



**IMPORTANT!**  
**DO NOT DESTROY**

# Installation and Maintenance Manual

with **Safety Information**  
and **Parts List**

RECOMMENDED SPARE PARTS HIGHLIGHTED IN GRAY

**Model CCEZ &  
Model CCAC**

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## ● Warning Signs

In an effort to reduce the possibility of injury to personnel working around HYTROL conveying equipment, warning signs are placed at various points on the equipment to alert them of potential dangers. Please check equipment and note

all warning signs. Make certain your personnel are alerted to and obey these warnings. Shown below are typical signs that are attached to this equipment.



PLACED ON ALL  
POWERED CONVEYORS NEAR  
DRIVE AND/OR CONTROLS.



PLACED NEXT TO DRIVE, BOTH SIDES.



PLACED ON 20 FT. INTERVALS, BOTH SIDES.



PLACED ON TERMINATING ENDS



PLACED ON ALL CHAIN GUARDS.



PLACED AT DRIVE OF ALL POWERED CONVEYORS.

# INTRODUCTION



This manual provides guidelines and procedures for installing, operating, and maintaining your conveyor. A complete parts list is provided with recommended spare parts highlighted in gray. Important safety information is also provided throughout

the manual. For safety to personnel and for proper operation of your conveyor, it is recommended that you read and follow the instructions provided in this manual.

## ● Receiving and Uncrating

1. . . Check the number of items received against the bill of lading.
2. . . Examine condition of equipment to determine if any damage occurred during shipment.
3. . . Move all crates to area of installation.
4. . . Remove crating and check for optional equipment that may be fastened to the conveyor. Make sure these parts (or any foreign pieces) are removed.

**NOTE:** If damage has occurred or freight is missing, see the "Important Notice" attached to the crate.

# INSTALLATION

## ● Installation Safety Precautions *for Conveyors and Related Equipment*

### GUARDS AND GUARDING

**Interfacing of Equipment.** When two or more pieces of equipment are interfaced, special attention shall be given to the interfaced area to insure the presence of adequate guarding and safety devices.

**Guarding Exceptions.** Wherever conditions prevail that would require guarding under these standards, but such guarding would render the conveyor unusable, prominent warning means shall be provided in the area or on the equipment in lieu of guarding.

**Guarded by Location or Position.** Where necessary for the protection of employees from hazards, all exposed moving machinery parts that present a hazard to employees at their work station shall be mechanically or electrically guarded, or guarded by location or position.

When a conveyor passes over a walkway, roadway, or work station, it is considered guarded solely by location or position if all moving parts are at least 8 ft. (2.44 m) above the floor or walking surface or are otherwise located so that the employee cannot inadvertently come in contact with hazardous moving parts.

Although overhead conveyors may be guarded by location,

spill guard, pan guards, or equivalent shall be provided if the product may fall off the conveyor for any reason and if personnel would be endangered.

### HEADROOM

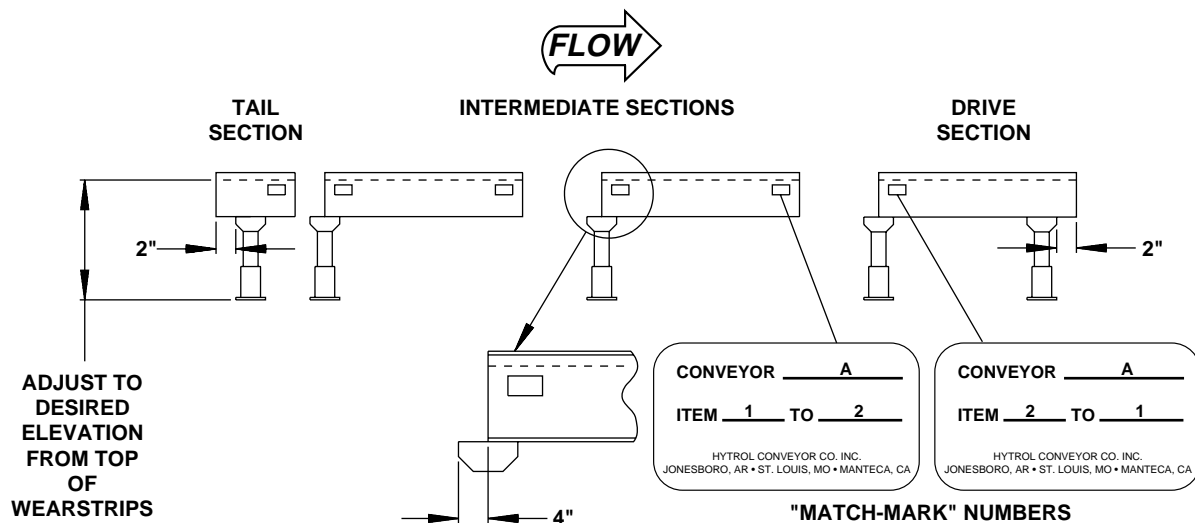
When conveyors are installed above exit passageways, aisles, or corridors, there shall be provided a minimum clearance of 6 ft. 8 in. (2.032 m) measured vertically from the floor or walking surface to the lowest part of the conveyor or guards. Where system function will be impaired by providing the minimum clearance of 6 ft. 8 in. (2.032 m) through an emergency exit, alternate passageways shall be provided.

It is permissible to allow passage under conveyors with less than 6 ft. 8 in. (2.032 m) clearance from the floor for other than emergency exits if a suitable warning indicates low headroom

## ● Support Installation

1. . . Determine direction of product flow. Figure 4A indicates the flow. Flow will always be toward the drive.
2. . . Refer to "Match-Mark" numbers on ends of conveyor sections (Figure 4A). Position them in this sequence near area of installation.
3. . . Attach supports to all conveyor sections as shown in Figures 4A and 5A. Hand tighten bolts only at this time.
4. . . Adjust elevation to required height.

FIGURE 4A



## ● Ceiling Hanger Installation

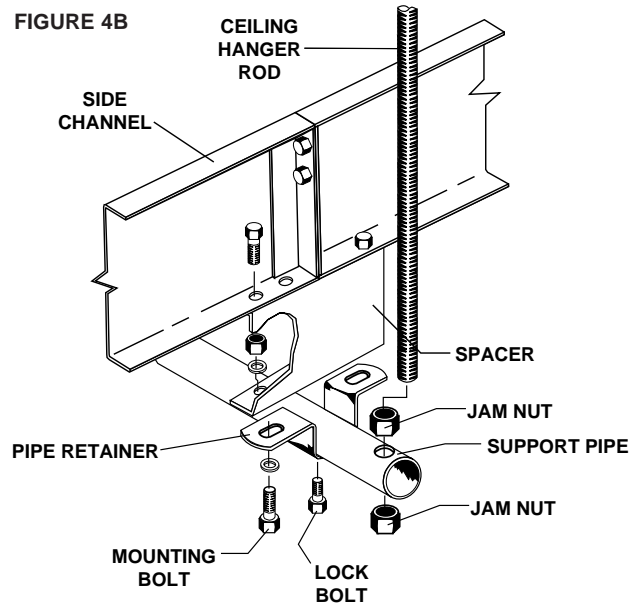
If conveyors are to be used in an overhead application, ceiling hangers may have been supplied in place of floor supports.

Figure 4B shows how a ceiling hanger mounts to a conveyor section. Ceiling hangers should be mounted at section joints. Do not place ceiling hangers in the catenary area of the drive section (Figure 10B) or the catenary area of the discharge tangent of a CCAC curve.

**NOTE: When installing ceiling hanger rods in an existing building, all methods of attachment must comply with local building codes.**

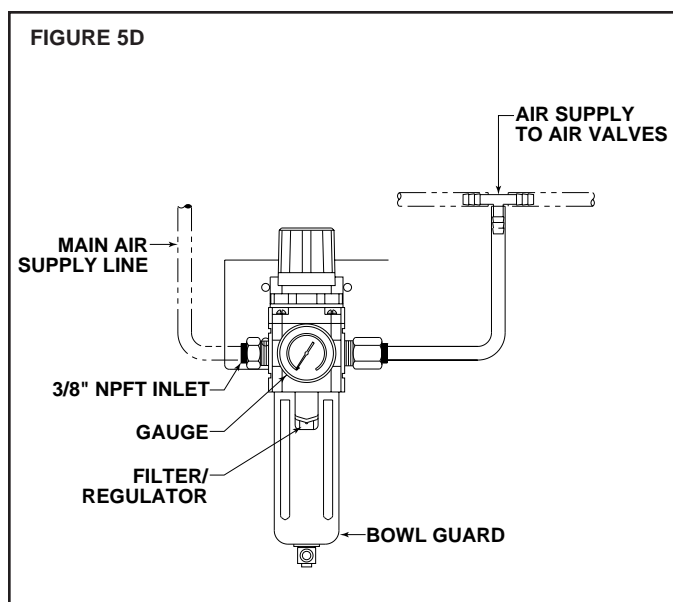
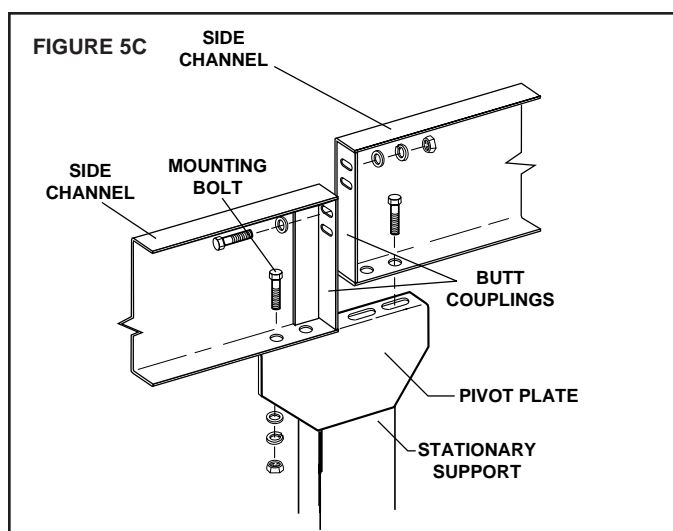
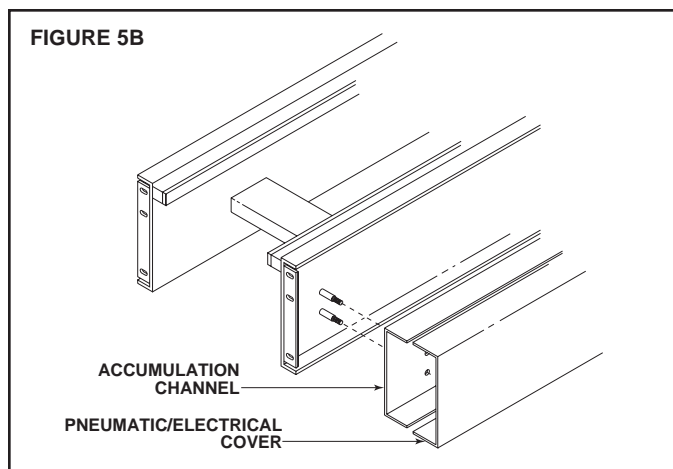
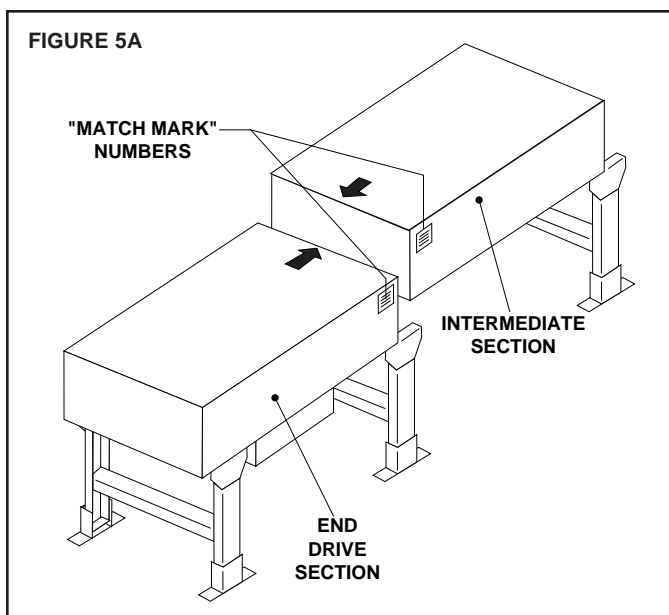
For safety information concerning conveyors mounted overhead, refer to "Installation Safety Precautions" on Page 3.

