Installation, Operation, Maintenance Manual

GATER ONVEYOR

CRUZ[®]belt

IOM Part Number: E0032544 Revision Date: 02/28/2022



Seleccione aquí para CRUZbelt IOM en español



TABLE OF CONTENTS

1 IOM INTRODUCTION	4
2 MHS CONVEYOR POLICIES	5
2.1 MHS RECOMMENDS PROPER LABELS FOR CONVEYOR TYPES	8 11
3.1 DEFINITION OF TERMS	
4.5 Part Inventory & Identification	
4.5 PART INVENTORY & IDENTIFICATION 5 CRUZBELT APPLICATION & INSTALLATION DETAILS	
5.1 ENVIRONMENT	
5.1 ENVIRONMENT	
5.3 ELECTRICAL / GEARMOTOR	
5.4 GEAR MOTOR ACTIVATION	
5.5 SQUARING CONVEYOR	26
5.6 ELEVATIONS	27
5.7 SUPPORTS & CONNECTIONS	
5.8 SUPPORT ARRANGEMENTS	
5.9 BOTTOM PANS	
5.10 Belt Material	-
5.11 CONVEYOR SET UP	
5.12 GUARDRAIL ASSEMBLY	
5.14 CRUZBELT W/CAM TAKE-UP	
5.15 STANDARD CRUZBELT LACING	
5.16 CRUZBELT 4 WITH SPRING TAKE-UP	
5.17 BELT TRACKING	39
7 CRUZBELT MERGE	44
8 CRUZBELT & STRIP BELT SPUR	46
9 CRUZBELT COMMISSIONING OF EQUIPMENT	47
10 CRUZBELT PREVENTIVE MAINTENANCE & TROUBLESHOOTING	48
10.1 BELT TROUBLESHOOTING GUIDE	
10.2 GEARMOTOR TROUBLESHOOTING GUIDE	
10.3 CHAIN & SPROCKET TROUBLESHOOTING GUIDE	
10.4 BEARINGS TROUBLESHOOTING GUIDE	
11 CRUZBELT REPLACEMENT PARTS IDENTIFICATION	58
11.1 Spare Parts Priority Level Explanations	
11.2 CRUZBELT INTERMEDIATE BED – BELT ON ROLLER	59



11.3 CRUZBELT END BEDS - BELT ON ROLLER	60
11.4 CRUZBELT CENTER DRIVES - BELT ON ROLLER	61
11.5 CRUZBELT MERGE DRIVE BED	62
11.6 CRUZBELT DRIVE TRAIN	63
11.7 CRUZBELT END DRIVE	65
11.8 CRUZBELT INTERMEDIATE SLIDER BED	67
11.9 CRUZBELT SLIDER END BED	68
11.10 CRUZBELT SLIDER CENTER DRIVE	69
11.11 CRUZBELT INTERMEDIATE NOSEUNDER BED	70
11.12 CRUZBELT NOSEUNDER END BED	71
11.13 CRUZBELT INTERMEDIATE NOSEOVER BED	72
11.14 CRUZBELT NOSEOVER END BED	73
11.15 CRUZBELT EMPTY CARTON SLIDER NOSEOVER	
11.16 CRUZBELT EMPTY CARTON CONVEYOR (SLIDER) DOUBLE SNUBBER	75
11.17 CRUZBELT4 METER BED	76
11.18 CRUZBELT METER BED DRIVE-TRAIN	
11.19 CRUZBELT 4 METER BED - HIGH PERFORMANCE	79
11.20 CRUZBELT 4 METER DRIVE-TRAIN	
11.21 CRUZBELT 4 CENTER DRIVE (CDR)	83
11.22 CRUZBELT 4 CDR DRIVE-TRAIN	84
11.23 CRUZBELT 4 END DRIVE	
11.24 CRUZBELT STRIP BELT SPUR	89
11.25 CRUZBELT SPUR DRIVE TRAIN	91
CRUZBELT REVISION HISTORY	93
WORKS CITED	94
MHS CONVEYOR GENERAL INFORMATION	94
ABOUT MHS CONVEYOR	95



1 IOM INTRODUCTION

IOM Purpose

It is the intent of MHS Conveyor, through this manual, to provide information that acts as a guide in the installation, operation, and maintenance of MHS Conveyor conveyors.

This manual describes basic installation practices, assembly arrangements, preventive maintenance, and assists in replacement parts identification.

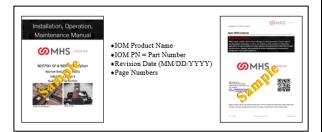
This service manual is intended for use by personnel who are knowledgeable of installation and safe working practices on conveyor systems.

Not all applications and conditions can be covered; therefore, this manual is to be used ONLY as a guide.

If additional copies of this manual are needed or if you have any question concerning the conveyor, please contact your MHS Distributor or MHS Lifetime Services at 231-798-4547 or visit MHS at <u>mhs-conveyor.com</u> for maintenance videos and other application information.

Manual Structure

You should receive a separate documentation for each product line of MHS Conveyor implemented in your installation. You can identify the respective product line on the back of the folder or on the cover sheet of the IOM (Installation Operation Maintenance Manual)



MARNING



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- Pay attention to the safety instructions!
- Prior to working at or in the immediate vicinity of the system it is recommended that you make yourself familiar with the safety instructions included in the present document!

2 MHS CONVEYOR POLICIES

MHS Conveyor Equipment Warranty

MHS Conveyor warrants that the material and workmanship entering into its equipment is merchantable and will be furnished in accordance with the specifications stated.

MHS Conveyor agrees to furnish the purchaser without charge any part proved defective within 2 years from date of shipment provided the purchaser gives MHS Conveyor immediate notice in writing and examination proves the claim that such materials or parts were defective when furnished. For drive components specific to XenoROL® (i.e. Xeno belts, slave Xeno belts, drive spools, standard and speed-up, and spacers), this warranty shall be extended to five years of running use, provided the conveyors are applied, installed and maintained in accordance with MHS Conveyor published standards. Other than the above, there are no warranties which extend beyond the description on the face hereof. Consequential damages of any sort are wholly excluded.

The liability of MHS Conveyor will be limited to the replacement cost of any defective part. All freight and installation costs relative to any warranted part will be at the expense of the purchaser. Any liability of MHS Conveyor under the warranties specified above is conditioned upon the equipment being installed, handled, operated, and maintained in accordance with the written instructions provided or approved in writing by MHS Conveyor.

The warranties specified above do not cover, and MHS Conveyor makes no warranties which extend to, damage to the equipment due to deterioration or wear occasioned by chemicals, abrasion, corrosion or erosion; Purchaser's misapplication, abuse, alteration, operation or maintenance; abnormal conditions of temperature or dirt; or operation of the equipment above rated capacities or in an otherwise improper manner.

THERE ARE NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, EXTENDING BEYOND THOSE SET FORTH IN THIS STATEMENT OF WARRANTY.

Rev 08/12/2021

MHS Conveyor Environment Standards

MHS Conveyor equipment is designed to be installed in a clean, dry warehouse environment. Exposure to extreme humidly, direct sunlight, blowing dirt or rain can permanently damage some components of MHS Conveyor. In particular, the curing agents in concrete are known to attack and degrade the urethane conveyor components.

When installing conveyor on a new construction site, be sure that the concrete is properly cured before setting conveyor on it. In addition, if conveyors are stored in the proximity of curing concrete, proper ventilation must be used to direct the curing agent fumes away from the conveyor.

Failure to comply with these guidelines will void the MHS warranty on any failed components that result from these environment issues.

08/12/2021



<u>∧</u> WARNING



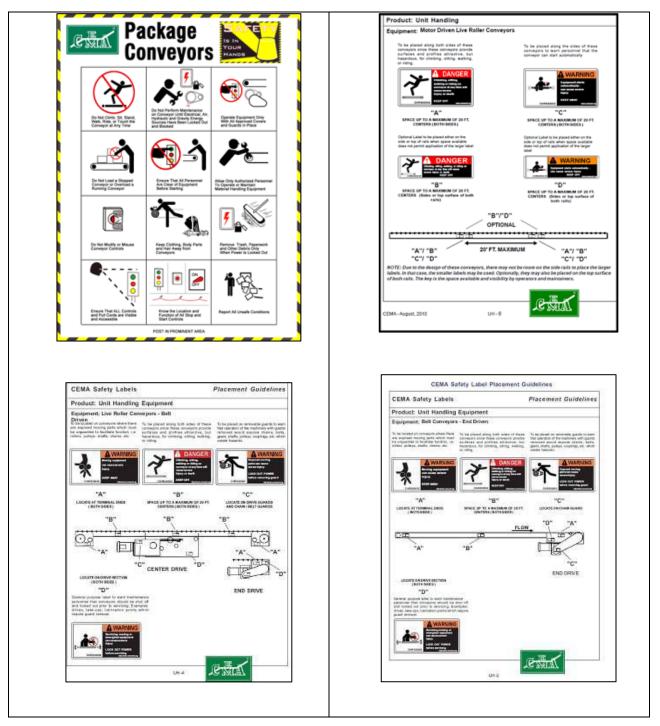
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Safety: Always lock out power source and follow recommended safety procedures.



2.1 MHS RECOMMENDS PROPER LABELS FOR CONVEYOR TYPES

Shown below are some samples of labels applicable to conveyor standards.





2.2 WARNINGS AND SAFETY INSTRUCTIONS

Failure to follow the instructions and cautions throughout this manual and warning label on the conveyor may result in injury to personnel or damage to the equipment.

Your MHS Conveyor is powered by a motor and can be stopped only by turning off electrical power to the motor. As with all powered machinery, the drive-related components – including sprockets, chains, shafts, universal joints, and pneumatic devices – can be dangerous. We have installed or provided guards to prevent accidental contact with these parts, along with warning labels to identify the hazards. Special attention must be paid to the following areas of this manual:

DANGER



Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations.

MARNING



 Indicates potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It may also be used to alert against unsafe practices.

CAUTION

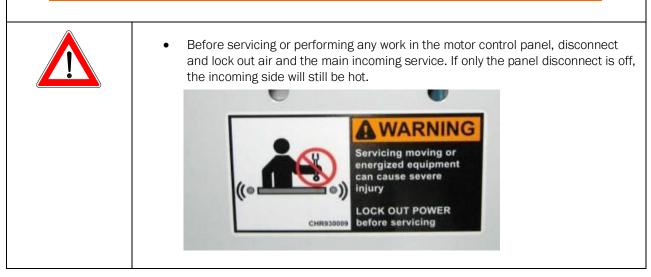
 Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.



2.2.1 Warnings and Safety Instructions

 of the device while performing general maintenance. Make sure all personnel are clear of all conveyor equipment before restarting the system Before restarting a conveyor, which has been stopped because of an emergency, an 	MARNING
 temptation for personnel to climb over or under any conveyor. Walking or riding on a moving conveyor must be prohibited. Before performing maintenance on the conveyor, make sure the start-up controls are locked out and cannot be turned on by any person other than the one performing the maintenance. If more than, one crewmember is working on the conveyor, EACH CREW MEMBER MUST HAVE A LOCK ON THE POWER LOCKOUT. All pneumatic devices must be de-energized and air removed to prevent accidental cyclir of the device while performing general maintenance. Make sure all personnel are clear of all conveyor equipment before restarting the system Before restarting a conveyor, which has been stopped because of an emergency, an inspection of the conveyor must be made and the cause of the stoppage determined. Th starting device must be locked out before any attempt is made to correct the cause of 	 Keep ALL warning labels clean and clear of any obstructions. Never remove, deface, or paint over WARNING or CAUTION labels. Any damaged label wi be replaced by MHS Conveyor at no cost by contacting Lifetime Services. It is very important to instruct personnel in proper conveyor use including the location an function of all controls. Special emphasis must be given to emergency stop procedures. It is important to establish work procedures and access areas, which do not require any part of a person to be under the conveyor. It should be required that long hair is covered by caps or hairnets. Loose clothing, long hair, and jewelry must be kept away from moving equipment. Maintain enough clearance on each side of all conveyor units for safe adjustment and maintenance of all components.
 Make sure all personnel are clear of all conveyor equipment before restarting the system Before restarting a conveyor, which has been stopped because of an emergency, an inspection of the conveyor must be made and the cause of the stoppage determined. The starting device must be locked out before any attempt is made to correct the cause of 	 temptation for personnel to climb over or under any conveyor. Walking or riding on a moving conveyor must be prohibited. Before performing maintenance on the conveyor, make sure the start-up controls are locked out and cannot be turned on by any person other than the one performing the maintenance. If more than, one crewmember is working on the conveyor, EACH CREW MEMBER MUST
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▲ WARNING





2.3 MHS CONVEYOR CONTROLS SAFETY GUIDELINES

The following basic conveyor control safety guidelines are recommended by MHS Conveyor even though Business Partner may or may not purchase conveyor controls from MHS Conveyor. The items listed deal with applications of controls equipment. The actual installation of the equipment must always follow the National Electric Code and all other local codes.

Start-up Warning Horn

Ideally, all conveyors should be within sight of the conveyor start pushbutton. This allows the operator to verify that no one is touching the conveyor or would be in danger if the conveyor were to start up. If it is not possible to see the entire conveyor being started from the start pushbutton location, then some form of audible warning device is required. It could be a horn, buzzer, bell, or anything unique to that conveyor for that location. It should be loud enough to be heard at any point on the conveyor system. It should sound for approximately five seconds after the start pushbutton is pushed, prior to the actual running of conveyor. Any auxiliary equipment such as vertical lifts, turntables, etc., should also be included in the warning circuitry.

Conveyors that stop and restart under automatic control could also require a horn warning prior to restarting. If it is not easy to distinguish the difference between a fully stopped conveyor system and a momentarily stopped conveyor section, then it is advisable to add a warning horn. All conveyor sections that stop and restart automatically should be marked with appropriate signs or labels.

Start Pushbuttons

Start pushbuttons should be the flush type or guarded such that inadvertently leaning against them will not actuate the conveyor. They should be provided with a legend plate clearly defining which conveyors will be started.

Stop Pushbuttons

Stop pushbuttons should be the extended type such that any contact with it is sufficient to stop the conveyor. They would also be provided with a legend plate clearly defining which conveyors will be stopped.

Operator Controls

Additional operator controls should be designed into the system with the same guidelines that go into start and stop pushbuttons, depending upon their function. Devices which are repeated on multiple control stations, such as emergency stops, should be located at the same relative location on each station (such as lower right corner).

Emergency Stops

All locations where an operator must work directly at the conveyor should be protected by an emergency stop. An operator should not have to move from where he is to actuate the emergency stop. Conveyors in areas of high pedestrian traffic should also be protected by emergency stop devices. For all other instances, emergency stops should be located throughout a system such that it is possible to shut down the system without having to walk too far. In these instances the emergency stop is used more to protect the equipment from damage than to protect personnel.



Emergency stops can be of the pushbutton or cable operated switch type. The pushbutton type should be a red, mushroom head maintained pushbutton which requires resetting after it is actuated. Cable operated switches should trip by pulling the cable, and require resetting at the switch.

Actuating an emergency stop must drop-out the start circuit, requiring restarting the system using the start pushbuttons provided.

An emergency stop should normally stop all conveyors in the system. Very large systems may involve dividing a system into zones of control based on proximity of personnel, safety hazards, walls obstacles, etc.

Controls Logic

Solid state controls logic devices, such as programmable controllers are used extensively for conveyor control. They are very reliable, but a hardware failure or software bug would cause an output to function erratically. For this reason, start circuits, warning horn circuits, and emergency stops should usually be configured using conventional relay logic.

Safety Switches

All conveyor control cabinets and motors should be provided with safety (or disconnect) switches. These switches must have provisions for padlocking. As required for maintenance, equipment should be locked in the off position.

Special Devices

Special devices and equipment such as vertical lifts, turntables, high speed conveyors, etc., all have unique design and safety requirements. These should be looked at in each case to determine what the requirements might be.

Rev 08/12/2021



3 CRUZBELT INTRODUCTION

CRUZbelt Features

This manual provides information for installing, operating, and maintaining your MHS Conveyor CRUZ®belt conveyor. A complete parts list has been provided, along with a list of recommended spare parts. Important safety information is included throughout this manual.

MHS Conveyor CRUZ®belt is considerably different than other belt conveyor. An understanding of this manual will help you take advantage of the many unique features of CRUZ®belt.

Features and Benefits:

- CRUZ[®] channel side frames have integrated cable trays.
- Side frames allow optional shrouds for a sleek appearance.
- Slider bed frames are interchangeable with roller bed frames.
- All intermediate bed sections can be made into end beds.
- End pulleys, snubbers, and take-up pulleys are adjusted with cams. By eliminating the usual threaded rods, adjustments are made in seconds.
- Innovative tube spanners eliminate bed racking.
- Alignment sight holes allow all pulleys to be easily squared before startup.
- Motor mounting allows chain adjustment without affecting sprocket alignment.
- This manual is arranged in the suggested order of installation.



