

***martin***®

***Martin***®  
***V-Plow HD***

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***Operator's Manual***  
***M3201***

# 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

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## General

The Martin® V-Plow HD floats on the inside surface of a conveyor belt to effectively remove stray material in light- to moderate-duty applications. The self-adjusting design provides effective cleaning in all states of blade wear.

The Martin® V-Plow HD fits belts from 18 to 96 in. (400 to 2400 mm) wide. Specifications are shown in Table I.

**Table I. Martin® V-Plow HD Specifications**

|                               |                               |
|-------------------------------|-------------------------------|
| <b>Cleaning Edge Material</b> | 60-Durometer Rubber           |
|                               | 90-Durometer Urethane         |
| <b>Blade Dimensions</b>       | 1 x 4 in.<br>(25 x 102 mm)    |
| <b>Operating Temperature</b>  | -20 to 160°F<br>(-29 to 71°C) |

## References

The following documents are referenced in this manual:

- American National Standards Institute (ANSI) z244.1-1982, *American National Standard for Personnel Protection - Lockout/Tagout of Energy Sources - Minimum Safety Requirements*, American National Standards Institute, Inc., 1430 Broadway, New York, NY 10018.
- Federal Register, Volume 54, Number 169, Part IV, 29 CFR Part 1910, *Control of Hazardous Energy Source (Lockout/Tagout); Final Rule*, Department of Labor, Occupational Safety and Health Administration (OSHA), 32nd Floor, Room 3244, 230 South Dearborn Street, Chicago, IL 60604.

## Safety

All safety rules defined in the above documents and all owner/employer safety rules must be strictly followed when working on the Martin® V-Plow.

## Materials required

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

## Before Installing V-Plow

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### **IMPORTANT**

Read entire section before beginning work.

### **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 v-plow 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 lock out / tag out / blockout / testout energy source according to ANSI standards (see "References").



### **⚠ WARNING**

**If equipment will be installed in an enclosed area, test gas level or dust content 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 the atmosphere for gas level or dust content. Cover the conveyor belt with a fire-retardant cover.