FIGURE 4B



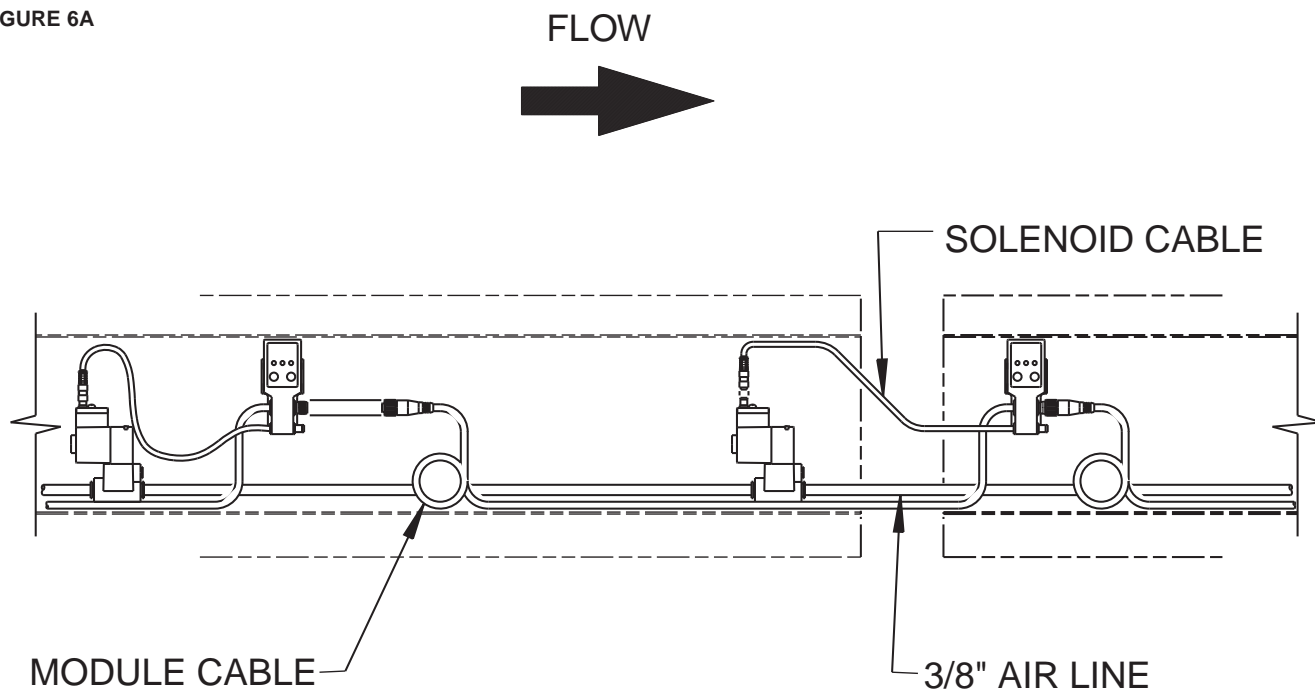
## ● CCEZ Conveyor Set-Up

- 1... Mark a chalk line on floor to locate centerline of the conveyor.
  - 2... Place the drive section in position.
  - 3... Place remaining sections on extended support of previous section (Figures 4A and 5A).
  - 4... Fasten sections together with butt couplings and pivot plates (Figure 5C). Lag conveyor to floor.
  - 5... Install Accumulation Kit to side of conveyor sections. (Figure 5B).
  - 6... Connect air lines and module cables at section joints as shown in "Figure 6A".
  - 7... Connect main air supply line to (Filter/Regulator). (Figure 5D). Every CCEZ conveyor is supplied with one Filter/Regulator to be mounted near the center of its overall length. In the case of short conveyors being connected together in a system, two or more conveyors may be supplied from one Filter/Regulator provided the most distant zone from the regulator is no more than 50 feet. (100 feet maximum length of conveyor)
  - 8... Set Regulator to working pressure of 25 P.S.I.
- NOTE:** See Packing Envelope for maintenance instructions on How to Adjust Filter/Regulator.



## ● CCEZ Conveyor Set-Up (Cont'd)

FIGURE 6A



9 . . . Connect supply power for EZLogic System. Also connect signal lines for discharge zone stop (Refer to EZLogic Components Manual).

10 . . . Wire variable speed controller and motor (see Page 8).  
Check for proper shaft rotation. (Figure 10B).

11 . . . Install plastic belt per instructions on Page 10.

## ● CCAC Conveyor Set-Up

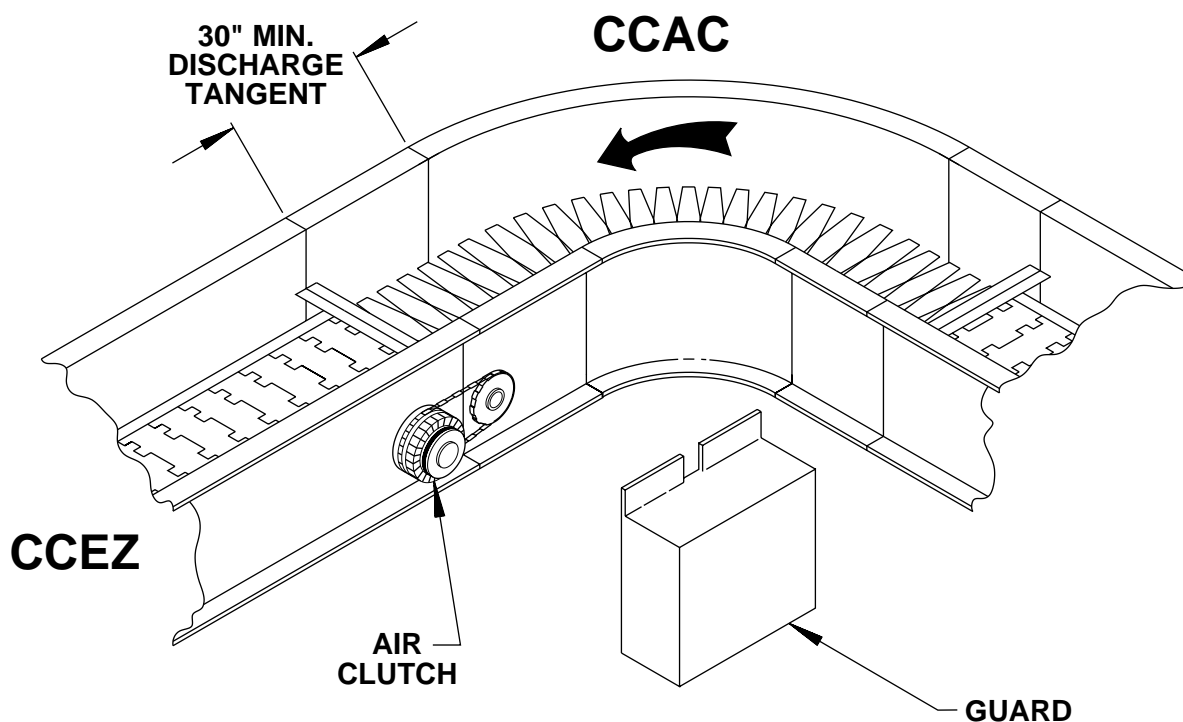
- 1... Locate the CCAC at the infeed end of the CCEZ from which it is to be slave driven.
- 2... Connect the discharge tangent of the CCAC (30" standard) to the infeed tail of the CCEZ.
- 3... The CCEZ designed for slaving a CCAC will be equipped with an air clutch on the infeed tail shaft. Place the #50 roller chain (supplied) around the sprocket on the CCAC shaft and the sprocket on the air clutch and connect with master link. (Figure 7A).
- 4... Place guard over chain and sprockets. (Figure 7A).
- 5... Connect main air supply to Filter Regulator. (Figure 14A). Set Regulator to working pressure of 60 PSI. **NOTE:** This regulator should not be used to supply air to any part of a CCEZ system other than the clutch.
- 6... Adjust the starting and stopping of the curve to provide a smooth, non-jerking start and approximately a two second delay in stopping.

To test the starting and stopping of the curve, block the front of the two EZLogic Modules closest to the infeed end of the CCEZ, the curve should stop after 1-2 seconds. Uncover the sensors and the curve should start.

Flow control valve (5) (Figure 14A) should be used to control the start-up of the curve. If the starting is jerky, adjust the flow control knob clockwise. If the starting is too slow, adjust the flow control knob counterclockwise.

Flow control muffler (4) (Figure 14A) should be used to control the stopping of the curve. If the curve stops immediately when the EZLogic Modules are blocked, adjust the flow control knob clockwise until it takes 1-2 seconds after the sensors are blocked for the curve to stop. If the curve will not stop or takes too long to stop, adjust the flow control knob counter-clockwise.

FIGURE 7A





## ● Electrical Equipment

### WARNING!

Electrical controls shall be installed and wired by a qualified electrician. Wiring information for the motor and controls are furnished by the equipment manufacturer.

### CONTROLS

Electrical Code: All motor controls and wiring shall conform to the National Electrical Code (Article 670 or other applicable articles) as published by the National Fire Protection Association and as approved by the American Standards Institute, Inc.

### CONTROL STATIONS

**A)** Control stations should be so arranged and located that the operation of the equipment is visible from them, and shall be clearly marked or labeled to indicate the function controlled.

**B)** A conveyor which would cause injury when started shall not be started until employees in the area are alerted by a signal or by a designated person that the conveyor is about to start.

When a conveyor would cause injury when started and is automatically controlled or must be controlled from a remote location, an audible device shall be provided which can be clearly heard at all points along the conveyor where personnel may be present. The warning device shall be actuated by the controller device starting the conveyor and shall continue for a required period of time before the conveyor starts. A flashing light or similar visual warning may be used in conjunction with or in place of the audible device if more effective in particular circumstances.

Where system function would be seriously hindered or adversely affected by the required time delay or where the intent of the warning may be misinterpreted (i.e., a work area with many different conveyors and allied devices), clear, concise, and legible warning shall be provided. The warning shall indicate that conveyors and allied equipment may be started at any time, that danger exists, and that personnel must keep clear. The warnings shall be provided along the conveyor at areas not guarded by position or location.

**C)** Remotely and automatically controlled conveyors, and conveyors where operator stations are not manned

or are beyond voice and visual contact from drive areas, loading areas, transfer points, and other potentially hazardous locations on the conveyor path not guarded by location, position, or guards, shall be furnished with emergency stop buttons, pull cords, limit switches, or similar emergency stop devices.

All such emergency stop devices shall be easily identifiable in the immediate vicinity of such locations unless guarded by location, position, or guards. Where the design, function, and operation of such conveyor clearly is not hazardous to personnel, an emergency stop device is not required.

The emergency stop device shall act directly on the control of the conveyor concerned and shall not depend on the stopping of any other equipment. The emergency stop devices shall be installed so that they cannot be overridden from other locations.

**D)** Inactive and unused actuators, controllers, and wiring should be removed from control stations and panel boards, together with obsolete diagrams, indicators, control labels, and other material which serve to confuse the operator.

### SAFETY DEVICES

**A)** All safety devices, including wiring of electrical safety devices, shall be arranged to operate in a "Fail-Safe" manner, that is, if power failure or failure of the device itself would occur, a hazardous condition must not result.

**B)** *Emergency Stops and Restarts.* Conveyor controls shall be so arranged that, in case of emergency stop, manual reset or start at the location where the emergency stop was initiated, shall be required of the conveyor(s) and associated equipment to resume operation.

**C)** Before restarting a conveyor which has been stopped because of an emergency, an inspection of the conveyor shall be made and the cause of the stoppage determined. The starting device shall be locked out before any attempt is made to remove the cause of stoppage, unless operation is necessary to determine the cause or to safely remove the stoppage.

Refer to ANSI Z244.1-1982, American National Standard for Personnel Protection – Lockout/Tagout of Energy Sources – Minimum Safety Requirements and OSHA Standard Number 29 CFR 1910.147 "The Control of Hazardous Energy (Lockout/Tagout)."



## ● Operation Safety Precautions

**A)** Only trained employees shall be permitted to operate conveyors. Training shall include instruction in operation under normal conditions and emergency situations.

**B)** Where employee safety is dependent upon stopping and/or starting devices, they shall be kept free of obstructions to permit ready access.

**C)** The area around loading and unloading points shall be kept clear of obstructions which could endanger personnel.

**D)** No person shall ride the load-carrying element of a conveyor under any circumstances unless that person is specifically authorized by the owner or employer to do so. Under those circumstances, such employee shall only ride a conveyor which incorporates within its supporting structure, platforms or control stations specifically designed for carrying personnel. Under no circumstances shall any person ride on any element of a vertical conveyor. Owners of conveyors should affix warning devices to the conveyor reading **Do Not Ride Conveyor**.

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

**F)** A conveyor shall be used to transport only material it is capable of handling safely.

**G)** Under no circumstances shall the safety characteristics of the conveyor be altered if such alterations would endanger personnel.

**H)** Routine inspections and preventive and corrective maintenance programs shall be conducted to insure that all safety features and devices are retained and function properly.

**I)** Personnel should be alerted to the potential hazard of entanglement in conveyors caused by items such as long hair, loose clothing, and jewelry.

**J)** As a general rule, conveyors should not be cleaned while in operation. Where proper cleaning requires the conveyor to be in motion and a hazard exists, personnel should be made aware of the associated hazard.

## ● Conveyor Start-Up

Before conveyor is turned on, check for foreign objects that may have been left inside conveyor during installation. These objects could cause serious damage during start-up.

After conveyor has been turned on and is operation, check motors, reducers, and moving parts to make sure they are working freely.

### CAUTION!

Because of the many moving parts on the conveyor, all personnel in the area of the conveyor need to be warned that the conveyor is about to be started.

## ● Belt Installation

- 1... Thread belt through conveyor as shown in Figure 10A and Figure 10B.
- 2... Pull ends together and insert connector pin. Using a small blade screwdriver, slide the pin retainer until it snaps into position over the pin. (Figure 10A).
- 3... The belt should sag 2" to 8" at catenary when conveyor is running.