CRUZbelt 4 Center Drive Complete Unit



CRUZbelt 4 and Strip Belt Spur



3.1 DEFINITION OF TERMS

ADJ	ADJUSTABLE			
ASY	ASSEMBLY			
BRG	BEARING			
BR*	BEARING BELT ON ROLLER			
BF	BETWEEN FRAME			
BRKT	BRACKET			
BRK	BRAKE			
WBB	Welded BUTT-BOLT CONNECTION			
C	CENTER (2.25"C, 3"C, 4"C, 6"C)			
CDR	CENTER DRIVE			
CONN	CONNECTOR (Mechanical, Electrical, Pneumatic)			
XM	CROSSMEMBER			
CZB	CRUZ BELT			
DR	DRIVE, DRIVE BED			
DL	DUAL LANE			
EL	ELEVATION			
EDR	ELEVATION END DRIVE			
EURO	END DRIVE EURODRIVE			
FPM	FEET PER MINUTE			
FT	FOOT/FEET			
FLA	FULL LOAD AMPS			
GALV	GALVANIZED			
GR	GUARD RAIL			
HD*	HEAVY DUTY			
HP	HORSE POWER			
HZ	HORIZONTAL TAKE-UP			
IN	INCH			
INDBLT	INDUCTION BELT			
INT	INTERMEDIATE BED			
ID	INSIDE DIAMETER			
LCD	LACED			
LGTH	LENGTH			
L/	LESS			
LM	LOGIC MODULE			
LOW PRO	LOW PROFILE			
LP	LOW PROFILE			
MAX	MAXIMUM			
MM	METRIC			
MID	MIDDLE			



CRUZ®belt ABBREVIATIONS LISTING				
MIN	MINIMUM			
MOD	MODULE			
MTR	MOTOR			
MNT	MOUNT			
MTG	MOUNTING			
NPT	NATIONAL PIPE THREAD			
NOML	NOMINAL			
NO	NOSE OVER			
NU	NOSE UNDER			
OAL	OVER ALL LENGTH			
OAW	OVER ALL WIDTH			
PL	PLATE			
PLTD	PLATING (Roller Description, previously FLCT)			
LBS	POUNDS			
PWR	POWER			
PRBG	PRECISION BEARING			
PRS	PRESSURE			
RPM	REVOLUTIONS PER MINUTE			
RC	ROLLER CHAIN			
SKWLOC	SKWEEZELOCK			
SB	SLIDER BED			
STD	STANDARD			
THD*	THREAD			
ТВ	TIMING BELT			
U- ARMS	ADJUSTABLE CHANNEL GUARD RAIL MOUNTS			
URO	URETHANE			
V	VOLT			
WLDMT	WELDMENT			



4 CRUZBELT RECEIVING & SITE PREPARATION

General

MHS Conveyor CRUZbelt units are shipped in subassemblies. These subassemblies are packaged to guard against damage in shipment, when handled properly.

Examination immediately following unloading will show if any damage was caused during shipment. If damage is evident, claims for recovery of expenses to repair damage or replace components must be made against the carrier immediately. While unloading, a check must be made against the Bill of Lading, or other packing lists provided, to confirm full receipt of listed items.

CAUTION

• TAKE CAUTION DURING THE REMOVAL OF EQUIPMENT FROM THE CARRIER. Remove small items and boxes first. Pull and lift only on the skid, not on the frame, cross member or any part of the conveyor equipment.



Preparation of Site

After the conveyor is received, move it to the installation, or designated dry storage, area as soon as possible. Clean up all packing material immediately before parts get lost in it. Loose parts should remain in the shipping boxes until needed.

Prior to starting the assembly of the conveyor, carefully check the installation path to be sure there are no obstructions that will cause interference. Check for access along the path needed to bring in bed sections and components closest to the point where they are needed. It is often necessary to give the area, along the system path, a general cleanup to improve installation efficiency, access, and accuracy.



4.5 PART INVENTORY & IDENTIFICATION

Label Identification

Each subassembly is shipped completely assembled except typical loose parts, which are in boxes with the subassemblies. Separate the conveyor subassemblies by types for inventory and ease of locating during installation.

An identification label is attached to the charged end of the center bed of each CRUZbelt Module unit.

Labels may contain the following information:

- Item number
- Description
- Job Number
- Mfg. Number

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- Tag number (if specified)
- Assembler's clock number
- Date of manufacture
 - QR (Quick Response) bar code
 - Scan bar code for IOM manual





Scan the QR code to retrieve the IOM Manual, if nothing happens; check your scanner settings to make sure the QR Label setting is enabled.

On the supports, the tag is located on the bottom side of the foot.

On special devices, it is located on a convenient flat surface that is not offensive to the appearance of the equipment but is still accessible for viewing. These numbers can be cross-referenced against the packing list.

Loose parts are boxed and shipped separately.

You should have all conveyor sections and supports for a particular conveyor prior to installation. It is cost-effective to identify and procure any missing parts before they are needed for assembly.

Small items like nuts and bolts are weigh-counted and packaged by size and type.



5 CRUZBELT APPLICATION & INSTALLATION DETAILS

General Procedures

The following procedures are to be used as guidelines only. Specific installation methods will vary somewhat depending on available equipment on site and each installer's preferences based on experience.

5.1 ENVIRONMENT

Temperature range (ambient):

+35° to +100°F. For applications that exceed this temperature range, please consult Applications Engineering.

Ultraviolet Rays:

Avoid exposure of polyurethane O-rings to sunlight.

Oily or Wet Conditions:

Will impair frictional drive characteristics.

Corrosive or Abrasive Substances:

Will adversely affect various components.

Cleaning O-Rings

Manufacturer suggested for cleaning O-rings is to use a cloth with a de-natured alcohol when cleaning the O-ring. This cleaning product would also work for cleaning the rollers.

Note:

Do NOT immerse the O-rings or any component in a container of this cleaning product.

Accumulation with Application Engineering approval.



5.2 DIMENSIONAL REFERENCE POINTS

The path of each conveyor in the system is determined by establishing a reference point at each end. The centerline of the conveyor is established and a chalk line is snapped between these points.

Conveyors should be installed with the centerline of the bed matching the centerline of the conveyor path within 1/8" of true center. Locate and mark the center of the crossmembers at each end of the conveyor. Use a plumb line or other applicable device to ensure accuracy to the chalk line.

Always carry out a thorough check for any obstructions such as building columns, manholes, etc. It may be necessary to reroute the conveyor to avoid the obstruction. In this case it would be advisable to begin installation at this point, using the obstruction as a reference point (Datum), and install the sections in either direction as required.

All conveyor sections must be checked for squareness prior to installation as "racking" or being knocked out of square may have occurred during shipping and handling.







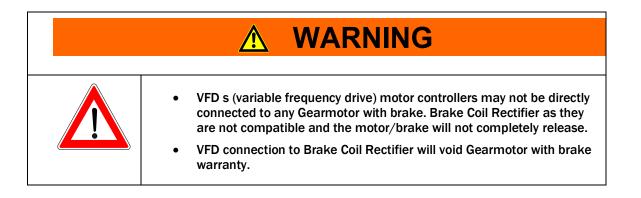
5.3 ELECTRICAL / GEARMOTOR



All motor controls and wiring must conform to the National Electrical Code as published by the National Fire Protection Association and approved by the American National Standards Institute, Inc. In addition, since specific electrical codes vary from one area to another, be sure to check with the proper authorities before starting the electrical wiring.

WARNING					
	 All Standard Gearmotor with brake Coil Rectifiers are Half-Wave and are suitable only for 480VAC. 				
	 Using standard Gearmotor with Brake at 240VAC will void the Gearmotor with brake warranty. 				
	• Contact Distributor Services for the correct rectifier for your intended voltage if other than 400-480VAC.				

The voltage of the motor will be stamped on the name plate. This voltage must match available voltage. Consult the wiring diagram on the motor for proper connections. If a single direction conveyor with a 3 phase motor runs the wrong direction, two leads must be switched to reverse rotation.



Consult the wiring diagram of the inside cover of the starter and pushbutton for the proper electrical connections. Three phase drives require transformers to reduce the pushbutton and control circuit to 115 volts. If primary voltage is changed, the transformer must be changed, according to the wiring diagram found on the transformer.



NEMA enclosure ratings are as follows:

NEMA 1- Indoor use, provides protection against contact with internal components. Suitable for use in warehouse and distribution environments.

Gasket

NEMA 1- Same use as NEMA 1, but with additional protection against dirt and dust.

NEMA 3- Outdoor use, designed to keep out rain and dust.

NEMA 4- Indoor and outdoor use, designed to keep out rain and dust.

NEMA 12- Indoor use, provides protection against dust, dirt, oil seepage, and dripping of non-corrosive liquids. Suitable for use in industrial environments.

NEMA 13- Indoor use, provides protection against dust, dirt, sprayed oil and non-corrosive liquids.

NOTE: All the controls logic, safety switches, and some special devices are covered by the original manufacturer's warranty.

Conveyor in areas of high pedestrian traffic should also be protected by emergency stop devices.

Emergency stops should be located throughout a system. Their location will depend on likely observation points and areas with special devices or interfaces between equipment.

Emergency stops can be a pushbutton or cable operated switch. The pushbutton should be mushroomstyle and red. The pushbutton must require resetting after actuation. Cable operated switches should trip by pulling the cable and require resetting at the switch.

An emergency stop should normally stop all conveyors in the system. Very large systems may involve dividing the system into zones of control.

Actuating an emergency stop must drop out the start circuit and require restarting the system using the start pushbutton.



Controls Logic

Solid state controls logic devices, such as programmable controllers, are used extensively for conveyor control. They are very reliable, but a hardware failure or software bug could cause an output to malfunction. For this reason, start circuits, warning horn circuits, and emergency stops should usually be configured using conventional relay logic.



Safety Switches

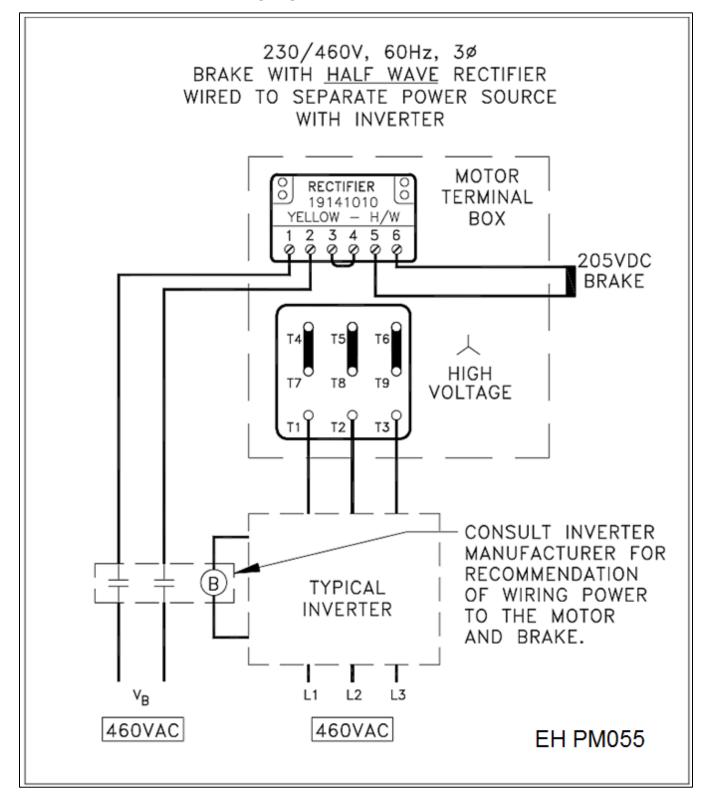
All conveyor control cabinets and motors should be provided with safety (or disconnect) switches. These switches must have provisions for padlocking. As required for maintenance, equipment should be locked in the OFF position.

Special Devices

Special devices and equipment such as vertical lifts, turntables, high speed conveyors etc. all have unique design and safety requirements and should be evaluated individually.



Reference for Standard Brake Wiring Diagram for 460/230v Motor & 460v Brake.





5.4 GEAR MOTOR ACTIVATION

PRIOR to systems activiation - Please inspect the gear unit for a vent and if applicable to the product remove the rubber sealing plug to activate. The vent is designed to allow excessive pressure to escape. Each gear unit should have a yellow instruction tag as shown below. The tag can be removed after the plug is removed.

Note: The rubber sealing plug is in place for shipping and storage purpose only.

 In order for the gear motor to release pressure, the vent must be activated by removing the rubber sealing plug PRIOR to gear unit start up.

Please check you gear unit for a vent and if applicable to your product, remove the sealing plug to activate. "<u>https://www5.nord.com</u>" Operation Manual for Gear Units (B1000).







Note: Yellow tags may be tucked out of sight. Please inspect all motors for a vent and remove sealing plug, if present, to activate.

The following pictures are examples showing where vent plugs may be located depending on the product line and motor position.









Vent & Sealing Plug may be hard to see depending on the product line and motor location.



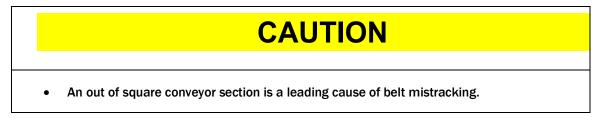
5.5 SQUARING CONVEYOR

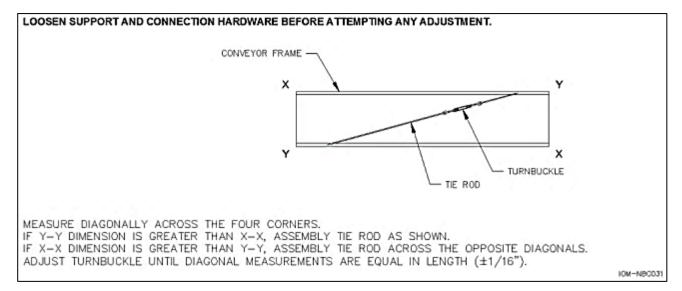
All conveyor sections must be checked for squareness prior to installation as "racked" or being knocked out of square may have occurred during shipping and handling. An out of square conveyor section is a leading cause of belt mistracking.

Measure diagonally across the four corners of the conveyor frame to determine if the frame is out of square. If the measurement is not equal between the two diagonals, the frame is not square. A "racked" conveyor will skew the rollers, causing the belt to wander off center.

The conveyor sections are joined together with welded butt plate connectors. If a conveyor section is determined to be out of square, adjustment must be made before proceeding to the next section. Correct the squareness of the conveyor frame by installing a tie rod along the longest diagonal dimension and adjusting the turnbuckle until the diagonal measurements are equal in length. It is important to loosen the support and connection hardware before attempting any adjustment.

If gaps appear between bed joints as a result of squaring the conveyor, take care not to "re-rack" the conveyor by pulling the sections together at the bed joints. Insert optional shim plates or washers to the required thickness to fill the gap before tightening the connection hardware. Verify the squareness of the conveyor after installation.





Squaring conveyor Kit# 1134766



5.6 ELEVATIONS

• All conveyor sections should be installed in accordance with the elevations shown on the drawings. In addition, they must be level across the frame width and length (if horizontal). Leveling of the frames is best done using a rotating laser level or builder's level.

After the first elevation is established at a critical point, the elevation of all other points shall be relative to this first point. Normal practice is to dimension the layout and measure elevations from the floor at each point of support.

As the conveyor system proceeds onto another floor or into another building or room, a new elevation will be measured from the floor at that point. The new elevation will then become the reference from subsequent elevations.

When installing an overhead system, the first elevation is measured from the floor and becomes the reference elevation point until a change in the elevation is shown on the layout. Any new elevation is also measured from the floor and becomes the new reference point. The process is repeated each time an elevation change occurs.

CAUTION

• Consult the building architect or a structural engineer regarding ceiling loading or structural limitations of the building if any conveyor section is ceiling hung.

Component Orientation

Using your conveyor system layout drawing and the numbers on the I.D. tags of each component, position, and orient the conveyor section.

You must know:

- The direction of product flow
- The elevation height
- How the drive is positioned
- Charge and discharge end beds

IMPORTANT! Do not make alterations to the equipment without consulting with user's representative and MHS Conveyor. Unauthorized modifications to the equipment may impair its functions, create a hazardous condition, affect its useful life, and /or void the warranty.



5.7 SUPPORTS & CONNECTIONS

For details on Supports & Connections, see Support & Connections IOM (#1200485) at

mhs-conveyor.com

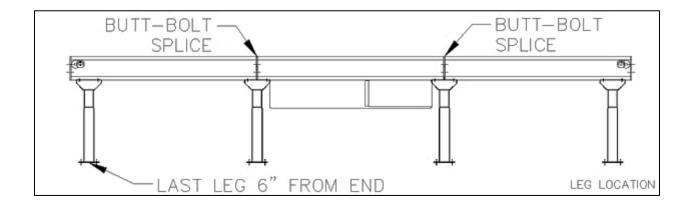
5.8 SUPPORT ARRANGEMENTS

Floor Support Information

All supports are intended to be used at a conveyor seam or joint at the end of a unit. All CRUZbelt beds now have butt-bolt connections to allow supporting off center of a bed joint if necessary. Support CRUZbelt at each end and at every splice as shown below. Set all supports for unit to proper height.

Attach supports to both sides of drive.

On intermediate and end beds, attach one support on the end furthest from the drive.

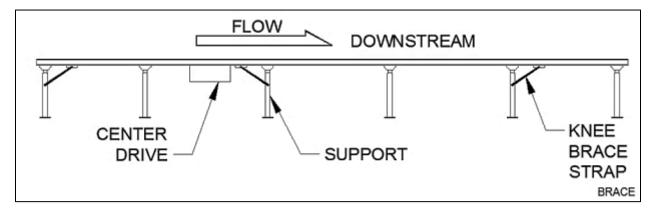


Leg elevations are shown on the elevation drawings. Leg elevation can also be set by subtracting 6-3/8" from the desired top of belt elevation.

NOTE:

Top of Belt - 6 3/8'' = Top of Support

If knee braces are required, they are installed on approximately 30' centers as shown below.

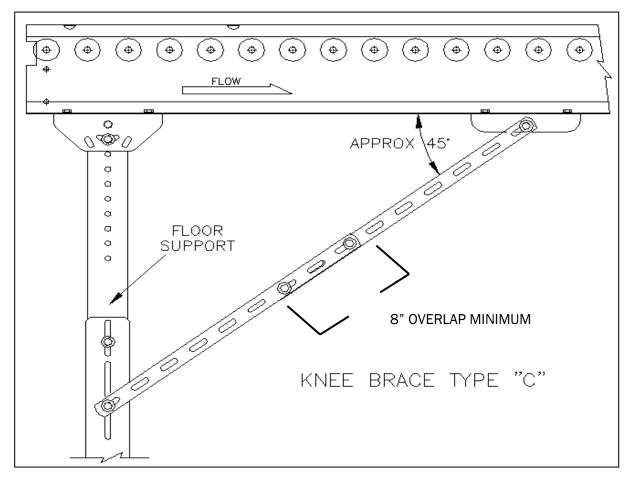




Note brace direction. Near a drive, the brace should be on the upstream side of the support. Elsewhere the brace should be downstream of the support. For maximum effect, the angle between the brace and the side frame must be between 30 and 45 degrees.

