table II. Recommended Pressures for Air Bag Tensioners**

Recommended Air Pressure for Martin® Tensioners					
Belt Width in. (mm)		Martin® QC1™ Cleaner HD psi (bar)		Durt Hawg® DH2 Cleaner psi (bar)	
18	(400-500)	6	(0.41)	7	(0.48)
24	(500-650)	9	(0.62)	11	(0.76)
30	(650-800)	12	(0.83)	14	(0.97)
36	(800-1000)	14	(0.97)	18	(1.24)
42	(1000-1200)	17	(1.17)	21	(1.45)
48	(1200-1400)	20	(1.38)	24	(1.65)
54	(1400-1600)	12*	(0.83)*	14*	(0.97)*
60	(1600-1800)	13*	(0.90)*	16*	(1.10)*
72	(1800-2000)	16*	(1.10)*	19*	(1.31)*
84	(2000-2200)	18*	(1.24)*	23*	(1.59)*
96	(2200-2400)	21*	(1.45)*	26*	(1.79)*
*Per Tensioner. Dual tensioners required.					

Place label on chute wall,  
visible to tensioner user.

***martin***®

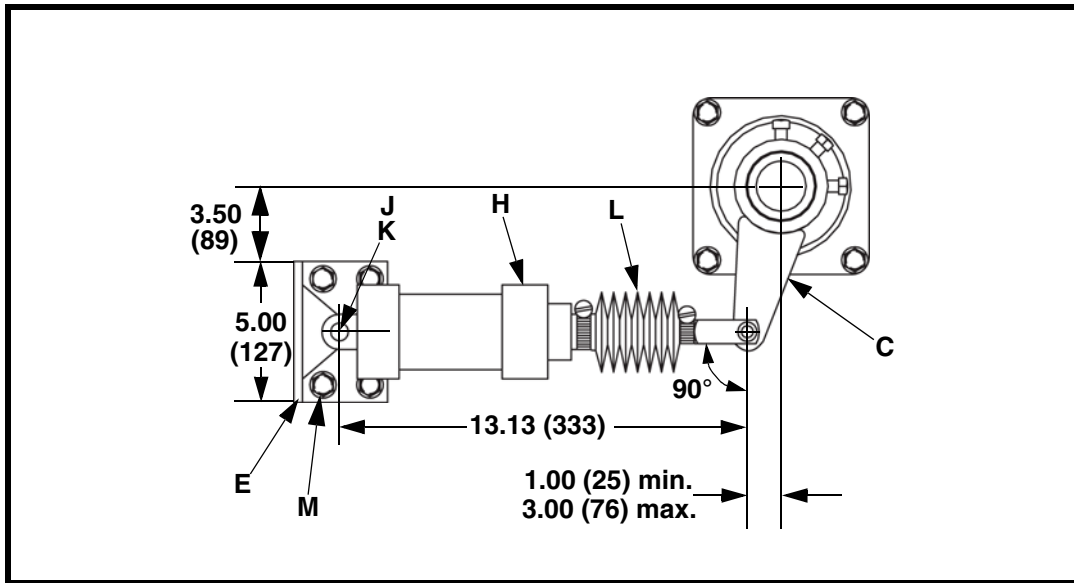
Label P/N 30480



**Figure 6. Air Cylinder Tensioner Installation**

## ***Installing Air Cylinder Tensioner Assembly***

1. Slide force arm weldment (C) onto operator side mainframe end weldment (D). Tighten set screws (A) to fasten onto mainframe end weldment.
2. Slide force arm weldment tight against shock bushing (B) to retract end weldment. Tighten square head set screws on telescoping mainframe weldment.
3. Remove cotter pin (F) and clevis pin (G) from force arm.
4. Place air cylinder (H) on force arm and fasten with clevis pin (G) and cotter pin (F).
5. Place mount bracket (E) on air cylinder and fasten with clevis pin (K) and cotter pin (J).



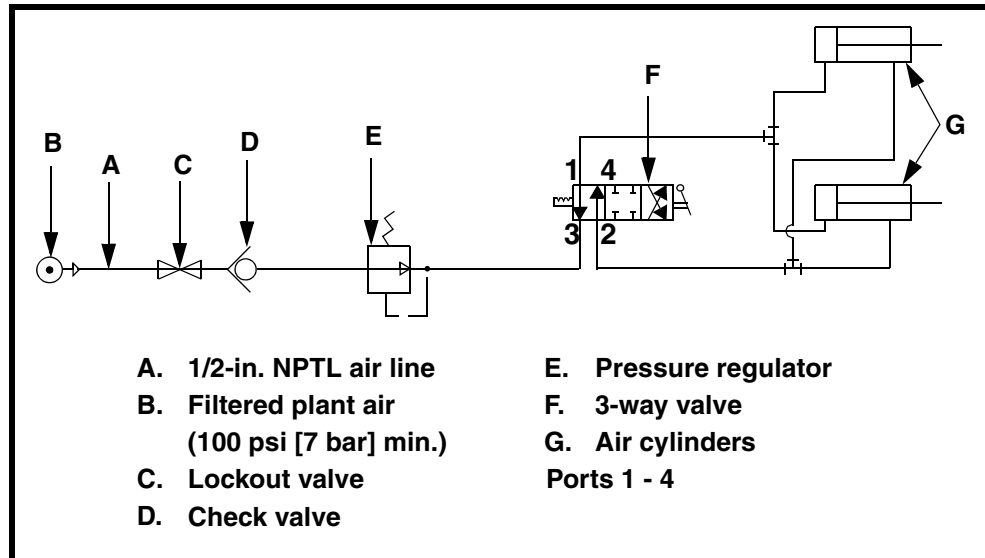
**Figure 7. Air Cylinder Tensioner Mounting Dimensions**

6. Make sure the distance between the mainframe vertical center line and the force arm clevis pin vertical center line is between 1 and 3 in. (25 and 76 mm) as shown in Figure 7.
7. Push force arm (C) toward air cylinder (H) until sewn rod boot (L) retracts and the distance between the clevis pins on the cylinder measures 13-1/8 in. (333 mm).
8. Mark location of cylinder mount bracket (E) holes on chute wall.
9. Remove clevis pin (K) and cotter pin (J). Remove mount bracket.

### NOTE

**For easier maintenance, Martin Engineering recommends bolting rather than welding mount bracket to chute wall.**

10. Bolt or weld cylinder mount bracket to chute wall as follows:
  - a. If bolting mount bracket to chute wall, do the following:
    - (1) Drill or cut four 9/16-in. holes in operator side chute wall. Remove burrs and sharp edges.
    - (2) Install mount bracket on chute wall with four hex head cap screws, flat washers, compression washers, and hex nuts (M).
  - b. If welding mount bracket to chute wall, do the following:
    - (1) Position mount bracket on chute wall so that four mounting holes line up with four holes marked on chute wall.
    - (2) Weld mount bracket onto chute wall. Skip weld around entire mount bracket surface contacting chute wall.
11. Install air cylinder onto mount bracket and fasten with clevis pin and cotter pin.



