MATERIAL HANDLING SOLUTIONS THAT WORK

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CHAIN CONVEYOR OWNERS MANUAL

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CHAIN CONVEYOR
HEAVY DUTY INDUSTRIAL CONVEYORS

INTRODUCTION

Thank you for purchasing a Chain Conveyor from Wecon Systems. This model is made of the finest materials available and is manufactured in Canada by skilled craftsmen. The conveyor is very easy to operate and to maintain, but we recommend that you read this owner's manual thoroughly before using the conveyor.

This manual provides installation instructions, start–up procedures, safety tips, a parts list and information regarding preventative maintenance, lubrication and troubleshooting. This conveyor is durable and has been designed for a long service life.

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SAFETY WARNINGS

WARNING: DO NOT ATTEMPT MAINTENANCE ON ANY CONVEYOR WHILE IT IS IN OPERATION.

BEFORE STARTING MAINTENANCE

- Read and understand instruction manual and be aware of all warning stickers.
- Know where the emergency stop buttons are located.
- Know or have quick access to emergency telephone numbers in the unforeseen event that an emergency should arise.
- Maintenance functions are to be performed while the conveyor is off. The main power disconnect switch to the conveyor shall be locked out in accordance with proper written lockout procedures. This will prevent anyone from applying power to the system while maintenance personnel are at work.
- NEVER work on a conveyor while it is running unless the maintenance procedure requires the equipment to be running. When a conveyor must be operating to perform the maintenance, allow only properly trained maintenance personnel to work on the conveyor.
- Wear safety glasses when in the proximity of the conveyor.
- NEVER allow personnel with long hair near the conveyor without the use of a protective hair net.

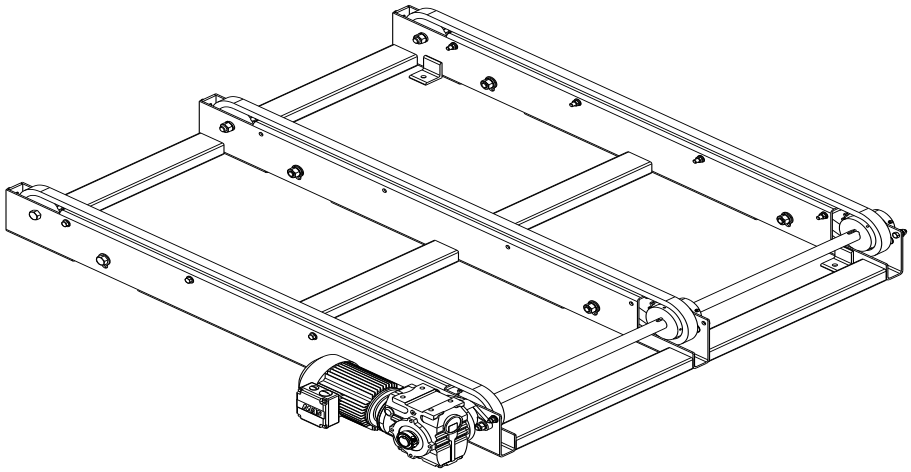
DURING MAINTENANCE

- Do not wear loose clothing, ties or jewelry while servicing or performing maintenance on any conveyor equipment.
- Be aware of hazardous conditions, such as sharp edges and protruding parts.
- When using hoists, cables or other mechanical equipment to perform maintenance, use care to not damage conveyor components.
- Keep area clean. Clean up lubricants and other materials before starting conveyor.

AFTER MAINTENANCE

- Before starting the conveyor after any maintenance has been completed, walk around the equipment and make certain all safety devices and guards are in place, pick up tools, maintenance equipment and clear any foreign objects from equipment.
- Make certain all personnel are clear of the conveyor and made aware that the conveyor is about to be started.
- Only authorized personnel should be permitted to start any conveyor following maintenance or emergency shut-off.
- Never place any part of your body in or on any part of this conveyor while in operation.
- Do not allow anyone to stand on the conveyor.
- Do not allow horseplay around the conveyor.
- Do not remove guards, perform maintenance or clear obstructions without first locking out the main power disconnect switch.