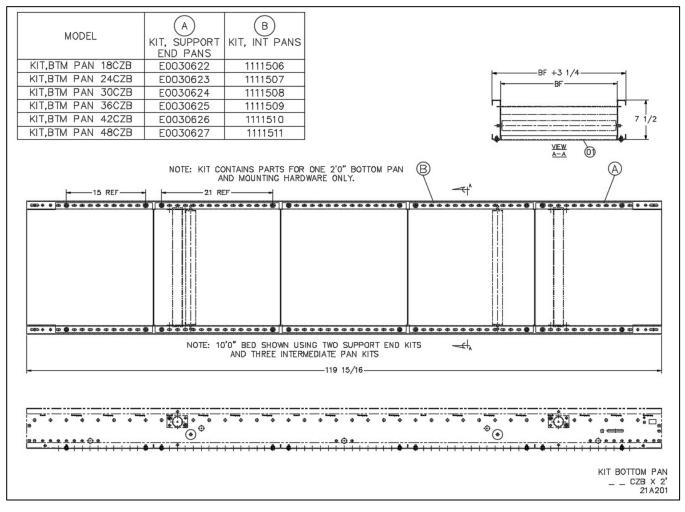


Supports over 48" high use a double knee brace (Type "C"). To make a double knee brace, bolt two straps together with a minimum 8" overlap.





5.9 BOTTOM PANS



Bottom pans are safety covers that provide operator protection from running belts and debris, and are highly recommended up to 8' from the floor.

Bottom pan kits include; (1) 2'0" bottom pan and mounting hardware.



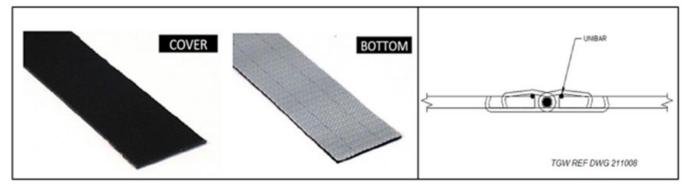
5.10 BELT MATERIAL

BELT MATERIAL (General)	BELT WIDTH	BELT LENGTH	TEMPERATURE RANGE	STRENGTH	ACCEPTABLE STRETCH	LACING	LACING PIN	
BELT,CZB9/16" X'" EWX (211008) SPARKS MONO FLEX BU 200 E POLYURETHANE IMPREGNATION (ANTI-STATIC QUIET WEAVE)		OAL ± 1/2"	-20°F TO 180°F		45 LBS @ 1% STRETCH			
BELT,CZB9/16" X'" HOZ (211006) SPARKS MONO FLEX BP 210 QW 2-PLY SMOOTH BLACK PVC (ANTI-STATIC QUIET WEAVE)	BF - 7/16" +- 1/16" (72" MAX WIDTH)	(MEASURE BELT END TO BELT END NOT INCLUDING FASTENERS OR LACING)	BELT END TO BELT END NOT INCLUDING FASTENERS 23°F TI	23°F TO 175°F	110 lbs / inch width	0.4 - 2.5% (MHS RECOMMENDED STRETCH 0.5%)	CLIPPER UCM36SP (316 STAINLESS STEEL) (PN 1100706)	CLIPPER DSS065 (316 STAINLESS STEEL) (PN E0034789)
BELT,CZB9/16" X'" INC (211007) SPARKS MONO FLEX BP 290 QW 2-PLY RIBBED BLACK PVC (ANTI-STATIC QUIET WEAVE)					0.4 - 2.5% (MHS RECOMMENDED STRETCH 0.5%)			

		COVER	COVER	WEIGHT	COEFICENT OF FRICTION		
BELT MATERIAL (Differences)	BELT THICKNESS	MATERIAL	HARDNESS	WEIGHT	STEEL	CARDBOARD	
BELT,CZB9/16" X'" EWX (211008) SPARKS MONO FLEX BU 200 E POLYURETHANE IMPREGNATION (ANTI-STATIC QUIET WEAVE)	.075" +015 (RANGE .060"090")	Polyurethanre Impregnation	NA	0.35 lbs /SQUARE FOOT	0.20 (BOTTOM WHITE SURFACE)	0.2328 PVC/PU (TOP COVER)	
BELT,CZB9/16" X'" HOZ (211006) SPARKS MONO FLEX BP 210 QW 2-PLY SMOOTH BLACK PVC (ANTI-STATIC QUIET WEAVE)	.079" +015 (RANGE .064"094")	PVC	78 DUROMETER SHORE "A"	0.50 lbs / SQUARE FOOT	0.22 (BOTTOM SURFACE)	0.37 PVC (TOP COVER)	
BELT,CZB9/16" X'" INC (211007) SPARKS MONO FLEX BP 290 QW 2-PLY RIBBED BLACK PVC (ANTI-STATIC QUIET WEAVE)	.102" +015 (RANGE .087"117")	PVC	45 DUROMETER SHORE "A"	0.72 lbs / SQUARE FOOT	0.22 (BOTTOM SURFACE)	0.95 PVC (TOP COVER)	



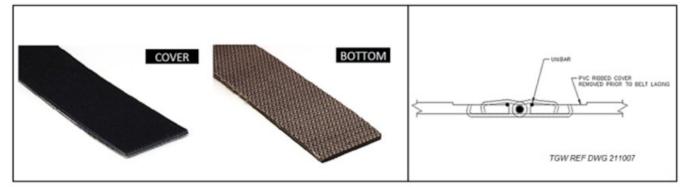
Mono Flex BU 200 (EWX)



Mono Flex BP 210 QW (HOZ)



Mono Flex BP 290 QW (INC)





5.11 CONVEYOR SET UP

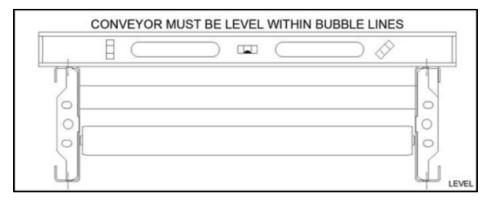
Place each bed in position per layout drawing.

Bolt bed butt connectors together.

Set final elevation and level unit. Conveyor must be level side-to-side and along conveyor length as shown below:

Tighten support bolts and anchor to floor.

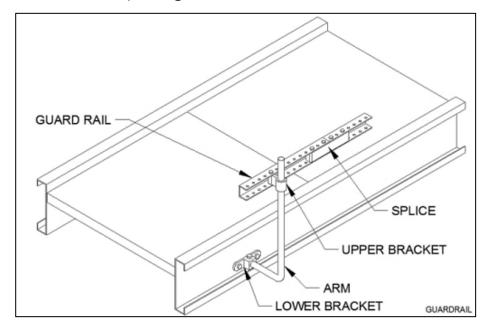
Install any required guard rail as shown:



Conveyor must be level

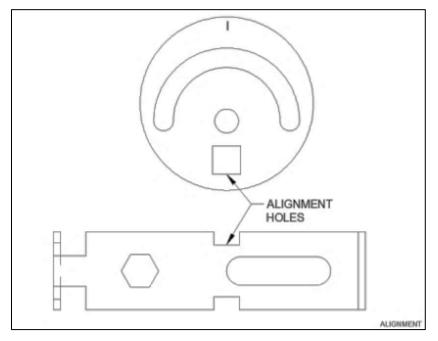
5.12 GUARDRAIL ASSEMBLY

Square end pulleys and snubbers using alignment holes. Move cam or snubber bracket until the 3/8" square alignment hole is in line with the 3/8" square in the bed frame. A 3/8" key stock can be inserted into the holes for quick alignment.



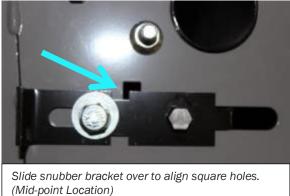


5.13 BELT ALIGNMENT



Hole Alignment



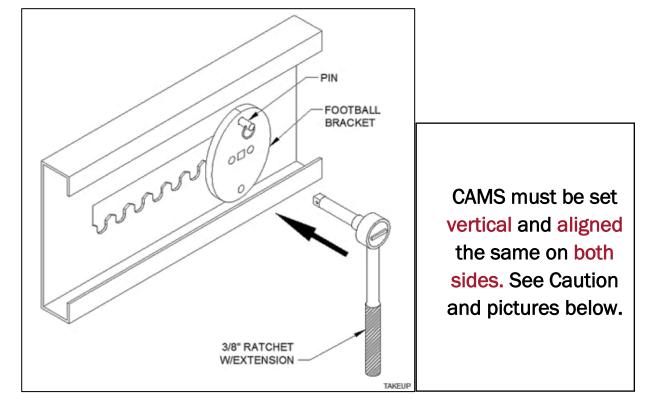


Locate drive. Remove both black plastic translucent shrouds and quick-release pins. Use a 3/8" ratchet with extension in the square hole of one football bracket to roll the take-up as shown. Make sure the belt is not rubbing on the side channels.

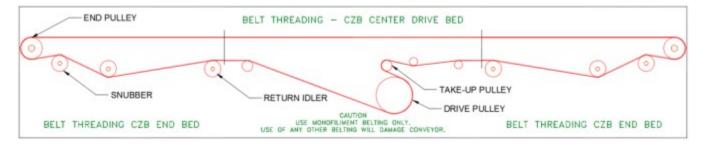
To view CRUZbelt Take-up and Tracking video visit: <u>mhs-conveyor.com</u>



5.14 CRUZBELT W/CAM TAKE-UP



Thread belt through conveyor. Labels on drive beds show specific threading. A general belt path is shown below.



5.15 STANDARD CRUZBELT LACING

	CRUZbelt LACING INFORMATION
LACING:	CLIPPER: UCM36SS12 316 STAINLESS STEEL (INSTALL LACE ON BELT WITH .065 DIA LACE PIN THRU HOOKS (P/N 1100706)
LACING PIN	CLIPPER: DSS065 316 STAINLESS STEEL WIRE CORE IN A .065 WHITE DURAPIN COATING (P/N E0034789)

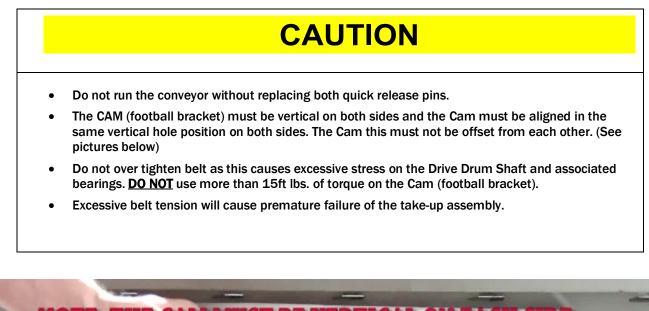


Pull belt ends together and insert lacing pin.

Tension belt by rolling a football bracket away from the motor. A standard 3/8" drive ratchet will provide correct belt tension with ease. <u>DO NOT</u> over tension the belt by using a "cheater bar", "long handled bar" or "breaker bar" on the ratchet bar or using two people with ratchets. Belt should be just tight enough to drive the product.

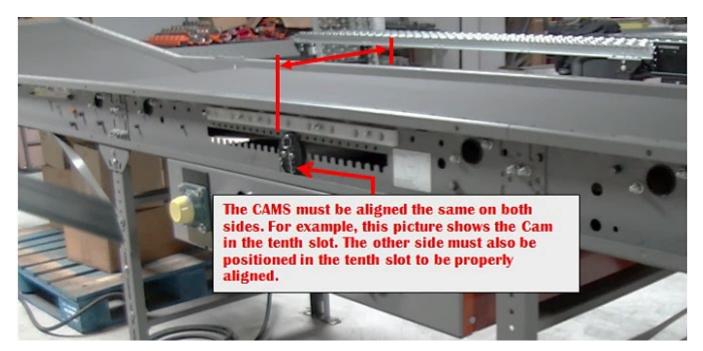
To prevent possible damage to the roller bearing, when tightening the CAM (football bracket) <u>DO NOT</u> use more than 15ft lbs. of torque.

Replace quick-release pins into both football brackets as shown on bed label. One football bracket may need to be separately aligned slightly to insert the pin. Replace drive shrouds.





The Cams must be vertical on each side.



The Cams must be aligned the same on both sides.



5.16 CRUZBELT 4 WITH SPRING TAKE-UP



Proper tension has been reached when spring is fully compressed into spring cup.

Take-up pulley must be square the equal dimensions on both sides.

Do not over tighten.





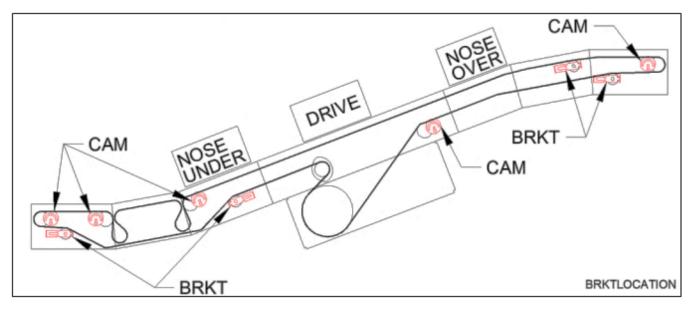
5.17 BELT TRACKING



ALL PULLEYS AND SNUBBERS MUST BE SQUARE, and conveyor must be level prior to tracking the belt. Align the 3/8" square in the cams and snubber brackets with the corresponding square in the bed frame. (See "Conveyor Set-up" section). Conveyor must be wired to run the correct direction. Belt should be tensioned tight enough to drive the heaviest product.

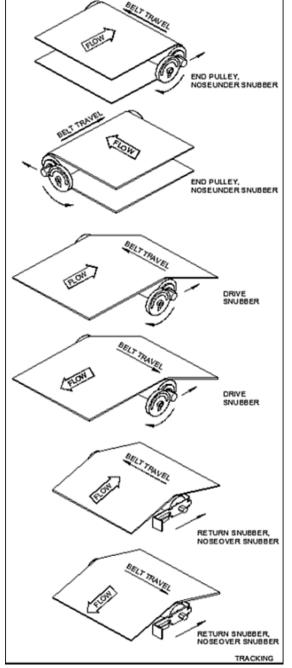
Belt tracking is accomplished by moving the snubber (belt return roller) tracking brackets (fine adjustments) first from their squared positions. The use of the tracking cams is a coarse adjustment that should only be used if necessary.

Tracking cams are located on the end pulleys, the drive snubbers, and near the middle of Noseunder. Snubber tracking brackets are located near the ends of the conveyor on the return belt snubber/carrier rollers and near the middle of Noseovers.





5.17.1 Tracking scenarios



NOTE: Flow refers to belt surface flow direction not necessarily product flow.

NOTE: Belt moves towards the end of the pulley that it contacts first.

CRUZbelt is slightly different to track than other conveyors. Since the belt is only 7/16" narrower than the between frame dimension, some belt contact with the side frame is expected. However, the belt <u>must not be</u> allowed to contact the frame near any end pulley or snubber roller.



CAUTION

• Belt must not be allowed to contact the side frame near an end pulley or a snubber roller.

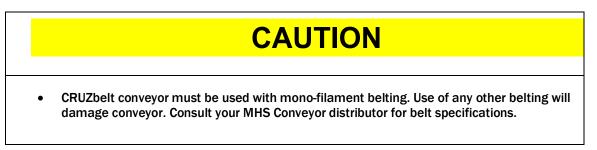
5.17.2 Basic tracking information:

The belt moves TOWARD the end of a pulley it contacts first.

Use snubber tracking brackets before using tracking cams. End pulley tracking is used as a last resort.

Tracking brackets and cams affect belt movement on the next device DOWNSTREAM from the adjusted pulley. Find the nearest bracket or cam upstream from the problem area and adjust as shown.

Adjust bracket or cam slightly and watch belt for several belt revolutions before continuing to ensure the belt location is stabilized.



5.17.3 CRUZbelt Noseunder Hex Axle Position



Note:

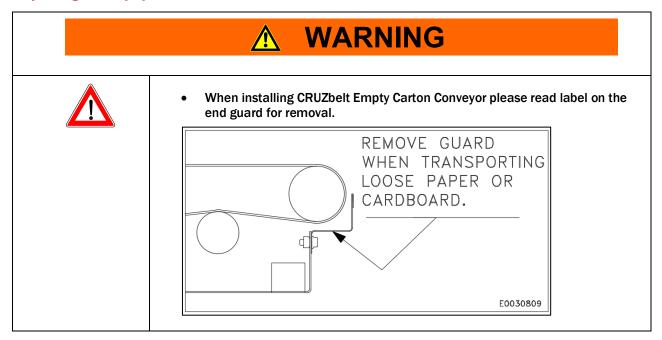
CZB Noseunder Hex Axle Position must be set with points up and flat side against the tracking cam. See pictures below.

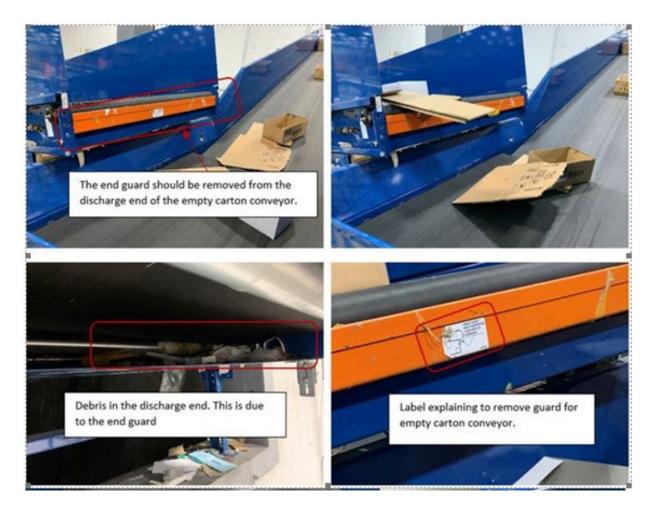




5.17.4 Empty Carton Conveyor (ECC) End Guard(s)

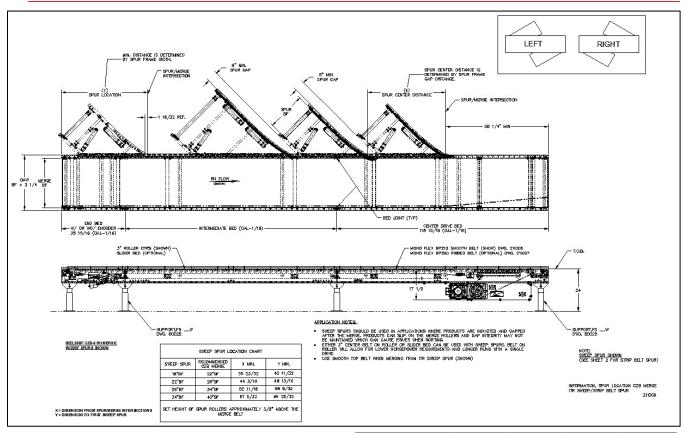
CRUZbelt Empty Carton Conveyor must have the end guard(s) removed when transporting loose paper or cardboard, otherwise debris can catch in the guard and interfere with proper conveyor operation. **Remove guard when** transporting loose paper or cardboard.







