

# HEAVY DUTY GRAVITY IMPACT Cart

# INSTALLATION, OPERATION & MAINTENANCE MANUAL

PLEASE REVIEW MANUAL BEFORE OPERATING EQUIPMENT





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### **GENERAL OVERVIEW**

The Gravity Impact Cart is designed for easy manual movement of materials, and to lessen the impact on Flex conveyors during the loading process, extending the life of the Flex conveyors. The Gravity Impact Cart is a non-powered conveyor that is comprised of rollers, side frames, and leg supports with casters. For general conveyor terminology, see image below.





#### WARNINGS AND SAFETY INSTRUCTIONS

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

Special attention must be paid to the following areas of this manual:



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



Indicates a situation which, if not avoided, could result in property damage.

#### NOTE

Indicates helpful hints and information.

### **ENVIRONMENTAL STANDARDS**

ConveyX Solutions, LLC's equipment is designed to be installed in a clean, dry environment. Exposure to extreme humidity, direct sunlight, blowing dirt or rain can permanently damage some components and equipment. Concrete curing agents are also known to attack and degrade the urethane conveyor components. Be sure that the concrete is properly cured at new sites before setting the conveyor on it and that proper ventilation is used to prevent curing agent fumes from impacting the conveyor. Equipment should be stored under cover to protect it from exposure to the weather and other adverse conditions from the dock door to the truck entrance. Failure to comply with these guidelines will void the warranty on any failed components that result from these environmental issues.

### ANSI STANDARDS FOR CONVEYORS

It is essential for safe and efficient system operation that the safety information and guidelines presented here are properly understood and implemented. The American National Standard Institute (ANSI) offers a booklet entitled Safety Standards for Conveyors and Related Equipment, for more information contact <u>https://webstore.ansi.org.</u>

With any piece of industrial equipment, conditions exist that might cause injury to workers. Because it is not possible to describe each potentially hazardous situation that might develop, workers 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.

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.

Labels or signs are posted to reduce the risk of injury to all personnel. Never assume that the signs and notices are applicable only to inexperienced personnel. Maintain signs in a legible condition. Contact a supervisor to post additional safety signs if necessary.



### **ANSI CONVEYOR SAFETY RULES**

Below are the conveyor safety rules, as well as specific regulations and guidelines listed in this publication:

- DO NOT touch moving conveyor parts.
- DO NOT walk, ride or climb on the conveyor.
- DO NOT operate the conveyor with chain guards or other protective guards removed.
- Keep jewelry, clothing, hair, etc., away from the conveyor.
- Know the location and function of all START/STOP devices (if applicable) and keep those devices free from obstruction.
- Clear all personnel from the equipment before starting the conveyor.
- DO NOT attempt to clear product jams while the conveyor is running.
- Allow only trained and authorized personnel to maintain or repair conveyor equipment.
- DO NOT load the conveyor beyond specified design limits.
- DO NOT attempt to make repairs to the conveyor while it is running.
- DO NOT modify equipment without checking with the manufacturer.
- DO NOT operate or perform maintenance on

equipment when taking any type of drug or sedative, when under the influence of alcohol or when over-fatigued.

 Report any unsafe condition to your supervisor or maintenance staff.

#### CEMA STANDARDS FOR CONVEYOR

The Conveyor Equipment Manufacturers Association (CEMA) provides safety information related to conveyor systems. To learn more about CEMA visit website, www.cemanet.org.

CEMA produces various Conveyor safety videos and posters, and it is recommended that the videos be made available for training and education purposes as part of a safe working environment around conveyor equipment. The videos introduce awareness of operations, personnel, maintenance technicians and safety hazard management commonly associated with the automated material-handling conveyor equipment.

The safety posters review important safety labels and are intended to be posted in public places as a day-to-day reinforcement of good safety practices. These posters can be downloaded from the CEMA website at: <u>https://cemanet.org/posters-videos.</u>

#### SAFETY INSTRUCTIONS

## A WARNING

- Do not exceed the conveyor load capacity, as it may result in possible operator injury or conveyor damage.
- Avoid wearing excessively loose clothing when working with moving equipment.
- Keep long hair pulled up to prevent it from becoming caught in moving parts.
- Broken or worn parts must be replaced immediately.
- Gravity Conveyors must only be serviced by properly trained and qualified technicians.