PLEASE RECOGNIZE ALL WARNING STICKERS AND OBEY ANY SAFETY INSTRUCTIONS. WARNING STICKERS ARE PLACED ON THE EQUIPMENT FOR YOUR SAFETY – PLEASE DO NOT REMOVE THEM. CONDITIONS DO EXIST ON ANY CONVEYOR THAT CAN CAUSE INJURY OR DEATH TO PERSONNEL. NO MANUAL CAN COVER ALL THE HAZARDOUS CONDITIONS THAT MIGHT DEVELOP. ALL PERSONNEL INVOLVED IN THE OPERATION OF ANY CONVEYOR EQUIPMENT SHOULD BE CONSTANTLY AWARE OF ANY UNSAFE CONDITIONS AND USE ALL POSSIBLE CARE, ALONG WITH COMMON SENSE AND STRICT ADHERENCE TO ACCEPTED SAFETY STANDARDS TO AVOID INJURY.



3-STRAND CHAIN CONVEYOR WITH OPTIONAL SIDE MOUNTED DRIVE

IMPORTANT

Wecon Systems does not warrant parts or components not manufactured by Wecon Systems. The manufacturers of electric motors and controls, air and hydraulic components and certain other items extend warranties, which may or may not be similar to that of Wecon Systems manufactured equipment. Defective material of this type should be reported by the customer to Wecon Systems whose sole responsibility is to notify the vendor of the defective material for action. Wecon Systems will not be responsible for units that have been tampered with or disassembled by anyone other than the authorized representative of the respective manufacturer.

EQUIPMENT DESCRIPTION

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Chain conveyors operate using a series two or more strands of carrying chain that are powered to move the product. They are ideally suited to convey products (pallets or goods exhibiting a uniform, rigid bottom) easily along the surface of the chain. Power for the series of carrying chains is provided by a common drive shaft arrangement. All beds are fabricated using heavy-duty construction within a steel frame.

Depending on application or load rating, each strand of carrying chain is structurally supported by a UHMW track or steel wear bar that guides the chain along the length of the conveyor. For applications utilizing the UHMW wear strip, the wearstrip provides quiet operation, wear resistance and reduces horsepower requirements. Those applications utilizing steel wear bars are typically designed for higher load ratings.

Chain conveyors are capable of indexing or two-way applications depending on the type of drive used. Heavy-duty construction makes these conveyors ideally suited for harsher environments where dirt, grease, heat, oil and other contaminants are present.

Chain conveyors provide smooth, continuous flow of product under positive control. They are designed to transport the product along a horizontal plane.

Wecon chain conveyors are available in different drive configurations. End drives are standard, with the drive mounted below and within the bed frame. Drives mounted outside the bed frame are available as an option. Centre drives are available as an option but offer the capability of one-way or two-way operation. End drives are capable of one-way operation only.

Chain conveyors are available with carrying chains on varying centers. Determination of the required number of chain strands is dependant on many parameters including width, weight and deflection of the carrying surface of the product being transported. Typically, the more uniform the transporting surface, the greater the allowance for larger carrying chain centers.

Conveyor frames are heavy-duty welded construction consisting of 6” x 2” x 3/16” wall HSS tube side channels, with a series of 3” x 1-1/2” x 1/8” wall HSS tube cross members welded in place along the side channels. For end drive configurations, one end of each side channel is coped to accept a flange bearing and drive shaft arrangement making it an integral part of the design. The opposite ends of each side channel are coped to accept an idler sprocket arrangement. The carrying chains are installed and run along either a UHMW guide track or steel wear bar arrangement (depending on application) that is installed on the top of the side channels.

Various accessories and options are available including multiple chain strands, limit switches, proximity switches, photo eyes, and guard rails.

