



EVO[®] ***Impact Cradle***

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Operator's Manual
M3785

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	ii
List of Tables	ii
Introduction	1
General	1
References	1
Impact Cradle Materials	1
Safety	1
Materials Required	1
Before Installing Impact Cradle	2
Installing Impact Cradle	3
Installation on EVO [®] Stringer	4
Installation on Standard Stringer	5
Installing Impact Bars	6
After Installing Impact Cradle	7
Maintenance	8
Troubleshooting/Installation Checklist	10
Part Numbers	11

List of Figures

Figure	Title	Page
1	Measuring for Impact Cradle	3
2	EVO [®] Impact Cradle, P/N UCGB-XXXXXMUPXX	12
3	EVO [®] Impact Cradle Dimensions	15
4	Conveyor Products Warning Label, P/N 23395	16

List of Tables

Table	Title	Page
I	EVO [®] Impact Cradle Materials and Specifications	1
II	EVO [®] Impact Cradle Part Numbers and Quantities	14

Introduction

General

The EVO[®] Impact Cradles are layered, shock-absorbing conveyor belt transfer point products engineered for use in bulk solids handling industries.

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.

Impact Cradle Materials

Materials and specifications for the EVO[®] Impact Cradles are shown in Table I.

Table I. EVO[®] Impact Cradle Materials and Specifications

Characteristics	Impact Bar
MSHA-Accepted for Underground Use	NA
Coefficient of Friction	0.5
Service Temperature	-20 to 160°F (-29 to 70°C)
Bar Construction	Urethane

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 Impact Cradle

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 EVO[®] Impact Cradle from shipping container. Equipment in container should include the following:
 - EVO[®] Impact Cradle Assembly
 - Two Conveyor Products Warning Labels, P/N 23395
3. If anything is missing or damaged, contact Martin Engineering or a representative.
4. Make sure belt is centered on conveyor.



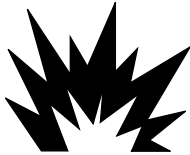
⚠ WARNING

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

5. 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.



6. If using a cutting torch or welding, test atmosphere for gas level or dust content. Cover conveyor belt with fire retardant cover.
7. If not already present, install an impact idler 1 in. (25 mm) ahead of and 1 in. (25 mm) behind EVO[®] Impact Cradle location.
8. Remove any unnecessary idlers.