**Figure 8. Air Cylinder Schematic (dual tensioners)**

12. Install air line to air tensioner as shown in Figure 8.

## IMPORTANT

**If dual air tensioners are used, make sure you install air line into same port location on far side cylinder as on operator side cylinder.**

- a. Install air line from port 1 on 3-way valve into one of two ports on air cylinder (G). If dual air tensioners are used, run air line through mainframe to far side air cylinder.
- b. Install air line from port 2 on 3-way valve into unused port on air cylinder. If dual air tensioners are used, run air line through mainframe to far side air cylinder.

## CAUTION

**Do not apply pressures greater than those recommended in Table III. Higher pressures can damage conveyor belt or cleaner, and blades will wear faster.**

13. Apply air pressure to air tensioner(s) as recommended in Table III or Air Cylinder Tensioner Label, P/N 37844.

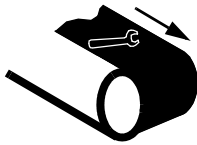
**Table III. Recommended Pressures for Air Cylinder Tensioner**

Recommended Air Pressure for Martin® Air Cylinder Tensioner		
Belt Width in. (mm)	Martin® QC1™ Cleaner HD psi (bar)	Durt Hawg® DH2 Cleaner psi (bar)
18 (400-500)	8 (0.55)	9 (0.62)
24 (500-650)	12 (0.83)	13 (0.89)
30 (650-800)	16 (1.10)	18 (1.24)
36 (800-1000)	20 (1.37)	22 (1.51)
42 (1000-1200)	24 (1.65)	27 (1.86)
48 (1200-1400)	28 (1.93)	31 (2.14)
54 (1400-1600)*	16 (1.10)*	18 (1.24)*
60 (1600-1800)*	18 (1.24)*	20 (1.37)*
72 (1800-2000)*	22 (1.51)*	25 (1.72)*
84 (2000-2200)*	26 (1.79)*	29 (2.00)*
96 (2200-2400)*	30 (2.06)*	33 (2.28)*
* Dual tensioners required Pressure per side.		
Label P/N 37844		
<b><i>martin</i></b> ®		

## 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](http://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.



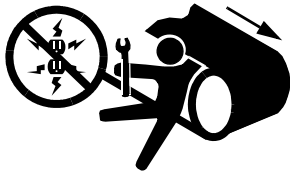
### **⚠ DANGER**

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.

5. Make sure all fasteners are tight. Tighten if necessary.
6. Make sure cleaner is not changing belt line. If it is, install belt support ahead of blade-to-belt contact point (Secondary Cleaner).
7. 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.)
8. If wear, material buildup, or some other problem exists, see “Troubleshooting.”

## NOTE

Maintenance inspections should be performed weekly until a maintenance schedule can be determined. Certain applications and/or changing material conditions 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. Turn off and lockout / tagout / blockout / testout energy source according to ANSI standards (see “References”).
2. For spring tensioners, do the following:

## IMPORTANT

**If blades are not cleaning effectively or approximately half of blade life has been used, tension will decrease and must be re-applied.**

- a. If blades are worn or are not cleaning effectively, release any remaining tension and re-tension according to Table I.
- b. Spray threaded rod with rust-inhibiting lubricant.
- c. Check spring for buildup under cover. Clean if necessary.
3. For air tensioners, do the following:
  - a. Check air gauge and ensure tension against conveyor belt is correct (see Table II or Table III).
  - b. Check air bag and fittings for leaks. Replace as follows:
    - (1) Shut off air to tensioner.
    - (2) Release pressure on bag by opening relief valve.
    - (3) Disconnect hose from bag.
    - (4) Remove four hex head cap screws and washers from each side of leaking bag. Discard leaking bag.
    - (5) Install new bag with four hex head cap screws and washers.
    - (6) Reconnect hose and close relief valve.
    - (7) Turn on air pressure and reset tension according to Table II.

## Troubleshooting

Symptom	Corrective Action
Insufficient cleaning and carryback.	<ul style="list-style-type: none"> <li>• Tension of cleaner on belt is set too low or too high. Increase or decrease tensioner setting.</li> <li>• Blades are worn. Check blades and replace if necessary.</li> </ul>
Blade wears only in the center.	<ul style="list-style-type: none"> <li>• Use a segmented style blade for crown pulleys.</li> <li>• Consider narrowing the blade width to clean the middle of the belt.</li> </ul>
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.
✓ Secondary Cleaner is not changing belt line.



# Part Numbers

This section provides product names and corresponding part numbers for Martin® Spring and Air Tensioners and related equipment. Please reference part numbers when ordering parts.

## IMPORTANT

Use only Martin® replacement springs or Martin® Spring Tensioner will not work properly.

### *Spring Tensioner Assemblies*

Belts 18 to 48 in. (400 to 1400 mm) wide:

**Martin® Spring Tensioner Assembly:** P/N 38180

Belts 54 to 96 in. (1400 to 2400 mm) wide:

**Dual Martin® Spring Tensioner Assemblies:** P/N 38180-2

### *Air Bag Tensioner Assemblies*

Belts 18 to 48 in. (400 to 1400 mm) wide:

**Martin® Air Bag Tensioner Assembly:** P/N 32745.

**Martin® Air Bag Tensioner XHD Assembly:** P/N 33894.

Belts 54 to 96 in. (1400 to 2400 mm) wide:

**Dual Martin® Air Bag Tensioner Assemblies:** P/N 32745-2R.

**Dual Martin® Air Bag Tensioner XHD Assemblies:** P/N 33894-2R.

### *Air Cylinder Tensioner Assemblies*

**Martin® Air Cylinder Tensioner Assembly:** P/N 37843-1

**Dual Martin® Air Cylinder Tensioner Assemblies:** 37843-2

**Air Tensioner Control Box Assembly:** P/N 36489-2

### *Optional mounts*

**Flange Mount Bracket:** P/N 30537. Use to mount Spring or Air Tensioner on chute wall with Martin® Inspection Door.

**Hanger Mount Assembly:** P/N 27382. Use to mount Spring or Air Tensioner on stringer instead of on chute wall.

### *Operator's manuals*

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

*Martin® Chevron Cleaner Operator's Manual,* P/N M3266.

*Martin® QCI™ Cleaner HD Operator's Manual,* P/N M3618.

*Martin® QCI™ Cleaner XHD Operator's Manual,* P/N M3504.

