

WASHDOWN SPIRAL

INSTALLATION, SERVICE AND MAINTENANCE MANUAL

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Version No. :


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NERCON PROPRIETARY STATEMENT

The following information is proprietary information of **NERCON** and must not be used except in connection with our work, nor in any manner disclosed to any third party without the prior written consent of **NERCON**.

All rights of design and invention are reserved.

Recipient of this manual acknowledges that they will abide by the instructions contained in this manual and in any optional training classes purchased from **NERCON**. Installation and startup supervision services are also available for purchase from **NERCON**. Recipient will not tolerate any operation that is contrary to these instructions. If the recipient observes equipment that presents a hazard, he will promptly inform **NERCON** so that a solution can be achieved.

	WARNING
	Failure to follow these rules can result in injury.


	NOTE
	<ul style="list-style-type: none">● The safety standards outlined in this manual have NOT been exactly duplicated from the latest issue of the ANSI booklet, Safety Standards for Conveyors and Related Equipment B20.1-20.● We recommend that all operators and maintenance personnel review this booklet, which you can obtain by contacting the American Society of Mechanical Engineers at the following address <p>American National Standards Institute @ www.ansi.org</p>

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Section 1 – Introduction

1-1: How to Use this Manual

This manual is supplied to assist you in installing, maintaining and servicing the NERCON equipment.

It is essential for safe and efficient operation that the information and guidelines presented here are properly understood and implemented. Following is a brief description of the information contained in each section:

This manual is intended for personnel who will install, maintain, repair, clean, clear and otherwise operate the supplied product handling equipment.

The Maintenance Manual provides maintenance personnel with the information necessary to maintain the system effectively. The manual provides the definition of the primary equipment, the roles and responsibilities of maintenance personnel, and the regular activities essential to the support and maintenance of the equipment.

The manual shall be used in conjunction with the equipment support drawings and other 3rd party vendor documentation. It is expected that the operators and maintenance personnel are skilled in the operation and maintenance of electrical and mechanical equipment used in the packaged food and consumer goods industry.

1. Introduction: Basic information about the manual and the system and trademarks / service-marks (if any) used in the manual.

2. Safety: Safety precautions for product's operation and maintenance.

3. Installation: Mechanical and Electrical information about the installation of the various types of equipment in the conveyor system.

4. Periodic Maintenance and Inspection Guide: One of the most important factors in the overall cost effectiveness of your material handling system is that of preventive maintenance and periodic inspection; that is, eliminating the cause of potential trouble before the trouble occurs.

This concept makes it possible to perform maintenance and repair operations on a predetermined schedule rather than according to chance. Implementing a periodic inspection program on your NERCON equipment serves to increase its dependability, longevity, and efficiency, all of which add up to lower operating costs.

Observe the equipment when it is functioning properly in order to detect failure and/or to perform maintenance or adjustment on the equipment.

5. Troubleshooting: Despite the best operating techniques and preventive maintenance program, machines do sometimes fail. This section contains suggested step-by-step methods to aid in detecting the cause or causes of these failures.

1-2: Target Group

These operating instructions are intended for:

- **The operating staff :** These members of staff have been introduced to the machine and are informed about potential danger situations due to incorrect behavior.
- **Skilled staff :** These members of staff received a suitable expert training, have additional experience and in-depth technical knowledge. They are capable to assess the task at hand and recognize potential hazards or danger situations.

Persons working with the machine must be informed regularly on the operational hazards with regard to the machine.

- The operating and maintenance staff must have read and understood the operating instructions, in particular the section "General Safety Rules" and any valid regulations before commencing work.
- Keep the operating instructions and valid regulations so that they are accessible for the operating and maintenance personnel.

1-3: Equipment Warranty

- A. **NERCON** warrants the items supplied by **NERCON** will conform to the agreement, shall be suitable for the intended use, and shall be free of defects in material and workmanship at the time of acceptance of the work for period of (12) months.
- B. THERE ARE NO WARRANTIES, EXCEPT OF TITLE, EXPRESSED OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PURPOSE EXCEPT AS EXPRESSLY SET FORTH IN THIS ARTICLE.
- C. **NERCON** liability for breach or warranty or otherwise is limited to the following actions:
 - i. Structural members: Defective or non-conforming structural members will be repaired or replaced by **NERCON** at PURCHASER's site.

- ii. Items of **NERCON** design or manufacturer: Defective components will be repaired or replaced when same are returned to **NERCON**, FOB **NERCON'S** plant.
 - iii. **Items not of NERCON'S design or manufacture:** **NERCON'S** liability for defects in material or workmanship for computer hardware, peripherals, software developed by third parties or other items not designed or manufactured by **NERCON**, which are incorporated into the system, shall be limited to that of the vendor thereof.
 - iv. **NERCON** developed controls: **NERCON** liabilities for defects are limited to the correction of demonstrable defects that are defined and documented by the PURCHASER.
- D. **NERCON** shall relieved of any obligations under the foregoing warranty as to any items which:
- i. Have not been properly maintained to the current support level in accordance with **NERCON'S** and manufacturer's recommended procedures and written instructions.
 - ii. Have not been operated in accordance with **NERCON'S** or manufacturer's recommended procedures and written instructions.
 - iii. Have been modified by persons other than **NERCON** (except where prior approval has been granted by **NERCON**).
 - iv. Differ from the operating conditions and methods contemplated by the Agreement.
- E. **NERCON** shall be given access to make warranty repairs.
- F. PURCHASER shall notify **NERCON** in writing of all warranty claims, defining the nature, extent and effect of the defect.

