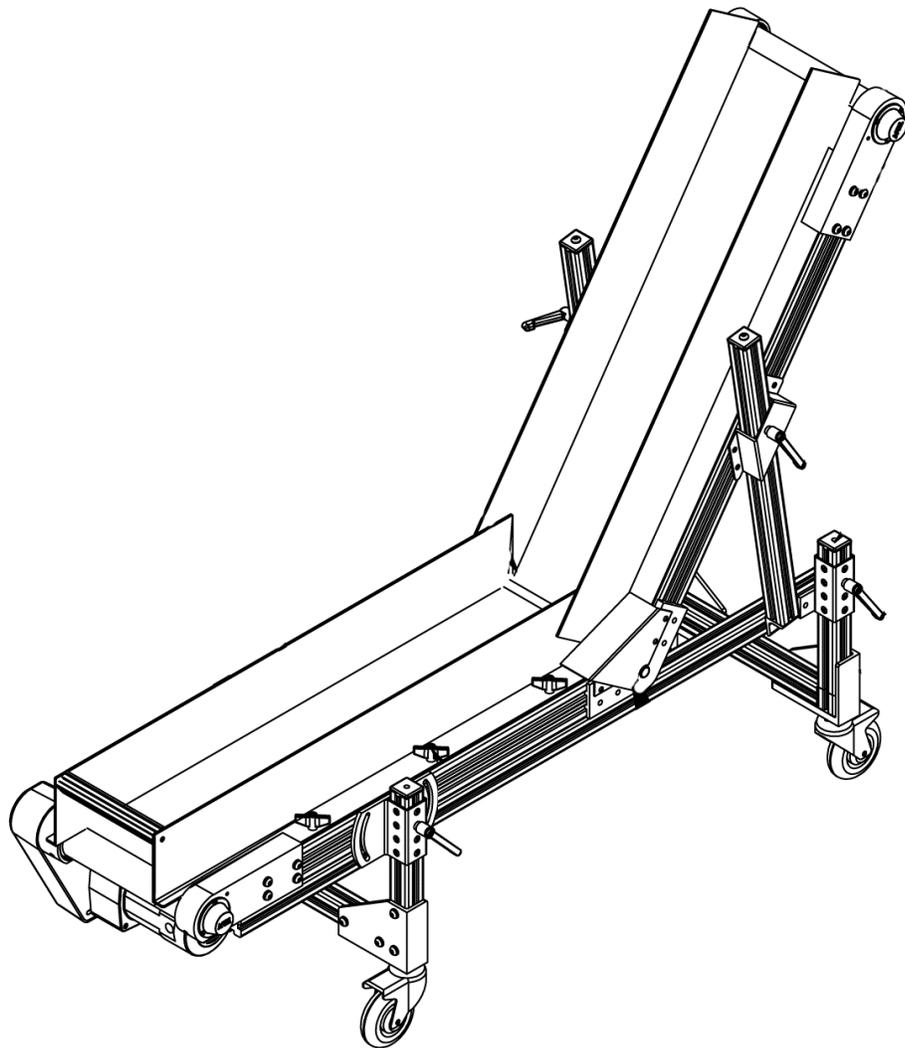


# **HIFA**

## **2200 SERIES CONVEYORS OWNERS MANUAL**



**MODELS:    2210    2220    2230  
              2240    2250    2260**

## **INTRODUCTION**

Thank you for choosing Harvard Factory Automation Inc. as your conveyor supplier. We are committed to providing you with the most innovative, high quality products in the industry.

If you have any problems, questions, or comments, please feel free to call us at (815) 943-1193.

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## **SAFETY INFORMATION**

**Disconnect power** from the conveyor before servicing or adjusting any part of the conveyor!

**Disconnect power** from the conveyor before removing any guarding, covers, rails or accessories!

**Disconnect power** from the conveyor before making any adjustments to the electrical components!

Have a qualified service technician install, adjust, and service this equipment.

Follow all applicable electrical and safety codes, including the provisions of the Occupational Safety and Health Act (OSHA) when installing equipment.

Additional safety guarding may be required in some applications. This guarding must be provided by the end user as required. HFA assumes no responsibility for injuries or damages as a result of improper, unsafe or lack of guarding at the point of use.

When making adjustments to the conveyor legs (especially on larger units), be sure to support the conveyor properly. Because the legs move freely when the locking handles are loosened, the conveyor could drop suddenly, causing a hazardous condition.

Pinch points have been minimized on this equipment; however, as with any moving machinery, wear no loose clothing and keep hands and feet clear of the moving components.