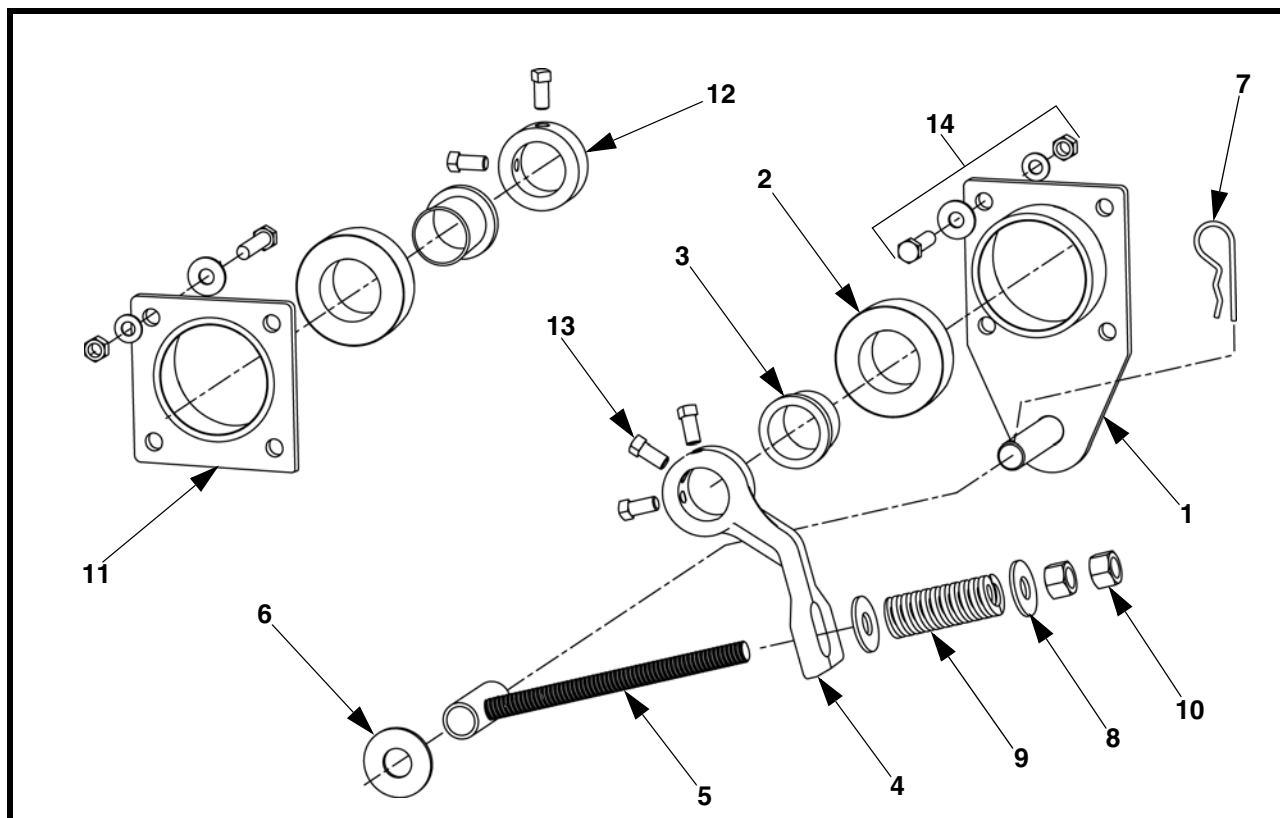
*Martin® QCI™ Pre-Cleaner with Metal Tipped Blade Operator's Manual,* P/N M3814.

*Martin® High Temperature Cleaner Operator's Manual,* P/N M3389.

*Durt Hawg® DH2 Cleaner Operator's Manual,* P/N M3619.

### *Miscellaneous*

**Plant Air Kit with Gauge for Single Air Tensioner:** P/N 31772-AS.

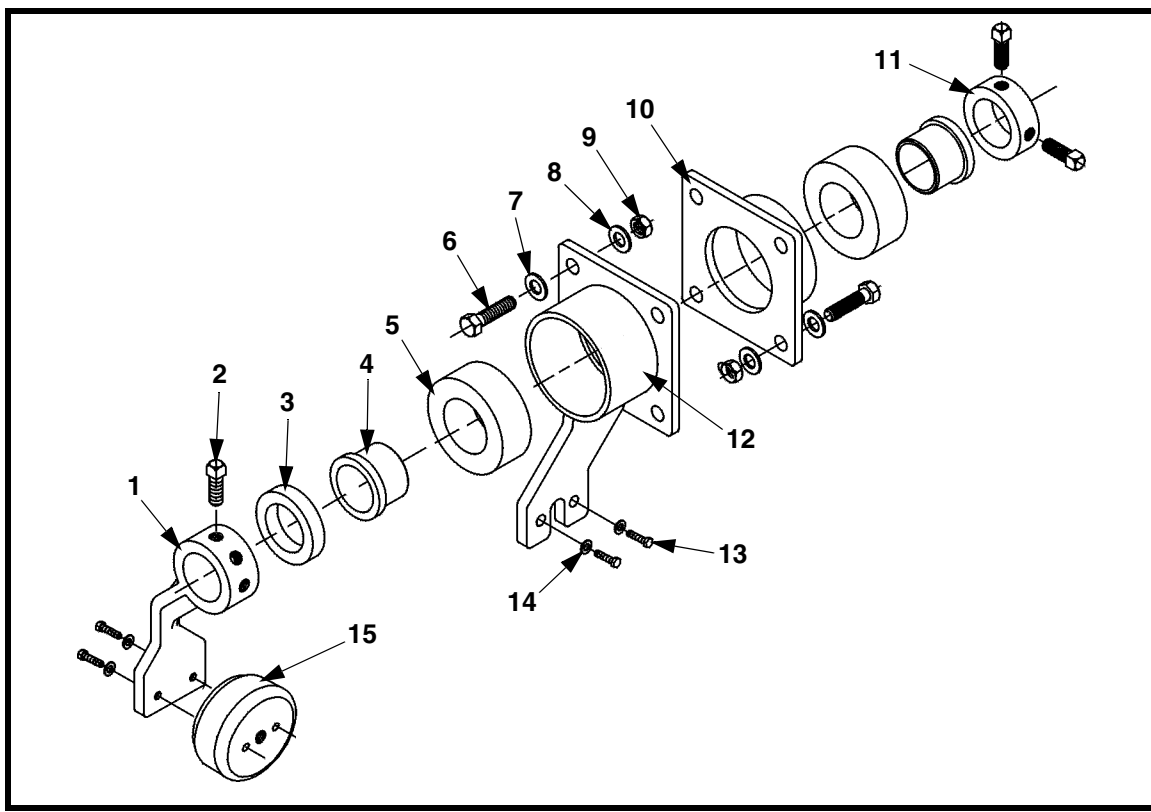


Item	Description	Part No.	Qty P/N 38180*	Qty P/N 38180-2*
1	Spring Tensioner Mount Plate Weldment	38179	1	2
2	Shock Ring	32501	2	2
3	Nylon Bushing	33335	2	2
4	Spring Tensioner Paddle Arm	30588-ST	1	2
5	Rod Weldment with SS Rod	38176	1	2
6	Washer Flat 1 ZP	32315	1	2
7	Hairpin Cotter .18 Dia x 3.56 ZP	35171	1	2
8	Washer Flat 3/4 Wide ZP	20164	2	4
9	Spring Medium Duty Green (Pre-Cleaners)	32244-M	1	2
9	Spring Medium-Heavy Duty Blue (Secondary Cleaners)	32244-MH	1	2
10	Nut Hex 3/4-6 ACME ZP	38170	2	4
11	Flange Plate Weldment	32496	2	—
12	Mounting Hub	16845	1	—
13	Screw SHS 1/2-13NC x 1 SS	22763-03	5	6
14	Mounting Hardware Kit	34498	1	1
Fig. 14	Label Conveyor Products Warning	23395	2	2
Fig. 16	Label Pinch Point Warning	30528	1	2
Fig. 18	Label Spring Tensioner	32259	1	2
NS	Operator's Manual	M3263	1	1

**Figure 9. Martin® Spring Tensioner Assembly, P/N 38180**

\*Part number 38180 is a single spring tensioner assembly for belts 48 in. and below. Part number 38180-2 is a dual spring tensioner assembly for belts 54 in. and above.