Installing Impact Cradle

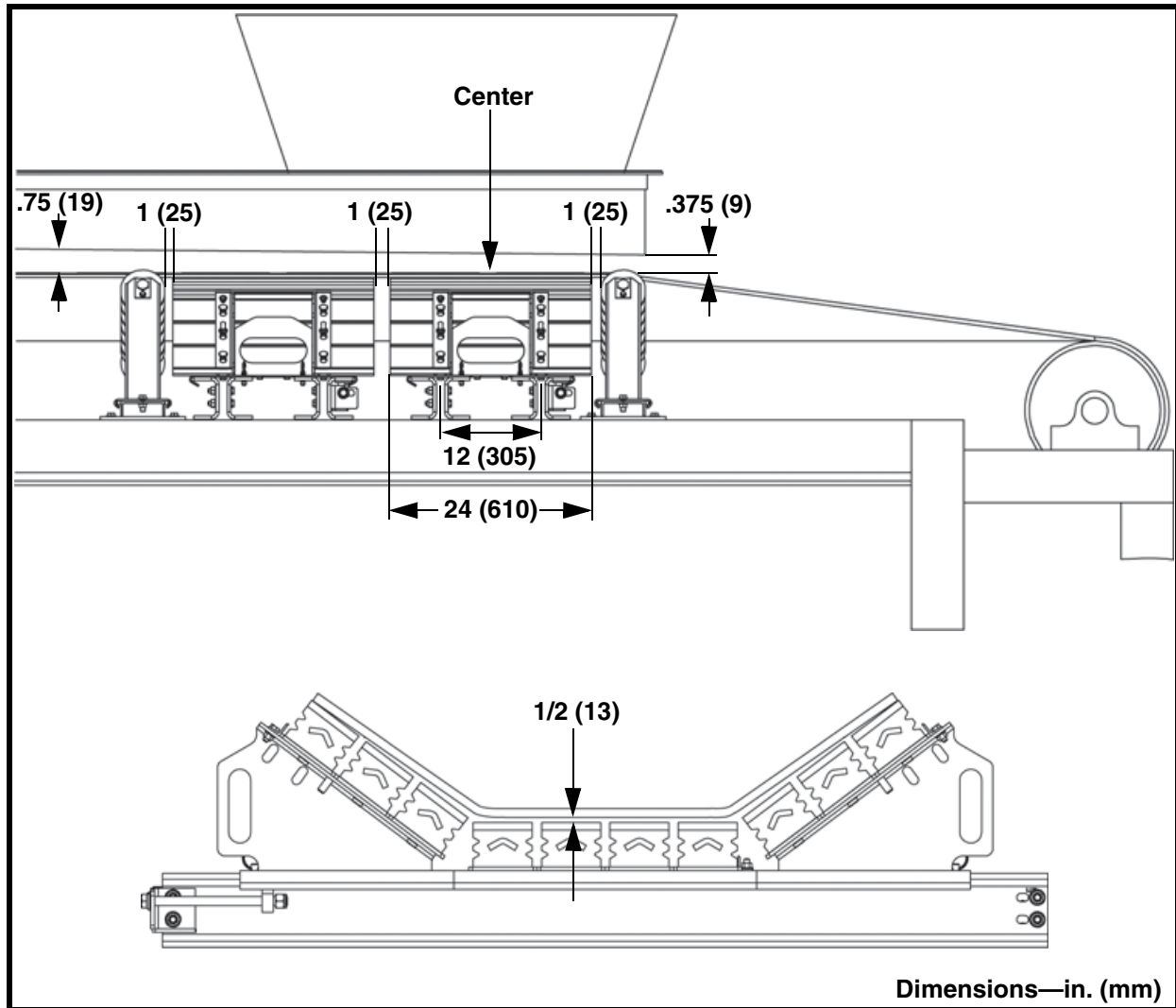


Figure 1. Measuring for Impact Cradle

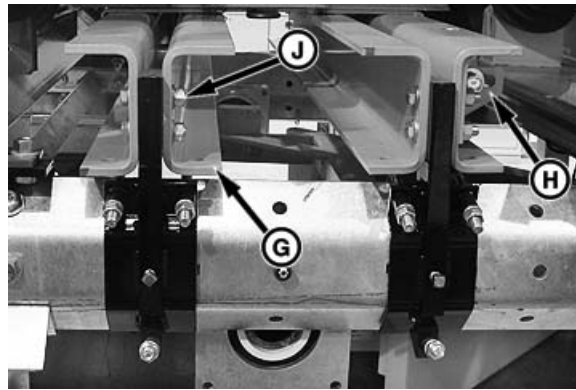
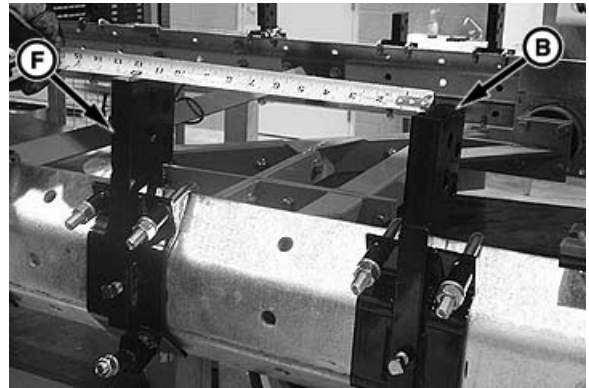
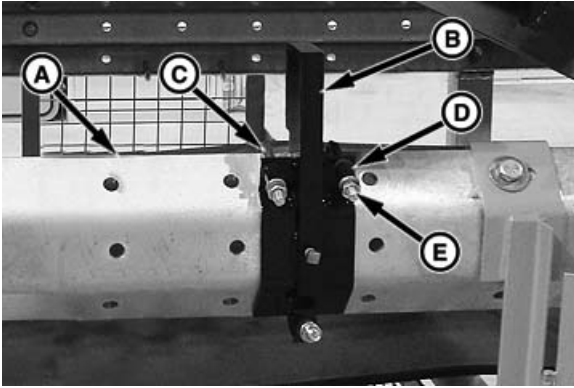
1. See Figure 1. The distance between top of belt and bottom of wear liners must increase over length of transfer point. If necessary, modify chute walls and/or wear liners.
2. Mark center of loading point on stringer; both sides of belt.