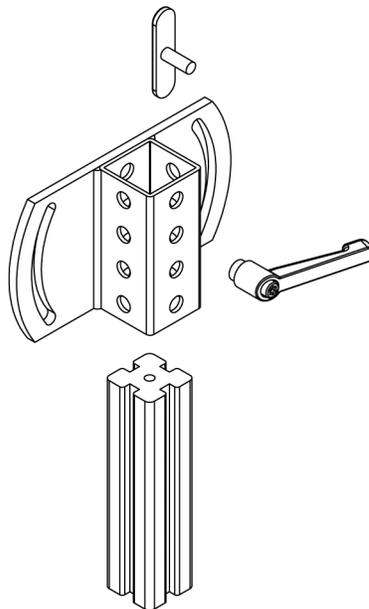
## UNPACKING INSTRUCTIONS

1. Upon delivery, inspect packaging and contents for any signs of damage. If contents are damaged in any way, note the damages on the bill of lading and notify **HFA** immediately.
2. Remove conveyor from crate or pallet (if shipped via common carrier). Carefully inspect packaging for any cartons or other components before proceeding.
3. If conveyor was shipped with legs removed, install the legs following the instructions provided.
4. If conveyor was shipped with legs installed, simply loosen the adjustable levers, adjust the legs to the desired height, and tighten the adjustable levers.
5. Install the casters or leveling pads into the leg bottoms (if applicable).
6. Check for any fasteners that may have vibrated loose in shipping and tighten.
7. Check for any belt obstructions or packaging materials.
8. Turn power switch off and plug conveyor into the correct power source. If there is any question about voltage, amperage or phase, these can be verified by checking the serial number plate (located on the motor mount plate).
9. Make sure conveyor is clear of any objects or persons and push the **ON** or **START** button.
10. If conveyor fails to run, check power source. If power source is correct, call **HFA** for further troubleshooting instructions.

## LEG ASSEMBLY INSTRUCTIONS

1. Insert the M8 stud plate into the second hole from the top, through the front or either side of the leg bracket tube.
2. Thread the adjustable locking lever onto the stud plate two or three turns.
3. After installing both left and right lever assemblies, slide the leg assembly into the leg bracket tubes simultaneously, making certain that the stud plates align properly with the leg extrusion.
4. Turn the lever assemblies clockwise until they seat against the leg bracket tube. Do not tighten them yet.
5. Install the plastic leg endcap on the end of the leg extrusion.
6. Adjust the legs up and down; they should adjust freely. If not, see Figure 2.
7. Adjust the legs to the desired height and tighten down the locking levers.

**Figure 1**



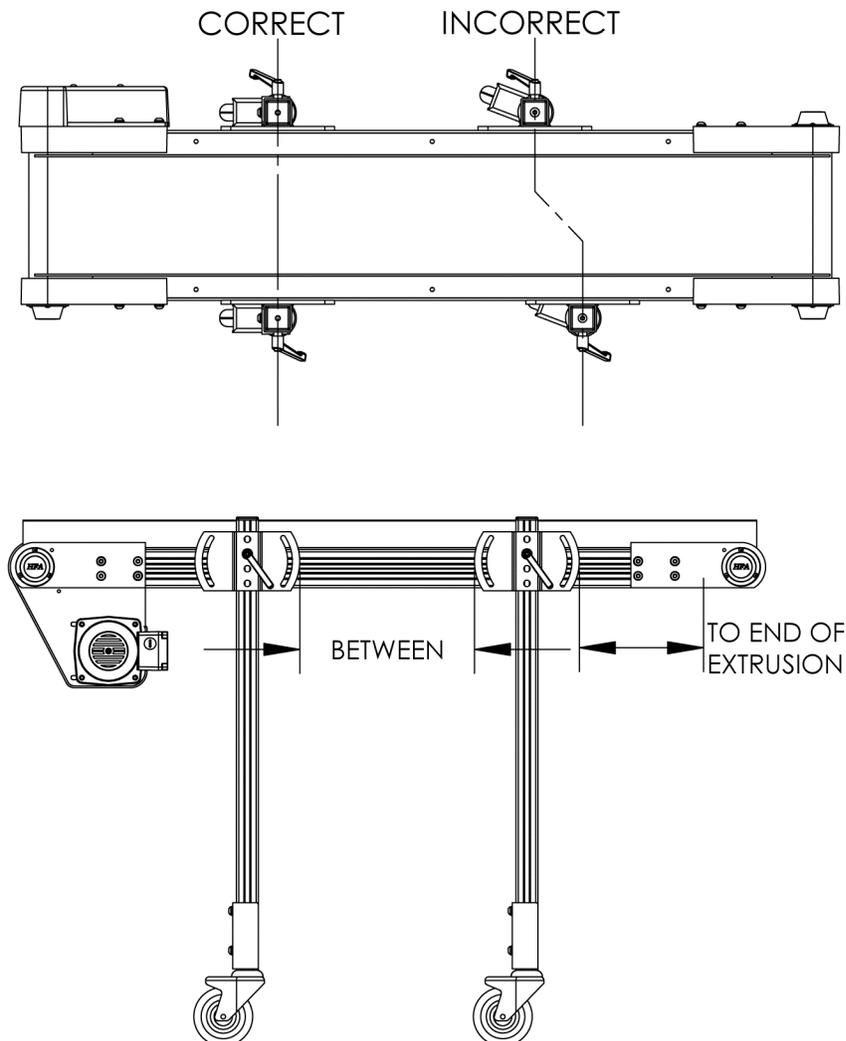
## LEG ADJUSTMENT INSTRUCTIONS

To ensure smooth adjustment of the conveyor legs, the leg brackets must be in the same location on each side of the conveyor.

