

# **CAMWALL CONVEYOR INSTALLATION, OPERATIONS AND MAINTENANCE MANUAL**







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# 1.0 GENERAL INFORMATION

## 1.01 SAFETY RECOMMENDATIONS



Safety informational symbols used in this manual include:

	<b>DANGER</b> indicates a hazardous situation which, if not avoided, <u>will</u> result in death or serious injury.
	<b>WARNING</b> Indicates a hazardous situation which, if not avoided, <u>could</u> result in death or serious injury.
	<b>CAUTION</b> , used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
	<b>Notice</b> is used to address practices not related to personal injury.













Safety for operators and other personnel is of prime concern. Always take the necessary precautions to ensure the safety of others, as well as yourself. The first line of defense, in any safety situation, is the common sense and safety awareness of the individuals performing the work. It is important that you allow access to the equipment only to **experienced** and **safety trained** employees with good safety records. These would be employees who have demonstrated that they will consistently follow safety procedures. To ensure safety, all equipment must be operated with care and concern by the operator. The operators and maintenance personnel must have a thorough knowledge of the machine's performance capabilities and operating characteristics, as well as be qualified to perform the work they are asked to provide.

It is a common practice, and we agree that it is a necessary and good practice, for owners and users of equipment to develop specific, written safety procedures that are specific to the environment and equipment to which personnel will be exposed. This manual may not cover all the safety related contingencies at your site. Owner and/or operators should carefully construct and enforce a safety program that fits their own specific conditions.

The following recommendations are offered as a general safety guide. Local rules and regulations will also apply.

1.  Read all warning tag information and become familiar with all controls before operating the equipment.
2.  Only qualified, authorized and trained personnel may

operate and maintain the equipment.

3.  **WARNING** Always use safety protective equipment and clothing such as safety glasses, safety shoes, hard hats, safety harness, etc...
4.  **WARNING** Always use proper lock-out and other safety procedures before attempting to clean, oil or perform any maintenance on the equipment. Do not begin without following proper lockout and safety procedures.
5.  **WARNING** Take appropriate precautions to protect personnel from falling objects.
6.  **WARNING** Never stand or walk under the discharge end of the conveyor.
7.  **WARNING** Always use proper lock-out / safety procedures before attempting to retrieve or place anything on a conveyor belt.
8.  **WARNING** Never reach into, or place any objects into the flow of material as it enters or discharges from the conveyor.
9.  **WARNING** Never touch, reach into or over a moving conveyor belt.
10.  **WARNING** Keep all loose clothing, hands, body parts and hair away from moving equipment, rotating shafts, belts, chains, etc...
11.  **WARNING** Take appropriate precautions to ensure that hands, legs or other body parts do not come in contact with the conveyor belt, drive belt, drive chain, etc...
12.  **WARNING** Local safety, health laws and regulations may require that entry into confined spaces be governed by regulations related to limited access / confined space(s). Always use proper safety procedures before entering a limited access / confined space and performing maintenance.
13.  **WARNING** Access the equipment using only **approved** methods such as walkways, stairs, ladders, etc... each with its associated proper personal safety gear, harness, lanyard, etc...
14.  **WARNING** Never use the conveyor or its housing as a walking or climbing surface.

15. **⚠ WARNING** Wear fall protection when accessing or working on the conveyor from any approved working surface or, in general, when working at a height of 4 feet or more above the ground.
16. **⚠ WARNING** Modifications to the conveyor and / or its supporting structure may effect the structural integrity of the equipment. Contact Cambelt International before any modifications are made.
17. **⚠ WARNING** Make sure all guards and covers are properly in place before operating equipment.
18. **⚠ WARNING** Never operate the equipment with any damaged or missing components, covers, guards, shields, fasteners, etc...
19. **⚠ WARNING** Corrosion and / or excessive wear will compromise the structural integrity of the equipment. Make certain that the coating system and structural components are maintained in good condition.
20. **⚠ WARNING** Wash down of equipment - Appropriate precaution must be taken to ensure the compatibility of any liquids or chemicals used for cleaning with any other materials in the vicinity.
21. **⚠ WARNING** Fire Hazard - The following can potentially generate excessive heat and / or may become an ignition source of dust or other combustible materials.
- Slipping V-Belts
  - Damaged Bearings
  - Chemical reactions
  - Static Electricity
22. Keep the equipment in good overall operating condition. Perform scheduled service and adjustments as indicated in the maintenance manual.

## 1.02

## TYPICAL EQUIPMENT SAFETY LABELS





## 1.03

# TO OUR VALUED CUSTOMERS

We at Cambelt International Corp. (CIC) are pleased that you have selected the CamWall Conveyor to fill your bulk materials handling need. This manual has been prepared to assist you in making the best possible use of your equipment, and in fully understanding its operation. We have attempted to cover most of the pertinent areas, and hope that our efforts have been successful. If, however, you have any questions concerning the installation, operation, or maintenance of our equipment, which are not covered in this Manual, please feel free to contact CIC directly or the Cambelt Representative in your area.

***Read these instructions carefully*** and pass them on to any others who will be responsible for the installation, operation, and maintenance of the CamWall Conveyor. It is very important that only competent and capable people who are **experienced** and **safety trained** with good safety records be responsible for the safe and professional installation, operation, and maintenance of the CamWall Conveyor. Although the equipment is quite simple, it nonetheless requires regular inspections and adjustments (if necessary) to keep the conveyor in top working condition. Remember, the successful operation of your CamWall Conveyor depends on how well these instructions are followed.

This manual covers the standard style CamWall Conveyor. It may not cover all custom designed details, modifications, or options.

While each CamWall conveyor is similar in design and operation, each job site has its own unique environment and other specific application issues which this manual may not cover. Any site specific requirement / procedures pertaining to your installation must be addressed by your operation, maintenance and safety personnel. We, at Cambelt, recommend that the owners and users of the Cambelt equipment develop specific written safety procedures which are specific to the environment and equipment to which personnel will be exposed. You should carefully construct and enforce a safety program that fits your own specific conditions.



