FORTNA

Installation, Operation, Maintenance Manual

CRUZ®belt
Belted Conveyor

Document Number: 1226672

Revision Date: August 14, 2023

FORTNA Inc. • 1300 E. Mount Garfield Rd. • Norton Shores, MI 49441

Vyberte odkaz pro český překlad

fortna-conveyor.com

The original manual is in English.

Revision Table

REVISION DATE	CHANGE DESCRIPTION	INITIALS
Aug 14, 2023	Initial release with CE standards	MD
No revision change	Removed crawling under the conveyor.	MM, AB

Original Instructions

Translated by:N/A

Published by: **FORTNA MI, USA**

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FORTNA Inc.

1349 W Peachtree St. NW

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Atlanta, GA 30309

Disclaimer

It is the Customer's and the system user's responsibility to ensure that the system is operated only in safe conditions and in accordance with this document and any other documentation or instructions provided by FORTNA or its representatives. THIS DOCUMENT CONTAINS IMPORTANT WARNINGS AND SAFETY REQUIREMENTS. This document must be available to and accessible by any users or anyone with access to the system so that it may be regularly consulted.

ANY PERSON TO USE OR ACCESS THE SYSTEM IN ANY WAY MUST CAREFULLY READ AND UNDERSTAND THIS DOCUMENT. VISITORS OF ANY KIND, AUTHORIZED AND UNAUTHORIZED GUESTS, CHILDREN, ANIMALS AND ANY OTHER PERSON WHO HAS NOT FULLY READ AND UNDERSTOOD THIS DOCUMENT MUST BE KEPT AT A SUITABLE AND SAFE DISTANCE FROM THE SYSTEM. PHYSICAL CONTACT WITH THE SYSTEM MUST BE AVOIDED AT ALL TIMES. SUITABLE WORK CLOTHING AND PROTECTIVE GEAR ARE REQUIRED.

All FORTNA warranties will be voided by any misuse of the system, failure to exercise care, inappropriate behavior, failure to comply with this document or other documentation or instructions supplied by FORTNA or its representatives, or unauthorized modification of the system. Please refer to the applicable FORTNA warranty document for other warranty limitations.

You must contact FORTNA at usinfo@fortna-conveyor.com or (231) 798-4547 immediately with any questions or concerns about this document or the system.

Forward

Editor's Note

This documentation is expressly addressed to technicians. Therefore, information that can be easily retrieved by reading these texts and analyzing the drawings may not be explained further. The Editor is by no means liable for any information and data provided in this manual: all information included herein has been supplied, controlled, and approved by the Manufacturer during review. The Editor shall by no means be held responsible for the consequences resulting from the user's misuse of the system.

General Remarks

All operating, maintenance instructions and recommendations described in this manual must be respected. For the best results, the Manufacturer recommends cleaning and servicing regularly to keep the partly completed machine as efficient as possible. It is particularly important to train the personnel in charge of this partly completed machine on how to use and service it. They must also comply with the operating procedures and all the safety standards indicated in this manual.

Limitation of Liability

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Table of Contents

1 Contact & Identification

1.1 Manufacturer Contact Information

FORTNA

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USA Tel.+ 231.798.4547

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Atlanta, GA 30309

FORTNA Parts & Service

Attn: Lifecycle Performance Services

Website: fortna-conveyor.com

For additional manuals, videos, and other resources visit our website at:

fortna-conveyor.com

1.2 Manufacturer Identification

MANUFACTURER	NAME & ADDRESS
Address of registered offices	FORTNA | MHS Conveyor 1300 E. Mount Garfield Road Norton Shores, MI 49441-6097 USA USA Tel.+ 231.798.4547
Operational Headquarters Address	FORTNA 1349 W Peachtree St NW Suite 1300 Atlanta, GA 30309 USA USA Tel.+ 770.475.0991
Economic Operator	ECONOMIC OPERATOR Senior Product Manager, Conveyance Fortna Services CZ s.r.o. Karolinská 661/4 PRAHA 8 - KARLIN 186 00 PRAHA 86 Czech Republic VAT No: CZ17334233

1.3 Identification Of the partly - completed machine

IDENTIFICATION OF THE PARTLY - COMPLETED MACHINE	
TYPE	FORTNA - CRUZbelt Conveyor
YEAR OF MANUFACTURE	As stated on bed tag. See Sample Label Below
SERIAL NUMBER	Reference CBC on bed tag

Bed Tag Label Sample

An identification label is attached to the outside of one side channel or on a cross member, close to one end of each conveyor bed or partly completed machine.

Refer to Parts Inventory & Identification in this IOM manual.

1.4 Contents of Declaration of Incorporation

Machinery listed in this manual fall under FORTNA's DOI for CRUZbelt conveyors. Any modifications or unique designs based on CRUZbelt conveyors technology will require further evaluation and risk assessment.

FORTNA

EC Declaration of Incorporation

EC DECLARATION OF INCORPORATION

WE,
OF,

FORTNA
1300 E. Mt. Garfield Road
Norton Shores, MI 49441 USA

In accordance with the following Directive: 2006/42/EC, we hereby declare that the following EHSRs have been complied with:

Equipment	CRUZbelt
Equipment Model number	CZB (With additional suffix)
Serial Number	(CBC/serial number)

In accordance with the following Directive: 2006/42/EC, we hereby declare that the following EHSRs have been complied with:

1.1.2 Principles of safety integration
1.1.3 Materials and products
1.1.5 Design of machinery to facilitate handling and storage
1.3.1 Risk of Loss of Stability
1.3.2 Risk of Breaking Up During Operation
1.3.3 Risks due to Falling or Ejected Objects
1.3.4 Risks due to Surfaces, Edges or Angles
1.3.7 Risks Related to Moving Parts
1.3.8.1 Moving transmission parts
1.3.8.2 Moving Parts Involved in the Pro
1.3.9 Risks of Uncontrolled M ements
1.4 Required characteristics o s an protective devices
1.4.1 General Requirements
1.4.2 Special requirements for gu ds
1.4.2.1 Fixed guards
1.5. Risks due to other zards
1.5.1 Ele icity supply
1.5.4 ors f fi g
1.5.6 Fi
1.5 bis
1. 15 isks of slipping, tripping or falling
1.6.1 Machinery Maintenance
1.6.2 Access to Operating Positions and Servicing Points
1.6.4 Operator Intervention
1.6.5 Cleaning of internal parts
1.7.1 Information and Warnings on the Machinery
1.7.1.1 Information and Information Devices
1.7.3 Marking of Machinery
1.7.4 Instructions

Other Standards complied with:
EN 619:2002+A1:2010 - Continuous handling equipment and systems — Safety and EMC requirements for equipment for mechanical handling of unit loads

The technical documentation for the machinery is available from:
Senior Product Manager, Conveyance
Fortna Services CZ s.r.o.
Karolinská 661/4
PRAHA 8 - KARLIN
186 00 PRAHA 86
Czech Republic

We, FORTNA, certify that the equipment described above has the following essential health and safety requirements of the Machinery Directive applied and fulfilled. This machinery may not be put into service until the machinery into which it is to be incorporated has been declared in conformity with the provisions of the Directive. The relevant technical documentation in accordance with Annex VII, Part B of the Machinery Directive 2006/42/EC has been compiled. We shall, in response to a reasonable written request by the appropriate national authority transmit the relevant requested information on the aforementioned partly completed machinery by email.

Date of Issue: 20/09/2023	
Signed: Mark van Bruchem	Title: VP Projects, EMEA
	Place of Issue: 1300 E Mount Garfield Rd. Norton Shores, MI 49441-6097
Signature:	

Confidential – Information. Do not disclose © Fortna 1 of 1

1.5 Reference Directives

We, FORTNA, certify that the equipment described above has the following essential health and safety requirements of the Machinery Directive applied and fulfilled. This machinery may not be put into service until the machinery into which it is to be incorporated has been declared in conformity with the provisions of the Directive.

The relevant technical documentation in accordance with Annex VII, Part B of the Machinery **Directive 2006/42/EC** has been compiled. We shall, in response to a reasonable written request by the appropriate national authority, transmit the relevant requested information on the aforementioned partly completed machinery by email.

FORTNA MI, USA, therefore, launches the partly completed machine on the market equipping it and accompanying it with: Declaration of incorporation

Installation, Operation, Maintenance Manual	Documentation drafted according to point 1.7.4.2 and Annex VI, VII, of Machinery Directive 2006/42/EC.

It is also noted that the partly completed machine was designed according to the following **Directives**:

2006/42/EC	Machinery Directive

The following **harmonized standards** have also been applied:

EN_619;2002+A1;2010	Continuous handling equipment and systems – Safety and EMC requirements for equipment for mechanical handling of unit loads CONSOLIDATED TEXT

2 Warranty

The original warranty is stated in the sales agreement and has priority over that stated in this section if different.

The warranty is subject to the following general conditions:

- Opening of boxes, crates, packages, and installation must be carried out in the presence of the Manufacturer's authorized integrators or technicians.
- The first start-up and positive test of the partly completed machine must be carried out under the supervision of the Manufacturer's authorized integrators and technicians; the sheet of intervention relating to the installation and testing must be drawn up.
- The partly completed machine must be used within the limits specified in the contract and indicated in the technical documentation.
- Maintenance operations shall follow the instruction in this manual, using authentic spare parts by FORTNA and assigning the task to execute these operations to qualified staff.

The warranty becomes void in the event of:

- Failure to comply with the safety standards.
- Removal or tampering with the control and safety devices (guards, photocells, sensors, microswitches, etc.).
- Improper use of the partly completed machine.
- Use of the partly completed machine by untrained and/or unauthorized personnel or not according to the competencies of the operators, as indicated in the manual.
- Changes or repairs made by the user without the manufacturer's written authorization.
- Non-compliance, partial or total, of the instructions.
- Energy power supply failures (electric, etc.).
- Lack in maintenance.
- Use of non-original spare parts not authorized.
- Extraordinary events like floods, fires, etc. (unless caused by the machines).

NOTICE	
	**Notice!** • Further details may be found in the commercial contract. • The conditions of the commercial contract (if different) have priority over those stated in this section.
Failure to follow these instructions can result in property damage or equipment damage.	

2.1 FORTNA Equipment Warranty

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

FORTNA agrees to furnish the purchaser without charge any part proved defective within 2 years from date of shipment provided the purchaser gives FORTNA immediate notice in writing and examination proves the claim that such materials or parts were defective when furnished. 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 FORTNA 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 FORTNA 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 FORTNA.

The warranties specified above do not cover, and FORTNA 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 Aug 12, 2021

3 General Preliminary Information

3.1 Intended For

The manual is intended for the operators in charge of utilizing and managing the partly completed machinery in all its technical aspects. The manual provides information for the correct utilization of the partly completed machine, to maintain its functional and qualitative characteristics unchanged over time. To include safety information and warnings for proper and safe use.

The manual, like the Declaration of Incorporation, is an essential part of the partly completed machine and must always accompany it in every displacement or property transfer. The user must maintain this documentation and make it available for consultation during the entire duration of the partly completed machine.

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 FORTNA 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.

Symbols / Figures

The pictures and drawings in this manual are purely illustrative and may differ from the actual machine due to technical changes.

Proprietary Rights

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This user manual may contain links to third-party sites, however, FORTNA is not responsible for and cannot control these other sites. FORTNA makes no representations whatsoever about any other website accessed through this user manual. If accessing a non-FORTNA website, even one that may contain a FORTNA logo, it is independent from FORTNA and that FORTNA has no control over the content on that website. In addition, a link to a non-FORTNA website does not mean FORTNA endorses or accepts any responsibility for the content, or the use of such website. Take precautions for viruses, worms, Trojan horses, and other items of a destructive nature.

3.2 Supply and Preservation

The manual is supplied in paper and electronic format. All the additional documentation (plant diagrams, sub-supplier manuals, etc.) is supplied annexed to this manual.

Keep this manual close to the partly completed machine, for easy consultation by the operator.

The manual is an integral part for the purpose of safety, therefore:

- If it is lost or ruined, you should immediately request a copy or scan the QR code on the bed tag or visit the following links.
  - New or revised manuals are available at: fortna-conveyor.com
  - Legacy manuals are available at: fortna-conveyor/support/legacy/manuals.
- It must follow the partly completed machine until it is completed (even if relocation, sale, rental, lease, etc.)

The attached manuals are a part of this document and the same recommendations/prescriptions contained in this manual are applied to them.

NOTICE	
	**Notice!** • This manual is an integral part of the partly completed machine for safety purposes and must, therefore, always accompany it.
Failure to follow these instructions can result in property damage or equipment damage.	

3.3 Manufacturer Updates

If the partly completed machine requires functional modifications or replacements, the Manufacturer is responsible for revising or modifying the manual. The Manufacturer is responsible for delivering the manual update.

The user is also responsible for ensuring that, should this document be modified by the Manufacturer, only the updated manual versions are present in the points of use.

New or revised manuals are available at: fortna-conveyor.com

Legacy manuals are available at: fortna-conveyor/support/legacy/manuals.

3.4 Language

The original language for this manual is written in English. All other translations must be done from the original instruction.

The manufacturer shall be responsible for the original information. Translations into different languages cannot be fully verified, inconsistency in translation may be detected, the text in the original language must be referred to or contact the Manufacturer.

3.5 Qualifications of Authorized Personnel

For the purpose of professionalism, the following table establishes what skills and qualifications are required of the personnel in charge of the various duties (starting up, operating, and routine maintenance, etc.):

Operator Qualification

Definitions:

- Operators are authorized to use and operate the partly completed machine for production purposes, for the activities it was constructed and supplied for.
- All operators must be capable of performing all the procedures required for good partly completed machine operations, their personal safety, and the safety of other workers. Have proven experience in the correct use of this type of machine and be trained, informed, and instructed accordingly.
- Must report any irregularity to his/her superior in case of doubt.

Note!

He/she is **NOT** authorized to perform any maintenance activity.

Mechanical Maintenance Engineer

Definitions:

- A qualified Mechanical Maintenance Engineer can carry out preventive/corrective maintenance activities on all the mechanical parts of the partly completed machines subject to maintenance or repairs.
- A qualified Mechanical Maintenance Engineer can access all parts of the partly completed machine for a visual analysis, inspect the equipment status, carry out adjustments, and calibrations.

The Qualified Maintenance Engineer is able to:

- Use the partly completed machine as an operator.
- Intervene on the mechanical elements for adjustments, maintenance, and repairs.
- Read plant diagrams, technical drawings, and spare parts list.
- In exceptional cases, he/she is trained to run the partly completed machine under reduced safety conditions.
- Where necessary, provide the operator with instructions for the proper use of the partly completed machine for production purposes.

Note!

He/she is **NOT** authorized to work on live electrical systems (if installed).

Electrical Maintenance Engineer

Definitions:

- A qualified Electrical Maintenance Engineer can carry out preventive/corrective maintenance activities on all the electrical parts of the partly completed machines subject to maintenance or repairs.
- A qualified Electrical Maintenance Engineer can access all parts of the partly completed machine for a visual analysis, inspect the equipment status, carry out adjustments, and calibrations.

The Qualified Electrical Maintenance Engineer can:

- Use the partly completed machine as an operator.
- Work on adjustments and on the electrical systems for maintenance purposes, repairs, and replacing worn parts.
- Reading wiring diagrams and checking the proper functional cycle.
- Where necessary, provide the operator with instructions for the proper use of the partly- completed machine for production purposes.
- Work while the electrical circuits in the electrical panel, junction boxes, control appliances, etc. live only if the technician is suitably qualified (PEI).

Note!

They **DO NOT** perform software programming of systems such as: PLC (logic or safety) and cannot modify the system passwords.

Manufacturer Technician

Definitions:

- Technician qualified by the Manufacturer and/or by its distributor for complex operations and is aware of the constructive production cycle of the partly completed machine.

Lift Equipment Operator

Definitions:

- A qualified operator of the lifting equipment is aware of the constructive production cycle of the partly completed machine. The lifting operator lifts and moves the partly completed machine per the user requests.
- The qualifications stated fall within a category of people defined “as trained person.”

Trained Personnel

Definitions:

- A person informed, educated, and trained on the work and on any dangers deriving from improper use. Also knows the importance safety devices, accident-prevention standards, and safe work conditions.

3.6 Symbols Used in This Manual

Symbols are used throughout the manual to emphasize information of significant importance.

SYMBOL	TYPE	DEFINITION
	**ATTENTION**	Symbol used to identify important warnings for the safety of the operator and/or partly completed machine.
	**FORBIDDEN (MUST NOT)**	Symbol used to identify operations that must not be performed or behaviors that must not be adopted as they could cause injury to personnel or damage to the partly completed machine.
	**OBLIGATION (MUST DO)**	Mandatory action symbol is used to draw attention to a supplementary sign for a specified mandatory action. The mandatory action symbol is used to identify particularly important information inside the manual. The information also regards the safety of personnel involved use of the partly completed machine. Failure to follow these instructions can result in property damage or equipment damage.
 	**OBLIGATION TO READ THE INSTRUCTION MANUAL** **OBLIGATION TO READ THE TECHNICAL MANUAL**	To use the partly completed machine safely, it is mandatory to read and understand the manual and accompanying documentation in its entirety. Before service to use the partly completed machine safely, it is mandatory to read and understand the manual and accompanying documentation in its entirety.

3.7 Symbols Used Throughout the Manual

Special attention must be made to the following areas of this manual. Listed below are some symbols used throughout the manual to emphasize information of significant importance.

DANGER	
	**Indicates a high level potentially hazardous situation which, if not avoided, will result in death or serious injury.**

WARNING	
	**Indicates a medium level potentially hazardous situation that, if not avoided, could result in death or serious injury.**

CAUTION	
	**Indicates a low level potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It may also be used to alert against unsafe practices or for the protection of the equipment.**

NOTICE	
	**Failure to follow these instructions can result in property damage or equipment damage.**

3.8 Glossary

Technical terminology or a different meaning from the standard used in the manuals.

Below is the explanation of the different terms and definitions used in this manual:

TERM	DEFINITION
LIFTING ACCESSORIES	Pieces of equipment that are used to attach the load to lifting equipment providing a link between the two. Common examples of lifting accessories are (e.g., rope slings, chains, single or multiple legs), a harness and its components are also considered lifting accessories.
LIFTING CHAINS, ROPES, OR BELTS	Elements designed and built for lifting as integral part of machines for lifting or lifting accessories
PERSONAL PROTECTIVE EQUIPMENT (PPE)	Personal Protective Equipment (PPE) is protective clothing, helmets, goggles, or other garments or equipment designed to protect the wearer's (operator, maintenance engineer, etc.) body from injury or infection.
BREAKDOWN	Element fully unable to perform a required function.
MACHINE	A machine is an apparatus using power to apply force and control movement to perform an action. Assembly, fitted with or intended to be fitted with a drive system, consisting of linked parts or components, at least one of which moves, and which are joined together for a specific application.
PARTLY COMPLETED MACHINE	Partly completed machinery is a term under the Machinery Directive (2006/42/EC) for an assembly of parts which is almost machinery, but which cannot in itself perform a specific application. Partly completed machines are only intended for incorporation or assembly with other machines or with other partly completed machines or devices to form a machine governed by the Machinery Directive.
PROTECTIVE MEASURE	Protective measures are designed or intended to protect something or someone from harm. Measure required to achieve risk reduction, implemented: • By design (intrinsically safe project, guards, covers, and additional protective measures, information for use). • By the user (organization: safe operation procedures, surveillance, work permits, availability and use of additional protective equipment, use of personal protective equipment, training).
HAZARD	Potential source of damage that, if not avoided, poses a risk to the safety and health of exposed persons.
EXPOSED PERSON	Any person fully or in part inside a dangerous area.
PREVENTION	The set of provisions or measures required also according to the specific work, the experience, and the technique, to avoid risks or reduce the probability of occurrence.

TERM	DEFINITION
PROTECTION	Defense against what may cause damage. Element placed between those who may suffer damage and what may cause it for hazards that cannot reasonably be eliminated or for risks that cannot be sufficiently reduced during design. The following are distinguished: • The active protection that the operators themselves must activate (e.g., emergency stops) and/or wear (PPE). • The passive protection that triggers even without human command.
GUARD	A device, fitted or specifically designed as a barrier and is attached as part of the partly completed machine, to provide protection.
FIXED GUARD	Fixed guards are permanently attached to the machine, do not have any moving parts, and cannot be moved while the machine is in use. Permanent part of the machine. Protection held in place (i.e., closed) or permanently (welded) or by means of fixing elements (screws, bolts, etc.) that do not allow removing/ opening without the aid of tools (wrenches, screwdrivers, or Allen screws).
MOVABLE GUARD	A movable guard is mechanically connected to the partly completed machine structure by mechanical means (e.g., hinges, slides, or guides) and is attached to the machine frame or an adjacent fixed element. It can be opened without a use of a tool.
UNEXPECTED START-UP	Unintended start-up. Any start-up which, because of its unexpected nature, generates a risk to persons.
RISK	Combination of the probability of occurrence of damage and the severity of that damage.
RESIDUAL RISK	Portion of risk remains after applying protective and preventive measures.
INTENDED USE	Use of a machine in accordance with the information provided in the instructions for use.
REASONABLY FORESEE- ABLE MISUSE	Use of a machine or systems in a way not intended by designer, but which can result from foreseeable human behavior.

3.9 Personal Protective Equipment

When operating near the partly completed machine for assembly and maintenance and/or adjustment operations strictly respect the main accident-prevention rules. For this purpose, it will be important to use the personal protective equipment (PPE) required for each individual operation.

Below is the full list of personal protective equipment (PPE) that may be required for the different procedures:

SYMBOL	DESCRIPTION
	**Obligation to use protective or insulating gloves.** Indicates a requirement for personnel to use protective or insulating gloves.
	**Obligation to wear eye protection.** Indicates a requirement for personnel to use approved safety eye protection.
	**Obligation to use safety shoes.** Indicates a requirement for personnel to wear work-safety footwear.
	**Obligation to use noise protection devices.** Indicates a requirement for personnel to use headphones or earplugs to protect hearing.
	**Obligation to use protective clothing.**
	**Obligation to use the safety harness** Must use safety harness for work at elevated heights.
	**Obligation to use a protective helmet.** Indicates a requirement for personnel to wear head protection.

The clothing worn by individuals running the machine or performing maintenance on the partly completed machine must comply with the essential safety requirements defined by regulations in force in the country where it is installed/used.

4 Safety

4.1 General Safety Warnings

The purpose of this chapter is to inform the personnel of any possible dangers and risks as well as of general and specific recommendations to eliminate or minimize said risks.

This chapter has information and instructions regarding:

- Dangerous situations that can arise during use and maintenance of the partly completed machine.
- Guards and safety devices adopted and their correct use.
- Residual risks and conduct to adopt (general and specific recommendations to avoid or reduce them).

This Installation Operation Maintenance (IOM) manual briefly summarizes these instructions in the sections where the described situations occur.

⚠DANGER

Protective Devices

- It is forbidden to use the partly completed machine or completed machine with no guards or protection devices, or with guards or protection devices deactivated. Ignoring the above can cause serious damage and/or accidents.

Indicates a high level potentially hazardous situation which, if not avoided, will result in death or serious injury.

NOTICE

Operation Manual Illustrations

- Some illustrations representing the partly completed machine are shown without the protection guards or with the guards removed to show specific details. This is necessary for the sake of clarity in the description.
- Some drawings represented in this operation manual are for visual reference only and as such not all drawings contain completed drawing information such as dimensions, notes, conveyor labels, or safety symbols.

Failure to follow these instructions can result in property damage or equipment damage.

4.2 Obligations and Prohibitions

4.2.1 Obligations

Listed are obligations that are mandatory and **Must Do**!

	THE WORKERS MUST DO!
 	• **Must Do,** carry out maintenance operations with the partly completed machine switched off. Do not lubricate moving parts. • **Must Do,** parts over 18kg should be lifted by two people. • **MUST DO,** step ladder must be used when performing maintenance or cleaning on items that cannot be reached from floor level. • **Must Do,** tie up long hair or long beards, avoid wearing scarves or other clothes that may get trapped in the moving parts of the partly completed machine. All loose clothing, long hair, long beards, and jewelry must be kept away from moving equipment. • **Must Do,** remove jewelry such as bracelets, rings or necklaces that may get trapped in moving parts, thus creating a risk for the operator. • **Must Do,** always perform interventions on the electrical system components in the absence of voltage (main switch off). • **Must Do,** make sure that no-one is standing or walking in the danger zones during the start-up and operation of the partly completed machine. • **Must Do,** use extreme caution to avoid injury or property damage during use of the partly completed machine. • **Must Do,** know the location and operation of the stopping device. • **Must Do,** comply with instructions and provisions given by the employer, managers, or supervisors, to ensure personal and collective safety. • **Must Do,** make proper use of equipment, tools, substances, and dangerous products, means of transport and other working machinery, as well as safety devices. • **Must Do,** make correct use of all personal protective equipment they have been provided with • **Must Do,** after maintenance, must REPLACE guards immediately. • **Must Do,** keep ALL warning labels clean and clear of any obstructions. • **Must Do,** must be trained to never remove, deface, or paint over symbols or labels of any kind. Any damaged label will be replaced by FORTNA at no cost by contacting Lifetime Services. • **Must Do,** it is very important to instruct personnel in proper conveyor use, including the location and function of all controls. • **Must Do,** special emphasis must be given to emergency stop procedures. • **Must Do,** it is important to establish work procedures and access areas, which do not require any part of a person to be under the conveyor. • **Must Do,** after the power source is turned off and locked out trained maintenance technician are to remove blockage or jams from the partly completed machine.

	THE WORKERS MUST DO!
	• **Must Do,** maintain enough clearance on each side of all conveyor units for safe adjustment and maintenance of all components • **Must Do,** provide crossovers or gates at sufficient intervals where needed to eliminate the temptation for personnel to climb over or under any conveyor. • **Must Do,** use the partly completed machine within the approved environmental conditions. • **Must Do, 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. • **Must Do**, if more than one crewmember is working on the conveyor, **EACH CREW MEMBER MUST HAVE A LOCK ON THE POWER LOCKOUT.** • **Must Do,** maintain enough clearance on each side of all conveyor units for safe adjustment and maintenance of all components. • **Must Do,** all pneumatic devices must be de-energized, and air removed to prevent accidental cycling of the device while performing general maintenance. • **Must Do,** make sure all personnel are clear of all conveyor equipment before restarting the system. • **Must Do,** continuous handling equipment shall be kept in proper working condition and maintained in accordance with the manufacturer's instructions. • **Must Do,** inspection, adjustment, maintenance and cleaning of moving parts shall be carried out regularly in a safe manner according to the manufacturer's instructions. • **Must Do,** if possible, inspection and adjustment of continuous mechanical handling equipment, in motion or in use, shall only be carried out with guards in position. • **Must Do,** displacing or removal of a guard and/or neutralization of a safety device shall be carried out in accordance with 6.3.3 of EN ISO 12100:2010. • **Must Do,** repairs and removal of protective enclosures or panels shall only be carried out after stopping the equipment and starting devices have been rendered inoperative by qualified persons. • **Must Do,** watch for nip points or pinch points. A pinch point hazard is a common class of mechanical hazard where injury or damage may be done by one or more objects moving towards each other, crushing, or shearing whatever comes between them. A nip point is a type of pinch point involving rotating objects, such as gears and pulleys. • **Must Do, 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 stoppage. • **Must Do,** make correct use of all personal protective equipment that they have been provided with. • **Must Do,** know the workplace and traffic routes, and all required protections/guarding of nearby hazardous equipment.

	THE WORKERS MUST DO!
	• **Must Do,** know conveyor equipment starts and stops without warning and can cause severe injury. • **Must Do,** employees that come in contact with the equipment must be warned of the dangers of an unexpected start. • **Must Do,** know hands can be crushed between products or products and channels. • **Must Do,** the user shall be careful to ensure a regular feed, avoiding overloading. • **Must Do,** all loading and working places, passageways, shall be kept clear. • **Must Do,** hands can be crushed between products or products and channels. • **Must Do, BEFORE** servicing or performing any work in the motor control panel, disconnect and padlock out air and the main incoming service. If ONLY the panel disconnect is off, the incoming side will still be hot. • **Must Do,** all safety rules must be observed when working with, on or at the conveyor system in whatever way. This includes reading all Installation, Operation, Maintenance, or Technical manuals.

Indicates a medium level potentially hazardous situation that, if not avoided, could result in death or serious injury.

Mandatory action symbol is used to draw attention to a supplementary sign for a specified mandatory action.
The mandatory action symbol is used to identify particularly important information inside the manual. The information also regards the safety of personnel involved use of the partly completed machine.

4.2.2 Prohibitions

Listed are prohibitions and are mandatory **Must Not Do** to avoid the hazard!

	**The Worker MUST NOT!**
	• **Must Not,** use the partly completed machine improperly, i.e., for uses other than those indicated in the “Intended use” paragraph. • **Must Not,** remove or modify the safety or signaling devices without authorization. • **Must Not,** remove, deface, or paint over symbols or labels of any kind. Any damaged label will be replaced by FORTNA at no cost by contacting Lifetime Services.
	• **Must Not,** convey hazardous materials. • **Must Not,** walk, stand, sit, on the conveyor.
	• **Must Not,** Walking or riding on a partially completed machine/moving conveyor must be prohibited. No person shall ride, sit, or stand on a conveyor under any circumstances.
	• **Must Not**, crawl under conveyor. • **MUST Not,** remove or install heavy parts whilst anyone is working on the floor level below the parts to be moved. This will help stop accidental falling of heavy parts onto people.
	• **Must Not,** carry out, upon their own initiative, operations or maneuvers they are not in charge of and that can jeopardize their own safety and that of other workers. • **Must Not,** wear bracelets, rings or necklaces that may get trapped in moving parts, thus creating a risk for the operator.
	• **Must Not,** modify the design or configuration of the equipment may lead to new hazards or higher risk that are not reduced adequately by the risk reduction measures of the manufacturer. • **Must Not,** replace or modify the speed of partly completed machine components without being authorized by a manager. • **Must Not,** modify the partly completed machine operating cycle.
	• **Must Not,** modify the connections to exclude the internal safety devices. • **Must Not,** use the partly completed machine if not properly incorporated within the final line, according to current regulations. • **Must Not,** use the partly completed machine or its components as point of support even if not operational (risk of falls and/or risk of damaging the components themselves). • **Must Not,** use the partly completed machine outside of the admitted environmental conditions.
	• **Must Not,** touch Motor rollers as they can become **hot!** • **Must Not,** touch any type of Motor as the motor may be **hot!**
	• **Must Not,** clear jams while the equipment is running.

	**The Worker MUST NOT!**
	• **Must Not,** do not pull-on equipment parts, such as belts, pulleys, or shafts, to assist slow starting equipment
Indicates a high level potentially hazardous situation which, if not avoided, will result in death or serious injury. **Symbol used to identify operations that must not be performed or behaviors that must not be adopted as they could cause injury to personnel or damage to the partly completed machine.**	

NOTICE	
	**Notice!** FORTNA is not liable for damage to property or people if it has been determined that the partly completed machine has been used in one of the non-admitted environments.
Failure to follow these instructions can result in property damage or equipment damage.	

4.3 Noise and Emissions

Noise levels have been measured in accordance with the requirements of the relevant regulations in force. During the operating cycles, the levels of exposure to noise for personnel **do not exceed 80 dBA**.

The actual noise levels of the incorporated partly completed machine during operation on site and in a manufacturing process, differ from those detected, as the noise is influenced by factors such as:

- Type and features of the site.
- Other adjacent machines in operation.

NOTICE	
	**Notice!** It is the precise responsibility of the end user/customer to apply the relevant preventive and protective measures in compliance with the law in the country of installation and use of the partly completed machine.
Failure to follow these instructions can result in property damage or equipment damage.	

4.3.1 CRUZbelt Noise Technical Data

CRUZBELT NOISE	DBA
CRUZbelt CTC	71 dBA
CRUZbelt4	71 dBA
CRUZbelt ECC	71 dBA
CRUZbelt Meter	71 dBA
CRUZbelt Merge	71 dBA

This chart is provided as a guide only. The load type will influence these readings if it is hard, metallic, soft, or if the contents add to the noise level. If loads are being transferred or diverted the readings will vary as well. The maximum readings are for worst case situations. In some cases, closer roller centers will affect the sound being generated. Equipment is tested without loading. Each load is unique and may impact noise levels.

FORTNA partially completed machine do not produce non-ionizing radiation which may cause harm to persons.

