

martin®

Martin®
Durt Dozer™ ***Plow***

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Operator's Manual
M3308

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® Durt Dozer™ Plow protects pulleys from material carryback on single-direction conveyor belts. Hung from brackets at a 45° angle across the belt, the Martin® Durt Dozer™ Plow rides on the conveyor belt and is spring tensioned to provide efficient cleaning. The Durt Dozer™ Plow is designed so that its metal frame will not contact the belt when the cleaning edge is worn away. When one side of the blade is worn, it can be flipped over to provide additional cleaning. A safety cable prevents the plow from being carried into the pulleys should its mounting brackets come loose.

The Martin® Durt Dozer™ Plow is equipped with a replaceable high-density polyethylene cleaning blade and is available in sizes to fit belts from 18 to 96 in. (400 to 2400 mm) wide.

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.

Safety

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

Materials required

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

Before Installing Plow

1. Inspect shipping box for damage. Report damage to delivery service. Fill out damage report and return to Martin Engineering.
2. Remove plow from shipping box. Equipment in box should include the following:
 - Martin® Durt Dozer™ Plow Assembly.
 - Two Conveyor Products Warning Labels, P/N 23395.
 - Two Flying Objects Warning Labels, P/N 38227.
 - Two Martin® Durt Dozer™ Plow Tensioning Labels, P/N 33738.
 - Warranty card.
 - Damage report.
3. If anything is missing or damaged, contact Martin Engineering or representative. Fill out warranty card and return to Martin Engineering.



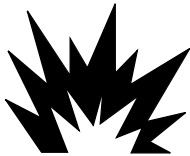
⚠ WARNING

Before installing equipment, turn off and lock out/tag out energy source to conveyor and conveyor accessories.

4. Turn off and lock out/tag out energy source according to ANSI standards (see “References”).

⚠ WARNING

If equipment will be installed in an enclosed area, gas level or dust content must be tested before using a cutting torch or welding. Using a cutting torch or welding in an area with gas or dust may cause an explosion.



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

Installing Plow

IMPORTANT

Read entire section before beginning work.

To install the Martin® Durt Dozer™ Plow, follow the procedures corresponding to the following steps:

1. Install mount brackets on stringers.
2. Install plow assembly onto mount brackets.
3. Tension blade against belt.
4. Install restraining cable.

Installing mount brackets

1. Locate plow on return side of conveyor belt before tail pulley where belt is taut or supported by idler. (See Figure 1.)

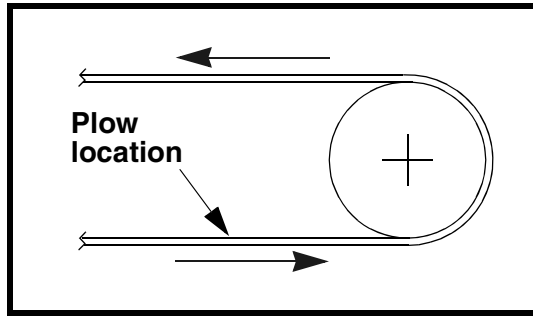


Figure 1. Locating Plow on Belt

NOTE

Left side is determined by standing at tail pulley and looking toward head pulley.

2. Locate left side mount bracket as follows:
 - a. See Figure 2. Starting from face of tail pulley, measure distance shown under “Locate Left Bracket” in Table I, and mark location on stringer on left side of belt.
 - b. Center mount bracket (A, Figure 3) on mark. Using bracket as template, mark location of mounting holes on stringer with bottom of bracket 1-1/2 in. (38 mm) above belt surface.
3. Locate right side mount bracket as follows:
 - a. See Figure 2. Starting from left side mounting hole marks, measure toward tail pulley distance shown under “Locate Right Bracket” in Table I. Mark location on left side stringer.