NOTE

A maximum of three EVO[®] Impact Cradles can be installed between idlers.

3. Install an idler 1 in. (25 mm) before and 1 in. (25 mm) after impact cradle(s).
4. Make sure clearance between belt and center section is 1/2 in. (13 mm) where wing section meets center section and tapers to no clearance between belt and wing section at outside edge.

Installation on EVO[®] Stringer

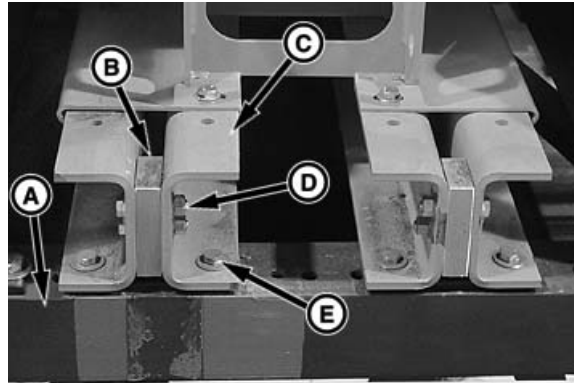


- A. Stringer
- B. Bracket (2 used)
- C. J-bolt (12 used)
- D. Spacer (12 used)
- E. Lock Washer and Nut (12 used)

- F. Bracket (2 used)
- G. Cross Support (4 used)
- H. Lock Mechanism
- J. Cap Screw, Lock Washer, and Nut (8 used)

1. Measure 7 in. from edge of idler roll to center of bracket (B).
2. Install bracket (B) on stringer (A) using J-bolts (C), spacers (D), lock washers, and nuts (E).
3. Measure 12 in. from center of bracket (B) to center of bracket (F).
4. Install bracket (F) on stringer using J-bolts, spacers, lock washers, and nuts.
5. Repeat steps 1–4 for brackets on opposite side of conveyor.
6. Install cross supports (G) onto brackets using cap screws, lock washers, and nuts (J).
7. Install cross support with lock mechanism (H) on the outside of the bracket.
8. Make sure cross supports are perpendicular to belt, or bars will wear unevenly and maintenance will be difficult.

Installation on Standard Stringer



- A. Stringer
- B. Spacer (4 used)
- C. Cross Support (4 used)

- D. Cap Screw, Washer, and Nut (8 used)
- E. Cap Screw, Washers, and Nut (8 used)

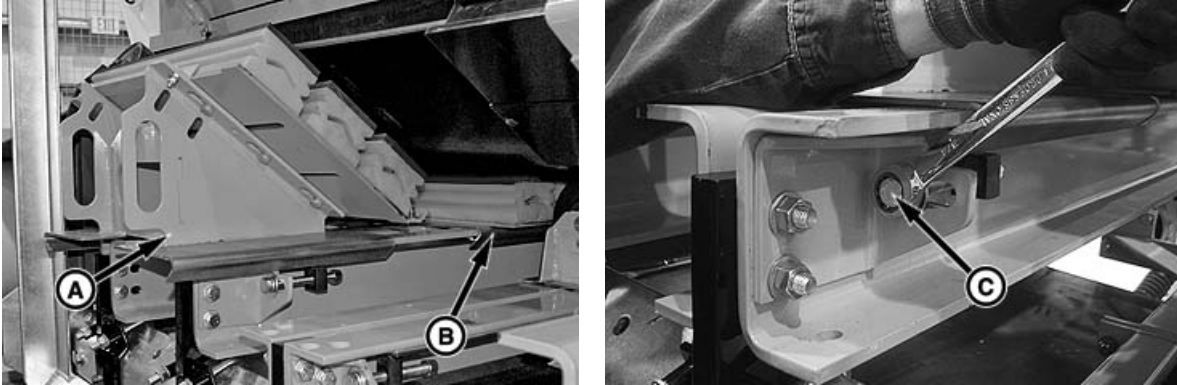
1. Measure 7 in. from edge of idler roll and mark location as center of first set of cross supports.
2. Measure 12 in. from center of first set of cross supports and mark location as center of second set of cross supports.
3. Repeat procedure on opposite side of conveyor.
4. Install block (B) between two cross supports (C) and fasten together using cap screws, washers, and nuts (D).
5. Position cross supports on stringers (A).
6. Make sure cross supports are perpendicular to belt and centered below belt, or bars will wear unevenly and maintenance will be difficult.
7. Make sure clearance between belt and center section is 1/2 in. (13 mm). If distance is greater than this, add shims under cross supports to raise impact cradle to proper height. (Shim Kit, P/N 34163 is available from Martin Engineering.) If distance is less than this, contact Martin Engineering or a representative.