7 CRUZBELT MERGE



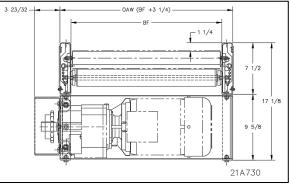
Standard Equipment

Belt:

Smooth top belting is used when merging, which pulls the product downstream and maintains orientation. The belt is a black smooth top PVC with monofilament carcass, 100 lbs. per inch of width, tensile strength, clipper lacing.

NOTE: CRUZbelt require a monofilament belt. Installation of any other type of belt will damage the internal components of CRUZbelt and will immediately and permanently **VOID all MHS Conveyor warranties**.

CRUZBELT WIDTH INFORMATION							
Overall Width	Overall Width 19-1/4" 25-1/4" 31-1/4" 37-1/4"						
Between Frames	16"BF	22"BF	28"BF	34"BF			
Belt Width	15-9/16"	21-9/16"	27-9/16"	33-9/16"			



Application

Sweep Spurs should be used when purging out a line to a final downstream accumulator prior to induction. Sweep Spurs discharge products on to the CRUZbelt Merge at rates up to 200 CPM.

The Strip Belt Spur should be used when there is a requirement to set the destination at the strip belt merge discharge and track the product from the strip belt spur to the sortation diverts location.

CRUZbelt Merge Beds



CHARGE (END) BED:

Length: 3'-0"

Roller Centers: Slider and 3" RC. Comes with or without encoder.

INTERMEDIATE BED

Lengths: 2'.0" thru 10'.0" (1'.0" Increments)

Roller Centers: Slider and 3" RC

DRIVE / DISCHARGE BED

Length: 10'-0"

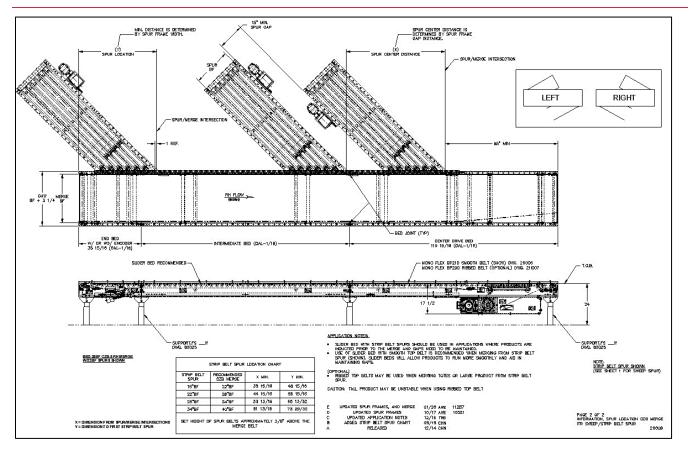
Roller Centers: Slider and 3" RC

DRIVE-TRAIN:

Use CRUZbelt center drive trains.



8 CRUZBELT & STRIP BELT SPUR



Standard Equipment Belt:

Black rough	top wi	th clippei	r lacing.

Speed:

Speed 103 FPM to 350 FPM available.

CRUZBELT WIDTH INFORMATION Overall Width 19-1/4" 25-1/4" 31-1/4" 37-1/4" Between Frames 16"BF 22"BF 28"BF 34"BF Belt Width 15-9/16" 21-9/16" 27-9/16" 33-9/16"

The Strip Belt Spur should be used when there is a requirement to set the destination at the strip belt merge discharge and track the product from the strip belt spur to the sortation diverts location.



9 CRUZBELT COMMISSIONING OF EQUIPMENT

General

Commissioning of the equipment can best be defined as the final adjustments and test of the installed equipment required for its proper operation. The need for commissioning is inherent, since the individual components of equipment are brought together at the installation site to operate as a system.

Mechanical and electrical commissioning is most often carried out simultaneously. Commissioning must simulate the actual operation of the system as close as possible to demonstrate the ability to perform reliably at the specified rate in the prescribed operational sequence.

During the Commissioning Phase, it is necessary to load the equipment with product to be conveyed, which provides the means of detecting those areas requiring adjustment. Personnel will be required to support operational functions. This may serve as part of operator training and familiarity with the system. During the commissioning activity, special attention should be directed toward personnel safety. No unnecessary risks should be taken that would endanger the safety of any personnel. All personnel must familiarize themselves with all safety features of the system such as emergency stops and motor disconnects.

Mechanical Static Checkout

(No power to the conveyor.)

Follow the belt path through the entire conveyor. Ensure lacing is straight and fastened correctly.

Visually inspect the installation. Is the conveyor straight? Is the conveyor level within bubble lines from side to side? From end to end?

Check guard rail clearance to product.

Eliminate all catch points.

Check conveyor elevations.

All bolts and set screws tight.

Check product clearance to overhead structures.

Simulate all operational functions with actual product.

All guards in place with proper clearance.

All OSHA required guards in place on walkways, catwalks, ladder-ways, floor openings, etc.

All labels and warning signs in proper place, unobstructed.

Mechanical Dynamic Checkout

(Power to the conveyor, but no product on it.)

Turn the motor ON. With the belt moving make sure each belt has proper tension. Check the belt tracking.



10 CRUZBELT PREVENTIVE MAINTENANCE & TROUBLESHOOTING

General PM

Preventive maintenance will save expensive downtime, wasted energy costs, and increase life of components. An accurate record keeping system will track component servicing history.

MHS Conveyor recommends periodic maintenance intervals. Inspection intervals may vary with load, speed, hours of operation, ambient temperature, humidity, etc. Intervals can be established by starting with a fairly frequent maintenance at first, and then lengthens the intervals as justified by observation of the need, based on history. The following schedule is based on 5 days per week, 8 hours per day operation under normal conditions.

Daily

- Listen to everything for unusual noises or vibration.
- Visually inspect to see that conveyor sections are clear and free of debris.
- Check to see that all safety guards are in place.
- Check for loose bolts or parts.

Weekly

- Check belt for wear and proper tension.
- Check belt tracking.
- Check belt lacing.

Monthly

- Inspect Gearmotor for leaking seals and the breather plug for dirt and debris.
- Inspect chain & sprocket, pulley, sheaves, and belts. See below for details.

Semi Annual

- Check the bearings for grease (Do not over grease). Recommend NLGI #2 lithium complex grease.
- Inspect pulleys and rollers for build-up of debris.

Annual

A complete inspection of conveyor equipment, parts, and proper operations to include safety tests. MHS Conveyor recommend inspecting for the following but not limited to:





MARNING

 Do not perform maintenance on the conveyor until the start-up controls, including motor safety switches, are locked out and cannot be turned by any person other than the one performing the maintenance.
• If more than, one member of a crew is working on the conveyor, EACH CREW MEMBER MUST HAVE A LOCK ON THE POWER LOCK OUT. The air pressure must be turned off to the work area. All pneumatic devices must be de-energized to prevent accidental cycling of the device.
Check the loosened parts have been retightened and all guards reinstalled.
 Make sure personnel are clear of all conveyor equipment before restarting the system.

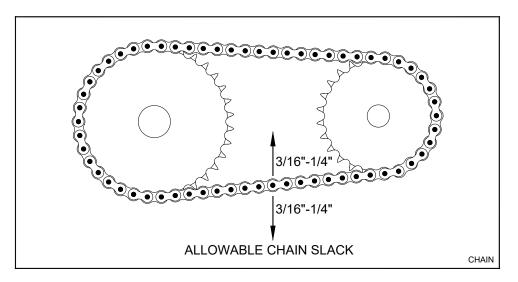
Gearmotor

The drive unit should be checked monthly. Check the motor gear case for leaking seals. Check breather on the gear case for dirt accumulation.

Chains and Sprockets

Chains and sprockets should be checked monthly. If either the sprockets or the chain is worn, both should be replaced. Sprockets must be checked for alignment with a straight edge. Clean the chain with a non-flammable solvent and lubricate with 30W synthetic oil. A brush is recommended for oil application.

Check chain tension after initial run-in and then monthly. Tension should be slightly slack, as shown:



Rollers

Inspect rollers periodically for debris build-up.

Belts

Belts normally need very little care. Clean monthly with compressed air or a stiff brush.



CAUTION

• Do not use petroleum-based products to clean the belt.

Regreasable Bearings

The drive unit and power take-off have re-greasable bearings. *Recommend NGLI #2 lithium complex grease*. These bearings should be lubricated once during the first six months of operation. Over-greasing will pass grease through the bearing seals/shields and will draw dirt to the bearing. These bearing rotate at a relatively slow speed and should not use grease on a continuing basis.

Pulleys and Sheaves

During the first 30 days of operation, inspect the bushings and cap / setscrews for proper torque at least once a week, thereafter during periodic shutdowns.





10.1 Belt Troubleshooting Guide

	Problem Belt	Possible Cause	Remedy
1.		Chain is loose and is skipping sprocket teeth	Tension chain. Check sprocket alignment, check for worn teeth.
		Belt has separated	Replace the entire belt or cut out damaged portion and add new piece with extra lacings.
		Bearings have failed	Locate and replace the bearings
	inan normal, reducer output	11 0 1 5	See #2 below
	shaft is turning properly and all electrical components are	Belt lacing pulled out	See #3 below
	operating normally.	Improper belt tension	Re-tension take-up pulley
		Drive sprocket loose on shaft	Re-tighten sprocket and check for shaft wear
		Belt jammed due to obstruction	Check belt path and remove any obstruction
		Belt mistracked on return side	Reference Belt Tracking procedure.
2.	Belt slipping on drive		Adjust take-up cam in small increments. Do not over-tighten.
		Drive pulley lagging or pulley side of belt is slippery	Replace pulley if lagging worn smooth. If slipping is caused by foreign substances in the lagging or bottom of belt, clean by scraping or wire brushing. Do not use solvents on belt or pulley lagging.
	pulley	New belt has stretched	Normal. Re-adjusted take-up.
		Seized end pulley or snubber roller bearings	Check and replace as required
		Load too heavy	Remove as required. Re-analyze needs.
		Belt threaded improperly	Check belt path per this manual
3.		Tension too high	Reduce belt tension at take-up pulley
	Belt lacing pulling out	Obstruction	Remove obstruction
		Lacing worn out	Replace lacing with Clipper #UCM36SS12
4.	Belt runs to one side	Rollers preceding and at trouble point are not square	Check alignment of pulleys and rollers. Adjust pulleys and rollers as required. See Belt Tracking section of this manual.



	Problem Belt	Possible Cause	Remedy
		Build-up of foreign material on rollers and pulleys	Clean rollers and pulleys. Do not use solvents.
		Conveyor not level	Level conveyor bed
		Bowed belt	If belt is new, load tension may straighten it. Otherwise, replace.
			Loosen belt and reposition the pulley centered in the frame. Retighten the set screws and center the belt on the pulley.
		Worn bearings	Check and replace.
		Belt not joined securely at lacing	Re-cut belt ends square and re- lace.
		Off center loading	Correct loading conditions.
5.		Obstruction	Remove obstruction
	Rips at or near edge of	Belt running against conveyor frame	See Belt Tracking section of this manual.
	pelting	Loose lacing	Check lacing for tightness and general condition. Check if belt is chamfered on corners.
	Conveyor belt jerks	Too much slack in drive chain which is jumping the sprocket	Adjust chain tension, check for worn sprockets.
	during operation		See "Chains & Sprockets" #8
7.		Obstruction	Locate and remove obstruction
	Gouging of top cover		Verify return idlers and snubber pulleys are spinning freely and have no material build-up.
8.		Belt slipping on drive pulley	See #2 above
	Severe wear on drive pulley side of belting	Frozen or sticking rollers or pulleys	Replace bad pulleys or rollers
		Slider bed damage or misalignment	Check slider bed for smoothness and alignment at joints
9.	Excessive belt stretching	-	Reduce belt tension by take-up adjustment



10.2 GEARMOTOR TROUBLESHOOTING GUIDE

	Problem -		
	Motor/Reducer	Possible Cause	Remedy
		No line voltage	Check emergency stops and reset. Check fuses and wiring for open circuit. Check thermal overload protection device. Check limit switches, starter and relays for faulty contacts or mechanical fault. Check voltage at source.
		Low line voltage	Check for low resistance short on line.
1.	Motor will not start	Conveyor overloaded or jammed	Check for foreign material in chain and sprockets. Check for material between belt and pulleys. Check conveyor belt tension. Remove product overloading from conveyor and address cause.
		Burned out motor	Replace motor with spare and send defective motor to authorized repair station.
		Failure of electrical component	Check photoelectric control relay, timing modules and start/stop pushbuttons.
	Motor running	Drag on conveyor	Inspect entire conveyor for obstruction or falling bearings.
		Lack of reducer lubricant	Check oil level in gear case. Be sure breather plug is open (if used).
		Too much lubrication	Drain off excess.
	excessively hot	Frozen pulley or roller	Check all pulleys and bearings for free rotation. Replace if frozen or difficult to rotate.
2.	Nietes	Wrong grade oil	Drain and refill with proper grade.
	Note: Temperature up to	Electrical	Check wiring and circuits. Take ampere reading and compare with motor rating on name plate.
	175° (hot to touch) is normal.	Key ramped up on the motor shaft, causing excessive bearing load.	Remove motor to reducer mounting belts. Pull motor back and reposition key, push motor back onto reducer. Binding or excessive resistance should not
		Overloaded conveyor	Remove excess product. Address cause.
		Misthreading belt path	Reroute belt path correctly.



	Problem -				
	Motor/Reducer	Possible Cause	Remedy		
		Drive chain broken or	Replace chain or repair.		
3.	Reducer runs – drive	disconnected			
	pulley does not turn	Sprockets loose. Also, see "Bearings" #8, Chain & sprockets #2 and #6.	Check key and tighten set screws		
		Defective oil seals on output shaft	Install new oil seals. Replace reducer with spare and send defective reducer to authorized repair facility.		
4.	Reducer leaks oil	Oil level too high	Drain off excess.		
		Loose bearing cover bolts	Tighten as required.		
		Incorrect size	Check size and replace if necessary.		
	Thermal protectors	Short in motor	See "Motor Will Not Start".		
5.	kicking out	Excessive amps being pulled	Reset starter and check ampere draw.		
		Poor ventilation in control panel	Check for conveyor overload. Add vents or fan.		
6.	Starter overloads				
	kicking out	Electrical	Check circuits and panel. Check heater size.		
		Excessive product loads	Check if loads or rates have increased since purchase of conveyor.		
7.	Repeated stalling	Motor wiring	Check motor wiring.		
		Overload on motor	Check conveyor for obstruction causing drag or bearing failure. Check for excessive product load.		
8.	Slow to start	Electrical	Check circuits and panel. Take ampere reading.		
		Lack of lubrication	Check oil level in gear case.		
9.	Excessive noise or	Damaged gears	Replace reducer.		
5.	motor hums	Loose mounting	Tighten bolts.		
		Faulty bearing	Replace bearing.		
10.	Motor will run but reducer does not turn	Worn gear in reducer	Replace reducer with spare and send defective reducer to authorized repair station.		
		Key between motor and reducer missing	Replace key.		



	Problem -		
	Motor/Reducer	Possible Cause	Remedy
11.	Electrical shorts	Loose connection	Check all wire connections. Check fuses.



10.3 Chain & Sprocket Troubleshooting Guide

	Problem - Chain &			
	Sprocket	Possible Cause	Remedy	
1.	Excessive slack	Normal wear	Expect rapid chain growth in first two weeks of operation. Check sprocket alignment and re-tension.	
2.	Sprocket loose on shaft	Loose set screws	Realign sprockets with straight edge and tighten set screws. Check for worn components.	
3.	Wear on tips of sprocket teeth	Chain elongated	Replace chain and sprockets	
4.	Abnormal wear on chain or sprockets	Excessive chain tension	Align sprockets and reduce tension to 1/4" chain slack each way of center.	
		Sprockets misaligned	Realign with straight edge across sprocket faces.	
		Chain not adequately lubricated	Lubricate chain with approved lubricant, wipe away excess lubricant.	
		Damaged sprocket or chain	Replace damaged component. Check alignment.	
		Dirty chain	Clean thoroughly and use approved Lubricant.	

10.4 BEARINGS TROUBLESHOOTING GUIDE

	Problem - Bearings	Possible Cause	Remedy
1.	Excessive vibration	Bearing brinnelled	Locate and replace
2.	Bearing runs excessively hot	No lubrication	Add approved lubricant
3.	Noise (intermittent)	Loose mounting bolts	Check security or mounting bolts
4.	Shaft rotation in bearing bore	Eccentric locking collar or hub loose	Tighten locking collar in the direction of shaft rotation and/or tighten set
5.	Noise (low pitch)	Bearing brinnelled	Replace
6.	Rough spots felt when rotated	Bearing worn	Replace
7.	Bearing squeals or thumps while running	Bearing has defect	Replace



	Problem - Bearings	Possible Cause	Remedy	
8.		Bearing frozen	Replace bearing or complete roller	
	Pulley or roller does not turn	ot Key sheared off in pulley hub Check loading. Check shaft. Replace		
		Set screws slipping on shaft	Tighten and check shaft	



11 CRUZBELT REPLACEMENT PARTS IDENTIFICATION

This section is used to identify parts that may require replacement during the life of the conveyor. Parts, which specifically pertain to MHS Conveyor conveyors, are included with illustrations. A "Recommended Spare Parts List" is published for all conveyor orders of \$20,000. This spare parts list is sent to the purchaser approximately (2) weeks after the order is received. It includes part numbers, description, pricing and recommended quantities to be kept on hand for maintenance. If you are unable to locate this document, another may be obtained by contacting the MHS Conveyor Lifetime Services at 231-798-4547.