NS = Not Shown

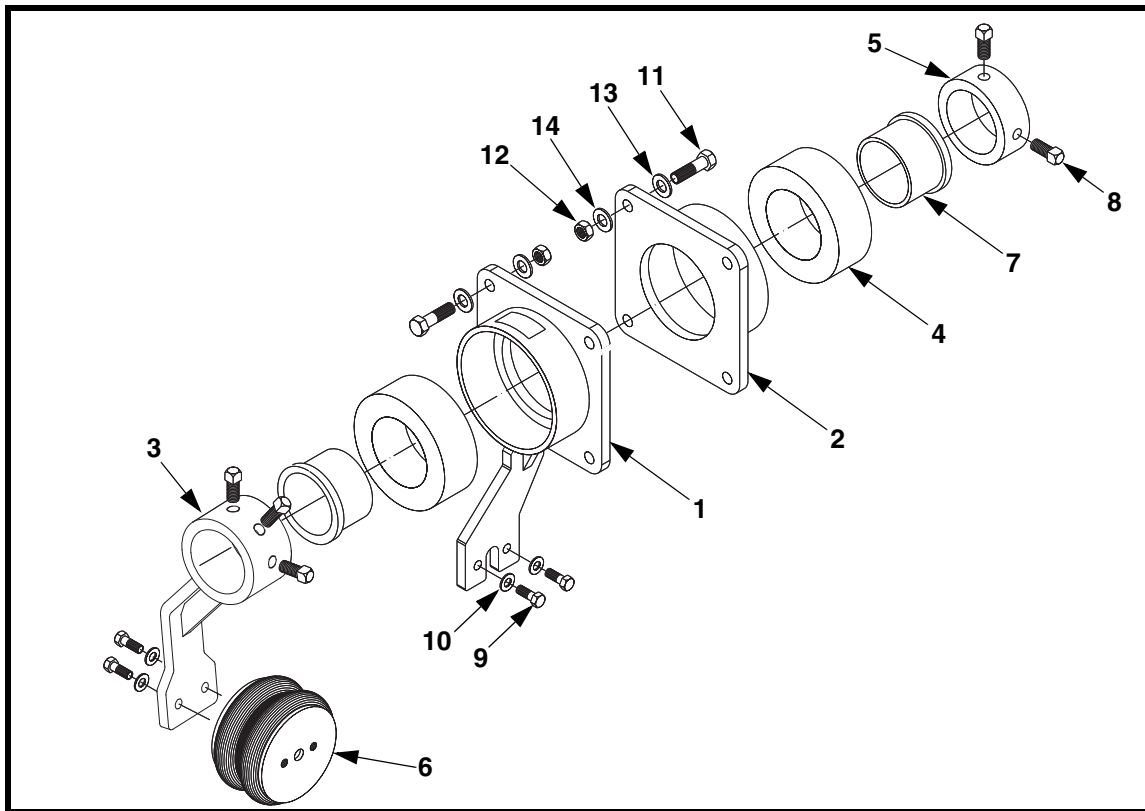


Item	Description	Part No.	Qty P/N 32745*	Qty P/N 32745-2R*
1	Air Paddle	30588	1	2
2	Screw SHS 1/2 -13 NC x 1	22763-03	5	6
3	Shock Ring Spacer	33346	1	2
4	Nylon Bushing	33335	2	2
5	Shock Ring	32501	2	2
6	Screw HHC 1/2 -13 NC x 2.00 ZP	14196	8	8
7	Washer Flat 9/16 ZP	17328	8	8
8	Washer Compression 1/2 ZP	11750	8	8
9	Nut Hex 1/2 -13 ZP	11771	8	8
10	Far Side Flange Plate Weldment	32496	1	—
11	Tensioner Locking Collar	16845	1	—
12	Tensioner Flange Plate Weldment	32521	1	2
13	Screw HHC 3/8 -16 x 1-1/4 GR 5 ZP	12215	4	8
14	Washer Flat 3/8 ZP	18007	4	8
15	Air Actuator/Isolator 1/4 NPT	30587	1	2
Fig. 14	Label Conveyor Products Warning	23395	1	2
Fig. 15	Label Air Bag Warning	32255	1	2
Fig. 16	Label Pinch Point Warning	30528	1	2
Fig. 17	Label Air Pressure	30480	1	2
NS	Operator's Manual	M3263	1	1

**Figure 10. Martin® Air Bag Tensioner Assembly, P/N 32745**

\*Part number 32745 is a single air tensioner assembly for belts 48 in. and below. Part number 32745-2R is a dual air tensioner assembly for belts 54 in. and above.