### SAFETY LABELS

Safety labels have been placed at various points on the equipment to alert everyone of potential dangers. Inspect equipment for proper position of safety labels and make sure all personnel are aware of the labels and obey their warnings. As mentioned in the previous section, a safety study should be made of the conveyor application by the purchaser(s). It is the purchaser's responsibility to provide any additional guards, safety labels or other safety equipment deemed necessary based on this safety study. This page contains typical safety labels that may have been attached to your equipment.

injury

Placed next to drive (both sides) to warn

Servicing moving or

energized equipment

can cause severe

LOCK OUT POWER

before servicing



#110479 ( 5" x 2 1/2" )

Placed on terminating ends (both ends) where there are exposed moving parts which must be unguarded to facilitate function, i.e. rollers, pulleys, shafts, chains, etc.



#113529 ( 5" x 2 1/2" )

Placed next to drive (both sides) to warn personnel that the lineshaft conveyor utilizes a rotating shaft which may be hazardous if hair or loose clothing become entangled around the rotating shaft. Also used on any other conveyors where the exposed shaft may create similar hazards.



#### #111752 ( 5" x 2 1/2" )

Placed on max of 20' centers (both sides) along conveyors which provide surfaces and profiles attractive, but hazardous, for climbing, sitting, walking or riding.



#113528 (5" x 2 1/2")



#111744 ( 5" x 2 1/2" )

General warning to personnel that the equipment's moving parts, which operate unguarded by necessity or function, i.e., air cylinders, etc., create hazards to be avoided.



#110478 (5" x 2 1/2")

Placed on all chain guards to warn that operation of the machinery with guards removed would expose chains, belts, gears, shafts, pulleys, couplings, etc. which create hazards.



#113513 ( 5" x 2 1/2" )

Placed on chain guard base so label is visible when guard cover is removed.



#111870 ( 5" x 3" )

General warning of pinch point hazards.



#111750 (1 3/4" x 1 1/4")

Generally placed on smaller guards to alert personnel of potential danger if guard is removed and power is not locked out.



Placed on shipping brace which stabilizes equipment during shipping. Brace must be removed before operating! May cause severe injury if not removed.



#110491 ( 10" x 7" )

Placed on equipment where conveyors may start without warning.





- Follow all proper safety precautions and plant installation procedures.
- If you find any damage to the conveyor upon inspection, contact the factory.

#### LOADING/UNLOADING

Have trained personnel load or unload equipment. The Gravity Impact Cart must be properly handled when transferring from the unloading area to final site location to prevent damage.

#### **RECEIVING AND INSPECTION**

Uncrating Checklist:

- 1. Compare the bill of lading with what you have received (including accessories).
- 2. Examine the equipment for damage.
- 3. Immediately report shortage or damages to the vendor and carrier.
- 4. Obtain a signed damage report from the carrier and send a copy to the vendor. **Do not attempt to modify or repair damaged equipment without authorization from vendor.**

After Completing the Uncrating Checklist:

- 1. Remove crating and packaging
- 2. Look for boxes, accessories, bags or components such as fasteners, manuals, guard rails etc. that may be banded or fastened to the crating material.

Note: Make sure all fasteners, guards and essential components are not discarded.



### **OPERATIONAL SAFETY**



- Replace all safety devices and guarding prior to equipment start-up.
- All servicing of equipment that is elevated or hanging requires additional safety procedures be followed. Please see your site's Risk Assessment and Safety Procedures.

Only trained, qualified personnel shall be permitted to operate a conveyor. Training shall include instruction in operation under normal conditions and emergency situations.

Where safety is dependent upon stopping / starting devices, they shall be kept free of obstructions to permit access. The area around loading and unloading points shall be kept clear of obstructions that could endanger personnel.

Do not ride the load-carrying element of a conveyor under any circumstances, unless the conveyor is designed and equipped with safety and control devices intended to carry personnel. For no reason shall a person ride any element of a vertical conveyor. Warning labels reading "DO NOT RIDE CONVEYOR" shall be affixed by the owner of the conveyor.