Measure the distance from the end of the frame extrusion to the leg brackets on each side of the conveyor. If there are multiple leg sets, measure the first set from the end of the extrusion, then measure the distance between the adjacent leg brackets.

After the leg brackets are located properly, make a pencil mark on the extrusion along the edge of the leg bracket. This will help you align the brackets when changing the angle of the conveyor.

**Figure 2**



## 2230 ANGLE ADJUSTING INSTRUCTIONS

1. **Disconnect power** to the conveyor.

**Note:** The side-rails on the horizontal section of the model 2230 conveyors are adjustable to allow the user to minimize the gap between rails at the transition point.

2. Before raising the incline section of the conveyor, loosen the wing nuts holding the horizontal rail sections and slide the rails away from the transition point (toward the motor).
3. Loosen the two adjustable locking levers and slowly raise the incline section to the desired height.

**Caution:** Be certain that the horizontal rail sides slide to the inside of the incline rail sides or damage to the rails could result.

4. Slide the horizontal rails towards the transition point to minimize the gap between rail sections and tighten down the wing nuts.

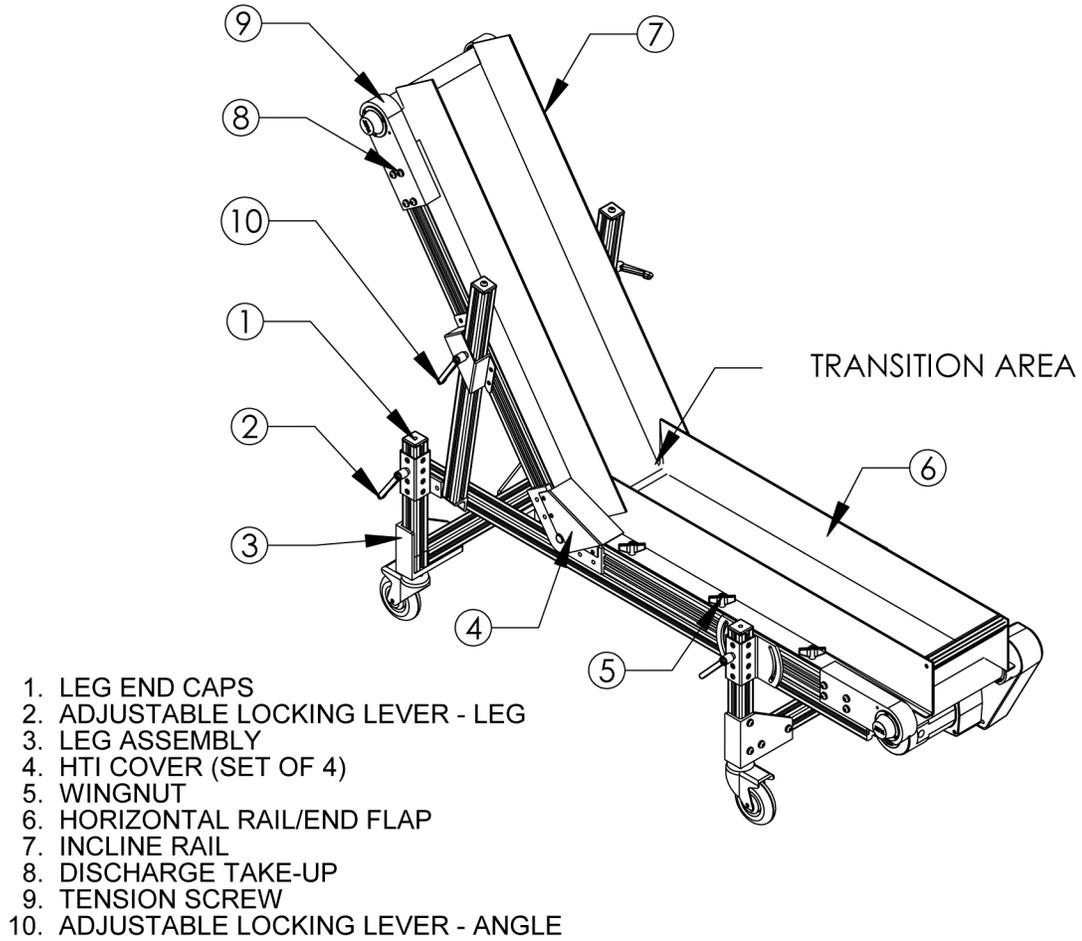
**\*\*\* DO NOT HAVE RAILS CUTTING INTO BELT \*\*\***

5. Reconnect power and turn on the conveyor. Belt should move freely through the transition. If not, the rails are too close to the transition point; stop and readjust the horizontal rails.
6. If properly tensioned, you can still grab the discharge pulley with your hands and force the drive pulley to slip under the belt.