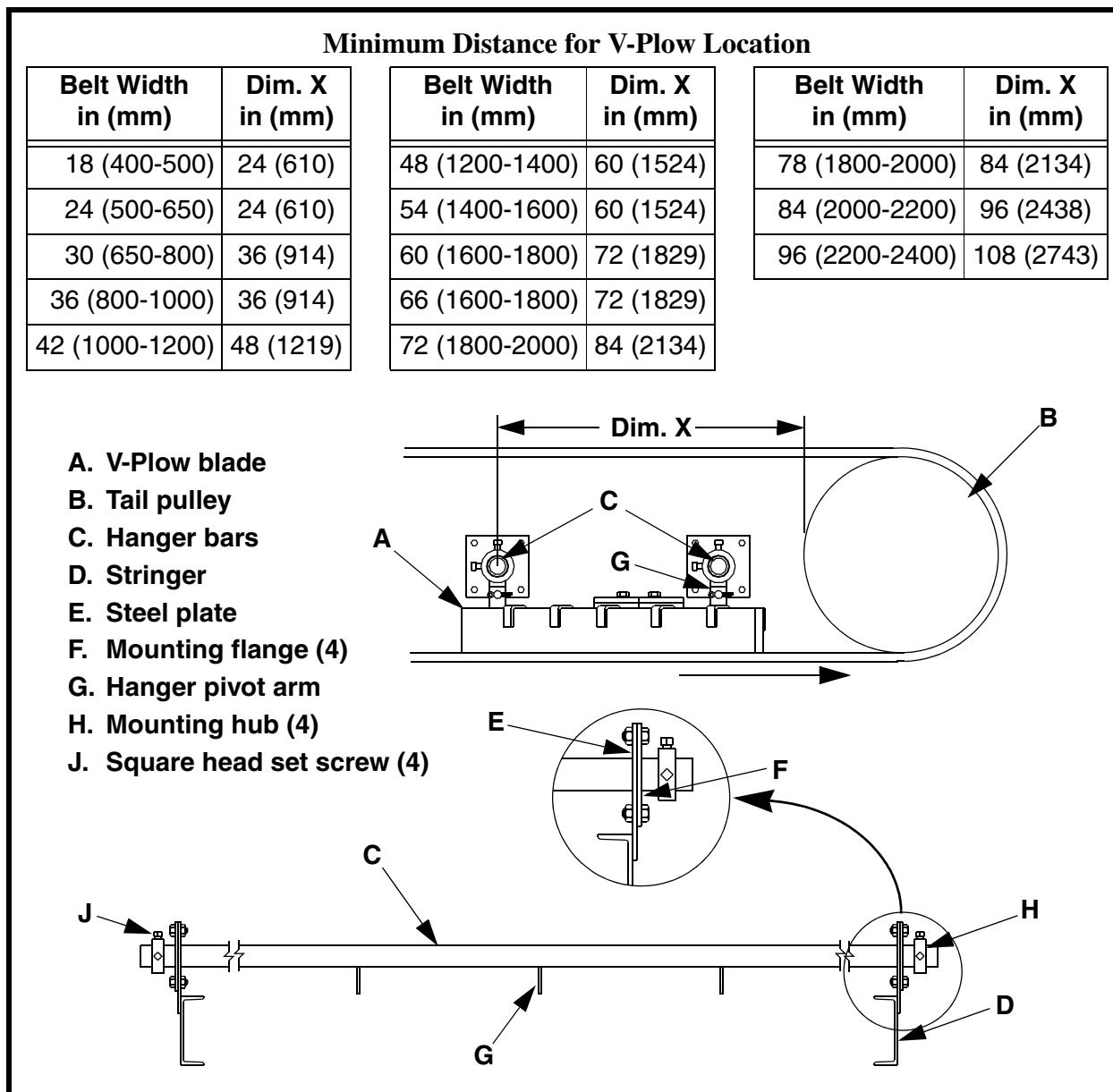
## IMPORTANT

Read entire section before beginning work.

## ⚠ CAUTION

Position v-plow blade according to chart in Figure 1. Minimum distance is to ensure safety cables will keep v-plow from damaging tail pulley or conveyor belt if mount brackets fail.

1. Place the Martin® V-Plow HD blade (A, Figure 1) on the return side of the belt before the tail pulley (B), with the “V” pointing away from the tail pulley. Position according to chart in Figure 1.



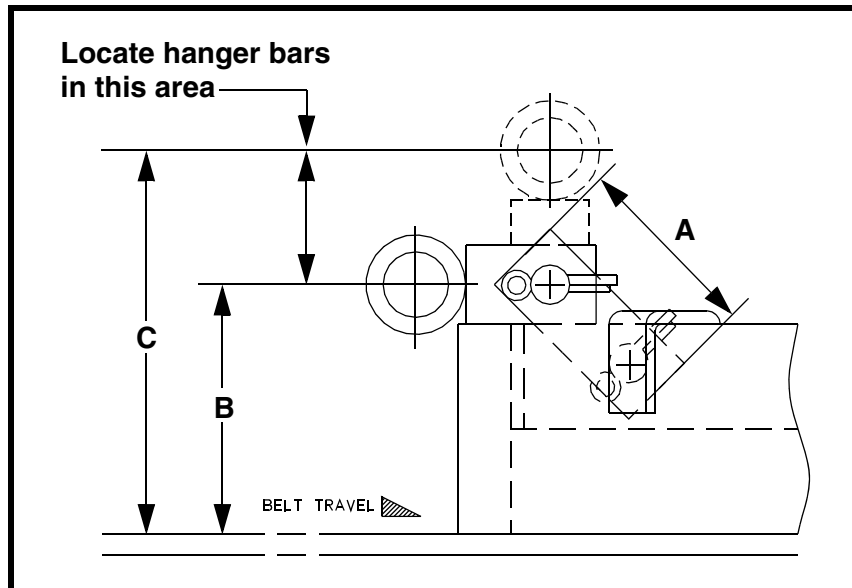
**Figure 1. Locating Martin® V-Plow HD on Belt**

2. Locate the hanger bars according to Table II and Figure 2. Mark the location of the hanger bars on the stringers.
3. Determine how to mount the hanger bars:
  - a. If the stringers are too low to accommodate the hanger bars in the proper position, bolt or weld four 1/2-in. (13-mm) thick steel plates to the top of the stringers.
  - b. If the stringers are high enough to accommodate the hanger bars in the proper position, mount the mounting flanges for hanger bars directly onto the stringers.