Personnel working on or near a conveyor shall be instructed as to the location and operation of pertinent stopping devices.

A conveyor shall be used to transport only a load that it is designed to handle safely. Under no circumstances shall the safety characteristics of the conveyor be altered.

Routine inspections and preventative and corrective maintenance programs shall be conducted to ensure that all safety features and guards are retained and function properly. Inspect equipment for safety labels. Make sure personnel are aware of and follow safety label instructions.

Alert all personnel to the potential hazard of entanglement in conveyors caused by items such as long hair, loose clothing and jewelry.





# GRAVITY IMPACT CART SAFETY INSTRUCTIONS

Be aware of potential pinch points:

- Interface between powered conveyor and gravity roller conveyors/Gravity Impact Carts can produce a "wringer" effect.
- Any point where accessories are located which also have moving parts.
- Product is free flowing. If equipment repair or replacement is required during inspections, thoroughly review the manufacturer's specific product information for correct procedure.



### **GENERAL PREVENTATIVE MAINTENANCE**

Periodic maintenance intervals shown may vary with load, speed, hours of daily operation, ambient temperature, humidity, etc. Intervals can be established by fairly frequent maintenance at first; then lengthen the intervals as justified by observation of need based on history. The following is based on 5 days per week, 8 hours per day under normal conditions.

#### WEEKLY, MONTHLY, QUARTERLY MAINTENANCE

- Perform an auditory inspection to identify any unusual noise that may indicate a problem with the equipment.
- Inspect conveyor for loose bolts.
- Inspect rollers to ensure they rotate freely.



- Prohibit riding on conveyor by anyone.
- Think before making any adjustments. It may prevent an injury. Remember, all moving components are potentially dangerous.
- Protect yourself from unexpected starts when working on a stopped unit by locking the control panel or disconnect switch that supplies power to the unit and/or connected equipment.

### ADJUSTMENT OR MAINTENANCE DURING OPERATION

When adjustments or maintenance must be done while equipment is in operation, only trained, qualified personnel who are aware of the hazards of the conveyor in motion shall be allowed to make adjustments, perform maintenance or service.

Conveyors shall NOT be maintained or serviced while in operation unless proper maintenance or service requires the conveyor to be in motion. If conveyor operation is required, personnel shall be made aware of the hazards and how the task may be safely accomplished.

#### LUBRICATION

Conveyors shall NOT be lubricated while in operation unless it is impractical to shut them down for lubrication. Only trained and qualified personnel who are aware of the hazards of the conveyor in motion shall be allowed to lubricate a conveyor that is operating.

Where the drip of lubricants or precess liquids on the floor constitutes a hazard, drip pans or other means of eliminating the hazard must be provided by purchaser(s).



- Lockout/Tagout procedures must be followed for every energy source of the conveyor.
- Maintenance and service shall be performed by trained, qualified personnel only.
- No maintenance or service shall be performed when a conveyor is in operation. See "Lubrication" and "Adjustment or Maintenance During Operation" for exceptions.

### MAINTENANCE OF GUARDS AND SAFETY DEVICES

Guards and safety devices shall be maintained in a serviceable and operational condition. Warning signs are the responsibility of the owner of the conveyor and must be maintained in a legible/operational condition.

#### INSPECTIONS

Routine inspections with preventative and/or corrective maintenance programs shall be conducted to ensure that all safety features and devices are maintained and function properly.

All personnel shall inspect for hazardous conditions at all times. Remove sharp edges or protruding objects. Repair or replace worn or damaged parts immediately.

#### CLEANING

Where light cleaning and/or casing cleaning are required, they shall be performed by trained personnel. Where applicable, the conveyor electrical power must be turned off and locked/tagged out following your company's machine specific procedures. Special attention may be required at feed and discharge points.

### **OPERATING INSTRUCTIONS**

#### NOTE

Prior to operation of any equipment, confirm that all safety, inspection and installation processes have been completed and that conveyance system is ready for operation.