**Note:** At incline angles of less than 40°, some buckling of the belt may occur at the transition. This may be minimized by slightly relieving belt tension.

## 2230 ANGLE ADJUSTING

Figure 3



## **TIMING BELT/CHAIN TENSIONING INSTRUCTIONS**

1. **Disconnect power** to the conveyor.
2. Remove the two M6 x 10mm screws holding the belt cover in place using an M4 hex key.
3. Remove the belt cover from the motor mount plate.
4. Check the belt / chain tension. The belt should deflect no more than 1/4" overall between the pulley. The chain should deflect no more than 1/8" overall between the sprockets.
5. If tensioning is required, loosen the four screws holding the motor in place using a 3/16" hex key.
6. Slide the motor to tension the belt / chain and tighten the screws.
7. Replace the belt cover.

## BELT TRACKING INSTRUCTIONS

**CAUTION!** Belt tracking is the only adjustment that should be performed with the conveyor operating. Keep clear of any pinch-points where the moving belt enters or leaves the frame, rails, infeed hopper, discharge tray, etc.

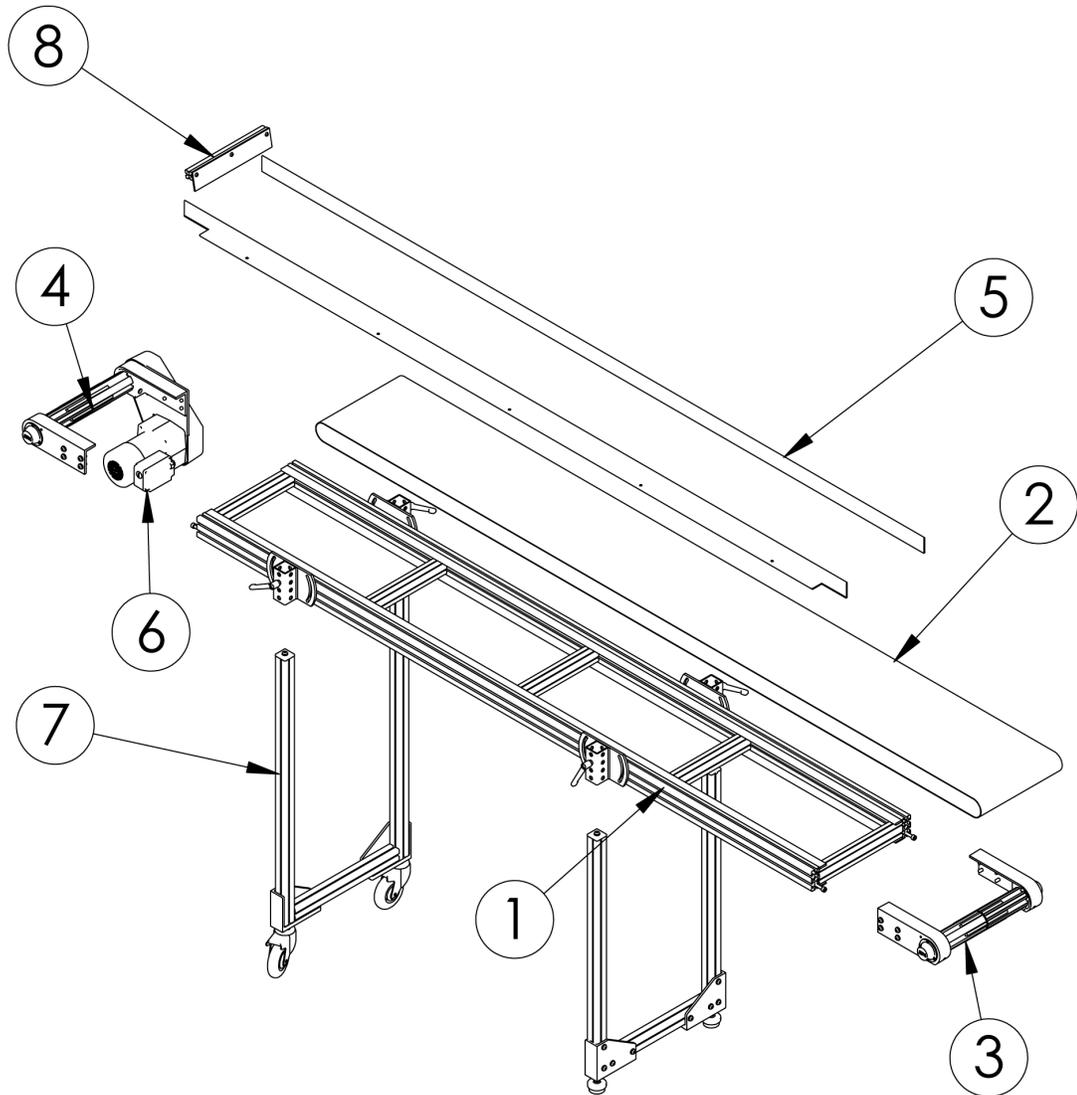
1. With the conveyor running, inspect the belt at the take-ups on the underside of the conveyor (where the belt enters the frame).
2. Note the distance between the edge of the belt and frame.
3. The belt should not contact either side of the frame. If so, determine which side of the conveyor the belt has tracked towards.
4. Loosen the four M8 button head screws on both castings at the same end of the conveyor.
5. Insert the 6MM hex key into the tensioning access hole in the casting on the side that the belt has tracked towards.
6. Turn the hex key 45 degrees *counterclockwise*.
7. Observe the belt, allowing it to make at least one full revolution before proceeding.
8. If the belt has now become centered between the frame sides, tighten the M8 button head screws.
9. If the belt has not centered itself, insert the 6MM hex key into the opposite casting and turn it *clockwise* 45 degrees.
10. Observe the belt, allowing it to make at least one full revolution before proceeding.
11. If the belt has now become centered between the frame sides, tighten the M8 button head screws.
12. If the belt has not centered itself, go back to step 5 and repeat steps 5-12 until belt runs centered.