11.1 SPARE PARTS PRIORITY LEVEL EXPLANATIONS

Level #1

Failure of a priority level #1 spare part ("A" level part) may cause major disruption of system performance.

Priority level 1 spare parts must be on-hand, and available to be replaced in the event of a component failure that could shut down a critical function of a conveyor system.

Priority level 1 spare parts include motors, gear reducers, gearmotor, motorized rollers, air solenoid valves, and related components. The majorities of these parts are purchased from MHS Conveyor vendors and carry their own warranties through these vendors. For more warranty information, see MHS Conveyor Equipment Warranty.

Level #2

Failure of a priority level #2 spare parts ("B" level part) usually is gradual and should not cause a major system disruption.

Priority level 2 spare parts are parts required for smooth system operation and preventative or regular mechanical maintenance.

Priority level 2 spare parts include roller chain, sprockets, belt pulleys, rollers, air cylinders, and other related parts whose failure should not stop a conveyor system suddenly. These parts tend to wear out gradually and are not know to fail suddenly.

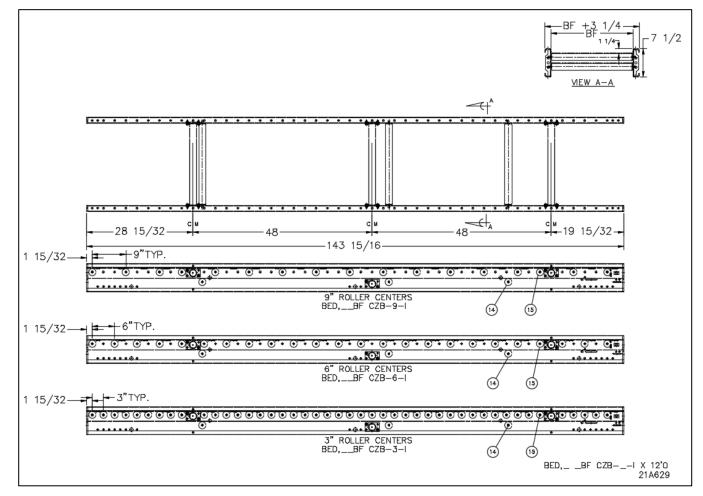
Level #3

Priority level #3 parts ("C" level part) rarely fails and are easily obtainable.

Priority level 3 spare parts are parts that rarely fail or maybe optionally used by the customer.



11.2 CRUZBELT INTERMEDIATE BED – BELT ON ROLLER

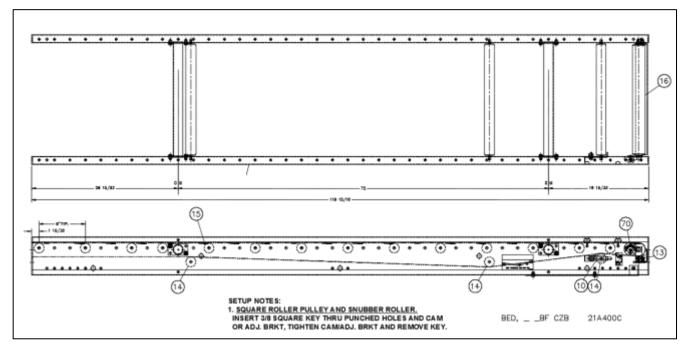


11.2.1 CRUZbelt Intermediate Bed

REPLACEMENT PARTS FOR CRUZBELT INTERMEDIATE BED						
	Widths & Part #s					
BALLOON	ALLOON DESCRIPTION 16" BF 22" BF 28" BF 34" BF					
14	ROLLER,CZB 1.9 SNUBBER PRBG	E0009652	E0009653	E0009654	E0009655	
15	ROLLER,"GRAV 1.9 PLTD PRBG	60218009	60224009	60230009	60236009	
	Bed Reference Dwg. #21A629					



11.3 CRUZBELT END BEDS - BELT ON ROLLER

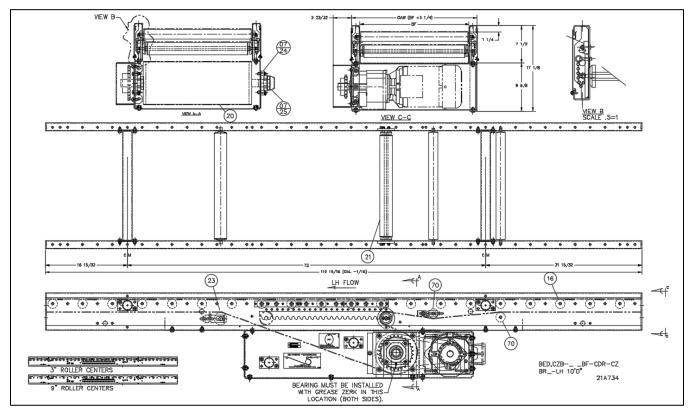


11.3.1 CRUZbelt End Beds

	REPLACEMENT PARTS	FOR CRUZBE	LT END BEDS					
			Widths &	& Part #s	-			
BALLOON	DESCRIPTION	16" BF	22" BF	28" BF	34" BF			
10	BRKT,CZB SNUBBER ADJ.	E0009408						
13	GUARD,FINGERCZB (HANDED)	E0034991	E0034992	E0034993	E0034994			
14	ROLLER,CZB 1.9 SNUBBER	E0009652	E0009653	E0009654	E0009655			
15	ROLLER," GRAV 1.9 PLTD PRBG	60218009	60224009	60230009	60236009			
16	PULLEY,CZB 2.5 DIA 1/4W	E0040390	E0040391	E0040392	E0040393			
70	CAM,ASY CZB	E0038393						
	•		E	ed Reference D	wg. #21A400C			



11.4 CRUZBELT CENTER DRIVES - BELT ON ROLLER

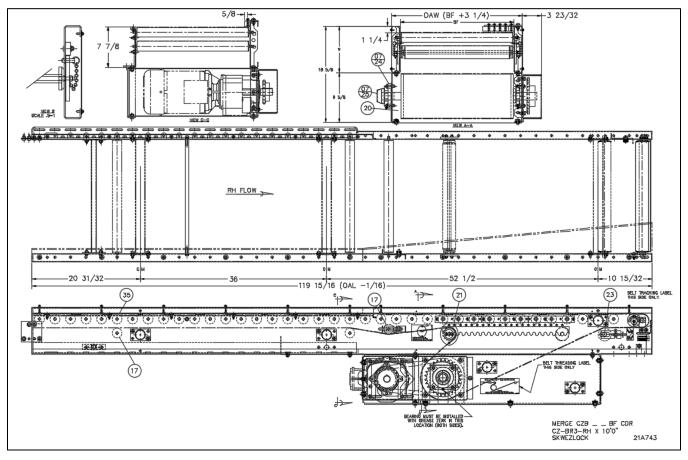


11.4.1 CRUZbelt Center Drives (BOR)

	REPLACEMENT PARTS FOR CRUZbelt CENTER D	RIVE BOR					
		Widths & Part #s					
BALLOON	DESCRIPTION	16" BF	22" BF	28" BF	34" BF		
07/24	BRG, FLG 4BOLT X 1-7/16" (CONCENTRIC CLAMP COLLAR,D-LOCK)	1114091					
07/25	BEARING END, SAFTY CAP	1114092					
16	ROLLER,"GRAV 1.9 PLTD PRBG	60218009	60224009	60230009	60236009		
20	PULLEY, WLDMT 8"BF CZB CDR	1158680	1158681	1158682	1158683		
21	PULLEY,CZB DR 2.5 DIA 1/4W	E0040400	E0040401	E0040402	E0040403		
23	ROLLER, SNUBBF 11/16 AXLE	18218001	18224001	18230001	18236001		
70	ROLLER,CZB 1.9 SNUBBER PRBG	E0009652	E0009653	E0009654	E0009655		
			Bed R	eference Dw	g. #21A734		



11.5 CRUZBELT MERGE DRIVE BED

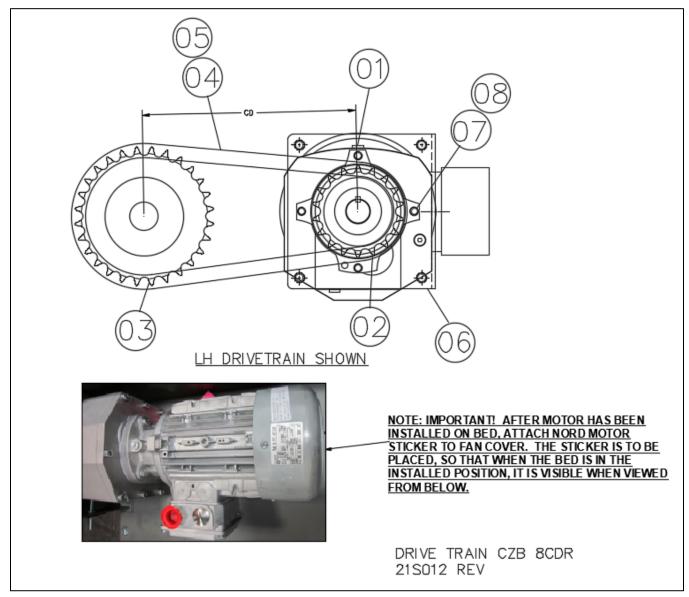


11.5.1 CRUZbelt Merge Drive

			Widths &	Part #s	
BALLOON	DESCRIPTION	22" BF	28" BF	34" BF	40" BF
07/24	PULLEY,CZB 2.5 DIA 1/4	E0040391	E0040392	E0040393	E0040394
07/25	BEARING END, SAFTY CAP	1114092	1114092	1114092	1114092
17	ROLLER,CZB 1.9 SNUBBER PRBG (CONCENTRIC CLAMP COLLAR,D-LOCK)	E0009653	E0009654	E0009655	E0009656
20	PULLEY,WLDMT 8"BF CZB CDR	1158681	1158682	1158683	1161079
21	PULLEY,CZB DR 2.5 DIA 1/4W	E0040401	E0040402	E0040403	E0040404
23	ROLLER,SNUBBF 11/16AXLE	18224001	18230001	18236001	18242001
22	BRG, FLG 4BOLT X 1-7/16"	1114091	1114091	1114091	1114091
35	ROLLER, "GRAV 1.9 PLTD PRBG (W/PRECISION BREARING)	60224009	60230009	60236009	60242009



11.6 CRUZBELT DRIVE TRAIN





11.6.1 CRUZbelt RH & LH Center Drive Trains Chain Driven

			REI	PLACEMEN	T PARTS FOR (CRUZBELT RH	& LH CENTER DRIVE	RAIN		DRIVE TRAINS	
Ballo	on #			1				2	3	4	5
FPM	HP	RH DR-TRAIN	LH DR-TRAIN	BRAKE	RH GEAR-MTR	LH GEAR-MTR	REDUCER SIZE	DRIVE SPROCKET	DRIVEN SPROCKET	CHAIN	MASTER
60	1	P/N 1135401	P/N 1135398	OPTION	P/N 1135095	P/N 1135093	IT 01 SK373.1Z-VL-80 LP/4	1118303 H6015T 1"BORE	1118285 28T 1-7/16" BORE		LINK
75	1.5	1135416	1135413		1135107	1135105	SK572.1Z-VL-90 SP/4	1118352 H6016T 1-1/4"BORE	1118264 27T 1-7/16" BORE		
120	2	1135454	1135452		1135135	1135132	SK572.1Z-VL-90 LP/4	1118352 H6016T 1-1/4"BORE	1118285 28T 1-7/16" BORE	90140032	00440407
150	3	1135478	1135476		1135160	1135158	SK572.1Z-VL-100 LP/4	1118352 H6016T 1-1/4"BORE	1118273 26T 1-7/16" BORE	PEER # 60 ROLLER	90440107 PEER # 60 MASTER
180	3	1135493	1135491		1135168	1135166	SK572.1Z-VL-100 LP/4	1118352 H6016T 1-1/4"BORE	1118273 26T 1-7/16" BORE	CHAIN	LINK
	2	1160558	1160556		1160537	1160535	SK372.1Z-VL-90 LP/4	1118277 H6016T 1"BORE	1118273 26T 1-7/16" BORE		
240	5	1160562	1160560		1160541	1160539	SK572.1Z-VL-112 MP/4	1118352 H6016T 1-1/4"BORE	1118285 28T 1-7/16" BORE		

11.6.2 CRUZbelt Timing Belt

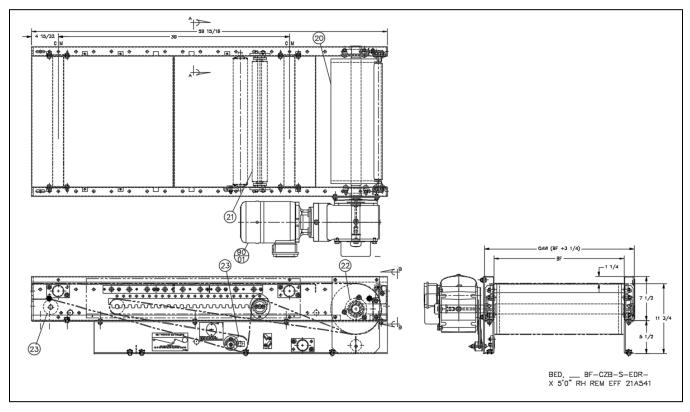
					REPLACEMEN	T PARTS FOR CR	UZBELT RH & LH TIMI	NG BELT		
Balle	oon #			1				2	3	
FPM	НР	RH DR-TRAIN	LH DR-TRAIN	BRAKE	RH GEAR-MTR	LH GEAR-MTR	REDUCER SIZE	DRIVE SPROCKET	DRIVEN SPROCKET	
		P/N	P/N	OPTION	P/N	P/N	IT 01			
90	1 1/2	1135507	1135504		1135183	1135504	SK572.1Z-VL-90 SP4	E0033834 PULLEY,GATES POLY8MX-48S-36	E0038985 PULLEY,GATES 8MX-63S-36	
120	2	1135527	1135525		1135126	1135123	SK572.1Z-VL-90 LP4	E0038328 PULLEY,GATES POLY 8MX-45S-36	E0038985 PULLEY,GATES POLY 8MX-63S-36	
150	3	1135545	1135543		1135310	1135307	SK573.1Z-VL-100 LP4	E0033834 PULLEY,GATES POLY 8MX-48S-36	E0038985 PULLEY,GATES 8MX-63S-36	
180	3	1135570	1135568		1135152	1135148	SK572.1Z-VL-100 LP4	E0033835 PULLEY,GATES POLY 8MX-50S-36	E0038985 PULLEY,GATES 8MX-63S-36	
	2	1135612	1135610		1135372	1135369	SK572.1Z-VL-90 LP4	E0038988 PULLEY,GATES 8MX-56S-36	E0038309 PULLEY,GATES 8MX-60S-36	
300	5	1135622	1135620		1135378	1135374	SK572.1Z-VL-112 MP4	E0033835 PULLEY,GATES POLY 8MX-50S-36	E0038985 PULLEY,GATES 8MX-63S-36	
									Drive-Train Ref Dwg # 21S012 H	

11.6.3 CRUZbelt Mount plate

	MOUNT PLATE FOR CONVERTING OLD STYLE GEARMOTOR MOUNT TO THE NEW NORD .1 NEW STYLE MOUNTING									
BALLOON	DESCRIPTION		Widths &	Part #s						
BALLOON	DESCRIPTION	16" BF	22" BF	28" BF	34" BF					
6	PL,MTR CZB CDR SK571 W/ 3/8-16 PEM NUTS		11677	'35						
6	PL,MTR CZB CDR SK371, W/ 3/8-16 PEM NUTS	1186161								
		Reference D)wg. #21S0 [,]	12H, 21D63	4, 21D672					



11.7 CRUZBELT END DRIVE



11.7.1 CRUZbelt End Drive & Drive Train Replacement Parts

REPLACEMENT PARTS FOR CRUZBELT END DRIVE										
				Widths &	& Part #s					
BALLOON	DESCRIPTION	16" BF	22" BF	28" BF	34" BF	40" BF	46" BF			
20	PULLEY,WLDMTCZB 8"EDR TAP	E0009080	E0009081	E0009082	E0009083	E0009084	E0009085			
21	PULLEY,CZB DR 2.5 DIA 1/4W DRIVE TAKE-UP ROLLER	E0040400	E0040401	E0040402	E0040403	E0040404	E0040405			
22	BRG,3BOLT FLG X 1-3/8" SST			111	5245					
23	PULLEY,4CZB 2.5 DIA 1/4W	E0040390	E0040391	E0040392	E0040393	E0040394	E0040395			
	Bed Reference Dwg. #21A541									

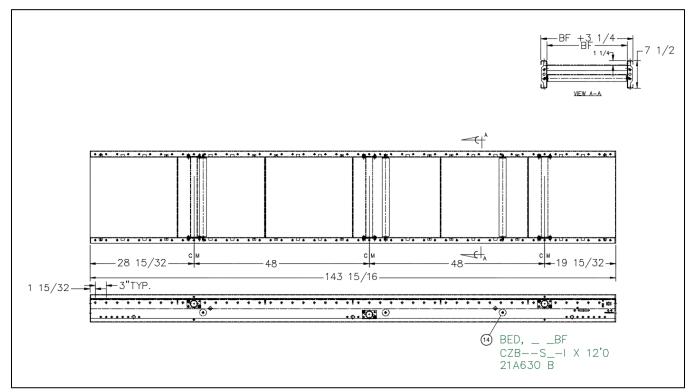


11.7.2 CRUZbelt Drive Train ITEM # Replacement Parts

DRIVE TRAIN ITEM #s DRIVE TRAIN ITEM #s / GEARMOTOR PART #s FOR CRUZBELT END DRIVES									
		BALLOON	90	90					
SPEED	SPEED HP BEL		RH DRIVE TRAIN	LH DRIVE TRAIN					
75	1	404	1171281	1171294					
90	1.5	469	1171282	1171295					
105	1.5	418	1171283	1171296					
120	1.5	380	1171284	1171297					
135	2	455	1171285	1171298					
150	2	414	1171286	1171299					
210	3	444	1171287	1171300					
	Dwg # 21A541								