NS = Not Shown

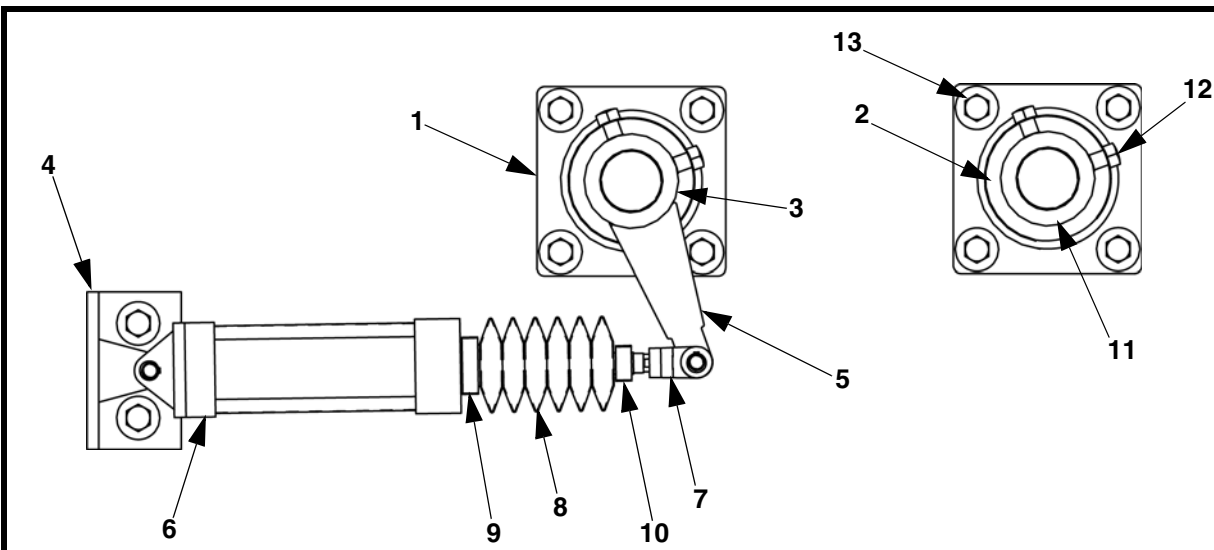


Item	Description	Part No.	Qty P/N 33894*	Qty P/N 33894-2R*
1	Plate Mount Weldment	33483	1	2
2	Plate Farside Mount Weldment	32342	1	—
3	Paddle Tensioning	33487	1	2
4	Bushing Shock	32322	2	2
5	Collar Locking	32341	1	—
6	Actuator Air Spring	32537	1	2
7	Bushing Nylon	34306	2	2
8	Screw SHS 1/2-13NC x 1	22763-03	5	6
9	Screw HHC 3/8-16NC x 1	11746-02	4	8
10	Washer Flat 3/8	18007	4	8
11	Screw HHC 1/2-13NC x 2	24308	8	8
12	Nut Hex 1/2-13NC	17151	8	8
13	Washer Flat 1/2	17152	8	8
14	Washer Compression 1/2	24310	8	8
Fig. 14	Label Conveyor Products Warning	23395	1	2
Fig. 15	Label Air Bag Warning	32255	1	2
Fig. 16	Label Pinch Point Warning	30528	1	2
NS	Operator's Manual	M3263	1	1

**Figure 11. Martin® Air Bag Tensioner XHD Assembly, P/N 33894**

\*Part number 33894 is a single air tensioner assembly for belts 48 in. and below. Part number 33894-2R is a dual air tensioner assembly for belts 54 in. and above.

NS = Not Shown



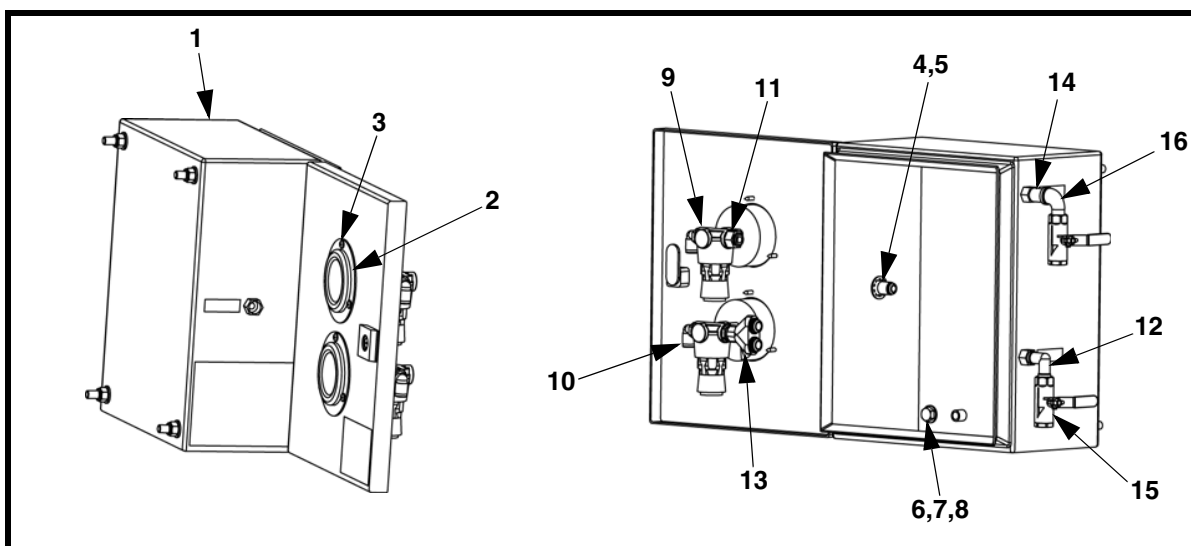
Item	Description	Part No.	Qty P/N 37843-S*	Qty P/N 37843-D*
1	Flange Plate Weldment	32496	2	2
2	Shock Ring	32501	2	2
3	Nylon Bushing	33335	2	2
4	Mount Weldment Rear Cylinder	37840	1	2
5	Force Arm Weldment	37842	1	2
6	Air Cylinder	37835	1	2
7	Cylinder Rod Clevis with Pin	37836	1	2
8	Rod Boot	37837	1	2
9	Hose Clamp	20339-06	1	2
10	Hose Clamp	20339-03	1	2
11	Locking Collar	16845	1	—
12	Screw SHS 1/2-13NC x 1 SS	22763-03	4	4
13	Mounting Hardware Kit	34845	1	1
Fig. 14	Label Conveyor Products Warning	23395	2	2
NS	Label Martin Products	32238	2	2
Fig. 19	Label Tensioner Recommended Air Pressure	37844	1	2
NS	Label Air Pressure Warning	37845	1	1
NS	Operator's Manual	M3263	1	1

**Figure 12. Martin® Air Cylinder Tensioner Assembly, P/N 37843\***

\*Part number 37843-S is a single air cylinder tensioner assembly.

\*Part number 37843-D is a dual air cylinder tensioner assembly.

NS = Not Shown



Item	Description	Part No.	Qty
1	Enclosure	30897-06	1
2	Pressure Gauge	37195	2
3	Screw PHP #8 x 5/8 SS	36372	6
4	Washer Lock 1/2 ZP	30228	3
5	Female Bulkhead 1/4 NPT	37186	3
6	Flat Washer 5/16 Narrow ZP	17083	8
7	Screw HHC 5/16-18NC x 1 ZP	32583	4
8	Nut Hex Elastic Lock 5/16-18NC SS	33054	4
9	Pressure Regulator	37189	2
10	Male Swivel Elbow 1/4 NPT	37248	2
11	Male Microlock Connector 1/4 NPT	37187	1
12	Male Elbow 1/4 NPT	37192	1
13	Union Y Male Connector 1/4	37188	1
14	Nipple 1/4 NPT x 1-1/2	37190	1
15	Ball Valve 1/4 NPT	32284	2
16	Street Elbow 1/4 NPT	37191	1
NS	Label Air Pressure	30480	1
NS	Label Martin Products	32238-01	1
NS	Plastic Tie Cable	30916	2
NS	Plastic Tie Mount	30918	1
NS	Inlet Label	37253-A	1
NS	Outlet Label	37253-B	2
NS	Polyurethane Tubing 1/4	100791	5 ft
NS	Operator's Manual	M3263	1