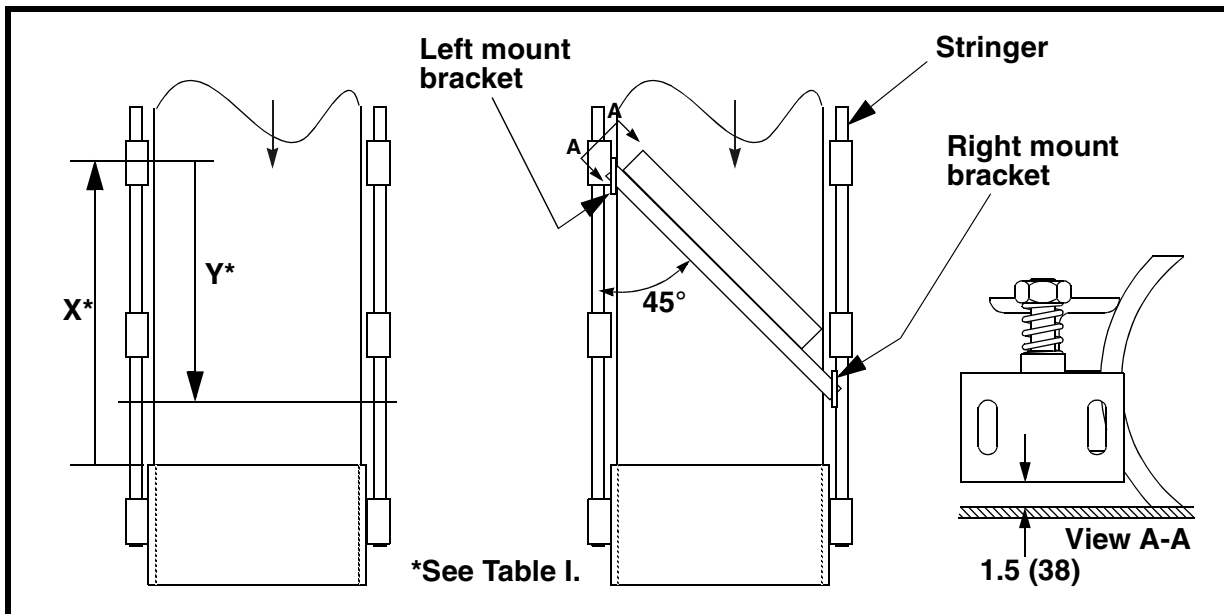


Figure 2. Locating Mount Brackets on Stringers

Table I. Locating Brackets and Tensioning Martin® Durt Dozer™ Plow

Belt Width in. (mm)	Locate Left Bracket X in. (mm)*	Locate Right Bracket Y in. (mm)**	No. of Turns
18 (400 - 500)	36 (914)	22.75 (578)	2
24 (500 - 650)	44 (1118)	28.75 (730)	2
30 (650 - 800)	52 (1321)	34.75 (883)	2
36 (800 - 1000)	61 (1549)	41.00 (1041)	3
42 (1000 - 1200)	69 (1753)	47.00 (1194)	4
48 (1200 - 1400)	77 (1956)	53.00 (1346)	5
54 (1400 - 1600)	86 (2184)	59.00 (1499)	6
60 (1600 - 1800)	95 (2413)	65.00 (1651)	7
66 (1600 - 1800)	103 (2616)	71.00 (1803)	8
72 (1800 - 2000)	112 (2845)	77.00 (1956)	9
84 (2000 - 2200)	129 (3277)	89.25 (2267)	11
96 (2200 - 2400)	146 (3708)	101.25 (2572)	12
<p>*Minimum distance from face of tail pulley (see Figure 2). **Distance from left mounting bracket toward tail pulley (see Figure 2).</p>			

- b. Mark same location on right side stringer, directly across from mark on left side stringer. (This should be at 45° angle from left side mounting hole marks.)
 - c. Center mount bracket on mark. Using bracket as template, mark location of mounting holes on right side stringer with bottom of bracket 1-1/2 in. (38 mm) above belt surface.
4. Bolt or weld mount brackets to stringers as follows:
- a. If bolting, drill or cut two 11/16-in. holes in each stringer where marked. Remove burrs and sharp edges. Apply thread sealing compound to four jam nuts (B). Install each mount bracket with two hex head cap screws (C), four flat washers (D), and two jam nuts.
 - b. If welding, position mount brackets over marks on stringers. Weld mount brackets to stringers, making continuous weld around entire mount bracket.