FIGURE 10A

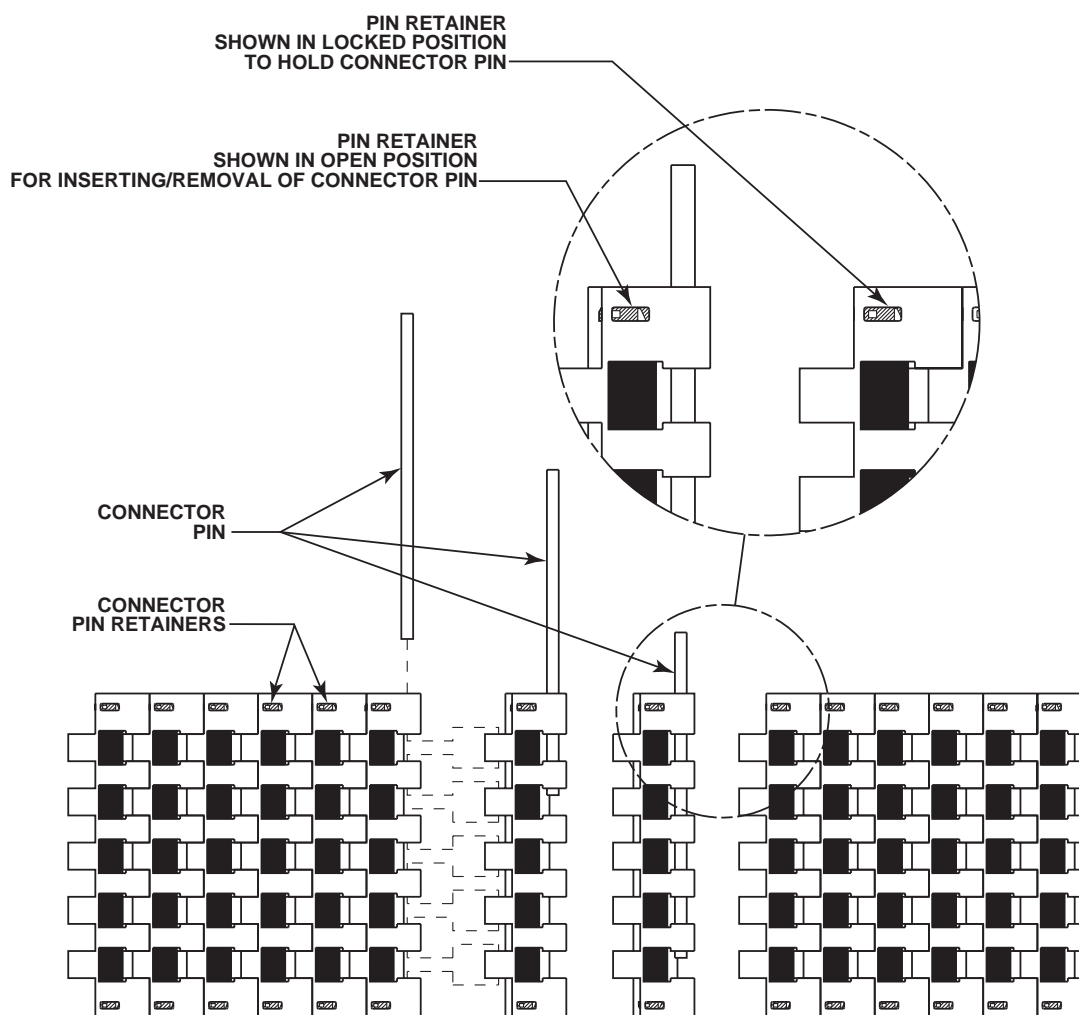
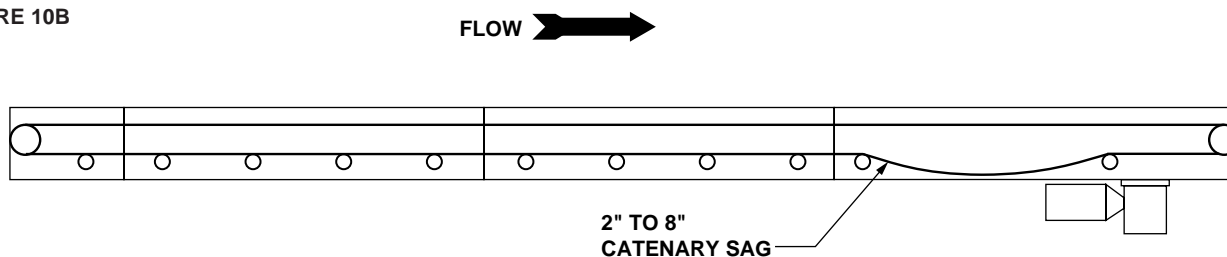


FIGURE 10B



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## ● Notes

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## ● Sequence of Operation—Singulation Mode

The Model CCEZ is made up of a series of accumulation zones, each zone having an *EZLogic™ Accumulation Module*, pneumatic valves and actuators to raise or lower the belt for conveying or accumulating product.

### LOADING THE CONVEYOR—SINGULATION MODE

1. . . Beginning with the conveyor “empty,” and a 24 volt DC zone stop signal to the discharge module and valve, the air bags in the discharge zone (Zone #1) are deflated, lowering the belt in the discharge zone below the wearstrips in that zone.
2. . . A carton placed on the conveyor continues forward until it reaches Zone #1 where the belt has been lowered. The carton then slides to a stop on the wearstrips.  
If two or more cartons are placed on the conveyor operating in singulation mode with a space of less than one zone length between them, the cartons **will attempt to singulate (separate) while traveling down the conveyor.**
3. . . Carton #2 continues forward until it reaches Zone #1 where it slides to a stop, generally making slight contact with Carton #1.
4. . . When Zone #1 is filled to within 3” of its infeed end the next *EZLogic™ Module* is activated, which causes the air bags in Zone #2 to deflate. This lowers the belt in Zone #2 so the next carton slides to a stop.
5. . . When Zone #2 is filled to within 3” of its infeed end the next *EZLogic™ Module* is activated which results in the belt being lowered in Zone #3.
6. . . The above sequences are repeated until the conveyor is loaded.. (Figure 12A)

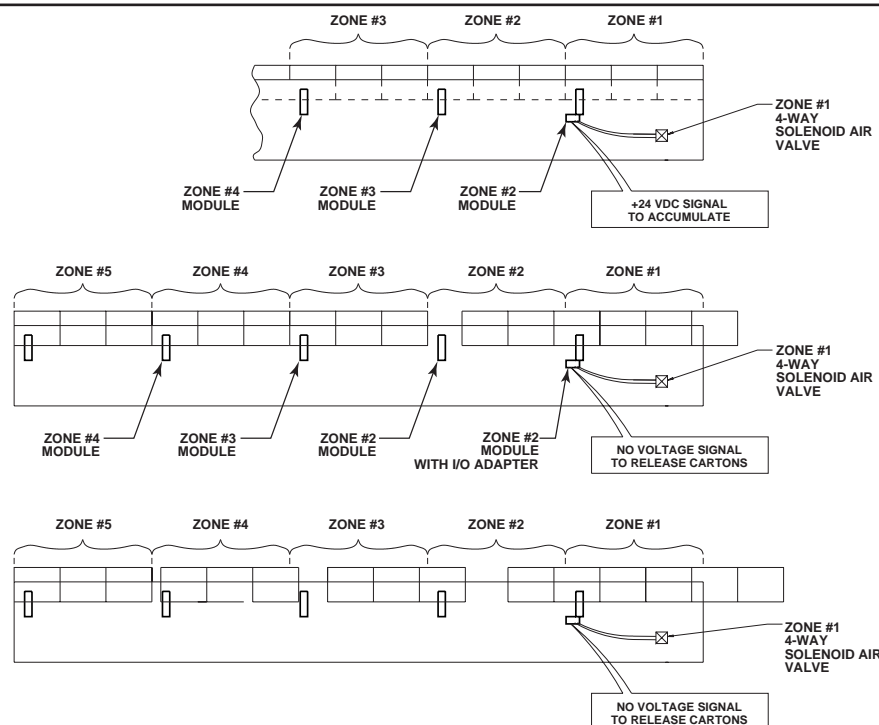
**NOTE:** When operating the CCEZ in singulation mode, the operating speed should be twice that required to handle the maximum carton throughput if cartons were back-to-back. Otherwise throughput will be hindered due to automatic zone separation. This will provide a maximum of 50% population of cartons on the conveyor when not accumulating.

The *EZLogic™ Accumulation System* provides two modes of operation which are user-selectable: Singulation Mode and Slug Mode. The sequences of “loading” and “unloading” the conveyor is as follows:

### UNLOADING THE CONVEYOR—SINGULATION MODE

1. . . Releasing cartons from the discharge of the CCEZ is accomplished by “de-activating” the zone stop signal to the discharge zone. This causes the air bags to lift the belt in the first two zones causing product to be released.
2. . . When cartons in the first two zones move forward enough to clear the module in zone #2, the belt in zone #3 raises to move cartons in zone #3 (Figure 12A).
3. . . When cartons in zone #3 move forward enough to clear the module in zone #3, the belt in zone #4 raises to move cartons in zone #4.
4. . . This sequence will continue as long as the preceeding cartons continue to move forward.

FIGURE 12A



## ● Sequence of Operation—Slug Mode

### LOADING THE CONVEYOR—SLUG MODE

- 1... Beginning with the conveyor “empty,” and a 24 volt DC zone stop signal to the discharge module I/O Adaptor, the air bags in the discharge zone (Zone #1) are deflated, lowering the belt in the discharge zone below the wearstrips in that zone.
- 2... A carton placed on the conveyor continues forward until it reaches Zone #1 where the belt has been lowered. The carton then slides to a stop on the wearstrips.  
If two or more cartons are placed on the conveyor with a space of less than one zone length between them, the cartons **will not singulate (separate) while traveling down the conveyor.**
- 3... Carton #2 continues forward until it reaches Zone #1 where it slides to a stop, generally making slight contact with Carton #1.
- 4... When Zone #1 is filled to within 3” of its infeed end the next *EZLogic™* Module is activated, which causes the air bags in Zone #2 to deflate. This lowers the belt in Zone #2 so the next carton slides to a stop.
- 5... When Zone #2 is filled to within 3” of its infeed end the next *EZLogic™* Module is activated which results in the belt being lowered in Zone #3.
- 6... The above sequences are repeated until the conveyor is loaded.

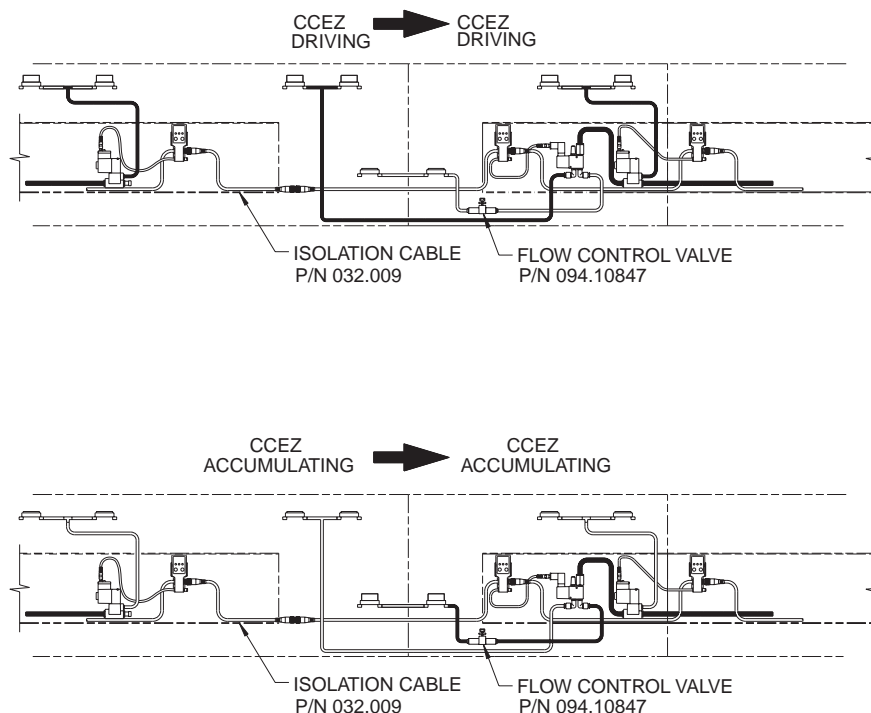
### UNLOADING THE CONVEYOR—SLUG MODE

- 1... Releasing **all cartons** is accomplished by “de-activating” the discharge zone. (Refer to the “Zone Stop Connections” section on page 16). This causes the air bags in **all occupied zones** to inflate and lift the belt into driving position. **All cartons** will then move forward.
- 2... All cartons will continue to move forward without singulation as long as the zone stop signal is de-activated.
- 3... **Jam Protection:** If a carton becomes jammed at any point along the conveyor for a period of 6 seconds or longer, cartons on the upstream side of the jammed carton will stop in sequence until the jammed carton is dislodged or removed. The accumulated zones will then return to normal operation.

### CONNECTING CCEZ'S

When it is necessary to connect two CCEZ's end to end to create one long line, the accumulation logic can be continued from one CCEZ to the next CCEZ. This prevents external controls from being necessary on long lines created with multiple conveyors. An optional conveyor-to-conveyor isolation cable is required along with a connecting infeed zone kit.

FIGURE 13A



# ● Sequence of Operation - CCAC

The Model CCAC is designed to accumulate product when the CCEZ from which it is being slave driven becomes fully accumulated. When the CCEZ is fully loaded and the infeed zone accumulates, an air signal is used to exhaust air pressure to the clutch and the curve stops driving.

A flow control muffler is supplied on the valve supplying air to the clutch. Use this muffler to slow the rate of exhausting air in stopping the curve thus preventing the curve from cycling on and off when two cases are just passing through with no accumulation required.