Side drive belt technology allows for the load to be divided between sprockets thus putting less strain on the belt, and allowing for longer continuous belt runs.

Belt sprocket tooth break sensor required to prevent operation with chain damage

1-5: Technical Specification

Table No 1: Technical Specification

Parameter	Decription
Product Name	Washdown Spiral
Height	
Width	
Unit Weight	
Unit Speed	
Max Product Rate	
Max Product Load	
Part Number	

1-6: Product Overview

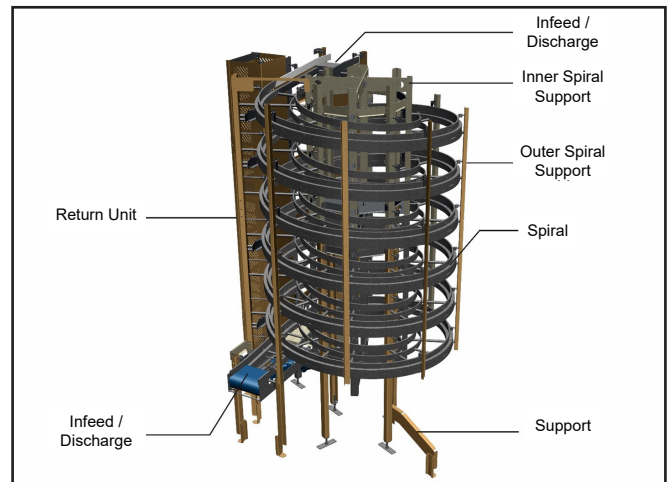


Figure No 1: Product Overview

1-4: Operational Concepts

The WD Spiral is intended to elevate or lower product from one elevation to another.

WD Spiral is engineered to be single or dual drive depending on design load.


It is not intended for accumulation and is designed for the product rate and loading stated on equipment tag.


Section 2 – General Safety Rules

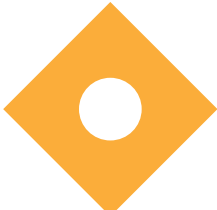
2-1: Definitions


This manual uses four indicators to highlight critical information: Note, Warning, Caution, and Danger.

They are defined as follows:


	NOTE
	Indicates points of particular emphasis that make operation of the product more efficient or convenient.

	WARNING
	Indicates a condition that can endanger the equipment or the operator.

	CAUTION
	Indicates a condition that can damage the equipment.

	DANGER
	Indicates a condition that may result in death or severe personal injury.

2-2: Description

	NOTE
	The safety procedures / policies listed in this chapter are not intended to address fire-related considerations. Your system must comply with any applicable national, state, and local codes.

Follow safety precautions for industrial work at all times. The information in this chapter includes guidelines specified in the latest issue of the **American National Standard Institute (ANSI) booklet entitled Safety Standards for Conveyors and Related Equipment B20.1-19--**. We have included additional precautions that are to be observed in accordance with any ANSI regulations that are applicable.

With any piece of industrial equipment, conditions exist that might cause injury to you or your co-workers. Because it is not possible to describe each potentially hazardous situation that might develop, you must be alert at all times for unsafe conditions. To avoid injury, use maximum possible care and common sense and adhere to all safety standards.

Until you are appropriately trained, you are not authorized to operate, install, maintain, or modify the system. See your supervisor about receiving this training or authorization before you operate, install, maintain, or modify the material handling system.


Take special care while maintaining and inspecting electrical equipment and devices. All personnel working on or around the system should be aware of, and adhere to, all **CAUTION**, **DANGER**, and **WARNING** signs. These signs are posted to reduce the risk of injury to all personnel. Maintain signs in a legible condition. Contact your supervisor to post additional safety signs if you feel they are necessary.

Follow these general safety rules, as well as specific regulations and guidelines listed in this publication.

2-3: Operator Guidelines

These operating instructions are intended for:

- The machine is constructed in accordance with the statutory regulations that were valid at the time of delivery and represents the state of the art in terms of safety.
- All safety information attached to the machine must be heeded and observed.
- All safety information must be available in full and be easily readable.
- Operate the machine only if all guard devices are in place.
- The legally stipulated checking and inspection intervals for the line must be adhered to.

	NOTE
	All work and activities may be carried out by trained and duly authorized person only.