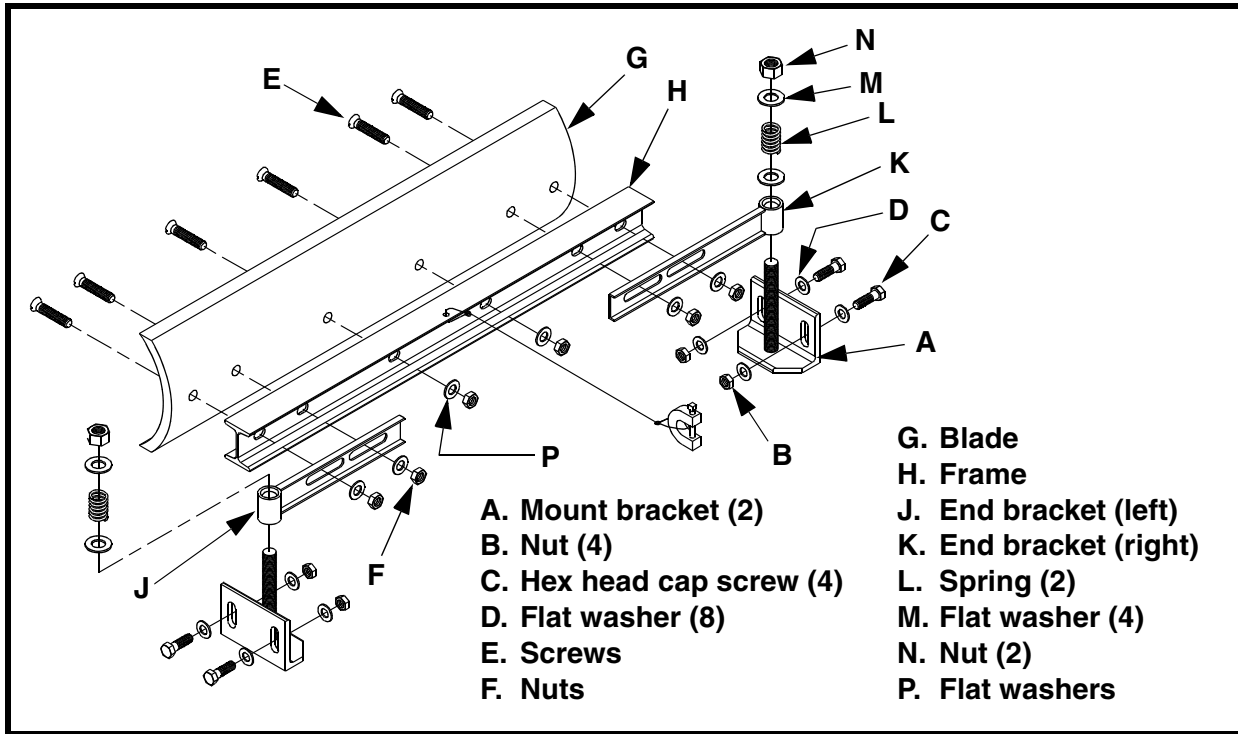


Figure 3. Installing Martin® Durt Dozer™ Plow Assembly

Installing plow onto mount brackets

1. Loosen four screws (E, Figure 3) and nuts (F) attaching blade (G) and frame (H) to end brackets (J and K).
2. Slide end brackets over threaded rods on mount brackets (A), with shorter end bracket (J) on left side mount bracket and longer end bracket (K) on right side mount bracket. Make sure concave side of blade is facing head pulley.
3. Slide frame on end brackets to center blade on belt. When centered, tighten screws (E) and jam nuts (F) to secure blade in place. Make sure blade is resting on belt surface.

Tensioning blade against belt

1. Drop two springs (L, Figure 3) onto threaded rods on mount brackets (A). Make sure springs rest on bottom weldment of mount brackets.
2. Install four flat washers (M) and two nuts (N) onto threaded rods. Make sure a flat washer rests on top of each spring.
3. Turn nuts until they hold flat washers firmly against springs, but without compressing springs.
4. Turn nuts further according to Table I.

*Installing
restraining cable*

⚠ CAUTION

Restraining cable must be installed to prevent plow from being carried into pulley if mount brackets should fail. Failure to do so could severely damage plow, pulley, and belt.

1. Loop one end of hanger cable (A, Figure 4) through hanger c-clamp (B) and secure with cable clip (C).

⚠ CAUTION

Do not install restraining cable on stringer that is between plow and tail pulley.

2. Apply thread sealing compound to threads of square head set screw (D). Secure hanger c-clamp to same stringer that mount bracket is installed on, or another stringer that is between plow and head pulley. Tighten square head set screw.
3. Loop loose end of hanger cable through hole in frame (E) and secure with cable clip.