4.3.2 Noise Emission Declaration

NOISE EMISSION DECLATION: CRUZ®BELT CONVEYING SYSTEM	
Maximum Speed:	1,5 m/s
Total Height:	Minimum height: 330-mm Maximum Height: 5.65 m
Transportation Unit:	Product loaded tray or bin with a maximum total mass of 34 kg
Infeed Conveyor:	Can be connected to most conveying systems with similar load sizes.
Outfeed Conveyor:	As above.
Operating Cycle:	From the load infeed point to the outfeed point. Measuring time: 5 cycles for a total duration of 100s.
Measuring Point:	Height = 1,6 m above floor level. Distance = 1,0 m to the Conveyor Edge.
Measuring Sequence:	According to E.4 1) of EN 619:2022

DECLARED DUAL-NUMBER NOISE EMISSION VALUES [dB(A)]

In accordance with EN ISO 4871

A-weighted emission sound pressure level, *LpA*, at lower floor level	71,0 dB (A). This level exceeds 70.0 dB (A).
Uncertainty, *KpA*,	3 dB (A)

Values determined according to noise test code given in Annex E of EN 619:2022 using the basic standard EN ISO 11201:2010 (grade 2)

NOTE: The sum of a measured noise emission value and its associated uncertainty represents an upper boundary of the range of values which is likely to occur in measurements.

MHS Conveyor Corporation confirms that all requirements of the noise test code have been fulfilled.

WARNING: *In situ (on site or in position)* noise levels at workplaces will be higher than those measured according to the noise test code given in Annex E of EN 619:2022, depending on the environmental noise.

4.4 Vibrations

The vibrations produced by the partly completed machine, depending on its method of operation, do not pose a risk to the health of the operators.

⚠CAUTION	
	**Caution!** • An excessive vibration can only be caused by a mechanical fault that must be immediately reported and eliminated, to avoid jeopardizing the safety of the partly completed machine and operators.
Indicates a low level potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It may also be used to alert against unsafe practices or for the protection of the equipment.	

4.5 Residual Risks

The partly completed machine was designed to guarantee the essential safety requirements for the operator.

Safety has been incorporated, as much as possible, into the design and construction of the partly completed machine; however, there are risks from which the operators must be protected, especially during:

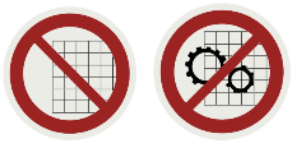
- Transport and incorporation or moving parts.
- Normal operation.
- Adjustments and fine tuning.
- Maintenance.
- Disassembly and dismantling.

For each residual risk, there is a description of the risk and of the zone or part of the partly completed machine subject to that residual risk, unless the risk is valid for the entire partly completed machine.

Procedural information as to how to avoid the risk and on the correct use of the personal protective equipment intended and prescribed by the Manufacturer is also supplied.

RESIDUAL RISK	DESCRIPTION	PROCEDURAL INFORMATION
 **RISK OF CRUSHING LIMBS OR AMPUTATION**  **HAND ENTANGLEMENT. BELT DRIVE WITH TEETH**  **HAND CRUSHED PINCH POINT OR ABOVE**	Limbs can get stuck during maintenance when the protections have been removed for inspection or repair.	Follow the procedures described and observe the safety instructions. Never turn on the partly completed machine without the safety protections installed. Turn the power off when working on the partly- completed machine. Lock the system to prevent it from being turned on inadvertently!
 **ELECTROCUTION HAZARD**	Contact with a power source during maintenance.	Always turn the power off when working on the partly completed machine. Do not attempt to perform maintenance without having first de-energized the system.
		Always keep sufficient distance from the partly complete machine.

RESIDUAL RISK	DESCRIPTION	PROCEDURAL INFORMATION
 **INJURIES TO THE LIMBS CAUSED BY CONTACT WITH MOVING PARTS**	Contact with moving parts during operation can cause minor or serious injuries.	Never insert your hands into the partly completed machine or a complete machine when it is running or not running.
 **AUTOMATIC START**	Know conveyor equipment starts and stops without warning and can cause severe injury.	Never insert your hands into the partly completed machine or a complete machine when it is running or not running. Do not insert your hands on or in between materials being conveyed.
 **FALL HAZARD STANDING OR WALKING ON CAONVYOR**	Risk of falling when standing or walking on the conveyor.	Never stand, walk on the conveyor.
	Take care to avoid coming into contact with a hot surface.	Allow sufficient time for hot components to cool before working on equipment.
 **DO NOT REACH MOVING PARTS UNDERNEATH**	Contact with moving parts during operation can cause minor or serious injuries.	Never insert your hands into the partly completed machine or a complete machine when it is running or not running.
 **RISK OF INJURIES TO THE LIMBS CAUSED BY CONTACT WITH MOVING PARTS**	Risk of falling due to walking, sitting, standing, or climbing on the conveyors belt, rollers, or any part of the conveyor systems, even when it is not moving.	Do not walk, stand, sit, or climb on the partly or completed machine when it is stationary or running.

RESIDUAL RISK	DESCRIPTION	PROCEDURAL INFORMATION
	Ignoring the guards missing can cause serious damage and/or accidents.	It is forbidden to use the partly completed machine or completed machines with no guards and protection devices.
	Must read all manuals.	Manuals must stay with a partly completed machine or completed machine. All safety rules must be observed when working with, on or at the conveyor system in whatever way. This includes reading all Installation, Operation, Maintenance manuals. Before service to use the partly completed machine safely, it is mandatory to read and understand the manual and accompanying documentation in its entirety.

4.6 User Responsibilities

It is the responsibility of the user to:

- Analyze the risks that might occur during handling and installation at his/her premises (the analysis done on the handling of the partly completed machine only took into consideration the characteristics of the same).
- Mark out the path of forklift trucks and/or laser guided vehicles, with appropriate floor signs.
- Awareness-raising and training of the personnel in charge of performing operations on workstations as well as partly- completed machine operators.
- Apply the visual safety signs in the work environment after having evaluated the risks inside the areas of transit or control.
- The integrator or end user/customer supply workstation layouts.

⚠CAUTION	
	The end user of the line must, during the incorporation, reduce the risks in the different zones of the partly- completed machine, according to the general risk analysis of the line itself.
Indicates a low level potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It may also be used to alert against unsafe practices or for the protection of the equipment.	

4.7 Safety Pictograms

The partly completed machine is equipped with a series of pictograms, which serve the purpose of warning the operator of any residual risks.

	**PROHIBITION MUST NOT** • **IT IS STRICTLY FORBIDDEN** to remove the pictograms installed on the partly completed machine. • FORTNA will not be held liable for the safety of the partly completed machine should this prohibition be disregarded.
	**MANDATORY ACTION MUST DO!** • General mandatory action sign indicates an action to take to avoid the hazard. • FORTNA will not be held liable for the safety of the partly completed machine should this prohibition be disregarded.
	**CAUTION!** Possible risk of damage to the machine if the incorrect procedure is used.

4.8 List of Pictograms

The following table lists the pictograms present on the partly completed machine but are not limited to only these pictograms.

PICTOGRAM AND DESCRIPTION		
 AUTOMATIC START UP	 HAND ENTANGLEMENT. BELT DRIVE WITH TEETH	 HAND CRUSH FROM NIP OR PINCH POINT
 HAND ENTANGLEMENT IN ROLLERS	 ELECTRICAL HAZARD	 HAND ENTANGLEMENT
 FALL HAZARD FROM CONVEYOR	 HOT SURFACE	
 DO NOT STEP, STAND OR SIT		
 DO NOT REACH MOVING PARTS UNDERNEATH	 DO NOT OPERATE WITHOUT GUARDS MOVING PARTS UNDERNEATH	 DO NOT OPERATE WITHOUT GUARDS
 ENGLISH WRENCH REQUIRED	 LOCK OUT TAG OUT PNEUMATIC	 LOCK OUT TAG OUT ELECTRICAL

PICTOGRAM AND DESCRIPTION
 **MUST READ ALL MANUALS**

4.9 Safety Devices

Safety devices are supplied by the integrators such as:

- Control systems
- Emergency stop systems
- Netting
- Fences

NOTICE	
	• Contact your customer/ integrator for specific safety information installed on your partly completed machine. • The integrator's (or end user's) responsibility is to ensure appropriate safety conditions. • FORTNA will not be held liable for the safety of the partly completed machine or people should this prohibition be disregarded.
Failure to follow these instructions can result in property damage or equipment damage.	

4.9.1 Safety Fence, Nets, Guards

Where applicable safety fences, netting, covers and guards must be applied.

POS	ELEMENT	DESCRIPTION
1	Safety Fence	 Safety fencing may be necessary depending on risk assessments and evaluations done by others.
		• FORTNA does not provide or sell fencing.
2	Safety Net	 It is advised for the customer of FORTNA to provide safety netting or other fall protection to protect anyone underneath the conveyor from falling load. FORTNA has added extra holes to the ceiling hanger crossmembers, as a service to our customers, to help attach safety netting to the bottom of an overhead conveyor.
		• FORTNA does not provide or sell safety netting.

POS	ELEMENT	DESCRIPTION
3	Safety Covers & Guards	  Only CRUZbelt Take-up and drive beds have shrouds as a secured guards. All other shrouds are designed as a decorative cover.
		 Guard rails help guide carton or totes and protect product from falling off the conveyor.

4.9.2 Ergonomic Hazards

Access to parts of the partly completed machine located in high elevation or over machinery shall be provided with proper means of protection against falls which may include but are not limited to, guard rails for stairways, stationary stepladders, platforms, or safety cages for ladders.

Improper access or poor location of controls could cause poor posture, issues that may lead to discomfort, fatigue, musculoskeletal disorder, stress, or inaccessibility for cleaning, maintenance, and similar hazards.

Assuring appropriate safe access to partly completed machine, safety controls, and equipment conditions is the integrator's (or end user's) responsibility.

4.9.3 Anchorage Points Personal Protection

Anchorage points for personal protective equipment against falls from height shall also be provided.

⚠WARNING

Warning!

Maintenance done above 1.82m must be tied off with fall protection safety harness.

Indicates a medium level potentially hazardous situation that, if not avoided, could result in death or serious injury.

NOTICE

Notice!

- The integrator's (or end user's) responsibility is to ensure appropriate safety conditions.
- FORTNA will not be held liable for the safety of the partly completed machine or people should this prohibition be disregarded.

Failure to follow these instructions can result in property damage or equipment damage.

4.10 FORTNA Conveyor Environment Standards

FORTNA Environment Policy

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

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 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 FORTNA warranty on any failed components that result from these environmental issues.

Pressurized Air Quality:

No FORTNA Manufacturer components require lubricated air. If the shop air is lubricated there must be a coalescing filter plus a regular filter of 5 micron installed in the line prior to the air reaching all FORTNA equipment.

In high humidity or low temperature situations an air dryer must be used.

Installation Environment:

All FORTNA technologies are designed to function in “normal” industrial environments. Chemical vapors, lubrication, excessive dust, high or low heat and moisture may affect their operation and void the equipment warranty. Some paint fumes, fresh concrete and other concentrations of airborne fumes have been known to adversely affect the life of many conveyor components and will void the equipment warranty.

4.11 Precautions & Cleaning

Precautions

ULTRAVIOLET RAYS of sunlight will weaken polyurethane belts.

OILY OR WET CONDITIONS impair frictional drive characteristics between drive pulley and belts.

CORROSIVE SUBSTANCES such as concrete curing agents will adversely affect various components, voiding the warranty.

Temperature range (ambient):

+35F(+1°C) to +100F(+38°C). For applications that exceed this temperature range, please consult Applications Engineering.

Grounding:

Equipment should be properly grounded before operation.

PVC Belts

Recommend using soap (Dawn or Ajax dish soap, etc.) and water applied to a sponge or rag squeezed out.

Note:

Do **NOT** immerse belts or any component in a container of this cleaning product.

Washdown Applications: No FORTNA manufactured conveyor equipment is designed or capable of being washed down. Even extremely high humidity may affect the ability of the equipment to convey loads as desired.

CAUTION WHEN CLEANING PRODUCTS	
	• Cleaning products are not provided by FORTNA, and as such, users are instructed to follow the local regulations and the manufacturer safety instructions for use and to follow the PPE (Personal Protective Equipment) guidelines. Also, dispose of rags and other used media in accordance with the manufacturers recommendation and your company policy.
	• The end user is to provide the user with the Safety Data Sheet (SDS).
	• Ensuring a good and safe interior environment is the integrator's (or end user's) responsibility.
	• Must Not! Never clean any parts of the partly completed machine or completed machine while the conveyor is running. The equipment should not be started again until it is certain that it is all clear and safe to do.

5 Description- Intended Use

5.1 Intended Use

Equipment intended for use by trained professionals in charge of using and managing the partly completed machinery or completed machine in all its technical phases.

CRUZbelt is designed for conveying carton and tote distribution, with belt on roller or belt on slider.

In its various of configurations, CRUZbelt can be used to:

- Transport totes and cartons horizontally or on an incline/decline
- Meter and create consistent gaps for singulation release
- Transportation of empty corrugated cartons

5.2 CRUZbelt Specifications

CRUZbelt

CRUZbelt is FORTNA Conveyor's upgrade to standard belt-on-slider or belt-on-roller bed conveyor. It features one-piece modular construction of the Noseunder and Noseover which replaces conventional components. It also has a self-aligning belt take-up that provides initial belt tensioning in less than a minute. It has an energy efficient in-line helical gearmotor to provide energy savings and the end pulleys are 63.5mm (2-1/2") diameter to reduce gaps between units for small product transportation. The construction design allows it to fit into the rest of the FORTNA Conveyor technologies seamlessly.

ECC (Empty Carton Conveyor)

ECC is FORTNA Conveyor's Empty Carton Conveyor. This is sometimes referred to as trash conveyor, however it is only offered for use as a conveyance for empty corrugated cartons as well as paper dunnage. It is not intended to act as a receptacle for garbage, food stuff, or plastic film which will cling to the belt and build up, causing jams and equipment damage. The construction is the same as our standard CRUZbelt but has extended widths to accommodate large dunnage systems. It has a Noseover like CRUZbelt but has a Double Snubber vs. a Noseunder to eliminate dunnage from creating jams. It has the same simple belt take-up and small end pulleys as CRUZbelt.

CRUZbelt Merge

This CRUZbelt version is specifically designed to allow for the angled side merging of loads from interconnecting spur lines. The "merge" side has a special hemmed channel and mounting frame that allows for spurs to be mounted directly to the merge belt minimizing the transition gap. The belting it uses is a smooth top style that minimizes the side loading pressure merging loads create. CRUZbelt Merge drives are end drive style only with a minimal length to accommodate a smaller required footprint.

CRUZbelt 4

CRUZbelt4 was initially designed to satisfy the requirement for a short belt unit designed and shipping as a completely assembled unit. The components proved to be very versatile and so their use has spread to other CRUZbelt designs. It can still be purchased as a single unit, or the individual components can be applied to special needs applications.

5.3 Reasonably Foreseeable Misuse

Reasonably foreseeable misuse is listed below:

- Conveying of people.
- Climbing, standing, sitting, or walking on top of the conveyor.
- Placing hands between rollers or belts.
- Using the partly completed machine without having correctly incorporated it in the destination line.
- Using the partly completed machine as a support.
- Using the partly completed machine to achieve greater production values than the required limits.
- Using partly completed machines to convey hazardous materials.
- Using the partly completed machine differently than in the “intended use” paragraph.
- Not reading the Installation, Operation, Maintenance manual.

Any use of the partly completed machine that differs from the intended use must be authorized beforehand in writing by the Manufacturer. Without this written authorization, the use must be considered “**improper use**;” therefore, the Manufacturer declines any liability for eventual damage to persons or property and deems any kind of warranty on the partly completed machine void.

NOTICE	
	**Important!** Incorrect use of the partly completed machine or completed machine excludes any liability by the Manufacturer.
Failure to follow these instructions can result in property damage or equipment damage.	

5.4 Definition of Terms

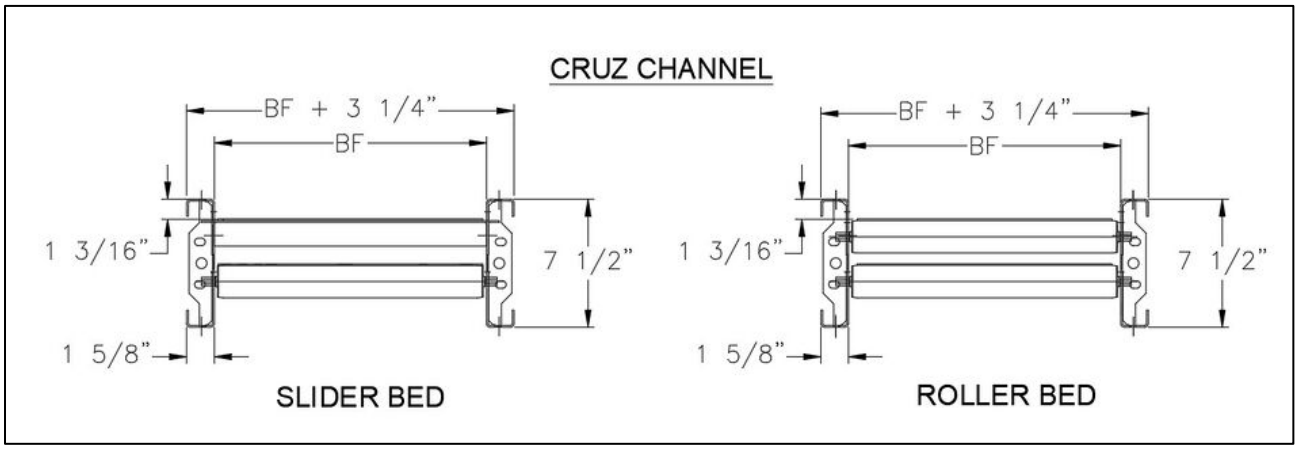
Conveyor terminology or different meanings pertaining to conveyor applications, parts, types, and functions that may be used in the manual.

Below is the explanation of the different terms and definitions used in this manual:

TERM	DEFINITION
Accumulation	Act of queuing, holding, or backing up product on a conveyor to gather (accumulate) product.
Bed	The part of the conveyor the load or carrying medium rests or slides while being conveyed.
Between Frames (BF)	Inside width dimension, the abbreviation "BF" (between frames) is used.
Coefficient of Friction	A numerical expression of the ratio between the force of contact between two surfaces and the resistant force tending to oppose the motion of one with respect to the other.
Conveyor Width	The dimension outside to outside of frame rails. For the inside dimension, the abbreviation "BF" (between frames) is used.
Crossmember	Structural member, which is assembled between two side channels of a conveyor bed.
HP (Horsepower)	Horsepower (hp) is a unit of measurement of power, or the rate at which work is done, usually in reference to the output of engines or motors.1hp=746W
Pulley	Conveyor pulleys are mechanical devices used to change the direction of a belt in a conveyor belt system along with tensioning and driving the belt. A conveyor system will always consist of a head pulley and a tail pulley.
Slider Pans	Slider bed conveyors are conveyors that do not necessarily have the belt supported by rollers but instead the belt “slides” along a solid surface.
Noseover/Noseunder	A section of conveyor with transition rollers placed in conveyor to provide transition from incline to horizontal or horizontal to incline.
Frame	The structure, which supports the components of a conveyor bed consisting of formed channel rails, bolted together with crossmembers.
Roller Centers (RC)	Distance between centerlines of adjacent rollers. For curves, roller centers are measured at the inside radius.
Top of Roller (TOP)	This is the distance from the floor to the top of the roller.
Top of Belt (TOB)	This is the distance from the floor to the top of the belt.
VFD	A variable frequency drive (VFD) is a type of motor controller that drives an electric motor by varying the frequency and voltage of its power supply. The VFD also has the capacity to control ramp-up and ramp-down of the motor during start or stop, respectively.

6 CRUZbelt Technical Data

6.1 CRUZbelt Standard Specifications



Conversion Chart

- 1 inch (1”) = 25.4 mm
- 1 foot (1’) = 304.8mm
- 1 foot (1’) = 12 inch (12”)

Framework:

CRUZchannels are provided with bolted-in cross members and welded butt connectors. Widths are available in 16”, 22”, 28” and 34” between the channels. Channels are formed from 12 Ga. steel. Assemblies are available in roller beds or slider beds. Dimensions as shown below.

Carry Rollers:

1.9” (48mm) Diameter 16 Ga. plated shell with ABEC-1 precision bearings and a 7/16” spring loaded hex axle. Mounted low in Cruz channels. Rollers are available in 3”, 6” or 9” centers. All rollers are mounted in the frames prior to shipping.

Slider Pans:

12 ga. formed steel pans are mounted between CRUZchannel frames. The pans come in nominal 24” (610mm) long sections with odd lengths making up the non-standard bed lengths.

Return Rollers:

1.9” (48mm) Diameter 16 Ga. plated shell with ABEC-1 precision bearings and a 7/16” spring loaded hex axle. Mounted below the carrying rollers/slider pans in Cruz channels. Rollers are mounted on nominal 60” centers. All rollers are mounted in the frames prior to shipping.

Snubber Rollers:

There are two types of snubber rollers. For higher pressure locations - 2.5” (63.5mm) Diameter plated shell with precision bearings and an 11/16” spring loaded hex axle. For lower pressure locations - 1.9” (48mm) Diameter plated shell with ABEC-1 precision bearings and a 7/16” spring loaded hex axle. All rollers are mounted in the frames prior to shipping.

Roller Bed Lengths:

Roller beds are available on 1” increments from 2’-0” to 4’-0”, on 3” increments from 4’-0” to 10’-0” and 12’-0”

Slider Bed Lengths:

Slider beds are available on 1” increments from 2’-0” to 4’-0”, on 3” increments from 4’-0” to 10’-0” and 12’-0”

Bottom Pans:

20 ga. formed steel pans are available in two designs for either intermediate or end placement on a bed. Each comes as a kit with hardware included. Some modifications may have to be made at installation to miss other components. Bottom pans are an option and not included as standard unless noted.

Drives:

Center drives are attached to the bottom of the bed frame and may be used for horizontal, incline, decline, one direction, and reversing operations. For all applications, the center drive should be located near the discharge end of the conveyor. For reversing applications, the drive should be located as close to the center as practical. Center drives have a built-in belt take-up. Because of the nature of the belt take-up, it is recommended that a minimum unit length of 25’-0” (7.62m) be considered to ease maintenance.

End drives are an integral part of a 5’-0” end bed. They contain the same style take-up that the center drive does. The gearmotor is shaft mounted and projects outside the framework of the module. Because of the nature of the belt take-up, it is recommended that a minimum unit length of 25’-0” (7.62m) be considered to ease maintenance.

Center Drive Bed Location and Auxiliary Belt Take-up:

The drive bed should be mounted towards the discharge end of each CRUZbelt unit. The Auxiliary Belt Take-up is used for CRUZbelt units that are longer than 150'. The position of the Auxiliary Belt Take-up should be mounted away from the drive, toward the charge end of the line.

End Beds:

End beds come in both roller bed and slider bed. They contain an end pulley and a snubber roller for belt tracking and return. They are available in roller bed configuration on 3” increments from 2’-0” to 10’-0” plus 12’-0”. They are available on 1” increments from 2’-0” to 10’-0” plus 12’-0” for slider bed configurations.

End Pulleys:

2.5” (63.5mm) diameter 0.25” wall at crown and tapered down to the ends for belt tracking. 11/16” hex spring loaded axle with precision bearings.

Nose-Over:

Provides a transitional change from horizontal to pitched beds or the inverse. Nose-overs are available on 9°, 12°, 15°, 18°, 21° & 24° angles. The unit comes as a module completely assembled and ready for installation. It utilizes the same piece of belting as the incline/decline portion.

Nose-Under:

Provides a transitional change from horizontal to pitched beds or the inverse. Nose-under are available on 9°, 12°, 15°, 18°, 21° & 24° angles. They take the place of a traditional power feed section. The unit comes as a module completely assembled and ready for installation. It utilizes the same piece of belting as the incline/decline portion.

Belting:

There are two types of standard belting available. Both are black PVC monofilament style belts. A smooth top style is used for horizontal applications and a longitudinal ribbed top style is used for incline/decline applications. Each is rated for 110 lb. per inch of width tensile strength and are clipper laced.

Note:

CRUZbelt requires a monofilament belt. Installation of any other type of belt will damage the internal components of CRUZbelt. **Any other type of belt other than a monofilament belt will immediately and permanently VOID all MHS Conveyor Systems warranties.**

Motors:

3-phase, 50 Hz, in-line helical gearmotor. HP varies by requirement, 0.75-4kW (5.3hp). All motors are VFD capable and are premium efficiency.

Speed:

30 FPM (.15m/s) minimum to 300 FPM (1.5m/s) maximum. Not all speeds are available with all HP's.

Incline / Decline Angle:

Standard incline/decline angles are 9°, 12°, 15°, 18°, 21° & 24°. Noseover and Noseunder modules complement the angled straights. The maximum incline/decline angle is 15° for totes. Contact Applications Engineering for more details.

Product Limitations:

Loads can weigh as much as 50lb. per foot (74kg/m) with a maximum of 75lb (34kg) total.

Accessories:

- CRUZchannel shrouds
- Bottom pans

Paint: Components located within the framework are painted black. All other components are painted job color. All FORTNA Conveyor paint is powder coated.

CRUZbelt Load Weight Limitations

CRUZBELT LOAD WEIGH LIMITATIONS	MINIMUM	MAXIMUM
CRUZbelt CTC	*	50 lb./ft. (74kg/m) or 75 lb.(34kg) Total
CRUZbelt4	*	50 lb./ft. (74kg/m) or 75 lb.(34kg) Total
CRUZbelt ECC	*	50 lb./ft. (74kg/m) or 75 lb.(34kg) Total
CRUZbelt Meter	*	50 lb./ft. (74kg/m) or 75 lb.(34kg) Total

(*) While there is no minimum weight established for these, lower weight loads may not respond to conveying or transferring as expected. FORTNA recommends testing of any loads in question.

CRUZbelt Load Length Limitations

CRUZBELT LOAD LENGTH LIMITATIONS	MINIMUM	MAXIMUM*
CRUZbelt CTC	***	n/a
CRUZbelt4	***	n/a
CRUZbelt ECC	***	n/a (be mindful of transitions)
CRUZbelt Meter	***	n/a****

(*) Technologies that have curves should use the Curve Clearance Calculation worksheet to determine the maximum load length recommended.

(**) These belted sections can carry smaller loads but the transition from belt to belt must be considered. FORTNA Conveyor recommends testing all questionable loads. Consult Applications Engineering with any questions.

(***) CRUZ belts are designed to carry almost any length loads but the transition onto and off from the units must be considered when applying them. The center of gravity, stability and bottom construction may affect the loads ability to enter or exit a CRUZbelt unit.

(****) While these have no established maximum load length limit there may be some limits based on their construction and interface with other technologies.

Load Width Limitations

CRUZBELT LENGTH LIMITATIONS	MINIMUM *	MAXIMUM **
CRUZbelt CTC	n/a	Determined by BF (Between Frame)
CRUZbelt4	6”	Determined by BF (Between Frame)
CRUZbelt ECC	n/a	Determined by BF (Between Frame)
CRUZbelt Meter	n/a	Determined by BF (Between Frame)

(*) Technologies that have transfers and/or diverts must consider the possibility of load stability when transferring. FORTNA recommends testing of any questionable loads.

(**) Technologies that have curves should use the Curve Clearance Calculation worksheet to determine the maximum load width recommended

Load Height Limits

For all technologies load stability must be the determining factor for maximum height limits.

For minimum height limits, FORTNA has established a 1” height to ensure that all loads will be recognized by the photo sensors. For those technologies that do not use any sensors the minimum height is established by the rigidity of the load bottom. FORTNA recommends testing of any questionable loads.

CRUZbelt Speed Limits

CRUZBELT SPEED LIMITS	MINIMUM FPM (FEET PER MINUTE)	MAXIMUM FPM (FEET PER MINUTE)
CRUZbelt CTC	30 FPM	300 FPM
CRUZbelt4	38 FPM/EDR 90FPM/CDR	229 FPM/EDR 300 FPM/CDR
CRUZbelt ECC	30 FPM	300 FPM
CRUZbelt Meter	**45 FPM	**240 FPM

(*) Drive types and HP's may affect what minimum and maximum speeds are achievable.

(**) These minimum and maximum speeds are dependent on the speed ration and HP selected.

(***) While it is possible to run these units at less than 210 FPM FORTNA Conveyor has found that this minimum speed is required to ensure loads are completely transferred off the sorter.

(****) This speed can be reduced via using a VFD drive. Load stability must be considered when determining the sorter/transfer speeds.

Operating Temperature Range

CRUZBELT TEMPERATURE RANGE	MINIMUM	MAXIMUM
CRUZbelt CTC	+35°F* (+1°C)	+100°F (+38°C)
CRUZbelt4	+35°F* (+1°C)	+100°F (+38°C)
CRUZbelt ECC	+35°F* (+1°C)	+100°F (+38°C)
CRUZbelt Meter	+35°F* (+1°C)	+100°F (+38°C)

***Temperature Range**: +35F(+1°C) to +100F(+38°C). System requirements below +50F(+10°C) should be referred to the applications department for analysis. Additional horsepower (kilowatt) may be required. Normally roller beds are utilized to minimize this impact.

6.2 Electrical Architecture

NOTICE

Notice!

For a detailed electrical schematic, see the electrical diagrams provided for your layout.

Failure to follow these instructions can result in property damage or equipment damage.

6.3 CRUZbelt Critical Parts

Critical components must be replaced without substitutes.

PART NUMBER	DESCRIPTION
1226236	GEARMTR,1.5KWBRK 86RPM 400V-50HZ-SK572.1Z-VL-90LP/4-IG12P-TI4-215E-151-340-A,30MM,16.46:1, B14 FL-MTG M6-TB4-3L-HL3-BRE20-400V BRAKE-50HZ-(2HP)
1225404,	BRG, FLG 4BOLT X 40MM-F4B-DL-40M, METRIC-CONCENTRIC CLAMP COLLAR, D-LOCK
1225625	BRG, PILLOW BLOCK 35MM B-SQUEEZE LOCK-P2B-DL-35M
1118558	SHROUD, ACC-CZ-5'-L/LABEL Plastic Parts
VFD's	Nord VFD

NOTICE

Notice!

- Warranty becomes void in the event of:
- Use of non-original spare parts not authorized.

Failure to follow these instructions can result in property damage or equipment damage.

7 Transport and Installation

7.1 General Warnings

General warnings are specified throughout the manual to emphasize information of significant importance.

⚠DANGER	
	**Danger!** **DO NOT** transit under suspended loads.
Indicates a high level potentially hazardous situation which, if not avoided, will result in death or serious injury.	

⚠CAUTION	
	**Caution!** FORTNA shall not be held liable for any damage, to things or people, caused by accidents due to a failure to comply with the instructions provided in this manual and in the following chapter.
Indicates a low level potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It may also be used to alert against unsafe practices or for the protection of the equipment.	

NOTICE	
	**Important!** • Lifting and handling must only be done by specialized and trained personnel, who are qualified to perform these activities. • Safety briefing of installation personnel according to occupational health and safety protection plan.
Failure to follow these instructions can result in property damage or equipment damage.	

7.1.1 Packaging

The partly completed machine is shipped by FORTNA from the production plant to that of the Business Partner or End User/Customer. Depending on the transport distance, on the specific Customer requests and on the amount of the load will remain in the packaging, the partly completed machine is shipped as follows:

- Normal protective packaging for short and medium distances.
- Special protective packaging for long distances.

Shipment must be made using covered or sheeted transport means, depending on the type of load. Upon receipt of the partly completed machine, the customer must verify that there is no damage caused by the method of transport or by the personnel in charge of the specific operations.

PRODUCT SIZE	PACKING DIMENSIONS	APPROXIMATE WEIGHT (kg)	MAX QUANITY
16 BF	371x51x191	800	Max 9 beds stacked
22 BF	371x66x191	900	Max 9 beds stacked
28 BF	371x81x191	950	Max 9 beds stacked
34 BF	371x96.5x191	1200	Max 9 beds stacked

ACCESSORIES/PARTS	PACKING DEMINSIONS (cm)	APPROXIMATE WEIGHT (kg)
Accessories/Parts	122x81x64	800/skids
Parts skid	310x66x51	1000/skids
RF Supports	Min 81” X 122” box on skid	Min 250 to Max 800 per skid

NOTICE	
	**Important!** • Packaging weight, size, and dimension will vary depending on crates built for each product size and quantity packaged. • RF Supports weight and size will vary by length and quantity stacked.
Failure to follow these instructions can result in property damage or equipment damage.	