2-4: Conveyor Safety Guidelines

- Do not touch moving conveyor parts.
- Do not walk, ride or climb on the conveyor.
- Do not operate the conveyor with chain guards or the protective guards removed or with personnel inside a customer defined safety perimeter.
- Keep jewelry, clothing, hair, etc., away from any and all moving parts.
- Know the location and function of all start/stop devices and keep those devices free from obstruction.
- Clear all personnel from the equipment before starting.
- Do not attempt to clear product jams while the product is running.
- Allow only trained and authorized personnel to maintain or repair the equipment.
- Do not load the conveyor beyond the specified design limits.
- Do not attempt to make repairs to the equipment while it is running.
- Do not modify equipment without checking with the manufacturer.
- Do not operate or perform maintenance on the equipment when taking any type of drug or sedative, or when over fatigued or under the influence of alcohol.
- Do not operate the conveyor if any part is damaged or improperly installed.
- Be sure that all replacement parts are interchangeable and of equal quality as original parts supplied.

When the equipment is stopped for maintenance or repair purposes, you must lock out or tag out the starting devices, prime movers, or powered accessories in accordance with a formalized procedure designed to protect everyone

involved against an unexpected restart. Also, alert all personnel to the hazard of stored energy, which can exist after the power source is locked out.

For additional information, refer to the latest issue of ANSI Z244.1-20--, American National Standard for Personnel Protection - Lockout/Tagout of Energy Sources - Minimum Safety Requirements. Also, OSHA 29CFR Part 1910.147 "Control of Hazardous Energy sources (Lockout/Tagout)", which includes requirements for release of stored energy.

2-5: Mechanical Maintenance Safety

Lubricate conveyors when they are not in motion wherever practical. Only trained personnel who are aware of the hazard of the conveyor in motion should be permitted to lubricate a conveyor that is operating.

After you lubricate the conveyor, check to make sure that none of the lubricants or other process liquids have spilled or dropped onto the floor. These liquids create a hazardous condition. If you notice a drip, install a drip pan or other means of eliminating the hazard.

2-6: Electrical Safety Guidelines

When an equipment problem occurs, the first priority is to ensure that power is disconnected from the affected area, as well as from the control panel where troubleshooting and repairs are performed.

Once you verify that power is locked out, make sure you inform other personnel in the area of the situation so they do not unexpectedly restore power.

After you inform your co-workers, recheck the power supply to ensure that power is disconnected in the affected control panel. Remove fuses only with insulated fuse pullers and check terminal strips for current-carrying wires.

Before you perform any repairs with an exposed conductor or terminal, use an approved voltmeter to check for continuity to ground and continuity between other current carrying conductors.

When you perform any kind of maintenance or repair involving electrical components, follow the guidelines listed below:

2-7: Mechanical Maintenance Safety

Lubricate conveyors when they are not in motion wherever practical. Only trained personnel who are aware of the hazard of the conveyor in motion should be permitted to lubricate a conveyor that is operating.

After you lubricate the conveyor, check to make sure

that none of the lubricants or other process liquids have spilled or dropped onto the floor. These liquids create a hazardous condition. If you notice a drip, install a drip pan or other means of eliminating the hazard.

2-8: Electrical Safety Guidelines

When an equipment problem occurs, the first priority is to ensure that power is disconnected from the affected area, as well as from the control panel where troubleshooting and repairs are performed.

Once you verify that power is locked out, make sure you inform other personnel in the area of the situation so they do not unexpectedly restore power.

After you inform your co-workers, recheck the power supply to ensure that power is disconnected in the affected control panel. Remove fuses only with insulated fuse pullers and check terminal strips for current-carrying wires.

Before you perform any repairs with an exposed conductor or terminal, use an approved voltmeter to check for continuity to ground and continuity between other current carrying conductors.

When you perform any kind of maintenance or repair involving electrical components, follow the guidelines listed below:

2-9: Safety Guidelines

- **NEVER** reset a circuit breaker or replace an open fuse before determining and correcting the cause of the circuit interruption.
- **NEVER** bypass or use a jumper to replace any limit switch, fuse, circuit breaker, or other circuit protection or safety device.
- **NEVER** replace an open fuse with another that is not rated at the proper current and voltage. Always double check correct fuse specifications rather than replace the open fuse with one of the same current and voltage rating.
- **NEVER** rest tools on motors, transformers, terminal strips, or other control panel or electrical components. All tools used should be kept in a tool box or pouch.
- **NEVER** restore power or restart equipment before verifying that all tools, spare parts, etc., are removed from the work area and are safely stored.
- **NEVER** restore power or restart equipment before verifying that ALL personnel are aware of the condition and are safely clear of the equipment.

- **ALWAYS** replace any safety devices or guards removed during maintenance or repair before you restore power or restart equipment.
- **ALWAYS** use extreme caution and follow recommended safety procedures while you perform any electrical inspection or maintenance operations.

I. Backstop Devices

Provide anti-runaway, brake, or backstop devices on all incline, decline, or vertical conveyors with which the effect of gravity might allow uncontrolled lowering of load if that lowering would cause injury to you or co-workers.

II. Power Gates and Switches

Where and if specified, **NERCON** has provided power-positioned gate and switch sections with devices that prevent these sections from falling in the event of power failure.

NERCON has also provided a means of preventing conveyed material from discharging into an open area created by the lifting of the gate or switch.

III. Electrical Code

All electrical installations and wiring must conform to the National Electrical Code (Article 670 and other applicable articles) published by the National Fire Protection Association and approved by the American National Standards Institute, Inc.