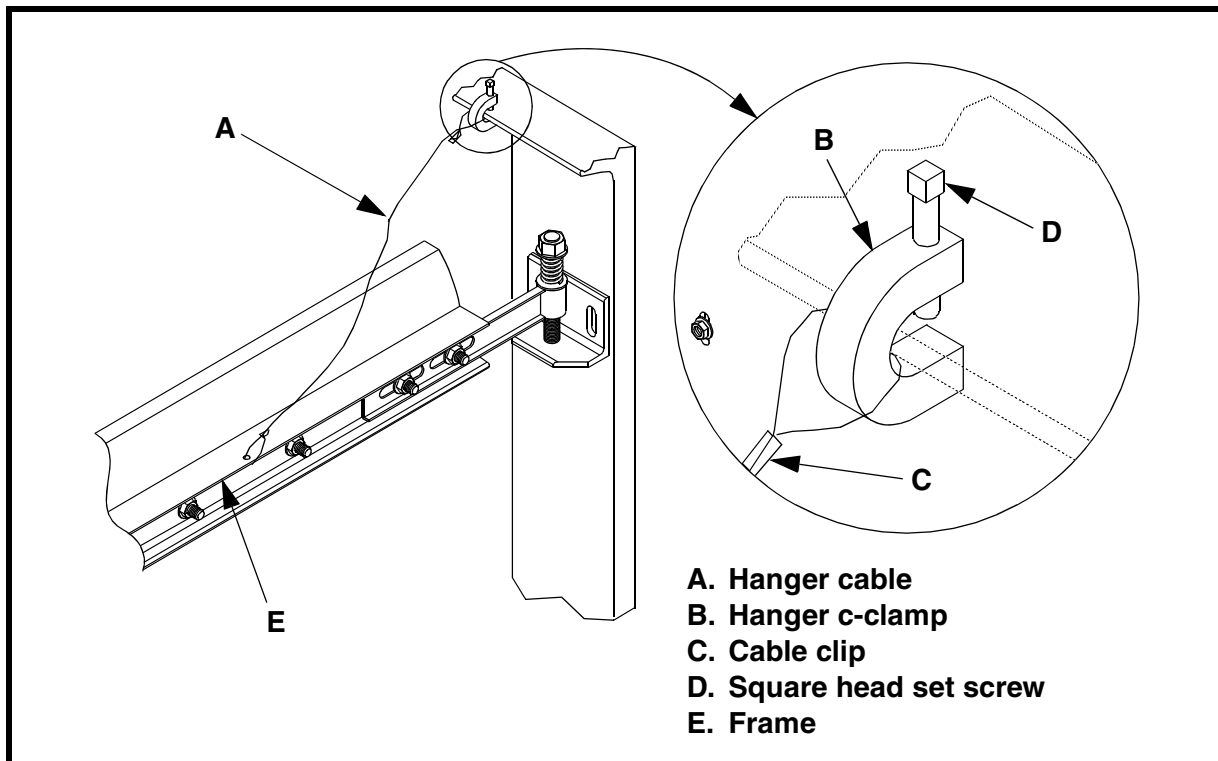


Figure 4. Installing Restraining Cable

After Installing Plow

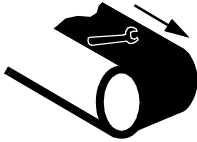
IMPORTANT

Read entire section before beginning work.

1. Thoroughly wipe outside chute walls clean above Martin® Durt Dozer™ Plow on both sides of chute. Place Conveyor Products Warning Labels (P/N 23395), Flying Objects Warning Labels (P/N 38227), and Martin® Durt Dozer™ Plow Tensioning Labels (P/N 33738) on chute walls visible to plow 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.



2. Remove all tools and fire retardant cover from installation area and conveyor 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.

⚠ WARNING

Before adjusting tail protection plow, turn off and lock out/tag out energy source to conveyor belt and conveyor accessories.



4. After 1 hour of operation, turn off and lock out/tag out energy source according to ANSI standards (see “References”).
5. Make sure all fasteners are tight. Tighten if necessary.
6. Inspect plow blade for wear. (A small amount of “break-in” wear may be found. This will stop once blade wears to conveyor belt contour.)
7. Make sure plow is pushing material off edge of belt efficiently, leaving minimal material on belt.
8. If wear, material buildup, or some other problem exists, see “Troubleshooting/Installation Checklist.”
9. Repeat steps 2 and 3.