NOTE

Martin Engineering recommends bolting rather than welding cross supports to stringers for easier accessibility and maintenance.

8. Bolt or weld cross supports to stringers as follows:
 - a. If bolting, drill or cut 9/16-in. holes in stringers through mounting holes in feet of cross supports. Install cap screw, flat washer, compression washer, and nut (E) in each hole to secure cross supports to stringers.
 - b. If welding, clean stringer of rust and dirt. Then stitch weld cross supports to stringers.

Installing Impact Bars



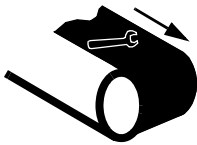
1. Slide center weldment (B) with bars onto cross supports. Position the weldment under the center of the belt.
2. Slide wing weldment (A) with bars onto cross supports until weldment contacts center weldment. Install second wing weldment on opposite side.
3. Center cradle under belt.
4. Insert pins through wing weldments into cross supports.
5. Tighten cap screw (C) on lock mechanism to lock the weldments in place.
6. Make sure there is 1 in. of clearance between bars and idler on both ends of cradle.

After Installing Impact Cradle

IMPORTANT

Read entire section before beginning work.

1. Thoroughly wipe outside chute walls clean above EVO® Impact Cradle on both sides of chute. Place a Conveyor Products Warning Label (P/N 23395) on each chute wall visible to belt 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 impact cradle, 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 impact bars for wear. (A small amount of “break-in” wear may be found. This will stop once the bars wear to conveyor belt contour.)
7. If excessive wear, uneven wear, or some other problem exists, see “Troubleshooting/ Installation Checklist.”

Maintenance



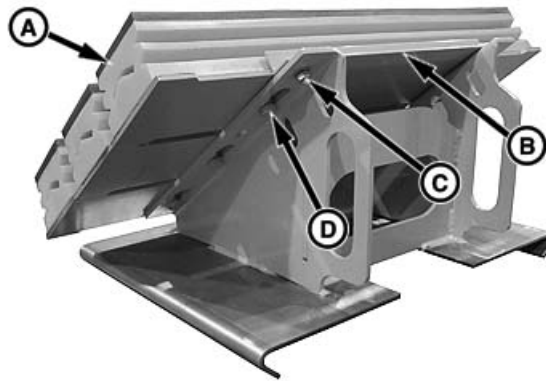
IMPORTANT

Read entire section before beginning work.

WARNING

Before servicing impact cradle, turn off and lock out/tag out energy source to conveyor belt and conveyor accessories.

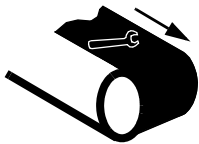
1. Turn off and lock out/tag out energy source according to ANSI standards (see “References”).
2. Make sure all fasteners are tight. Tighten if necessary.
3. Check bars for wear. If top cover on bars is worn through to orange urethane, replace bars as follows:



A. Bar
B. Locking Angle (3 used)

C. Cap Screw, Washer, and Nut (6 used)
D. Tab

- a. Loosen cap screw on lock mechanism.
- b. Remove wing weldments and center weldment.
- c. Replace bars (A) on each weldment as follows:
 - (1) Remove cap screws, washers, and nuts (C).
 - (2) Remove locking angle (B) from weldment.
 - (3) Slide bar so tabs (D) will fit through slots and bar can be removed.
 - (4) Replace worn bars and reinstall in reverse order.
4. Remove fines between impact bars with broom or high-pressure air or water.
5. Inspect impact cradle for cracks or fatigue. Weld or strengthen structure as necessary.
6. Wipe warning labels clean. If labels are not readable, contact Martin Engineering or a 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 EVO® Impact Cradle, see below:

Symptom	Corrective Action
High impact bar wear rate.	Impact cradle is installed too close to belt. Make sure impact cradle surface is 1/2 in. (13 mm) below belt.
Impact bars worn unevenly.	Belt is unevenly loaded, wear liners are improperly installed, and/or impact bars are not parallel to belt travel. Inspect loading area and wear liners, and modify transfer point if necessary.