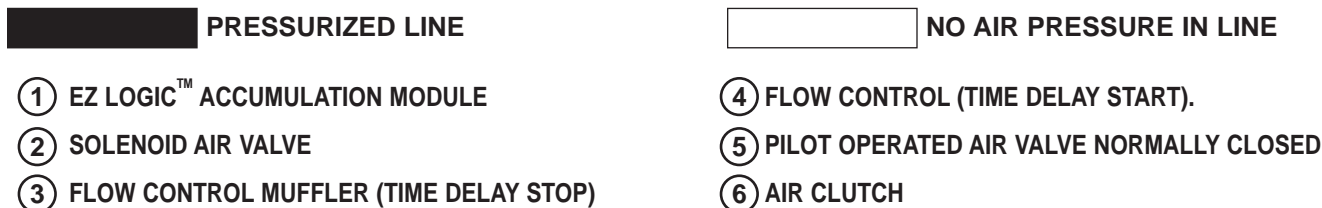
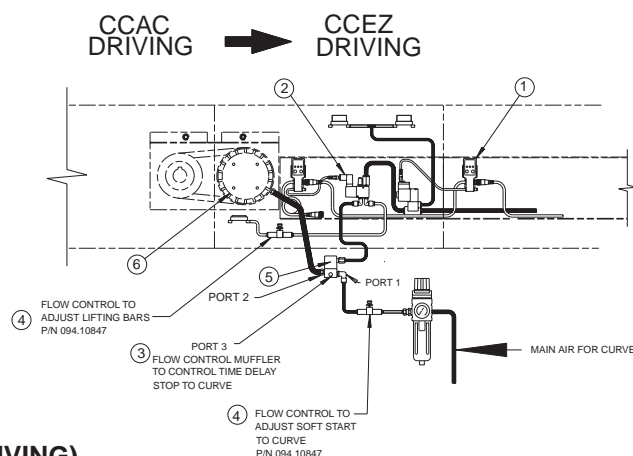


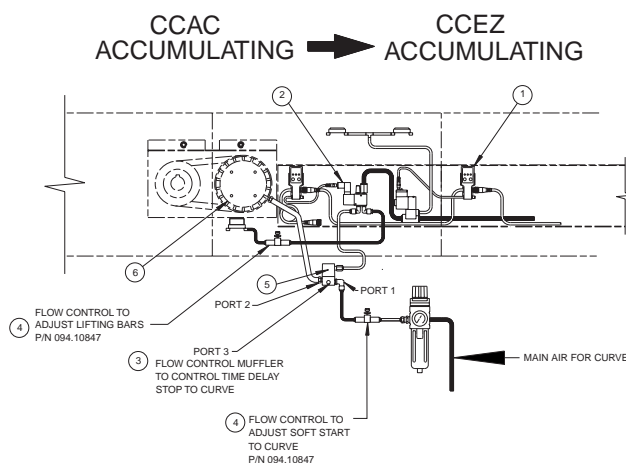
FIGURE 14A



## PNEUMATIC SEQUENCE (DRIVING)

Air from infeed zone on CCEZ supplies air to **PILOT** to and supplies air to allow the **CLUTCH** (6) to drive the open valve (5). Air flows from regulator through valve (5) curve.

FIGURE 14B



## PNEUMATIC SEQUENCE (ACCUMULATING)

When air is exhausted from infeed zone on the CCEZ, air is removed from the **PILOT** and the valve (5) closes. Air

pressure is no longer supplied to the **CLUTCH** (6) so the curve stops driving.

## ● Sequence of Operation - CCAC (Cont'd)

The Model CCAC may be used as a curved intermediate section between two Model CCEZ's. The curve will then stop when the CCEZ which it is feeding becomes fully

accumulated and will automatically begin the accumulation process on the CCEZ prior to it. See Pneumatic Diagram Figure 15A.

FIGURE 15A

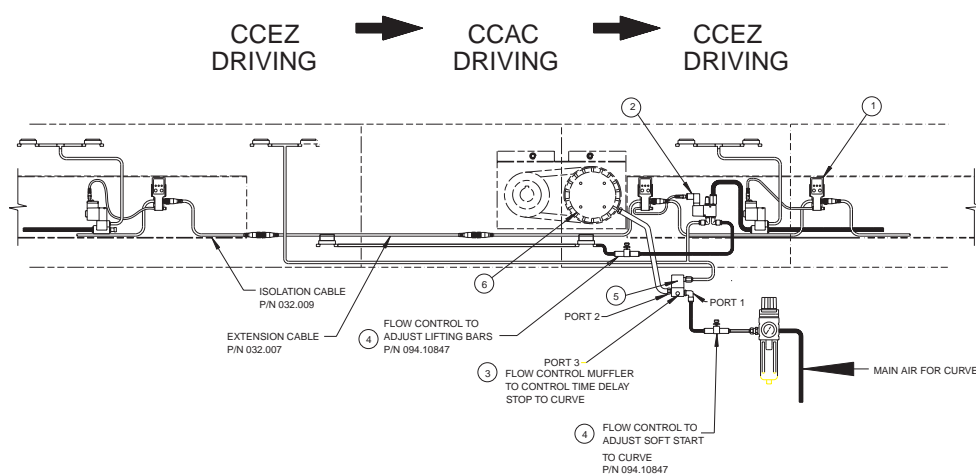
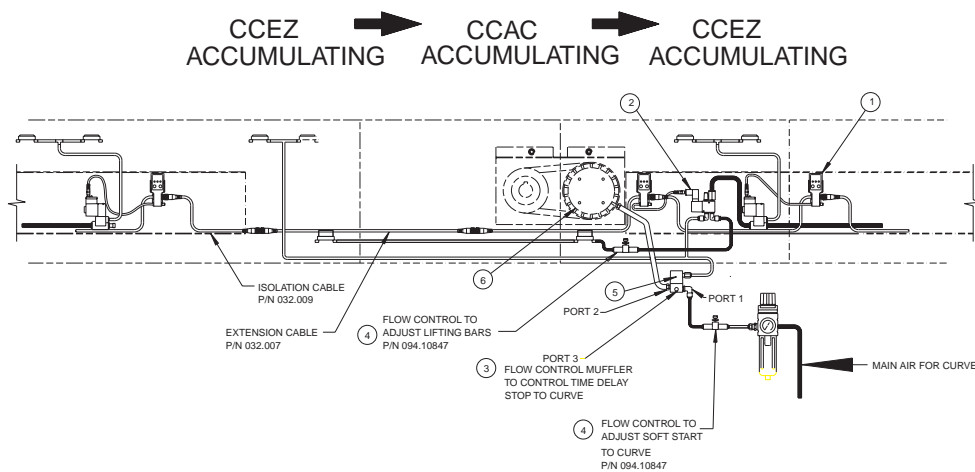


FIGURE 15B





## ● EZLogic<sup>®</sup> System

### **EZLogic' Accumulation System Connections**

The model CCEZ is equipped with the EZLogic' accumulation system. The following basic information may be used as a guide during the installation and initial setup of the conveyor. For detailed information about EZLogic' system components, options, functions, and programming, please refer to the EZLogic' Component Manual. Each EZLogic<sup>™</sup> module is equipped with sealed connectors for zone-to-zone communication, solenoid output, and zone stop connections (figure 18B). These connections are described in the following sections.

#### **ZONE CONNECTIONS**

Each module has a cable terminated with a female micro-connector and a male micro-connector integral with the module body. This cable provides power to all the modules on the conveyor as well as communication between modules.

All modules are mounted and connected at the factory within each conveyor section. Connections between sections are made at installation. (See Conveyor Set-Up, pages 5-7.) The cable from one module is always connected to the module on the upstream side of it. This is the way the modules know which direction product is flowing.

The module cable on the infeed end of the conveyor is simply bundled and tied in the accumulation channel and is not connected. Protective caps are provided to seal unused connectors.

An optional conveyor-to-conveyor connector is required when two conveyors are joined end-to-end (figure 13A). Please refer to the EZLogic' Component Manual for more information.

#### **SOLENOID CONNECTIONS**

Each accumulation module has a built-in cable to provide a zone drive/no drive output to the solenoid air valve operating the zone. This cable is terminated with a female Pico-style sealed snap-lock connector.

Connection is made by pushing the cable connector onto the corresponding male connector of the valve until it snaps in.

Please note that this output is only to be used to operate the zone mechanism of the conveyor. It is not to be used as an output signal to other control devices. If a control output is needed, an optional accumulation module with I/O should be used. Please refer to the EZLogic' Component Manual for more information.

#### **ZONE STOP CONNECTIONS**

An EZLogic' accumulation module with I/O (yellow labeled module) is supplied at the discharge end of the conveyor line. This module can accept a 24 VDC zone stop signal from an external source such as a PLC or other interfacing machinery. The white and gray wires from the I/O cable of the module are wired in parallel with the 4-way solenoid air valve in the discharge zone and then to the PLC or other signal source (see Figure 18A).

A 24 VDC signal to the valve and module will both energize the 4-way valve, accumulating the discharge zone, and will set up the discharge EZLogic' module to accumulate the second zone when blocked. The conveyor will continue to accumulate until this 24 VDC signal is removed, then the conveyor will begin releasing cartons.

## ● EZLogic<sup>®</sup> System

### SLUG MODE CONNECTIONS

The EZLogic™ accumulation system provides two modes of accumulation which are user-selectable: Singulation mode and Slug mode. (For descriptions of the sequence of operation for each mode, refer to the "Sequence of Operation" section on pages 12 and 13.) The desired mode of operation may be programmed into the accumulation modules at installation (refer to the EZLogic' Component Manual for details). If the users wishes to be able to alternate between singulation mode and slug mode "on-the-fly," an optional Slug Mode Control Cable (Hytrol P/N 032.008) may be used. The default mode is singulation mode. If the user desires to operate the conveyor in slug mode, or if the user wishes to be able to alternate between the two modes as needed, the following procedures should be used.

### SLUG MODE ONLY

Program the accumulation modules to operate in "slug mode only" as detailed in the EZLogic' Component Manual.

### SELECTABLE SINGULATION/SLUG

1. Install a slug mode control cable (Hytrol P/N 032.008) on the module in the discharge zone of the conveyor. The cable attaches to the unused male micro connector on the module (see figure 18B).
2. Connect the two wires of the slug mode control cable to any "dry contact" type switching device, such as a toggle switch or relay.
3. With the switch contacts open, the conveyor will be in singulation mode. When the switch is closed, the conveyor is in slug mode.

**Note!** Do not apply a voltage to these wires, or wire more than one module to any one contact.

FIGURE 18A

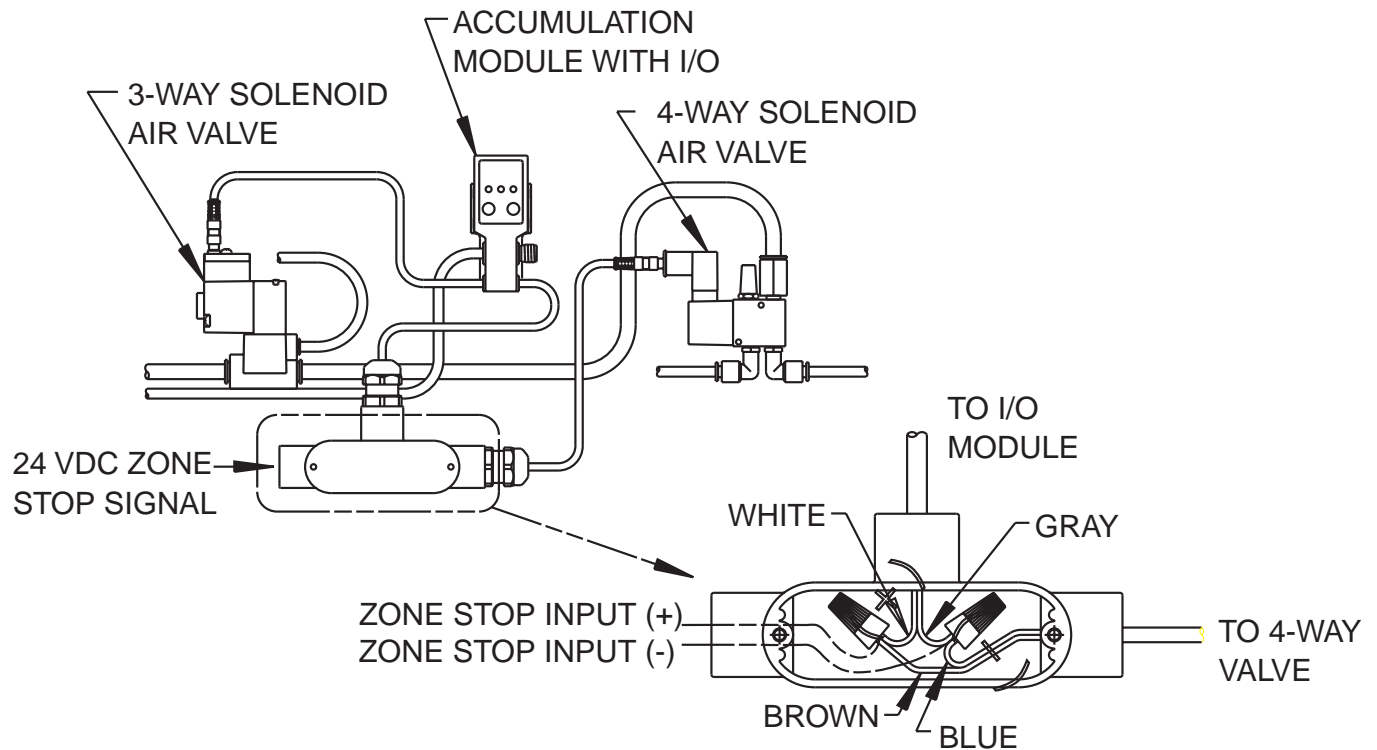
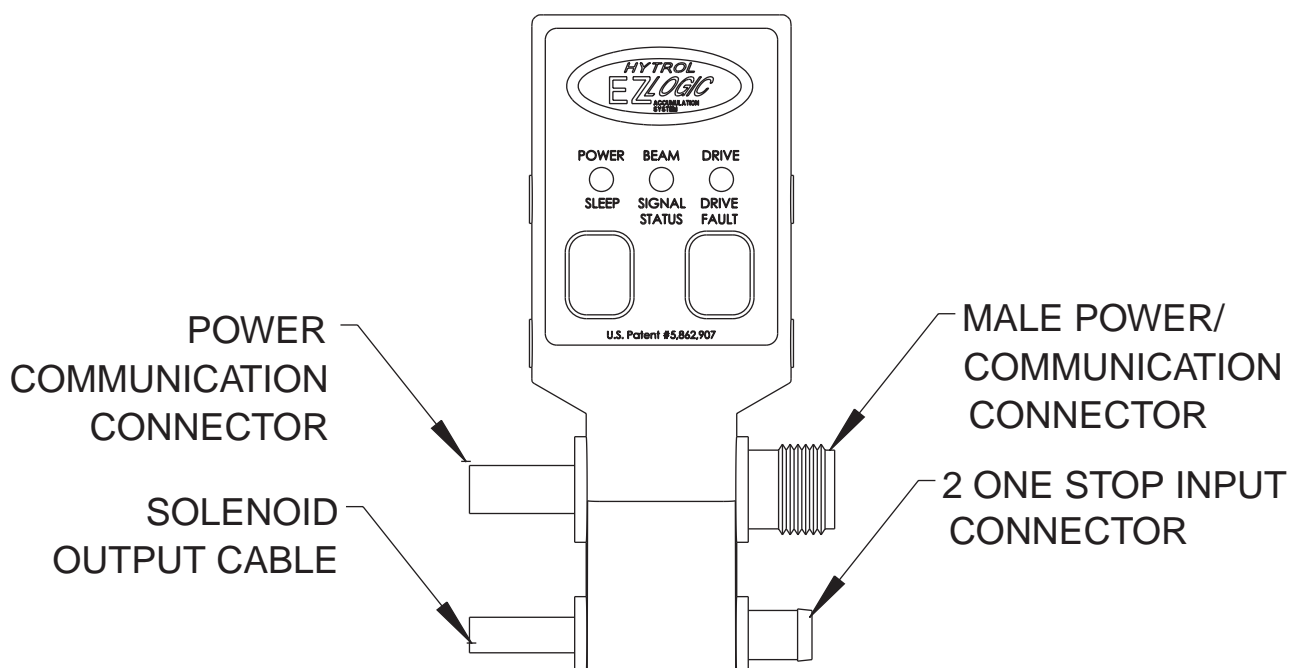


FIGURE 18B



## ● Maintenance Safety Precautions

**A)** Maintenance, such as lubrication and adjustments, shall be performed only by qualified and trained personnel.

**B)** It is Important that a maintenance program be established to insure that all conveyor components are maintained in a condition which does not constitute a hazard to personnel.