IMPORTANT

Read entire section before beginning work.



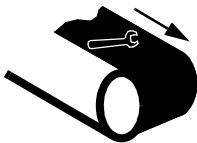
WARNING

Before servicing tail protection plow, turn off and lock out/tag out energy source to conveyor belt and conveyor accessories.

1. Turn off and lock out/tag out energy source according to ANSI standards (see “References”).
2. Make sure all fasteners are tight. Tighten if necessary.
3. Make sure blade is still properly tensioned against belt. If blade is not cleaning effectively, follow procedure under “Tensioning blade against belt.”
4. Check blade for wear. If blade no longer contacts belt at full tension and end brackets are resting on mount brackets, do the following:
 - a. Remove screws (E, Figure 3), jam nuts (F), and flat washers (P) attaching blade and frame (H) to end brackets (J and K).
 - b. If other side of blade is not worn, flip blade over. If both sides of blade are worn, install a new blade. Make sure concave side of blade faces head pulley.
 - c. Apply thread sealing compound to jam nuts. Install blade onto frame and end brackets with screws, nuts, and flat washers, but do not tighten.
 - d. Slide frame on end brackets to center blade on belt. When centered, tighten screws and nuts to secure blade in place. Make sure blade is resting on belt surface.
 - e. Follow procedure under “Tensioning blade against belt.”
5. Check restraining cable for wear. Make sure hanger c-clamp is securely attached to stringer.
6. Wipe warning 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.



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/Installation Checklist

Troubleshooting If you are experiencing problems with tail protection plow, see below:

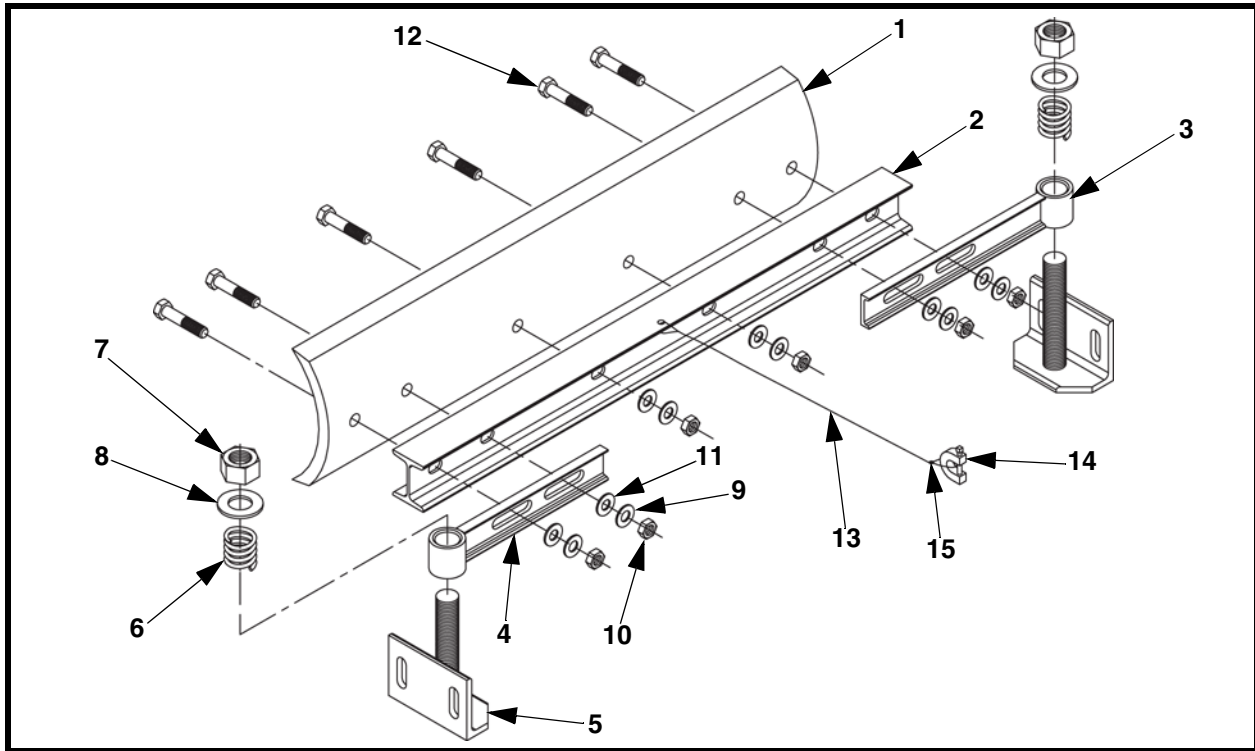
Symptom	Corrective Action
Material buildup on blade	Blade is not installed at 45° angle. Check angle and re-install if necessary.
High blade wear rate.	Tension is set too high. Reduce tension.
Insufficient cleaning and carryback.	Tension is set too low or too high. Increase or decrease tension. Check blades for excessive wear and flip over or replace if necessary.