NOTICE	
	**Important!** If damage is found, leave the found packaging and immediately contact the relevant shipping company for a damage assessment and then inform your distributor immediately.
Failure to follow these instructions can result in property damage or equipment damage.	

7.1.2 Packaging Removal

1) Place the partly completed machine or its components in its intended place.
2) Unpack the parts delivered with crate, as follows:
   - Remove the straps.
   - Remove screws.
   - Remove stable 2x4 boards.
   - Remove the heat-shrink cellophane.
   - Remove the crate.
   - Remove any fastening systems to the wooden platform.
3) Unpack the parts delivered on pallets, as follows:
   - Remove the straps.
   - Remove the heat-shrink cellophane.
   - Remove any fastening systems to the wooden platform.

7.2 Disposal of Packaging

The packing is an integral part of the supply; its disposal is the purchaser’s responsibility.

The disposal or destruction must comply with the regulations in force in the user's country, bearing in mind the nature of the materials:

- Wood for the crates.
- Plastic film for the protection of the partly completed machine and adhesive tape for their fastening.
- Absorbing bags for the moisture.

7.3 Transport and Handling

The handling procedures described in this paragraph shall be carried out by staff trained for such operations: suitably trained to safely perform loading, unloading, and handling operations by means of lifting equipment.

Transport Operations

NOTICE	
	Important! • The lifting personnel must be authorized and trained to use the lifting equipment and devices and must comply with the applicable regulations for personal protection. • FORTNA refuses any liability for any damage to the partly completed machine arising from failure to comply with the instructions provided.
Failure to follow these instructions can result in property damage or equipment damage.	

Transport of Conveyor Modules

TRANSPORT REQUIREMENTS	
NO OF QUALIFIED OPERATOR	No. 2 Lifting equipment operator
PPE REQUIRED	
LIFTING EQUIPMENT	Electrical or Propane Forklift per your approved lifting equipment.
FORKLIFT TOOL TO BE USED	Forklift extenders
HANDHELD TOOLS TO USE	• Banding cutters • Torx T25 bit and cordless drill • Forklift extensions • Straps • Clamps

7.4 Lifting Equipment General Warnings

Must read Supports & Connections manual for installation details.

NOTICE

Important!

- Must read all manuals. Support & Connections IOM#1226673 (Original language is in English) or visit: fortna-conveyor.com
- Manuals must stay with a partially completed machine or completed machine.
- All safety rules must be observed when working with, on or at the conveyor system in whatever way. This includes reading all Installation, Operation, Maintenance manuals.

Failure to follow these instructions can result in property damage or equipment damage.

⚠DANGER

Danger

- Only use suitable and approved lifting equipment, compatible with the dimensions and weight of the component to be handled.
- Make sure nobody stops within the range of the lifting equipment.

Indicates a high level potentially hazardous situation which, if not avoided, will result in death or serious injury.

NOTICE

Notice!

The lifting personnel must be authorized and trained to use the lifting equipment and devices and must comply with the applicable regulations for personal protection.

Failure to follow these instructions can result in property damage or equipment damage.

⚠WARNING	
	**Hazard to Person or Equipment!** **Know The Forklift Operating Procedures.** • Only trained and license personnel is allowed to drive the fork truck. • Always know and follow your forklift operating procedures, safety guidelines and legal requirements.
Indicates a medium level potentially hazardous situation that, if not avoided, could result in death or serious injury.	

⚠DANGER	
	**Hazard to People!** **Must Not** It is forbidden to ride on forks or anywhere on the fork truck that is not intended for people to ride, sit, or stand.
Indicates a high level potentially hazardous situation which, if not avoided, will result in death or serious injury.	

7.5 Unloading Instructions

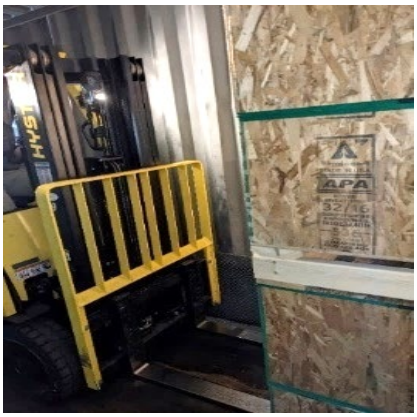
Step 1)

Checking the Load for Damage

1) 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.
2) While unloading, a check must be made against the Bill of Lading, or other packing lists provided, to confirm full receipt of listed items.

Step 2)

Unloading Crates Using a Forklift



1) Drive safely into skid at bottom being careful not to drive too far into the load with the extended forks.
2) Lift skid and tilt backward to take the weight of the skid off the floor.
3) Drive skid off the container.
4) Place skid in designated unloading/unstacking area.

5) Remove banding between top skid and bottom skid.

6) Unstack skid by using forklift at the entry point of the top skid.

7) Lift skid and place next to bottom skid

8) Cut and remove the rest of the banding.

9) Remove the screws on the top and sides of the crate with a Torx T25 bit and cordless drill.

10) Lift the 2x4 support board out of the crate.

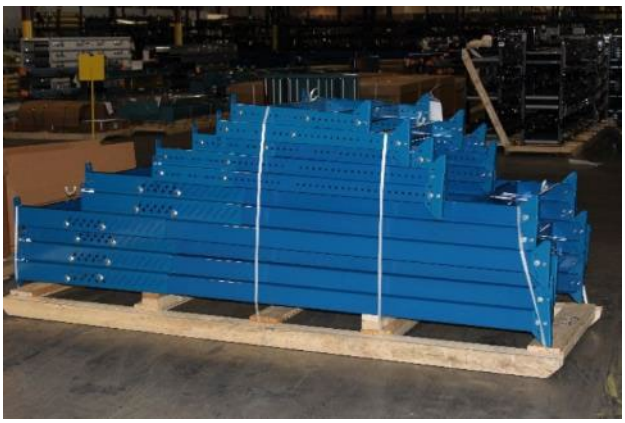
7.5.1 Visual of Packing Units

Packaging may vary per the partly completed machine.







7.6 Receiving & Site Preparation

General

FORTNA conveyor 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

Caution!

TAKE CARE 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, crossmember or any part of the equipment.

Indicates a low level potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It may also be used to alert against unsafe practices or for the protection of the equipment.

7.6.1 Preparation of Site

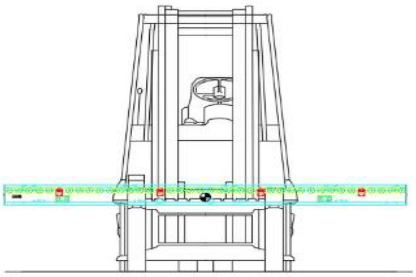
After the conveyor is received, move it to the installation site or designated dry storage area as soon as possible. Clean up all packing material immediately before parts get lost in it. Loose parts should remain in the shipping boxes until needed.

Prior to starting assembly of the partly completed machine 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.

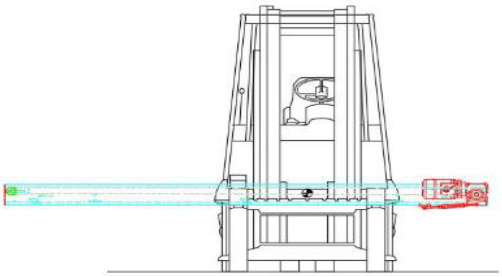
7.6.2 Staging or Installing with Forklift

1) Make sure there is adequate space to move the partially completed machine without interference or obstruction.
2) Before moving the partially completed machine make sure to place the forklifts in the center of gravity of the load. If needed change position of the forking or lifting straps to find the center of gravity point. The center of gravity is typically at the center of the machine.

   Note: The motors will impact the center of gravity.



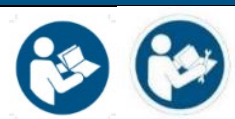
CONVEYOR CENTER OF GRAVITY IS TYPICALLY AT THE CENTER OF THE CONVEYOR.



ADJUST CENTER OF GRAVITY FOR CONVEYOR WITH MOTORS.

3) If possible, place fork truck forks under the partially completed machine to lift. If not possible, align forks at bottom of partially completed machine, at the center of gravity point. Then slide the partially completed machine onto the forks. Slowly lift the load and perform a stability check.
4) Before moving the partially completed machine make sure the load is balanced and secured with straps or clamps to prevent it from falling to the ground.
5) Position the conveyor on installed conveyor supports at installation point. Connect conveyor to supports before removing forks

Must read Supports & Connections manual for installation details.

NOTICE	
	**Important!** • Must read all manuals. Support & Connections IOM#1226673 (Original language is in English) or visit: fortna-conveyor.com.
Failure to follow these instructions can result in property damage or equipment damage.	

7.6.3 Parts Inventory & Identification

Each subassembly is shipped completely assembled. Identify and separate components by type or tag number, for inventory and ease of locating during installation.

An identification label is attached to the outside of one side channel or on a cross member, close to one end of each conveyor bed or partly completed machine.

This label contains:

- Tag number (if specified)
- Description
- Item number
- Job Number
- Mfg. Number
- Mfg. Date
- CBC number (Serial Number)
- QR (Quick Response) Label
  - Scan Code for IOM Manual

Scan the QR code to retrieve the IOM Manual, if nothing happens; check your scanner settings and 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.

⚠WARNING	
	**Warning!** • The Installation Supervisor must be experienced with conveyor, qualified in the mechanics of the equipment, and enforce safe working procedures for the protection of the crew, customer, and customer's property. • The installation must only be carried out by trained and qualified personnel. • The responsibility for the correct realization of the installation work resides with the personnel entrusted with installation. • Before restarting a conveyor, which has been stopped because of an emergency, an inspection of the conveyor must be conducted, and the cause of the stoppage determined. The starting device must be locked out before any attempt is made to correct the cause of stoppage.
Indicates a medium level potentially hazardous situation that, if not avoided, could result in death or serious injury.	

7.7 Supports and Connections

Must read Supports & Connections manual for installation details.

NOTICE	
	**Important!** • Must read all manuals. Support & Connections IOM#1226673 (Original language is in English) or visit: fortna-conveyor.com • Manuals must stay with a partially completed machine or completed machine. • All safety rules must be observed when working with, on or at the conveyor system in whatever way. This includes reading all Installation, Operation, Maintenance manuals.
Failure to follow these instructions can result in property damage or equipment damage.	

CRUZbelt Installation & Applications

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8 Installation Arrangements

8.1 Arrangements

Arrangements are to be made by the customer and integrator.

The Customer normally bears the preparation of the following, except for different contractual agreements:

- Premises (including building work, such as foundations or ducts if required, lighting).
- It is the integrator's responsibility to ensure conformity with all electrical safety aspects of the Machinery Directive.
- Systems up to the partly completed machine power supply points, in compliance with the laws in force in the country of installation and/or required by the Manufacturer.
- All technical specifications requested by the Manufacturer are contained in the contract of sale.
- The Manufacturer declines any liability if the customer is unable to guarantee the technical features of the systems requested in the contract of sale.
- Auxiliary services suitable for the partly completed machine requirements.
- Tools and consumables necessary for assembly and incorporation.
- If required lubricants for starting up the partly completed machine.
- Suitable lifting and handling systems.

Integrator

- It is the integrator's responsibility to ensure conformity with all electrical safety aspects of the Machinery Directive.

8.2 Permitted Environmental Conditions

The environment in which the partly completed machine is installed/incorporated and used is indoors, and sheltered against atmospheric agents such as rain, hail, snow, fog, suspended dusts, and combustible dusts.

The work surface must be sufficiently lit so there are no hazards resulting in discomfort, fatigue, stress, eye strain* etc., any other such as mechanical hazard or electrical hazard, due to human error caused by an inability to see clearly. If there are dark areas or differences in level in the workplace, the user must set adequate lighting devices.

Permitted Environmental Conditions

PERMITTED ENVIRONMENTAL CONDITIONS	
AMBIENT TEMPATURES	1C through 38C (35° F / 100°F)
MAXIMUM RELATIVE HUIMIDITY	80% (Without condensation)
INSTALLATION SITE	Industrial warehouse
AMBIENT LIGHTING	Fluorescent or LED
FLOORING	Concrete industrial floor

⚠CAUTION	
	**Caution!** • Environmental conditions different from those specified may cause severe damage to the partly completed machine. • Placing the partly completed machine in facilities that do not fulfil these requirements will cause the warranty to lapse for parts to be replaced.
Indicates a low level potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It may also be used to alert against unsafe practices or for the protection of the equipment.	

8.3 Prohibited Environmental Conditions

It **must not** be a classified environment or exposed to aggressive agents such as corrosive vapors or sources of excessive heat.

The use of the partly completed machine under conditions other than those listed is **not allowed**. In particular, the installation and operating environment **MUST NOT**:

	MUST NOT!
	• **Must Not,** be exposed to corrosive fumes.
	• **Must Not,** be exposed to excessive humidity (beyond 80%) and quick relative humidity changes (beyond 0.005 p.u./h).
	• **Must Not,** be exposed to excessive dust.
	• **Must Not,** be exposed to abrasive dust.
	• **Must Not,** be exposed to oily vapors.
	• **Must Not,** be exposed to explosive powders or gas mixtures.
	• **Must Not,** be exposed to salty air.
	• **Must Not,** be exposed to anomalous vibrations, collisions, or blows.
	• **Must Not,** be exposed to weather conditions beyond allowed limits or dripping.
	• **Must Not,** be exposed to unusual transport or storage conditions.
	• **Must Not,** be exposed to high or rapid thermal variations (beyond 5K/h).
	• **Must Not,** have presence of any radiation.

NOTICE
Ensuring a good and safe interior environment is the integrator's (or end user's) responsibility.
Failure to follow these instructions can result in property damage or equipment damage.

9 CRUZbelt Introduction

CRUZbelt Features

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

FORTNA 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.
- 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

9.1.1 Restrictions

Duty Cycle Limit

CRUZbelt motors are intended for continuous operation. Duty cycle is limited to >70%.

CRUZbelt Carton Tote Conveyor (CTC)

Use the conveyor width to accommodate the maximum product width. Loads can weigh as much as 50lb. per foot (74 kg/m) with a MAXIMUM of 75lb. (34kg), total.

CRUZbelt4

Use the conveyor width to accommodate the maximum product width. Loads can weigh as much as 50lb. per foot (74 kg/m) with a MAXIMUM of 75lb. (34kg), total.

CRUZbelt Empty Carton Conveyor (ECC)

Only empty corrugated cartons and/or dry dunnage used for packing are to be conveyed on the ECC conveyor.

No trash or poly film should be placed on the ECC conveyor as jams may occur causing damage to the CRUZ belt components.

CRUZbelt Merge

Use the conveyor width to accommodate the maximum product width. Loads can weigh as much as 50lb. per foot (74 kg/m) with a MAXIMUM of 75lb. (34kg), total.

NOTICE	
	**Important!** Refer to CRUZbelt Technical Data for more information regarding the conveyor specification.
Failure to follow these instructions can result in property damage or equipment damage.	

Restrictions

#NO.	ISSUE	MITIGATION	EXPLANATION
1	Smooth bottomed totes may slip on steep incline/declines.	Maximum incline/decline angle is 15° for totes.	Proper carton and totes are to be conveyed.
2	Odd shaped or high center-of-gravity loads may tumble on steep incline/declines.	Maximum incline/decline angle is 15° for totes.	Proper carton and totes are to be conveyed.
3	Sharp edges or protrusions may damage the belting.	Product conveyed should not be sharp or unpackaged.	Proper carton and totes are to be conveyed.
4	Oily, Wet, Corrosive, or Abrasive Substances or Conditions.	Will impair the belt's ability to drive and will adversely affect various components.	Must provide a clean and safe environment.
5	Objects with irregular, flexible, or high center-of-gravity loads may tip.	These shapes should not be transported as they may tip or jam while conveying.	Proper carton and totes are to be conveyed.
6	Poly bags, small loads or loads with loose packaging should not be conveyed where Noseunder is required.	The transition rollers may allow for the material to become pulled into the gap.	Proper carton and totes are to be conveyed.

The partly completed machine has been created to:

- Fulfill the specific demands stated in the sales agreement.
- Be used according to instructions and limitations for use set out in this manual.

The partly completed machine is designed and built to work safely if:

- It is used within the limits stated in the contract and in this manual.
- The usage manual procedures are followed.
- Ordinary maintenance operations are performed as indicated.
- Extraordinary maintenance is performed promptly, in case of need.
- Safety devices are not removed and/or modified.
- Safety labels or signs are not removed and/or modified.

9.2 IOM Purpose

IOM Purpose

It is the intent of FORTNA, through this manual, to provide information that acts as a guide in the Installation, Operation, and Maintenance of FORTNA conveyors.

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

NOTICE	
	**Important!** • Must read all manuals. • Manuals must stay with a partially completed machine or completed machine. • All safety rules must be observed when working with, on or at the conveyor system in whatever way. This includes reading all Installation, Operation, Maintenance manuals.
Failure to follow these instructions can result in property damage or equipment damage.	

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. Proper training of operating and maintenance personnel is required by the owner/operator of the equipment. If additional copies of this manual are needed or if you have any question concerning the conveyor, please contact your FORTNA Distributor or FORTNA Lifetime Performance Services at 231-798-4547 or visit fortna-conveyor.com for maintenance videos and other application information.

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.

FORTNA 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.

9.3 Tools

9.3.1 Applicable Tightening Torques

Applicable torque settings are specified in all other cases.

HEXAGON BOLTS/SOCKET SCREWS					
PROPERTY CLASS MARKING					
NOMINAL DIAMETER	**PROPERTY CLASS**	**TIGHTENING TORQUE**		**PRELOAD**	
(mm)		**(Nm)**	**(ft-lb)**	**(kN)**	**(lb)**
M4 X 0.7	4.6	1.0	8 (in-lb)	1.5	333
	8.8	2.6	23 (in-lb)	3.8	858
	10.9	3.7	32 (in-lb)	5.5	1,228
M5 X 0.8	4.6	2.0	18 (in-lb)	2.4	538
	8.8	5.3	47 (in-lb)	6.2	1,387
	10.9	7.5	66 (in-lb)	8.8	1,985
M6 X 1	4.6	3.5	31 (in-lb)	3.4	763
	8.8	9.0	79 (in-lb)	8.8	1,968
	10.9	12.8	113 (in-lb)	12.5	2,816
M8 X 1.25	4.6	8.4	6 (ft-lb)	6.2	1,389
	8.8	21.8	16 (ft-lb)	15.9	3,580
	10.9	31.1	23 (ft-lb)	22.8	5,123
M10 X 1.5	4.6	16.7	12 (ft-lb)	9.8	2,200
	8.8	43.0	32 (ft-lb)	25.2	5,671
	10.9	61.5	45 (ft-lb)	36.1	8,115
M12 X 1.75	4.6	29.1	21 (ft-lb)	14.2	3,197
	8.8	74.9	55 (ft-lb)	36.7	8,240
	10.9	107.3	79 (ft-lb)	52.5	11,792

PRELOAD ESTIMATED AS 75% OF PROOF LOAD FOR SPECIFIC BOLT/SCREW TORQUE VALUES FROM T=KDF WHERE; K=0.17 FOR ZINC PLATED AND DRY CONDITIONS

There are points at which torque measurements should be measured.

- RF Supports.
- Connection plates.

9.3.2 Tools Required

QUANTITY	DESCRIPTION	DIMENSION
2	3/8” Socket extension	mm

QUANTITY	DESCRIPTION	DIMENSION
1	Adjustable wrench	N/A
2	Allen wrench set	mm
1	Belt Lacer Machine per belt width or one per max width.	N/A
2	Dead Blow Hammer	N/A
1	English socket set	Inch
1	English wrench set	Inch
1	Flashlight	N/A
2	Flat head screwdriver	N/A
1	Gates 505C/507C Sonic Tension (Vibration) meter.	N/A
1	Grease gun	N/A
1	Hammer	N/A
2	Impact wrench with impact bit set	mm
2	Joint with extension for screwdriver	N/A
1	Laser level	N/A
2	Level	Up to 4ft
1	Locking pliers	N/A
2	M4 through M12 Torque wrench	N/A
1	Marker	N/A
2	Measuring tape	N/A
2	Metric socket set	mm
2	Metric wrench set	mm
1	Multimeter	N/A
2	Pliers	N/A
1	Plumb line (chalk string)	N/A
1	Plum-Bob or Laser	N/A
2	Putty knife	N/A
2	Ratchet belt	N/A
2	Screw Clamps	N/A
2	Small snips	N/A
1	Socket wrench set	mm
2	Square or a 90° triangle	N/A
1	Tape	N/A
1	Tongue and groove pliers	N/A
2	Torque wrench set to 55 Ft./Lb.	N/A
2	Utility knife	N/A
1	Voltage Meter	N/A
2	Wire cutter	N/A
2	Wire Strippers	N/A
2	Wire tracer	N/A

NOTICE

Note!

- The tools required are designed for one work team or 2 people.

NOTICE	
	• The conveyor equipment is designed for one work team.
Failure to follow these instructions can result in property damage or equipment damage.	

9.3.3 Other Tools (Optional)

What is marked in the following table is an option to have at the work site for ease of maintenance.

QUANTITY	DESCRIPTION	DIMENSION
---	---	---

9.4 Installation Information

General Procedures

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

Shrouds

Translucent PVC shrouds are available in 5' lengths to enclose the CRUZchannel or C6-channel with a decorative cover over the CRUZcontrol® components. Mounting brackets for the C6 shrouds are installed in the field. Shrouds and mounting kits are shipped loose for field installation.

Field modification is required to the shrouds if they are used with adjustable channel guardrail. Optional jackets mounted to the bottom flange of conveyor can be used as an alternate mount.

Note:

When installing conveyor shrouds, every fourth shroud requires safety label information and in addition, every 4th or 5th section requires a FORTNA label. Alternate labels so they are not on the same shroud.

9.5 Supports & Connections

NOTICE	
	**Important!** • Must read all manuals. • Manuals must stay with a partially completed machine or completed machine. • All safety rules must be observed when working with, on or at the conveyor system in whatever way. This includes reading all Installation, Operation, Maintenance manuals.
Failure to follow these instructions can result in property damage or equipment damage.	

Support & Connections IOM#1226673 (Original language is in English) or visit: fortna-conveyor.com

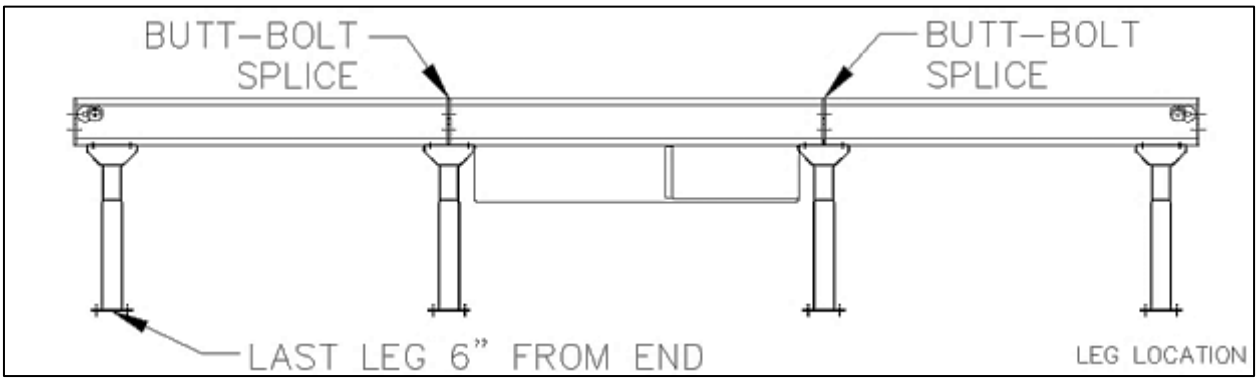
9.6 Support Arrangements

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.

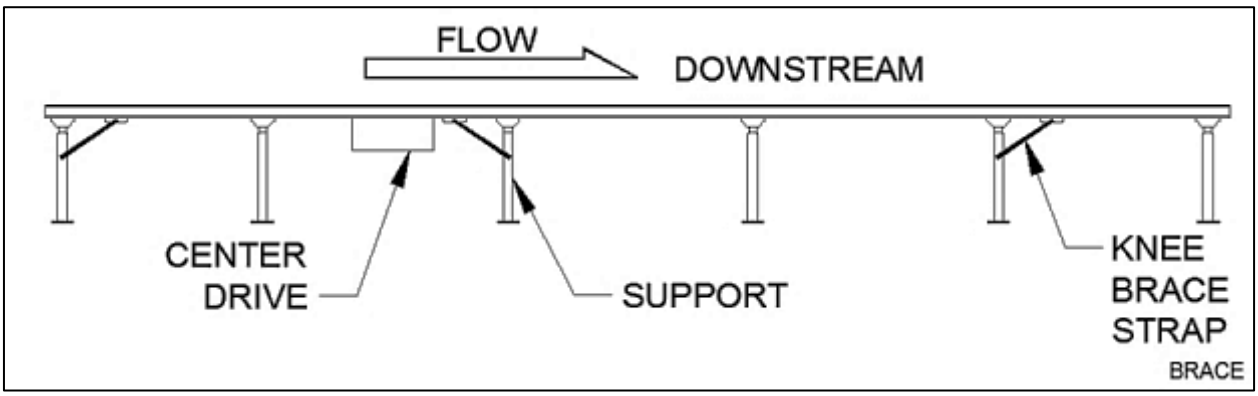


Leg elevations are shown on the elevation drawings. Leg elevation can also be set by subtracting 6-3/8” from the desired top of belt elevation.

Note:

Top of Belt (TOB) minus 6-3/8” = Top of Support

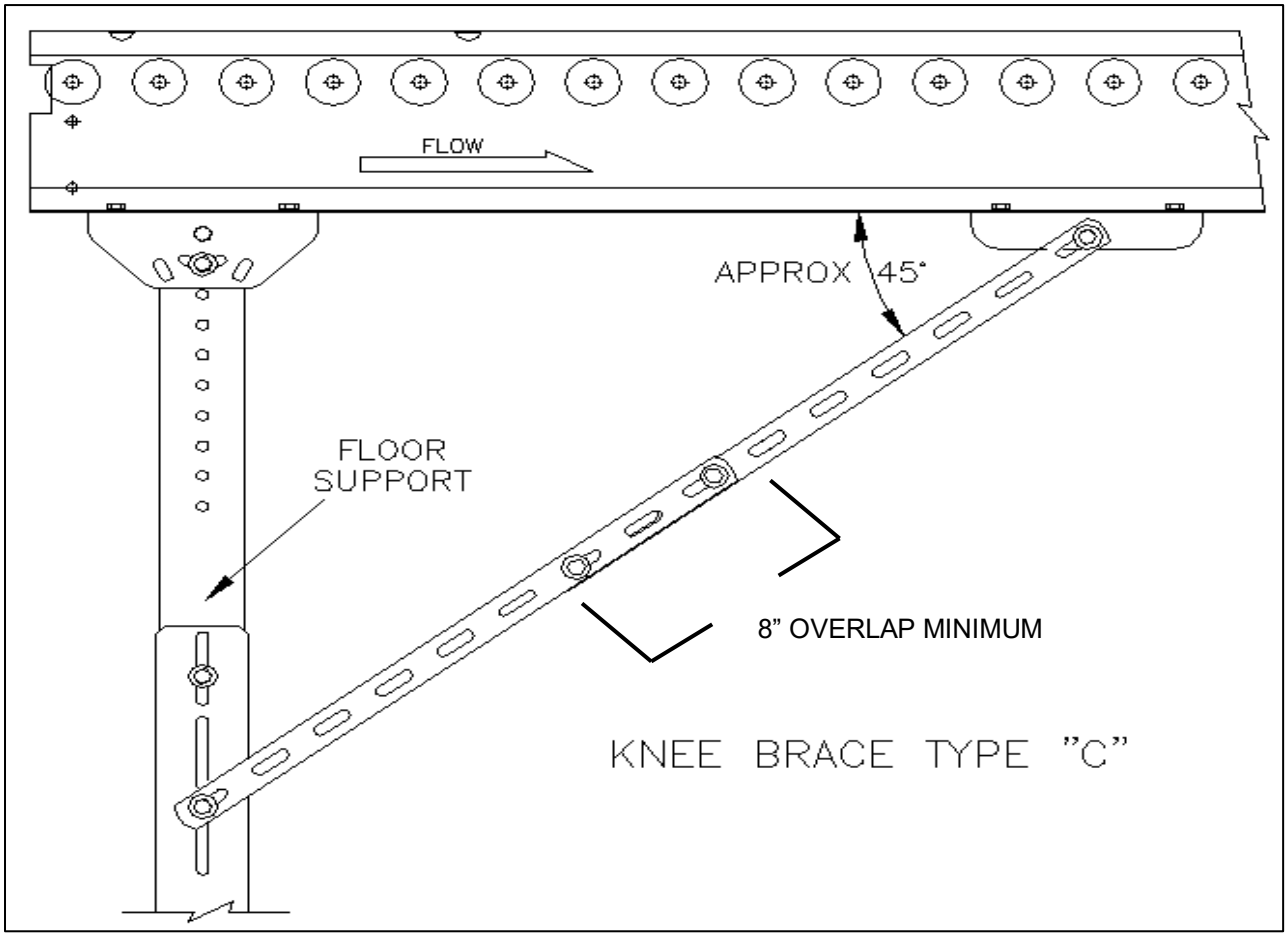
If knee braces are required, they are installed on approximately 30’ centers as shown below.



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.

⚠WARNING
Warning! • Leg uprights must be vertical. Adjust stand head to compensate for slope.
Indicates a medium level potentially hazardous situation that, if not avoided, could result in death or serious injury.

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.



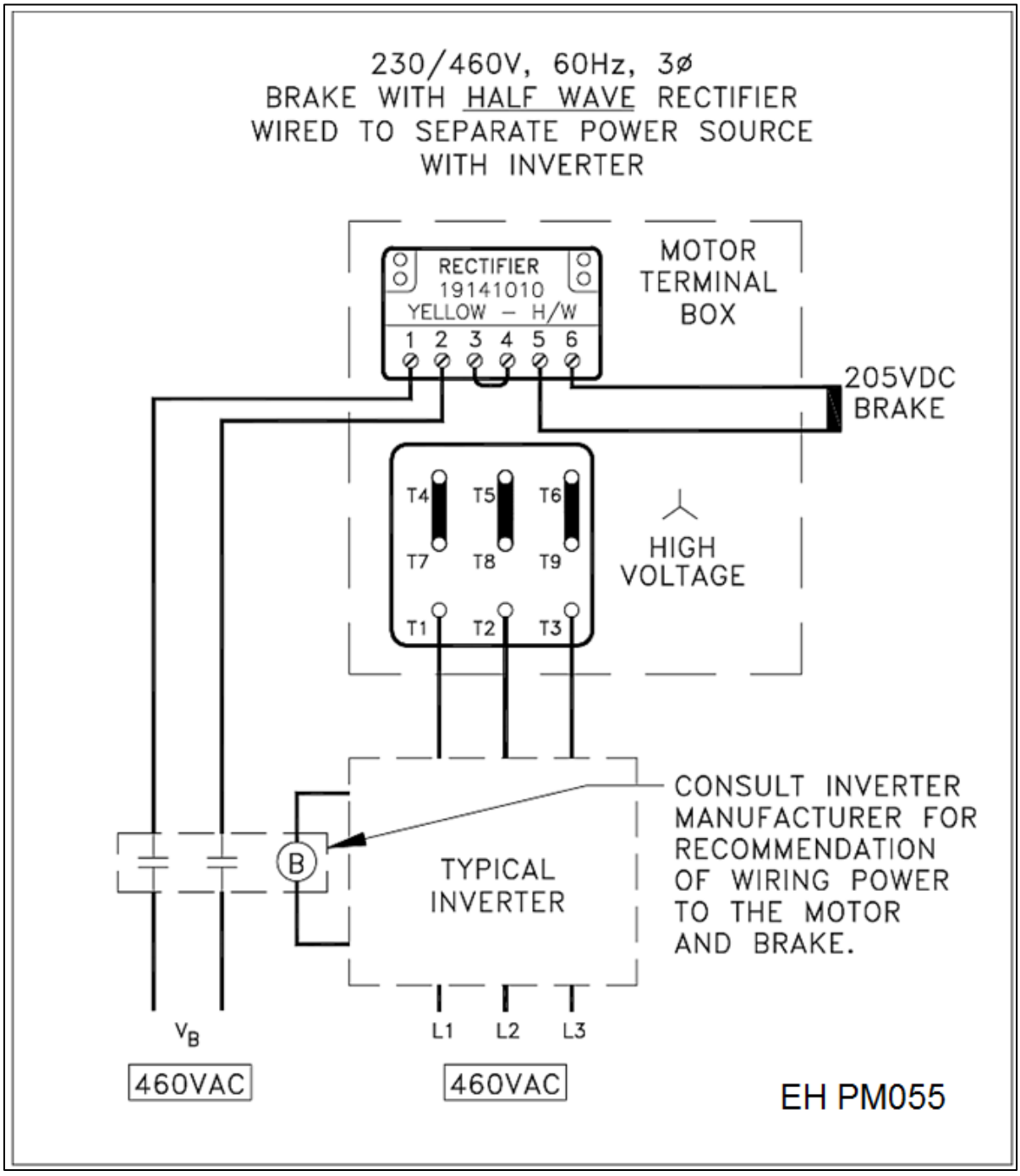
9.7 Stability

FORTNA equipment, when installed as instructed in the Supports and Connections doc, ensures the stability of the equipment.