**Table II. Martin® V-Plow HD Hanger Bar Locations—in. (mm)  
(Refer to Figure 2.)**

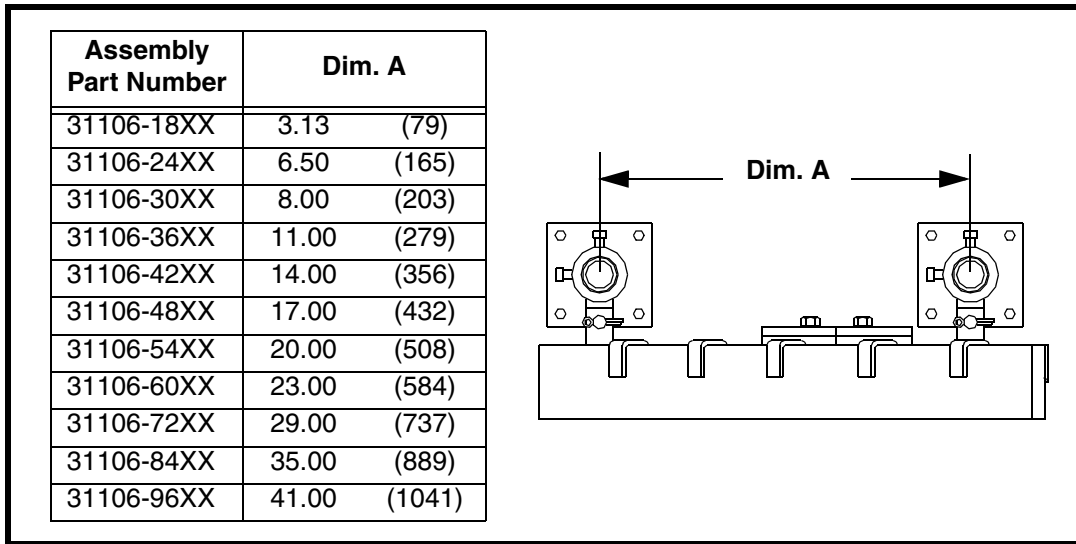
| Hanger<br>Pivot Arm<br>Part No. | If arm length is A, locate hanger bar<br>between B and C |             |             |
|---------------------------------|--|-------------|-------------|
|                                 | A  | B (min.)    | C (max.)    |
| 31131*                          | 3.63 (92)  | 6.50 (165)  | 7.25 (184)  |
| 31131-01*                       | 6.88 (175)   | 9.75 (248)  | 10.50 (267) |
| 31131-02                        | 9.88 (251)   | 12.75 (324) | 13.50 (343) |
| 31131-03                        | 14.00 (356)  | 16.88 (429) | 17.63 (448) |
| 31131-04                        | 8.88 (225)   | 11.75 (298) | 12.50 (318) |
| 31131-05                        | 7.00 (179)   | 10.13 (257) | 10.88 (276) |
| 31131-06                        | 8.13 (201)   | 11.25 (286) | 12.00 (305) |
| 31131-07                        | 11.13 (283)  | 14.25 (362) | 15.00 (381) |

\*For full wear with clearance between metal frame and belt, locate at B (min.).



**Figure 2. Martin® V-Plow HD Hanger Bar Locations  
(Refer to Table II.)**





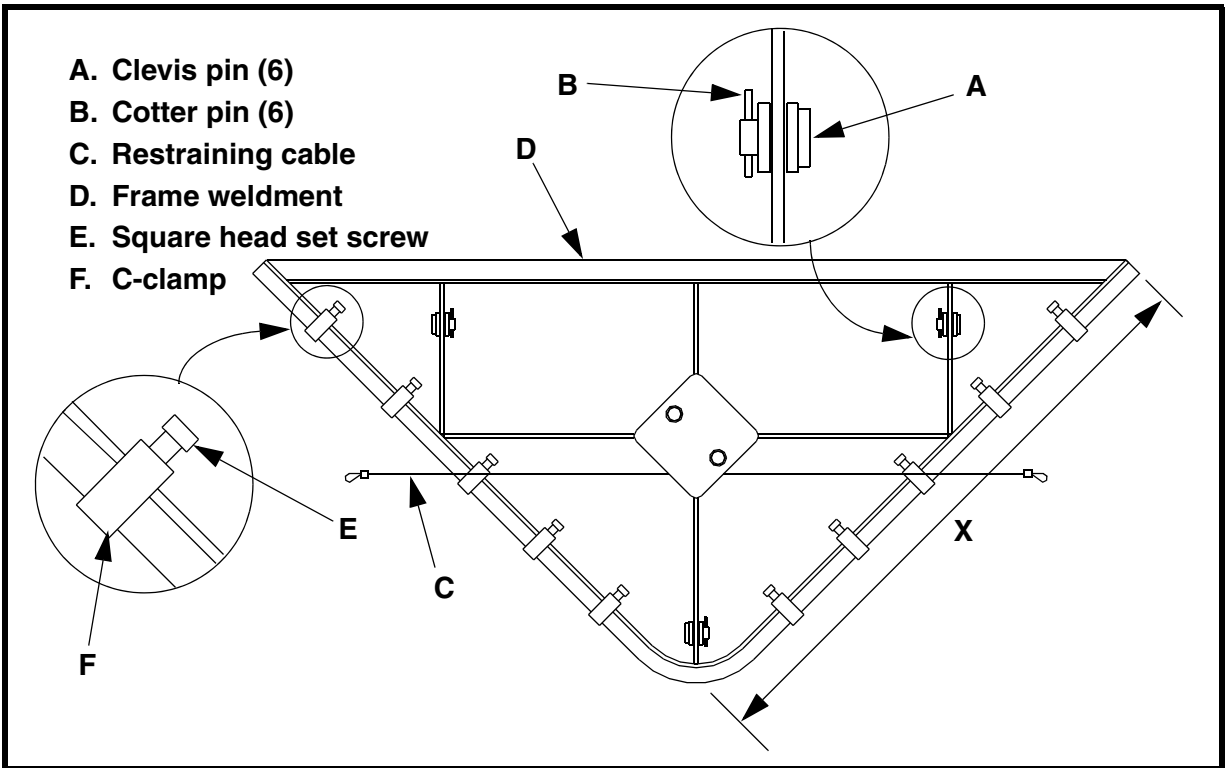
**Figure 3. Distance Between Hanger Bars**

4. Use a mounting flange as a template to mark the location of mounting holes on the stringers or steel plates on both sides of the belt for each hanger bar.