Drive – Is the power source that moves the chain. End drives are standard, with the drive mounted below and within the bed frame. Drives mounted outside the bed frame are available as an option. Standard drives have fixed speeds. All are capable of indexing. Optional centre drives are available but offer the capability of one-way or two-way operation. For two-way operation, the drive must be located as close as possible to the center of the bed length, midway between each end. This makes for roughly equal runs of chain to each side of the drive, keeping the required chain pull to a minimum. End drives are capable of one-way operation only.

Carrying Chains – Provides a surface to carry the product.
Consists of heavy duty riveted double pitch chain C2060 or C2080 depending on the required load capacity. The double pitch conveyor chains reduce product damage and wear when compared to standard roller chain.

1. C2060 double pitch conveyor chain is used to accommodate a maximum unit load of 2000 lbs. For end drive configurations, the carrying chain is drawn along a length of UHMW guide track or steel wear bar (depending on application and load) and over a C2060A idler sprocket at the end of the conveyor. The chain is re-routed back and over the drive sprocket to form an endless loop.

2. C2080 double pitch conveyor chain is used to accommodate a maximum unit load of 4000 lbs. For end drive configurations, the carrying chain is drawn along a length of UHMW guide track or steel wear bar (depending on application and load) and over a C2080A idler sprocket at the end of the conveyor. The chain is re-routed back and over the drive sprocket to form an endless loop.

TYPICAL IDLER SPROCKET ARRANGEMENT SHOWING CARRYING CHAIN

Heavy Duty Supports – Must be mounted to the floor. All heavy duty supports are fully adjustable for final set up and leveling. Numerous width and height combinations are available.

HEAVY DUTY SUPPORT

INSTALLATION INSTRUCTIONS

POSITION AND ALIGNMENT

Proper mechanical installation is vital for the equipment to operate as described. Our installation standards show the importance that Wecon places on a quality installation.

Installation Standards

- In General:
  The following standards, where applicable, will be used as guidelines by Wecon approved installers.

- Dimensional Reference Points:
  The location of each conveyor in the system will be determined by establishing a reference point to the center of each conveyor from the fixed building column lines as indicated on approved general arrangement drawings.

- Level and Elevations:
  Conveyors will be installed in accordance with the elevations shown on the layout drawing(s).
  After the first elevation is established, the elevation of all other points will be related to this first point. The practice of dimensioning elevations from the floor at each point of support will not be followed. When the floor level changes significantly, such as the system going to an upper or lower floor, or into another building or room, a new elevation will be established from the first floor at that point. This new elevation will then become the reference point for subsequent elevations.

- Standards For Floor Mounting:
  Anchoring will be accomplished by drilling into the floor and inserting a suitable anchor bolt in an approved manner in accordance with the manufacturer's instructions.
  Drive and intermediate stands will be anchored with 3/8" diameter minimum bolts, one in each leg.
  Explosive type anchors will not be used. Adhesive or specialized anchors will be used only when specified.

CONVEYOR INSTALLATION

It is recommended that only trained personnel install or service this equipment.

Wecon chain conveyors are shipped on skids, generally, not exceeding 4000 pounds, for lift truck unloading and handling. The skids may also be handled with a crane if one is available. If a crane is utilized, ensure the operator is certified in the competency of its operation. Each skid will vary in width, length and height depending upon the style of product purchased.

The conveyor frames, supports, and accessories should be thoroughly inspected before proceeding with the conveyor installation. Upon delivery, be sure to check the following items very carefully:

- The alignment of the frames, to ensure horizontal and parallel orientation.
- The equipment to ensure there is no visible damage to the frames, supports or accessories.

Floor Mounted Units

- At the desired position for the conveyor, snap a chalk line (not in excess of 100 feet per run) on the floor location for the centre line of the unit.
- Use a plumb line to align the centre line of each conveyor section to the chalk line.
- Set height of unit.
- Adjust the conveyor both lengthwise and diagonally using a level.