**Figure 13. Air Tensioner Control Box Assembly, P/N 36489-2**

NS = Not Shown

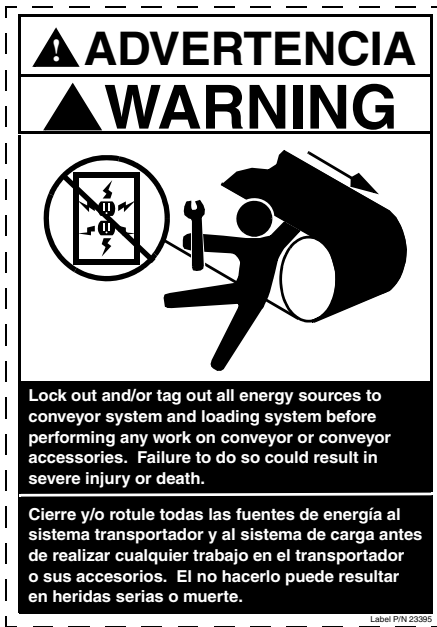


Figure 14. Conveyor Products  
Warning Label, P/N 23395



Figure 16. Pinch Point Warning  
Label, P/N 30528



Figure 15. Air Bag Warning Label, P/N 32255

Recommended Air Pressure for Martin® Tensioners					
Belt Width in. (mm)		Martin® QC1™ Cleaner HD psi (bar)		Durt Hawg® DH2 Cleaner psi (bar)	
18	(400-500)	6	(0.41)	7	(0.48)
24	(500-650)	9	(0.62)	11	(0.76)
30	(650-800)	12	(0.83)	14	(0.97)
36	(800-1000)	14	(0.97)	18	(1.24)
42	(1000-1200)	17	(1.17)	21	(1.45)
48	(1200-1400)	20	(1.38)	24	(1.65)
54	(1400-1600)	12*	(0.83)*	14*	(0.97)*
60	(1600-1800)	13*	(0.90)*	16*	(1.10)*
72	(1800-2000)	16*	(1.10)*	19*	(1.31)*
84	(2000-2200)	18*	(1.24)*	23*	(1.59)*
96	(2200-2400)	21*	(1.45)*	26*	(1.79)*
*Per Tensioner. Dual tensioners required.					

Place label on chute wall,  
visible to tensioner user.

**martin®**

Label P/N 30480

Figure 17. Air Bag Pressure Label, P/N 30480

Martin® Spring Tensioners Recommended Tension				
Belt width in. (mm)	Martin® QC1™ Cleaner HD	Durt Hawg® DH2 Cleaner	Martin® QC1™ Metal Tipped	
	Spring length †	Spring length †	Spring length †	
18 (400-500)	3.63 (92)	3.38 (86)	3.85 (98)	
24 (500-650)	3.50 (90)	3.25 (83)	3.85 (98)	
30 (650-800)	3.38 (86)	3.00 (76)	3.85 (98)	
36 (800-1000)	3.25 (83)	3.00 (76)	3.85 (98)	
42 (1000-1200)	3.13 (79)	2.88 (73)	3.85 (98)	
48 (1200-1400)	3.00 (76)	2.75 (70)	3.85 (98)	
54 (1400-1600)	3.38 (86)*	3.38 (86)*	3.85 (98)*	
60 (1600-1800)	3.38 (86)*	3.25 (83)*	3.85 (98)*	
72 (1800-2000)	3.25 (83)*	3.00 (76)*	3.85 (98)*	
84 (2000-2200)	3.13 (79)*	3.00 (76)*	3.85 (98)*	
96 (2200-2400)	3.00 (76)*	2.75 (70)*	3.85 (98)*	

\*Per tensioner. Dual tensioners required. † Compressed

Place label on chute wall,  
visible to tensioner user.

**martin®**

Label P/N 32259

Figure 18. Spring Tensioner Label, P/N 32259



### Recommended Air Pressure for Martin® Air Cylinder Tensioner

Belt Width in. (mm)	Martin® QC1™ Cleaner HD psi (bar)	Durt Hawg® DH2 Cleaner psi (bar)
18 (400-500)	8 (0.55)	9 (0.62)
24 (500-650)	12 (0.83)	13 (0.89)
30 (650-800)	16 (1.10)	18 (1.24)
36 (800-1000)	20 (1.37)	22 (1.51)
42 (1000-1200)	24 (1.65)	27 (1.86)
48 (1200-1400)	28 (1.93)	31 (2.14)
54 (1400-1600)*	16 (1.10)*	18 (1.24)*
60 (1600-1800)*	18 (1.24)*	20 (1.37)*
72 (1800-2000)*	22 (1.51)*	25 (1.72)*
84 (2000-2200)*	26 (1.79)*	29 (2.00)*
96 (2200-2400)*	30 (2.06)*	33 (2.28)*

\* Dual tensioners required Pressure per side.

Label P/N 37844

***martin***®

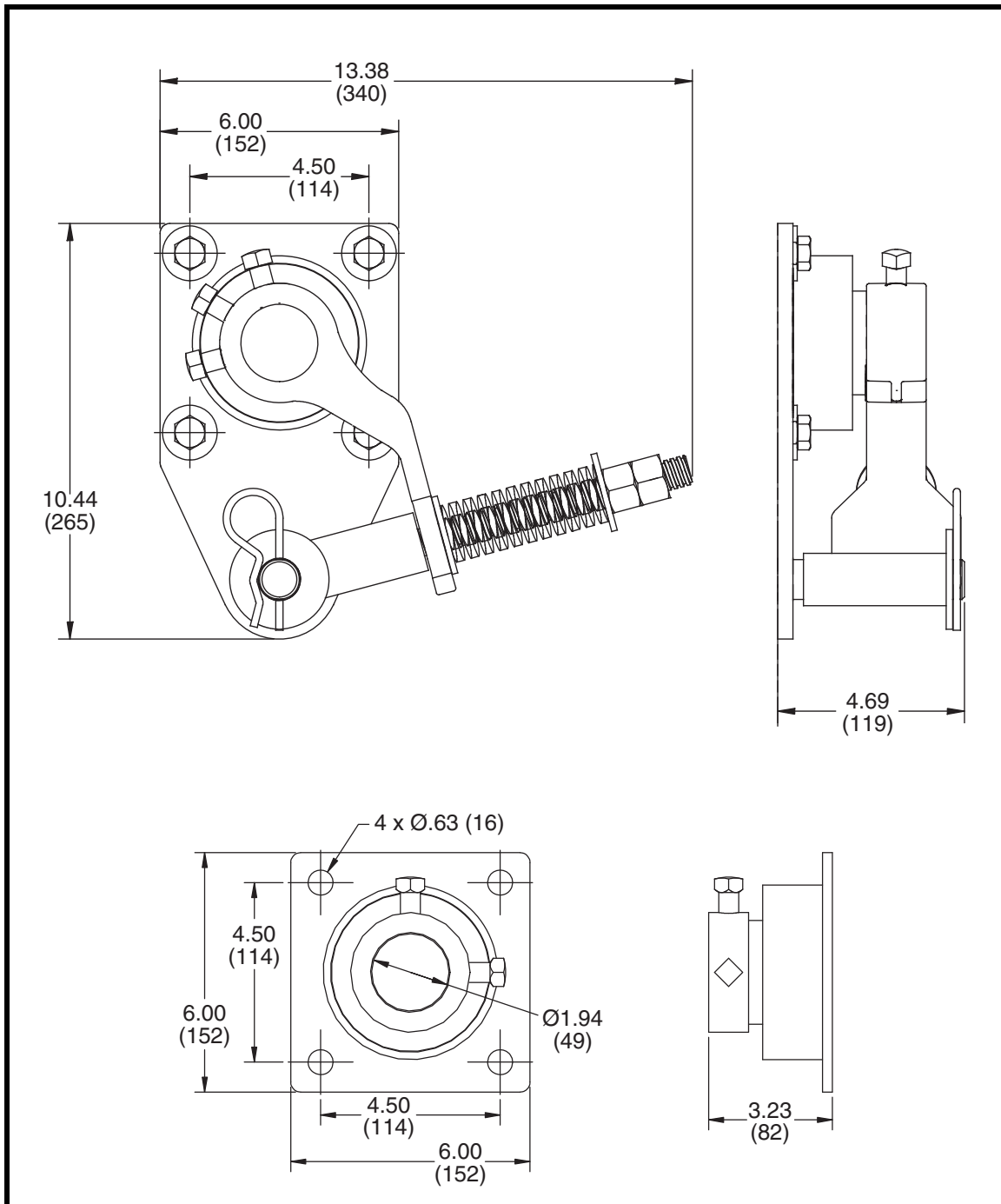
**Figure 19. Air Cylinder Pressure Label, P/N 37844**