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

Installation Checklist
Chute walls and/or wear liners are 3/8 in. above belt at tail and 3/4 in. above belt at head.
Impact cradle aligns with center of loading point.
An idler is installed 1 in. (25 mm) before and 1 in. (25 mm) after impact cradle.
Center impact bars are centered below belt and are parallel to belt travel.
Wing sections are aligned with idlers.
Distance from top of center impact bars to bottom of belt surface is 1/2 in. (13 mm) max.

Part Numbers

This section provides product names and corresponding part numbers for EVO[®] Impact Cradles. Please reference part numbers when ordering parts.

***EVO[®]
Impact Cradle***

EVO[®] Impact Cradle, P/N UCGB-XXXXXMUPXX

***EVO[®]
Support Cradle***

EVO[®] Support Cradle: P/N UCGS-XXXXX6PPXX

Miscellaneous

Shim Kit: P/N 34163.

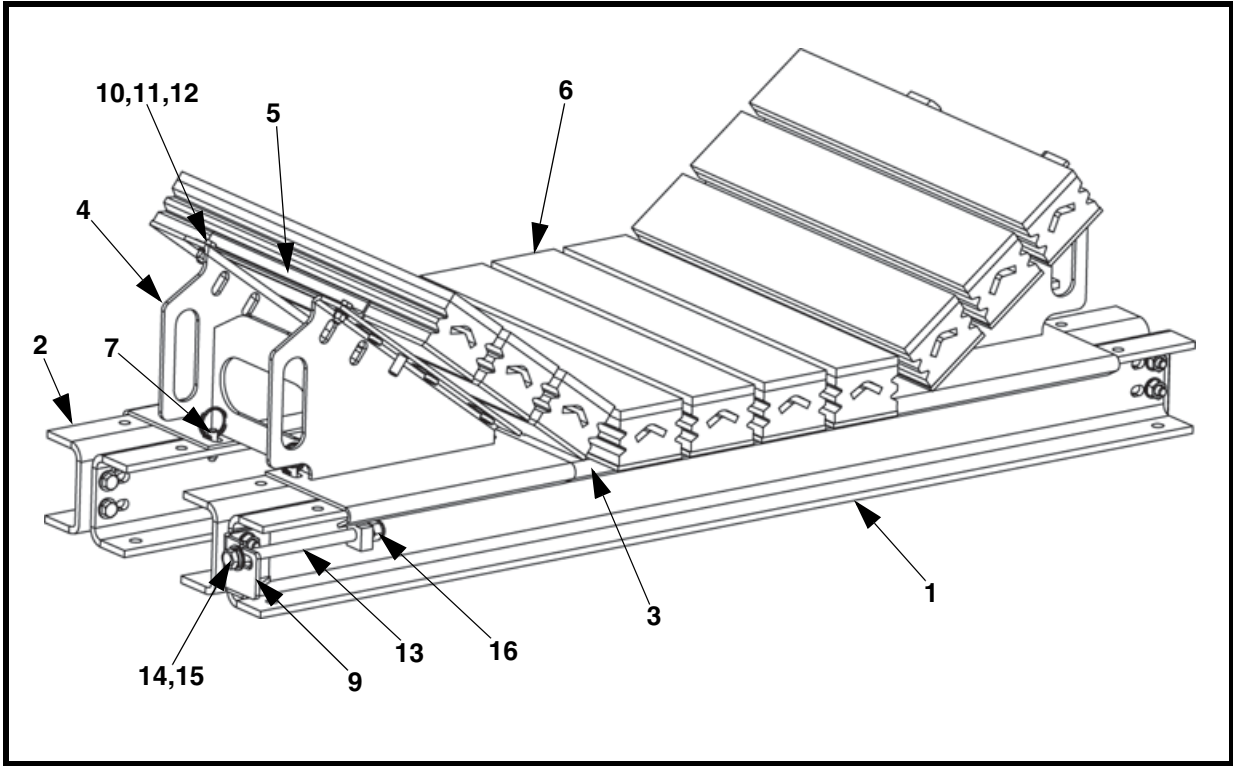


Figure 2. EVO[®] Impact Cradle, P/N UCGB-XXXXXMUPXX

Item	Description	Part No.	Qty
1	Cross Support Weldment	Table II	1
2	Formed "C" Channel	Table II	3
3	Center Sleeve	Table II	1
4	Wing Weldment	Table II	2
5	Locking Angle	UC-001525	2
6	Urethane Bar	UC-001530	Table II
7	Quick Release Pin	UC-001529	4
8 (NS)	Locking Angle–Center Sleeve	UC-001526	1
9	Sleeve Lock Angle Weldment	Table II	1
10	Screw HHC 3/8–16NC x 1.00 Gr 5 ZP	11746-02	6
11	Washer Compression 3/8 ZP	11747	6
12	Nut Hex 3/8–16NC Gr 5 ZP	11770	6
13	Screw HHC 5/8–11NC x 9.5 Gr 5 ZP	UC-001504	1
14	Washer Compression 5/8 ZP	11752	1
15	Washer Flat 5/8 ZP	16814	1
16	Nut Hex Elastic Lock 5/8–11NC ZP	22624	1
NS	Mounting Kit–EVO®	UC-001580	1
NS	Mounting Kit–Standard	UC-001590	1
NS	Label Kit	34042	1
NS	Operator's Manual	M3785	1

NS = Not Shown