IV. Control Stations

Arrange control stations so that equipment operation is visible from the stations and clearly mark or label each station to indicate its function.

The emergency stop devices installed with your system are designed so that they cannot be overridden from other locations. Keep the area around your control station clear.

Remove all miscellaneous equipment (such as inactive and unused actuators, controllers, and wiring) from control stations and panel boards, as well as obsolete diagrams, indicators, control labels, and other material that might confuse the operator.

V. Headroom

When equipment is installed above exit passageways, aisles, or corridors, provide a minimum clearance of 6 feet 8 inches (measured vertically from the floor or

walking surface to the lowest part of the conveyor or guards). Where providing the minimum clearance of 6 to 8 inches through an emergency exit will impair system function, provide alternate passageways. It is permissible, however, to allow passage under conveyors with less than 6 to 8 inches clearance from the floor for other than emergency exits if a suitable warning indicates low headroom.

2-10: Application Safety

The equipment used in your system is designed to convey specified commodities or materials within a certain rate and speed. It might not be possible to safely use the equipment outside of the intended capacities or speeds. Check with your supervisor if you have questions regarding the safe operation of the equipment.

VI. Guarding

If necessary to protect from hazards, guard by location or position all exposed moving machinery parts that present a hazard to personnel at their workstations.


When a conveyor passes over a walkway, roadway, or work station, it is considered to be guarded solely by location or position if all moving parts are at least 8 feet above the floor or walking surface, or are otherwise located so the personnel cannot inadvertently come in contact with hazardous moving parts.

VII. Safety Devices

All safety devices, including wiring of electrical safety devices, are designed to operate in a “fail-safe” manner; that is, if power or the device fails, a hazardous condition will not result.

VIII. Emergency Stops and Restarts


In case of an emergency stop, first determine the cause of the stoppage and correct the situation that warranted the stop. To resume operation after a stoppage, manually reset or start at the location where the emergency stop occurred.

NOTE	
	<p>Before you try to correct the situation, lock out or tag out the starting device, unless it must be operated to determine the cause or to safely remove the stoppage. For additional information, refer to the latest issue of ANSI Z244.1-20--, American National Standard for Personnel Protection Lockout / Tagout of Energy Sources – Minimum Safety Requirements.</p>

Section 3 – Packing, Loading and Transport

3-1: Definitions

Prevent free-falling material that might result from flooding, ricocheting, or uncontrolled free-fall from occurring. At transfer, loading, and discharge points, prevent unconfined and uncontrolled free-fall of material resulting from flooding, ricocheting, overloading, trajectory, leakage, or a combination thereof, if the material would create a hazard to personnel.

	NOTE
	<p>All equipment must be installed to conform to the National and Local Safety Codes. In the event that any caution or warning labels affixed to the equipment are damaged in shipping or obscured from vision because of the position of the equipment on site, you should order the appropriate replacement labels before operating the equipment.</p>

3-2: Checks when packing

- Items securely fastened to shipping skid
- All small items boxed
- Any strapping is tight and secure
- Loose bolts are secured or packaged
- Equipment to be kept clean

3-3: Checks when loading

- Skids are secure, Cannot slide around on truck
- Equipment to be kept clean and dry
- No damage from moving around shop
- Load is complete (no missed parts)
- Bill of lading correct

3-4: Checks when transport

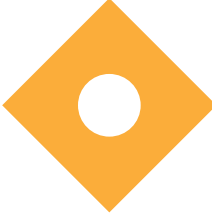
- Assure load has not shifted
- Equipment to be kept dry (no leaky trailers)
- Flatbed trucks need to be tarped
- All permits correct

3-5: Unloading / Receiving

It is always recommended to use the appropriate unloading equipment/crane/ vehicle to unload the **NERCON** equipment. Each unit is custom and an estimated weight will be provided so that the installation contractor may plan for appropriate unloading equipment/ crane/vehicle.


3-6: Reporting damage on equipment



	CAUTION
	<p>Inspect for damage before accepting the equipment package.</p>

The most important thing, for the customer is to note any and all damage on the BOL (Bill Of Lading) with the driver present and before signing for shipment. Contact **NERCON** immediately if it was **NERCON** arranged freight, so we can start a claim with the carrier.

The more pictures of the damage, the better. This will help with costing and replacement of parts to resolve your claim quickly.

	NOTE
	<p>If customer arranged freight, the same is needed but, the customer assumes the responsibility of filing the claim with the freight company.</p>

3-7: Storage

Equipment should be stored indoors, covered and protected from the elements.

Protect equipment from construction dust at all times. Abrasive materials will cause premature wear of belt and wear strips and those are not covered under warranty.

3-8: Shipping Truck Sizes

Table No 2: Technical Specification

Shipping Truck Sizes				
	Width	Height	Width with permit	Height with permit
Roll Up Door	90"	92"	N/A	N/A
Swing Door	96"	109"	N/A	N/A
Flatbed	101"	114"	144"	134"
Lowboy	101"	138"	144"	146"

A permit required in every state unit is transported through. Units also would be required to be covered in tarp. Get approval from **NERCON** Shipping Department if permits required.