**Table IV. Recommended Pressures for Martin® Air Bag Tensioner XHD**

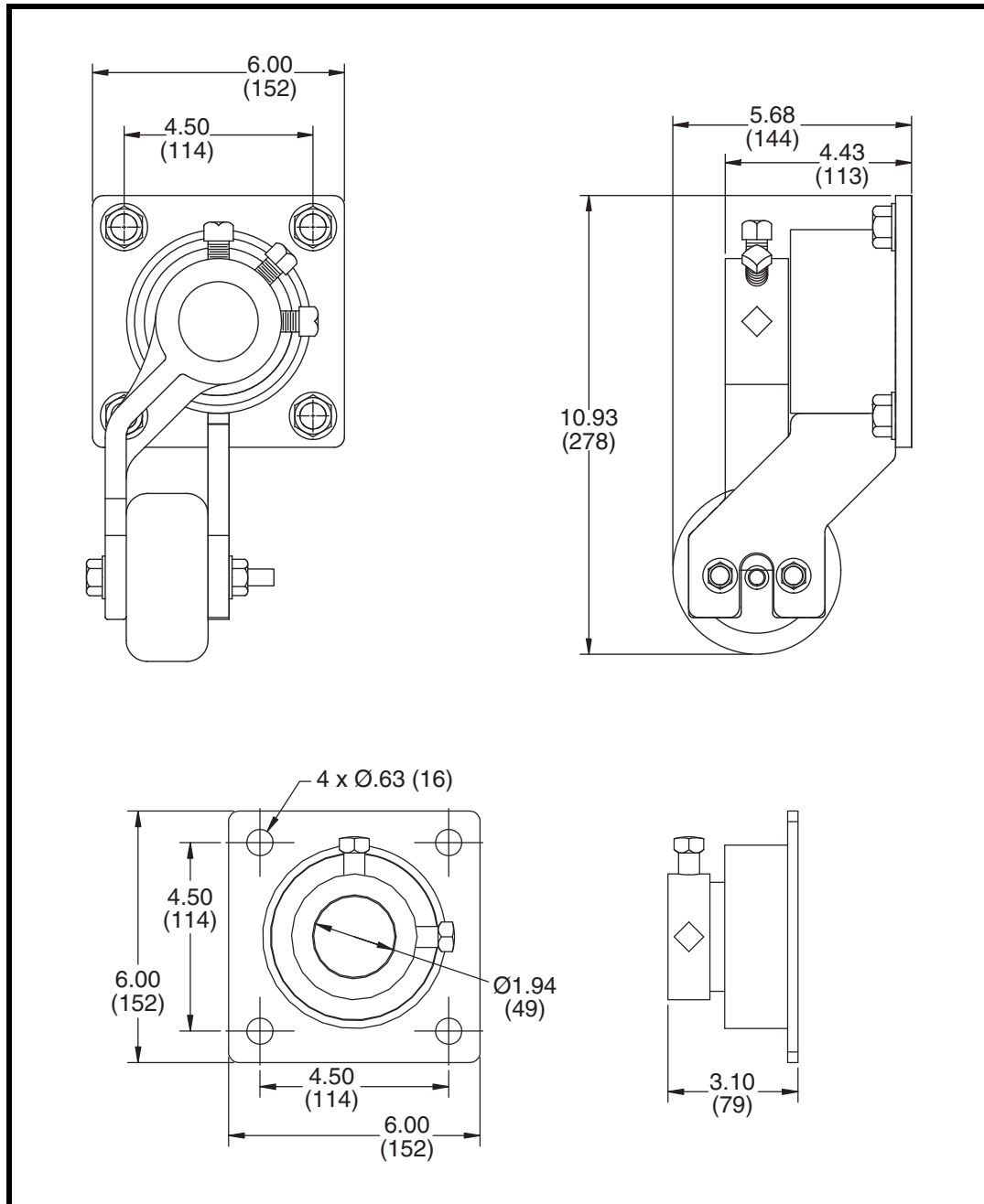
Belt Width in. (mm)	Martin® QC1™ Cleaner XHD psi (bar)
18 (400-500)	8 (0.55)
24 (500-650)	10 (0.69)
30 (650-800)	13 (0.90)
36 (800-1000)	16 (1.10)
42 (1000-1200)	20 (1.38)
48 (1200-1400)	22 (1.52)
54 (1400-1600)	11 (0.76)*
60 (1600-1800)	15 (1.03)*
72 (1800-2000)	16 (1.10)*
84 (2000-2200)	20 (1.38)*
96 (2200-2400)	22 (1.52)*
102 (2400-2600)	25 (1.72)*
108 (2600-2800)	26 (1.79)*
120 (2800-3000)	28 (1.93)*

\*Pressure per tensioner. Dual tensioners required.