The Impact Cart is used for the initial step in loading products onto Flex Conveyor, either gravity or powered. By using the Impact Cart for loading product onto a conveyance system, the life of the Flex Conveyors' rollers and sensors is extended.

#### **POSITION IMPACT CART & CONVEYOR**

- 1. Using the handle, place Impact Cart in a location near the products that will be loaded and conveyed. Next, position the loading end of the Flex Conveyor loading near the handle-end of the Impact Cart.
- 2. Lower the handles on the Impact Cart and the Flex Conveyor. To do this, lift the handle up and then pivot downward.

#### LOCKING/UNLOCKING CASTERS

Before securing the Impact Cart to the Flex Conveyor, lock all swivel casters. Leave locks engaged while conveyors are in use.

Engaging the Brake:

- Identify the brake levers, located on the sides of the swivel casters. The brake lever will have markings indicating which end to press to turn the brakes "ON" or "OFF". (Figure 1)
- 2. Apply force to the "ON" side of the lever, pivoting each to one side or the other. Be sure to apply sufficient force to firmly engage the brake mechanism. Repeat this procedure to engage all four caster locks

 Once the brakes have been activated, check that they are properly engaged. Try to rotate the wheels or attempt to roll the Impact Cart. If the wheels remain stationary, the brake is properly engaged.

Disengaging the Brake:

- 1. Release the pressure on the brake by pivoting the lever in the "OFF" direction.
- 2. Test the swivel motion by attempting to roll the Impact Cart in the desired direction.

#### **ADJUST LEGS**

The TOR (Top of Roller) on the Impact Cart and the adjacent Flex Conveyor should be aligned. This allows product to move without "catching" on the Flex Conveyor, or dropping and creating impact on the Flex Conveyor rollers.

To change level of the Impact Cart TOR, use the square shaft locking pins to adjust the legs of the Impact Cart (Figure 2).





Figure 1: Swivel Caster with Lock



### **OPERATING INSTRUCTIONS (CONTINUED)**

#### SECURING CART TO CONVEYOR

The Impact Cart should be secured to the Flex Conveyor before use. There are two methods for securing these sections.

Method #1 - Hook Securement:

1. Locate the end hooks on the Impact Cart (Figure 3) and also on the Flex Conveyor.



Figure 3: Shoulder Bolt with End Hook

- 2. Starting on one side of the Impact Cart, latch the Impact Cart endhook onto the shoulder bolt of the Flex Conveyor. Next, latch the Flex Conveyor end hook onto the shoulder bolt of the Impact Cart.
- 3. Repeat this process on the other side of the Impact Cart so that both the left and right sides of the conveyors are secure.

Method #2 - Bolt-On Securement:

- 1. On one side of the Impact Cart, locate the galvanized bolt plate featuring a slot and nut and bolt assembly (see Figure 4). Loosen the nut and remove the bolt.
- 2. Align the slot on the plate with the corresponding slot on the Flex Conveyor.
- 3. Fasten the nut and bolt through the plates, securing the two sections of conveyor together.
- 4. Repeat this process on the other side of the Impact Cart so that both the left and right sides of the conveyors are secure.



Figure 4: Impact Cart Connection Plate



#### PARTS REPLACEMENT PROCEDURES



- Before starting any maintenance procedure, the ELECTRICAL SERVICE MUST BE TURNED OFF AND LOCKED OUT.
- Replace all safety devices and guarding prior to equipment start-up.

#### **ROLLER REPLACEMENT**

Regularly scheduled preventative maintenance will ensure maximum component life. In the event of excessive wear or damage to a roller, complete the following procedure.

 One or both ends of the roller may be spring retained. Identify which end of roller is spring retained. Using a small diameter punch or similar tool, apply linear pressure to the shaft on the opposite end until the shaft clears the inside of the frame.

#### NOTE

Be careful to NOT apply side load pressure to the roller shaft.

- 2. Apply upward force on the roller body until the roller shaft lifts out of the frame completely. It is recommended to place a putty knife or similar flat surface tool between the shaft and the inside of the frame to protect the finish on the inside of the conveyor frame.
- 3. Place the new roller's shaft into the hole in the conveyor frame.
- 4. Press on spring-loaded idler shaft using putty knife and slide roller into place, so that shaft sets in the opening in the opposite conveyor frame.