3-9: Signs and Symbols on machine

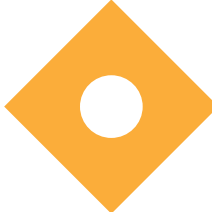


Figure No 2: Signs and Symbols on machine


Section 4 – Installation


4-1: Pre-installation readiness

- Safety harness for working in elevated position
- Rigging equipment for moving, stacking and setting equipment.
- Checks with the all electrical connections are ready for installation.
- Check with the foundation readiness.
- Check proper space should be available around the equipment installation area.

	CAUTION
	Be very careful of pinch points, when performing this action.



	WARNING
	This belt can trap and injure fingers. Never touch a moving belt! Stop the conveyor before servicing.

	NOTE
	Before use in food-safe applications, follow good manufacturing practice and thoroughly clean and sanitize belts according to your standard sanitary operating procedures



4-2: Stacking sections

- Lift top section into place and align drive shaft position and tier connection



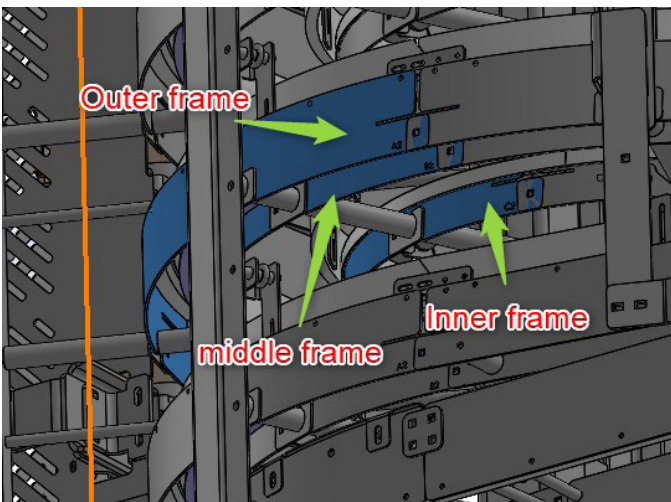
- Replace bolts and tighten to specified torque.



- Slide sections together.



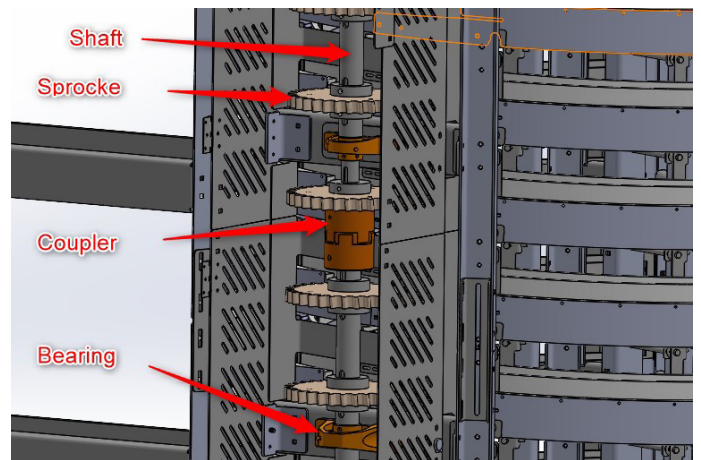
- Connect inner and outer frames.



- Connect wear strips (PIC)



- Connect drive shaft couplers

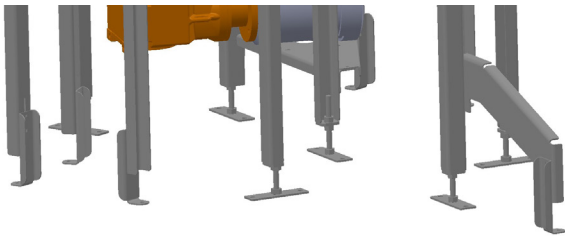


4-3: Anchoring equipment to floor

- Support feet designed to use 1/2" anchors



- All supports are required to be anchored down

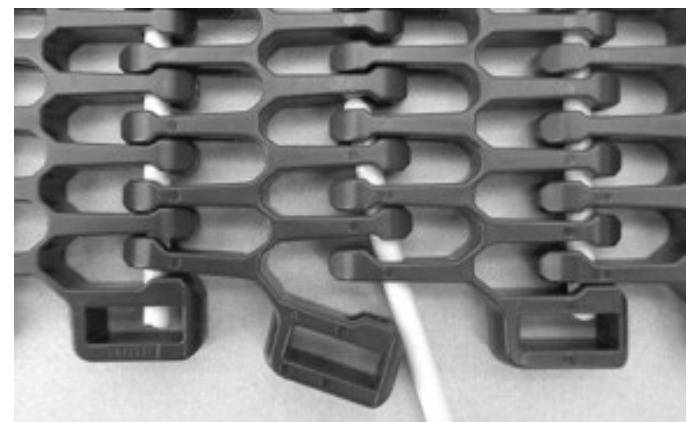


	NOTE
	<p>The purpose of the bolts is not to hold it down but to keep it where it is and not be able to move around on floor</p>