# **I M P O R T A N T ! !**

*Immediately upon receiving the conveyor(s), inspect for damage or indication of rough handling. Make sure all shafts rotate freely and examine the housing for obstructions or sharp edges, especially, in the path of the belt. Remove burrs and sharp edges wherever you find them.*

**⚠ CAUTION** *WEAR GLOVES! Sharp edges will cut.*

Check for shortages by referring to the packing list or Bill of Materials for a record of items shipped. Report any damage or shortage claims immediately to the carrier, keeping a record of your report; then notify your Cambelt Conveyor representative or CIC. CIC is not obligated to replace, free of charge, items which show as being shipped on the Packing List. CIC must be notified within 10 days after receipt of equipment of any shortages and/or damage. This will not relieve the carrier of its responsibility, but will provide CIC with information we would need if you happen to need our assistance in processing your claim with the carrier. Failure to notify CIC as specified will be understood to be notice that the equipment was received, complete, and in good condition.

# **I M P O R T A N T ! !**

In the event that problems are encountered in the assembly, installation or erection of your CamWall Conveyor that would be considered to be beyond normal and expected, it is necessary that your Cambelt engineer be notified prior to the affectation of a cure, especially if any claim is to be made against Cambelt as a result of the problem.

**CAMBELT WILL NOT APPROVE OR ACCEPT BACKCHARGES FOR LABOR, MATERIALS OR OTHER COSTS INCURRED BY PURCHASER OR OTHERS IN MODIFICATION, ADJUSTMENT, SERVICE OR REPAIR OF CAMBELT-FURNISHED MATERIALS UNLESS SUCH BACKCHARGE HAS BEEN APPROVED IN ADVANCE OF THE WORK BY AN AUTHORIZED CAMBELT PRODUCT MANAGER, BY CAMBELT PURCHASE ORDER OR WORK REQUISITION SIGNED BY CAMBELT.**

## 1.04 OWNER'S RESPONSIBILITY

The following are not covered by the Warranty, and are the responsibility of the Owner.

1. Periodic lubrication and adjustments that become necessary because of use and operation of the conveyor.
2. Changing or adding oil in the Gear Reducer.

**NOTICE** *Conveyors are shipped without oil in the gear reducer.*

3. Electrical system, wiring, fuses and starters.
4. V-Belt drive adjustments.
5. Conveyor belt adjustments and alignment.
6. Proper feeding of material at designated rate.
7. Changes in character of material.
8. Design of auxiliary equipment, to insure unobstructed discharge of material.

## **1.05**

## **WARRANTY**

Cambelt equipment is backed by Cambelt's reputation as a quality manufacturer, and by many years of proven equipment reliability.

Equipment manufactured and sold by Cambelt International Corp. is backed by the following warranty:

For the benefit of the original user, Cambelt warrants all new equipment manufactured by Cambelt International Corp. to be free from defects in material and workmanship; and will replace or repair, F.O.B. at its factories or other location designated by it, any part or parts returned to it which Cambelt's examination shall show to have failed under normal use and service by the original user. Such repair or replacement shall be free of charge for all items, except those items such as conveyor belting, and the like, that are consumable and normally replaced during maintenance, which repair or replacement shall be subject to pro-rata charge based on Cambelt's estimate of the percentage of normal service life realized from the part. Cambelt's obligation under this warranty is conditioned upon its receiving prompt notice of claimed defects, which shall in no event be no later than thirty (30) days following expiration of warranty which lasts for a period of one (1) year from date of start-up of the equipment, or eighteen (18) months from the date of shipment, whichever occurs first; and is limited to repair or replacement, as aforesaid.

**THIS WARRANTY IS EXPRESSLY MADE BY CAMBELT, AND ACCEPTED BY PURCHASER, IN LIEU OF ALL OTHER WARRANTIES, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PARTICULAR PURPOSE, WHETHER WRITTEN, ORAL, EXPRESS, IMPLIED, OR STATUTORY. CAMBELT NEITHER ASSUMES, NOR AUTHORIZES ANY OTHER PERSON TO ASSUME FOR IT, ANY OTHER LIABILITIES WITH RESPECT TO ITS EQUIPMENT. CAMBELT SHALL NOT BE LIABLE FOR NORMAL WEAR AND TEAR, NOR FOR ANY CONTINGENT, INCIDENTAL OR CONSEQUENTIAL DAMAGE OR EXPENSE DUE TO PARTIAL OR COMPLETE INOPERABILITY OF ITS EQUIPMENT FOR ANY REASON WHATSOEVER.**

This warranty shall not apply to equipment or parts which have been altered or repaired outside of Cambelt's factory, or damaged by improper installation or application, or subjected to misuse, abuse, neglect or accident.

Cambelt makes no warranty with respect to parts, accessories or components manufactured by others. The warranty which applies to such items is that offered by their respective manufacturers.

This warranty applies only to equipment made or sold by Cambelt International Corp.

## **1.06 SERVICE AVAILABLE**

The CamWall Conveyor is designed to be installed and serviced by your authorized plant personnel. However, if factory service is desired, please contact your local Cambelt representative or CIC. A schedule of current field service rates will be forwarded to you, upon request. Normally, advance notice of your need for field service is required, so plan ahead. An order for field service should be placed with your Cambelt representative at least one week in advance of the date on which you would like service to commence.

## 2.0

## INSTALLATION

### 2.01

### INSTALLATION OF THE CONVEYOR HOUSING

#### **WARNING**

*Installation of the equipment should only be performed by competent personnel familiar with all aspects of the installation including but not limited to Civil, Structural, Mechanical, Electrical and personnel safety. Refer to section 1.01 for Safety Recommendations.*

Normally, all conveyors are fabricated, assembled and shipped in pre-assembled component modules; i.e., Head Section, Tail Section, Turn Section(s), etc. Refer to your conveyor general arrangement drawing and locate the connection flange designations. Connect the modules according to the corresponding match markings on the conveyor modules and the flange designations on the general arrangement drawing. Conveyor modules must be erected in the order as shown on the general arrangement drawing in order to ensure proper conveyor alignment.

Be sure that the conveyor is installed plumb and level, and is not crooked, twisted, or skewed. Care must be taken to install the conveyor properly, so as to avoid belt alignment problems which are almost certain if the conveyor is not properly assembled or aligned as stated above.

If the conveyor support structures are supplied by Cambelt, assemble them as indicated on the appropriate assembly drawings, and attach them to the conveyor structure as indicated on the general arrangement drawing(s).

#### **NOTICE**

*If welded supports are used, never weld on the conveyor housing after the belt has been installed, unless special precautions are taken to prevent burning the belt.*

If conveyor support structures are supplied by others, please consult with a Cambelt engineer to determine specific support requirements.