**C)** When a conveyor is stopped for maintenance purposes, starting devices or powered accessories shall be locked or tagged out in accordance with a formalized procedure designed to protect all person or groups involved with the conveyor against an unexpected start.

**D)** Replace all safety devices and guards before starting equipment for normal operation.

**E)** Whenever practical, **DO NOT** lubricate conveyors while they are in motion. Only trained personnel who are aware of the hazard of the conveyor in motion shall be allowed to ubri-cate.

### SAFETY GUARDS

Maintain all guards and safety devices **IN POSITION** and **IN SAFE REPAIR**.

### WARNING SIGNS

Maintain all warning signs in a legible condition and obey all warnings. See Page 2 of this manual for examples of warning signs.

## ● Lubrication

### BEARINGS

Bearings are lubed and sealed for life.

### CHAIN

It is recommended that the drive chain be lubricated with SAE-30 oil approximately every 40 hours of operation. Under extreme conditions, more frequent lubrication may be required. (Also, See "Drive Chain Alignment and Tension").).

### REDUCERS

**MANUFACTURED BY HYTROL:** See separate manual in Packing Envelope that contains lubrication and main-tenance instructions for HYTROL's Gear Reducer.

**MANUFACTURED BY OTHERS:** Refer to their recom-mendations.

# ● Drive Chain Alignment and Tension

The drive chain and sprockets should be checked periodically for proper tension and alignment. Improper adjustment will cause extensive wear to the drive components.

## TO MAKE ADJUSTMENTS

1. . . Remove chain guard.
2. . . Check sprocket alignment by placing a straightedge across the face of both sprockets. (Figure 20A.) Loosen set screws and adjust as needed. Re-tighten set screws.
3. . . To adjust chain tension, loosen bolts that fasten motor base to mounting angles, both sides of conveyor. Tighten take-up bolts until desired chain tension is reached. (Figures 20B & 20C). Re-tighten mounting bolts.
4. . . Make sure both sides are adjusted the same amount to prevent mis-alignment of sprockets. Re-tighten mounting bolts.
5. . . Lubricate chain per lubrication instructions.
6. . . Replace chain guard so that it does not interfere with drive.

## CAUTION!

Never remove chain guards while the conveyor is running. Always replace guards after adjustments are made.

FIGURE 20A

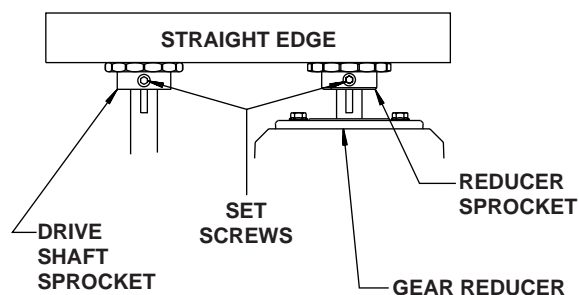


FIGURE 20B

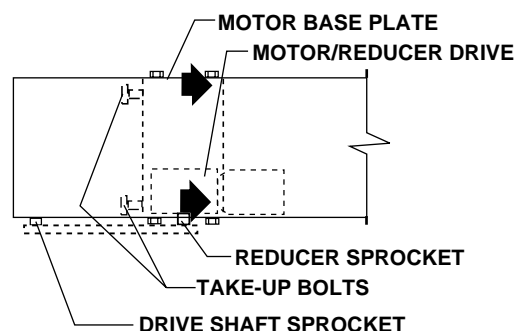
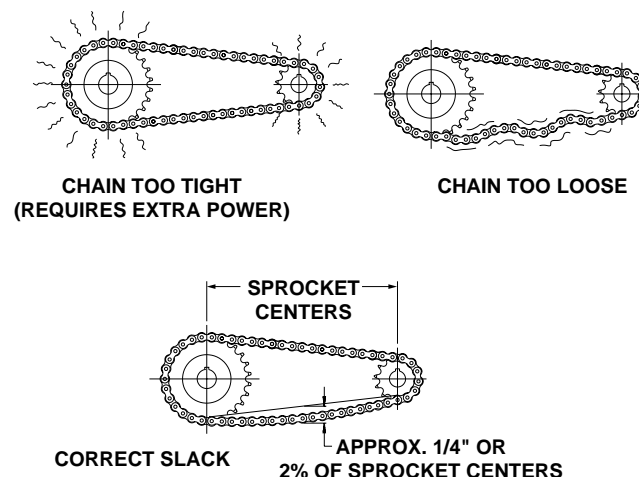


FIGURE 20C



## ● Trouble Shooting

The following charts list possible problems that may occur in the operation of a powered conveyor.

### TROUBLE SHOOTING DRIVES

TROUBLE	CAUSE	SOLUTION
Conveyor will not start or motor quits frequently.	1) Motor is overloaded or drawing too much current.	1) Check for overloading of conveyor. 2) Check heater or circuit breaker and change if necessary.
Drive chain and sprockets wear excessively.	1) Lack of lubrication on chain causing chain stretch which creates improper chain to sprocket mesh. 2) Sprockets are out of alignment. 3) Loose chain.	1) Replace chain and sprockets. NOTE: If problem reoccurs, a chain take-up may be required. 2) Align sprockets. See "Drive Chain Alignment and Tension" in this manual. 3) Tighten chain.
Loud popping or grinding noise.	1) Defective bearing. 2) Loose set screws in bearing. 3) Loose drive chain.	1) Replace bearing. 2) Tighten set screw. 3) Tighten chain.
Motor or reducer overheating.	1) Conveyor is overloaded. 2) Low voltage to motor. 3) Low lubricant level in reducer.	1) Check capacity of conveyor and reduce load to recommended level. 2) Have electrician check and correct as necessary. 3) Relubricate per manufacturer's recommendations. For HYTROL reducer, refer to separate manual.

### TROUBLE SHOOTING ACCUMULATION

TROUBLE	CAUSE	SOLUTION
Product will not accumulate on one or more zones.	1) Defective air valve. 2) Defective EZLogic Module.	1) Locate and replace defective air valve. 2) Locate and replace defective EZLogic Module.
Product will not accumulate from discharge zone back.	1) Zone stop on discharge end not working.	1) Check stop.
Product will not drive when belt is running.	1) Air pressure too low.	1) Adjust air pressure to 25 PSI.

## ● Preventive Maintenance Checklist

The following is a general maintenance checklist which covers the major components of your conveyor. This will

be helpful in establishing a standard maintenance schedule.

COMPONENT	SUGGESTED ACTION	SCHEDULE		
		Weekly	Monthly	Quarterly
MOTOR	Check Noise			
	Check Temperature			
	Check Mounting Bolts			
REDUCER	Check Noise			
	Check Temperature			
	Check Oil Level			
BELT	Check Tension (Figure 11B)			
BEARINGS	Check Noise			
	Check Mounting Bolts			
DRIVE CHAIN	Check Noise			
	Lubricate			
	Check For Wear			
SPROCKETS	Check For Wear			
	Check Set Screws & Keys			
STRUCTURAL	General Check: All loose bolts, etc., tightened			

## ● How to Order Replacement Parts

Included in this manual are parts drawings with complete replacement parts lists. Minor fasteners, such as nuts and bolts, are not included.

When ordering replacement parts:

- 1... Contact Dealer from whom conveyor was purchased or nearest HYTROL Distributor.
- 2... Give Conveyor Model Number and Serial Number or HYTROL Factory Order Number.
- 3... Give Part Number and complete description from Parts List.
- 4... If you are in a breakdown situation, tell us.



HYTROL Serial Number  
(Located near Drive  
on Powered Models)



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● Notes

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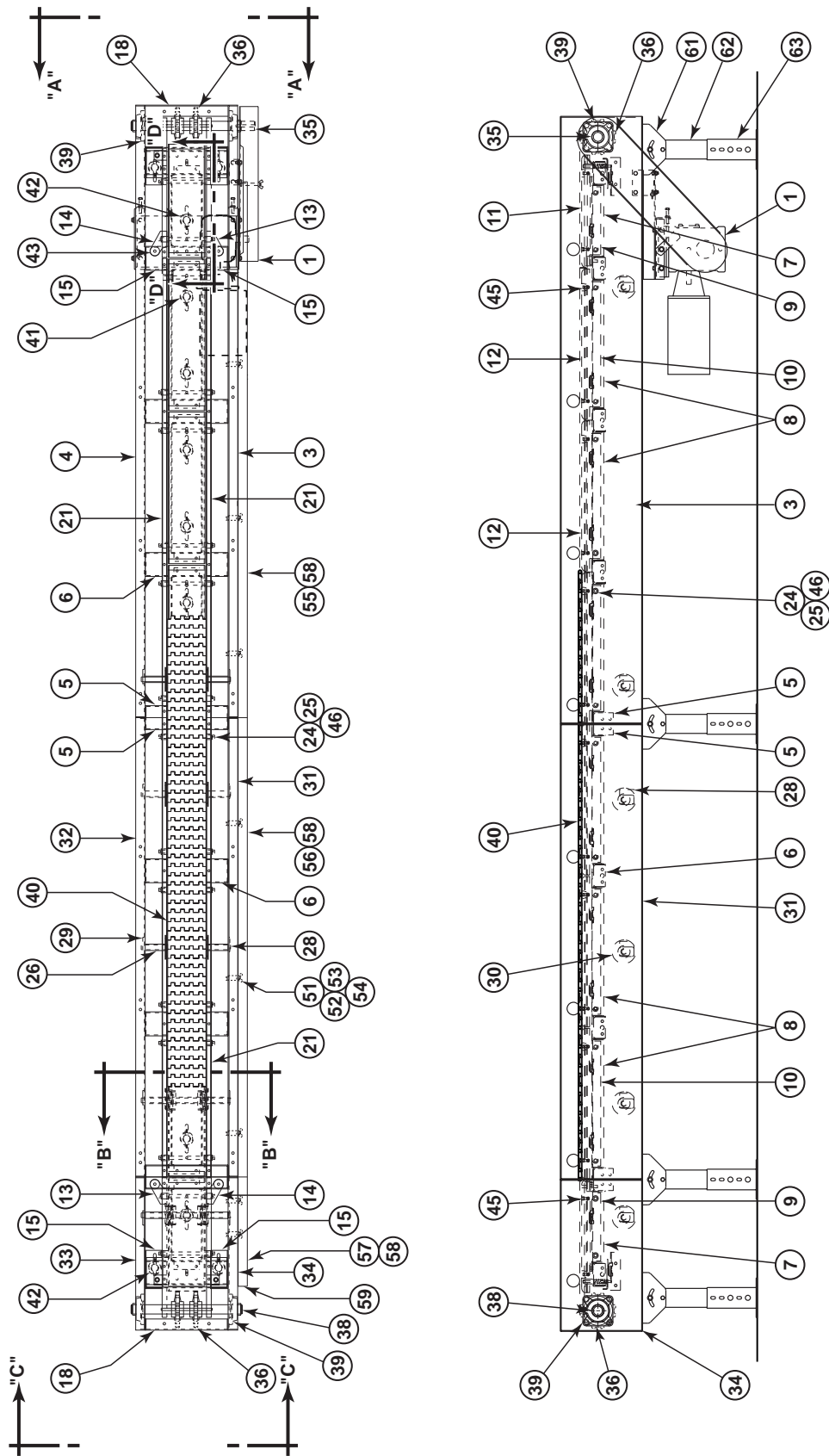
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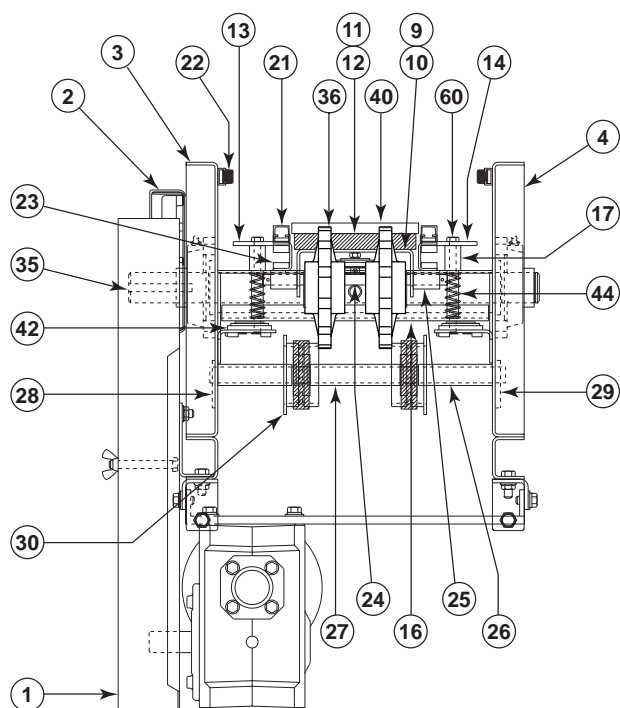
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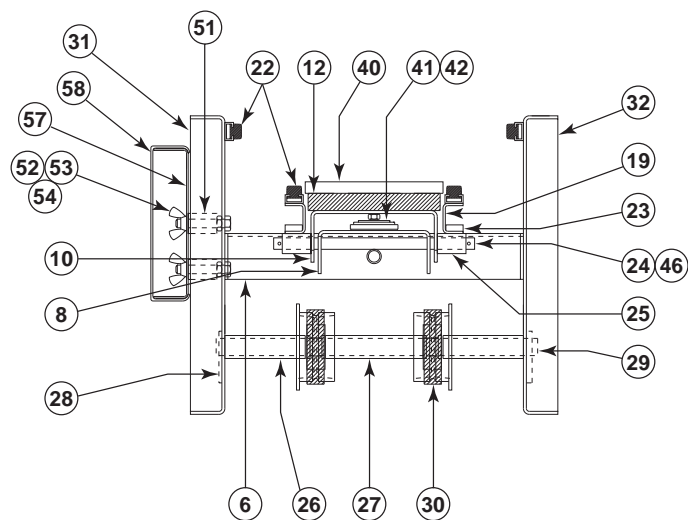
# ● Model CCEZ Parts Drawing