Figure 2. EVO® Impact Cradle, P/N UCGB-XXXXXMUPXX

First XX indicates belt width. Third X indicates Standard (S) or Wide (W) base stringer. Next XX indicates trough angle 20, 35, or 45 degrees. Sixth X indicates Fully Assembled (A) or Component Parts (C). Last X indicates EVO® (E) or Standard (S) stringer.

Table II. EVO[®] Impact Cradle Part Numbers and Quantities

Part No.	P/N Item 1	P/N Item 2	P/N Item 3	P/N Item 4	P/N Item 9	Qty Item 6
UCGB-36S20MUPXX	UC-001500-36	UC-001501-36	UC-001511-36	UC-001520-3620	UC-001527-1	7
UCGB-36S35MUPXX	UC-001500-36	UC-001501-36	UC-001511-36	UC-001520-3635	UC-001527-1	7
UCGB-36S45MUPXX	UC-001500-36	UC-001501-36	UC-001511-36	UC-001520-3645	UC-001527-1	7
UCGB-42S20MUPXX	UC-001500-42	UC-001501-42	UC-001511-42	UC-001520-4220	UC-001527-2	9
UCGB-42S35MUPXX	UC-001500-42	UC-001501-42	UC-001511-42	UC-001520-4235	UC-001527-2	9
UCGB-42S45MUPXX	UC-001500-42	UC-001501-42	UC-001511-42	UC-001520-4245	UC-001527-2	9
UCGB-48S20MUPXX	UC-001500-48	UC-001501-48	UC-001511-48	UC-001520-4820	UC-001527-2	10
UCGB-48S35MUPXX	UC-001500-48	UC-001501-48	UC-001511-48	UC-001520-4835	UC-001527-2	10
UCGB-48S45MUPXX	UC-001500-48	UC-001501-48	UC-001511-48	UC-001520-4845	UC-001527-2	10
UCGB-54S20MUPXX	UC-001500-54	UC-001501-54	UC-001511-54	UC-001520-5420	UC-001527-3	12
UCGB-54S35MUPXX	UC-001500-54	UC-001501-54	UC-001511-54	UC-001520-5435	UC-001527-3	12
UCGB-54S45MUPXX	UC-001500-54	UC-001501-54	UC-001511-54	UC-001520-5445	UC-001527-3	12
UCGB-60S20MUPXX	UC-001500-60	UC-001501-60	UC-001511-60	UC-001520-6020	UC-001527-3	13
UCGB-60S35MUPXX	UC-001500-60	UC-001501-60	UC-001511-60	UC-001520-6035	UC-001527-3	13
UCGB-60S45MUPXX	UC-001500-60	UC-001501-60	UC-001511-60	UC-001520-6045	UC-001527-3	13