Mount the motor and speed reducer on the conveyor Head Section. Be sure the Head Section is supported adequately to take the additional weight of the drive.

#### **WARNING**

*Be sure the Head Section is supported adequately to take the additional weight of the drive.*

## 2.02                    **INSTALLATION OF THE CONVEYOR BELT**

The following steps will assist in quickly and easily installing a new CamWall Conveyor belt.

1. Prepare one end of the new CamWall Conveyor belting according to instructions given in the publication entitled:

*BELT SPLICE INSTRUCTIONS  
for  
CamWall CONVEYOR BELTS (CF) using  
FLEXCO 550J FASTENERS*

Refer specifically to paragraphs 1 thru 3 in said instructions, and follow them explicitly. Initially, however, perform all steps necessary to completely install the mechanical belt fasteners on **one end of the belt only**. After the new belt is in place in your conveyor, go back and complete all the steps necessary to complete the belt splice.

2. Prior to threading the belt, all pulleys should be checked for possible damage or misalignment. Pulleys are checked by rotating them in their bearings. Check to make sure there is free rotation and the pulleys are centered in the middle of their housings(s). If any pulley is not centered, the set screws in the bearing locking collars and the pulley's taper-lock bushings must be checked so the pulley can be re-centered. This may require that the collars and / or bushings be loosened, to permit the pulley to slide back to center on the shaft; then securely retightened to prevent further shifting of the pulley on the shaft, or movement of the shaft itself.

If you are unsure of exactly what to do, please call your Cambelt engineer for assistance.

3. When the conveyor housing is fully erected, remove / open quick-opening access panels, or any cover that will aid in the installation of the belt.
4. The screw take-up must be adjusted so the tail pulley is in its forward-most position, toward the inlet.
5. If V-Belts were previously installed remove them from the drive. This will allow the head pulley to coast or "float" as the new conveyor belt pulled into the conveyor.
6. Pre-threading a heavy rope or steel cable through the conveyor along the

anticipated belt path will aid greatly in the actual threading of the belt. The end of the rope or cable can be attached to the leading end of the new belt and then pulled through the conveyor, leading the belt along the correct path.

7. Many belts may be long enough and /or heavy enough that they may require mechanical assistance, by means of a winch or similar device, in order to pull the belt into place. At times, a pickup truck, forklift, or crane may be used to accomplish this, but only with extreme caution. The belt may be easily damaged or injury may occur if proper care is not taken.

**⚠ WARNING** *When using mechanical assistance, pickup truck, forklift, etc..., to pull the belt, extreme care must be taken to ensure that the rope / cable or the leading edge of the belt does not “catch” or get “hung up” resulting in damage to the equipment or potentially causing injury.*

**⚠ WARNING** *Care must be taken to ensure that the rope / cable is of adequate strength and the connections at both ends of the rope / cable to the belt and the pulling device are secure enough that there is no risk of the rope / cable or the connections failing under stress, potentially causing injury.*

**⚠ WARNING** *Care must be taken to keep loose clothing, fingers, hands, arms or other body parts clear of the belt as it is being pulled into and through the conveyor.*

Note: Threading of the belt and pulling it into the conveyor is made easier if the conveyor drive pulley is allowed to coast or “float”. Removal of the V-Belts from the drive pulley sprocket will permit the drive pulley to coast, as needed.

8. We often recommend that a steel plate be bolted to the leading end of the belt to assist in drawing the belt through the conveyor. The steel plate should be attached to the leading edge of the belt in several places along it’s width and should have a hole in it through which the rope or steel cable (see step no. 2 above) is threaded and attached. This plate will prevent the corners on the leading end of the belt from curling downward, which would inhibit easy entry of the belt into and through the conveyor.

**⚠ WARNING** *Care must be taken to ensure that the connection from the rope or cable to the belt end is secure enough that*



*there is no risk of the connection failing under stress, potentially causing injury.*

9. The roll, pallet, or crate of belt, as received from Cambelt, should be lined up with the conveyor so as to allow for free and easy insertion of the belt into the conveyor. Misalignment will result in considerable difficulty in threading the belt into the conveyor.
10. Pulling the belt into the conveyor can be a stop and go process and care should be taken to **slowly** pull the belt while watching carefully to ensure that the leading edge of the belt does not “catch” or “hang-up” while pulling the rope or the old belt.
11. It is sometimes easier to thread the belt into the “return” side of the conveyor first; then up over the conveyor head pulley, and back down the “carrying” side of the conveyor.
12. Bring the two ends of the belt together at an easily accessed point, where the belt splice may be performed. Refer again to the belt splicing instructions noted in step no. 1 above, and complete the belt splice.

Specific belt splicing instructions will be inserted into the splice kit that is shipped with your conveyor. The splice kit will normally be rolled up with the belt, or may be located in the wooden shipping crate that also contains the conveyor drive motor, speed reducer, and other conveyor accessories.

**FOLLOW THE INSTRUCTIONS** included with the splice kit!

13. With the belt splice completed, replace / close all quick-opening access panels, or any cover that was removed or opened.
14. After the belt has been installed, and prior to running the belt, check the belt covers for dings and dents which may have been incurred during shipping or erection. All dents must be removed so the belt will not come in contact with the belt cover.

Clearance must also be checked between the belt top and the cover plate around the inlet hopper. Hopper weight, material weight, or other loads transferred to the conveyor belt cover may cause the cover plate to sag into the belt. If this happens, add supports to the hopper, to prevent sagging. In a few cases, the cover can be shimmed, to provide additional clearance.

15. Re-tension (see section 2.03) and align the belt (see section 2.04).

**⚠ WARNING**

*When running the belt, for any reason, for initial testing, for alignment and maintenance procedures or for operation, with any covers open, keep all loose clothing, hands, legs, body parts, hair and tools away from the openings and any moving parts.*

*Never reach into the opening.*

*The moving belt or associated moving parts may cause death or serious injury.*

## 2.03

# TENSIONING THE CONVEYOR BELT

A CamWall Conveyor utilizes a manual screw-type belt take-up device for removing the slack from the belt.

No specific formula exists to determine the amount of tension that should be applied to a belt. As a starting point a simple rule to follow is that the belt should only be tensioned to a point that;

1. When the belt is first started, no slipping of the belt on the drive pulley is detected.
2. Enough tension has been applied to allow for good control of belt alignment at the conveyor pulleys.

When both A and B are achieved, tighten the belt just a little bit more.