NOTE: Beds must be level from side to side to prevent the possibility of skewing the product.

SUPPORT ASSEMBLY

Typically, a chain conveyor would be shipped with the supports installed on the conveyor. In the event the supports are shipped loose, the supports are fastened to the bottom web of the side channel utilizing holes designed into each bed section. For those applications, supports can be mounted in the first available set of holes at the charge and the discharge ends of the conveyor. Mounting a support can be accomplished by either lifting the bed section into position onto a support or attaching the support to a bed section prior to lifting it into position. After the conveyor has been aligned and leveled, anchor the supports to the floor in an approved manner in accordance with the anchor bolt manufacturer's instructions.

HD SUPPORT MOUNTED AT THE END OF A CONVEYOR

PREPARING UNIT TO RUN

- All electrical controls must be installed, wired and connected by a licensed electrician only.
- Check to ensure the motor is properly wired for correct rotation with respect to the direction of travel.
- Make certain that installation is in conformance to all local codes and regulations.
- Ensure the conveyor path is free from oil, debris and other foreign objects.
- Prior to start up, check and verify if the reducer has the correct level of oil and that breather plugs (if required) are correctly installed before operating the motor.
- Check to ensure all guards are in place and that all hardware has been tightened.
- Ensure that all personnel are clear, then run unit and observe travel.

CHAIN CONVEYOR OPERATION

- With unit running, observe the travel of the carrrying chain over the length of the bed and through all components.
- Listen for any noisy bearings, sprockets, motors, reducers or other vibrations. Correct any problems immediately.
- Check to ensure chain tracks are level.
- Run conveyor with a moderate load of product on conveyor and check for positive drive.
- Check to ensure supports are level.
- Remove any dirt build up from the carrying chain that could effect the operation of the conveyor.
- Any component that shows visual signs of damage should be replaced.

CARRYING CHAIN ADJUSTMENT

- With unit running, observe the travel of the carrying chain over the length of the bed and through all components.
- Slack conveying chain may be taken up by making adjustments to the individual take-ups located in the side channels specific to each carrying chain strand.
- Tension of the carrying chain is set according to standard chain tensioning procedures.

MAINTENANCE

WARNING: DO NOT ATTEMPT MAINTENANCE ON ANY CONVEYOR WHILE IT IS IN OPERATION.

MECHANICAL MAINTENANCE

Item	Schedule Service	Suggested Maintenance
Gear reducer	At start-up and every month of operation	Check oil
	Yearly	Change oil
Motor	At start-up and every month of operation	Check mounting hardware and align if necessary
Drive chain	Monthly	Check tension and alignment
	Monthly	Clean and lubricate with recommended oil using a brush or spray
Carrying chains	Monthly	Check tension and alignment
	Monthly	Clean and lubricate with recommended oil using a brush or spray
Protective guards	At start-up and every week of operation	Check to ensure all guards are in place and properly secure
Supports	Weekly	Check to ensure supports have not been damaged and are properly secured
Hardware	At start-up and every week of operation	Check to ensure all fasteners are in place and properly tightened

Note: Gear reduction drives units are filled with lubricant prior to shipping. The lubricant level should be checked prior to start-up and the breather plug installed in the proper location (see reducer manual supplied with unit). Only refill reducers with the approved lubricant required for standard service - if service is more severe; the oil should be changed more frequently.
Consult the reducer manufacturer for a more specific lubrication schedule.

ELECTRICAL MAINTENANCE

WARNING: DISCONNECT ALL POWER BEFORE PERFORMING THE FOLLOWING MAINTENANCE. ENSURE THE MAIN POWER DISCONNECT SWITCH TO THE CONVEYOR IS LOCKED OUT IN ACCORDANCE WITH PROPER WRITTEN LOCKOUT PROCEDURES.

ONLY QUALIFIED PERSONNEL SHOULD PERFORM THE FOLLOWING MAINTENANCE.