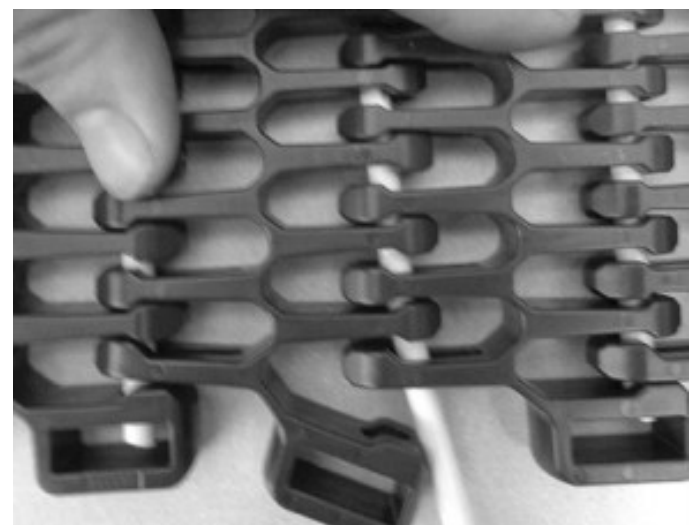
4-4: Rod / Pin: Removal / Installation

	CAUTION
	<p>Inspect for damage before accepting the equipment package.</p>

1. Cut rods 0.5 in (12.7 mm) shorter than the overall belt width.
2. Join belt ends together so the hinges are aligned.
3. Insert the rod through the hinges.

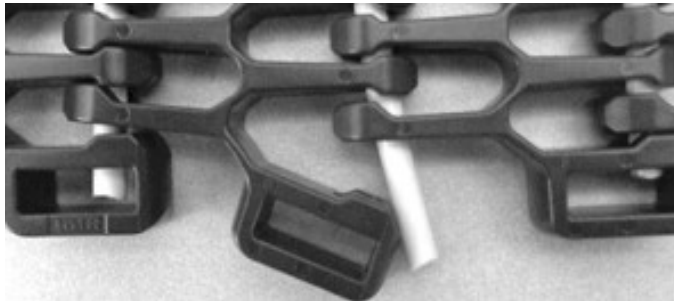


4. Align the hinges of the fourth and fifth link.

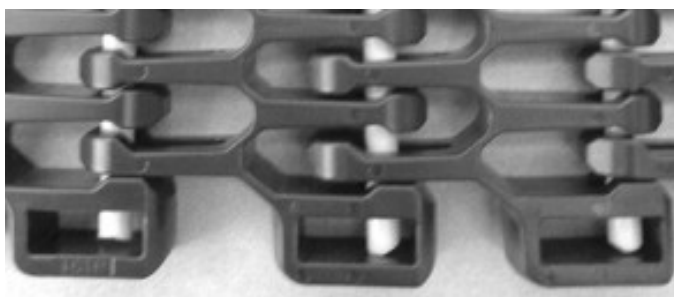


5. Continue inserting the rod through the hinges until the end of rod is near the belt edge.

6. Push the rod past the belt edge and snap the flush edge over the rod into the closed position.



7. Ensure the rod is fully inserted.

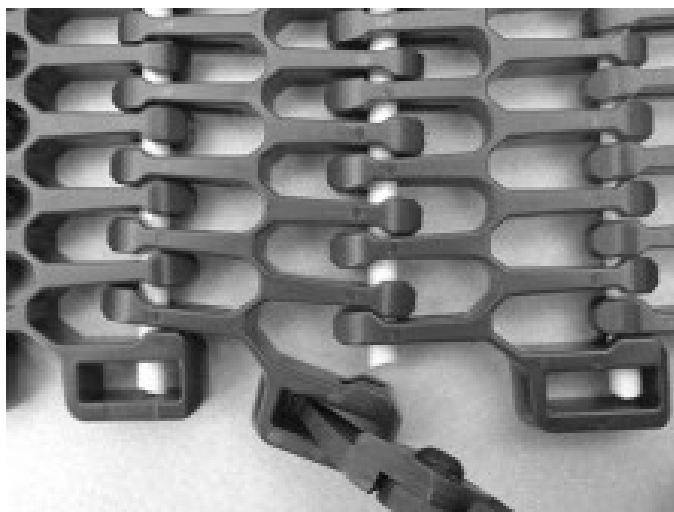


3. Grip and pull the rod out to open the belt.



Remove the rod

1. Grip the rod and push it into the belt.
2. Use your thumb to flex the flush edge of the module to free the rod from the retention feature.