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

Installation Checklist
– Tail protection plow is installed where belt is taut or supported by idler.
– Tail protection plow is installed at 45° angle across belt.
– Ends of frame are equal distance from belt.
– Blade is centered on belt.
– Concave side of blade is facing head pulley.

Part Numbers

Figure 5 provides part numbers for Martin® Durt Dozer™ Plows. Please reference part numbers when ordering parts.



Item	Description	Part No.	Qty
1	Blade	33610-XX	1
2	Frame	33618-XX	1
3	HD Long Channel Weldment	33607	1
4	HD Short Channel Weldment	33608	1
5	HD Mount Bracket Weldment	33609	2
6	Compression Spring	34671	2
7	Nut Hex Jam 1-1/4-7NC	32694	2
8	Washer Flat 1-1/4	34672	2
9	Washer Compression 5/8 SST	23330	See Table II
10	Nut Jam 5/8-11NC 316 SST	35398	See Table II
11	Washer Flat 5/8	17154	See Table II
12	Screw HHC 5/8-11NC x 3 316 SST	35397	See Table II
13	Cable Hanger	100107	1
14	Cable Clip	23481	2
15	Screw HHC 5/8-11NC x 2	26288	1
Fig. 6	Label Martin® Durt Dozer™ Plow Tensioning	33738	2
Fig. 7	Label Conveyor Products Warning	23395	2
Fig. 8	Label Flying Objects Warning	38227	2

*XX indicates belt width in inches.

Figure 5. Martin® Durt Dozer™ Plow Assembly, P/N 33600-XX*

Table II. Martin® Durt Dozer™ Plow Assembly Blade Coverage and Quantities

Belt Width in. (mm)	Blade Coverage in. (mm)	Quantity Items 6 & 8	Quantity Item 1	Length Item 9 in. (mm)
18 (400 - 500)	29.00 (737)	9	5	33 (838)
24 (500 - 650)	37.50 (953)	10	6	36 (914)
30 (650 - 800)	46.00 (1168)	11	7	39 (991)
36 (800 - 1000)	54.50 (1384)	12	8	42 (1067)
42 (1000 - 1200)	63.00 (1600)	13	9	45 (1143)
48 (1200 - 1400)	71.50 (1816)	14	10	48 (1219)
54 (1400 - 1600)	80.00 (2032)	15	11	51 (1295)
60 (1600 - 1800)	88.50 (2248)	16	12	54 (1372)
66 (1600 - 1800)	97.00 (2464)	17	13	57 (1448)
72 (1800 - 2000)	105.50 (2680)	18	14	60 (1524)
84 (2000 - 2200)	122.50 (3112)	20	16	66 (1676)
96 (2200 - 2400)	139.50 (3543)	22	18	72 (1829)

Martin® Durt Dozer™ Plow Location and Tensioning			
Belt Width in. (mm)	Locate Left Bracket in. (mm)*	Locate Right Bracket in. (mm)**	No. of Turns
18 (400 - 500)	36 (914)	22.75 (578)	2
24 (500 - 650)	44 (1118)	28.75 (730)	2
30 (650 - 800)	52 (1321)	34.75 (883)	2
36 (800 - 1000)	61 (1549)	41.00 (1041)	3
42 (1000 - 1200)	69 (1753)	47.00 (1194)	4
48 (1200 - 1400)	77 (1956)	53.00 (1346)	5
54 (1400 - 1600)	86 (2184)	59.00 (1499)	6
60 (1600 - 1800)	95 (2413)	65.00 (1651)	7
66 (1600 - 1800)	103 (2616)	71.00 (1803)	8
72 (1800 - 2000)	112 (2845)	77.00 (1956)	9
84 (2000 - 2200)	129 (3277)	89.25 (2267)	11
96 (2200 - 2400)	146 (3708)	101.25 (2572)	12
*Minimum distance from face of tail pulley.			
**Distance from left mounting bracket toward tail pulley.			
<small>Label P/N 33738</small>			
<i>martin</i>® 800-544-2947 or 309-852-2384			