The partly completed machinery is packaged and delivered per the "Transportation and Handling Document" in such a manner to ensure the stability of the equipment during transport.

Instruction on the proper handling of equipment during installation can be found in the "Transportation and Handling Document".

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



9.9 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.

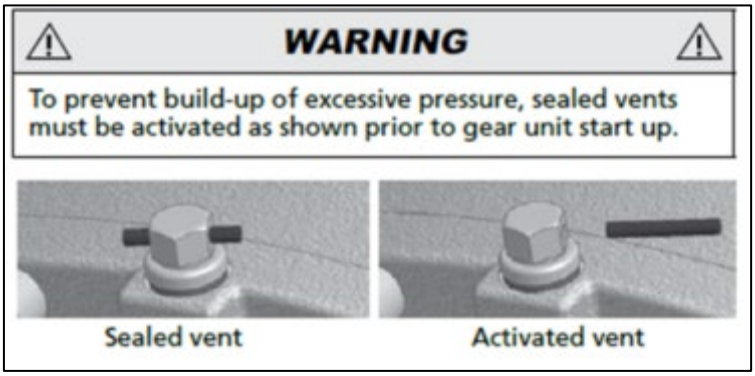
Note:

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

⚠CAUTION	
	**Caution** • 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.
Indicates a low level potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It may also be used to alert against unsafe practices or for the protection of the equipment.	

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

To prevent build-up of excessive pressure, sealed vents must be activated as shown below, prior to gear unit start up.

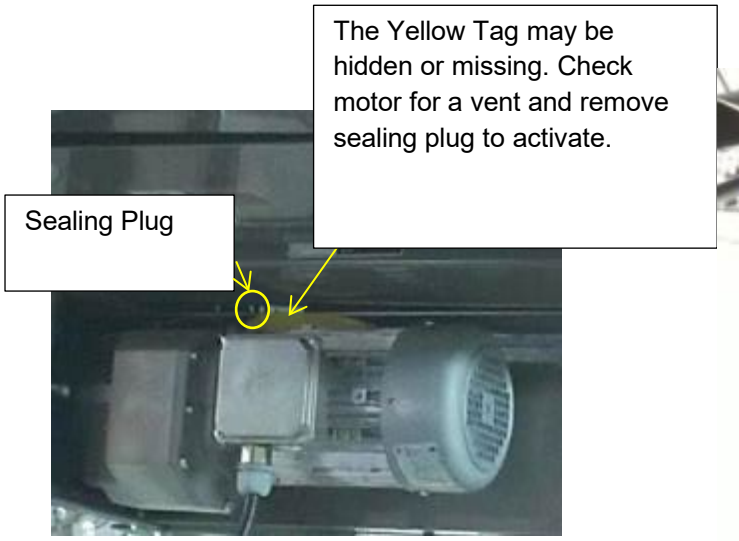


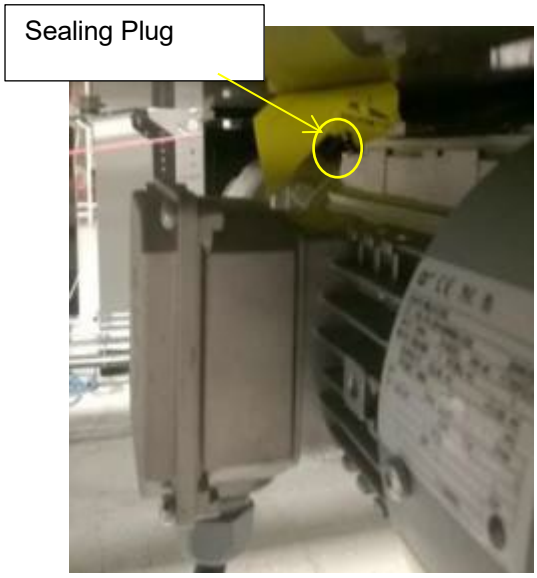
Original language is in English

Note:

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

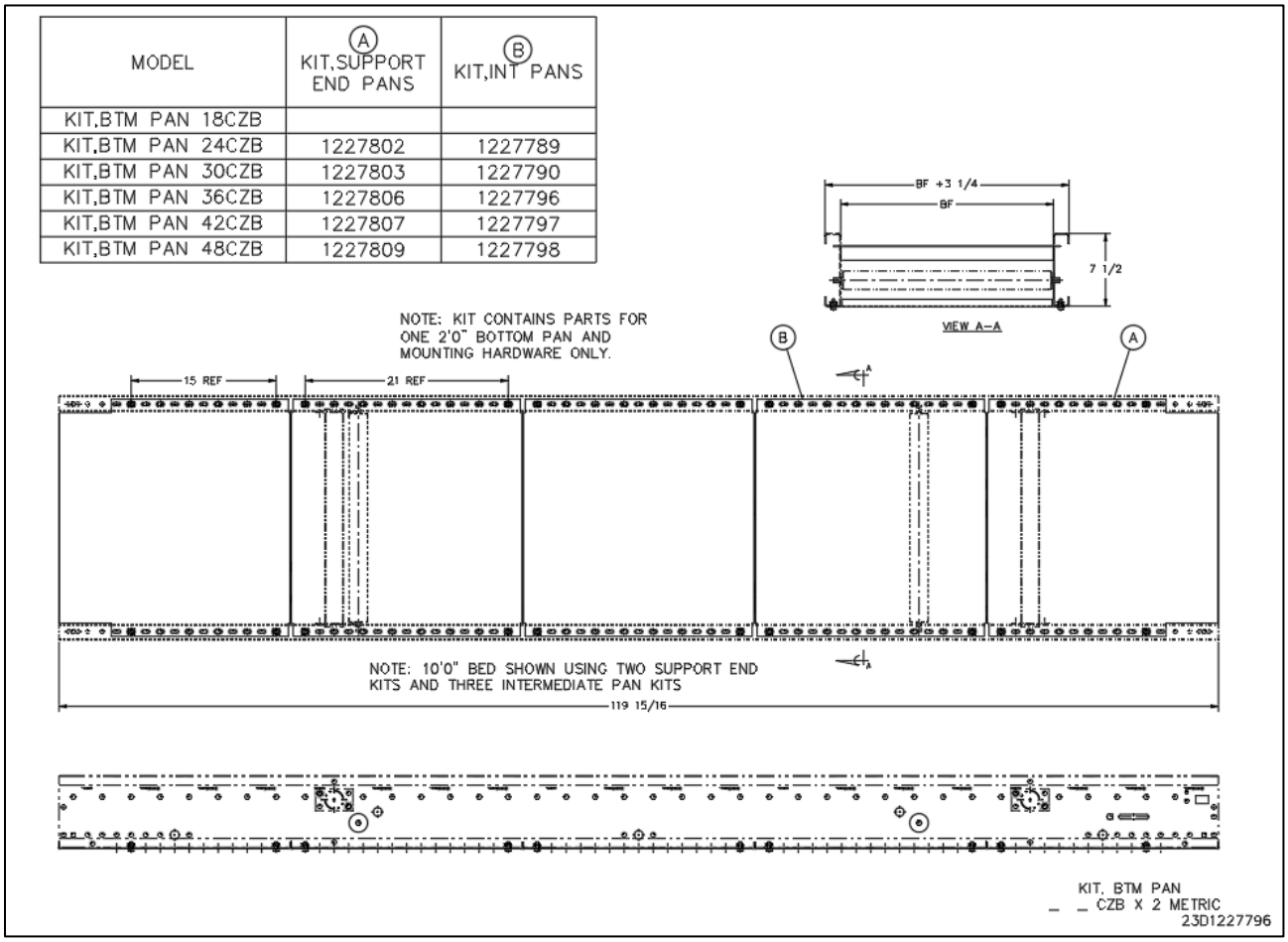
The following pictures are examples showing where vent plugs may be located depending on the product line and motor position.





9.10 Bottom Pans

MODEL	(A) KIT,SUPPORT END PANS	(B) KIT,INT PANS
KIT,BTM PAN 18CZB		
KIT,BTM PAN 24CZB	1227802	1227789
KIT,BTM PAN 30CZB	1227803	1227790
KIT,BTM PAN 36CZB	1227806	1227796
KIT,BTM PAN 42CZB	1227807	1227797
KIT,BTM PAN 48CZB	1227809	1227798



Bottom pans are safety covers that provide operator protection from running belts and debris and are highly recommended up to 8ft (2.4m) from the floor.

Bottom pan kits include (1) 2’0” bottom pan and mounting hardware.

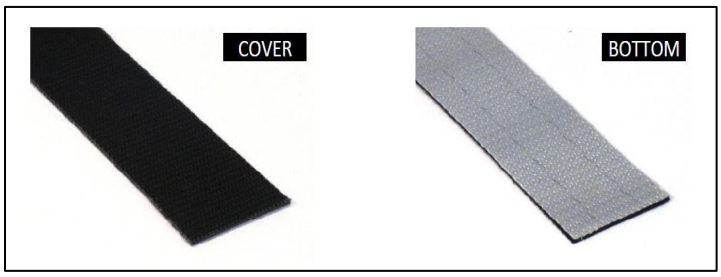
9.11 Belt Material and Lacing

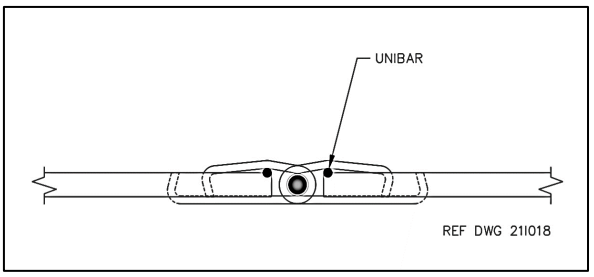
BELT MATERIAL AND LACING (General)	BELT WIDTH	BELT LENGTH	TEMPERATURE RANGE	STRENGTH	ACCEPTABLE STRETCH	LACING	LACING PIN
BELT,CZB _ _-9/16" X _ _ _'- _ _" EWX (21I018) SPARKS **MONO FLEX BU 200 I** POLYURETHANE IMPREGNATION (ANTI-STATIC QUIET WEAVE)	BF - 7/16" +- 1/16" (72" MAX WIDTH)	OAL ± 1/2" (MEASURE BELT END TO BELT END NOT INCLUDING FASTENERS OR LACING)	20°F TO 180°F	74 LBS @ 1% STRETCH	.04 - 1% (MHS RECOMMENDED STRETCH 0.5%)	CLIPPER UCM36SPSS (PN 1234469)	CLIPPER DSS065 (316 STAINLESS STEEL) (PN E0034789)
BELT,CZB _ _-9/16" X _ _ _'- _ _" HOZ (21I006) SPARKS **MONO FLEX BP 210 QW** 2-PLY SMOOTH BLACK PVC (ANTI-STATIC QUIET WEAVE)			20°F TO 180°F	68 LBS/INCH	.04 - 1% (MHS RECOMMENDED STRETCH 0.5%)	CLIPPER UCM36SS (PN 1100706)	
BELT,CZB _ _-9/16" X _ _ _'- _ _" INC (21I007) SPARKS **MONO FLEX BP 290** QW 2-PLY RIBBED BLACK PVC (ANTI-STATIC QUIET WEAVE)			23°F TO 175°F	46 LBS/INCH	.04 - 1% (MHS RECOMMENDED STRETCH 0.5%)		

BELT MATERIAL (Differences)	BELT THICKNESS	COVER MATERIAL	COVER HARDNESS	WEIGHT	COEFICENT OF FRICTION	
					STEEL	CARDBOARD
BELT,CZB _ _-9/16" X _ _ _'- _ _" EWX (21I018) SPARKS **MONO FLEX BU 200 I** POLYURETHANE IMPREGNATION (ANTI-STATIC QUIET WEAVE)	.075" +-.015 (RANGE .060" - .090")	Polyurethanre/PVC	NA	0.45 LBS /SQUARE FOOT	0.20 (BOTTOM WHITE SURFACE)	0.23 - .28 PVC/PU (TOP COVER)
BELT,CZB _ _-9/16" X _ _ _'- _ _" HOZ (21I006) SPARKS **MONO FLEX BP 210 QW** 2-PLY SMOOTH BLACK PVC (ANTI-STATIC QUIET WEAVE)	.071" +-.015 (RANGE .056" - .086")	PVC	78 DUROMETER	0.45 LBS / SQUARE FOOT	0.22 (BOTTOM SURFACE)	0.37 PVC (TOP COVER)
BELT,CZB _ _-9/16" X _ _ _'- _ _" INC (21I007) 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"	0.594 LBS/ SQUARE FOOT	0.22 (BOTTOM SURFACE)	0.95 PVC (TOP COVER)

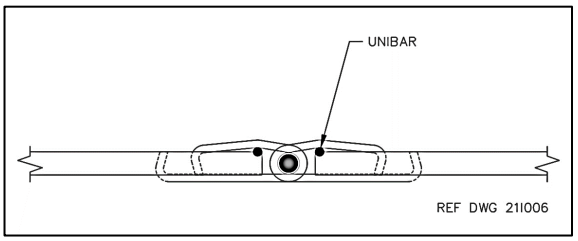
CRUZbelt conveyor must be used with mono-filament belting. Use of any other belting will damage the conveyor. Consult your FORTNA Conveyor distributor for belt specifications.

Mono Flex BU 200 (EWX)

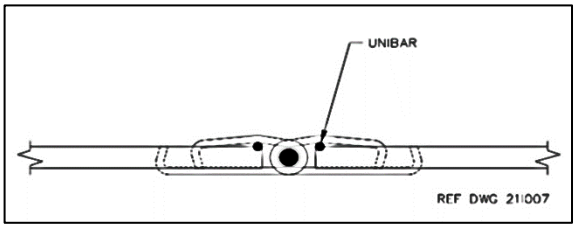




Mono Flex BP 210 QW (HOZ)



Mono Flex BP 290 QW (INC)



9.12 Conveyor Set Up

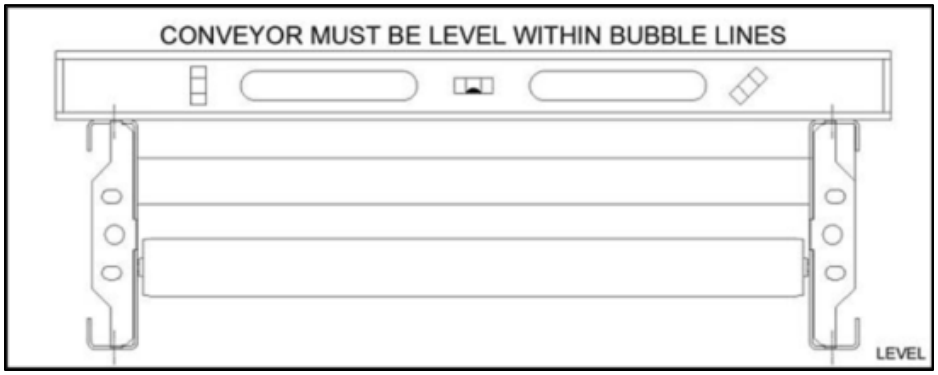
Place each bed in position per layout drawing.

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:

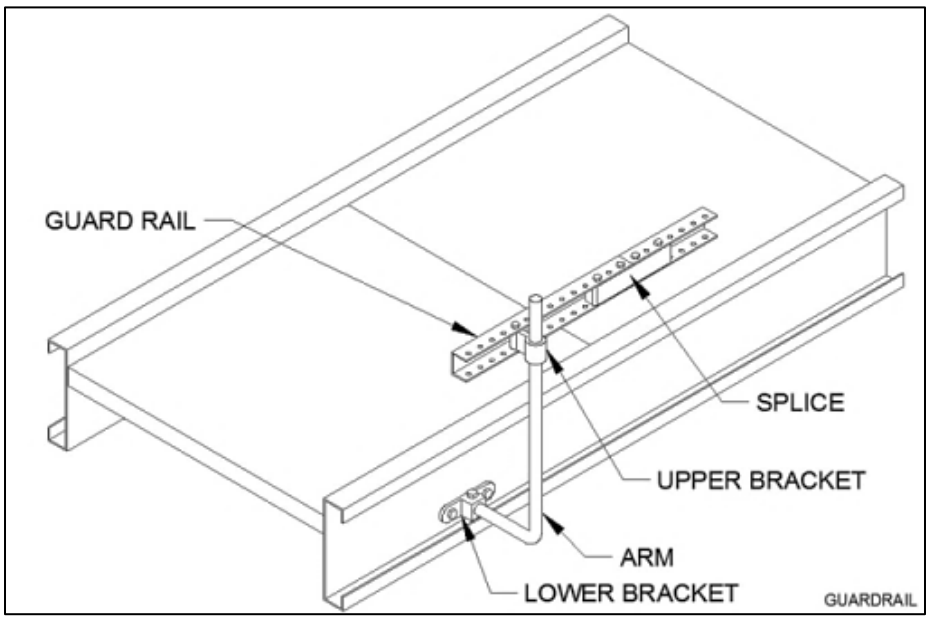
Tighten support bolts and anchor to floor.

Install any required guard rail as shown:

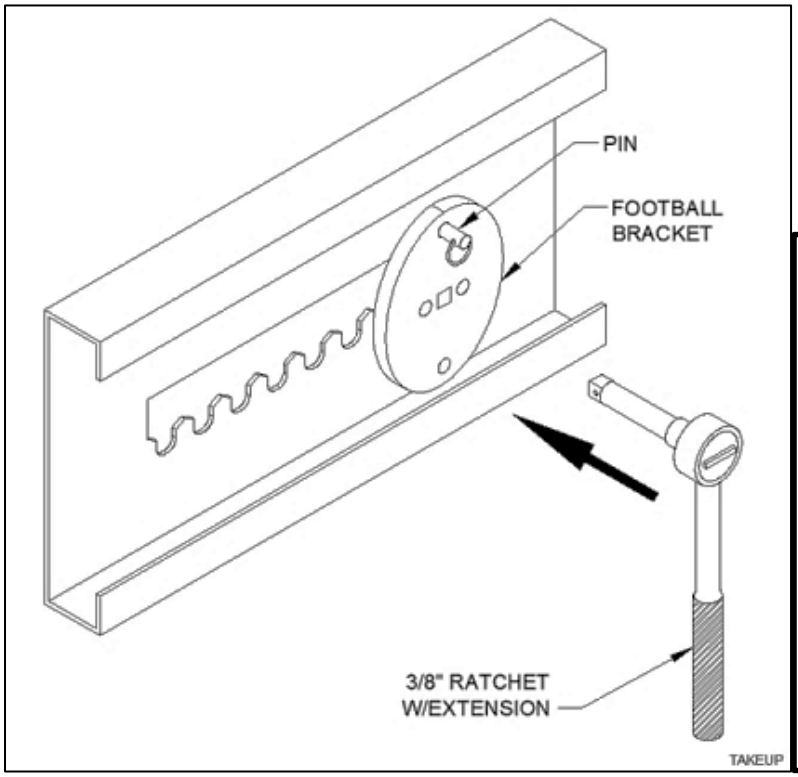


Conveyor must be level

9.13 Guardrail assembly

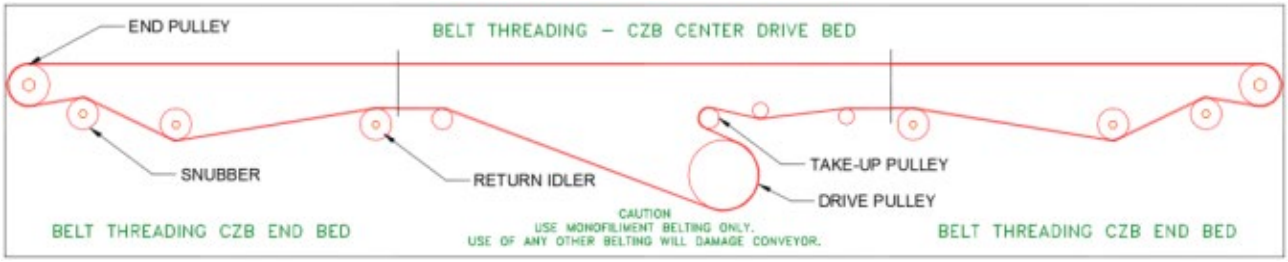


9.14 CRUZbelt W/CAM Take-up



CAMS must be set vertical and aligned the same on both sides. See Caution and pictures below.

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



9.15 Standard CRUZbelt Lacing

CRUZbelt LACING INFORMATION	
PART NUMBER	**DESCRIPTION**
1234469	LACE, CZB CLIPPER UCM36 SPSS
1100706	LACE, CZB CLIPPER UCM36 SS12
E0034789	LACING PIN, LACING .065 DURA STAINLESS

Reference “Conveyor Set Up” chapter for more details.

9.16 Routing the belt Instructions

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. **DO NOT** over tension the belt by using a “cheater bar,” or “long handled bar” or “breaker bar” on the ratchet bar or using two people with ratchets. The belt should be just tight enough to drive the product.

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

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

NOTICE	
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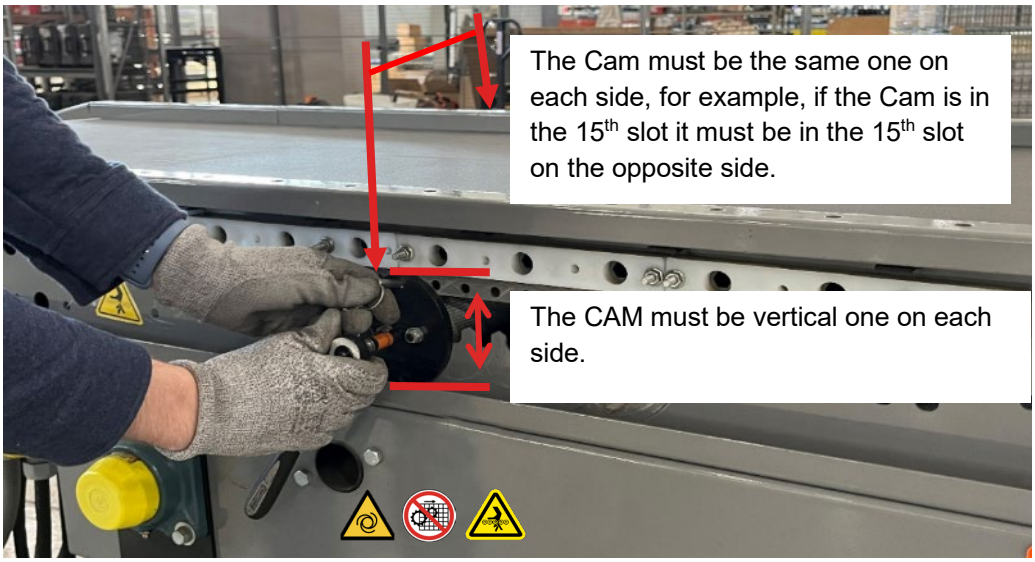
Failure to follow these instructions can result in property damage or equipment damage.	

⚠CAUTION

Caution

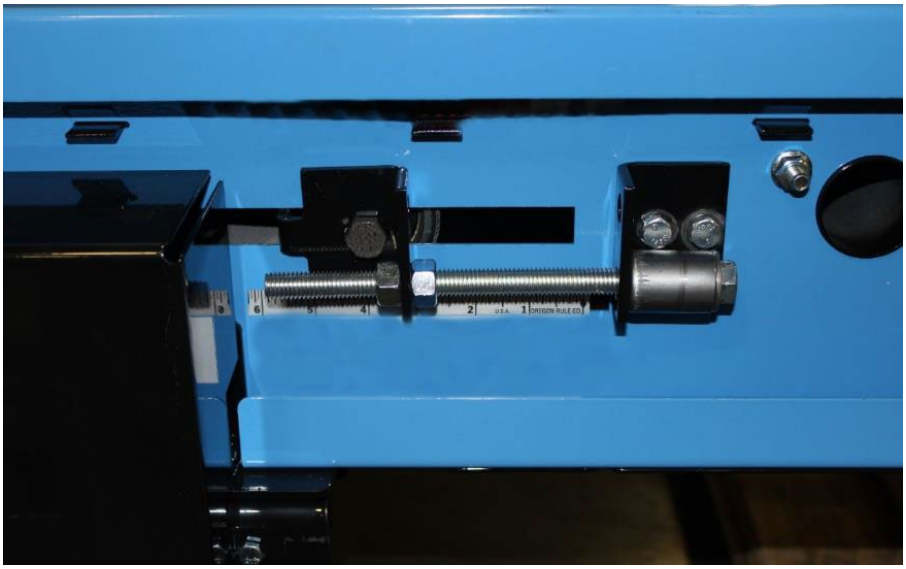
- Do not run the conveyor without replacing both quick release pins.
- The CAM (football bracket) must be vertical on both sides and the Cam must be aligned in the same vertical hole position on both sides. The Cam this must not be offset from each other. (See pictures below)
- Do not over tighten the belt as this causes excessive stress on the Drive Drum Shaft and associated bearings. DO NOT use more than 15 ft-lb. of torque on the Cam (football bracket).
- Excessive belt tension will cause premature failure of the take-up assembly.



Indicates a low level potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It may also be used to alert against unsafe practices or for the protection of the equipment.

Original language is in English

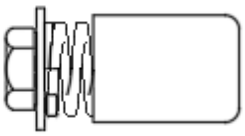
9.17 CRUZbelt 4 with Spring Take-up



NOTICE

Important!

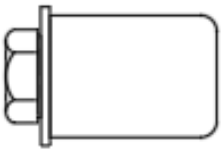
- Must read all manuals.
- Manuals must stay with a partially completed machine or completed machine.
- All safety rules must be observed when working with, on or at the conveyor system in whatever way. This includes reading all Installation, Operation, Maintenance manuals.



IMPROPER TENSION

PROPER TENSION IS REACHED WHEN SPRING IS FULLY COMPRESSED INTO SPRING CUP.

TAKE-UP PULLEY MUST BE SQUARE WITH EQUAL DIMENSIONS ON BOTH SIDES. DO NOT OVER TIGHTEN.



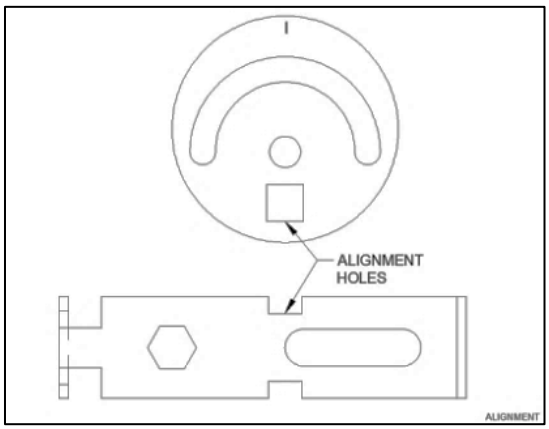
PROPERLY TENSIONED

Failure to follow these instructions can result in property damage or equipment damage.

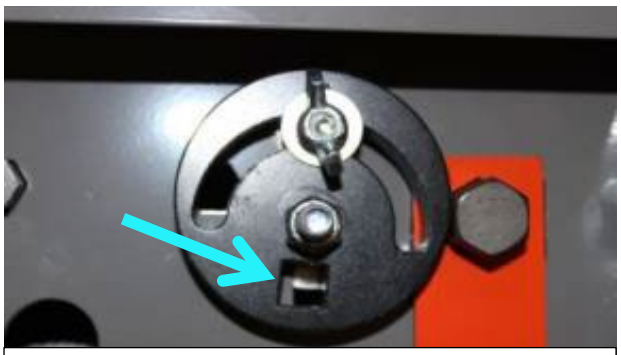
9.18 Belt Alignment

NOTICE
Important! • Must read all manuals. • Manuals must stay with a partially completed machine or completed machine. • All safety rules must be observed when working with, on or at the conveyor system in whatever way. This includes reading all Installation, Operation, Maintenance manuals.
Failure to follow these instructions can result in property damage or equipment damage.

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” socket drive or key stock can be inserted into the holes for quick alignment.



Hole Alignment



Move CAM over to align square holes. (Mid-point Location)

Slide snubber bracket over to align square holes. (Mid-point Location)

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: fortna-conveyor.com

9.19 Belt Tracking

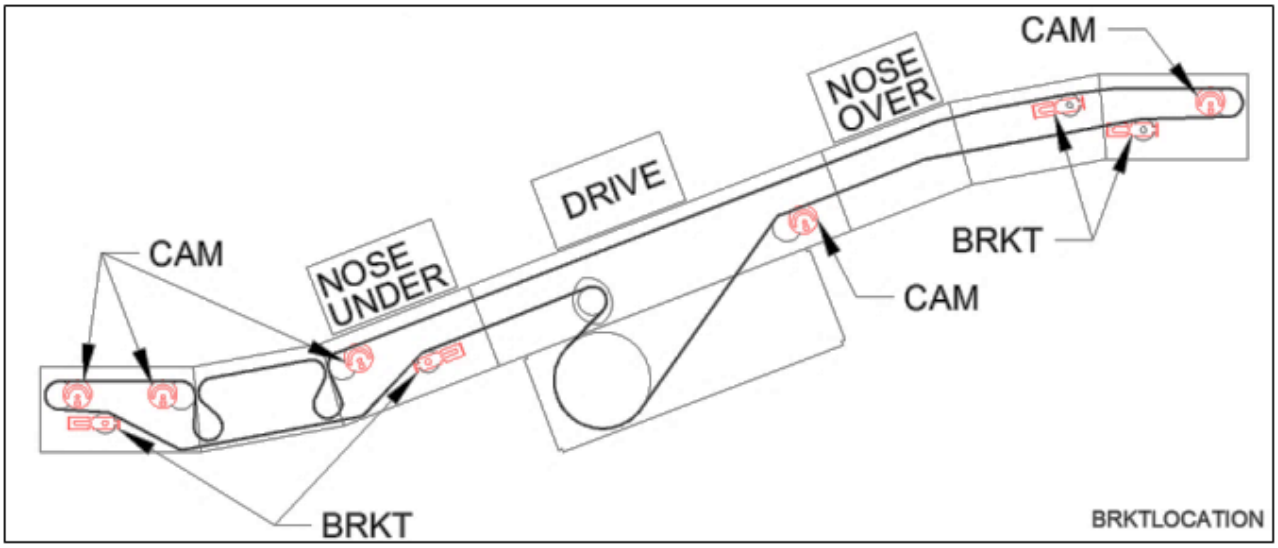
NOTICE
Notice! • Must read all manuals. • Manuals must stay with a partially completed machine or completed machine. • All safety rules must be observed when working with, on or at the conveyor system in whatever way. This includes reading all Installation, Operation, Maintenance manuals.
Failure to follow these instructions can result in property damage or equipment damage.

⚠WARNING
Warning • Only qualified personnel should be allowed to track the belt. • Use caution since conveyor must be running during the tracking procedure.
Indicates a medium level potentially hazardous situation that, if not avoided, could result in death or serious injury.

ALL PULLEYS AND SNUBBERS MUST BE SQUARE, and the 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” chapter above. The conveyor must be wired to run the correct direction. The belt should be tensioned tight enough to drive the heaviest product.