**NOTE**

**For easier maintenance, Martin Engineering recommends bolting rather than welding mounting flanges to stringers or steel plates.**

5. Bolt or weld the mounting flanges to the stringers or steel plates as follows:
  - a. If bolting the mounting plates to stringers or steel plates, do the following:
    - (1) Drill or cut four 2-1/2-in. (63-mm) holes for the two hanger bars.
    - (2) Drill or cut four 9/16-in. (14-mm) holes for the mounting screws for each mounting flange.
    - (3) Remove burrs and sharp edges.
    - (4) Install each mounting flange onto the stringer or steel plate with four hex head cap screws, flat washers, compression washers, and hex nuts.
  - b. If welding the mounting plates to stringers or steel plates, do the following:
    - (1) Drill or cut four 2-1/2-in. (63-mm) holes for the two hanger bars.
    - (2) Position each mounting flange onto the stringer or steel plate.
    - (3) Weld each mounting flange onto the stringer or steel plate. Make a continuous weld around the entire mounting flange.



**Figure 4. Installing Martin® V-Plow HD**

6. Insert the hanger bars (C, Figure 1) through the mounting holes. Attach each hanger pivot arm (G) to the hanger bar with a clevis pin (A, Figure 4) and cotter pin (B).
7. Center the blade on the belt. Slide a mounting hub (H, Figure 1) onto both ends of each hanger bar, and up against the mounting flanges. Tighten the two set screws (J) in each mounting hub.

**⚠ CAUTION**

**Restraining cables must be installed to prevent the plow from being carried into the pulley if the mount brackets should fail. Failure to install restraining cables could severely damage the plow, pulley, and belt. Do not install restraining cables on stringers that are between the plow and tail pulley.**

8. Attach a restraining cable (C, Figure 4) to the conveyor stringers far enough from the tail pulley. Make sure v-plow is located according to chart in Figure 1. Leave no more than 2 in. (51 mm) of slack in cable.

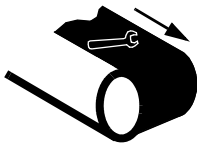
## IMPORTANT

Read entire section before beginning work.

1. Thoroughly wipe the outside chute wall clean above the v-plow on the operator side of the chute. Place a Conveyor Products Warning Label (P/N 23395) and a Flying Objects Warning Label (P/N 38227) on the chute wall visible to the belt operator.
2. 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.



3. Remove all tools and the fire-retardant cover from the 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.



4. Turn on the conveyor belt for 1 hour.

## 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. After 1 hour of operation, turn off and lockout / tagout / blockout / testout energy source according to ANSI standards (see “References”).
6. Make sure all fasteners are tight. Tighten if necessary.
7. Inspect the V-Plow for wear. (A small amount of “break-in” wear may be found. This will stop once the blade wears to the conveyor belt contour.)
8. Make sure the plow is pushing material off the edge of the belt efficiently, leaving minimal material on the belt.
9. Repeat step 2.

## Monthly Maintenance

### IMPORTANT

Read entire section before beginning work.

### ⚠ DANGER

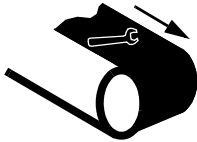


**Before installing, servicing, or adjusting conveyor equipment, turn off and lockout / tagout / blockout / testout all energy sources to the conveyor and conveyor accessories according to ANSI standards. Failure to do so could result in serious injury or death.**

1. Turn off and lockout / tagout / blockout / testout energy source according to ANSI standards (see “References”).
2. Make sure all fasteners are tight. Tighten if necessary.
3. Check the cleaning edge for wear. If it is worn almost to the frame weldment (D, Figure 4), replace as follows:
  - a. Remove the square head set screws (E) and C-clamps (F) holding the cleaning edge against the frame weldment.
  - b. Remove the old cleaning edge.
  - c. Install a new cleaning edge and secure with C-clamps and square head set screws.
4. Check the restraining cable for wear. Make sure the cable is securely attached to the stringers.
5. Wipe all labels clean. If the labels are not readable, contact Martin Engineering or your representative for replacements.