Figure 2: Applying Linear Pressure



### **GENERAL TROUBLESHOOTING**

The troubleshooting information contained on the following pages is general in nature and is intended to provide an efficient means of pinpointing a correct solution in a timely manner.

Equipment malfunctions or failures may occur at any time. Following a regularly scheduled preventative maintenance program can help to minimize conveyor down time. Scheduled maintenance can lessen the frequency of equipment repairs by keeping components running more efficiently and in a better working environment.

Prior to performing any maintenance or replacement procedures, **the electrical service must be turned off and locked out.** 

The disassembly or repair of equipment under warranty may void such warranty (motor, reducer, cable reel, etc.). Check to be sure that the warranty has not expired or will not be voided prior to performing disassembly or repair.



#### Replace all safety devices and guarding prior to equipment start up.

PROBLEM	CAUSE	SOLUTION
Product doesn't flow.	Insufficient decline.	Raise infeed height or lower discharge height.
	Rollers don't rotate freely.	Replace damaged rollers.
	Poor bottoms on product.	Improve conveyability of product.
Product skews as it travels down the line.	Rollers are not square in frame.	Loose connecting bolts. Square the frames. Tighten the connecting bolts.



### PARTS REFERENCE CHARTS & DRAWINGS

GRAVITY IMPACT CART REPLACEMENT AND SPARE PARTS			
3	MCCW-30	CASTER WELDMENT: 30" TOR	
4	CXC-100022	TUBE CAP: FOR 1 1/2 SQ.TUBE, BLACK, LOW DENSITY PE, WITH FLEXIBLE RIDGES	
5	CXC-100056B	CASTER (SWIVEL W/BRAKE): 6" X 2" BLACK POLYOLEFIN WHEEL, 4" X 4-1/2" PLATE MOUNT, 700# CAPACITY	
6	FXLG-RH-HW-V1	REMOVABLE HANDLE WELDMENT	
7	FXLG-EH-HW-30-V1	HANDLE WELDMENT: 30" BF, ENDS	
8	FAS0120680	LOCKING PIN: FASTENAL #0120680, 1/4" DIAMETER PIN, 2 1/2" USEABLE LENGTH, 2 1/2" RETAINER CLEARANCE, ZINC PLATED STEEL, LOCKING RETAINER W/EASY RELEASE TAB	
10	FXEB	END HOOK	
11	SHSS012X2	SOCKET HEAD SHOULDER SCREW: 1/2" DIA. SHOULDER X 2" LONG, 3/8-16 THREAD, BLACK OXIDE, CASE HARDENED	
12	NLN03816	LOCK NUT (NYLON): 3/8-16, ZINC PLATED	
13	SHSS038X2	SOCKET HEAD SHOULDER SCREW: 3/8" DIA. SHOULDER X 2" LONG, 5/16-18 THREAD, BLACK OXIDE, CASE HARDENED	
14	HHCS5051618X214	HEX HEAD CAP SCREW: 5/16-18 X 2 1/4, GRADE 5, ZINC PLATED	
15	FW0516	FLAT WASHER: 5/16, ZINC PLATED	
16	FWN051618	WHIZ NUT (SERRATED FLANGE): 5/16-18, ZINC PLATED	
17	MCHD-RO-30	GRAVITY ROLLER: 30" BF, 2.5" OD X 11 GA GALVANIZED, #102041-GP BEARING, 11/16" AXLE SPRING RETAINED, COTTER PIN ONE END OPPOSITE OF SPRING	
18	HHCS503816X114	HEX HEAD CAP SCREW: 3/8-16 X 1 1/4, GRADE 5, ZINC PLATED	
19	SAEFW038	FLAT WASHER (SAE): 3/8, ZINC PLATED	
20	LW038	LOCK WASHER: 3/8, ZINC PLATED	
21	HN503816	HEX NUT: 3/8-16, GRADE 5, ZINC PLATED	
22	HHCS503816X034	HEX HEAD CAP SCREW: 3/8-16 X 3/4, GRADE 5, ZINC PLATED	
23	FWN03816	WHIZ NUT (SERRATED FLANGE): 5/16-18, ZINC PLATED	
25	CB03816X1	CARRIAGE BOLT: 3/8-16 X 1, GRADE 5, ZINC PLATED	
26	HRH3	HOG RING: H3, COPPER, 3/32" WIRE DIA., DISTANCE BETWEEN POINTS .812", DISTANCE BETWEEN WIDEST SECTION 1.437"	
28	HHCS503816X034	HEX HEAD CAP SCREW: 3/8-16 X 3/4, GRADE 5, ZINC PLATED	