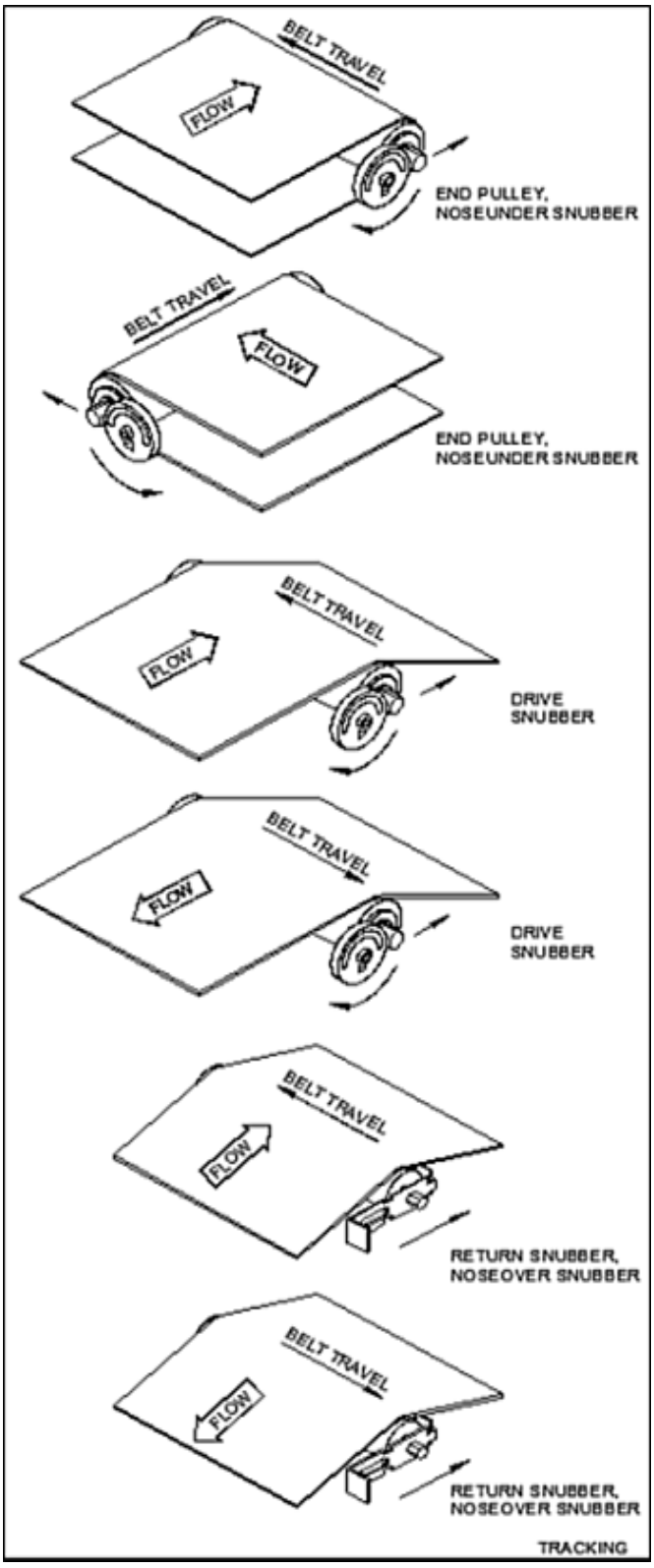
Belt tracking is accomplished by moving the snubber (belt return roller) tracking brackets (fine adjustments) first from their squared positions. The use of the tracking cams is a coarse adjustment that should only be used if necessary.

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.



Original language is in English

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 **must not be** allowed to contact the frame near any end pulley or snubber roller.

⚠CAUTION	
	**Caution!** Belt must not be allowed to contact the side frame near an end pulley or a snubber roller.
Indicates a low level potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It may also be used to alert against unsafe practices or for the protection of the equipment.	

9.19.1 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.

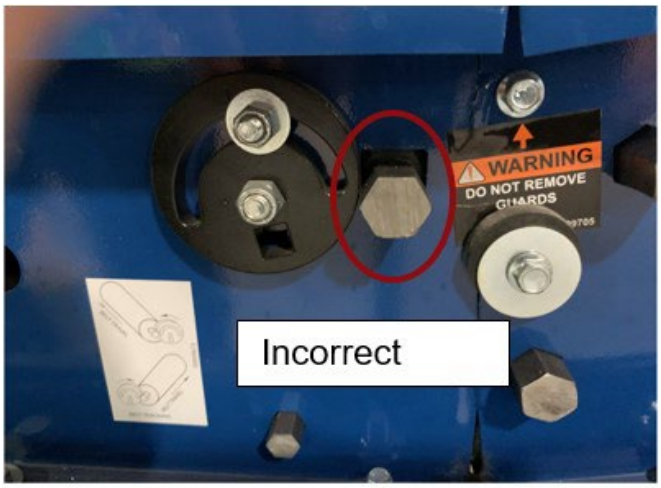
Adjust bracket or cam slightly and watch belt for several belt revolutions before continuing to ensure the belt location is stabilized.

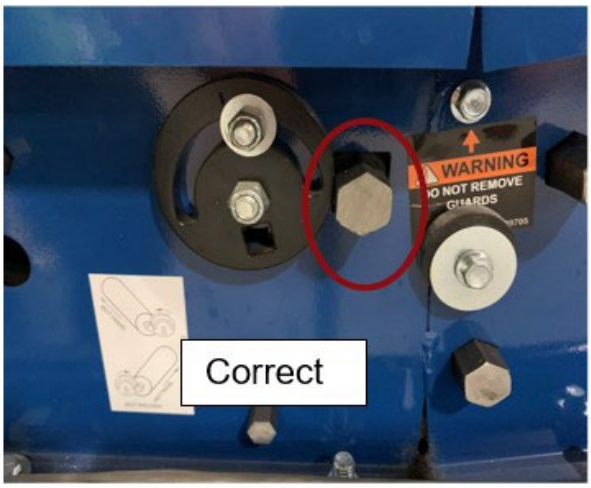
9.19.2 CRUZbelt Noseunder Hex Axle Position

⚠CAUTION	
	Caution! CRUZbelt Noseunder - Hex Axle Position must be set with points up and flat side against the tracking cam.
Indicates a low level potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It may also be used to alert against unsafe practices or for the protection of the equipment.	

Note:

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





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

NOTICE

Important!

- Must read all manuals.
- Manuals must stay with a partially completed machine or completed machine.
- All safety rules must be observed when working with, on or at the conveyor system in whatever way. This includes reading all Installation, Operation, Maintenance manuals.

Failure to follow these instructions can result in property damage or equipment damage.

CRUZbelt Empty Carton Conveyor is intended to transport empty corrugated cartons only. Transporting loose paper or cardboard could result in debris catching in the end guard. If this is the case, the end guard can be removed ONLY after the user conducts an onsite risk assessment of the equipment and the appropriate risk mitigation steps are taken.

⚠WARNING

Warning!

- End guard may need to be removed when transporting loose paper or cardboard on ECC ONLY!
- **It is the integrator's responsibility to conduct an appropriate risk assessment before removing end guards.**
- **Guard can typically be removed safely for Empty Carton Conveyor end guard that is isolated by 2.5m of safety distance.**

When transporting loose paper or cardboard the end guard should be removed from the discharge end of the Empty Carton Conveyor only!

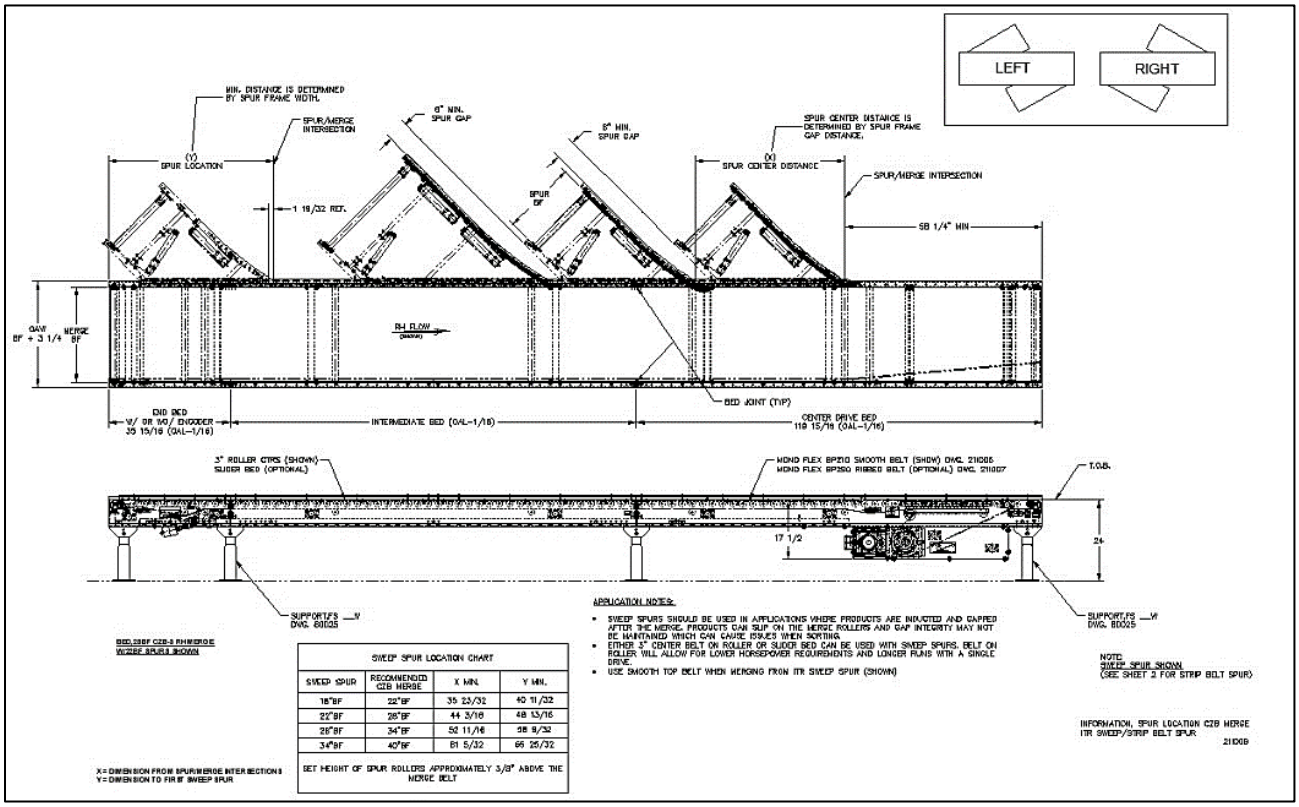
⚠WARNING

Debris in the Empty Carton Conveyor discharge end is causing a jam because of the end guard.

It is the integrator's responsibility to conduct an appropriate risk assessment before removing end guards. The end guard can typically be removed safely for Empty Carton Conveyor only, if it is isolated by 2.5m of safety distance.

Indicates a medium level potentially hazardous situation that, if not avoided, could result in death or serious injury.

9.20 CRUZbelt Merge



Standard Equipment

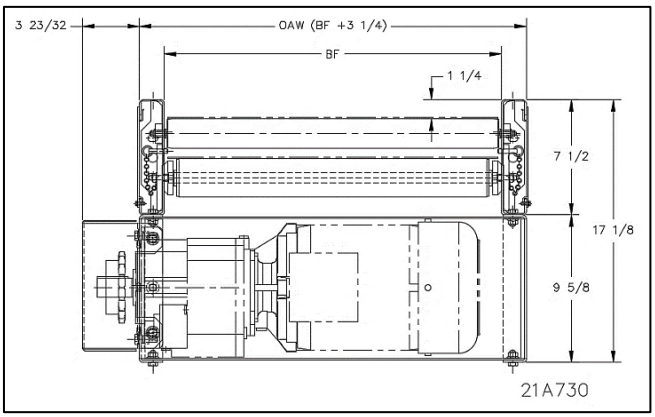
Belt:

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 lb. per inch of width, tensile strength, clipper lacing.

NOTE:

CRUZbelt requires a monofilament belt. Installation of any other type of belt will damage the internal components of CRUZbelt and will immediately and permanently **VOID all FORTNA Conveyor warranties**.

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"



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.

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 drivetrains.

Controls

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10 FORTNA Controls Safety Guidelines

The following basic conveyor control safety guidelines are recommended by FORTNA even though Business Partner may or may not purchase conveyor controls from FORTNA. 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 may be subject to local safety codes requiring e-stops. It is the responsibility of the integrator to check with state and local authorities on the need and application of e-stops.

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.

04/06/2023

NOTE:

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

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

Emergency stops should be located throughout the system. Their location will depend on 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 mushroom-style 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.

10.1 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 are tight.
- Check product clearance to overhead structures.
- Simulate all operational functions with actual product.
- All guards in place with proper clearance.
- All 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.

⚠WARNING	
	**Warning!** • The Installation Supervisor must be experienced with conveyor and qualified in the mechanics of the equipment and enforce safe working procedures for the protection of the crew, customer, and customer's property. • 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 stoppage.
Indicates a medium level potentially hazardous situation that, if not avoided, could result in death or serious injury.	

10.2 Operating Safety Precautions

Only trained personnel shall be allowed to operate a conveyor. Training shall include instruction in operation under normal conditions and emergency situations. It is very important to instruct personnel in proper conveyor use, including the location and function of all controls.

- Special emphasis must be given to emergency stop procedures and stopping devices or starting devices or both, must always be kept free of obstructions to permit ready access.
- Before restarting a conveyor, which has been stopped because of an emergency, an inspection of the conveyor must be conducted, and the cause of the stoppage determined. The starting device must be locked out before any attempt is made to correct the cause of stoppage.
- Personnel working on or near a conveyor shall be instructed as to the location and operation of all important stopping devices.
- Trained maintenance personnel are to remove jams and blockages.
- Maintain enough clearance on each side of all conveyor units for safe adjustment, operations, and maintenance of all components.
- The area around loading and unloading points shall be kept clear of obstructions that could endanger personnel.
- Walking or riding on a partly completed machine/moving conveyor must be prohibited. No person shall ride, sit, or stand on a conveyor under any circumstances. Use the provide crossovers or gates at sufficient intervals.
- A conveyor shall be used to transport only approved material that the conveyor is designed to handle safely.
- Under no circumstances shall the safety features of the conveyor be altered as this would endanger personnel.
- Routine inspections and preventive and corrective installation maintenance programs shall be conducted to ensure all the guards and safety features and devices are retained and function properly.
- Personnel shall be alerted to the potential hazard of entanglement in conveyors caused by items such as long hair, long beards, loose clothing, and jewelry.
- Partly completed machine/ conveyor shall not be newly installed, maintained, or serviced while in operation unless proper installation, maintenance, or service requires the conveyor to be in motion. In this case, personnel shall be made aware of the hazards and how the task may be safely accomplished.

10.3 General Electrical Requirements

⚠WARNING

Warning!

- All electrical controls must be installed, wired, and connected by a licensed electrician only.
- All motor controls and wiring must conform to your local approved electrical codes and standards. Since specific electrical codes vary from one area to another, be sure to check with proper authorities before starting.

Indicates a medium level potentially hazardous situation that, if not avoided, could result in death or serious injury.

NOTICE

Note!

All controls equipment is covered by the original manufacturer's equipment warranty.

Failure to follow these instructions can result in property damage or equipment damage.

⚠DANGER

Danager!

All safety devices, including wiring of electrical safety devices, shall be arranged to operate in a “fail safe” manner. That is, if power failure or failure of the device itself would occur, a hazardous condition must not result.

Indicates a high level potentially hazardous situation which, if not avoided, will result in death or serious injury.

⚠DANGER

Danager!

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 stoppage.

Indicates a high level potentially hazardous situation which, if not avoided, will result in death or serious injury.

10.4 Electrical / Gearmotor

⚠WARNING

Warning!

- All electrical controls must be installed, wired, and connected by a licensed electrician.
- All motor controls and wiring must conform to your local wiring codes.

Indicates a medium level potentially hazardous situation that, if not avoided, could result in death or serious injury.

NOTICE

Note!

- All Standard Gearmotor with brake Coil Rectifiers are Half-Wave and are suitable only for 400VAC.
- 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 400VAC.

Failure to follow these instructions can result in property damage or equipment damage.

The voltage of the motor will be stamped on the name plate. This voltage must match the 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.

⚠WARNING

Warning!

- VFD s (variable frequency drive) motor controllers may not be directly connected to any Gearmotor with brake. Brake Coil Rectifier as they are not compatible, and the motor/brake will not completely release.

⚠WARNING	
	• VFD connection to Brake Coil Rectifier will void Gearmotor with brake warranty.
Indicates a medium level potentially hazardous situation that, if not avoided, could result in death or serious injury.	

Consult the wiring diagram on 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 voltages. If primary voltage is changed, the transformer must be changed, according to the wiring diagram found on the transformer.

Motors use the HAN Q4 connector for power delivery.

⚠WARNING	
	**Warning!** Before restarting a conveyor, which has been stopped because of an emergency, an inspection of the conveyor shall be made, and the cause of the stoppage determined. The starting device shall be locked out before any attempt is made to correct the cause of the stoppage.
Indicates a medium level potentially hazardous situation that, if not avoided, could result in death or serious injury.	

CRUZbelt Maintenance

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11 CRUZbelt Preventive Maintenance & Service

11.1 General Preventive Maintenance

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

FORTNA 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 frequent maintenance at first, and then lengthening 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.

11.2 General Maintenance Obligations

GENERAL MAINTENANCE OBLIGATIONS	
 	**Must Do,** Continuous handling equipment shall be kept in proper working condition and maintained in accordance with the manufacturer's instructions.
	Must Do, Inspection, adjustment, maintenance and cleaning of moving parts shall be carried out regularly in a safe manner according to the manufacturer's instructions.
	Must Do, if possible, inspection and adjustment of continuous mechanical handling equipment, in motion or in use, shall only be conducted with guards in position.
	Must Do, Displacing or removal of a guard and/or neutralization of a safety device shall be carried out in accordance with 6.3.3 of EN ISO 12100:2010.
	Must Do, Repairs and removal of protective enclosures or panels shall only be carried out after stopping the equipment and starting devices have been rendered inoperative by qualified persons.
	Must Do, carry out maintenance operations with the partly completed machine switched off. Do not lubricate moving parts.
	Must Do, 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
Indicates a medium level potentially hazardous situation that, if not avoided, could result in death or serious injury.	
Failure to follow these instructions can result in property damage or equipment damage.	

11.3 Safety Warnings

⚠WARNING

Warning!

- The maintenance operations must be carried out by qualified and authorized personnel.
- Maintenance of the partially completed machine includes modifications (inspection, adjustment, and replacement) that become necessary following normal usage.

Indicates a medium level potentially hazardous situation that, if not avoided, could result in death or serious injury.

⚠WARNING

Warning!

For proper maintenance operations:

- Use only authentic spare parts and tools that are suitable and in good condition.
- Respect the frequency of intervention provided in the IOM manual for scheduled maintenance (preventive and regular maintenance).
- The distance (indicated in time or in working cycles) between operations must be understood as the maximum acceptable, so it must not be exceeded, however, it can be reduced.
- Constantly supervise the partially completed machine and promptly verify the cause of potential problems such as excessive noise, overheating, fluid leaks, etc. repair them; the prompt removal of any cause of malfunction or failure prevents further damage to equipment and safeguards operators' safety.
- The partially completed machine maintenance personnel must be well trained and have an in-depth knowledge of safety regulations; unauthorized personnel must remain outside of the work area during operation.
- Cleaning and adjustment activities must also be carried out only during the maintenance phase and with the partly completed machine stopped and de-energized and the electrical panel disconnected.

- Prohibit walking, sitting, or riding on conveyor by anyone.
- Care should be taken when servicing any conveyor to prevent accidental injury.
- All moving parts are potentially dangerous.
- Before starting any maintenance operation on the partly completed machine, isolate, and padlock all energy sources. Affix the sign “MACHINE BEING SERVICED-DO NOT POWER” near the machine.
- When the partly completed machine is being serviced, to stop it from accidentally being started up, press the emergency mushroom button, and display the following signs: "CAUTION! MACHINE UNDERGOING MAINTENANCE".

⚠WARNING	
	• Must wear all protective equipment such as gloves, goggles, boots, and clothing as required to the operation. • During maintenance operations, unauthorized personnel must remain in the vicinity of the operating area. If the operation involves removing protections, set barriers around the area and display signs forbidding access to anyone who is not directly involved in the maintenance task. • Perform only the tasks within your competence (Mechanical, Electrical, Hydraulic) for which you are permitted to intervene. Utilize the most suitable instruments and the most suitable for troubleshooting and maintenance. • The need to place the partly completed machine in operating conditions and/or with protections disabled, requires an adequate competence and knowledge and extreme caution by the maintenance engineer who must be adequately trained on the possible and present risks. • The safety precautions contained in the IOM manual must always be strictly observed during the maintenance of the partially finished machine, to avoid injuries to personnel and damage to the equipment. • In case of doubt, it is forbidden to operate. Contact the manufacturer (https://mhs-conveyor.com) for the necessary clarification.
Indicates a medium level potentially hazardous situation that, if not avoided, could result in death or serious injury.	

11.4 Scheduled Maintenance

11.4.1 Daily Inspection

DAILY (VISUAL & LISTEN INSPECTION)	ACTION
Listen to everything for unusual noises or vibration.	Isolate noise or vibration and repair as needed.
Visually inspect to see that the conveyor sections are clear and free of debris.	Remove any build-up.
Check to see that all safety guards, covers or netting are in place.	Reinstall any missing safety guards, covers or netting.
Check for loose bolts or parts.	Tighten any loose hardware.
Full inspection of equipment, parts, and proper operations.	Full inspection of equipment.

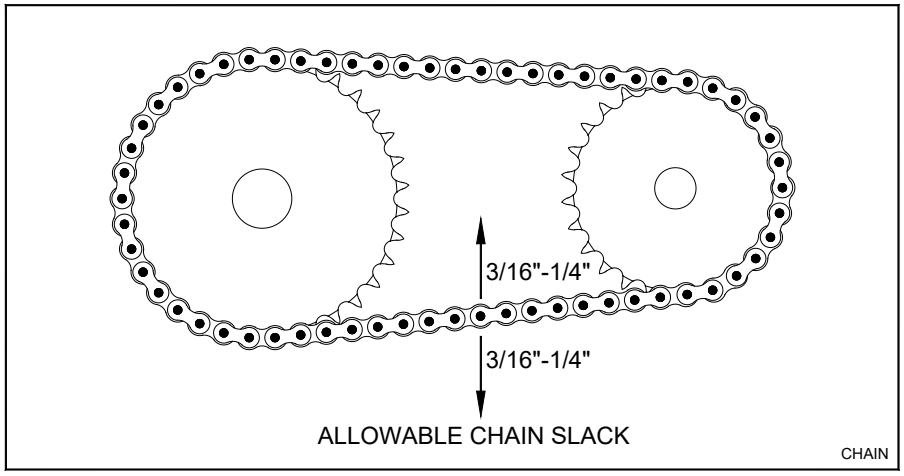
11.4.2 Weekly Inspection

WEEKLY (VISUAL & LISTEN INSPECTION)	ACTION
Belt Check belt for wear and proper tension.	Replace worn belt. If the belt is good adjust the tension if needed.
Tracking Check belt tracking.	Adjust tracking

WEEKLY (VISUAL & LISTEN INSPECTION)	ACTION
Lacing Check belt lacing.	Replace broke lacing.
Loose parts Check for loose bolts or parts.	Tighten any loose hardware.
Full inspection of equipment, parts, and proper operations.	Full inspection of equipment.

11.4.3 Monthly Inspection

MONTHLY (VISUAL & LISTEN INSPECTION)	ACTION
Motor Inspect Gearmotor for leaking seals and the breather plug for dirt and debris.	Replace the motor if it is leaking. Clean the breather plug with stiff brush or compressed air.
Chain and sprockets Inspect chain & sprocket, pulley, sheaves, and belts. See below for details.	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 it 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:



Inspect rollers periodically for debris build-up.	Remove debris and build-up.
Belts normally need very little care.	Clean monthly with compressed air or a stiff brush.

11.4.4 Semi-Annual inspection

SEMI ANNAUAL (VISUAL & LISTEN INSPECTION)	ACTION
Check the bearings for grease (Do not over grease).	***Recommend NLGI #2 lithium complex grease.***
Inspect pulleys and rollers for build-up of debris.	Remove debris and build-up.

11.4.5 Annual Inspection

ANNAUAL (VISUAL & LISTEN INSPECTION)	ACTION
A complete inspection of conveyor equipment, parts, and proper operations to include safety tests. FORTNA Conveyor recommend inspecting for the following but not limited to:	
Timing Belt Tension	Belt tension to measured using a **Gates 505C/507C Sonic Tension (Vibration) meter.**

⚠CAUTION

Caution!

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

Indicates a low level potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It may also be used to alert against unsafe practices or for the protection of the equipment.

11.4.6 Re-Greaseable Bearings

The drive unit and power take-off have re-greaseable 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 bearings rotate at a slow speed and should not use grease on a continuing basis.

11.4.7 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.

⚠CAUTION

Pulleys and Sheaves.

- Do not use a worn hex wrench, as this may damage the setscrews.

⚠CAUTION	
	• Reference the bushing manufactures website (https://dodgeindustrial.com) for proper lubrication, torque specifications, and tightening procedures.
Indicates a low level potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It may also be used to alert against unsafe practices or for the protection of the equipment.	

⚠WARNING	
	**Warning!** • 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.** • Check the loosened parts have been retightened and all guards reinstalled. • Make sure personnel are clear of all conveyor equipment before restarting the system. • Allow sufficent time for brake resistor to cool before working on motor.
Indicates a medium level potentially hazardous situation that, if not avoided, could result in death or serious injury.	

11.4.8 Inspection Sheet Sample

Add Your Company Logo	CRUZbelt Inspection Sheet	
Customer:		Installation Foreman:
MHS Project #:		MHS Site PM:
City & State:		Date:

CONVEYOR #		#		
#	**DESCRIPTION**	**OK**	**CODE**	**COMMENTS**
1	E-STOPS /PULL CORDS			
2	GUARDS			
3	BELLY PANS			
4	DISCONNECT			
5	PULLEYS			
6	END/CENTER DRIVE ??			
7	GEARBOX			
8	BREATHER PLUG IN GEARBOX			
9	MOTOR			
10	BRAKE			
11	DRIVE CHAIN			
12	DRIVE SPROCKETS			
13	DRIVE CLEAN of DEBRIS			
14	BELT			
15	BELT LACING			
16	BELT TRACKING			
17	BELT TENSION			
18	AIR PRESSURE			
19	SLAVE DRIVE			
20	SLAVE BELT			
21	SLAVE BELT LACING			
22	SLAVE BELT TRACKING			
23	BEARINGS			
24	ROLLERS			
25	PHOTO EYES			
26	CONVEYOR STRAIGHT/LEVEL/ALIGNED			
27	CONVEYOR TO CONVEYOR CONNECTION			
28	CONVEYOR TO EQUIPMENT CONNECTION			
29	SAFETY NETTING			
COMMENTS:				

CODE REFERENCE NUMBERS						
1 - LOOSE			7 - BENT and/or DENTED			13 - LEAKING
2 - BROKEN			8 - WRONG SIZE			14 - RUNNING HOT
3 - MISSING			9 - OUT OF ALIGNMENT			15 - INCORRECT
4 - WORN			10 - LOW OR EMPTY			16 - SLIPPAGE
5 - DIRTY and/or DRY			11 - EXCESSIVE NOISE			17 - VIBRATION
6 - EXCESSIVE TENSION			12 - REPLACE			18 Other / Comments

11.5 Maintenance Service & Repairs

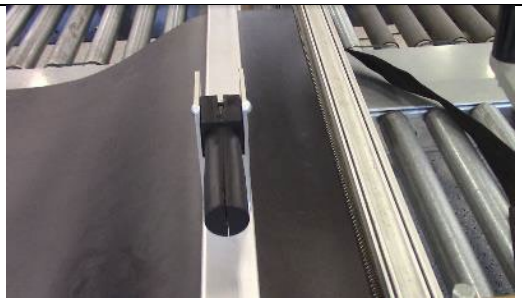
⚠WARNING	
	**Warning!** • Do not perform maintenance on the conveyor until the start-up controls, including motor safety switches, are locked out and cannot be turned by any person other than the one performing the maintenance. • If more than one member of a crew is working on the conveyor, **EACH CREW MEMBER MUST HAVE A LOCK ON THE POWER LOCK OUT.** • Check the loosened parts have been retightened and all guards reinstalled. • Make sure personnel are clear of all conveyor equipment before restarting the system. • Allow sufficent time for brake resistor to cool before working on motor.
Indicates a medium level potentially hazardous situation that, if not avoided, could result in death or serious injury.	

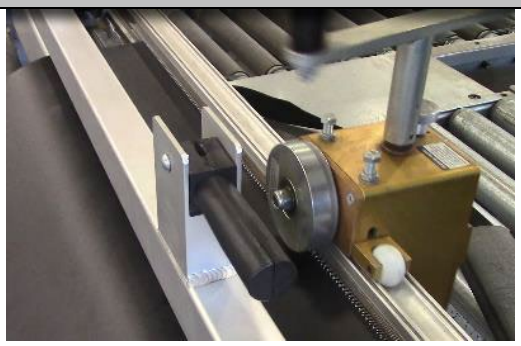
11.6 (WT-LT-009) CRUZbelt How to Lace the Belt

11.6.1 PPE & Tools Required

DIRECTION - CRUZBELT HOW TO LACE THE BELT	
No of required operators	No. 1 Maintenance Engineer
PPE required	
Tools to be used	1. Lace machine 2. Lacing and pin kit 3. Drill with socket (optional)

CRUZbelt How to Lace the Belt

STEP	ACTION	PICTURE
1	Turn off and lock out the power.	
2	Install lacing into the face plate of the lacing machine. Make sure the clipper lace is properly seated.	
3	Install the pin through the clipper lace. Check to make sure the pin is through all the lacing.	
4	Remove the paper guarding.	
5	Insert the belt. Make sure the belt is centered in the clipper lace.	 
6	Lock down the belt by pushing down the two hold clamps. Double check the belt making sure it is centered and seated in the clipper lace.	

STEP	ACTION	PICTURE
7	Check the wheels on the lace machine to ensure they are open and barely touch the clipper lace. Turn the round adjuster knob to adjust the wheels to close or open. Turn the handle to go back and forth over the clipper lace or use a drill and socket (optional).	
8	To compress the clipper lace, turn the round adjuster knob approximately 1/2 turn at the end of each passing. Turn the handle to move back and forth across the clipper lace. Repeat until the clipper lace starts to show through the belt and is fully compressed.	
9	Remove the pin.	
10	Unlock the belt and remove it from the lacing machine.	
11	Repeat steps 2 through 9 for the other end of the belt.	
12	Bring the two clipper laces together and center, make sure the lacing is not off set. Trim the excess clipper lace.	
13	Insert the pin.	
14	Adjust the belt tension and tracking. (See How to Adjust belt tension and tracking instruction below) LT-006.	
15	Unlock and turn on the power.	

⚠WARNING	
	Warning! • 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.** • Check the loosened parts have been retightened and all guards reinstalled. • Make sure personnel are clear of all conveyor equipment before restarting the system. • Allow sufficent time for brake resistor to cool before working on motor.
Indicates a medium level potentially hazardous situation that, if not avoided, could result in death or serious injury.	

11.7 (WI-LT-010) CRUZbelt How to Adjust Belt Tension and Tracking

11.7.1 PPE & Tools Required

DIRECTION – CRUZBELT, BELT TENSION AND TRACKING	
No of required operators	No. 1 Maintenance Engineer
PPE required	
Tools to be used	1. 7mm socket 2. 3/8” ratchet with extension

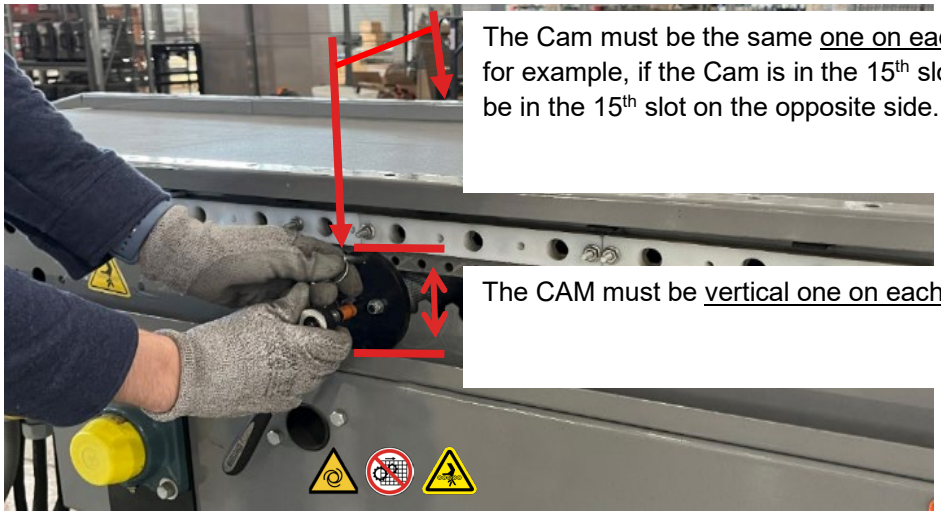
CRUZbelt How to Adjust Belt Tension and Tracking

STEP	DIRECTION
1	Remove the shroud, one on each side of the take-up unit.
2	Remove the Cam pin, one on each side of the take-up.
3	To loosen the belt, rotate the take-up Cam. At this point you may remove, replace, re-lace, or perform other belt maintenance.
4	Rotate the Cam take-up to tension the belt. Stop when the Cam has feedback tension
5	Insert the pin into the Cam, one on each side of the take -up. The Cam must be vertical.