### ⚠ 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.**



6. Remove all tools from the 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.**



7. Start the conveyor belt.

# Part Numbers

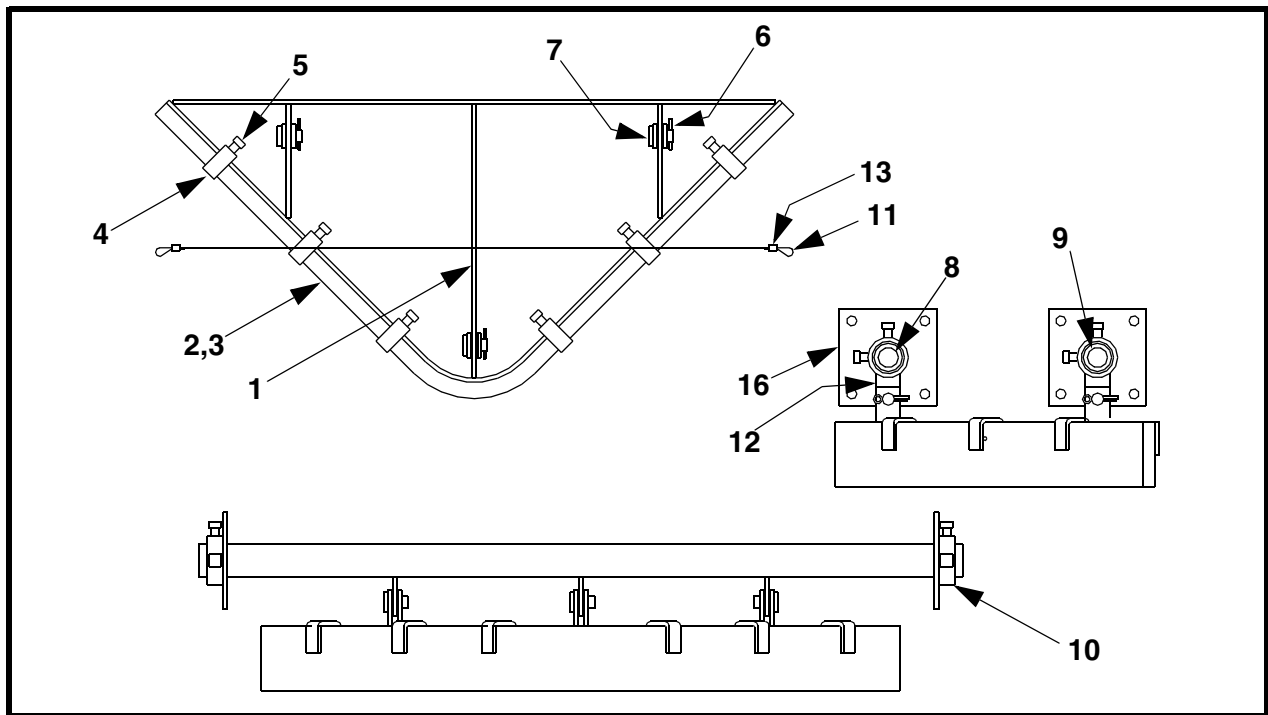
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This section provides product names and corresponding part numbers for the Martin® V-Plow HD and related equipment. Please reference the part numbers when ordering parts.

***Martin® V-Plow  
HD Assembly***

For belts 18 to 48 in. wide: P/N 31106-XXXX. See Figure 5.

For belts 54 to 96 in. wide: P/N 31106-XXXX. See Figure 6.



| Item    | Description                     | Part No.   | Qty       |
|---------|---------------------------------|------------|-----------|
| 1       | Frame Weldment                  | 31135-XX   | 1         |
| 2       | Blade Urethane                  | Table VII  | Table IV  |
| 3       | Blade 800 Nitrile Rubber        | 100066     | Table IV  |
| 4       | C-Clamp                         | 31132      | Table III |
| 5       | Screw SHS 1/2-13NC x 1          | 22763-03   | Table III |
| 6       | Pin Cotter                      | 16578      | 6         |
| 7       | Pin Clevis                      | 29066      | 6         |
| 8       | Bar Front Hanger                | 31136-XX   | 1         |
| 9       | Bar Back Hanger                 | 31133-XX   | 1         |
| 10      | Hub Mounting                    | 16845      | 4         |
| 11      | Clip Cable                      | 23481      | 4         |
| 12      | Arm Hanger Pivot                | Table VIII | 6         |
| 13      | Lanyard                         | 100107     | Table III |
| 14 (NS) | Conveyor Products Warning Label | 23395      | 2         |
| 15 (NS) | Operator's Manual               | M3201      | 1         |
| 16 (NS) | Flange Mounting                 | Table III  | 4         |
| 17 (NS) | Mounting Hardware Kit           | Table III  | 1         |
| 18 (NS) | Martin Products Label           | 32238      | 2         |
| 19 (NS) | Flying Objects Warning Label    | 38227      | 2         |

**Figure 5. Martin® V-Plow HD Assembly, P/N 31106-XXXX\*  
(18 - 48-in. [400 - 1400-mm] belts)**

\*First XX indicates belt width (18 through 48 in.); third X indicates urethane or rubber blade; fourth X indicates special pivot arm heights (blank indicates standard height); last XX indicates material for urethane blades. \*\*XX indicates belt width in inches.