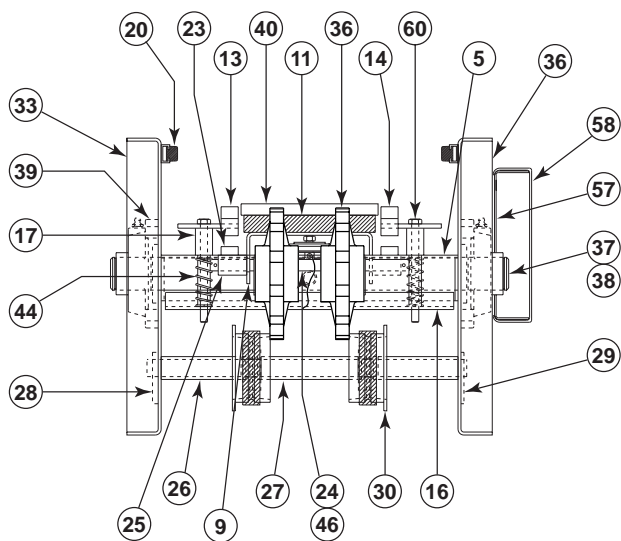
② SEE PAGES 28 \* 29 FOR PNEUMATICS & EZ LOGIC



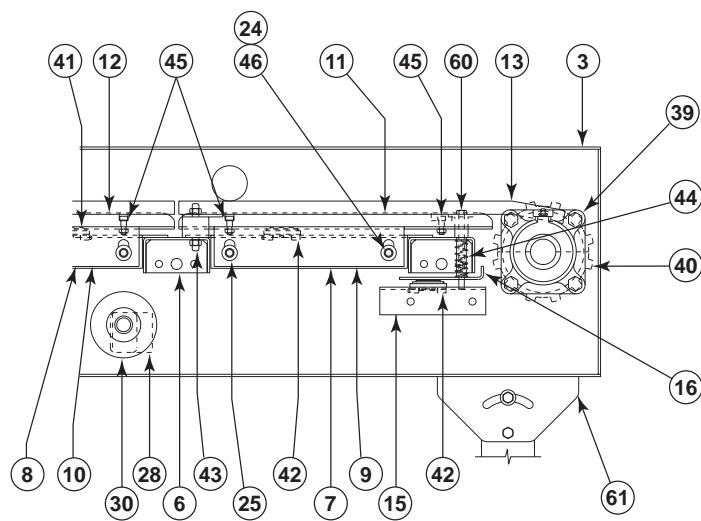
**SECTION "A-A"**



**SECTION "B-B"**



**SECTION "C-C"**



**SECTION "D-D"**

# ● Model CCEZ Parts List



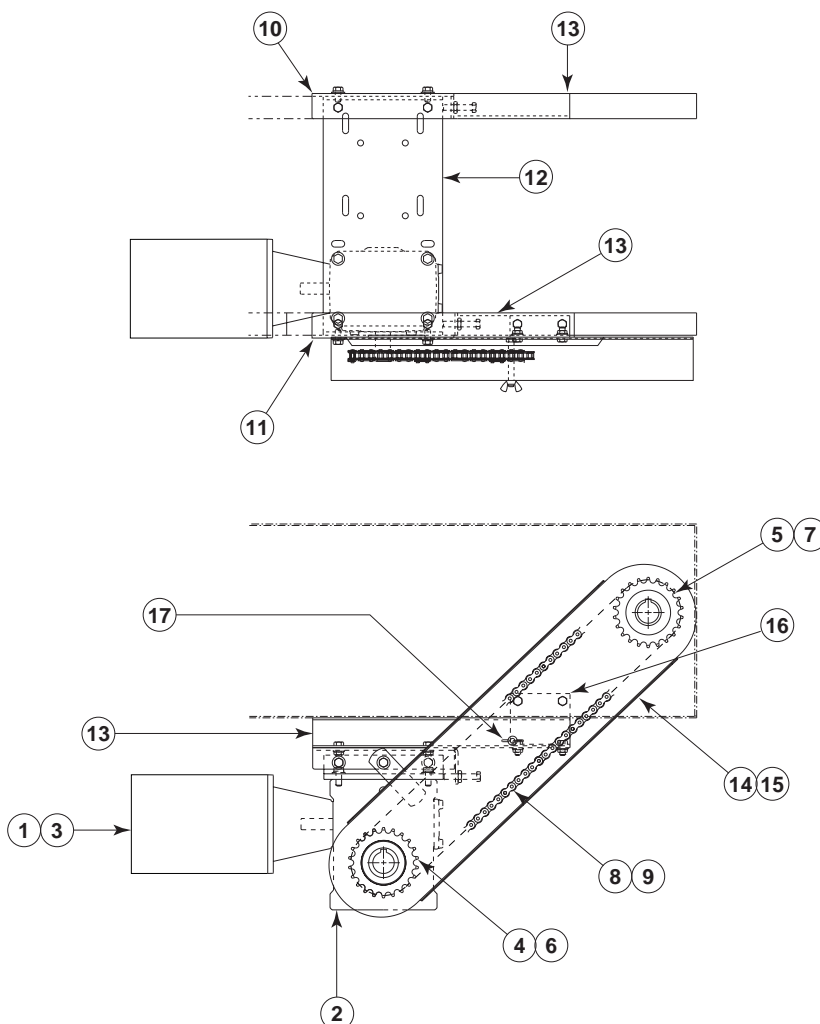
See Page 20 For Information On How to Order Replacement Parts.

Recommended Spare Parts List  
Highlighted in Gray.

Ref. No.	Part No.	Description
1	—	Drive Assembly
2	—	Pneumatics & EZ Logic
3	B-22044-R	8' Drive Channel—RH
4	B-22044-L	8' Drive Channel—LH
5	B-22056	End Spacer
6	B-22053	Bed Spacer
7	B-22064	Air Bag Support Channel—15" (Drive & Tail)
8	B-22063	Air Bag Support Channel—24" (Drive & Intermediate)
9	B-22062	Belt Support Channel—18" (Drive & Tail)
10	B-22061	Belt Support Channel—24" (Drive & Intermediate)
11	099.4582	Belt Support Wearstrip—18" (Drive & Tail)
12	099.4583	Belt Support Wearstrip—24" (Drive & Intermediate)
13	B-22078-R	Lifter Assembly—RH (Drive & Tail)
14	B-22078-L	Lifter Assembly—LH (Drive & Tail)
15	B-22080-R	Lifter Air Bag Support Angle (Drive & Tail)
16	B-22079	Lifter Base Angle (Drive & Tail)
17	B-22081	Lifter Guide Pin (Drive & Tail)
18	B-22059	Transition Angle Assembly (Drive & Tail)
19	B-22067	Wearstrip Support Channel—72" (Drive & Intermediate)
20	B-22070	Wearstrip—2' Long (Tail)
21	B-22072	Wearstrip—6' Long (Drive)
22	B-22070	Wearstrip—2' Long (Intermediate)
—	B-22071	Wearstrip—4' Long (Intermediate)
—	B-22072	Wearstrip—6' Long (Intermediate)
—	B-22073	Wearstrip—8' Long (Intermediate & Drive)
—	099.672	Wearstrip—10' Long (Intermediate)
23	B-22082	Stop Bar (Drive & Tail)
24	B-22060	Zone Channel Guide Bar
25	B-22074	Bumper Tube
26	B-22091	Return Spool Spacer Pipe—3-1/2" Long
27	B-22092	Return Spool Spacer Pipe—4" Long
28	B-22085	Return Roller Support
29	B-22086	Return Roller Vibration Plate
30	024.150	Return Spool
31	B-22045-R	2' Intermediate Side Channel—RH
—	B-22046-R	4' Intermediate Side Channel—RH
—	B-22047-R	6' Intermediate Side Channel—RH
—	B-22048-R	8' Intermediate Side Channel—RH
—	B-22049-R	10' Intermediate Side Channel—RH
32	B-22045-L	2' Intermediate Side Channel—LH
—	B-22046-L	4' Intermediate Side Channel—LH
—	B-22047-L	6' Intermediate Side Channel—LH
—	B-22048-L	8' Intermediate Side Channel—LH
—	B-22049-L	10' Intermediate Side Channel—LH
33	B-22050-L	2' Tail Side Channel—RH
34	B-22050-L	2' Tail Side Channel—LH
35	B-18582	Drive Shaft
36	029.280	Sprocket, 18 Tooth
37	090.20450	Shaft Key—3/8 in. Sq. x 2 Long
38	B-18583	Tail Shaft

Ref. No.	Part No.	Description
39	010.203	4-Bolt Flange Bearing, 1-7/16 Bore Chain
40	069.814	Chain
41	094.1076	Double Port Air Bag
42	094.1077	Single Port Air Bag
43	092.163	Rubber Vibration Mount
44	093.129	Compression Spring
45	042.50065	Shoulder Bolt—5/16 x 3/8 Long
46	090.1043	Cotter Pin
47	032.218	Reflector
48	B-20709	Reflector Bracket
49	042.1018	Round Head Machine Screw #10-24 x 5/8 Long
50	041.802	Hex Locknut, Nylon Insert #10-24
51	098.147	Spacer—3/8 ID x 1-1/4 Long
52	040.307	Hex Head Bolt—3/8-16 x 2-1/4
53	041.300	Hex Jam Nut—3/8-16
54	049.552	Wing Nut—3/8-16
55	B-20507	Accumulation Channel (Drive)
56	—	Accumulation Channel (Intermediate)
—	B-20507-024	2' Long
—	B-20507-048	4' Long
—	B-20507-072	6' Long
—	B-20507-096	8' Long
—	B-20507-120	10' Long
57	B-20507	Accumulation Channel (Tail)
58	036.090	Cover Accumulation Channel 10' Long
59	036.091	End Cap Accumulation Channel
60	040.209	5/16-18 x 4-1/2" Long Hex Head Bolt
61	—	MS Type Pivot Plate—1-1/2 Flange
—	B-00916	3-11/16 High
—	B-02112	1-9/16 High
62	—	Floor Support Frame
—	B-00914-016	6 High
—	B-12777-016	7 High
—	B-12778-016	8 High
—	B-00915-016	9 High
—	B-00923-016	11-1/2 High
—	B-00925-016	14-1/2 High
—	B-02107-016	18-1/2 High
—	B-02109-016	22-1/2 High
—	B-02111-016	32-1/2 High
—	B-00923-016	44-1/2 High
—	B-00925-016	56-1/2 High
—	B-02107-016	68-1/2 High
—	B-02109-016	78-1/2 High
—	B-02111-016	90-1/2 High
63	B-00911	Adjustable Foot Assembly (Specify Length)

# ● CCEZ & CCAC Drive Assembly Parts Drawing & List



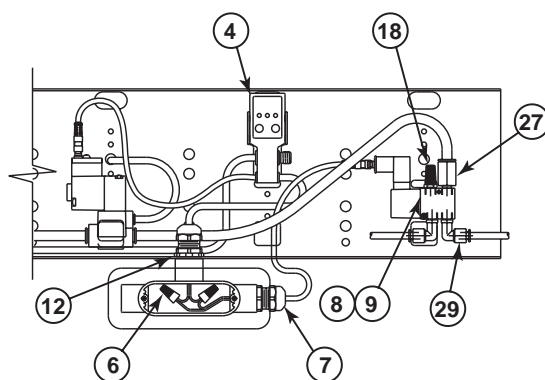
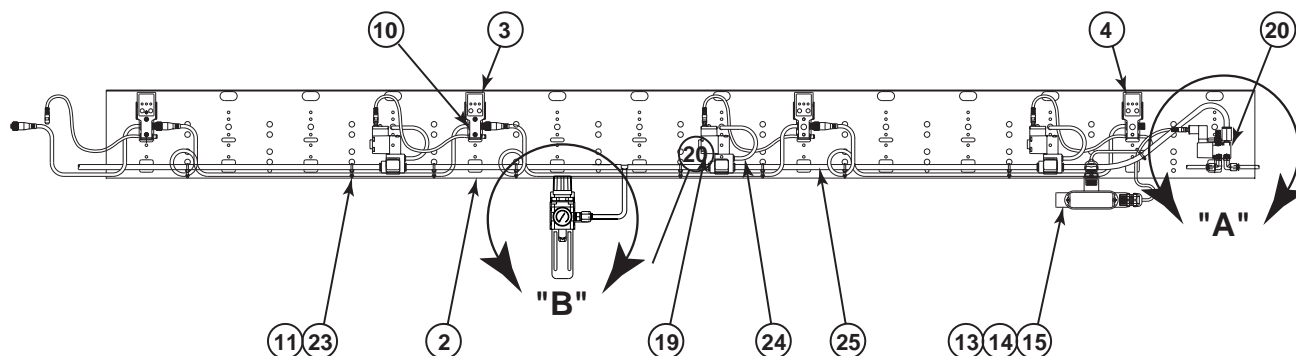
See Page 22 For Information On  
How to Order Replacement Parts.