Figure 6. Martin® Durt Dozer™ Plow Tensioning Label, P/N 33738

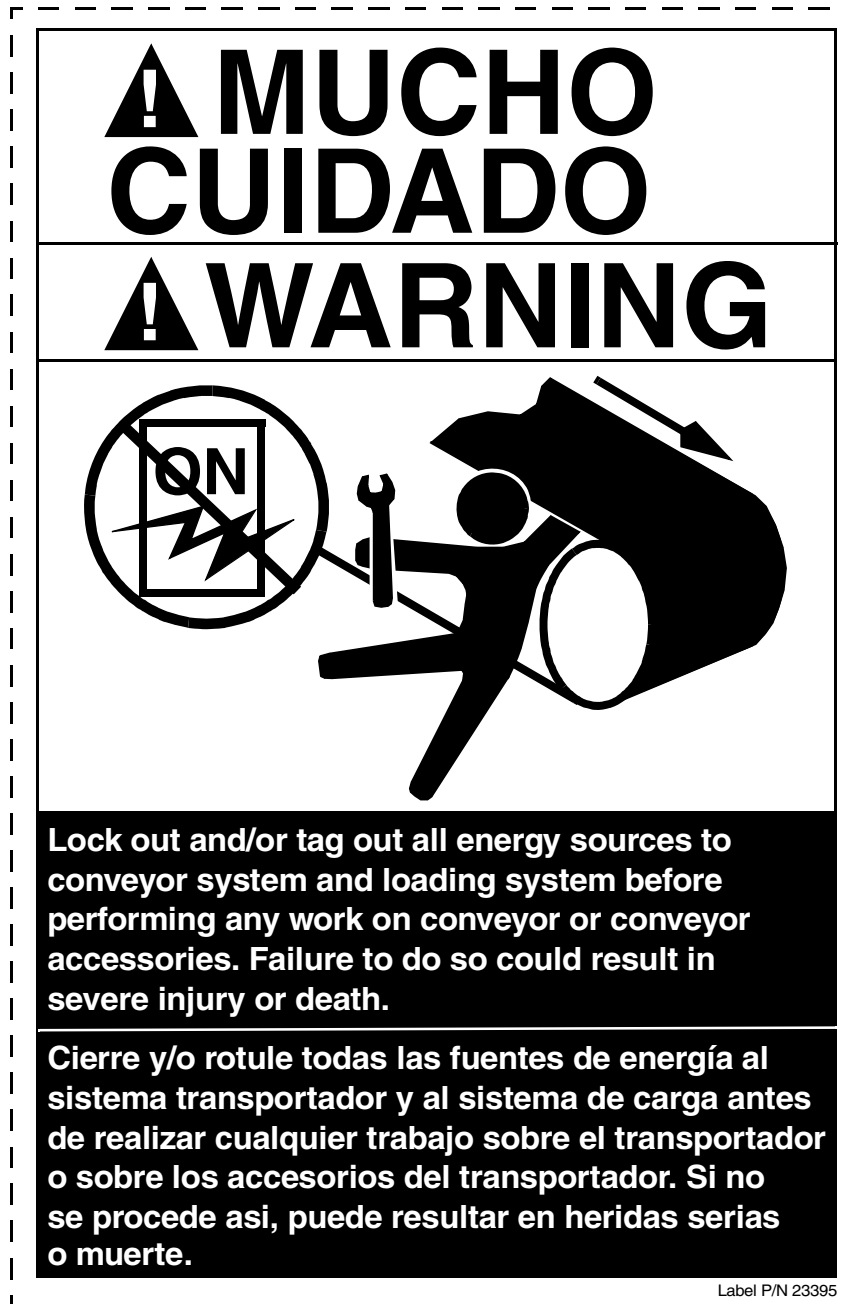


Figure 7. Conveyor Products Warning Label, 23395



Figure 8. Flying Objects Warning Label, P/N 38227

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