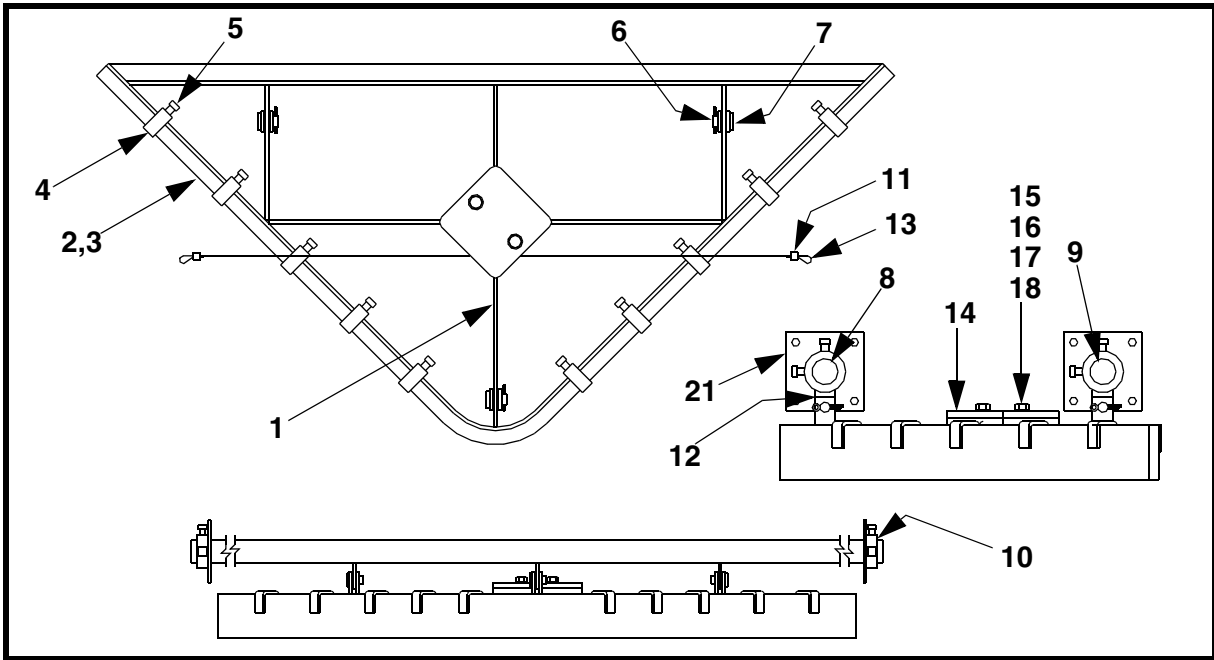
**Table III. Martin® V-Plow HD Item Quantities and Part Numbers**

| <b>Assembly Part No.</b> | <b>Items 4 &amp; 5 Qty</b> | <b>Item 13 Qty</b> | <b>Item 8 Part No.</b> | <b>Item 16 Part No.</b> | <b>Item 17 Part No.</b> |
|--------------------------|----------------------------|--------------------|------------------------|-------------------------|-------------------------|
| 31106-18XXXX             | 4                          | 5' 0"              | 31136-24               | 30208                   | 38735-1                 |
| 31106-24XXXX             | 4                          | 5' 0"              | 31136-24               | 16628                   | 38735                   |
| 31106-30XXXX             | 6                          | 5' 8"              | 31136-36               | 16628                   | 38735                   |
| 31106-36XXXX             | 6                          | 5' 8"              | 31136-36               | 16628                   | 38735                   |
| 31106-42XXXX             | 8                          | 6' 10"             | 31136-48               | 16628                   | 38735                   |
| 31106-48XXXX             | 8                          | 6' 10"             | 31136-48               | 16628                   | 38735                   |

**Table IV. Martin® V-Plow HD Blade Quantities**

| <b>Assembly Part No.</b> | <b>Item 2 Qty</b> | <b>Item 3 Qty</b> |
|--------------------------|-------------------|-------------------|
| 31106-18RX               | 0                 | 2.25              |
| 31106-18UXXX             | 1                 | 0                 |
| 31106-24RX               | 0                 | 2.96              |
| 31106-24UXXX             | 1                 | 0                 |
| 31106-30RX               | 0                 | 3.67              |
| 31106-30UXXX             | 1                 | 0                 |
| 31106-36RX               | 0                 | 4.37              |
| 31106-36UXXX             | 1                 | 0                 |
| 31106-42RX               | 0                 | 5.08              |
| 31106-42UXXX             | 1                 | 0                 |
| 31106-48RX               | 0                 | 5.79              |
| 31106-48UXXX             | 1                 | 0                 |