## Recommended Spare Parts List Highlighted in Gray.

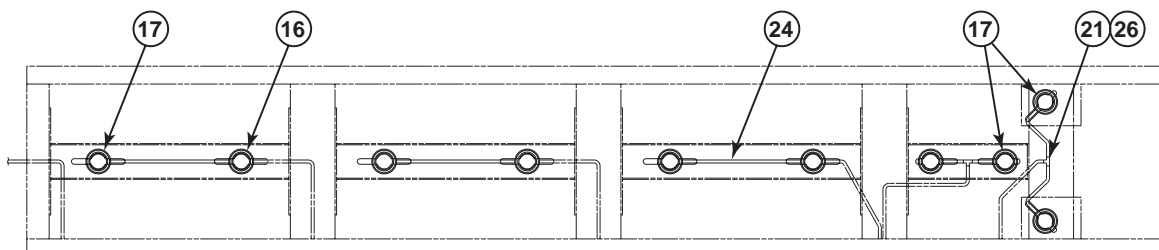
Ref. No.	Part No.	Description
1	—	Motor—C-Face
—	030.7244	3/4 HP—230/460VAC—3 Ph.—60 Hz.—TEFC
—	030.7324	1 HP—230/460VAC—3 Ph.—60 Hz.—TEFC
—	030.7434	1 1/2 HP—230/460VAC—3 Ph.—60 Hz.—TEFC
—	030.7534	2 HP—230/460VAC—3 Ph.—60 Hz.—TEFC
2	—	Speed Reducer
—	R-00153-10R	4AC—RH—10:1 Ratio
—	R-00153-10L	4AC—LH—10:1 Ratio
—	R-00164-10R	5AC—RH—10:1 Ratio
—	R-00164-10L	5AC—LH—10:1 Ratio
3	—	Coupling Kit—Motor to Reducer
—	052.145	3/4 — 1 HP
—	052.146	1-1/2 — 2 HP
4	—	Sprocket—Reducer
—	028.208	60B16 x 1 in. Bore (4AC CCEZ)
—	028.2081	60B16 x 1-1/4 in. Bore (5AC CCEZ)
—	028.207	60B15 x 1 in. Bore (4AC CCAC)
—	028.2071	60B15 x 1-1/4 in. Bore (5AC CCAC)
5	028.2148	60B21 x 1-7/16" Bore (Drive Shaft)
6	090.203	Shaft Key—1/4" x 1" Long

Ref. No.	Part No.	Description
7	090.204	Shaft Key—3/8" x 1" Long
8	029.102	#60 Riveted Roller Chain
9	029.202	#60 Connector Link
10	B-05540	LH Motor Base Support Angle
11	B-05545	RH Motor Base Support Angle
12	B-06629-016	Motor Base Plate Assembly
13	B-22377	Motor Base Spacer Channel
14	—	Chain Guard Back Plate
—	B-18596-R	Right Hand
—	B-18596-L	Left Hand
15	B-18598	Chain Guard Front Plate
16	B-14492	Chain Guard Mounting Angle

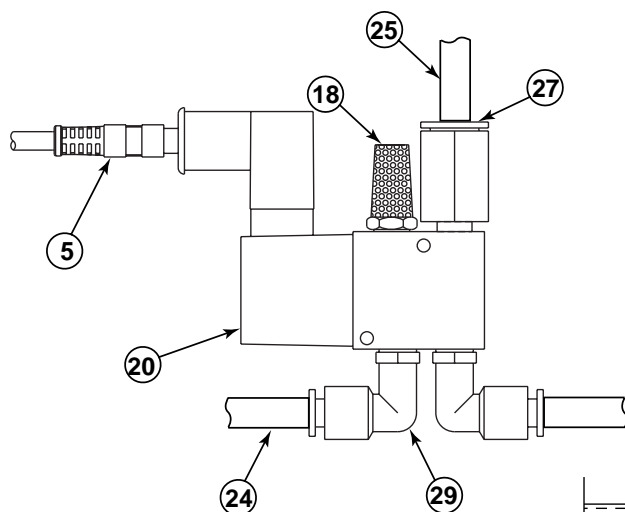
# ● Model CCEZ Pneumatic Parts Drawing



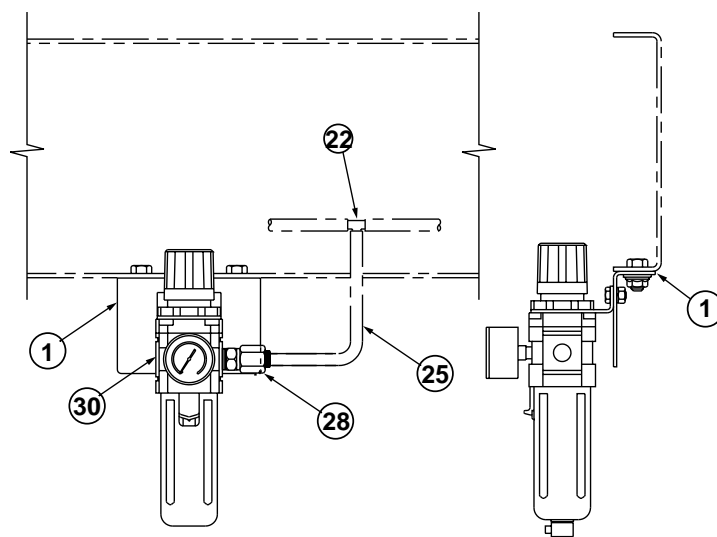
Plumbing Detail



# ● Model CCEZ Pneumatic Parts List



**DETAIL "A"  
AIR VALVE  
4-WAY SINGLE SOLENOID**



**DETAIL "B"  
FR WITH GAUGE**

See Page 22 For Information On  
How to Order Replacement Parts.

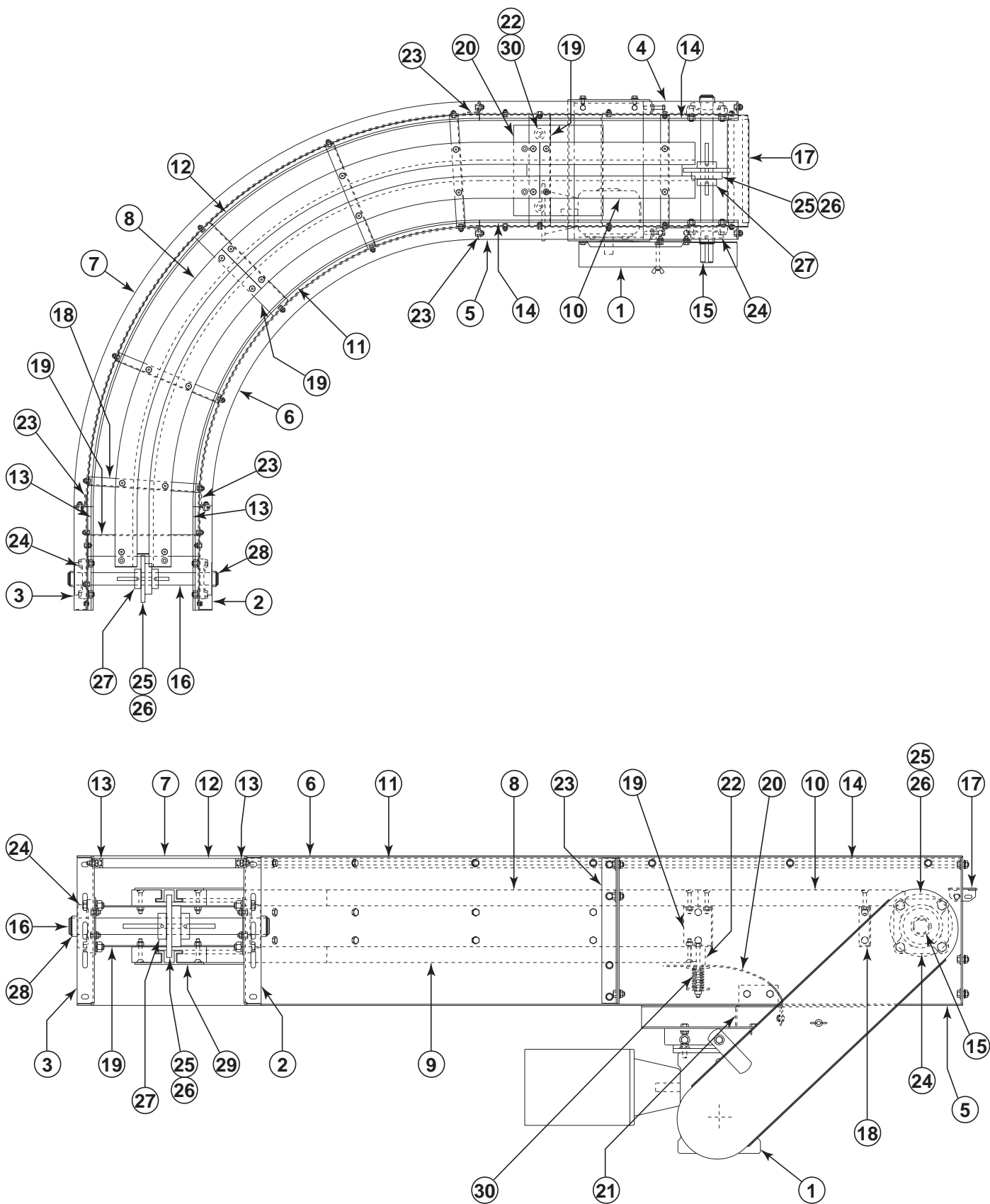
## Recommended Spare Parts List Highlighted in Gray.

Ref. No.	Part No.	Description
1	B-11302	MTG Angle-Filter/Regulator KT
2	B-20507	Accumulation CHNL (Specify Length)
3	032.001	Accumulation Module - Polarized Reflex
4	032.003	Accumulation Module Input/Output- Polarized Reflex
5	032.012	Zone Stop Connector Cable
6	034.301	Wire Nut - Size 2
7	035.1064	Water Tight Strain Relief Bushing
8	041.8005	#6-32 Hex Locknut - Nylon Insert
9	042.59025	#6-32 X 1-1/4"LG Socket Head Mach Screw
10	090.108	Alum Pop Rivet - 5/32" DIA X 1/4"LG Grip
11	091.109	Cable Tie - 5-1/2" LG
12	092.0851	1/2-14 NPT Conduit FTG Tiger Grip Locknut
13	092.098	Conduit Body Tee- 1/2"Hub, Aluminum
14	092.0981	Cover - For 1/2" Conduit Body, Aluminum
15	092.0982	Gasket - For 1/2" Conduit Body, Neoprene

Ref. No.	Part No.	Description
16	094.1076	Air Bag Assy W/2 Inlets
17	094.1077	Air Bag Assy W/1 Inlet
18	094.10816	1/8" Porous Bronze Muffler
19	094.108345	3-Way Single Solenoid Air Valve
20	094.108355	4-Way Single Solenoid Air Valve
21	094.1114	Plastic Union Tee - Barb Fitting
22	094.112	Plastic Union Tee - 1/4"ID Air Line
23	094.1141	Push Button Mount For Cable Tie
24	094.11481	1/4"OD Polyurethane Tubing (Green)
25	094.1149	3/8"OD Polyurethane Tubing
26	094.118	Flanged Locking Sleeve - 1/4" Air Line
27	094.14015	Brass Conn-Straight Male, 1/8"NPT-3/8"PLS
28	094.1403	Brass Conn-Straight Male, 3/8"PLST-3/8"NP
29	094.1406	Plastic Elbow -Male
30	094.194	Air Line Filter/Regulator