NOTICE

Note

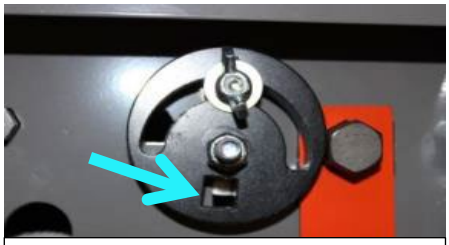
- The cam position must be vertical one on each side.
- The cam position must be vertical and aligned one on each side.



Failure to follow these instructions can result in property damage or equipment damage.

6	Adjust CRUZbelt, belt tension and tracking
7	Reinstall the shroud, one on each side of the take-up unit.
8	To adjust the belt tracking, reset the tracking plate and tracking Cam to the mid-point locations.
8.1	The tracking plate should start in the mid-point location by aligning the square hole in the frame with the notch in the plate.
8.2	The tracking Cam should start in the mid-point location by aligning the square hole in the frame with the square hole in the Cam.

NOTICE

STEP	DIRECTION
	Note The square holes and their proper alignment.  Move CAM over to align square holes. (Mid-point Location)  Slide snubber bracket over to align square holes. (Mid-point Location)
Failure to follow these instructions can result in property damage or equipment damage.	
9	The conveyor should be running to track the belt. Slightly move the tracking plate or the Cam until the belt is centered and not rubbing on the side channels.
9.1	Repeated adjustments may be necessary between the tracking plate and Cam to acquire proper tracking.

Maintenance video is available: https://mhs-conveyor.com (CRUZbelt Take-up video)

⚠WARNING	
	Warning! • 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.** • Check the loosened parts have been retightened and all guards reinstalled. • Make sure personnel are clear of all conveyor equipment before restarting the system. • Allow sufficent time for brake resistor to cool before working on motor.
Indicates a medium level potentially hazardous situation that, if not avoided, could result in death or serious injury.	

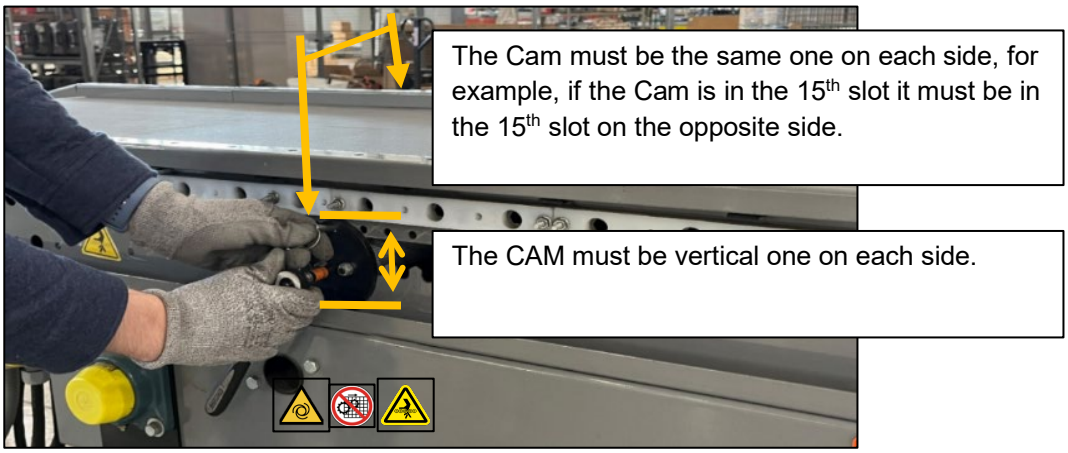
11.8 (WI-LT-011) CRUZbelt How to Replace the End Pulley

11.8.1 PPE & Tools Required

DIRECTION – CRUZBELT END PULLEY	
No of required operators	No. 1 Maintenance Engineer
PPE required	
Tools to be used	1. 7mm socket 2. 3/8 inch ratchet with extension 3. Screwdriver 4. Putty knife or similar

CRUZbelt How to Replace the End Pulley

STEP	DIRECTION	PICTURE
1	Remove the shrouds, one on each side.	
2	Pull out the locking pins in the cams, one on each side. Loosen the belt tension by turning the Cam with a 3/8 inch ratchet and extension.	
3	Remove the End Pulley by pushing in the axle.	
4	Install the new End Pulley by placing a putty knife between the axle and side rail to wedge the axle in position. Use a screwdriver to help to guide the axle in place.	 
5	Check the end pulley position by inspecting the axle position one on each side to make sure it is through the orange guard and the belt is not pinched or folded.	
6	To tension the belt, turn the Cam until you feel feedback tension. The Cam must be vertical and aligned on each side. Reinstall the locking pins, one on each side.	

STEP	DIRECTION	PICTURE
	NOTICE **Note!** • The cam position must be vertical one on each side. • The cam position must be vertical and aligned one on each side.	
	⚠CAUTION **Caution** • Do not run the conveyor without replacing both quick release pins. • The CAM (football bracket) must be vertical on each side and the Cam must be aligned in the same vertical hole position on each side. The Cam this must not be offset from each other. (See pictures below) • Do not over tighten the belt as this causes excessive stress on the Drive Drum Shaft and associated bearings. DO NOT use more than 15ft-lb. of torque on the Cam (football bracket). • Excessive belt tension will cause premature failure of the take-up assembly.	
7	Check the belt tracking and adjust if needed.	
8	Reinstall the shrouds, one on each side.	

Maintenance video is available: https://mhs-conveyor.com/media/maintenance/czb-mv/ (CRUZbelt Take-up video and Replace CRUZbelt End pulley)

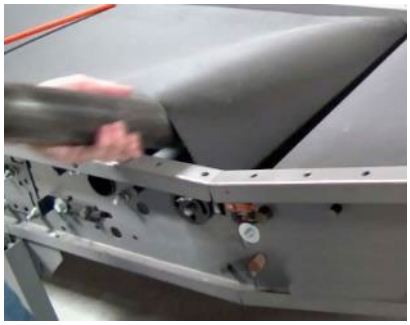
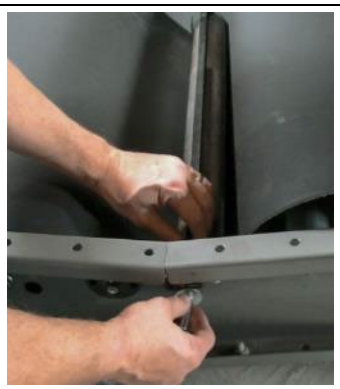
⚠WARNING	
	Warning! • Do not perform maintenance on the conveyor until the start-up controls, including motor safety switches, are locked out and cannot be turned by any person other than the one performing the maintenance. • If more than one member of a crew is working on the conveyor, **EACH CREW MEMBER MUST HAVE A LOCK ON THE POWER LOCK OUT.** • Check the loosened parts have been retightened and all guards reinstalled. • Make sure personnel are clear of all conveyor equipment before restarting the system. • Allow sufficent time for brake resistor to cool before working on motor.
Indicates a medium level potentially hazardous situation that, if not avoided, could result in death or serious injury.	

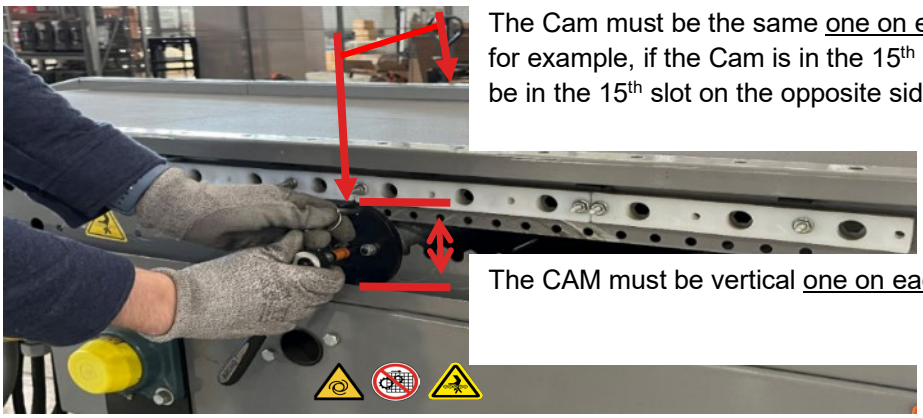
11.9 (WI-LT_012) CRUZbelt How to Replace Noseunder Snubber Pulley

11.9.1 PPE & Tools Required

DIRECTION – CRUZBELT END PULLEY	
No of required operators	No. 1 Maintenance Engineer
PPE required	
Tools to be used	1. 7mm socket 2. 3/8-inch ratchet with extension 3. Screwdriver 4. Putty knife or similar

CRUZbelt How to Replace Noseunder Snubber Pulleys

STEP	DIRECTION	PICTURE
1	Remove the shrouds one on each side.	
2	To loosen the belt tension, pull out the Cam locking pins one on each side, then turn the Cam with a 3/8” ratchet and extension fitted with a 1/4” socket.	
3	Remove top orange finger guard.	
4	Remove the two top Snubber Pulleys by pushing in the axle with a screwdriver.	
5	Remove the bottom guard bar.	

STEP	DIRECTION	PICTURE
6	Remove the bottom Snubber Pulley by pushing in the axle with a screwdriver.	
7	Install the bottom Snubber Pulley. Place a putty knife (or similar) between the axle and side channel to wedge the axle in position.	
8	Install the guard bar.	
9	Reinstall the top two-snubber pulleys. Place a putty knife (or similar) between the axle and side channel to help guide the axle in position.	
10	Reinstall the orange finger guard.	
11	Turn the Cam to tension the belt, stop when you have feedback tension. Insert the Cam locking pins one on each side.	
	NOTICE **Note!** • The cam position must be vertical one on each side. • The cam position must be vertical and aligned one on each side.  The Cam must be the same one on each side, for example, if the Cam is in the 15th slot it must be in the 15th slot on the opposite side. The CAM must be vertical one on each side.	
12	Reinstall the shrouds one on each side.	

Maintenance video is available: https://mhs-conveyor.com (How to replace Noseunder snubber pulleys)

11.10 Sheet Reference

REF.	PARTLY COMPLETED MACHINE	SHEET REF.
01	CRUZbelt-How to Lace the Belt	WI-LT-009
02	CRUZbelt How to Adjust Belt Tension and Tracking	WI-LT-010
03	CRUZbelt How to Replace the End Pulley	WI-LT-011
04	CRUZbelt How to Replace Noseunder Snubber Pulley	WI-LT-012

Maintenance video is available: https://mhs-conveyor.com

12 Troubleshooting Guide

12.1 Belt Troubleshooting Guide

	PROBLEM BELT	POSSIBLE CAUSE	REMEDY
1.	Belt stopped or moving slower than normal, reducer output shaft is turning properly and all electrical components are operating normally.	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
		Belt slipping on drive pulley	See #2 below
		Belt lacing pulled out	See #3 below
		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 pulley	Take-up pulley not adjusted properly	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.
		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.	Belt lacing pulling out	Tension too high	Reduce belt tension at take-up pulley
		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.
		Build-up of foreign material on rollers and pulleys	Clean rollers and pulleys. Do not use solvents.
		Conveyor not level	Level conveyor bed

	PROBLEM BELT	POSSIBLE CAUSE	REMEDY
		Bowed belt	If belt is new, load tension may straighten it. Otherwise, replace.
		Pulley bearing set screws loose allowing pulleys to walk to one side	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.	Rips at or near edge of belting	Obstruction	Remove obstruction
		Belt running against conveyor frame	See Belt Tracking section of this manual.
		Loose lacing	Check lacing for tightness and general condition. Check if belt is chamfered on corners.
6.	Conveyor belt jerks during operation	Too much slack in drive chain which is jumping the sprocket	Adjust chain tension, check for worn sprockets.
7.	Gouging of top cover	Obstruction	Locate and remove obstruction
		Damaged return idler or snubber pulley	Verify return idlers and snubber pulleys are spinning freely and have no material build-up.
8.	Severe wear on drive pulley side of belting	Belt slipping on drive pulley	See #2 above
		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	Tension too great	Reduce belt tension by take-up adjustment

12.2 Gearmotor Troubleshooting Guide

	PROBLEM - MOTOR/REDUCER	POSSIBLE CAUSE	REMEDY
1.	Motor will not start	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. Check control circuit voltage.
		Low line voltage	Check for low resistance short online.
		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. Check chain tension.
		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.
2.	Motor running excessively hot **Note:** Temperature up to 175ºF (79°C) (hot to touch) is normal.	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.
		Frozen pulley or roller	Check all pulleys and bearings for free rotation. Replace if frozen or difficult to rotate.
		Wrong grade oil	Drain and refill with proper grade.
		Electrical	Check wiring and circuits. Take ampere reading and compare with motor rating on name plate.
		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 be felt.
		Overloaded conveyor	Remove excess product. Address cause.
		Miss threading belt path	Reroute belt path correctly.
3.	Reducer runs – drive	Drive chain broken or	Replace chain or repair.

	PROBLEM - MOTOR/REDUCER	POSSIBLE CAUSE	REMEDY
	pulley does not turn	disconnected	
		Sprockets loose. Also, see “Bearings” #8, Chain & sprockets #2 and #6.	Check key and tighten set screws
4.	Reducer leaks oil	Defective oil seals on output shaft	Install new oil seals. Replace reducer with spare and send defective reducer to authorized repair facility.
		Oil level too high	Drain off excess.
		Loose bearing cover bolts	Tighten as required.
		Incorrect size	Check size and replace if necessary.
5.	Thermal protectors kicking out	Short in motor	See “Motor Will Not Start.”
		Excessive amps being pulled	Reset starter and check ampere draw. Check for conveyor overload.
6.	Starter overloads kicking out	Poor ventilation in control panel	Add vents or fan.
		Electrical	Check circuits and panel. Check heater size.
7.	Repeated stalling	Excessive product loads	Check if loads or rates have increased since purchase of conveyor.
		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.
9.	Excessive noise or motor hums	Lack of lubrication	Check oil level in gear case.
		Damaged gears	Replace reducer.
		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.
11.	Electrical shorts	Loose connection	Check all wire connections. Check fuses.

13 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 FORTNA conveyors, are included with illustrations. A "Recommended Spare Parts List" is published for all conveyor orders of $20,000. The spare parts list is sent to the purchaser approximately (2) weeks after the order is received. It includes part numbers, description, pricing, and SP Class (“A,” “B,” & “C”) along with the recommended quantities to be kept on hand for maintenance. If you are unable to locate this document, another may be obtained by contacting the FORTNA Lifetime Performance Services at 231-798-4547.

13.1 Spare Parts Priority Level Explanations (SP Class)

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 majority of these parts are purchased from FORTNA vendors and carry their own warranties through these vendors. For more warranty information, see FORTNA 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.

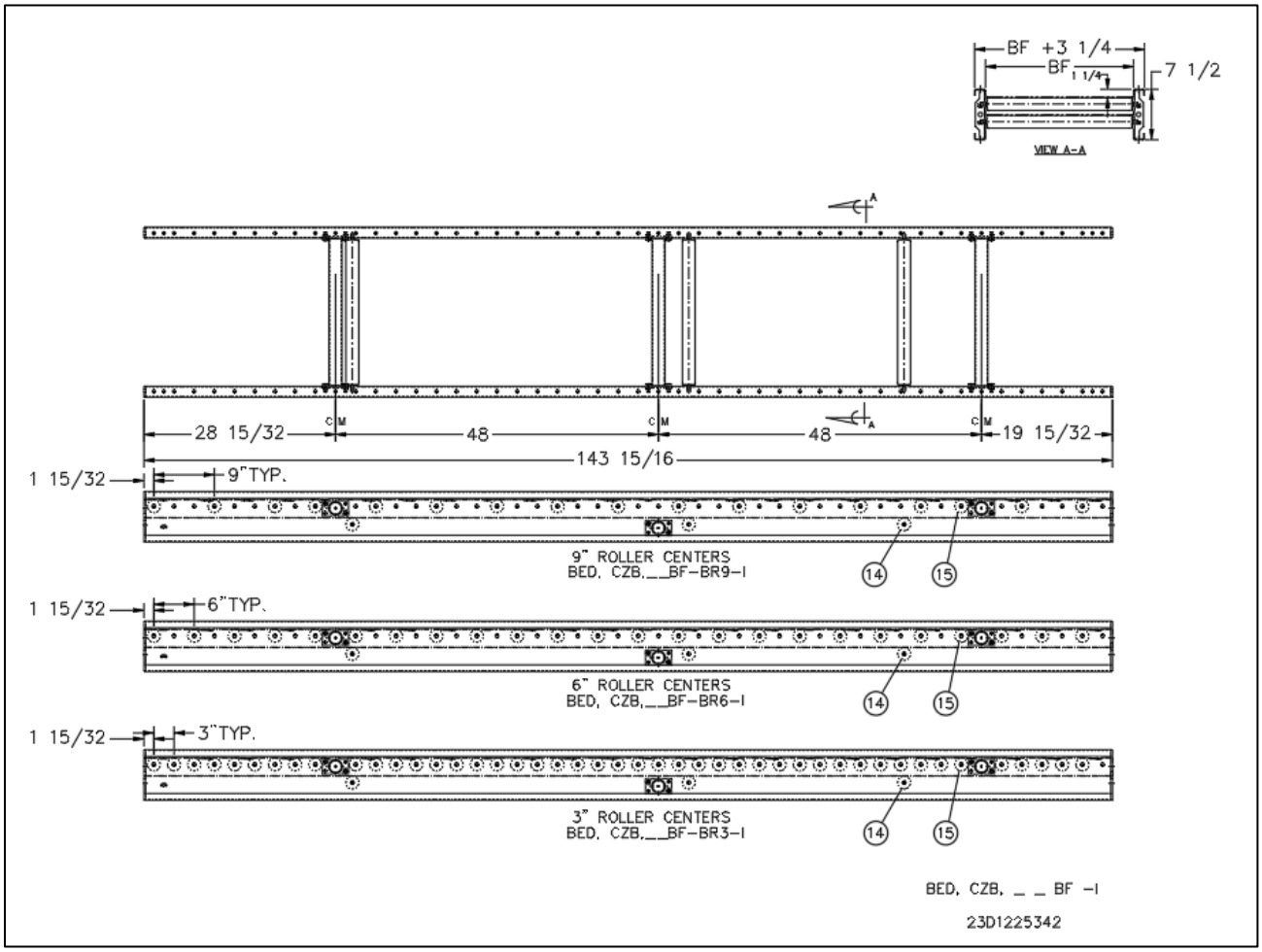
Priority level 2 spare parts include roller chain, sprockets, belt pulleys, rollers, air cylinders, and other related parts whose failure should not stop a conveyor system suddenly. These parts tend to wear out gradually and are not known to fail suddenly.

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.

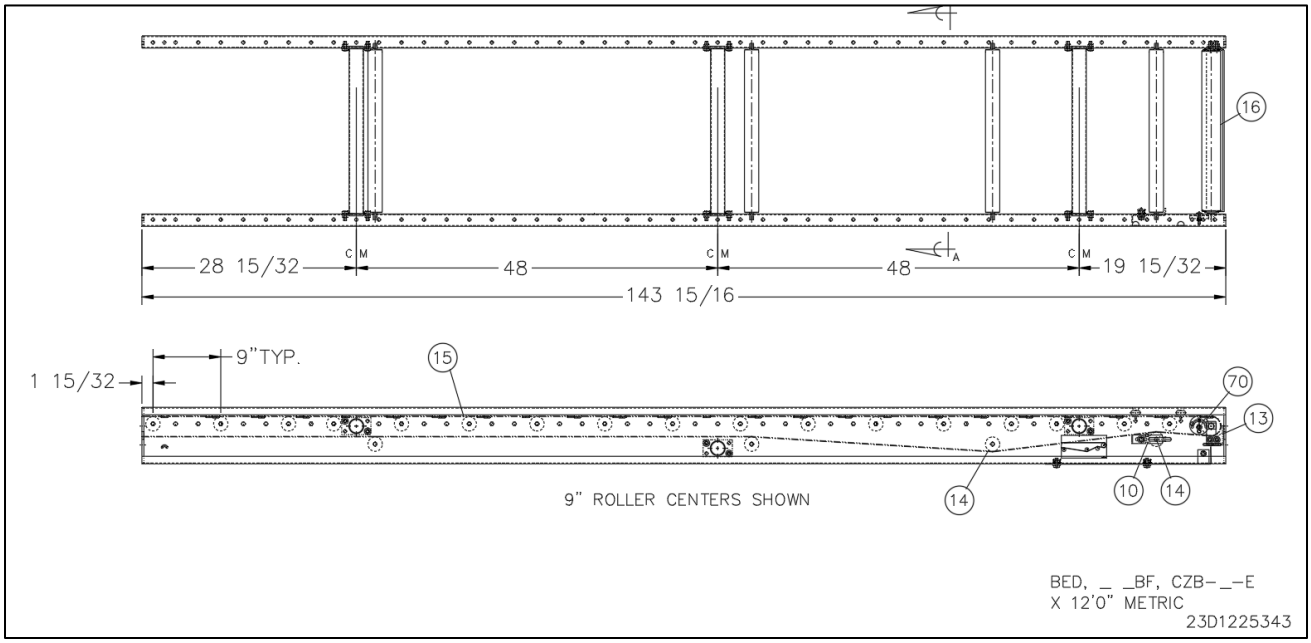
13.2 CRUZbelt Intermediate Bed – Belt on Roller



13.2.1 Replacement Parts - CRUZbelt Intermediate Bed

CRUZBELT INTERMEDIATE 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
15	ROLLER, _ _"GRAV 1.9 PLTD PRBG	60218009	60224009	60230009	60236009
					Reference Dwg#23D1225342

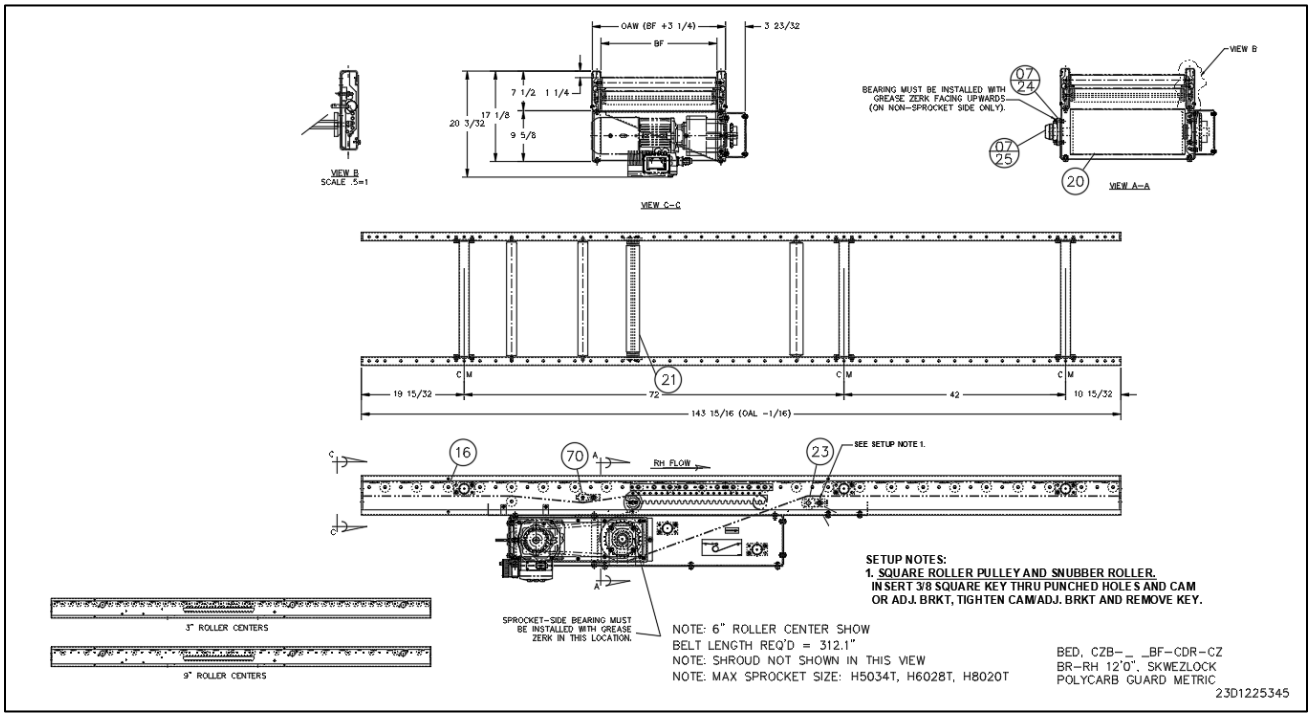
13.3 CRUZbelt End Beds - Belt on Roller



13.3.1 Replacement Parts - CRUZbelt End Beds

CRUZBELT END BEDS					
		Widths & Part #s			
BALLOON	**DESCRIPTION**	**16" BF**	**22" BF**	**28" BF**	**34" BF**
10	BRKT, CZB SNUBBER ADJ.	E0009408			
13	GUARD, FINGER _ _CZB (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	1225453	1225453	1225453	1225453
					Reference Dwg#23D1225343

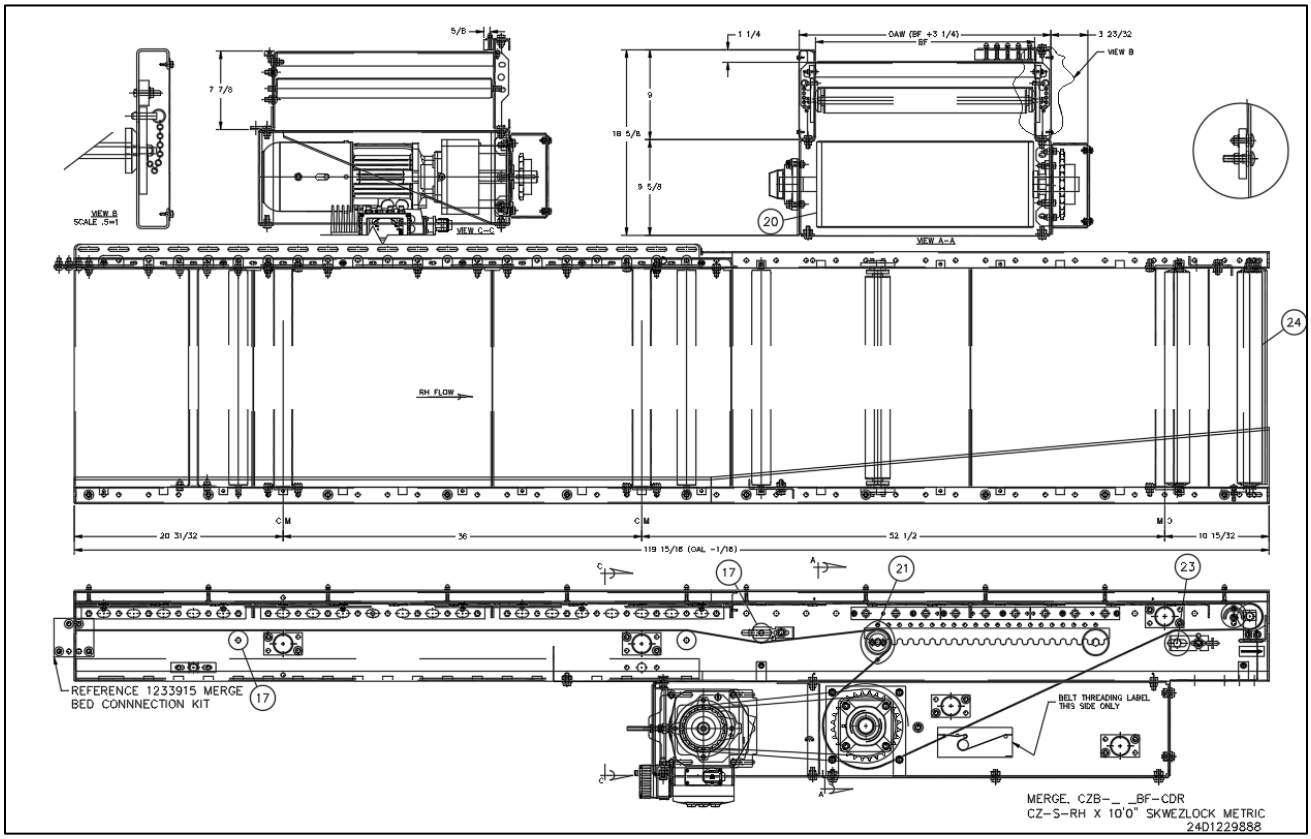
13.4 CRUZbelt Center Drives - Belt on Roller (BOR)



13.4.1 Replacement Parts - CRUZbelt Center Drives (BOR)

CRUZbelt CENTER DRIVE BOR					
		Widths & Part #s			
BALLOON	**DESCRIPTION**	**16" BF**	**22" BF**	**28" BF**	**34" BF**
07/24	BRG, FLG 4BOLT X 40MM-F4B-DL-40M, METRIC	1225404	1225404	1225404	1225404
07/25	BEARING END, SAFTY CAP	1114092	1114092	1114092	1114092
16	ROLLER, _ _"GRAV 1.9 PLTD PRBG	60218009	60224009	60230009	60236009
20	PULLEY, WLDMT 8" _ _BF CZB CDR-METRIC	1225375	1225376	1225377	1225378
21	PULLEY, _ _CZB DR 2.5 DIA 1/4W	E0040400	E0040401	E0040402	E0040403
23	ROLLER, SNUB _ _BF 11/16 AXLE	18218001	18224001	18230001	18236001
70	ROLLER, _ _CZB 1.9 SNUBBER PRBG	E0009652	E0009653	E0009654	E0009655
					Reference Dwg# 23D1225345

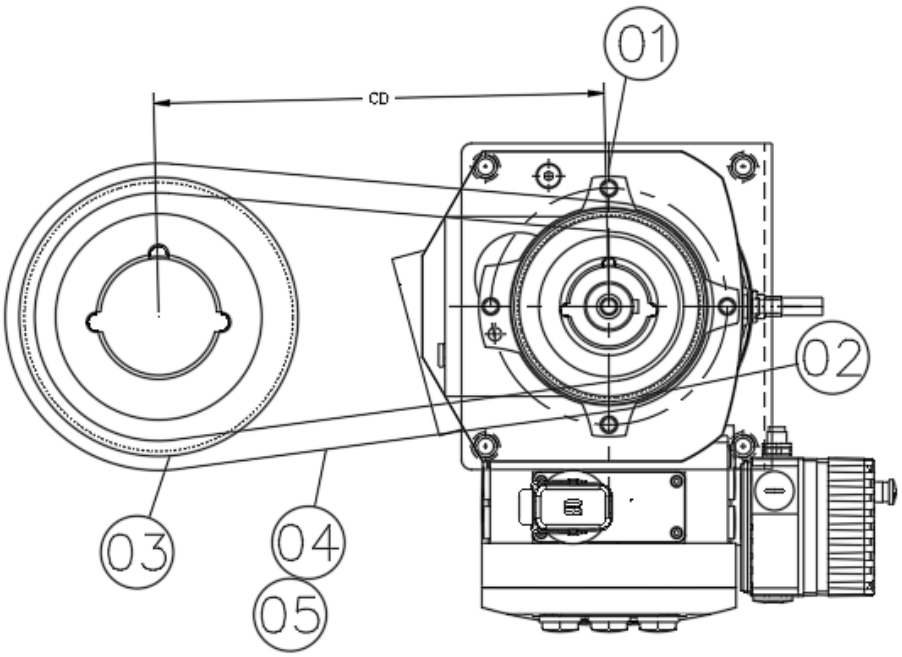
13.5 CRUZbelt Merge Drive Bed



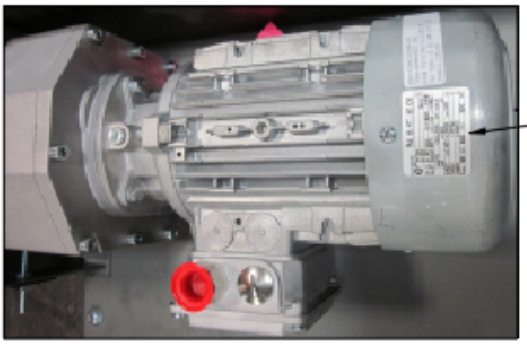
13.5.1 Replacement Parts - CRUZbelt Merge Drive

REPLACEMENT PARTS FOR CRUZBELT MERGE DRIVE					
		Widths & Part #s			
BALLOON	DESCRIPTION	22" BF	28" BF	34" BF	40" BF
17	ROLLER, 30CZB 1.9 SNUBBER PRBG	E0009653	E0009654	E0009655	E0009656
20	PULLEY, WLDMT 8" _ _BF CZB CDR	1225376	1225377	1225378	1225379
21	PULLEY, 30CZB DR 2.5 DIA 1/4W	E0040401	E0040402	E0040403	E0040404
23	ROLLER, SNUB _ _BF 11/16 AXLE	18224001	18230001	18236001	18242001
24	BRG, FLG 4BOLT X 40MM	1225404	1225404	1225404	1225404
24	PULLEY, 30CZB 2.5 DIA 1/4W	E0040391	E0040392	E0040393	E0040394
					REF DWG# 24D1229888

13.6 Replacement Parts - CRUZbelt Drivetrain



LH DRIVETRAIN
SHOWN



NOTE: IMPORTANT! AFTER MOTOR HAS BEEN INSTALLED ON BED, ATTACH NORD MOTOR STICKER TO FAN COVER. THE STICKER IS TO BE PLACED, SO THAT WHEN THE BED IS IN THE INSTALLED POSITION, IT IS VISIBLE WHEN VIEWED FROM BELOW.