A new conveyor belt will experience most of the expected stretch in a short period of time. A new belt normally stretches approximately 1.5% - 2% of its length. In other words, a 100 foot long loop of belt will experience belt stretch of approximately 1.5 feet (18 inches) or 9 inches of travel in the belt take-up. Again, the major part of this stretch will occur in the first several weeks of operation, and once that initial stretch is gone, belt tensioning maintenance may be done on a less frequent basis. Initially, however, frequent attention must be paid to belt tension in order to avoid damaging a belt by allowing it to run too loose, while the belt is stretching. If the belt is loose and the take-up pulley has no adjustment left, the belt may be shortened and respliced.

As a belt is tensioned, care should be taken to prevent misalignment of the belt at the pulleys. A belt that is too **loose** will not align properly. A belt that is too **tight** will also not align properly. The belt must have sufficient tension to prevent it from slipping on the head (drive) pulley when under maximum load.

### **NOTICE**

*Over-tensioning may cause belt damage.*

Observe the conveyor carefully during the first several days of operation, as this is when most belt stretch will occur. Re-tensioning will likely be necessary during this period.

If misalignment occurs, correct it immediately! (See section 2.04)

## 2.04 BELT ALIGNMENT

In order to realize maximum life from your conveyor belting, keeping the belt in proper alignment is a matter of the highest priority. Improper alignment may result in deterioration of the edges(s) of the belt, and will likely cause a considerable amount of spillage of the conveyed material at the inlet to the conveyor.

Primarily, belt alignment changes are accomplished by moving the pulleys. When the belt has been installed, the conveyor should be run while empty, and checked for alignment. A properly aligned conveyor has the belt running evenly in the center of the conveyor and at all conveyor pulleys, and therefore, prevents damage to the belt edges from contact with supporting structures or other objects. It is common, however, with most belts, to see some “wandering” of the belt from side to side on the conveyor. As long as the wander is not severe, simply set the belt alignment such that it averages out pretty well in the middle. If a misalignment problem exists, some adjustment of the belt may be accomplished by readjusting the head, tail, turn pulleys and possibly the belt idlers.

If alignment problems persist, it would be well to check the conveyor structure alignment. Structural misalignment can make a belt almost impossible to track.

If one section of a belt runs true and another section runs out of line, then generally, the belt ends were not properly squared when the splice was installed.

If the belt runs out of line consistently at one point in one of the conveyor straight runs, or if adjustment of the pulleys will not correct misalignment at a pulley terminal, the condition may be attributed to misaligned idlers. Usually the idlers that require adjustment will be located upstream of the point at which the belt runs out of line. Proper alignment is achieved by loosening the mounting bolts on several idlers on the upstream side and skewing them slightly. When one side of an idler is shifted ahead of the other, the belt shifts to the side which is behind. Re-tighten the mounting bolts before restarting the conveyor.

Note: It is better to adjust several idlers a little than to adjust 1 or 2 idlers a lot.

The following steps will assist in aligning the belt.

1. Remove inspection covers nearest each pulley, for observation.



*When running the belt with any covers open keep all loose clothing, hands, legs, body parts, hair and tools away from the openings and any moving parts.*

*Never reach into the opening.*

*The moving belt or associated moving equipment may cause death or serious injury.*

2. **⚠ WARNING** Prior to starting the conveyor, be sure the conveyor is clear of all tools and foreign objects, and that the Gear Reducer has been filled with oil (refer to lubrication instructions on Gear Reducer nameplate and owner's instruction manual).
3. **NOTICE** Grease all pulley bearings. The Conveyor's bearings have only a small amount of grease in them when shipped from the factory. Be sure to add more grease.
4. Adjust belt alignment at each pulley with the conveyor running. It is common, with most belts, to see some "wandering" of the belt from side to side on the conveyor. As long as the wander is not severe, simply set the belt alignment such that it averages out pretty well in the middle. The belt will drift to the slack side of the pulley at the Head and Tail Sections of the conveyor, but will normally run to the high (tight) side of the pulley at the Turn Section.

**NOTICE** Belt alignment just ahead of or prior to the flanged pulley in the conveyor turn section(s) is critical, and is of major importance, if your conveyor is of an "L" or "Z" configuration. Misalignment in this area will cause the belt to enter the flanged pulley in such a way that the corrugated sidewall will scrub against the interior side of the flange, causing severe abrasion to the sidewall of the belt. The existence of this condition will be clearly evident if you observe that the smooth, round edges of the corrugations of the sidewall are being "squared off". **THIS IS A COMMON OCCURANCE, SO LOOK FOR IT!** It is also possible that the sidewall of the belt may completely "jump" the flange of the pulley if misalignment is bad enough. When misalignment in this area occurs, adjust the idlers just ahead of the flanged pulley (see step 5 below).

5. Adjust belt alignment with idlers (if necessary). If the belt runs out of line consistently at one point in one of the conveyor straight runs, or if adjustment of the pulleys will not correct misalignment at a pulley terminal, the condition may be attributed to misaligned idlers. Usually the idlers that require adjustment will be located upstream of the point at which the belt runs out of line. Proper alignment is achieved by loosening the mounting bolts on several idlers on the upstream side and skewing them slightly. When one side of an idler is shifted ahead of the other, the belt shifts to the side which is behind. Re-tighten the mounting bolts before restarting the conveyor.

Note: It is better to adjust several idlers a little than to adjust 1 or 2 idlers a lot.

**⚠ WARNING** *The belt **MUST BE STOPPED AND NOT RUNNING** when*

*adjusting idler alignment. Never reach into any opening with a moving belt or equipment. The moving belt or associated equipment may cause death or serious injury.*

**NOTICE**

Re-tighten the mounting bolts before restarting the conveyor.

**NOTICE**

Do not shift idlers on a reversing belt as they will detrain the belt when it travels in the opposite direction.

6. Once a constant central belt alignment has been achieved on the return and carrying run with an empty belt, the conveyor should be checked while carrying a full load.

It is not unusual to have to readjust the belt alignment while the belt is loaded, even though the empty pre-aligned belt was running straight.

## 2.05 WASTE-PACK ENCLOSURES

Many enclosed CamWall Conveyors are equipped with waste-pack boxes that encase the take-up bearings on the conveyor's tail pulley. Absent these boxes, the bearings would be constantly exposed to dust and spilled or carried-back material(s) that accumulate in the take-up frames around the bearings.