# ● Model CCAC Parts Drawing



# ● Model CCAC Parts Drawing & Parts List



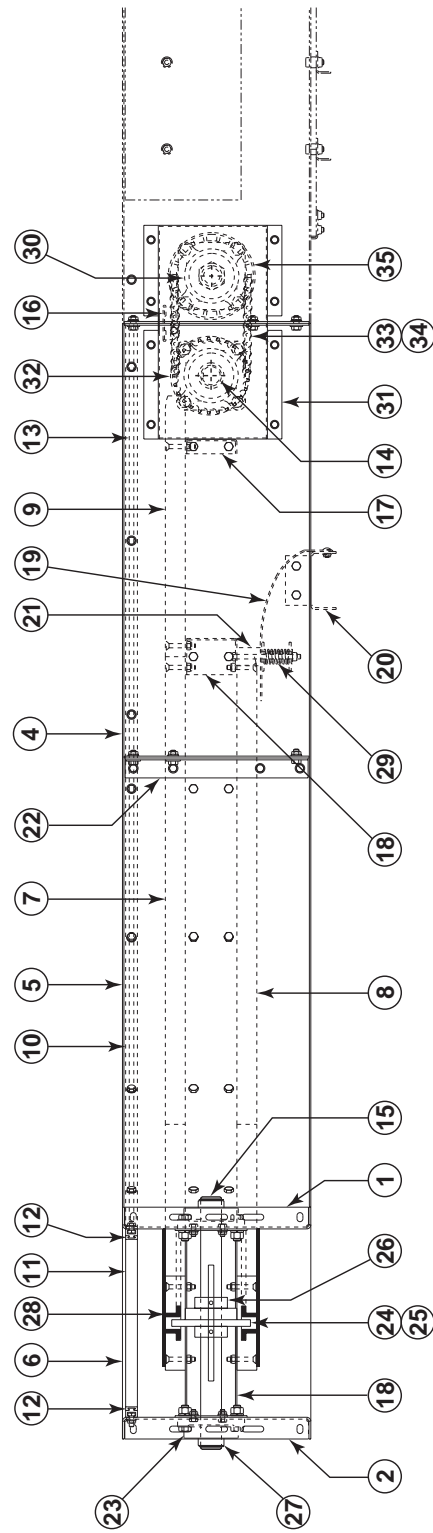
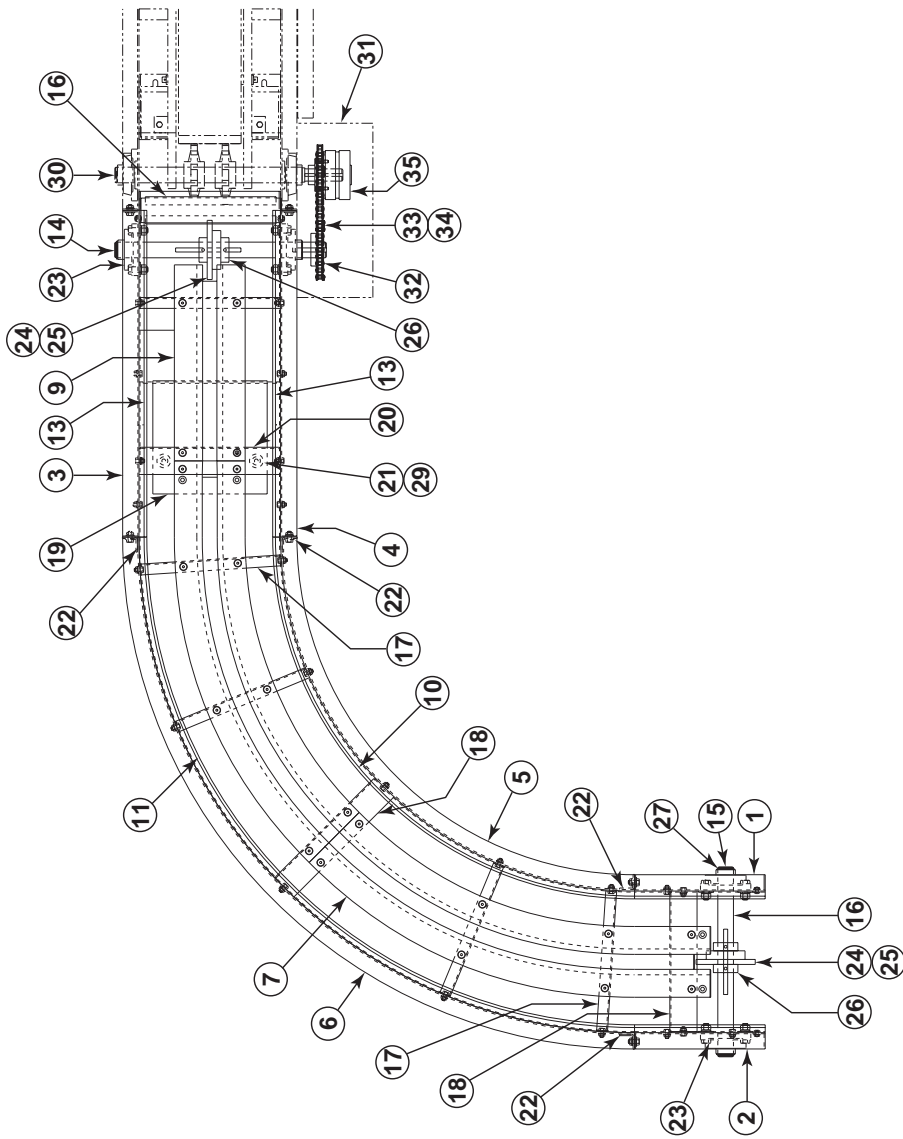
See Page 22 For Information On  
How to Order Replacement Parts.

## Recommended Spare Parts List Highlighted in Gray.

Ref. No.	Part No.	Description
1	—	Drive Assembly (See Page 27)
2	B-19767-12L	Infeed Tangent Channel-L.H.
3	B-19767-12R	Infeed Tangent Channel-R.H.
4	B-19584-30L	Discharge Tangent Channel-L.H.
5	B-19584-30R	Discharge Tangent Channel-R.H.
6	B-19757	Inside Curve Channel
7	B-19585	Outside Curve Channel
8	—	Curve Chain Guide Kit Top
—	B-19764-L	Left Hand
—	B-19764-R	Right Hand
9	—	Curve Chain Guide Kit Bottom
—	B-22806-L	Left Hand
—	B-22806-R	Right Hand
10	B-19762-030	Tangent Chain Guide
11	B-18721	Inside Curve Wearstrip
12	B-18722	Outside Curve Wearstrip
13	B-18723-096	Infeed Wearstrip
14	B-18723-240	Discharge Wearstrip
15	B-18582	Drive Shaft
16	B-22807	Tail Shaft
17	B-19583	Transition Plate
18	B-19582	Bed Spacer
19	B-22801	Transition Bed Spacer
20	B-22802	Catenary Plate
21	B-22805	Catenary Support Channel
22	B-22803	Catenary Spacer
23	B-22804	Butt Coupling
24	010.203	Bearing, 4-Bolt-1-7/16 in. Bore
25	028.5485	Sprocket, 60BTL23 x 1-7/16 in. Bore
26	090.204	Shaft Key, 3/8 in. Sq. x 1 in. Long

Ref. No.	Part No.	Description
27	098.188	Locking Collar, 1-7/16 in. I.D.
28	049.3051	External Retainer Ring
29	069.812	Tabletop Chain
30	093.105	Spring
31	—	MS Type Pivot Plate-1-1-2 in. Flange
—	B-00916	3-11/16 in. High
—	B-02112	1-9/16 in. High
32	—	Floor Support Frame
—	B-00914-016	6 in. High
—	B-12777-016	7 in. High
—	B-12778-016	8 in. High
—	B-00915-016	9 in. High
—	B-00916-016	11-1/2 in. High
—	B-00917-016	14-1/2 in. High
—	B-02098-016	18-1/2 in. High
—	B-00919-016	22-1/2 in. High
—	B-00921-016	32-1/2 in. High
—	B-00923-016	44-1/2 in. High
—	B-00925-016	56-1/2 in. High
—	B-02107-016	68-1/2 in. High
—	B-02109-016	78-1/2 in. High
—	B-02111-016	90-1/2 in. High
33	B-00909	Center Support Leg (Specify Length)
34	B-00911	Adjustable Foot Assembly (Specify Length)

# ● Model CCAC (Slave) Parts Drawing



# ● Model CCAC (Slave) Parts List



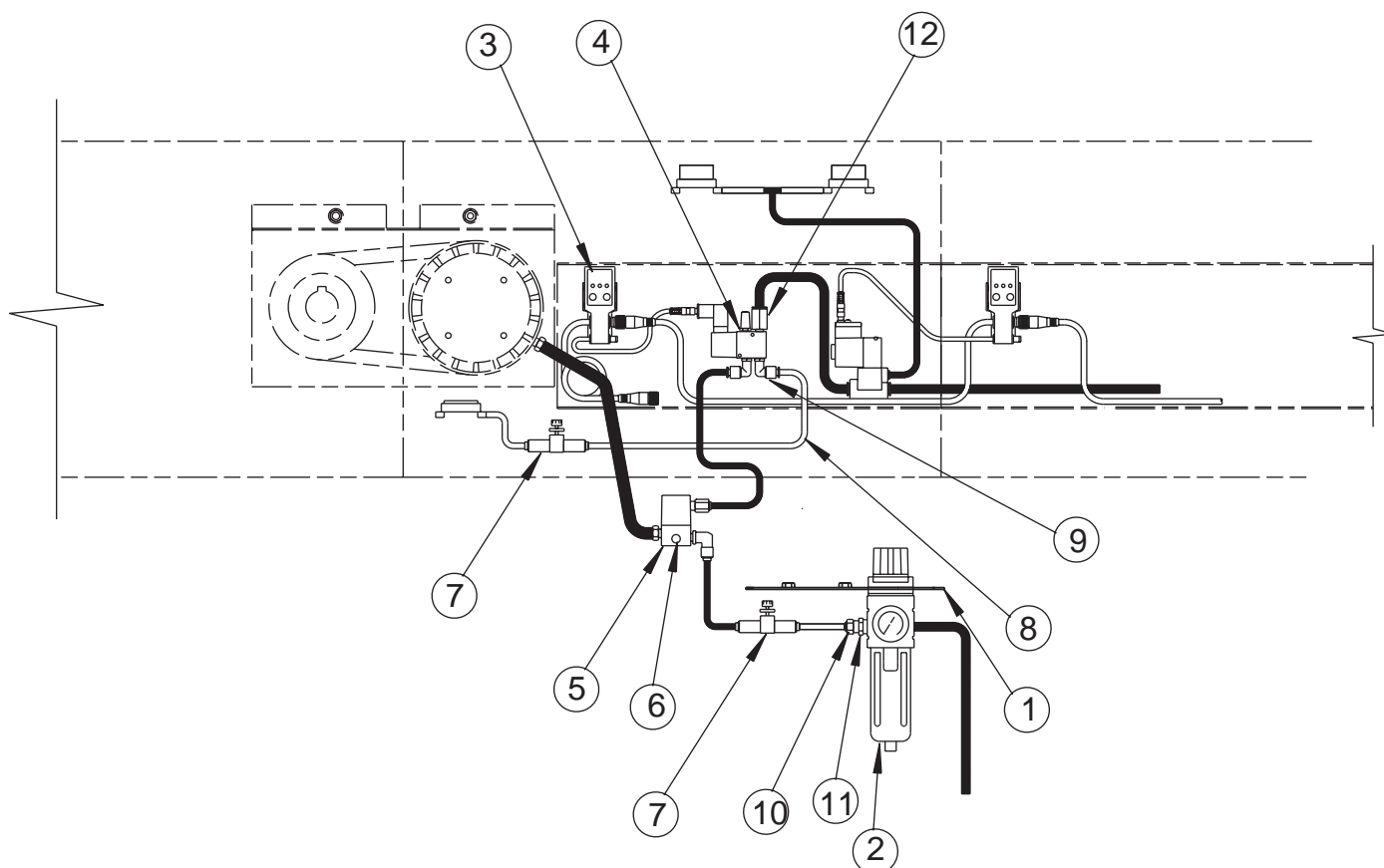
See Page 22 For Information On  
How to Order Replacement Parts.

## Recommended Spare Parts List Highlighted in Gray.

Ref. No.	Part No.	Description
1	B-19767-12L	Infeed Tangent Channel—L.H.
2	B-19767-12R	Infeed Tangent Channel—R.H.
3	B-19584-30L	Discharge Tangent Channel—L.H.
4	B-19584-30R	Discharge Tangent Channel—R.H.
5	B-19757	Inside Curve Channel
6	B-19585	Outside Curve Channel
7	—	Curve Chain Guide Kit Top
—	B-19764-L	Left Hand
—	B-19764-R	Right Hand
8	—	Curve Chain Guide Kit Bottom
—	B-22806-L	Left Hand
—	B-22806-R	Right Hand
9	B-19762-030	Tangent Chain Guide
10	B-18721	Inside Curve Wearstrip
11	B-18722	Outside Curve Wearstrip
12	B-18723-096	Infeed Wearstrip
13	B-18723-240	Discharge Wearstrip
14	B-18582	Drive Shaft
15	B-22807	Tail Shaft
16	B-19583	Transition Plate
17	B-19582	Bed Spacer
18	B-22801	Transition Bed Spacer
19	B-22802	Catenary Plate
20	B-22805	Catenary Support Channel
21	B-22803	Catenary Spacer
22	B-22804	Butt Coupling
23	010.203	Bearing, 4-Bolt—1-7/16 in. Bore
24	028.5485	Sprocket, 60BTL23 x 1-7/16 in. Bore
25	090.204	Shaft Key, 3/8 in. Sq. x 1 in. Long
26	098.188	Locking Collar, 1-7/16 in. I.D.

Ref. No.	Part No.	Description
27	049.3051	External Retainer Ring
28	069.812	Tabletop Chain
29	093.105	Spring
30	B-18630	Tail Shaft (CCA) for Slaving Curve
31	B-18726	Guard Cover
32	028.1025	Sprocket, 50B25 x 1-7/16 in. Bore
33	029.101	#50 Riveted Roller Chain
34	029.102	#50 Connector Link
35	029.450	1-1/8 in. Bore Air Clutch
36	—	MS Type Pivot Plate-1-1-2 in. Flange
—	B-00916	3-11/16 in. High
—	B-02112	1-9/16 in. High
37	—	Floor Support Frame
—	B-00914-016	6 in. High
—	B-12777-016	7 in. High
—	B-12778-016	8 in. High
—	B-00915-016	9 in. High
—	B-00916-016	11-1/2 in. High
—	B-00917-016	14-1/2 in. High
—	B-02098-016	18-1/2 in. High
—	B-00919-016	22-1/2 in. High
—	B-00921-016	32-1/2 in. High
—	B-00923-016	44-1/2 in. High
—	B-00925-016	56-1/2 in. High
—	B-02107-016	68-1/2 in. High
—	B-02109-016	78-1/2 in. High
—	B-02111-016	90-1/2 in. High
38	B-00909	Center Support Leg (Specify Length)
39	B-00911	Adjustable Foot Assembly (Specify Length)

# ● Model CCAC (Slave) Pneumatic Parts Drawing & List



Ref. No.	Part No.	Description
1	B-18732	Plumbing Plate
2	094.193	Filter Regulator
3	032.001	EZLogic™ Module
4	094.10835	Air Valve—4 Way Single Solenoid 24 Volt DC
5	094.10809	Air Valve—3 Way Pilot Operated
6	094.10825	Muffler, Speed Control—1/8 in.
7	094.10847	Valve, Inline Flow Control
8	094.11481	1/4 in. O.D. Polyurethane Tubing
9	094.1406	1/4 in. PLST to 1/8 in. NPT Elbow
10	094.1401	1/4 in. PLST to 1/4 in. NPT Straight Connector
11	092.0921	Reducer Bushing—3/8 in.-1/4 in. NPT
12	094.14015	1/8" NPT - 3/8" Plst Straight Connector

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## ● Notes

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