## 2210 BELT CHANGING INSTRUCTIONS

1. Remove end caps from the top of the leg uprights.
2. Loosen handles on legs and slide the leg assembly off.
3. With the conveyor horizontal, remove all side rail screws and slide off side rail. (Use 4mm hex wrench).
4. Loosen screws on the (2) take-up castings on the side **OPPOSITE** the motor. (Use M5 hex wrench, 4 bolts each.)
5. Loosen the tension screws at ends of the loosened take-up castings. (Use 6mm hex wrench.)
6. Push take-up casting as far forward on the frame as possible and tighten one bolt to prevent slippage.
7. Turn conveyor on side (with motor side down).
8. On the underside of the conveyor, slide the belt out from under the frame.
9. With the conveyor on its side, work the belt up over the take-up castings.
10. Slide the replacement belt over the take-up castings.
11. Slide belt under the conveyor frame on the bottom side of the conveyor.
12. Turn conveyor back to horizontal position.
13. Loosen the screw holding the take-up casting in place and tension casting out with the tension bolt from frame until the belt is at the proper tension. (Use 6mm hex wrench).
14. Run conveyor and check tracking.
15. Tighten the screws on the sides of the take-up castings.
16. Slide side rails back onto the conveyor frame and replace and properly tighten all screws.
17. Replace conveyor back on leg assembly.
18. If the conveyor is an incline conveyor, make sure the conveyor is re-aligned to proper position and angle.