The waste-pack boxes come from Cambelt's factory completely and tightly stuffed with new, clean cotton string material. The tightly packed string acts as a filter through which contaminants would have to first pass before coming into contact with the bearing and its own factory manufactured seal system. Under normal operating conditions, unless highly unusual conditions exist, the string should be adequate and not require replacement or re-charging during the lifetime of the take-up bearing.

When take-up bearing replacement occurs, previously used string packing may be re-used if it is clean. Any soiled or contaminated string should be replaced. The key issue here is: pack the box full and tight!



### **WARNING**

*The belt **MUST BE STOPPED AND NOT RUNNING** when checking or performing maintenance on the waste-pack enclosures. Never reach into any opening with a moving belt or equipment. The moving belt or associated equipment may cause death or serious injury.*

## 2.06 ZERO SPEED SWITCHES

### 1. Application.

Conveyors that are left unattended during operation should be equipped with a Zero Speed Switch that is mechanically connected to the conveyor belt pulley. In the event that the conveyor becomes jammed and/or the belt speed drops below a preset percentage, the Zero Speed Switch is designed to send a signal to the conveyor controls system. Without this type of protective device, an unattended conveyor that became jammed could continue to operate, potentially causing a fire, or serious damage to the conveyor belt, the motor, and other component parts.

### 2. Principle.

As the conveyor belt turns, the pulley shafts turn with it. One of these shafts is mechanically coupled to the Zero Speed Switch shaft. Should the conveyor belt speed drop below a preset percentage, the switch will send a signal to the conveyor controls system. **What the controls system does with that signal is left up to the discretion of the owner of the conveyor.** Very often, the signal initiates immediate disruption of power to the conveyor drive motor, preventing damage to the conveyor belt. Alternatively, the signal may activate an audible alarm, alerting operations personnel to an immediate potential problem, allowing the operator to take immediate precautionary action(s).

### 3. Mounting Location.

A Zero Speed Switch can be mounted at any one of several places on the body of a conveyor. The switch is mounted at the conveyor assembly plant in a pre-selected location on the conveyor, suitable to the customer; then it is disassembled and packed in the wooden crate, along with the conveyor drive equipment, to prevent damage during shipment.

#### **NOTICE**

Do not mount a Zero Speed Switch on the lower pulley of an increasing turn section. This pulley is not a high belt tension pulley and therefore may not indicate a true or consistent belt speed.

### 4. Wiring.

The Zero Speed Switch comes complete with a variety of wiring diagrams for connecting the switch to the controls circuit best suited to the individual requirements of the conveyor user.



## 2.07 ROTARY BELT THUMPER

A Rotary Belt Thumper is a belt cleaning device that is used on a belt that does not have a smooth belt surface on the carrying side of the belt, thus prohibiting the use of a belt scraper. The thumper creates a beating action on the backside of the belt very near the point where the belt leaves the conveyor head pulley. Its purpose is to help shake loose any material which may have stuck to the belt at the discharge point.

If your conveyor has been equipped with a belt thumper, there are several items which should be checked periodically.

1. When installing the belt thumper, be sure that the rotation of the thumper is running counter to belt travel direction. If the rotation is incorrect, change polarity on the motor wiring to correct the direction of rotation.
2. Slotted holes and adjusting screws have been provided as a means of adjusting the belt thumper upward and downward to provide a means of adjusting for proper amplitude of the thumping action against the belt. Make sure good solid contact is made with the bottom of the conveyor belt. However, the belt thumper should not be allowed to beat the belt so hard as to cause excessive or premature wear of the belt.
3. The external shaft bearings of the belt thumper should be checked and lubricated as needed.
4. The oil level in the right-angle gearbox of the thumper drive should be checked as a part of your routine maintenance.
5. Visually inspect all four (4) thumper rollers and the thumper roller bearings on a regular basis.
6. If your thumper is equipped with chain drive, visually inspect and oil the chain as necessary.

### **WARNING**

*The belt and belt thumper **MUST BE STOPPED AND NOT RUNNING** when checking or performing maintenance on the thumper. Never reach into any opening with a moving belt or equipment. The moving belt or associated equipment may cause death or serious injury.*

## **2.08 THE CONVEYOR INLET**

History has shown that a high percentage of problems experienced with belt conveyors originate at the conveyor inlet. Improper feeding of the belt may result in material spilling over the edge(s) of the belt and / or in overfilling the belt with more material than the belt is capable of carrying away.

Generally speaking, the use of skirtboards is impractical with a corrugated sidewall conveyor belt. We rely upon the sidewall themselves to stop the flow of material from escaping or flooding over the edges of the CamWall belt. It is vital, therefore, that, as much as possible, the flow of material into the conveyor inlet be directed in the same direction as the belt is traveling and toward the center of the belt and away from the sidewalls. If your CamWall Conveyor has been supplied with a set of orifice plates and slide gate at the conveyor inlet, **DO NOT DISCARD THEM!** They will aid greatly in directing the flow of material onto the belt as is required to minimize spillage and overfilling.

A CamWall Conveyor **must not** be overfilled at the inlet! A controlled feed is often required with a CamWall Conveyor. Common methods are variable frequency vibrating pan feeders, screw conveyors, rotary valves, etc...; but again, the orifice plates and slide gate mentioned above are your best prevention against belt overfill.

## **2.09 THE CONVEYOR DISCHARGE**

Always make sure that the conveyor discharge chute or transition is kept free from build-up or obstruction. The results of such a condition can be disastrous, as the material will “back leg” and the conveyor housing will quickly fill full of material and jam the entire system. Regular inspection of the discharge chute, or installation of a plugged chute switch will go a long way toward eliminating such an unfortunate occurrence.

## 3.0

# OPERATING THE CamWall CONVEYOR

Good conveyor system engineering practice requires that the conveyor belt be running prior to the introduction of product onto the belt and, conversely, the feed source be stopped prior to shut down of the conveyor belt. Whenever possible, adherence to this rule is very important. If your system includes a mechanical feed device just ahead of the belt conveyor, your system control logic should provide for a sequential start-up which will start the belt conveyor approximately 5 to 10 seconds prior to the start-up of the feed device and shut down the feed device with enough time to allow the product in the conveyor to be discharged from the belt prior to stopping the conveyor.