### PARTS REFERENCE CHARTS & DRAWINGS



FXGRMCHD30A6: IMPACT CART ASSEMBLY: 30" BF, 2.5" DIA ROLLERS, 30" TOR, 6" CASTERS, HEAVY DUTY



#### WARRANTY STATEMENT

The Seller warrants that the Equipment will be free of defects in workmanship and material (if properly installed, operated and maintained) for a period of one year or 2080 hours of use, whichever is sooner, from date of shipment to Customer, subject to the limitations hereunder set forth. If within the one year warranty period, the Seller receives from the Customer written notice of any alleged defects in the Equipment and if the Equipment is not found to be in conformity with this warranty (the Customer having provided the Seller a reasonable opportunity to perform any appropriate tests thereon) Seller will, at its option, either repair the Equipment or supply a replacement therefore.

The Seller under either option shall have the right to require Customer to deliver the Equipment to Seller's designated service center and the Customer shall pay all charges for in-bound and out-bound transportation and for services of any kind, diagnostic or otherwise, excepting only the direct and actual costs of repairing or replacing the Equipment. If after reasonable effort the Seller cannot correct said deficiencies, the Seller will make an equitable price adjustment based on actual performance, provided that such adjustment shall under no circumstances exceed the purchase price. The Seller further warrants that the parts, and components supplied by the Seller and forming a part of the Equipment will be free from defects in material and workmanship for a period of one year or 2080 hours of use, whichever is sooner, from date of shipment to the Customer. The Seller's liability shall be solely limited to the supplying of replacement parts and materials.

For a copy our full warranty included in our Terms and Conditions of Sale, contact ConveyX Solutions, LLC.



#### RETURN AUTHORIZATION PROCEDURES

If the component in question is included in the replacement parts package, the following procedure will apply:

- Identify the part number from the manual
- If part is indicated as wear part
  - Replace the damaged or defective part from parts inventory
  - Order additional parts as required
- If the part is indicated as a warranty part
  - Replace the damaged or defective part from parts inventory
  - Contact ConveyX Solutions, LLC for a Return Merchandise Authorization (RMA) number
    - Have conveyor serial number available when contacting CXL.
  - Send the part to the following address

ConveyX Solutions, LLC. 2380 US 23 South Docks C, D, E Alpena, MI 49707

- Include the conveyor serial number and RMA number on the packaging and the packing slip
- CXL will inspect the part and make a warranty determination
- If the part is under warranty, CXL will...
  - Ship a replacement to Customer to replenish parts stock
  - Issue a credit for the freight

If the component in question is not included in the replacement parts package, the following procedure will apply:

- · Identify the part number from the manual
- Contact CXL for an initial review to establish if part is covered under warranty and to provide a quote if needed.
  - Have conveyor serial number available when contacting CXL
- · Issue a purchase order for a replacement part
- CXL will issue a Return Merchandise Authorization (RMA) number for the part to be returned.
- Send the part to the following address

ConveyX Solutions, LLC. 2380 US 23 South Docks C, D, E Alpena, MI 49707

- Include the conveyor serial number and RMA number on the packaging and the packing slip
- CXL will inspect the part and make a warranty determination
- If the part is under warranty, CXL will Issue a credit to Customer for the purchased part and associated freight charges





ConveyX Solutions, LLC strives to be the leading dock door conveyor solutions manufacturer in North America. Our load and unload material handling equipment is designed for unit handling applications delivering operational improvements and energy efficiency.

We build to our customers' specifications to enhance their processes with quality equipment and components. We specialize in rapid product development to exceed lead time and volume requirements.