## 2210 EXPLODED VIEW

Figure 4



1. FRAME ASSY
2. BELT
3. IDLE ASSEMBLY
4. DRIVE ASSEMBLY
5. SIDERAILS
6. MOTOR ASSEMBLY
7. LEG ASSEMBLY
8. END FLAP ASSY

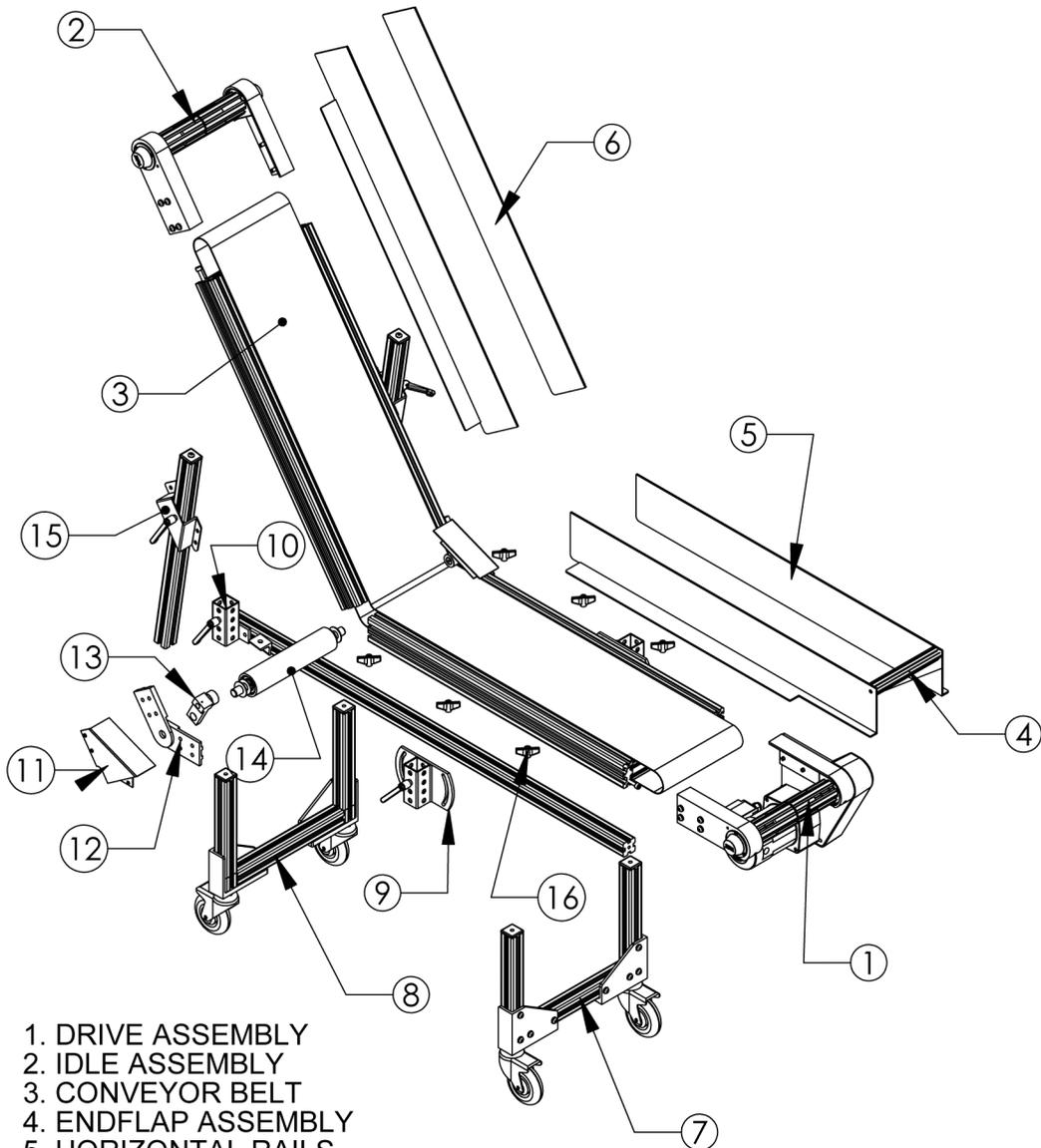
## 2230 BELT CHANGING INSTRUCTIONS

1. Angle the incline section down (horizontal).
2. Remove (4) HTI covers by loosening the top (2) bolts of each knuckle and sliding off. (Black sheet metal covers at transition).
3. With the conveyor horizontal, remove wing nuts from the horizontal (infeed) rails and remove rail/endflap assembly.
4. Remove all side rail screws from the incline section and slide off side rails. (Use 4mm hex wrench). Place screws back into M6 nut plates to prevent them from falling out.
5. Loosen screws on the (2) take-up castings, on side **opposite** the motor. (Use 5mm hex wrench, (4) bolts each.)
6. Rotate clockwise the tension screws at the ends of the loosened take-up castings. (Use 6mm hex wrench.)
7. Push take-up castings toward the center of the conveyor as far as possible and tighten one bolt on each casting to prevent slippage.
8. Pull belt over the cam followers.
9. Angle the incline section to 60° and lock into place.
10. Remove end caps from the top of the leg uprights.
11. Loosen handles on legs and slide the leg assemblies off.
12. Turn conveyor on side (with motor side down).
13. On the underside of the conveyor, slide the belt out from under the frame.
14. Work the belt over the take-up castings.
15. Slide the replacement belt over the take-up castings.
16. Slide belt under the conveyor frame on the bottom side of the conveyor.
17. Turn the conveyor back to the horizontal position.
18. Slide conveyor back onto leg assemblies.
19. Angle the incline section back to horizontal.
20. Push the belt under the cam followers.
21. Loosen the screw holding the take-up casting in place and tension casting out with the tension bolt from frame until the belt is at minimal tension. (Use 6mm hex wrench.)
22. Re-install the incline rails (push into contact with the cam follower roller).
23. Install the horizontal rail/end flap assembly (inside of incline rails). Do not lock into place.
24. Install the (4) HTI knuckle covers.
25. Angle the incline section to 60° (or usable angle), and lock into place.
26. Adjust the horizontal rails to minimize the cap at the transition point.

**\*\*\* DO NOT HAVE RAILS CUTTING INTO BELT \*\*\***
27. Turn on conveyor and check belt tension. If properly tensioned, you can still grab the discharge pulley with your hands and force the drive pulley to slip under the belt. Tension both sides of the take-up pulley equally.
28. Run the conveyor and check tracking.
29. Tighten the screws on the sides of the take-up castings.