Note: A qualified person should keep a logbook of the following readings noting and documenting any excessive changes from normal that could indicate a potential problem.

1. Measure voltages and current of incoming power to enclosure.
2. Measure current readings of all motors.
3. Measure current readings on primary and secondary of control transformer to insure proper infeed and outfeed voltage.
4. Review usage - excessive use of fuses or replacing the same part several times indicates an excessive current draw, faulty components, or exceeding the capacity of the conveyor unit.

Item	Schedule Service	Suggested Maintenance
Control panels and pushbutton enclosures	Always	Enclosures should be clean and dry
	Weekly	Check if components have vibrated loose, check door/power interlocks and latches
	At start-up, monthly or if any problems occur	Check for loose or discolored wires (Discolored wires indicate an excessive current draw)
Photoeyes	At start-up, weekly	Dust, oil and foreign objects should be wiped from lenses and reflectors
Limit switches	Weekly	Check arms for adjustment and tightness
Pushbuttons	Weekly	Check wires and terminals for tightness
Emergency stop devices	Weekly	Check for proper operation
Conduit and conduit hangers	Monthly	Check for alignment and damage, exposed wiring
Wiring	At start-up, monthly or if any problems occur	Check for exposed cords and wires for damage, replace as necessary

TROUBLE SHOOTING GUIDES

MOTOR AND GEAR REDUCER

Problem	Possible Cause	Suggested Solution
Hard to start, stalling out or running hot	Drag on conveyor	Inspect for obstruction causing drag and remove
	Lack of lubricant	Check oil level in gearbox, verify vent breather plug is open
	Overloaded	Remove load and possibly increase horsepower
	Electrical	Check wiring, circuits and take load readings
Excessive noise	Lack of lubricant	Check oil level in reducer and add if required
	Damaged gears	Replace unit
	Faulty bearing	Replace bearing

CHAIN AND SPROCKETS

Problem	Possible Cause	Suggested Solution
Abnormal wear	Excessive chain tension	Reduce the chain tension
	Misaligned sprockets	Align sprocket faces using a straight edge and tighten set screws
	Chain not lubricated	Lubricate with proper lubricant
	Damaged chain or sprocket	Replace damaged component
	Misaligned chain guard	Adjust as required
Excessive noise	Loose chain	Adjust chain tension
	Chain not lubricated	Lubricate with proper lubricant
	Misaligned sprockets	Align sprocket faces using a straight edge and tighten set screws
Pulsating chain	Improper chain tension	Adjust chain tension
	Overloaded conveyor	Inspect for obstruction causing drag or remove excess load
Broken chain	Seized or sticking sprocket or shaft	Inspect and replace damaged items
	Worn or damaged chain	Replace damaged chain
	Obstruction	Inspect conveyor for obstruction and remove
Sprockets loose on shaft	Loose set screws	Align sprocket faces using a straight edge and tighten set screws
	Worn or damaged key	Replace key and inspect shaft keyway for damage
Chain slack	Normal wear	Adjust chain to proper tension or replace chain

ELECTRICAL

Problem	Possible Cause	Suggested Solution
Motor not operating	Emergency stop activated	Reset pull cord, air pressure switch or pushbuttons
	Blown fuses	If resistance from hot to ground is OK replace fuse
	Overload relay tripped	Reset relay, measure current draw
	Check for wiring problems	Check wiring diagram for correct connections
Unit running wrong direction	3 phase motor wired incorrectly	Check proper voltage wiring diagram
	1 phase motor wired incorrectly	Check proper voltage wiring diagram
	DC motor wired incorrectly	Check proper voltage wiring diagram
Overload relay trips	Check setting on overload relay with full load amperage on motor nameplate	If incorrect, reset overload relay
	Check for mechanical binding or jams	Remove item creating drag load on unit - check belt
	Additional load is too much for motor	Decrease the amount of product load on unit
	Check if motor current draw is high	Drive may require more horsepower-consult factory
Unit operates sporadically	Check photoeyes	Clean lenses and check for proper alignment
	Check reflectors	Clean and check for proper alignment
	Limit switches	Check arm location and tightness
	Solenoids	Check pressure at the valve
	Loose connections	Check wire nuts and terminal strip