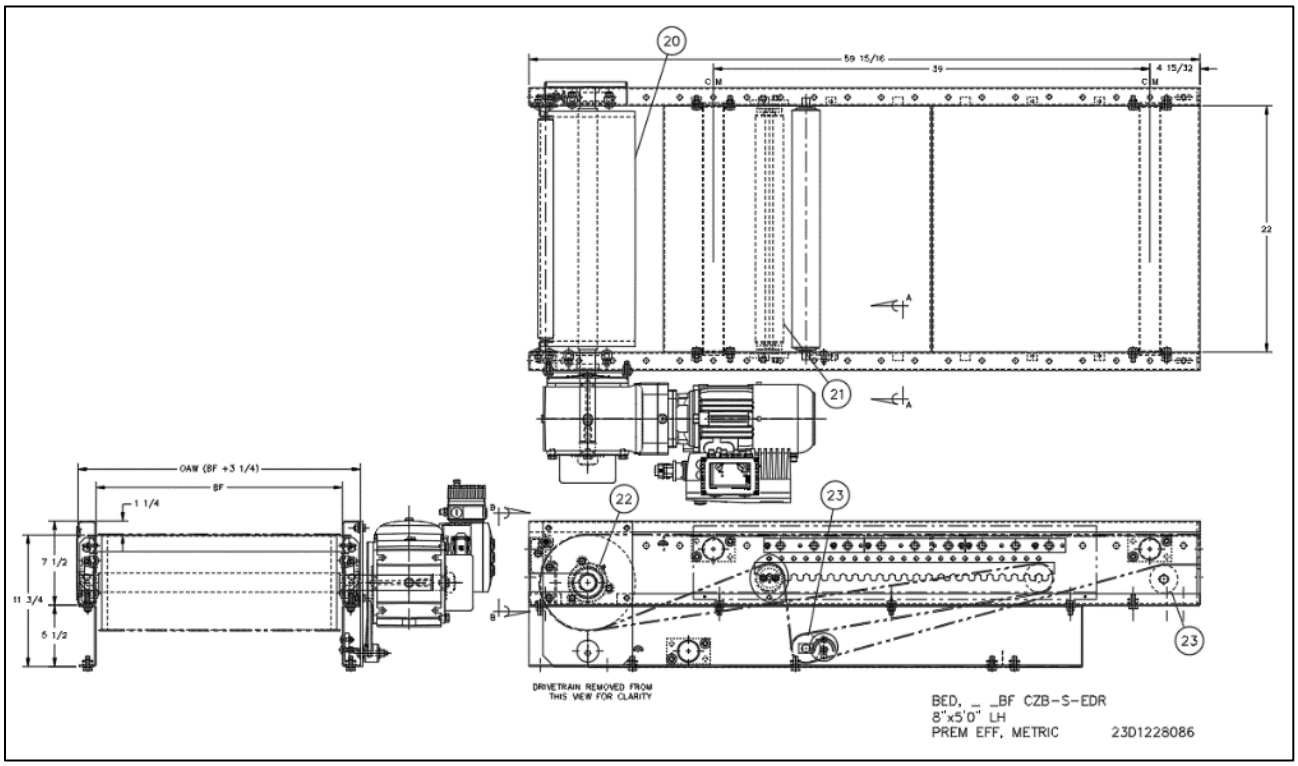
DRIVETRAIN, CZB 8CDR
NORD .1 PREM EFF METRIC

23D1225385

13.6.1 Replacement Parts - CRUZbelt Timing Belt

REPLACEMENT PARTS FOR CRUZBELT RH & LH TIMING BELT											
Balloon #		**1**						**1**	**2**	**3**	**4**
FPM	**M/MIN**	**LH DR-TRAIN W/O BRAKE**	**LH DR-TRAIN WITH BRAKE**	**RH DR-TRAIN W/O BRAKE**	**RH DR-TRAIN WITH BRAKE**	**MOTOR HP**	**MOTOR KW**	**GEARMOTOR (RPM)**	**DRIVE PULLEY**	**DRIVE PULLEY**	**BELT**
90	27.43					1 1/2	1.12	SK572.1Z-VL-90 SP/4 (-)	8MX-48S-36-2012	8MX-63S-36-2517	8MGT- _ _ _-36
120	36.58				1225385	2	1.49	SK572.1Z-VL-90 LP/4 (86)	8MX-40S-36 2012	8MX-63S-36 2012	8MGT- 1200 - 36
150	45.72					3	2.23	SK573.1Z-VL-100 LP/4 (-)	8MX-48S-36 2012	8MX-63S-36 2517	8MGT- _ _ _-36
180	54.86					3	2.23	SK572.1Z-VL-100 LP/4 (-)	8MX-50S-36 2012	8MX-63S-36 2517	8MGT- _ _ _-36
300	60.96					2	1.49	SK572.1Z-VL-90 LP/4 (-)	8MX-56S-36 2012	8MX-60S-36 2517	8MGT- _ _ _-36
	60.96					5	3.73	SK572.1Z-VL-112 MP/4 (-)	8MX-50S-36 2012	8MX-63S-36 2517	8MGT- _ _ _-36
Reference Dwg# 23D1225385											

13.7 CRUZbelt End Drive



13.7.1 Replacement Parts - CRUZbelt End Drive & Drivetrain

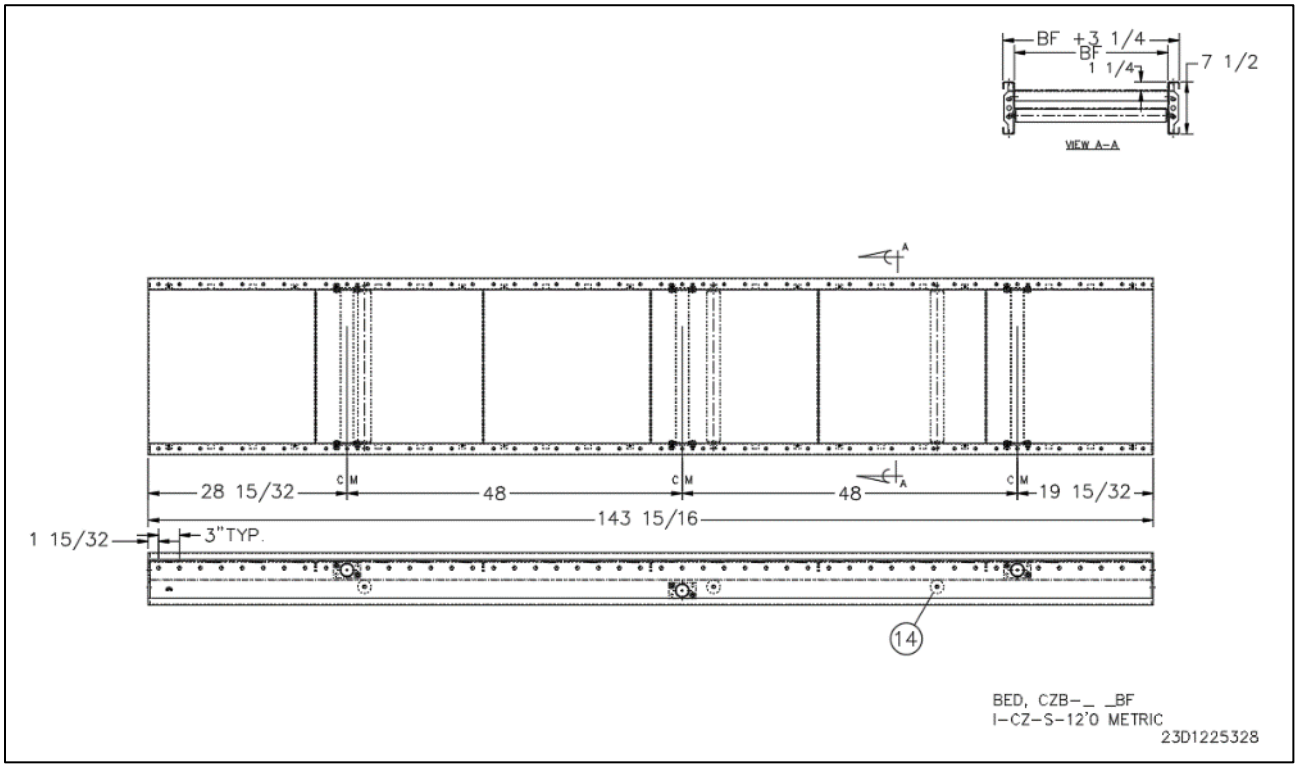
CRUZBELT END DRIVE							
		Widths & Part #s					
BALLOON	DESCRIPTION	16" BF	22" BF	28" BF	34" BF	40" BF	46" BF
20	PULLEY, WLDMT 36CZB 8"EDR TAP	1228315	1228316	1228317	1228318	1228319	1228320
21	PULLEY,36CZB DR 2.5 DIA 1/4W	E0040400	E0040401	E0040402	E0040403	E0040404	E0040405
22	BRG, FLG 3BOLT X 35MM B DODGE	1225669	1225669	1225669	1225669	1225669	1225669
23	PULLEY,36CZB 2.5 DIA 1/4W	E0040390	E0040391	E0040392	E0040393	E0040394	E0040395
Reference Dwg#23D1228086							

13.7.2 Replacement Parts - CRUZbelt Drivetrain

DRIVETRAIN ITEM #s / GEARMOTOR PART #s FOR CRUZBELT END DRIVES						
		BALLOON	90	90	90	90
SPEED	HP	BELT PULL	RH DR-TRAIN L/BRK	RH DR-TRAIN W/BRK	LH DR-TRAIN L/BRK	LH DR-TRAIN W/BRK
75	1	404				
90	1.5	469				
105	1.5	418				

120	1.5	378			1228089	1228091
135	2	455				
150	2	414				
210	3	444				
						Reference Dwg#23D1228086

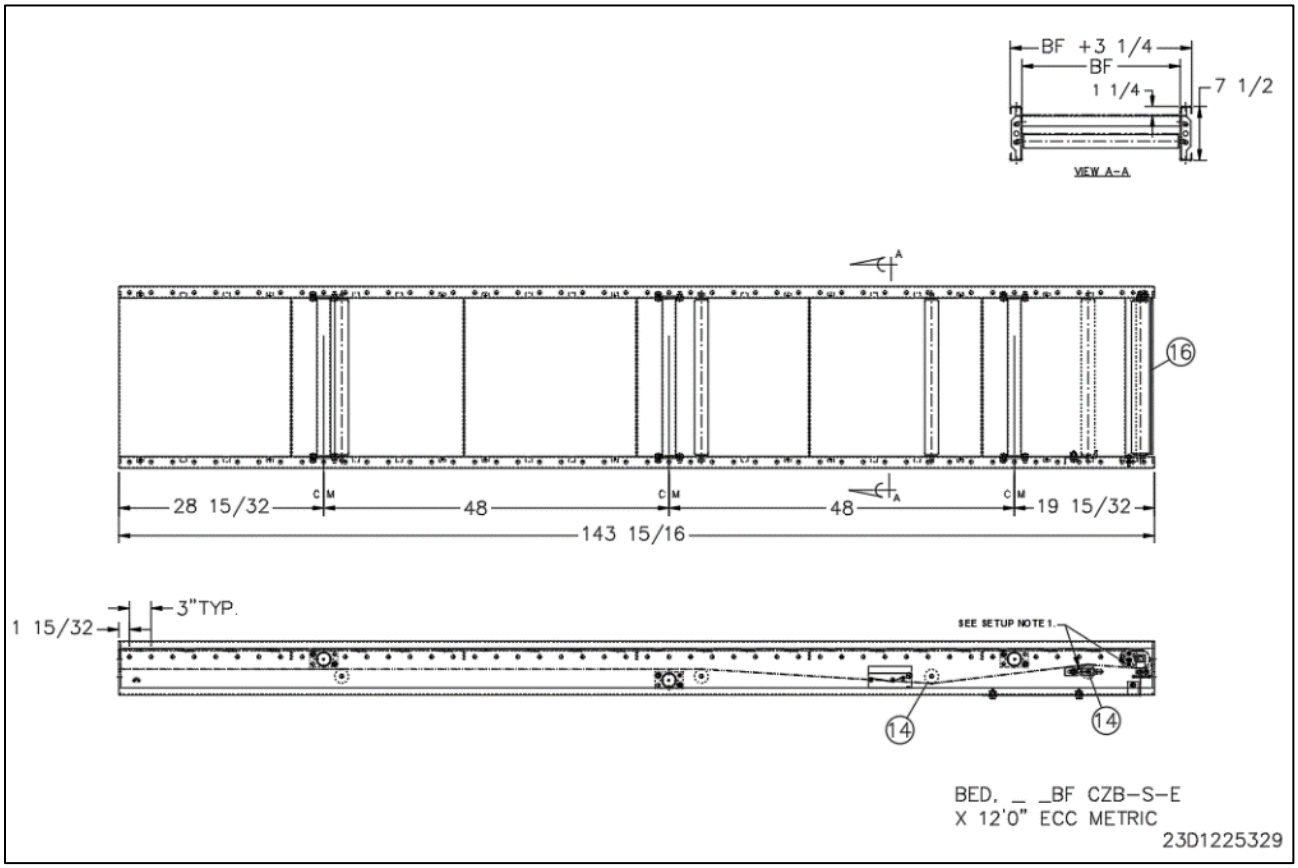
13.8 CRUZbelt Intermediate Slider Bed



13.8.1 Replacement Parts - CRUZbelt Intermediate Slider Bed

CRUZBELT INTERMEDIATE SLIDER BED							
		Widths & 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
							Reference Dwg#23D1225328

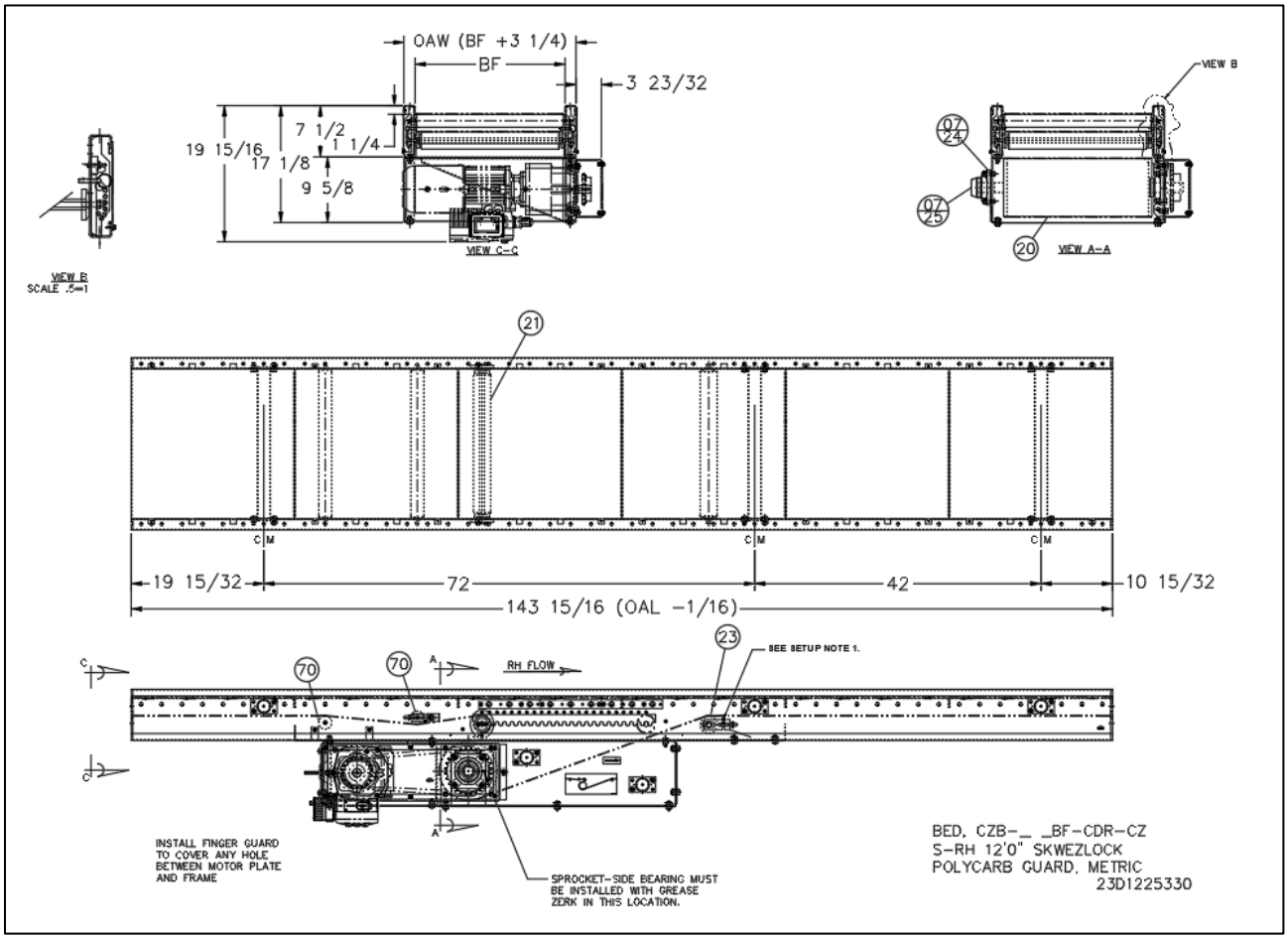
13.9 CRUZbelt Slider End Bed



13.9.1 Replacement Parts - CRUZbelt Slider End Bed

CRUZBELT SLIDER END BED							
		Widths & Part #s					
		Carton Tote Conveyor & Empty Carton				Empty Carton Only	
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
Reference Dwg#23D1225329							

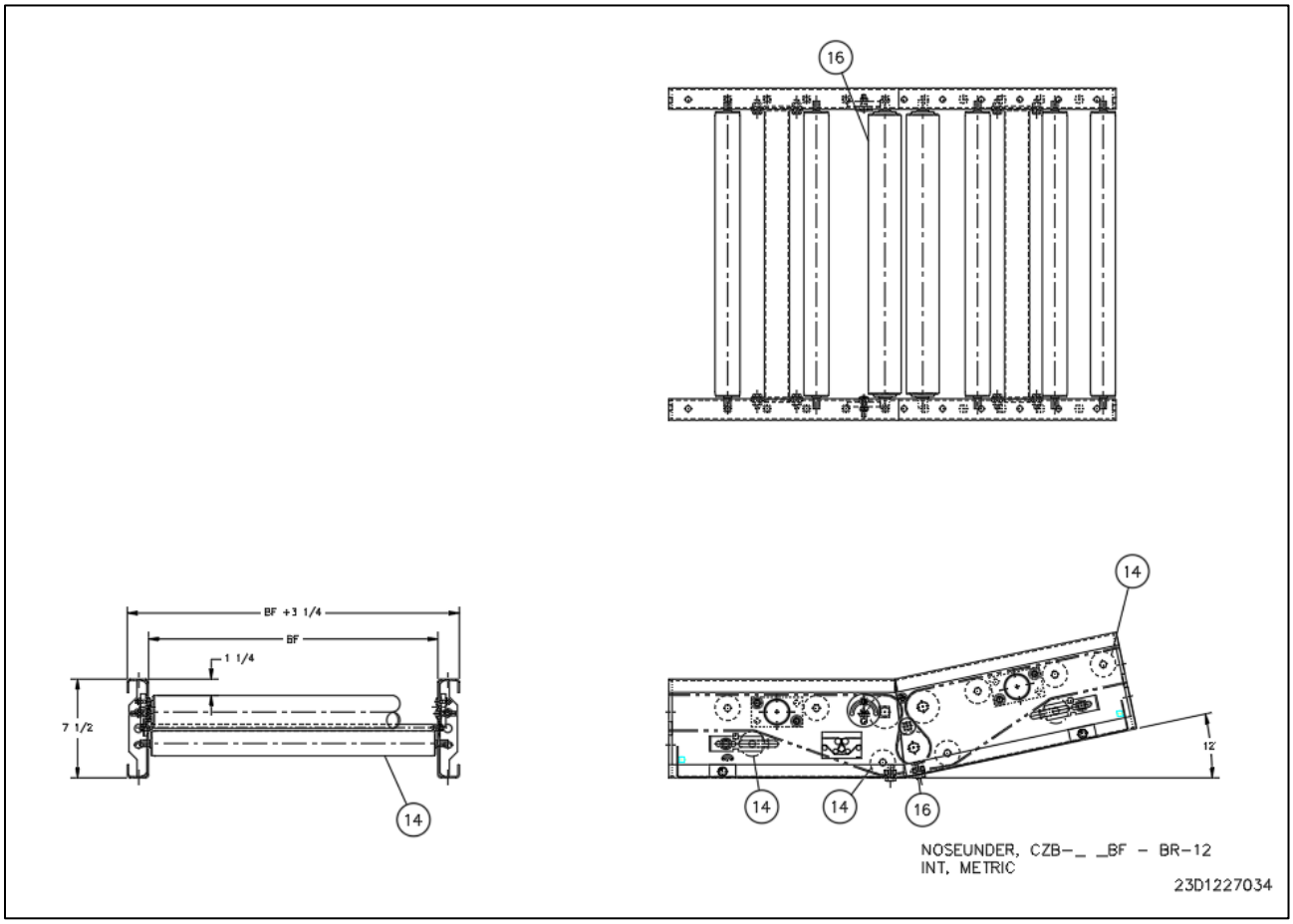
13.10 CRUZbelt Slider Center Drive



13.10.1 Replacement Parts - CRUZbelt Slider Center drive

CRUZbelt SLIDER CENTER DRIVE							
		Widths & Part #s					
		Carton Tote Conveyor & Empty Carton				Empty Carton Only	
BALLOON	**DESCRIPTION**	**16" BF**	**22" BF**	**28" BF**	**34" BF**	**40" BF**	**46" BF**
07/24	BRG, FLG 4BOLT X 40MM"	1225404	1225404	1225404	1225404	1225404	1225404
07/25	BEARING END SAFTY CAP	1225405	1225405	1225405	1225405	1225405	1225405
20	PULLEY, WLDMT 8" _ _BF CZB CDR	1225375	1225376	1225377	1225378	1228232	1228386
21	PULLEY, _ _CZB DR 2.5 DIA 1/4W	E0040402	E0040401	E0040402	E0040403	E0040404	E0040405
23	ROLLER, SNUB _ _BF 11/16 AXLE	18218001	18224001	18230001	18236001	18242001	18248001
70	ROLLER, _ _CZB 1.9 SNUBBER PRBG	E0009652	E0009653	E0009654	E0009655	E0009656	E0009657
Reference Dwg#21D1225330							

13.11 CRUZbelt Intermediate Noseunder Bed

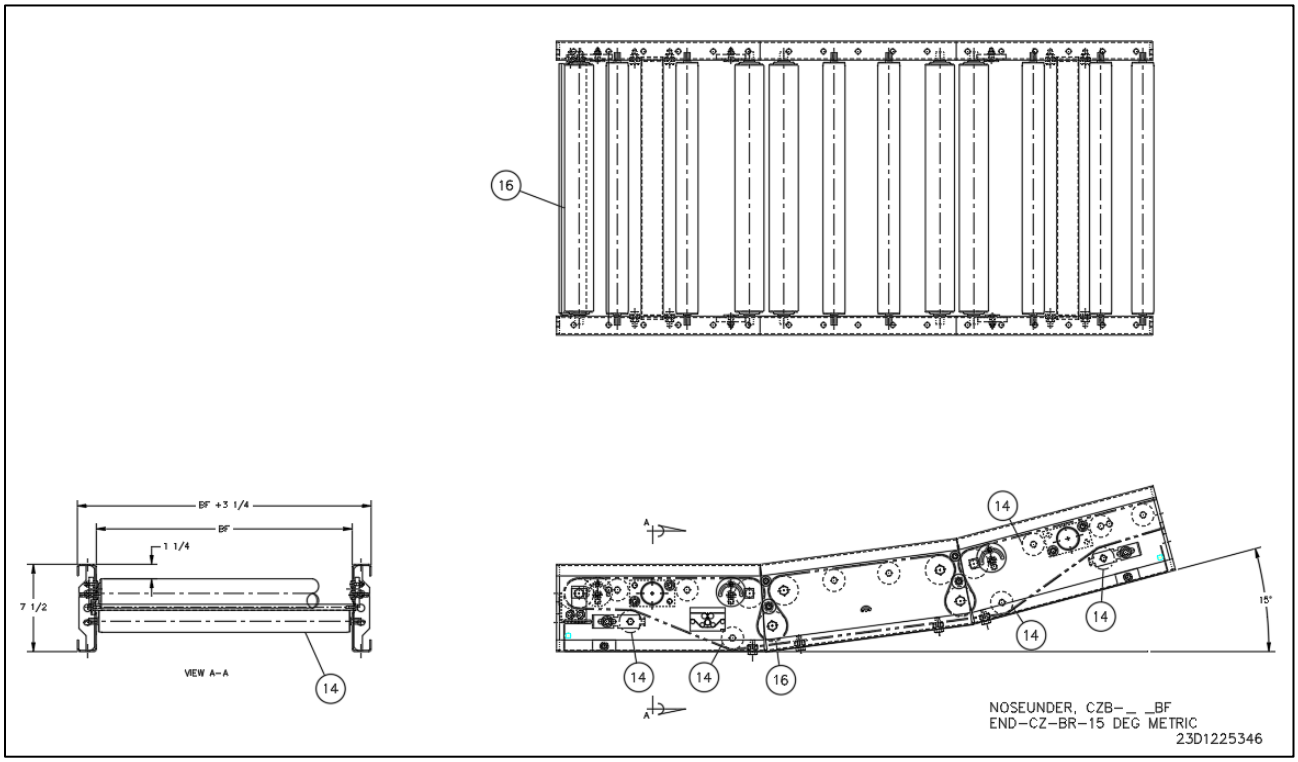


13.11.1 Replacement Parts - CRUZbelt Noseunder

CRUZBELT NOSEUNDER					
		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
Note: #14 above is not used with slider pan conveyors					
					Reference Dwg#23D1227034

Original language is in English

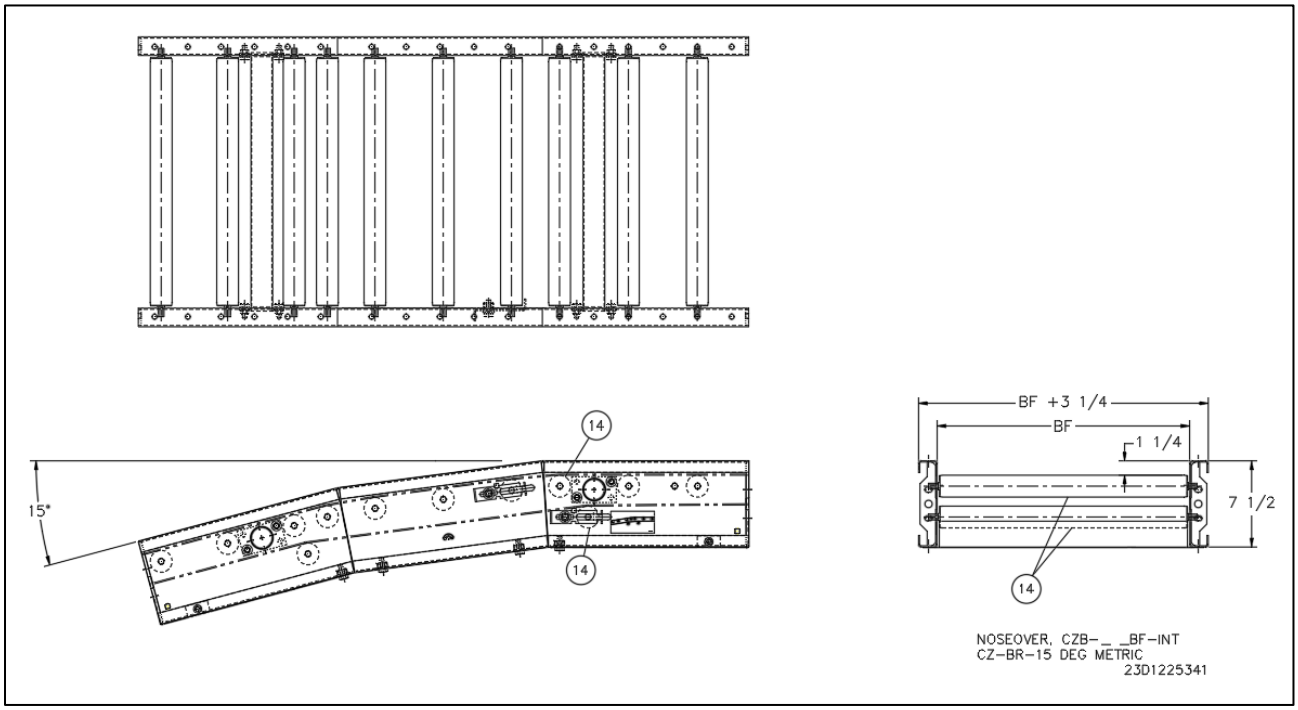
13.12 CRUZbelt Noseunder End Bed



13.12.1 Replacement Parts - CRUZbelt Noseunder End Bed

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
					Reference Dwg##23D1225346