# 2230 EXPLODED VIEW

Figure 5

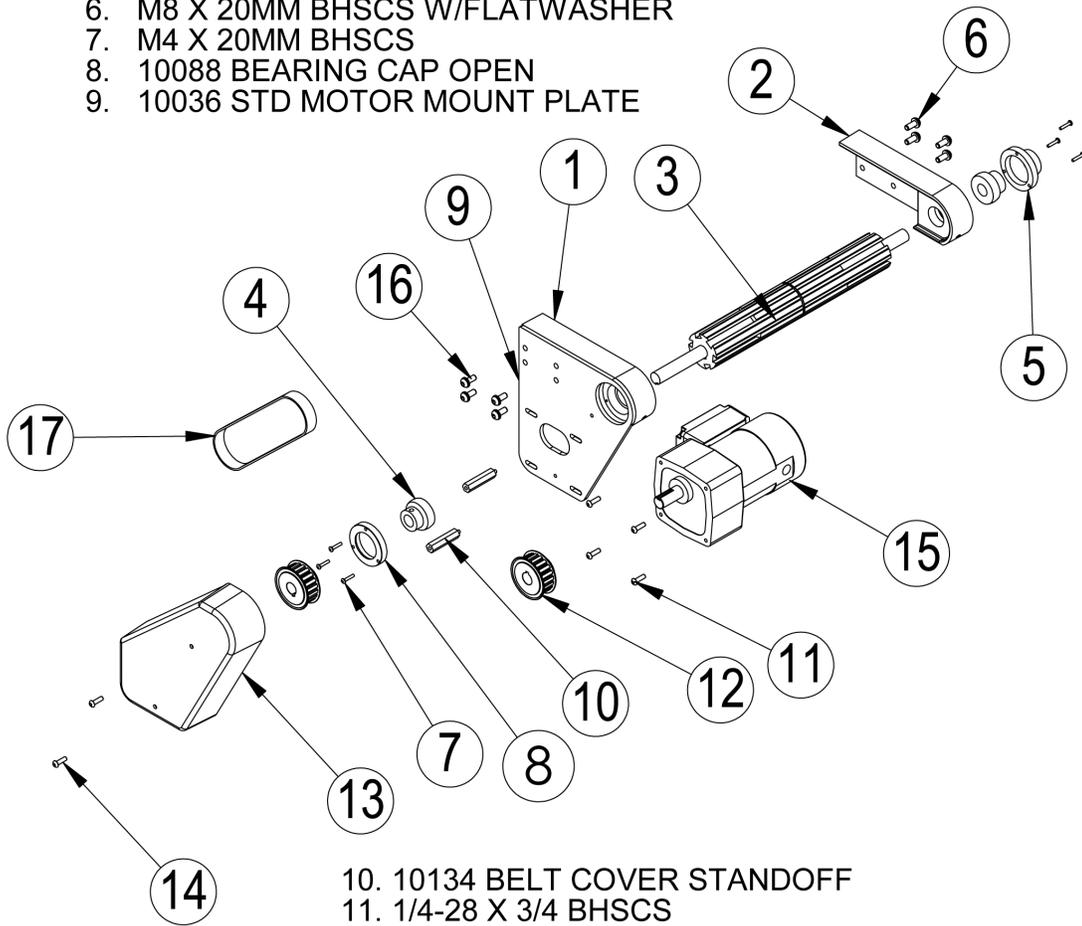


1. DRIVE ASSEMBLY
2. IDLE ASSEMBLY
3. CONVEYOR BELT
4. ENDFLAP ASSEMBLY
5. HORIZONTAL RAILS
6. INCLINE RAILS
7. LEG ASSEMBLY - INFEED
8. LEG ASSEMBLY - DISCHARGE
9. LEG MOUNTING PLATE - 30°
10. LEG MOUNTING PLATE - HTI
11. HTI COVER (SET OF 4)
12. HTI KNUCKLE (SET OF 4)
13. CAM FOLLOWER/ROLLER ARM
14. INTERMEDIATE PULLEY ASSY
15. RISER/MOUNT
16. WINGNUT (M6)

## DRIVE ASSEMBLY

Figure 6

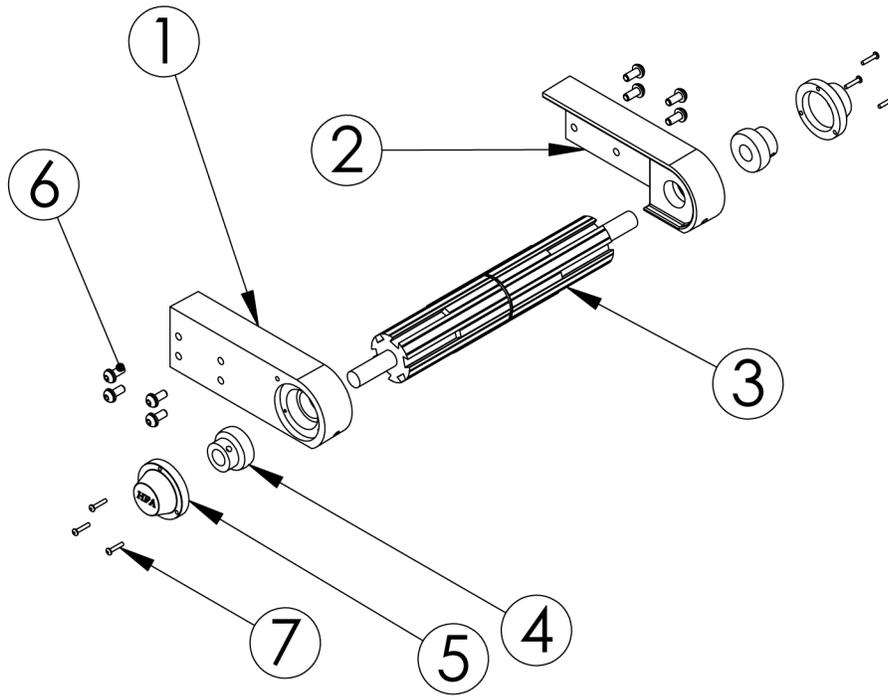
1. 10046L TAKE-UP CASTING LEFT SIDE
2. 10046R TAKE UP CASTING RIGHT SIDE
3. 10079D DRIVE PULLEY
4. RA012-RRB BEARING
5. 10032 BEARING CAP CLOSED
6. M8 X 20MM BHSCS W/FLATWASHER
7. M4 X 20MM BHSCS
8. 10088 BEARING CAP OPEN
9. 10036 STD MOTOR MOUNT PLATE