Your conveyor has been supplied with a drive package that has sufficient horsepower to start the belt with a full design capacity load on the belt. This does not necessarily mean, however, that the belt will start under all loaded conditions. Conditions such as a high inlines (inclines high enough that a belt stopped under load will not hold the material in place) or an overloaded conveyor housing, overloaded belt at the conveyor inlet point, extremely cold temperatures, loose V-belt, etc..., may cause failure of the conveyor to start.

### **NOTICE**

Prior to 1<sup>st</sup> time use check the oil in the Gear Reducer. Verify that the Gear Reducer has been filled with oil (refer to lubrication instructions on Gear Reducer nameplate and owner's instruction manual). The Conveyor's gearbox / reducer is shipped dry and oil must be added before use.

### **NOTICE**

Prior to 1<sup>st</sup> time use Grease all pulley bearings. The Conveyor's bearings have only a small amount of grease in them when shipped from the factory. Be sure to add more grease.

### **NOTICE**

Make sure bearings and drive have been serviced according to the manufacturer's instructions, and the operation and adjustment of the drive are thoroughly understood. Special attention to the V-belt drive is necessary during initial start-up and operation, as the V-belts will tend to stretch. 3V section belts, which are commonly used, require greater operating tension than other types of V-belts.

The following steps should be followed when starting and stopping the conveyor.

### **Starting the conveyor**

1. Start the conveyor without load, and allow a 5 to 10 seconds for it to accelerate to full operating speed before feeding material into the conveyor.

2. Start feeding product into the conveyor using the small orifice plate & mostly closed slide gate.
3. Adjust and verify the correct orifice plate and slide gate settings gradually to insure proper belt fill and conveyor capacity.

The CamWall Conveyor is commonly equipped with an adjustable shut-off gate and interchangeable orifice inlet plates for the inlet to the conveyor (see conveyor inlet section for addition information).

This inlet arrangement is designed to control the flow of material onto the belt. If the material being conveyed is allowed to enter the inlet with no attempt at control, it is possible for the belt to accept more material than it can elevate. If this happens, the excess material will spill over the sidewalls, eventually filling the Tail Section, which could jam and break the conveyor belting or cause a myriad of other problems.

Three (3) different size orifice plates are offered as standard equipment with each CamWall Conveyor. They are normally packed inside the shipping crate, along with the conveyor's drive equipment. Care should be taken that they are not misplaced or lost during installation of the conveyor, as they will be needed in order to control material flow into the inlet of the conveyor.

The proper combination of the length of the inlet opening (controlled by the adjustable slide gate) and the width of the inlet opening (depending on the size orifice plate used) will generally give adequate control of the material entering the conveyor. Some experimentation may be necessary to determine the correct combination of length and width of the opening for any given material. It is always good practice to begin using a smaller orifice plate, and then increase the length of the inlet opening with the adjustable slide gate. The inlet opening width can be adjusted by replacing the orifice plate with another orifice plate that has a larger (or smaller) opening, to adjust for proper material flow.

The conveying capacity of the CamWall Conveyor is measured by volume, i.e., **cubic feet per hour**; not weight per hour. Never feed more material to the belt than the conveyor was designed to handle. If in doubt as to how much material you are feeding to the belt, temporarily remove an inspection cover, just past the feed area, and observe the belt while it is running.



**WARNING**

*When running the belt with any covers open keep all loose clothing, hands, legs, body parts, hair and tools away from the openings and any moving parts.*

*Never reach into the opening.*

***The moving belt or associated moving equipment may cause death or serious injury.***

Normally, the belt should be **less than** about 60% full. An amperage check should be taken while the belt is operating at its rated capacity. If the amperage reading is greater than that stamped on the motor nameplate, you may be over-feeding the belt. Amperage should not pulsate greatly; this also indicates an overloaded situation.

### **Stopping the conveyor**

4. Stop feeding product into the conveyor and allow the material on the conveyor belt to be completely discharged before stopping the conveyor. The use of a short time delay between the cut-off of material being fed to the conveyor and stopping the conveyor drive motor will normally allow the belt to clear.

#### **NOTICE**

As a generally accepted practice, it is **not advisable to stop the conveyor when the belt is loaded**. Whenever possible, all material in the belt should be discharged before stopping the conveyor. If the conveyor is stopped while loaded, the material in the belt will generally (depending on the flowability, particle size, and weight of the material) run to the low point of the conveyor. This will be either a Turn Section or a Tail Section (or both), and may cause an overload condition when the belt is restarted. Should this occur, it may be necessary to remove the covers at these points, and clear the excess material from the housing before the conveyor can be restarted.

#### **⚠ WARNING**

***Use proper lock out procedures to disable the conveyor such that the belt cannot be started while personnel are cleaning out or maintaining the conveying equipment.***

5. Stop the conveyor belt.

In the event that the belt must be shut down with the belt fully loaded, due to an emergency situation, re-starting the belt may prove difficult. Prior to attempting to restart the belt, close any open slide gate(s). Start the belt and allow it to fully discharge, then re-open the slide gate(s) to resume conveying product. If the belt will **not** re-start, you may want to try closing any open slide gate(s), and “bump” the conveyor in the REVERSE direction (if so equipped) for a couple of seconds, then back to the FORWARD position, repeating this procedure, until the jammed belt will begin to move forward. Once the belt has resumed its normal operating speed, re-open the slide gate(s) to resume conveying product.

**⚠ WARNING**

*Do not attempt to reverse direction of the conveyor belt too quickly. Damage to mechanical components could result causing personnel injury. Allow a couple of seconds between directional changes.*

**⚠ WARNING**

*When clearing material from a jammed conveyor belt ALWAYS use proper lock-out and other safety procedures before attempting to clear or remove any excess material from the belt. NEVER reach into or place any objects on the conveyor belt without performing ALL proper lock-out and other safety procedures which will prevent the conveyor belt from starting and causing personal injury.*

**NOTICE**

When working with a jammed conveyor belt, NEVER allow the head pulley to spin beneath the conveyor belt or damage to the back side of the belt will occur and the excessive heat generated could cause a fire.

## 4.0

# MAINTENANCE AND LUBRICATION SCHEDULE

- ⚠ WARNING** Only qualified, authorized and trained personnel may operate and maintain the equipment.
- ⚠ WARNING** Always use proper lock-out and other safety procedures before attempting to clean, oil or perform any maintenance on the equipment. Do not begin without following proper lockout and safety procedures.
- ⚠ WARNING** Always use safety protective equipment and clothing such as safety glasses, safety shoes, hard hats, safety harness, etc...
- ⚠ WARNING** Keep all loose clothing, hands, body parts and hair away from moving equipment, rotating shaft, belts, chains, etc...
- ⚠ WARNING** Take appropriate precautions to ensure that hands, legs or other body parts do not come in contact with the conveyor belt, drive belt, drive chain, etc...
- ⚠ WARNING** Wear fall protection when accessing or working on the conveyor from any approved working surface or, in general, when working at a height of 4 feet or more above the ground.