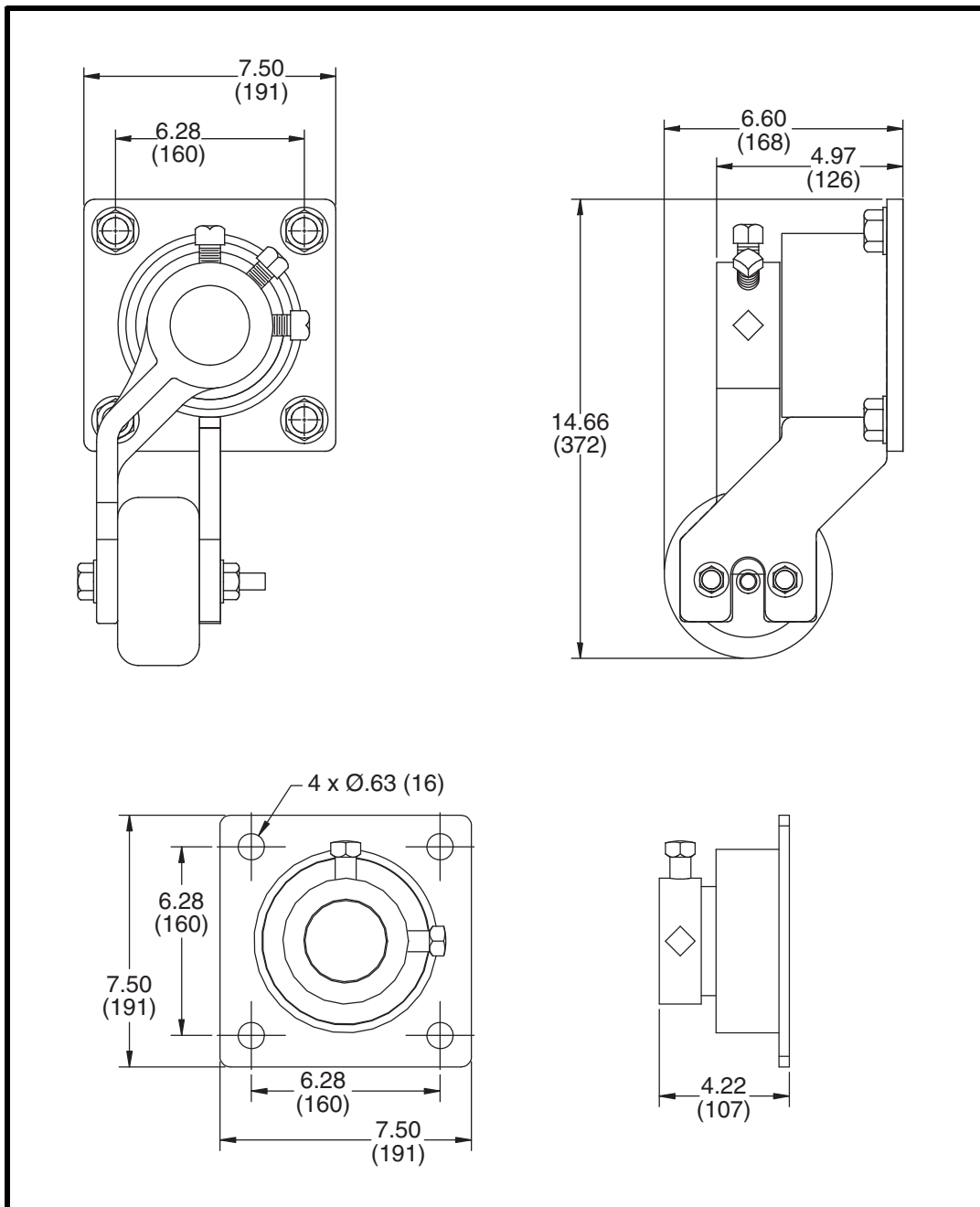
# Appendix Martin® Spring and Air Tensioner Dimensions



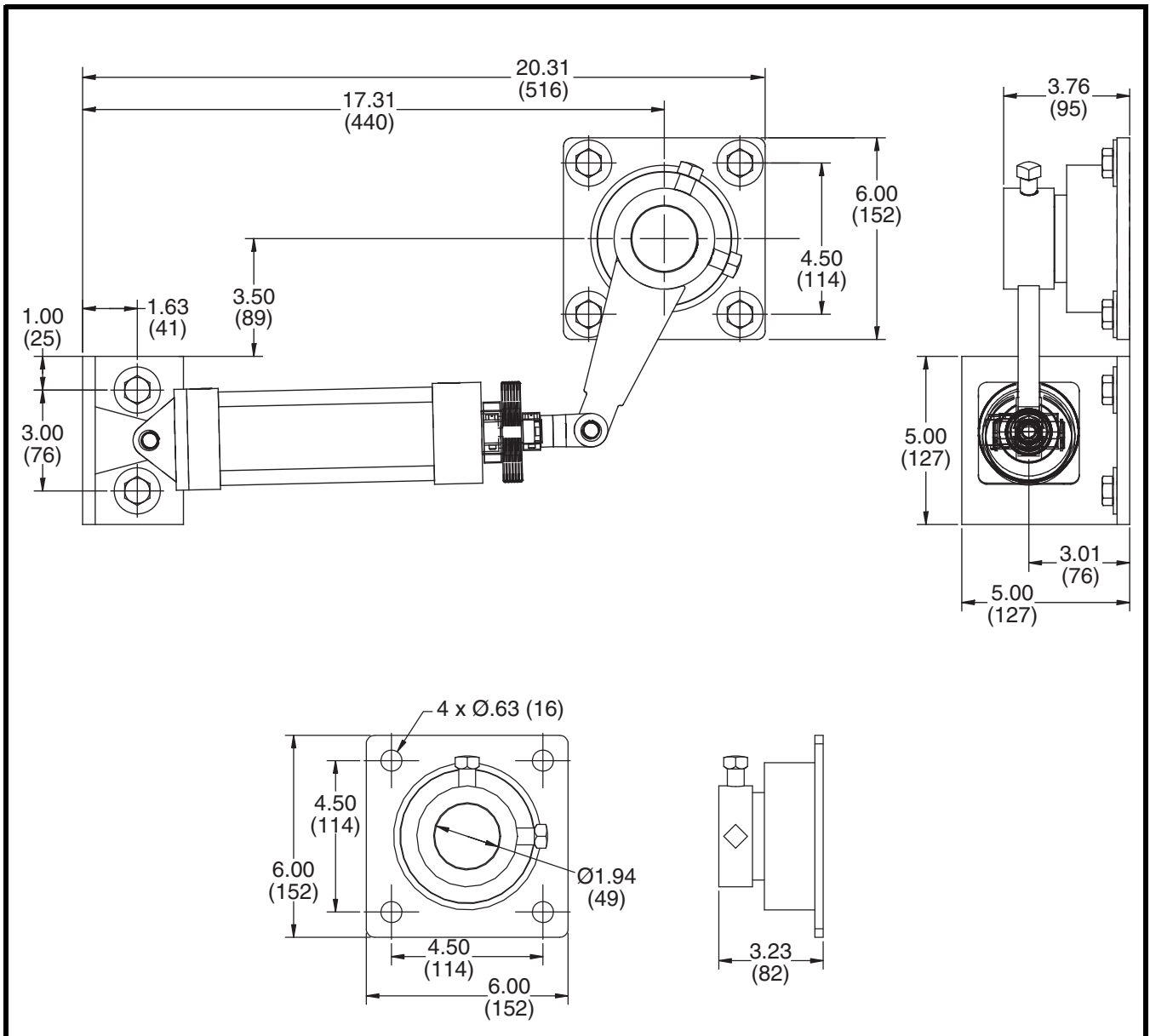
Martin® Spring Tensioner



**Martin® Air Bag Tensioner**



**Martin® Air Bag Tensioner XHD**



Martin® Air Cylinder Tensioner

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