11.8 CRUZBELT INTERMEDIATE SLIDER BED

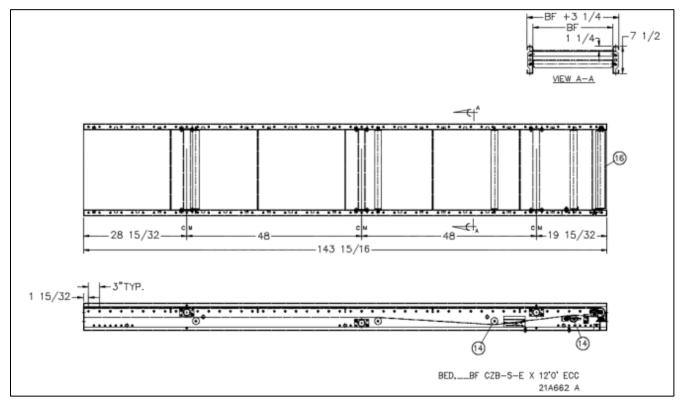


11.8.1 CRUZbelt Intermediate Slider Bed

	REPLACEMENT PARTS FOR CRUZBELT INTERMEDIATE SLIDER BED									
				Widths &	k Part #s					
BALLOON	DESCRIPTION	16" BF	22" BF	28" BF	34" BF	40" BF	46" BF			
14	ROLLER,CZB 1.9 SNUBBER PRBG	E0009652	E0009653	E0009654	E0009655	E0009656	E0009657			
	Bed Reference Dwg. #21A630									



11.9 CRUZBELT SLIDER END BED

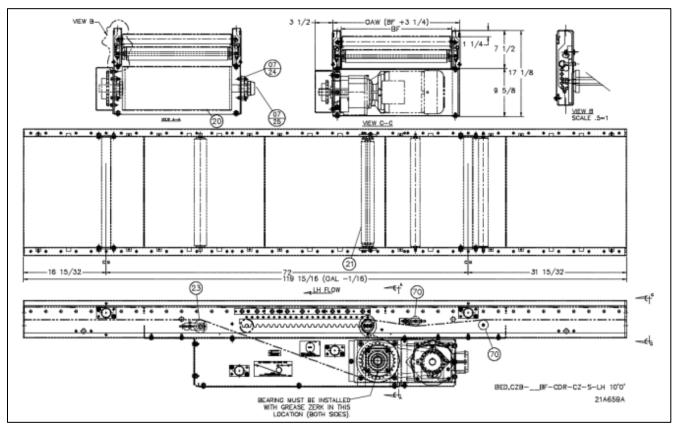


11.9.1 CRUZbelt Slider End Bed

	REPLACEMENT PARTS FOR CRUZBELT SLIDER END BED									
				Widths & P	art #s					
		Carton Tote Conveyor & Empty Carton Empty Carton C								
BALLOON	DESCRIPTION	16" BF	22" BF	28" BF	34" BF	40" BF	46" BF			
14	ROLLER,CZB 1.9 SNUBBER PRBG	E0009652	E0009653	E0009654	E0009655	E0009656	E0009657			
16	PULLEY,CZB 2.5 DIA 1/4W	E0040390	E0040391	E0040392	E0040393	E0040394	E0040395			
	Bed Reference Dwg. #21A662									



11.10 CRUZBELT SLIDER CENTER DRIVE

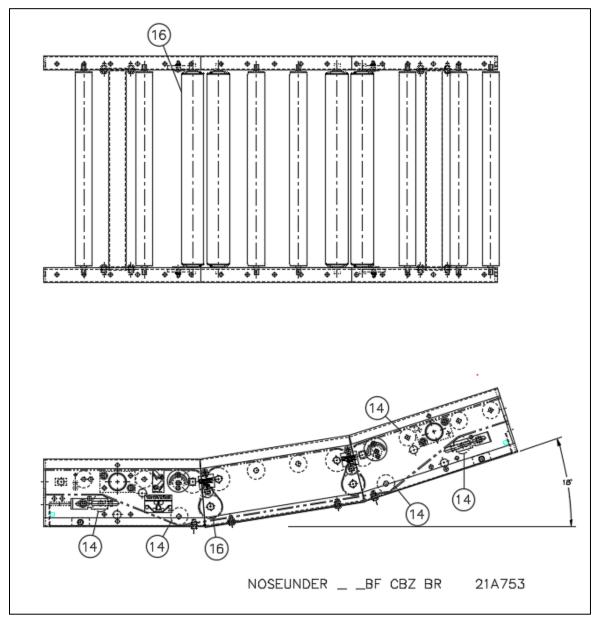


11.10.1 CRUZbelt Slider Center drive

	REPLACEMENT PARTS FOR CRUZbelt SLIDER CENTER DRIVE									
		Widths & Part #s								
		Carton Tote Conveyor & Empty Carton Empty Carton C				rton Only				
BALLOON	DESCRIPTION	16" BF	22" BF	28" BF	34" BF	40" BF	46" BF			
07/24	BRG, FLG 4BOLT X 1-7/16"	1114091								
07/25	BEARING END SAFTY CAP	1114092								
20	PULLEY, WLDMT 8"BF CZB CDR	1158680	1158681	1158682	1158683	1161079	1161080			
21	PULLEY,CZB DR 2.5 DIA 1/4W	E0040400	E0040401	E0040402	E0040403	E0040404	E0040405			
23	ROLLER, SNUBBF 11/16 AXLE	18218001	18224001	18230001	18236001	18242001	18248001			
70	ROLLER,CZB 1.9 SNUBBER PRBG	E0009652	E0009653	E0009654	E0009655	E0009656	E0009657			
	Bed Reference Dwg. #21A659									





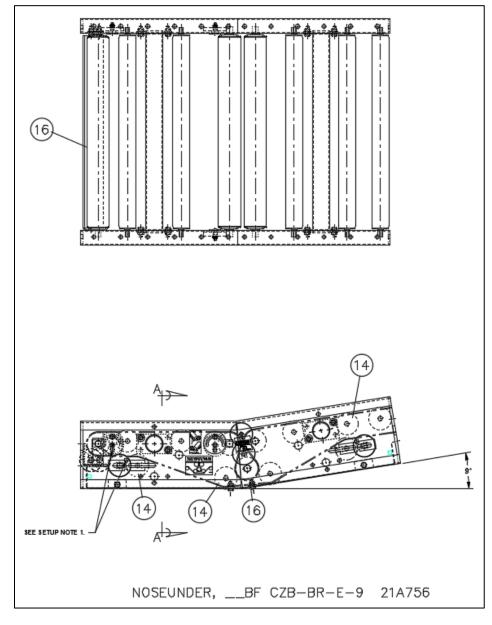


11.11.1 CRUZbelt Noseunder

	REPLACEMENTS FOR CRUZBELT NOSEUNDER									
	DESCRIPTION		Widths &	& Part #s						
BALLOON		16" BF	22" BF	28" BF	34" BF					
14	ROLLER,CZB 1.9 SNUBBER PRBG	E0009652	E0009653	E0009654	E0009655					
16	PULLEY,CZB 2.5 DIA 1/4W	E0040390	E0040391	E0040392	E0040393					
Note: #14 abo	ve is not used with slider pan conveyors									
				Bed Reference	e Dwg. #21A753					



11.12 CRUZBELT NOSEUNDER END BED

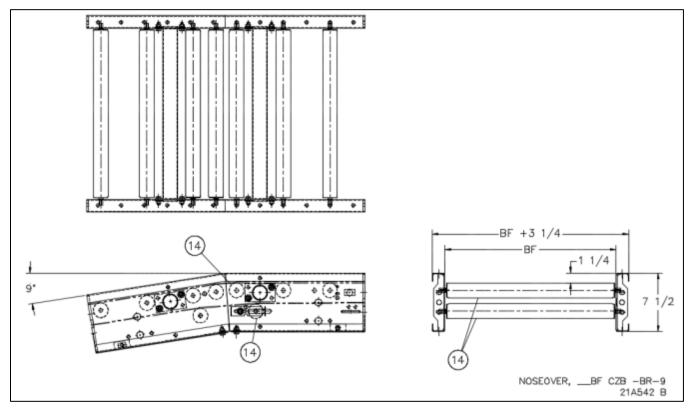


11.12.1 CRUZbelt Noseunder End Bed

REPLACEMENT PART FOR CRUZBELT NOSEUNDER END BED								
		Widths & Part #s						
BALLOON	DESCRIPTION	16" BF	22" BF	28" BF	34" BF			
14	ROLLER,CZB 1.9 SNUBBER PRBG	E0009652	E0009653	E0009654	E0009655			
16	PULLEY,CZB 2.5 DIA 1/4W	E0040390	E0040391	E0040392	E0040393			
Bed Reference Dwa. #21A75								



11.13 CRUZBELT INTERMEDIATE NOSEOVER BED

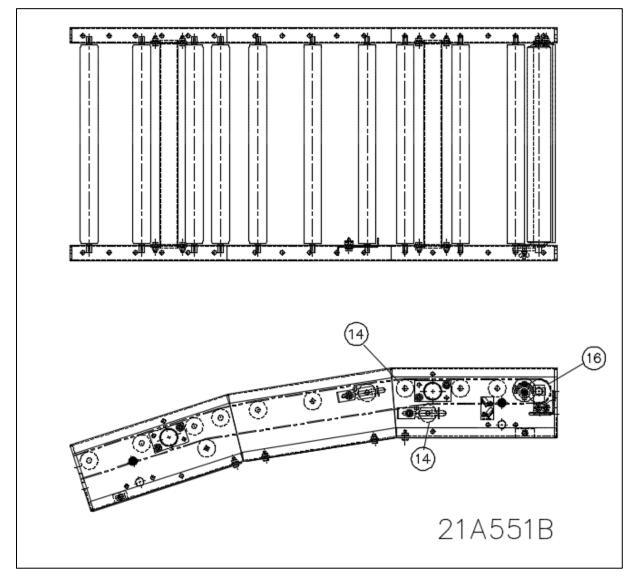


11.13.1 CRUZbelt Intermediate Noseover Bed

REPLACEMENT PARTS FOR CRUZBELT INTERMEDIATE NOSEOVER BED								
		Widths & Part #s						
BALLOON	DESCRIPTION	16" BF	22" BF	28" BF	34" BF			
14	ROLLER,CZB 1.9 SNUBBER PRBG	E0009652	E0009653	E0009654	E0009655			
Bed Reference Dwg. #21A542								



11.14 CRUZBELT NOSEOVER END BED

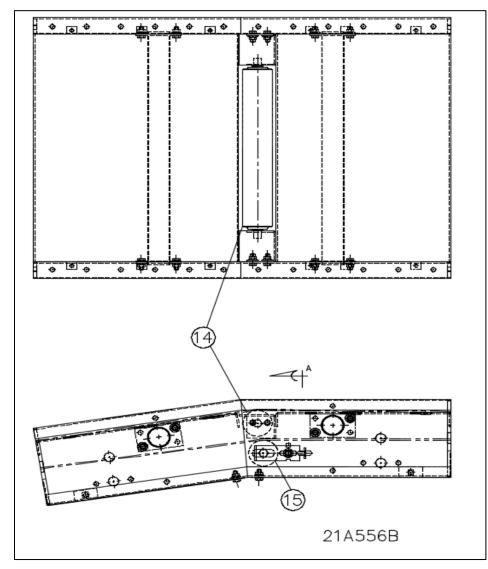


11.14.1 CRUZbelt Noseover End Bed

	REPLACEMENT PART FOR CRUZBELT NOSEOVER END BED									
	Widths & Part #s									
BALLOON	DESCRIPTION	16" BF	22" BF	28" BF	34" BF					
14	ROLLER,CZB 1.9 SNUBBER PRBG	E0009652	E0009653	E0009654	E0009655					
16	16 PULLEY,CZB 2.5 DIA 1/4W E0040390 E0040391 E0040392 E0040393									
				Bed Reference	e Dwg. #21A551					



11.15 CRUZBELT EMPTY CARTON SLIDER NOSEOVER

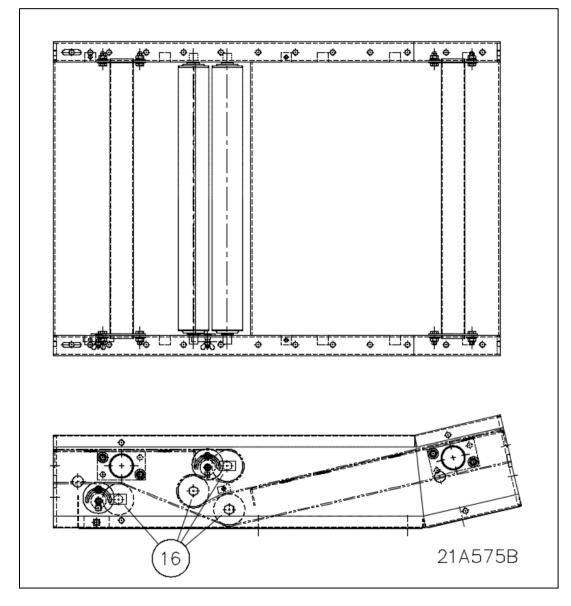


11.15.1 CRUZbelt Slider Noseover

	REPLACEMENT PARTS FOR CRUZBELT SLIDER NOSEOVER								
				Widths &	& Part #s				
BALLOON	DESCRIPTION	16" BF	22" BF	28" BF	34" BF	40" BF	46" BF		
14	PULLEY,CZB 2.5 DIA 1/4W	1157669	E0040390	E0040391	E0040392	E0040393	E0040394		
15	PULLEY,CZB 2.5 DIA 1/4W	E0040390	E0040391	E0040392	E0040393	E0040394	E0040395		
					Bed F	Reference Dv	vg. #21A556		



11.16 CRUZBELT EMPTY CARTON CONVEYOR (SLIDER) DOUBLE SNUBBER

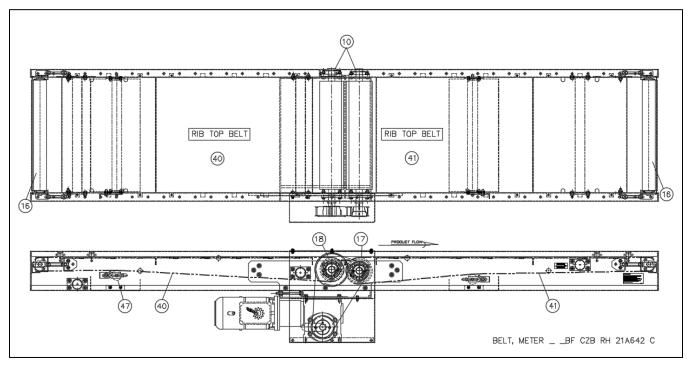


11.16.1 CRUZbelt Double Snubber (ECC Only)

REPLACEMENT PARTS FOR CRUZBELT DOUBLE SNUBBER (ECC Only)											
				Widths &	& Part #s						
BALLOON	ON DESCRIPTION 16" BF 22" BF 28" BF 34" BF 40" BF 46" BF										
16	16 PULLEY,CZB 2.5 DIA 1/4W E0040390 E0040391 E0040392 E0040393 E0040394 E0040395										
					Bed Re	eference Dw	g. #21A575				



11.17 CRUZBELT4 METER BED

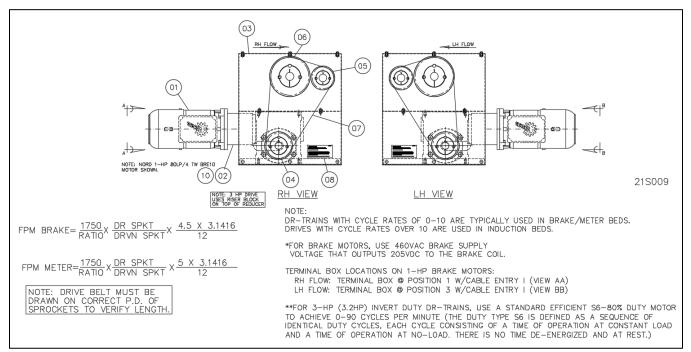


11.17.1 CRUZbelt 4 Brake Meter Induction Beds

	REPLACEMENT PARTS FOR CRUZbelt4 METER BEDS								
			Widths &	& Part #s					
BALLOON	DESCRIPTION	16" BF	22" BF	28" BF	34" BF				
10	BRG,FLG 3BOLT X 1-1/4" BORE DODGE		110	7696					
16	PULLEY,CZB 2.5 DIA 1/4W	E0040390	E0040391	E0040392	E0040393				
17	PULLEY,TAPERLOCKCZB 4.5DIA, LAGGED, 80A URETHANE	E0038269	E0038270	E0038271	E0038272				
18	PULLEY, TAPERLOCKCZB 4" DIA, LAGGED, 80A URETHANE	E0038273	E0038274	E0038275	E0038276				
40 & 41	BELT,CZB 15-9/16X10'2"INC, BP290QW LACED W/CERT	1169943	1169944	1169945	1169946				
47	ROLLER,CZB 1.9 SNUBBER PRBG	E0009652	E0009653	E0009654	E0009655				
				Bed Reference	Dwg. #21A642				