CamWall Conveyor						
Maintenance Schedule						
Maintenance Task	Frequency					
	10 Hours or Every Day	Every 50 Hours	Every 100 Hours	Every 150 Hours	Every 300 Hours	Every 2500 Hours (6 months)
Check Bearings; grease if needed	X					
Gear Reducers - Inspect Oil Leak	X					
Gear Reducers - Check Oil Level					X	
Gear Reducers - Change Oil						X
Check Drive Belt Tension		X				
Check Conveyor Belt Tension	X					
Check Conveyor Belt Alignment	X					
Check Conveyor Belt Wear		X				
Check Belt Splice for wear & looseness		X				



## 5.0 TROUBLE-SHOOTING GUIDES

### **⚠ WARNING**

*Use proper lock out procedures to prevent the conveyor from starting while personnel are cleaning out or maintaining the equipment.*

### 5.01 CONVEYOR “JAM-UP”

When the conveyor belt stops while in operation due to a “jam-up,” one of the following will normally occur simultaneously.

1. Conveyor belt slippage on the head pulley.
2. V-belt slippage on the motor drive sheaves.
3. Motor overload heaters kick out.

In order to take the proper corrective action, check the following possible causes for the jam-up.

1. Conveyor belt tension. Inadequate conveyor belt tension can cause slippage of the belt at the head pulley, with a resulting jam-up. For conveyors equipped with a screw-type take-up, slippage will usually occur as a result of normal belt stretch. Belt tension can be increased by turning the take-up adjusting nuts on either side of the Tail Section. Care should be taken to see that proper belt alignment is maintained (see section titled, “Belt Alignment”).
2. Overloading. Wherever possible, the CamWall Conveyor should have a controlled feed. If the material being conveyed is allowed to enter the inlet with no attempt at control, it is possible for the belt to accept more material than it can convey. When this happens, the excess material will eventually accumulate in the lower portions of the conveyor, and could cause it to jam up. Two generally accepted methods of control are as follows.
  - A. The CamWall Conveyor is commonly equipped with an adjustable slide gate and replaceable orifice inlet plates for the inlet to the conveyor (three (3) sizes of orifice plates are furnished as standard equipment). The proper combination of the length of the inlet opening (controlled by the adjustable slide gate) and the width of the inlet opening (depending on the size orifice plate used) will generally give adequate control of the material entering the conveyor. Some experimentation may be necessary to determine the correct combination of length and width of the opening for any given material. It is always good practice to begin using a smaller orifice plate, and then increase the length of the inlet opening with the adjustable slide gate, or the width of the opening by changing to a wider

orifice plate, until you you have determined the proper setting for the amount of material to be conveyed, in keeping with design capabilities. A change in the flow characteristics of the material due to moisture content, particle size, etc., may require a change in the size of the inlet opening. Some material accumulation in the Turn and Tail Sections is normal, and will not affect the operation of the conveyor, as this material is normally recycled. If this material hardens due to moisture, pressure, etc., it would interfere with the belt and cause excessive belt wear. Clean out material build-up, as necessary.

- B. When space is available, a rotary type feeder can be used to control the flow of material to the inlet of the CamWall Conveyor. In this instance, the RPM of the feeder vanes controls the material flow, and should be reduced if over-feeding occurs.
3. Restricted Discharge. An unrestricted discharge is necessary to insure proper operation of the CamWall Conveyor. Any build-up of material at the discharge could cause the material to back-leg down the return housing of the CamWall, with resultant jam-up. Other common causes of back-legging are as follows.
- A. Overfilling of the bin or hopper being fed by the CamWall.
  - B. Inability of auxiliary equipment (conveyors, mixers, etc.) accepting material from the CamWall to take the material away as fast as it is being fed.
  - C. Improper discharge chute design. The angle of decline in discharge chutes should rarely be less than 60 degrees, in order to insure proper flow of material away from the CamWall Conveyor.
4. Material Build-Up inside the conveyor. In normal operation of the CamWall Conveyor, some accumulation of loose material will occur in the lower portions of the conveyor. A hardening of this material due to moisture content, pressure, chemical action, etc., could cause excessive drag on the belt, with resultant belt wear and possible motor overload. An inspection of the belt may reveal unusual wear, and give indications of where this build-up is taking place.

Areas where build-up might occur are belt covers, and pulley faces, as well as the lower portions of Turn Sections, Intermediate Sections and Tail Sections. Quick-opening panels should be removed to check for build-up on slide plates and belt covers.



*When running the belt with any covers open keep all*

*loose clothing, hands, legs, body parts, hair and tools away from the openings and any moving parts.*

*Never reach into the opening.*

*The moving belt or associated moving equipment may cause death or serious injury.*

If the problem continues, contact your Cambelt representative or CIC.

NOTE: Materials that cause build-up usually have a moisture content between 5% and 12%, depending on the type of material.

5. Belt Alignment. Improper belt alignment can contribute to conveyor malfunction by causing excessive drag on the belt, which could show up in either belt slippage or overloading the drive motor. See section titled, "Belt Alignment," for instruction on how to align belt.
6. Pulley Alignment. If pulleys become misaligned, they can rub against the side of the conveyor housing, causing wear, as well as excessive overloading of the drive motor and belt misalignment, all of which can contribute to conveyor malfunction. Bearing adjustment devices are located at most bearing locations. Where adjustment devices are not provided, the pulleys at those locations do not require adjustment for alignment.
7. V-Belt Slippage. The CamBelt Conveyor drive is commonly equipped with 3V-section drive belts. These belts generally require more tension than A, B, C or D section belts. Proper V-belt tension is maintained by adjusting the motor mount in a direction away from the driven pulley.



*Never operate equipment without belt guards in place..*



*When equipment is running with any covers / guards removed keep all loose clothing, hands, hair and tools away from the openings and any moving parts.*

*Never reach into the opening.*

*The moving belt or associated moving equipment may cause death or serious injury.*



*Fire Hazard - Slipping V-Belts generate excessive heat and may become an ignition source of dust or other*

*combustible materials.*

**NOTICE**

The drive belts should always be adjusted prior to start-up, and frequently during the first few days of operation.