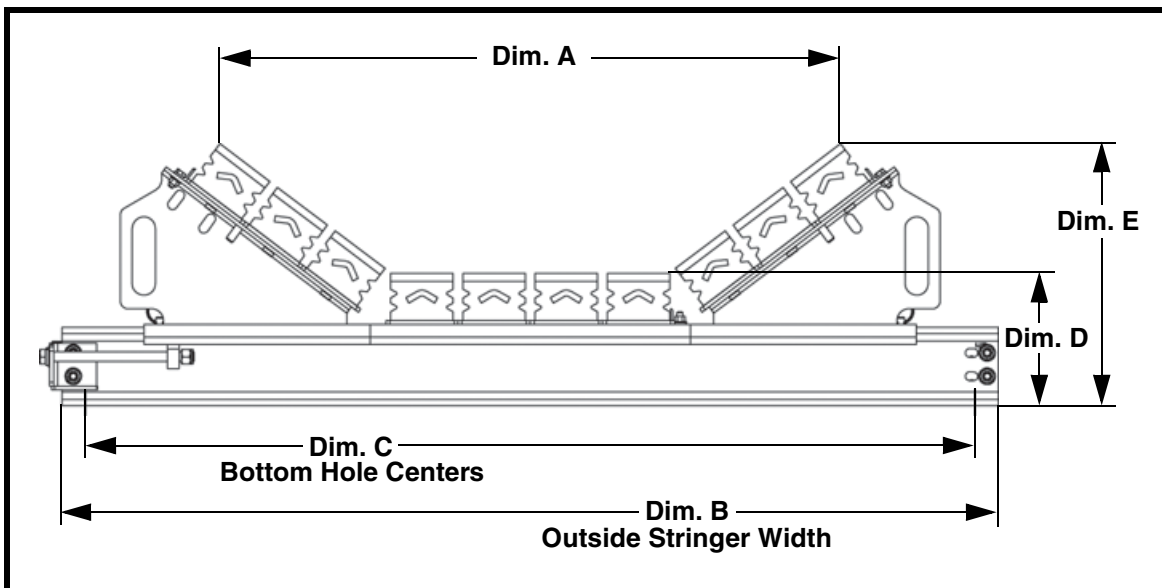


Figure 3. EVO® Impact Cradle Dimensions

Part No.	Dim. A	Dim. B	Dim. C	Dim. D	Dim. E
UCGB-36S20MUPXX	30.04 (763)	48.00 (1219)	45.00 (1143)	7.94 (202)	11.50 (292)
UCGB-36S35MUPXX	28.20 (716)	48.00 (1219)	45.00 (1143)	7.94 (202)	13.71 (348)
UCGB-36S45MUPXX	26.12 (663)	48.00 (1219)	45.00 (1143)	7.94 (202)	14.95 (380)
UCGB-42S20MUPXX	40.32 (1024)	54.00 (1372)	51.00 (1295)	8.44 (214)	13.45 (342)
UCGB-42S35MUPXX	36.69 (932)	54.00 (1372)	51.00 (1295)	8.44 (214)	16.41 (417)
UCGB-42S45MUPXX	33.69 (856)	54.00 (1372)	51.00 (1295)	8.44 (214)	18.09 (459)
UCGB-48S20MUPXX	43.34 (1101)	60.00 (1524)	57.00 (1448)	8.44 (214)	13.61 (346)
UCGB-48S35MUPXX	39.77 (1010)	60.00 (1524)	57.00 (1448)	8.44 (214)	16.74 (425)
UCGB-48S45MUPXX	36.51 (927)	60.00 (1524)	57.00 (1448)	8.44 (214)	18.39 (467)
UCGB-54S20MUPXX	53.15 (1350)	66.00 (1676)	63.00 (1600)	8.69 (221)	15.32 (389)
UCGB-54S35MUPXX	48.30 (1227)	66.00 (1676)	63.00 (1600)	8.69 (221)	19.17 (487)
UCGB-54S45MUPXX	44.11 (1120)	66.00 (1676)	63.00 (1600)	8.69 (221)	21.61 (549)
UCGB-60S20MUPXX	56.87 (1444)	72.00 (1829)	69.00 (1753)	8.69 (221)	15.43 (392)
UCGB-60S35MUPXX	51.56 (1310)	72.00 (1829)	69.00 (1753)	8.69 (221)	19.54 (496)
UCGB-60S45MUPXX	47.20 (1199)	72.00 (1829)	69.00 (1753)	8.69 (221)	22.01 (559)