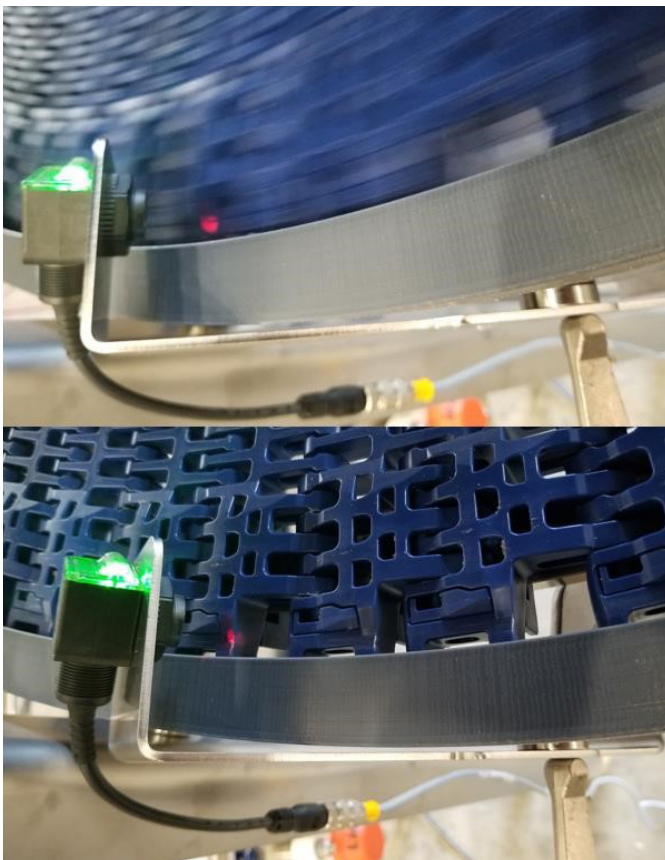
4-5: WD Spiral Broken Link Detection Sensor

I. Sensor Purpose:


- a) Broken link detection sensor is a retro-reflective photoelectric sensor. The sensor will turn on an input when the reflector is sensed. When the sensor has detected a gap on the chain this will indicate a broken link. The spiral should fault to stop the spiral and the link needs to be repaired immediately.
- b) With all links in tact the sensor signal should be off. If this “flickers” or pulses occasionally with all links attached the sensor angle would need to be increased to avoid any false trips.


II. Wiring of sensor:

- a) The broken link sensor is a 24Vdc Sensor.
- b) Cable Wiring
 - i. Brown- +24Vdc
 - ii. Blue – DC Common
 - iii. Black – Sensor Output (This typically is connected to input of PLC or controller of the Spiral) Signal is +24v when sensing the reflector, 0V when blocked
 - iv. White – Not used Tape wire off



Section 5 – Maintenance

	NOTE
	<ul style="list-style-type: none"> Lack of cleaning and inadequate maintenance and upkeep will cut short the service life of the machine. Service the machine regularly and in accordance with the instructions, make sure you keep the workplace clean.

	NOTE
	<p>Replace any faulty parts immediately upon discovery during scheduled inspections.</p>

- Comply with setting, maintenance and servicing jobs and intervals that are described in the manual including the specifications on the replacement of parts.
- Workshop equipment appropriate for the work is absolutely necessary for the performance of maintenance measures.
- Clean the machine, in particular the connections and screwed fittings prior to starting maintenance procedures.
- Do not use any corrosive cleaning agents.

5-1: Periodic Inspection Guide

I. Introduction

NERCON equipment is designed to operate with a minimum of maintenance. Downtime on any part of a system involves both time and money. Certainly not all breakdowns or failures can be detected before they occur; however, many can be prevented if you follow a regular periodic inspection program. When you install new equipment, you should establish a schedule of periodic inspection. The inspection procedures outlined in this manual provide an easy means of determining the operational status of the equipment. This will enable you to identify possible trouble areas, so that the suspect condition does not deteriorate to the point of equipment failure.

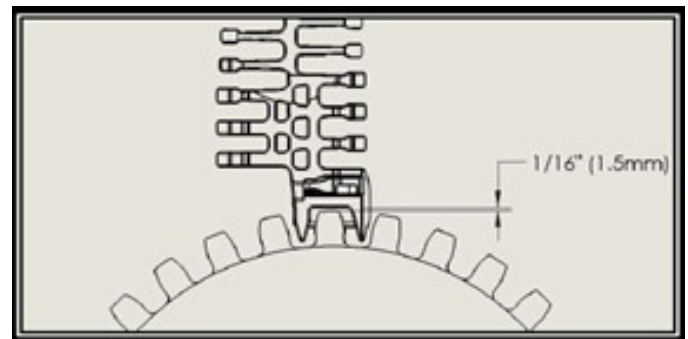
II. Purpose

The objective of the periodic inspection schedule is to ensure that the equipment performs at maximum efficiency over a long period of time. This helps to eliminate costly repairs. Do not assume that trouble will occur and, therefore, pass over inspection items. Standardized procedures ensure effective control over maintenance operations and enable you to compare equipment in order to evaluate the inspection program.

5-2: Drive Specifications

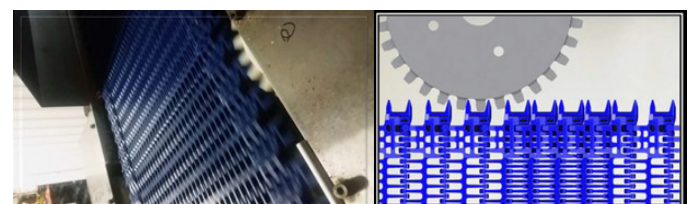
Side Drive Sprockets

- Sprockets must engage a minimum of two belt teeth at all times.
- The sprockets should maintain a 3/32" (2mm) clearance from the belt edge in running conditions.
- The sprocket bore should be designed in such a way that it can be quickly disengaged from the belt drive teeth to allow collapse following the drive to be adjusted.