8. Obstructions and Sharp Edges. During assembly of the CamBelt Conveyor, extra care should be taken to insure that there are no obstructions or sharp edges in the path of the belt.

**CAUTION**

***WEAR GLOVES! Sharp edges will cut.***

Damage which might occur during shipping and handling, if not corrected prior to assembly, can cause belt damage and/or excessive drag on the belt, with resultant wear, and also contribute to conveyor malfunction. Most common areas where this can occur are at flanged connections where Intermediate Sections are bolted together, or to Turn, Head or Tail Sections, and to the belt covers, where dents or bends can cause a restriction to the belt. If the belt shows excessive wear, a check should be made to determine the reasons and located the obstruction. Foreign objects left in the conveyor during erection, or introduced into the conveyor along with the material to be conveyed, can cause serious problems, and should be watched for.

**WARNING**

***The conveyor MUST BE STOPPED AND NOT RUNNING when checking for or removing any foreign objects or obstructions. Never reach into any opening with a moving belt or equipment. The moving belt or associated equipment may cause death or serious injury.***

## 5.02 BELT WEAR

1. Check to see if there is damage or abnormal wear on the belt, which might be caused by a mechanical problem in the conveyor, such as misaligned components or a foreign object in the conveyor.
2. An incorrectly spliced belt can cause belt wear or damage. Check to see that the ends of the belt were cut squarely, and that there are no edges that protrude beyond the body of the belt.
3. Any material being conveyed, which has a high oil content can cause the belt to swell. Other materials may cause the belt to abrade or may attack the belt fabric.
4. All of the pulleys must turn freely. Check for bad bearings that may cause a pulley to lock up or turn slowly.
5. If the belt is threaded through the conveyor housing improperly, severe belt wear or damage will occur.
6. Normal wear may result in small quantities of rubber being present in the material being conveyed. Generally, there is not enough to be visible; but if you feel there is an excess, check items 1 thru 5 above, thoroughly.
7. A build-up of hardened material at any point in the conveyor, where it can interfere with passage of the belt, may cause belt wear, and must be cleaned out.

### **WARNING**

*The conveyor **MUST BE STOPPED AND NOT RUNNING** when checking or performing maintenance of the belt. Never reach into any opening with a moving belt or equipment. The moving belt or associated equipment may cause death or serious injury.*

### **WARNING**

*When running the belt with any covers open keep all loose clothing, hands, legs, body parts, hair and tools away from the openings and any moving parts.*

*Never reach into the opening.*

*The moving belt or associated moving equipment may cause death or serious injury.*

## 5.03 BELT ALIGNMENT

1. Misalignment of the belt is often caused by a pulley which is out of alignment. Adjust the bearings on the problem pulley shaft by loosening them and moving them in their slots, using the bearing adjustment device(s). If the belt does not become aligned by moving the bearings in one direction, try the opposite direction. You would normally move the bearings, on each side of the conveyor housing, in opposite directions.
2. Build-up of material on the pulleys could cause the belt to mis-align.
3. A crooked belt splice, causing a “dog-leg” in the belt, can cause a misalignment.
4. Deterioration of the belt, through chemical or mechanical means, can cause the belt to be difficult to align.

For belt alignment procedures see section 2.04 Belt Alignment.

### **WARNING**

*When running the belt with any covers open keep all loose clothing, hands, legs, body parts, hair and tools away from the openings and any moving parts.*

*Never reach into the opening.*

*The moving belt or associated moving equipment may cause death or serious injury.*

### **WARNING**

*Prior to starting the conveyor, be sure the conveyor is clear of all tools and foreign objects.*

### **WARNING**

*The belt **MUST BE STOPPED AND NOT RUNNING** when adjusting idler alignment. Never reach into any opening with a moving belt or equipment. The moving belt or associated equipment may cause death or serious injury.*

## 5.04 LOW CAPACITY

If the conveyor has been operated for a long enough period to obtain an accurate volumetric capacity, and a check reveals that the capacity is under that for which it was designed, the following could be a problem.

1. A restriction at the inlet to the conveyor.
2. Bridging of the material above the inlet is a common cause of low capacity. A special agitator above the inlet may be necessary if bridging is a common problem with the material being conveyed.

**⚠ WARNING**

*The Conveyor belt **MUST BE STOPPED AND NOT RUNNING** when checking for blockage. Never reach into any opening with a moving belt or equipment. The moving belt or associated equipment may cause death or serious injury.*

**⚠ WARNING**

*When running the belt with any covers open keep all loose clothing, hands, legs, body parts, hair and tools away from the openings and any moving parts.*

*Never reach into the opening.*

*The moving belt or associated moving equipment may cause death or serious injury.*

3. If the material does not seem to flow into the belt, even when the inlet is at its largest opening, special characteristics of the material may require a larger inlet opening. Contact your Cambelt representative or CIC.
4. Changes in the characteristics or flow rate of the material, or inaccurate design information may result in an improper belt speed. Since the ability of a given material to enter the belt properly, as well as the capability of the conveyor to deliver the desired capacity, is directly related to belt speed, it is very important that the correct belt speed be used. Contact CIC or your Cambelt representative if you have a question concerning this.
5. As mentioned in paragraph 4 above, changes in the characteristics of the material being conveyed can affect the operation of the CamWall Conveyor. An increase in particle size, density, or moisture content will generally decrease the capacity of the conveyor, as a result of the changed flow characteristics of the material.

## **5.05 GENERAL**

1. With CamWall Conveyors that have high incline belt configurations, and with short horizontal sections, the belt should coast after the power to the drive motor has been shut off. If the belt does not coast for a short time, it could mean that there is some problem causing excess drag on the belt. A check should be made to see that the belt is properly aligned, or that there are no obstructions to the belt, or build-up of material which might interfere with belt travel. Conveyors with long horizontal sections usually will not coast.
2. Many times, operational problems are people problems, rather than mechanical ones. Make sure that your operations and maintenance people understand those operational features which are peculiar to the CamWall Conveyor. It will give you years of dependable service if they do. Don't hesitate to contact CIC or your Cambelt representative for assistance in understanding any phase of its operation or maintenance, should the need arise.
3. For operational information on motors provided, see the manufacturer's specification sheets enclosed.