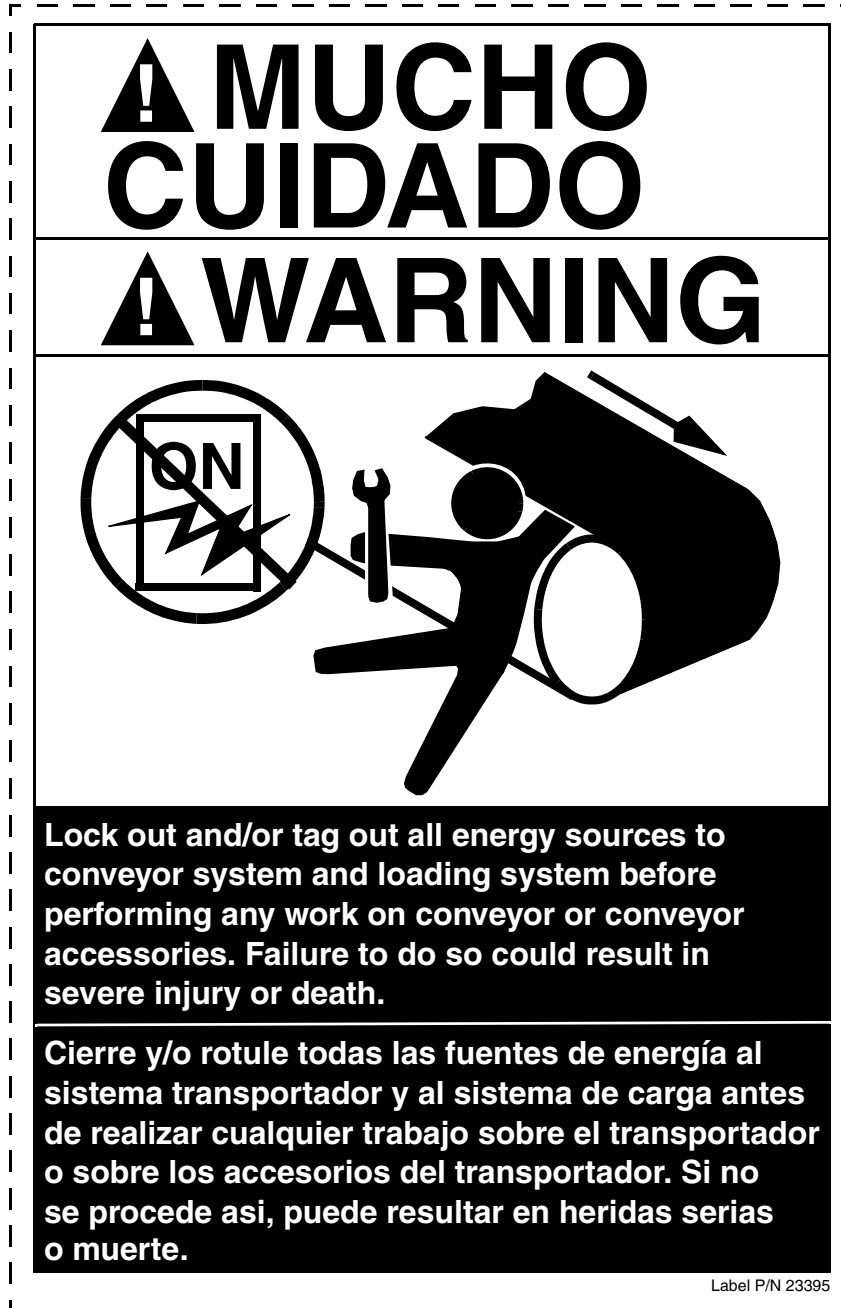


Figure 4. Conveyor Products Warning Label, P/N 23395

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