DO NOT ATTEMPT MAINTENANCE ON ANY CONVEYOR WHILE IT IS IN OPERATION. DISCONNECT ALL POWER WHILE PERFORMING ANY MAINTENANCE FUNCTIONS ENSURING THAT THE MAIN POWER DISCONNECT SWITCH TO THE CONVEYOR IS LOCKED OUT IN ACCORDANCE WITH PROPER WRITTEN LOCKOUT PROCEDURES.

PARTS GUIDE

DRIVE TRAIN COMPONENTS

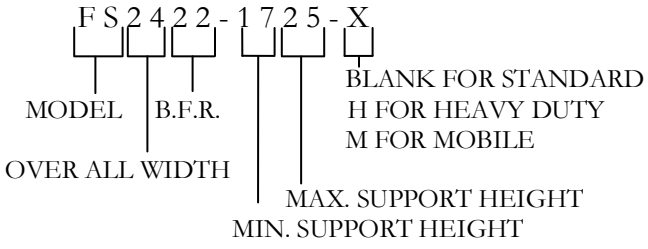
COMPONENT	PART NUMBER
Driver sprocket - refer to order (reducer)	Specify series, hub type, number of teeth x bore from sprocket
Driven sprocket - refer to order (drive shaft)	Specify series, B type, number of teeth x bore from sprocket
RC 60 chain	RC 60 x length
RC 60 connecting link	RC-60-CL
RC 60 offset link	RC-60-OL
2 hole flange brg x refer to order (common drive shaft)	Specify bore diameter
Drive Shaft – refer to order	Specify shaft diameter, length, number and location of keyways
Driver sprockets – refer to order (common drive shaft – carrying chain)	Specify series, hub type, number of teeth x bore from sprocket

MOTOR & REDUCER DRIVE COMBINATIONS

COMPONENT	PART NUMBER
Motor – refer to order	Specify manufacturer, HP, voltage, enclosure, mtg from motor nameplate
Reducer – refer to order	Specify manufacturer, style, size, ratio, handing, mtg from reducer nameplate

SUPPORTS

WHEN ORDERING SUPPORTS USE THE FOLLOWING FORMAT



CARRYING CHAIN & ASSOCIATED COMPONENTS

COMPONENT	PART NUMBER
C2060 chain - heavy duty riveted	C2060H
C2060 connecting link - heavy duty	C2060H/2062H-C/L
C2080 chain - heavy duty riveted	C2080H
C2080 connecting link - heavy duty	C2080H/2082H-C/L
UHMW chain guide track to suit C2060 chain x 10 ft long (cut to suit application)	HB-2060-10
UHMW chain guide track to suit C2080 chain x 10 ft long (cut to suit application)	HB-2080-10
Self tapping screw #8-32 UNC x 7/16" lg	ST-565P
7/16"square steel wear bar to suit C2060 chain x specify length	FISTE0742025
1/2"square steel wear bar to suit C2080 chain x specify length	FISTE0742030
End idler sprocket 60A20 x 5/8" bore	HN60A20X5/8
End idler sprocket 80A12 x 3/4" bore	HN80A12X3/4
Take-up sprocket 60A13 x 5/8" bore	HN60A13X5/8

TOUCH-UP PAINT

COLOUR	PART NUMBER
Wecon (shop) blue	P-S-BLUE
Ermanco blue (ER-1)	P-E-BLUE-ER-1
Ermanco blue (ER-2)	P-E-BLUE-ER-2
Medium grey	P-M-GREY
Wecon (shop) green	P-S-GREEN
Safety yellow	P-S-YELLOW