5-3: Installation and Operation

- The Side Drive system functions by reducing belt tension to zero after each drive which allows for long conveying sections with no transfer.
- The belt must maintain **5-8 collapsed rows** after each drive at all times to ensure that tension is being reduced to zero and prevent the belt from becoming double constrained between two drive sprockets. This allows for expansion and contraction of the belt, as well as creating a buffer of non-tensioned belt at the beginning of each drive section.



5-4: Cleaning

	WARNING
	<ul style="list-style-type: none"> ● For cleaning the machine must be at a complete standstill. ● Secure the machine against being switched on. ● Lock-out, tag-out procedures should be observed

Work instructions

- Perform cleaning and any disinfection of the machine in conformity with your company's cleaning schedule.
- After the cleaning process, examine machine for any loose bolts, damaged belt paying specific attention to the drive teeth that none are missing or damaged. Immediately eliminate any defects that are ascertained.
- Remove all unwanted material from conveyor.
- Remove dust and dirt from the equipment.
- Clean the guards
- Clean HMI screen with soft lint-free cloth (If installed on equipment)

5-5: Initial Start-up Check List

- Check for machine fastened down to the floor as per [Section 4.3: Anchoring Equipment to Floor](#)
- Check for all belt connections. [Section 4.4. Rod/Pin: Removal / Installation](#)
- Make sure that all bolts are tight before operating the machine.
- Make sure, there is nothing in or on-chain path (ex. Bolts, Tools, Test product). These things can be a hazard for the machine as well as the operator.
- Check for a proper number of collapsed belt rows in each tier. (For dual-drive unit, this means 2 areas per tier)
- Check for sprockets adjusted correctly and collars are tight.
- Check for proper electrical power supply to the machine.

- Make sure all the electrical boxes are closed.
- Check for chain break sensor connection.
- Make sure that the chain break sensor functions properly.
- Confirm by "bumping drive" that the belt is going the right way
- Slow start the machine to confirm that belt moves smoothly
- Make sure that operator is trained in proper use of the protective equipment.
- Check floor is dry for operator motion.
- Check for starting and stopping controls are tested.

5-6: Maintenance Schedule

Table No 3: Maintenance Schedule

Sr. No.	Parameter	Daily	Weekly	Monthly
1	During operation monitor belt performance for any irregularities.	•		
2	Check Proper Chain Collapse	•		
3	Inspect entire belt length for any damaged or missing belt modules		•	
4	Examine drive sprockets for signs of excessive wear			•
5	Check for loose bolts			•
6	Check drive couplings for proper alignment			•
7	Drive couplings Tight			•
8	Drive coupling spider condition			•
9	Infeed and discharge pulleys are tight and in position		•	
10	Check for any foreign debris on or around the belt path.		•	
11	Look for unusual wear patterns on the belt surface.		•	
12	Guards in Place	•		
13	Guard locks functional		•	
14	Check the carry way wear strips and return way shoes for excessive wear			•


Section 6 – Troubleshooting


Table No 4: Troubleshooting

Problem	Cause	Action
Motor Overload Trip	<ul style="list-style-type: none"> ● VFD overload parameter is incorrectly set. ● Chain damaged. ● Chain wear strips worn. ● Foreign material or product has built up in the chain path. 	<ul style="list-style-type: none"> ● Verify that the VFD overload parameter is set as listed in the electrical schematics. ● Check the chain for any damage or excessive wear. Replace if necessary. ● Check the chain wear strips for any damage or excessive wear. Replace if necessary. ● Check for build up or foreign material in the chain path. Clear the chain path if buildup exists.
Chain Popping	Belt too tight between sprockets	Adjust belt with 5-8 collapsed rows
Spiral does not run	<ul style="list-style-type: none"> ● E-Stop pushbutton is pressed. ● Motor disconnect switched off. 	<ul style="list-style-type: none"> ● Verify that the safety circuit is reset. ● Verify that all motor disconnects are switched on.
Product turning	Too wide of a rail opening	Adjust rail openings smaller to stop rotation
Chain sensor fault	Broken drive tooth or teeth	Replace broken belt sections

Section 7 – Dismantling, Storage and Disposal

7-1: Periodic Inspection Guide

	WARNING
	Before dismantling the machine, disconnect it from all external energy supplies.

	NOTE
	The machine may be disassembled only by trained, skilled and duly authorized technicians.

- Remove all the material from equipment prior disassembly
- Dismantle the machine with suitable tool.

7-2: Storage

To maintain the operability of a machine that is not going to be used for a long period of time, the following points must be heeded:

- The storage room must be dry and cool.
- Set the machine down on level ground to prevent distortion.
- Secure the machine against tipping and being set in motion unintentionally.
- Cover the machine completely so that no dirt or dust is able to penetrate.

7-3: Disposal

- Disassemble dismantled modular component into individual parts.
- Dispose of components in compliance with environmental and regulatory stipulations, thereby adhering to all legal and operational regulations.



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