11.18 CRUZBELT METER BED DRIVE-TRAIN



11.18.1 CRUZbelt Meter Bed 2:1 Reduction Drive-Train

			Balloon#	1	2		4		5		6	7	10
NOMINAL FPM	HP	OPTIONS	DRIVE TRAIN	MOTOR	REDUCER	DRIVE PULLY	BUSHING	DRIVEN PULLY	BUSHING	DRIVEN PULLY	BUSHING	BELT	HYTREL SPYDER
45/90	1	BRAKE	1190163	1190117	E0038363	E0038310 34-TOOTH	90800943	E0038310 34-TOOTH	90800948	E0038309 60-TOOTH	E0038311	E0034960	E0038360
60/120	1	BRAKE	1190165	1190117	E0038363	E0038328 45-TOOTH	E0038372	E0038310 34-TOOTH	90800948	E0038309 60-TOOTH	E0038311	E0034960	E0038360
75450	1	BRAKE	1190167	1190117	E0038331	E0038310		E0038310		E0038309	50000011	E0004000	E0038360
75/150	3	VFD READY	1190187	1211648	E0038365	34-TOOTH	90800943	34-TOOTH	90800948	60-TOOTH	E0038311	E0034960	E003836
400/000	1	BRAKE	1190169	1190117	E0038331	E0038328	F000070	E0038310		E0038309	50000011	E0004000	E0038360
100/200	3	VFD READY	1190188	1211648	E0038365	45-TOOTH	E0038372	34-TOOTH	90800948	60-TOOTH	E0038311	E0034960	E003836
120/240	1	BRAKE	1190170	1190117	E0038331	E0033833	90800943	E0038310	90800948	E0038309	E0038311	E0034960	E0038360
120/240						36-TOOTH	90800943	34-TOOTH	90800948	60-TOOTH	E0036311	E0034960	5000000
	3	VFD READY		1211648			ΈΔΙΝ (2·1 RED					in Reference I	
	3		REPLACEMENT	PARTS FOR	CRUZBELT MI			-)		Dwg #21S00
NOMINAL	НР						RAIN (2:1 RED 4 BUSHING	-	E TRAINS) LE			in Reference I	Dwg #21500 10 HYTREL
			REPLACEMENT Balloon#	PARTS FOR	CRUZBELT MI	DRIVE	4	DRIVEN	5	DRIVEN	6	7	10 HYTREL SPYDER
FPM	НР	OPTIONS	REPLACEMENT Balloon# DRIVE TRAIN	PARTS FOR 1 MOTOR	CRUZBELT MI 2 REDUCER	DRIVE PULLY E0038310	4 BUSHING	DRIVEN PULLY E0038310	5 BUSHING	DRIVEN PULLY E0038309	6 BUSHING	7 BELT	10 HYTREL SPYDER E0038360
FPM 45/90 60/120	HP	OPTIONS BRAKE	REPLACEMENT Balloon# DRIVE TRAIN 1190177	PARTS FOR 1 MOTOR 1190114	CRUZBELT MI 2 REDUCER E0038363	DRIVE PULLY E0038310 34-TOOTH E0038328	4 BUSHING 90800943 E0038372	DRIVEN PULLY E0038310 34-TOOTH E0038310	5 BUSHING 90800948 90800948	DRIVEN PULLY E0038309 60-TOOTH E0038309	6 BUSHING E0038311 E0038311	7 BELT E0034960 E0034960	10 HYTREL SPYDER E0038360 E0038360
FPM 45/90	HP 1	OPTIONS BRAKE BRAKE	REPLACEMENT Balloon# DRIVE TRAIN 1190177 1190178 1190179	PARTS FOR 0 1 MOTOR 1190114 1190114	CRUZBELT MI 2 REDUCER E0038363 E0038363 E0038331	DRIVE PULLY E0038310 34-TOOTH E0038328 45-TOOTH	4 BUSHING 90800943	DRIVEN PULLY E0038310 34-TOOTH E0038310 34-TOOTH	5 BUSHING 90800948	DRIVEN PULLY E0038309 60-TOOTH E0038309 60-TOOTH	6 BUSHING E0038311	7 BELT E0034960	10 HYTREL SPYDER E0038360 E0038360 E0038360
FPM 45/90 60/120 75/150	HP 1 1	OPTIONS BRAKE BRAKE BRAKE	REPLACEMENT Balloon# DRIVE TRAIN 1190177 1190178 1190179	PARTS FOR (1 MOTOR 1190114 1190114 1190114	CRUZBELT MI 2 REDUCER E0038363 E0038363 E0038331	DRIVE PULLY E0038310 34-TOOTH E0038328 45-TOOTH E0038310 34-TOOTH E0038328	4 BUSHING 90800943 E0038372 90800943	DRIVEN PULLY E0038310 34-TOOTH E0038310 34-TOOTH E0038310 34-TOOTH E0038310 34-TOOTH E0038310 S4-TOOTH E0038310	5 BUSHING 90800948 90800948 90800948	DRIVEN PULLY E0038309 60-TOOTH E0038309 60-TOOTH E0038309 60-TOOTH E0038309 60-TOOTH E0038309 60-TOOTH	6 BUSHING E0038311 E0038311 E0038311	7 BELT E0034960 E0034960 E0034960	10 HYTREL SPYDER E0038360 E0038360 E0038360
FPM 45/90 60/120	HP 1 1 1 3	OPTIONS BRAKE BRAKE BRAKE VFD READY	REPLACEMENT Balloon# DRIVE TRAIN 1190177 1190178 1190179 1190195 1190180	PARTS FOR (1 MOTOR 1190114 1190114 1190114 1211648	CRUZBELT MI 2 REDUCER E0038363 E0038363 E0038363 E0038365 E0038331	DRIVE PULLY E0038310 34-TOOTH E0038328 45-TOOTH E0038310 34-TOOTH	4 BUSHING 90800943 E0038372	DRIVEN DRIVEN PULLY E0038310 34-TOOTH E0038310 34-TOOTH E0038310 34-TOOTH	5 BUSHING 90800948 90800948	DRIVEN PULLY E0038309 60-TOOTH E0038309 60-TOOTH E0038309 60-TOOTH	6 BUSHING E0038311 E0038311	7 BELT E0034960 E0034960	10 HYTREL SPYDER E0038360 E0038360 E0038360 E0038360
FPM 45/90 60/120 75/150	HP 1 1 1 3 1	OPTIONS BRAKE BRAKE BRAKE VFD READY BRAKE	REPLACEMENT Balloon# DRIVE TRAIN 1190177 1190178 1190179 1190195 1190180	PARTS FOR 1 MOTOR 1190114 1190114 1190114 1211648 1190114	CRUZBELT MI 2 REDUCER E0038363 E0038363 E0038363 E0038365 E0038331	DRIVE PULLY E0038310 34-TOOTH E0038328 45-TOOTH E0038310 34-TOOTH E0038328	4 BUSHING 90800943 E0038372 90800943	DRIVEN PULLY E0038310 34-TOOTH E0038310 34-TOOTH E0038310 34-TOOTH E0038310 34-TOOTH E0038310 S4-TOOTH E0038310	5 BUSHING 90800948 90800948 90800948	DRIVEN PULLY E0038309 60-TOOTH E0038309 60-TOOTH E0038309 60-TOOTH E0038309 60-TOOTH E0038309 60-TOOTH	6 BUSHING E0038311 E0038311 E0038311	7 BELT E0034960 E0034960 E0034960	10

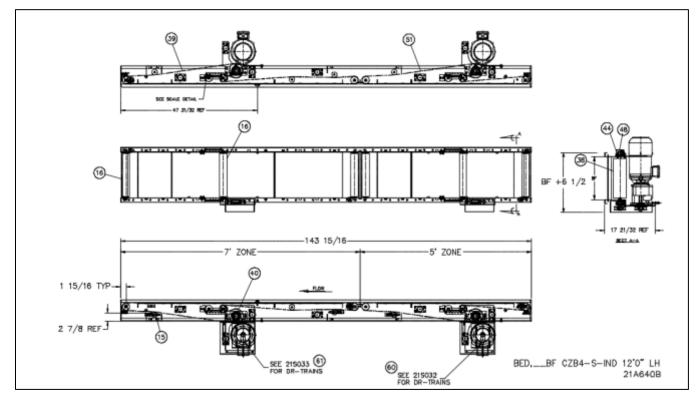


11.18.2 CRUZbelt Meter Bed 1.5:1 Reduction Drive-Train

		REP	LACEMENT PAR	TS FOR CRUZB	ELT METER	, DRIVE TRAIN	(1.5:1 RED	UCTION DRIVE	TRAINS)	IGHT HA	ND		
			Balloon#	1	2	4		5		6	3	7	10
NOMINAL FPM	НР	OPTIONS	DRIVE TRAIN	MOTOR	REDUCER	DRIVE PULLY	BUSHING	DRIVEN PULLY	BUSHING	DRIVEN PULLY	BUSHING	BELT	HYTREL SPYDER
60/90	1	BRAKE	1190171	1190117	E0038363	E0034695 38-TOOTH	90800943	E0034695 38-TOOTH	90800948	E0033835 50-TOOTH	E0034696	E0034960	E0038360
80/120	1	BRAKE	1190172	1190117	E0038363	E0038328 45-TOOTH	E0038372	E0038310 34-TOOTH	90800948	E0038328 45-TOOTH	E0034696	E0034960	E0038360
100/150	1	BRAKE	1190173	1190117	E0038331	E0034695 38-TOOTH	90800943	E0034695 38-TOOTH	90800948	E0033835 50-TOOTH	E0034696	E0034960	E0038360
	3	VFD READY	1190192	1211648	E0038365		ļ				ļ		E003E361
133/200	1	BRAKE	1190174	1190117	E0038331	E0038328	90800943	E0038310	90800948	E0038328	E0034696	E0034960	E0038360
	3	VFD READY	1190193	1211648	E0038365	45-TOOTH		34-TOOTH		45-TOOTH			E0038361
160/240	1	BRAKE	1190175	1190117	E0038331	E0034695	90800943	E0033833	90800948	E0033834	E0034696	E0034960	E0038360
	3	VFD READY	1190194	1211648	E0038368	38-TOOTH	30000343	36-TOOTH	30000340	48-TOOTH	20034030	L0034300	E0038361
											Drive-Trai	n Reference	Dwg #21S009
		REI					l (1.5:1 REC		E TRAINS)		ND		-
NOMINAL	НР	REI	PLACEMENT PAI Balloon# DRIVE TRAIN	RTS FOR CRUZI 1 MOTOR	2	R, DRIVE TRAIN 4 DRIVE PULLY	1	DUCTION DRIVI	E TRAINS)	EFT HA	ND	n Reference 7 BELT	Dwg #21S009 10 HYTREL SPYDER
-	HP		Balloon#	1	2	4	1	5 DRIVEN	r	6 DRIVEN	ND	7	10 HYTREL
FPM		OPTIONS	Balloon# DRIVE TRAIN	1 MOTOR	2 REDUCER	4 DRIVE PULLY E0034695	BUSHING	5 DRIVEN PULLY E0034695	BUSHING	6 DRIVEN PULLY E0033835	ND BUSHING	7 BELT	10 HYTREL SPYDER
FPM 60/90 80/120	1	OPTIONS BRAKE	Balloon# DRIVE TRAIN 1190182	1 MOTOR 1190114	2 REDUCER E0038363	4 DRIVE PULLY E0034695 38-TOOTH E0038328 45-TOOTH	BUSHING 90800943 E0038372	5 DRIVEN PULLY E0034695 38-TOOTH E0038310 34-TOOTH	BUSHING 90800948 90800948	6 DRIVEN PULLY E0033835 50-TOOTH E0038328 45-TOOTH	BUSHING E0034696 E0034696	7 BELT E0034960 E0034960	10 HYTREL SPYDER E0038360
FPM 60/90	1	OPTIONS BRAKE BRAKE BRAKE	Balloon# DRIVE TRAIN 1190182 1190183 1190184	1 MOTOR 1190114 1190114	2 REDUCER E0038363 E0038363 E0038331	4 DRIVE PULLY E0034695 38-TOOTH E0038328	BUSHING 90800943	5 DRIVEN PULLY E0034695 38-TOOTH E0038310	BUSHING 90800948	6 DRIVEN PULLY E0033835 50-TOOTH E0038328	ND BUSHING E0034696	7 BELT E0034960	10 HYTREL SPYDER E0038360 E0038360
FPM 60/90 80/120 100/150	1	OPTIONS BRAKE BRAKE BRAKE	Balloon# DRIVE TRAIN 1190182 1190183 1190184	1 MOTOR 1190114 1190114 1190114	2 REDUCER E0038363 E0038363 E0038331	4 DRIVE PULLY E0034695 38-TOOTH E0038328 45-TOOTH E0034695 38-TOOTH E0038328	BUSHING 90800943 E0038372 90800943	5 DRIVEN PULLY E0034695 38-TOOTH E0038310 34-TOOTH E0034695 38-TOOTH E0038310	BUSHING 90800948 90800948 90800948	Control Control <t< td=""><td>BUSHING E0034696 E0034696 E0034696</td><td>7 BELT E0034960 E0034960 E0034960</td><td>10 HYTREL SPYDER E0038360 E0038360</td></t<>	BUSHING E0034696 E0034696 E0034696	7 BELT E0034960 E0034960 E0034960	10 HYTREL SPYDER E0038360 E0038360
FPM 60/90 80/120	1	OPTIONS BRAKE BRAKE BRAKE VFD READY	Balloon# DRIVE TRAIN 1190182 1190183 1190184 1190199	1 MOTOR 1190114 1190114 1190114 1211648	2 REDUCER E0038363 E0038363 E0038331 E0038365	4 DRIVE PULLY E0034695 38-TOOTH E0038328 45-TOOTH E0034695 38-TOOTH	BUSHING 90800943 E0038372	5 DRIVEN PULLY E0034695 38-TOOTH E0038310 34-TOOTH E0034695 38-TOOTH	BUSHING 90800948 90800948	BRIVEN PULLY E0033835 50-TOOTH E0038328 45-TOOTH E0033835 50-TOOTH	BUSHING E0034696 E0034696	7 BELT E0034960 E0034960	10 HYTREL SPYDER E0038360 E0038360 E0038360 E0038361
FPM 60/90 80/120 100/150	1 1 3 1	OPTIONS BRAKE BRAKE BRAKE VFD READY BRAKE VFD READY BRAKE	Balloon# DRIVE TRAIN 1190182 1190183 1190184 1190199 1190185	1 MOTOR 1190114 1190114 1190114 1211648 1190114	2 REDUCER E0038363 E0038363 E0038331 E0038331 E0038331 E0038335 E0038331	4 DRIVE PULLY E0034695 38-TOOTH E0038328 45-TOOTH E0034695 38-TOOTH E0038328	BUSHING 90800943 E0038372 90800943	5 DRIVEN PULLY E0034695 38-TOOTH E0038310 34-TOOTH E0034695 38-TOOTH E0038310	BUSHING 90800948 90800948 90800948	Control Control <t< td=""><td>BUSHING E0034696 E0034696 E0034696 E0034696 E0034696 E0034696 E0034696</td><td>7 BELT E0034960 E0034960 E0034960 E0034960</td><td>10 HYTREL SPYDER E0038360 E0038360 E0038360 E0038360 E0038360</td></t<>	BUSHING E0034696 E0034696 E0034696 E0034696 E0034696 E0034696 E0034696	7 BELT E0034960 E0034960 E0034960 E0034960	10 HYTREL SPYDER E0038360 E0038360 E0038360 E0038360 E0038360



11.19 CRUZBELT 4 METER BED - HIGH PERFORMANCE



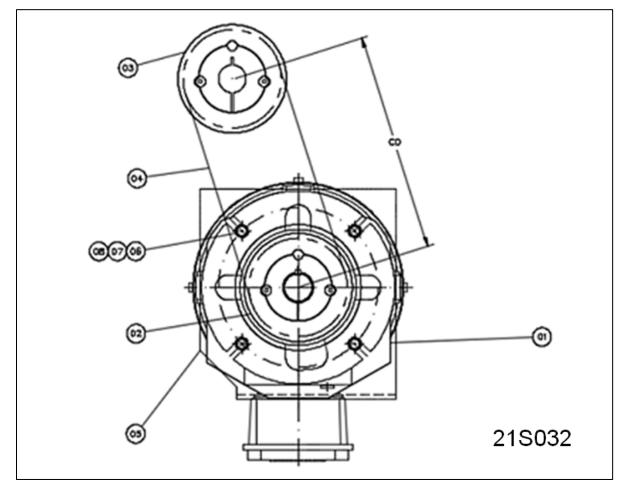


11.19.1 CRUZbelt 4 Single Meter Beds

	REPLACEMENT PARTS FOR C	RUZbelt 4 SIN	GLE METER B	EDS				
		Widths & Part #s						
BALLOON	DESCRIPTION	16" BF	22" BF	28" BF	34" BF			
60	DR-TRAIN,CZB INDUCT 5HP 330FPM		1174	4022				
61	DR-TRAIN,CZB INDUCT 5HP 410FPM		117;	3903				
60 & 61 / 04	BELT, POLYCHAIN 8MGT-720-36		113	1521				
15	ROLLER, _ CZB 1.9 SNUBBER PRBG	E0009652	E0009653	E0009654	E0009655			
16	PULLEY, CZB 2.5 DIA 1/4W	E0040390	E0040391	E0040392	E0040393			
38	PULLEY,WLDMT CZB4 CDR	1139425	1151294	1147330	1152563			
39	BELT,CZB _ 9/16" X 16'-0" INC	1152570	1152571	1147341	1152572			
40	BRG,PILLOW BLOCK 1 1/4" BORE		1139	9427				
44	BRG,FLG 3BOLT X 1-1/4"B DODGE		110	7696				
	BRG,FLG 3BOLT X 1-1/4" BORE	E0034955						
48	COVER, BRG END EC-206-X		121	7663				
51	BELT,CZB _ 9/16" X 12'-0" INC	1143775	1152568	1147585	1152569			
				REF	DWG#:21A640			



11.20 CRUZBELT 4 METER DRIVE-TRAIN



NOTE: DRIVE NOT TO EXCEED 500 LBS. OF BELT PULL MAXIMUM SPROCKET SIZE DRIVE: 8MX-53S-36 MAXIMUM SPROCKET SIZE DRIVEN: 8MX-42S-36

 $FPM = RPM \times DR SPKT \times 5 \times 3.1416$ DRVN SPKT 12

BELT PULL =	<u>33000 X .98 X .97 X HP</u>
	FPM

NOTE: NOTE ALL GEARMOTORS USE "VL" BEARING OPTION (IE-SK372Z-VL-90SP/4) ALL GEARMOTORS USE "TW" THERMOSTAT OPTION (IE-SK372.1-VL-90SP/4 TW)

ASSUMPTIONS:

GEARMOTOR EFFICIENCY = 97% SPROCKET EFFICIENCY = 95% LAGGED PULLEY = 5" DIA

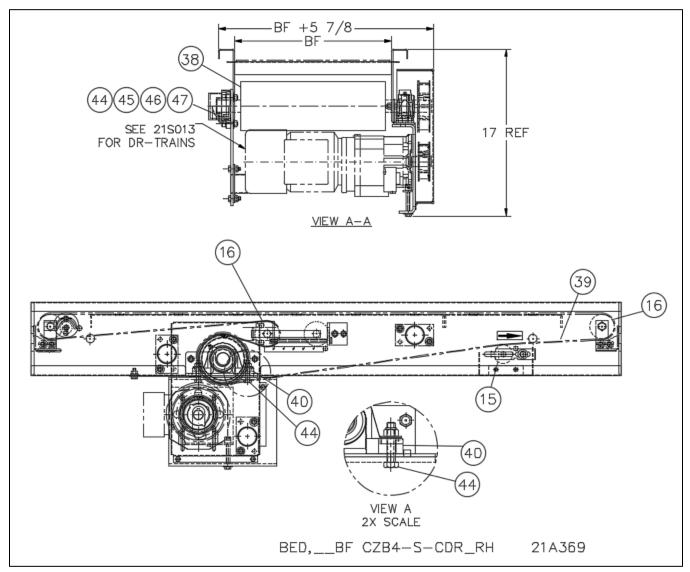


11.20.1 CRUZbelt 4 Meter Drive-Train

	REPLACEMENT PARTS FOR CZB 4 METER DRIVE-TRAINS										
NOMINAL FPM HP SIDE DRIVE TRAIN 1 2 2 3 3 4											
WITH GEAR REDUCER DRIVE DRIVE DRIVE DRIVE DRIVEN ENCODER MOTOR RPM SPROCKET BUSHING SPROCKET BUSHING BUSHING											
410	5	RH LH	1174023 1174891	1174022	416	E0038981	90800948	E0038983	E0034696	1131521	
330	5	RH LH	1173899 1174890	1173903	336	8MX-33S-36	1610 1-1/4B	8MX-41S-36	2012 1-1/4" B	8MGT-720-36	
								Drive-Train Refe	erence Dwg # 21	S032 & 21S03	



11.21 CRUZBELT 4 CENTER DRIVE (CDR)

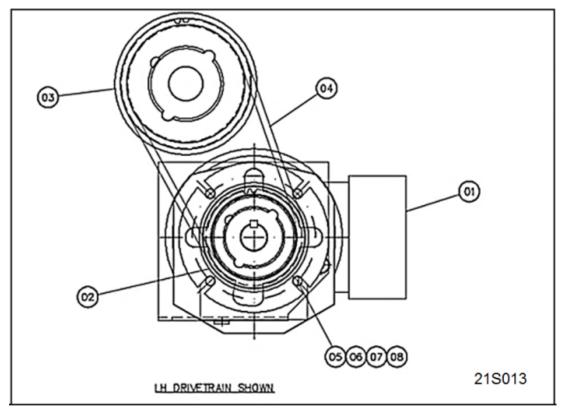


11.21.1 CRUZbelt 4 Center Drives

	REPLACEMENT PARTS FOR CRUZBELT4 CENTER DRIVES							
			Widths &	& Part #s	-			
BALLOON	DESCRIPTION	16" BF	22" BF	28" BF	34" BF			
15	ROLLER,CZB 1.9 SNUBBER PRBG	E0009652	E0009653	E0009654	E0009655			
16	PULLEY,CZB 2.5 DIA 1/4W	E0040390	E0040391	E0040392	E0040393			
38	PULLEY,WLDMTBF CZB4 CDR URETHANE	1139425	1151294	1147330	1152563			
39	BELT,CZB9/16" XX_ INC BP290 QW LACED W/CERT	1170650	1170651	1170652	1170653			
40	BRG,PILLOW BLOCK 1 1/4" BORE SQUEEZE LOCK		113	9427				
44	BRG,FLG 3 BOLT X 1-1/4" BORE, CLAMP STYLE LF-DL-104S		110	7696				
		°		REF D	WG#:21A369			



11.22 CRUZBELT 4 CDR DRIVE-TRAIN



GEARMOTOR INFORMATION:

MOUNTING POSITION: M1 MOUNTING STYLE: FLANGE "F" (140MM) HEAVY DUTY OUTPUT BEARING OPTIONAL: VL NOTE: ALL GEARMOTORS USE "VL" BEARING OPTION (IE-SK372Z-VL-90S/4) POSITION OF BRAKE HAND RELEASE LEVER: POSITION 1 W/TERMINAL BOX POSITION 1 POSITION 3 / W TERMINAL BOX POSITION 3

BELT PULL = <u>33000 X .98 X .97 X HP</u> FPM

FPM =RPM xDR SPKTx5 X 3.1416DRVN SPKT12

ASSUMPTIONS:

GEARMOTOR EFFICIENCY = 97% SPROCKET EFFICIENCY = 95% LAGGED PULLEY = 5" DIA MAXIMUM SPROCKET SIZE: 8MX-48S-21 NOTE: DRIVE NOT TO EXCEED 250 LBS OF BELT PULL.

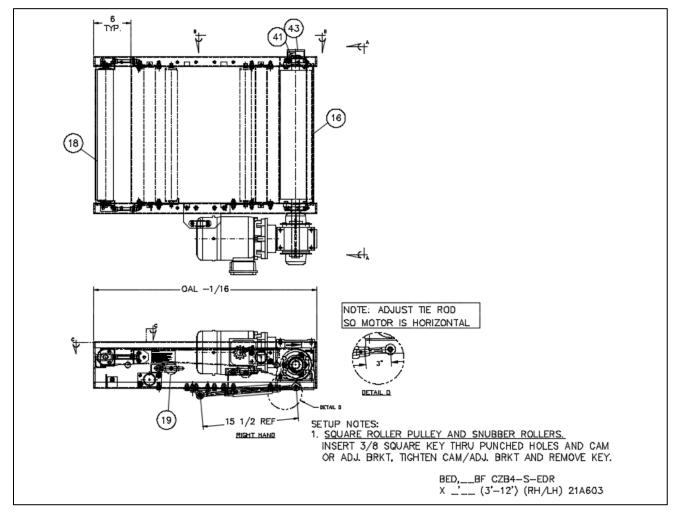


11.22.1 CRUZbelt 4 CDR Drive-Trains

	REPLACEMENT PART NUMBERS FOR CZB4-CDR TIMING BELT & DRIVE TRAINS										
		RH	LH		1	1	2	2	3	3	4
FPM	HP	DRIVE TRAIN	DRIVE TRAIN	BRAKE OPTION	RH GEAR MOTOR	LH GEAR MOTOR	DRIVE PULLEY	DRIVE BUSHING	DRIVEN PULLEY	DRIVEN BUSHING	DRIVE BELT
90	1.0	1187126	1187119		1187135	1187130	D0603454 8MX-38S-21	90800942 1610 1" BORE	4400055		
120	1.0	1157021	1139659		1170436	1139571	1139653 8MX-41S-21	90800919	1139655 8MX-45S-21		
150	1.5	1157023	1139661		1157005	1139573		2012 1" BORE		E0034696 2012 1-1/4"	1198816
180	1.5	1157024	1139662		1160997	1139574		I BORE	1139654 8MX-42S-21	BORE	720-21 GT2
300	3	1157028	1139668		1183473	1183473	D0503820	90800919	1139655		
300	3	1157038	1139679	BRAKE	1198713	1139651	8MX-40S-21	2012 1" BORE	8MX-45S-21		
									Drive-Tr	ain Reference	Dwg #21S013



11.23 CRUZBELT 4 END DRIVE





11.23.1 CRUZbelt 4 Slider Bed End Drive & Drive	Train
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REPLACEMENT PARTS FOR CRUZbelt4 END DRIVE BED (RH & LH)							
BALLOON	DESCRIPTION	Bed Length	Widths & Part #s				
	DESCRIPTION		16" BF	22" BF	28" BF	34" BF	
16	PULLEY, WLDMTCZB 4.5 DIA EDR		E0038892	E0038893	E0038894	E0038895	
18	PULLEY, CZB 2.5 DIA 1/4W	01.401	E0040390	E0040391	E0040392	E0040393	
19	ROLLER,CZB 1.9 SNUBBER PRBG	3'-12'	E0009652	E0009653	E0009654	E0009655	
41	BRG, FLG 3 BOLT X 1-1/4" BORE DODGE		1107696				
43	COVER, BRG END EC-206-X (END CAP)		1217663				
	BELT,CZB _ 9 /16 X 6'-1.5" INC	3'	1167782	1167783	1167784	1167785	
	BELT,CZB _ 9 / 16 X 8'-1.4" INC	4'	1167786	1167787	1167788	1167789	
	BELT,CZB _ 9 / 16 X 10'-1.3" INC	5'	1167790	1167791	1167792	1167793	
	BELT,CZB _ 9 / 16 X 12'-1.2" INC	6'	1167794	1167795	1167796	1167797	
	BELT,CZB _ 9 / 16 X 14'-1.1" INC	7'	1167798	1167799	1167800	1167801	
	BELT,CZB _ 9 / 16 X 16'-0.9" INC	8'	1167802	1167803	1167804	1167805	
	BELT,CZB _ 9 / 16 X 18'-0.8" INC	9'	1167806	1167807	1167808	1167809	
	BELT,CZB _ 9 / 16 X 20'-0.7" INC	10'	1167810	1167811	1167812	1167813	
000000000000000000000000000000000000000	BELT,CZB _ 9 / 16 X 22'-0.6" INC	11'	1167814	1167815	1167816	1167817	
	BELT,CZB _ 9 / 16 X 24'-0.5" INC	12'	1167818	1167819	1167820	1167821	
					REFI	DWG:21A603	



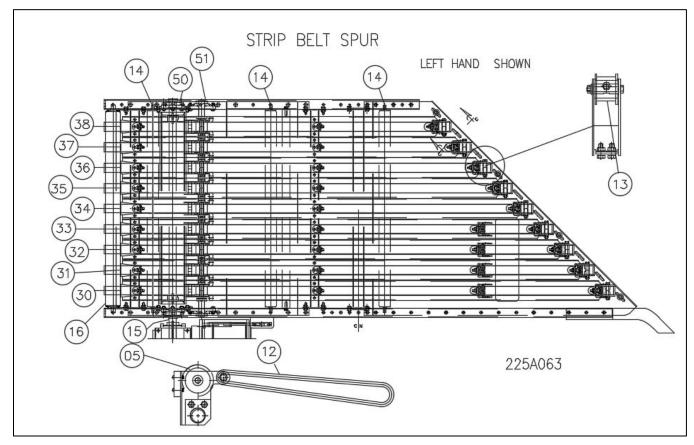
DRIVE TRAIN ITEM #s / GEARMOTOR PART #s								
		10			RUZBELT 4 EN			1
FPM	SIDE	40 DRIVE TRAIN	40 BRAKE	2 MOTOR PN	2 MOTOR HP	1 REDUCER PN	1 RATIO / HP	BELT PUL
	OIDE	PN	OPTION			-	MTR FRAME	DEETTOE
		1192976		1192973	.5	E0038752	60:1, .5HP 56/20H	
*38	LH	1192987	BRAKE	1192975	.5	E0038752	60:1, .5HP 56/20H	700
	RH	1192983	BRAKE	1192974	.5	E0038752	60:1, .5HP 56/20H	
		1192977		1192973	.75	E0039000	50:1, .5HP 56/20H	
*45	LH	1192990	BRAKE	1192353	.75	E0038419	40:1, .75HP 56/20H	583
	RH	1192984	BRAKE	1192974	.75	E0039000	50:1, .5HP 56/20H	
		1192979		1190384	1	E0038491	40:1, .75HP 56/20H	466
*57	LH	1192991	BRAKE	1192353	1	E0038705	30:1, .75HP 56/20H	
	RH	1192985	BRAKE	1192352	1	E0038491	40:1, .75HP 56/20H	
		1192981		1190384	1	E0038705	30:1, .75HP 56/20H	350
*76	LH	1192989	BRAKE	1192975	1	E0039000	50:1, .5HP 56/20H	
	RH	1192986	BRAKE	1192352	1	E0038705	30:1, .75HP 56/20H	
		1187672		1187037		E0038710	25:1, 1HP 140/20H	291
91	LH	1190104	BRAKE	1190117	1			
	RH	1190098	BRAKE	1190114				
		1187673		1187037		E0038707	20:1, 1HP 140/20H	233
114	LH	1190105		1190117	1			
	RH	1190099	BRAKE	1190114				
		1187674		1187037	1	E0038706	18:1, 1HP 140/20H	
127	LH	1190106	DDAKE	1190117				210
	RH	1190100	BRAKE	1190114				
		1187675		1187038	1.5	E0038711	15:1, 1.5HP 140/20H	261
152	LH	1190107		1190119				
	RH	1190101	BRAKE	1190118				
		1187678		1187039				
180	LH	1190108		1190119	1.5	E0038708	12.7:1, 1.5HP 140/20H	221
	RH	1190102	BRAKE	1190118	-			
		1187679		1187039				
229	LH	1190109		1190121	2	E0038709	10:1, 2HP 140/20H	233
	RH	1190103	BRAKE	1190120		-		,

11.23.2 CRUZbelt 4 Slider End Drive & Drive Train

On Brake motors, use 460VAC brake supply voltage that outputs 205VDC to the brake coil.



11.24 CRUZBELT STRIP BELT SPUR



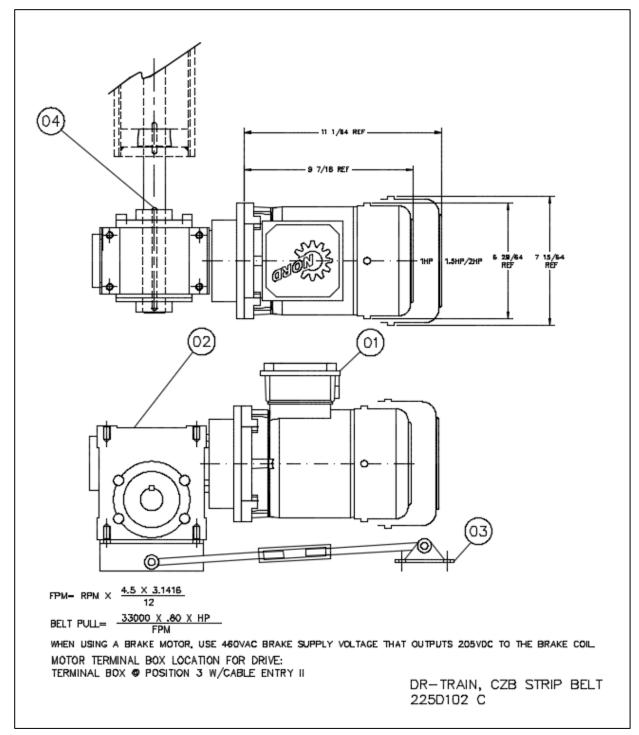


11.24.1 CRUZbelt Strip Belt Spur

	DESCRIPTION	Widths & Part #s				
BALLOON		16" BF	22" BF	28" BF	34" BF	
6	BRG, R6 ZZ C3	90050111				
5	SHEAVE,ASY FENNER #FA2501, INCLUDES (2)FENNER CB 0003, MTG ADAPTERS	E0007309				
10	BUSHING,BRONZE 3/8 X 5/8 X 3/4		E003	3909		
12	ORING,83A 5/16 X 25"		1111	1445		
13	SHEAVE,ASY FLAT EFSON FA2501	E007309	E007309	E007309	E0033908	
14	ROLLER,CZB 1.9 SNUBBER PRBG	E0009652	E0009653	E0009654	E0009655	
15	PULLEY, TAPERLOCKCZB 4"DIA		1126914	1111480	1120530	
16	ROLLER,SNUBBF 11/16AXLE	18218001	18224001	18230001	18236001	
30	BELT,RGH TOP 1-1/2" W X 198" LACED	E0033899				
31	BELT,RGH TOP 1-1/2" W X 191" LACED	E0033900				
32	BELT,RGH TOP 1-1/2" W X 184" LACED	E0033901				
33	BELT,RGH TOP 1-1/2" W X 177" LACED	E0033902				
34	BELT,RGH TOP 1-1/2" W X 170" LACED	E0033903				
35	BELT,RGH TOP 1-1/2" W X 163" LACED	E0033904				
36	BELT,RGH TOP 1-1/2" W X 156" LACED			E0033905		
37	BELT,RGH TOP 1-1/2" W X 149" LACED			E0033906		
38	BELT,RGH TOP 1-1/2" W X 142" LACED				E0033907	
50	BRG,FLG 3BOLT X 1-1/4" BORE DODGE	1107696				
	BRG,2BOLT FLG X 1" BORE BRG, LESS SET SCREWS,REF 1115244	90050202				



11.25 CRUZBELT SPUR DRIVE TRAIN





11.25.1 Strip Belt Spur Drive Train

REPLACEMENT PARTS CZB STRIP BELT SPUR DRIVE TRAIN							
		Balloon# 1	1		2		
NOMINAL FPM	DR-TRAIN P/N PROODUCT	MOTOR P/N	MOTOR HP	REDUCER P/N	REDUCER SIZE/RPM	ACTUAL FPM	BELT PULL
103	1190137	1187037	1	E0038707	20Q20H14 / 87	101.9	259
137	1190139	1187037	1	E0038711	20Q15H14 / 115	135.9	194
206	1190141	1187037	1	E0038709	20Q10H14 / 173	203.8	130
206	1190143	1187038	1.5	E0038709	20Q10H14 / 174	205	193
275	1190145	1187039	2	1156109	20Q07H14 / 247	291.2	181
410	1190155	1187039	2	1153140	20Q05H14 / 346	407.6	130
	REF DWG#:225D102						



CRUZBELT REVISION HISTORY

Revision Date	Chapter/Description	Initials
4/22/2021	Fixed Typo on a drawing number – No new revision issues	TE
09/24/2021	Update MHS Conveyor name, logo, and format	MD AB
02/28/2022	Correct the page header IOM title	MD
02/28/2022	Update part numbers list for dwg 21S013 & 21S012	DG / MD
12/09/2022	Add Pulley & Sheaves in maintenance section – no new revision issued.	TE



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MHS Conveyor, located in Norton Shores, Michigan, is a leading deliverer of "smart" material handling systems, technologies, products, and services, creating solutions for material flow applications. As a global supplier of conveyor systems and equipment since 1964, MHS Conveyor provides sorters, conveyors, and accessories to satisfy a broad spectrum of accumulation, transportation, and sortation applications.

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