10. 10134 BELT COVER STANDOFF
11. 1/4-28 X 3/4 BHSCS
12. 20LB075 X 3/4 TIMING BELT PULLEY
13. 10049 TIMING BELT COVER LH (10123 RH)
14. M6 X 20MM SHCS
15. BODINE MOTOR (#2252 SHOWN)
16. M8 X 25MM BHSCS W/FLATWASHER
17. TIMING BELT 210L075

## IDLE ASSEMBLY

Figure 7



1. 10046L TAKE-UP CASTING LEFT SIDE
2. 10046R TAKE-UP CASTING RIGHT SIDE
3. 10079I IDLE PULLEY
4. RA012-RRB BEARING
5. 10032 BEARING CAP CLOSED
6. M8 X 20MM BHSCS w/ FLATWASHER
7. M4 X 20MM BHSCS

## REPLACEMENT PARTS

<b>Description.....</b>	<b>Part Number</b>
<i>Conveyor Belt (call with conveyor serial number )</i> .....	<i>Belt</i>
<i>Timing Belt</i> .....	<i>210L075-NBR</i>
Timing Belt Pulley .750 Bore .....	20L0755P02
Drive/Idle Pulley Bearing .....	RA012-3/4
Intermediate Pulley Bearing (2230 & 2240 Only).....	YA012-3/4
Cam Follower Bearing 1.25.....	RBC1.25
Std. Drive Belt/Chain Cover (Pos. A & C) .....	10049
Std. Drive Belt/Chain Cover (Pos. B & D) .....	10123
End Drive Belt/Chain Cover.....	10111
Belt Cover Standoff.....	10134
<i>Caster</i> .....	<i>DL414PPGG</i>
Leveling Pad .....	8T2SNS
Locking Adjustable Lever (Female Thread).....	8NA02K
Locking Adjustable Lever (Male Thread).....	8N25A02K
Rail Mounting Wing Nut.....	6309020
D.C. Variable Speed Drive Brush Type.....	C4XL3025
A.C. Variable Speed Drive .....	ACVFD
Motor Capacitor .....	494-00034
Motor Junction Box.....	0984
Motor Starter Enclosure .....	140-E41
Motor Starter.....	140-MN160
1/4 hp Variable Speed Motor Brush Type.....	4185
1/6 hp Fixed Speed Motor .....	0685
1/6 hp Variable Speed Motor AC Inverter Duty 230 Volt .....	2252
Polycohr UHMW adhesive tape 1", 1.5", 2" x 36 yd. Rolls .....	Polycohr
Drive / Idle Pulley, specify length .....	10079
Take-up Casting .....	10046 L/R

**HFA** is a supplier / distributor of extruded aluminum profiles, brackets and other 80/20 compatible components. Please call **HFA** sales for price and availability.

Italicized descriptions and part numbers are recommended spare parts.

### Options

Metric Tee Handle Set.....	AWS-M5
80/20 Catalog.....	80/20 Cat.

## **LIMITED WARRANTY**

**WARRANTY**—Harvard Factory Automation Inc. (referred to as “HFA”) warrants that this product will be free from defects in materials and workmanship for a period of two (2) years from the date of shipment thereof. Within this warrantee period, HFA will replace or repair such products or components that are returned to: Harvard Factory Automation, Inc., 3 North Lincoln Street, Harvard, IL 60033 U.S.A.; and determined to be defective by HFA.

A limited one (1) year manufacturers warranty shall apply only to the variable speed drives.

Bodine Electric Corporation gearmotors are warranted for a period of one (1) year only.

This warranty shall not apply to any product that:

- has been subject to misuse, abuse, negligence, or accident
- has been misapplied
- has been repaired
- has been improperly installed.

Harvard Factory Automation, Inc. is not responsible for the removal, installation or any other incidental expenses incurred from shipping the product to and from the repair point.

**DISCLAIMER**—The provisions listed above are HFA’s sole obligation and exclude all other warranties of merchantability for use, express or implied. HFA further disclaims any responsibility to the customer or to any person for injury to the person or damage or loss of property of value caused by any product that has been subject to misuse, negligence, accident, misapplication, or modification by unauthorized persons, improper installation.

**LIMITATIONS OF LIABILITY**—HFA shall under no circumstance be liable for any consequential damages, losses, or expense arising in connection with the use of, or inability to use HFA’s product for any purpose whatsoever.

An adjustment made under warranty does not void the warranty, nor does it extend the original warranty period. Products serviced or replaced on a no-charge basis during the warranty period carry the unexpired portion of the original warranty only.