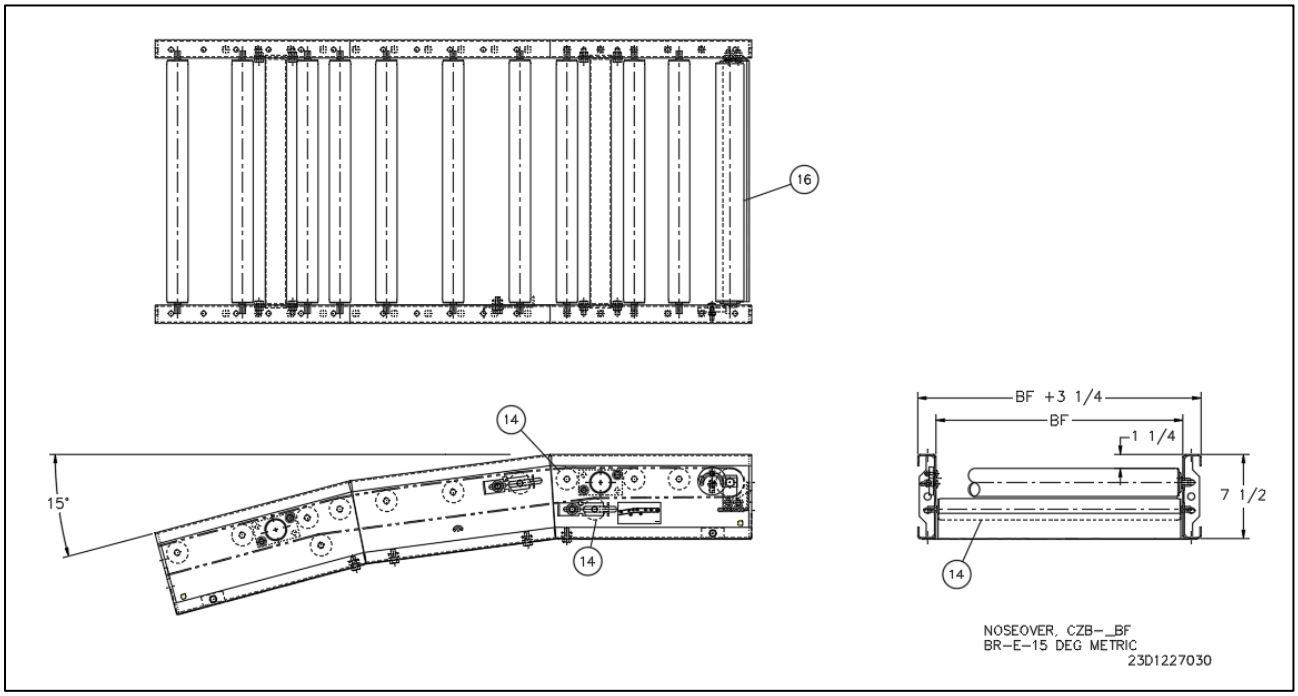
13.13 CRUZbelt Intermediate Noseover Bed



13.13.1 Replacement Parts - CRUZbelt Intermediate Noseover Bed

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
					Reference Dwg#23D1225341

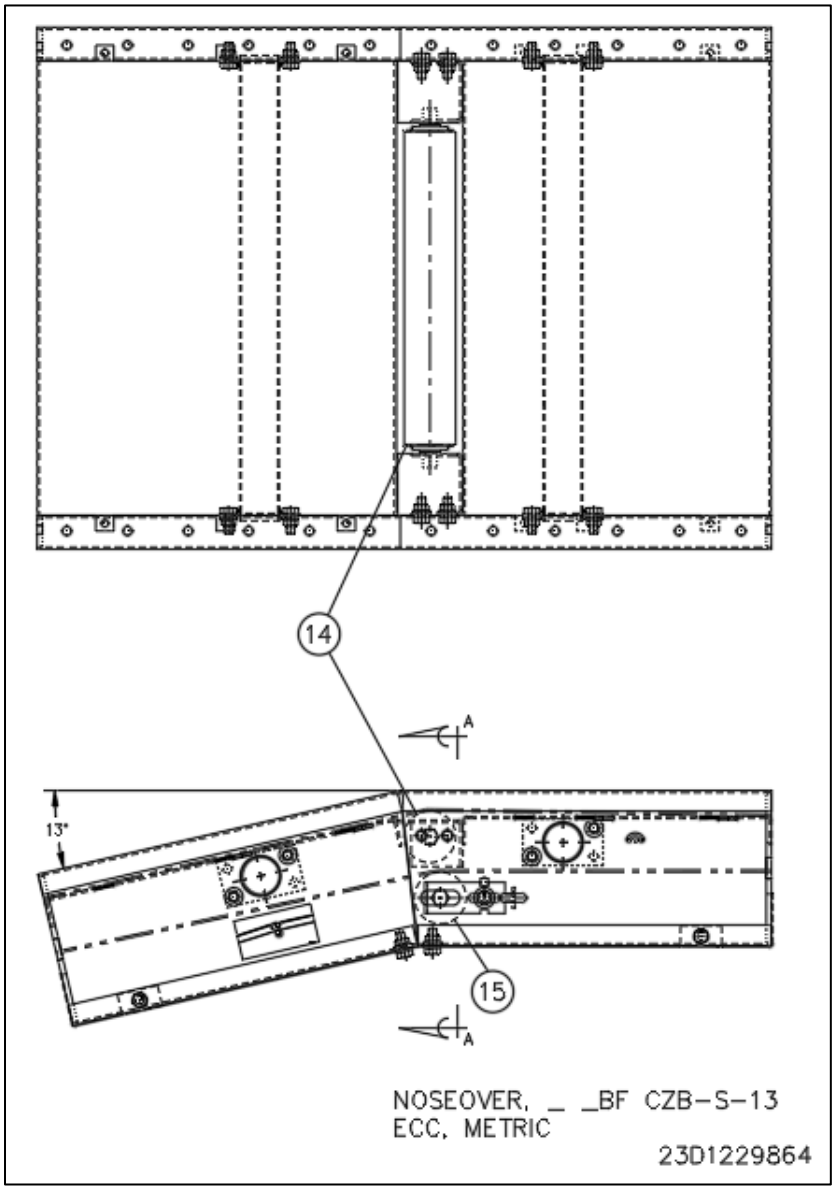
13.14 CRUZbelt Noseover End Bed



13.14.1 Replacement Parts - CRUZbelt Noseover End Bed

CRUZBELT NOSEOVER END BED					
		Widths & Part #s			
BALLOON	**DESCRIPTION**	**16" BF**	**22" BF**	**28" BF**	**34" BF**
14	ROLLER, 30 CZB 1.9 SNUBBER PRBG	E0009652	E0009653	E0009654	E0009655
16	PULLEY, CZB 2.5 DIA 1/4W	E0040390	E0040391	E0040392	E0040393
Bed Reference Dwg#23D1227030					

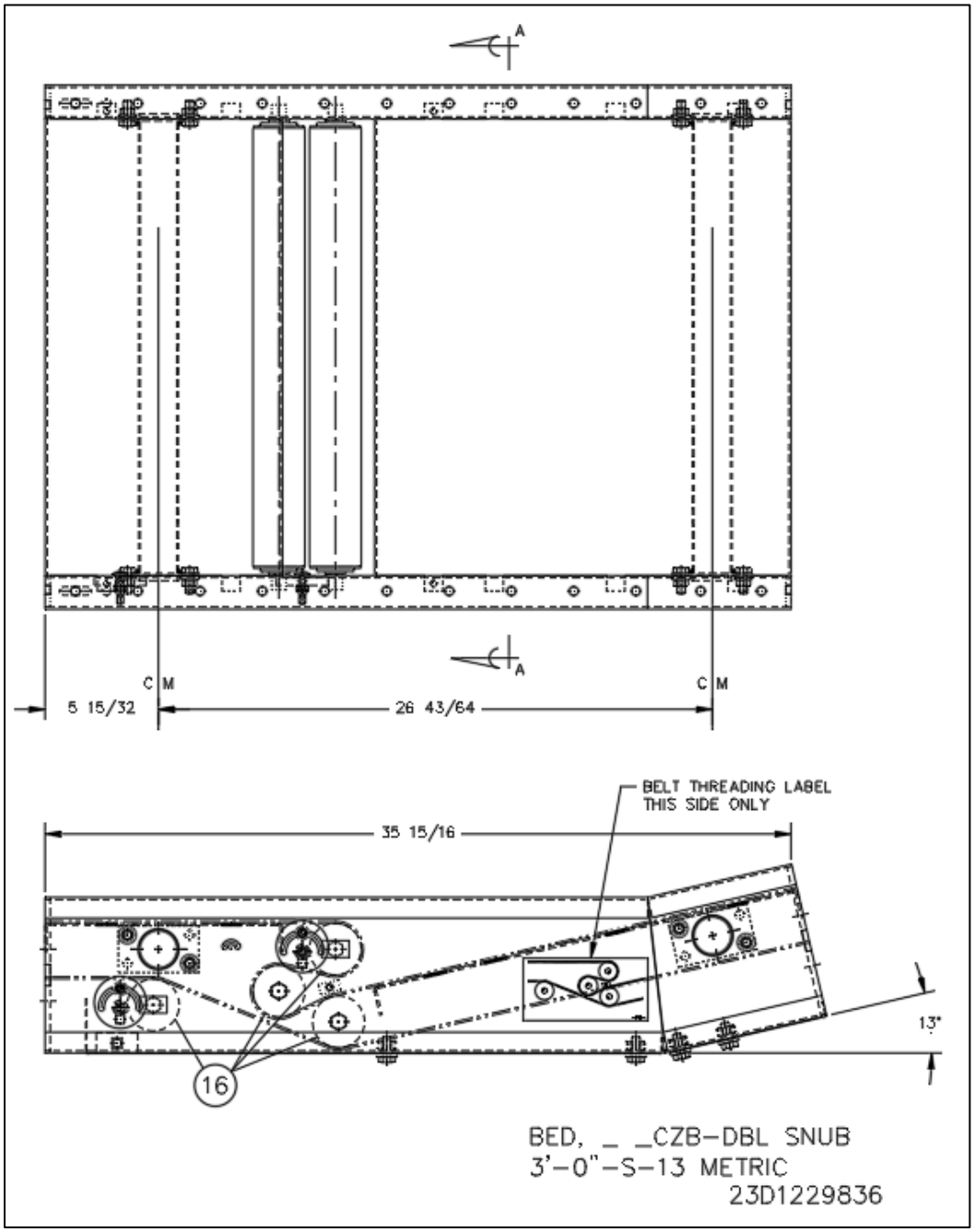
13.15 CRUZbelt Empty Carton Slider Noseover



13.15.1 Replacement Parts - CRUZbelt Slider Noseover

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 Reference Dwg. #23D1229864							

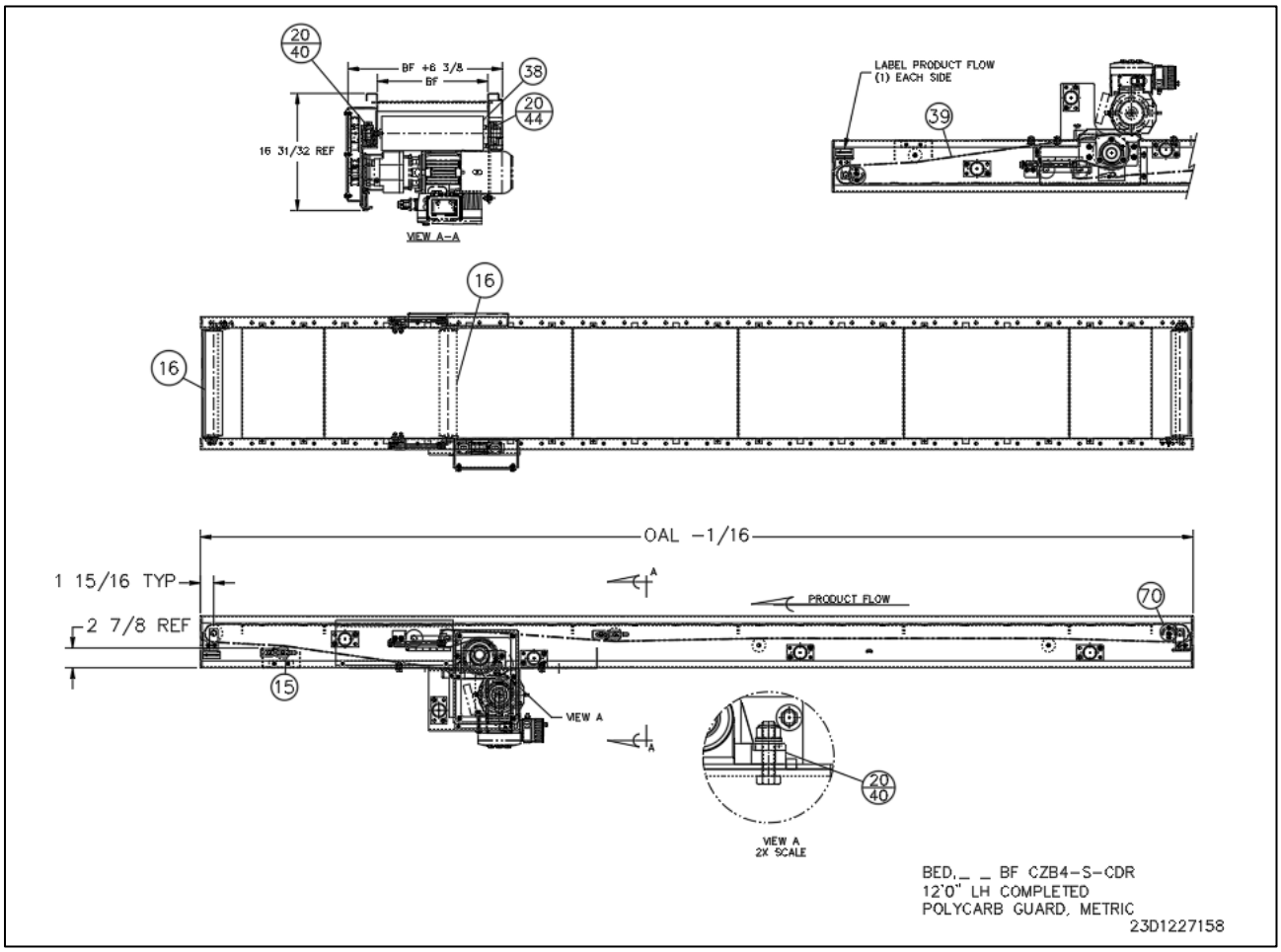
13.16 CRUZbelt Empty Carton Conveyor (Slider) Double Snubber



13.16.1 Replacement Parts - CRUZbelt Double Snubber (ECC Only)

CRUZBELT DOUBLE SNUBBER (ECC Only)							
		Widths & Part #s					
BALLOON	DESCRIPTION	16" BF	22" BF	28" BF	34" BF	40" BF	46" BF
16	PULLEY, _ _CZB 2.5 DIA 1/4W	E0040390	E0040391	E0040392	E0040393	E0040394	E0040395
							Bed Reference Dwg. #23D1229836

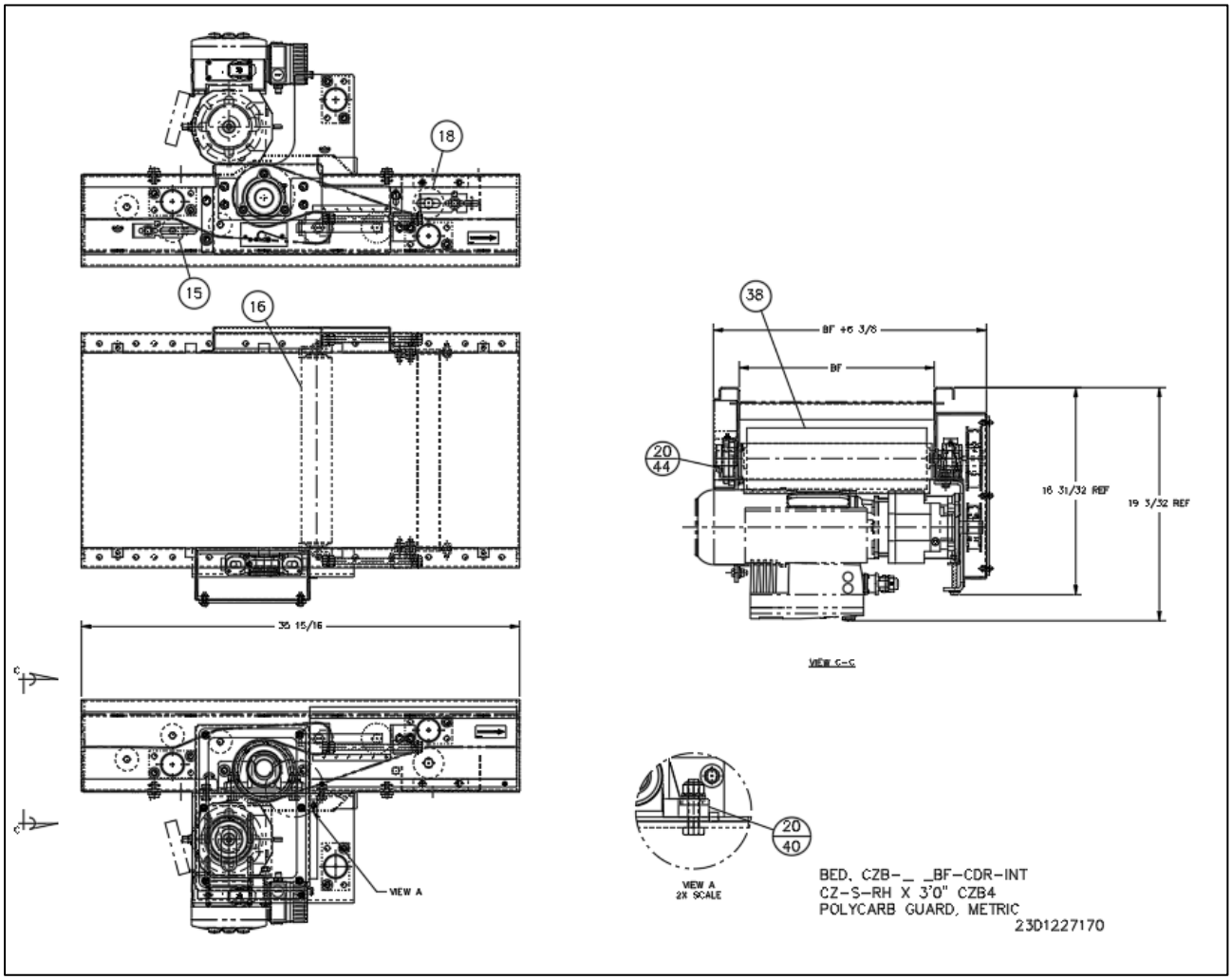
13.17 CRUZbelt 4 Center Drive (CDR) Complete



13.17.1 Replacement Parts - CRUZbelt 4 Center Drives Complete

CRUZBELT 4 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, WLDMT _ _BF CZB4 CDR URETHANE	1225615	1225615	1225615	1225615
39	BELT, CZB _ _-9/16" X __X_" MF BP290 FR LACED W/ CERT			1226227	
20/40	BRG, PILLOW BLOCK 35MM B	1225625	1225625	1225625	1225625
20/44	BRG, FLG 3BOLT X 35MM B DODGE	1225669	1225669	1225669	1225669
					Reference Dwg. #23D1227158

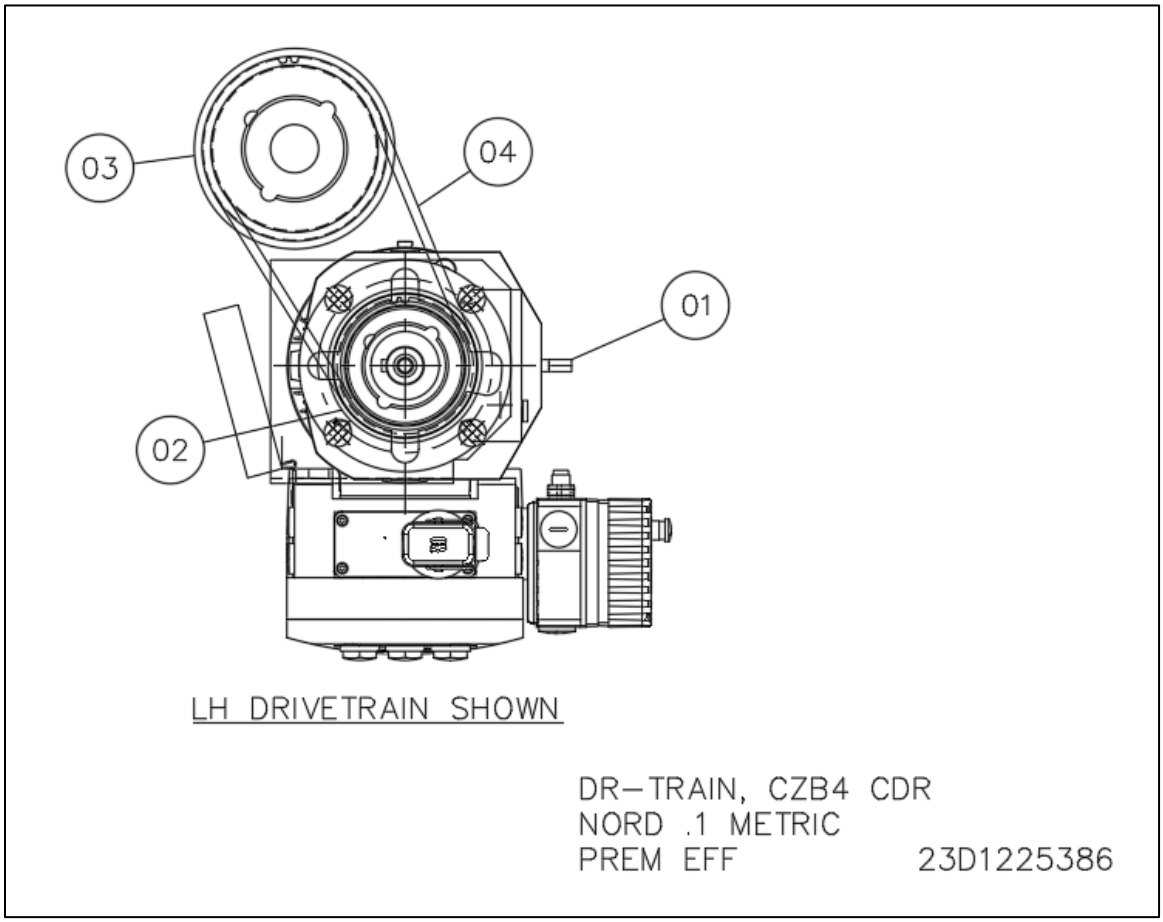
13.18 CRUZbelt 4 Center Drive (CDR) Slider



13.18.1 Replacement Parts - CRUZbelt 4 Center Drives Slider

CRUZBELT 4 CENTER DRIVES SLIDER					
		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
18	ROLLER, SNUB _ _BF 11/16AXLE	18218001	18224001	18230001	18236001
38	PULLEY, WLDMT _ _BF CZB4 CDR URETHANE	1225615	1225615	1225615	1225615
20/40	BRG, PILLOW BLOCK 35MM B	1225625	1225625	1225625	1225625
20/44	BRG, FLG 3BOLT X 35MM B DODGE	1225669	1225669	1225669	1225669
Reference Dwg. #23D1227170					

13.19 CRUZbelt 4 CDR Drivetrain



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)

ALL GEARMOTORS USE “TW” THERMOSTAT OPTION (IE- SK372-VL-90SP/4 TW)

POSITION OF BRAKE HAND RELEASE LEVER: POSITION 1 W/TERMINAL BOX POSITION 1

POSITION 3 / W TERMINAL BOX POSITION 3

$$\text{BELT PULL} = \frac{33000 \times .98 \times .97 \times \text{HP}}{\text{FPM}}$$

$$\text{FPM} = \text{RPM} \times \frac{\text{DR SPKT}}{\text{DRVN SPKT}} \times \frac{5 \times 3.1416}{12}$$

ASSUMPTIONS:

GEARMOTOR EFFICIENCY = 97%

SPROCKET EFFICIENCY = 95%

LAGGED PULLEY = 5” DIA

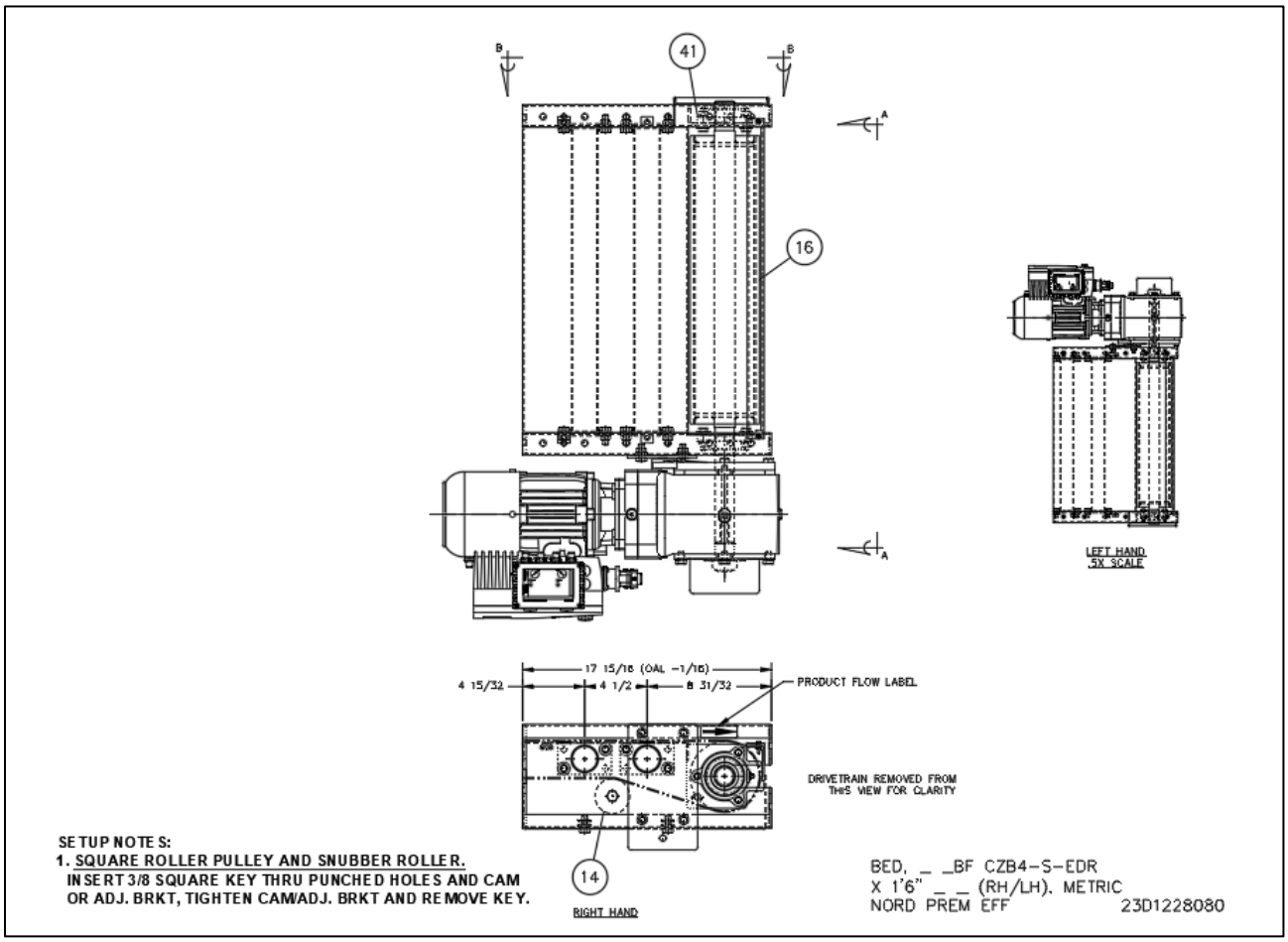
MAXIMUM SPROCKET SIZE: 8MX-48S-21

NOTE: DRIVE NOT TO EXCEED 250 LB OF BELT PULL.

13.19.1 Replacement Parts - CRUZbelt 4 CDR Drivetrains

CZB4-CDR TIMING BELT & DRIVETRAINS											
Balloon #		1						1	2	3	4
FPM	M / MIN	LH DR-TRAIN W/O BRAKE	LH DR-TRAIN WITH BRAKE	RH DR-TRAIN W/O BRAKE	RH DR-TRAIN WITH BRAKE	MOTOR HP	MOTOR KW	GEARMOTOR (RPM)	DRIVE PULLEY	DRIVE PULLEY	BELT / POLYCHAIN
90	27.43					1	0.75	SK372.1F-VL-80 LP/4 (-)	8MX-45S-21-1610	8MX-45S-21-2012	8MGT-720-21
120	36.58		1225386		1226436	1	0.75	SK372.1F-VL-80 LP/4 (109)	8MX-41S-21 2012	8MX-45S-21 2012	8MGT-720-21
150	45.72					1.5	1.125	SK372.1F-VL-90 SP/4 (-)	8MX-40S-21 2012	8MX-45S-21 2012	8MGT-720-21
180	54.86					1.5	1.125	SK372.1F-VL-90 SP/4 (-)	8MX-40S-21 2012	8MX-42S-21 2012	8MGT-720-21
300	91.44					3	2.25	SK372.1F-VL-100 LP/4 (-)	8MX-40S-21 2012	8MX-45S-21 2012	8MGT-720-21
Reference Dwg# 23D1225386											

13.20 CRUZbelt 4 End Drive



13.20.1 Replacement Parts - CRUZbelt 4 Slider Bed End Drive

CRUZbelt4 END DRIVE SLIDER BED (RH & LH)						
			Widths & Part #s			
BALLOON	DESCRIPTION	Bed Length	16" BF	22" BF	28" BF	34" BF
14	PULLEY, _ _ CZB 2.5 DIA 1/4W	3'-12'	E0040390	E0040391	E0040392	E0040393
16	PULLEY, WLDMT _ _CZB 4.5 DIA EDR	3'-12'	1228184	1228184	1228184	1228184
41	BRG, FLG 3 BOLT X 35MM BORE DODGE	3'-12'	1225669	1225669	1225669	1225669
REF DWG:23D1228080						

13.20.2 Replacement Parts - CRUZbelt 4 Slider End Drive & Drivetrain

CZB4-EDR DRIVE TRAIN ITEM #s							
			BALLOON#	40	40	40	40
FPM	HP	ACTUAL SPEED	ACTUAL BELT PULL	DR-TRAIN P/N RH	DR-TRAIN P/N LH	DR-TRAIN P/N RH W/BRAKE	DR-TRAIN P/N LH W/BRAKE
*38	0.5	38	352				
*45	0.5	45	293				
*57	0.75	56	354				
*76	0.75	75	265				
91	1	91	284	1228357	1228082	1228083	1228084
114	1	113	233				
127	1	126	210				
152	1.5	152	261				
180	1.5	179	221				
229	2	227	233				
REF DWG#: 23D1228080							
*** FOR NORMAL; SPEEDS OF 38 THRU 76 FPM, USE 0.50, 0.75-HP NORD STANDARD EFF. MOTORS.** **ON RH MTRS, THE VFD IS @ 3. ON LH BRK< THE VFD IS @1.**							

$$\text{FPM} = \text{RPM} \times \frac{5 \times 3.1416}{12}$$

$$\text{BELT PULL} = \frac{33000 \times .8 \times \text{HP}}{\text{FPM}}$$

14 Decommissioning and Disposal

Caution

Decommissioning and dismantling must be entrusted to personnel specialized in such activities.

Only those in charge of the dismantling and final waste disposal phase can perform the following activities:

- Mechanical and electric disconnection of parts according to disassembly instructions and design diagrams.
- Transporting parts from the position of use to the waste disposal facility for separation of parts.

Caution

The partly completed machine does not contain components or hazardous substances which require special removal procedures.

14.1 Decommissioning

If the partly completed machine is not to be used for a long time, it must be set safely and stored in a closed, dry, and clean environment to preserve all the parts that compose it as best as possible.

Proceed as follows to decommission the partly completed machine:

Step 1.

- Turn off and lock/out the main power supply panel.
- Turn off and lock out the power supply to the partly completed machine power box.
- Disconnect the electrical connection such as the driver cards, air lines, or power harness connections from the partly completed machine and the adjacent partly completed machine.
- Clean all the components of the partly completed machine (refer to the “Maintenance” chapter).
- Secure the partly completed machine before you unanchored it.
- Move partly completed machine to designated storage location

14.2 Disposal

- When you wish to dispose of the partly completed machine, secure it.
- To dispose of the partly completed machine, proceed as described below:

Step 2.

- Turn off and lock/out the main power supply panel.
- Disconnect the power supply to the partly completed machine.
- Disconnect the electrical connection such as the driver cards, air lines, or power harness connections from the partly completed machine and the adjacent partly completed machine.
- Clean all the components of the partly completed machine (refer to the “Maintenance” chapter).
- Secure the partly completed machine before you unanchored it.
- Prepare a spacious working area, free from obstacles, to safely dismantle the partly completed machine.
- Remove all the cables and electrical components, adopting the safety measures required for such interventions.

- Disassemble all the components, separating the resulting material into groups, for differentiated disposal.

Caution

The partly completed machine does not contain components or hazardous substances which require special removal procedures.

Caution

Always comply with the laws in force in the country of installation/incorporation regarding partly completed machine disposal.

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As standards, specifications, and design change from time to time, please ask for confirmation of the information given in this publication.