# Part Numbers



| Item    | Description                     | Part No.   | Qty      |
|---------|---------------------------------|------------|----------|
| 1       | Frame Weldment                  | 31135-XX   | 1        |
| 2       | Blade Urethane                  | Table VII  | Table VI |
| 3       | Blade 800 Nitrile Rubber        | 100066     | Table VI |
| 4       | C-Clamp                         | 31132      | Table V  |
| 5       | Screw SHS 1/2-13NC x 1          | 22763-03   | Table V  |
| 6       | Pin Cotter                      | 16578      | 6        |
| 7       | Pin Clevis                      | 29066      | 6        |
| 8       | Bar Front Hanger                | 31136-XX   | 1        |
| 9       | Bar Back Hanger                 | 31133-XX   | 1        |
| 10      | Hub Mounting                    | 16845      | 4        |
| 11      | Clip Cable                      | 23481      | 4        |
| 12      | Arm Hanger Pivot                | Table VIII | 6        |
| 13      | Lanyard                         | 100107     | Table V  |
| 14      | Weight 5 lbs Stackable          | 28817      | Table V  |
| 15      | Screw HHC 1/2-13NC              | Table V    | 2        |
| 16      | Nut Hex 1/2-13NC                | 11771      | 2        |
| 17      | Washer Compression 1/2          | 11750      | 2        |
| 18      | Washer Flat 1/2                 | 31010      | 2        |
| 19 (NS) | Conveyor Products Warning Label | 23395      | 2        |
| 20 (NS) | Operator's Manual               | M3201      | 1        |
| 21 (NS) | Flange Mounting                 | 16628      | 4        |
| 22 (NS) | Mounting Hardware Kit           | 38735      | 1        |
| 23 (NS) | Martin Products Label           | 32238      | 2        |
| 24 (NS) | Flying Objects Warning Label    | 38227      | 2        |

**Figure 6. Martin® V-Plow HD Assembly, P/N 31106-XXXXXX\*  
(54 - 96-in. [1400 - 2400-mm] belts)**

\*First XX indicates belt width (54 through 96 in.); third X indicates urethane or rubber blade; fourth X indicates special pivot arm heights (blank indicates standard height); last XX indicates material for urethane blades. \*\*XX indicates belt width in inches.



**Table V. Martin® V-Plow HD Item Quantities and Part Numbers**

| <b>Assembly Part No.</b> | <b>Items 4 &amp; 5 Qty</b> | <b>Item 13 Qty</b> | <b>Item 8 Part No.</b> | <b>Item 17 Part No.</b> |
|--------------------------|----------------------------|--------------------|------------------------|-------------------------|
| 31106-54XXXX             | 10                         | 8' 0"              | 31136-60               | 30224                   |
| 31106-60XXXX             | 10                         | 8' 0"              | 31136-60               | 30224                   |
| 31106-66XXXX             | 12                         | 9' 2"              | 31136-72               | 30224                   |
| 31106-72XXXX             | 12                         | 9' 2"              | 31136-72               | 30224                   |
| 31106-78XXXX             | 14                         | 9' 7"              | 31136-84               | M921                    |
| 31106-84XXXX             | 14                         | 9' 7"              | 31136-84               | M921                    |
| 31106-96XXXX             | 16                         | 10' 10"            | 31136-96               | M921                    |

**Table VI. Martin® V-Plow HD Blade Quantities**

| <b>Assembly Part No.</b> | <b>Item 2 Qty</b> | <b>Item 3 Qty</b> |
|--------------------------|-------------------|-------------------|
| 31106-54RX               | 0                 | 6.50              |
| 31106-54UXXX             | 1                 | 0                 |
| 31106-60RX               | 0                 | 7.21              |
| 31106-60UXXX             | 1                 | 0                 |
| 31106-66RX               | 0                 | 7.92              |
| 31106-66UXXX             | 1                 | 0                 |
| 31106-72RX               | 0                 | 8.62              |
| 31106-72UXXX             | 1                 | 0                 |
| 31106-78RX               | 0                 | 9.33              |
| 31106-78UXXX             | 1                 | 0                 |
| 31106-84RX               | 0                 | 10.04             |
| 31106-84UXXX             | 1                 | 0                 |
| 31106-96RX               | 0                 | 11.46             |
| 31106-96UXXX             | 1                 | 0                 |

**Table VII. Martin® V-Plow HD Urethane Blade Chart**

| <b>Assembly Part No.</b> | <b>Item 2 Part No.</b> | <b>Blade Material</b> | <b>Blade Color</b> |
|--------------------------|------------------------|-----------------------|--------------------|
| 31106-XXXX               | 31134-XXU              | 90 Durometer          | Orange             |
| 31106-XXUXGR             | 31134-XXUGR            | 95 Durometer          | Green              |
| 31106-XXUXBL             | 31134-XXUBL            | 85 Durometer          | Blue               |
| 31106-XXUXBR             | 31134-XXUBR            | 85 Durometer          | Brown              |

**Table VIII. Martin® V-Plow HD Hanger Pivot Arm Part Numbers**

| <b>Assembly Part No.</b> | <b>Pivot Arm Part No.</b> | <b>Pivot Arm Length in (mm)</b> |       |
|--------------------------|---------------------------|---------------------------------|-------|
| 31106-XXX                | 31131                     | 3.63                            | (92)  |
| 31106-XXX1               | 31131-01                  | 6.88                            | (175) |
| 31106-XXX2               | 31131-02                  | 9.88                            | (251) |
| 31106-XXX3               | 31131-03                  | 14.00                           | (356) |
| 31106-XXX4               | 31131-04                  | 8.88                            | (225) |
| 31106-XXX5               | 31131-05                  | 7.00                            | (179) |
| 31106-XXX6               | 31131-06                  | 8.13                            | (201) |
| 31106-XXX7               | 31131-07                  | 11.13                           | (283) |

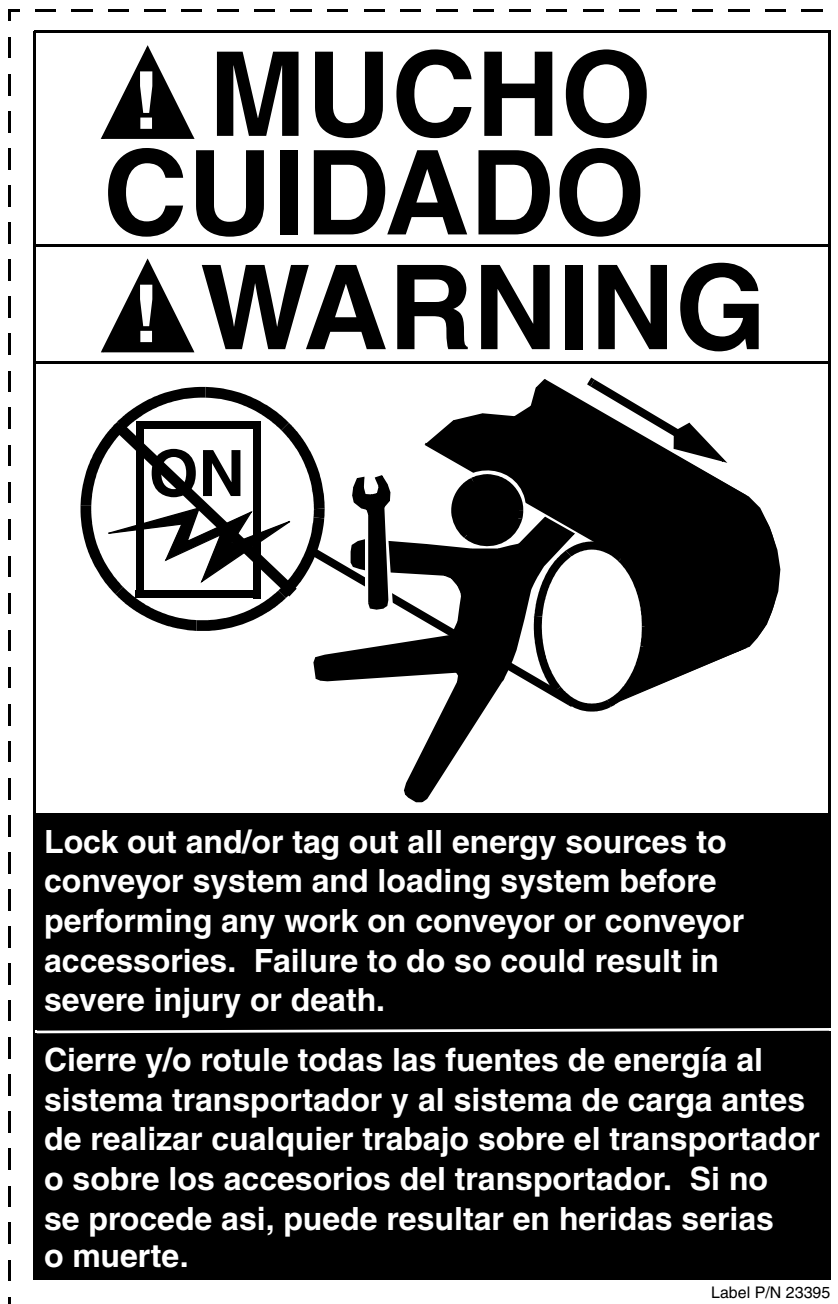


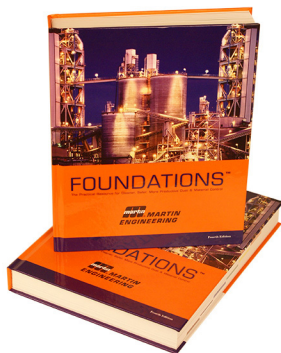
Figure 7. Conveyor Products Warning Label, P/N 23395



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

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# **Problem Solved™** ***GUARANTEED!***



*For nearly 20 years, Martin Engineering's Foundations™ Books have taught industry personnel to operate and maintain clean and safe belt conveyors. The Foundations™ Book, fourth edition, focuses on improving belt conveyors by controlling fugitive material. "The Practical Resource for Total Dust and Material Control," is a 576-page hard cover volume that provides information of value to industries where the efficient handling of bulk materials is a key to productivity and profitability.*

*Expanding upon the book, our Foundations™ Training Program addresses the design and development of more productive belt conveyors, and is offered in three customizable seminars. Attendees gain a better understanding of conveyor safety and performance, helping to justify upgrade investments and increase profitability.*



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