INSTALLATION AND MAINTENANCE MANUAL

ZERO PRESSURE FLAT MOTOR DRIVEN ROLLER CONVEYOR

DO NOT OPERATE EQUIPMENT BEFORE READING

ATLANTIS TECHNOLOGIES LLC

Version 2014.1

TABLE OF CONTENTS

INTRODUCTION

This manual has been created to assist with the maintenance, operation and installation of the FM519Z conveyor. It is important that all maintenance personnel are trained properly in operation and maintenance of the conveyor. Damage or injury caused by non-compliance with this manual is not the responsibility of Atlantis Technologies LLC.

RECEIVING, INSPECTION AND UNCRATING

1) Compare the bill of lading with what you have received.
2) Examine the equipment for damage during shipping.
3) Immediately report shortage or damages to the carrier.
4) Move all crates to area of installation.
5) Remove crating and packaging.
6) Look for boxes, accessories, bags or components such as fasteners, manuals, guard rails, etc. that may be banded or fastened to the crating material to ensure you do not discard any loose parts (Guards, Fasteners or other components) that were packaged for loose shipping.

ORDERING REPLACEMENT PARTS

Assembly drawings with replacement parts listings have been provided in this manual.

Procedure for ordering replacement parts:

1) Contact your Atlantis Technologies LLC Distributor.
2) Give Conveyor Model Number and/or Serial Number.
3) Give Part Number and complete description from Parts Listing.
4) Give type of drive configuration.
5) Tell us if you are in a breakdown situation.

SAFETY INFORMATION - INSTALLATION

GUARDS AND GUARDING

Interfacing of Equipment

When two or more pieces of equipment are interfaced, special attention should be given to the interfaced area to ensure the presence of adequate guarding and safety devices.

Guarding Exceptions

Wherever conditions prevail that would require guarding under this standard but such guarding would render the conveyor unusable, seek guidance from your safety professional.

Overhead conveyors for which guarding would render the conveyor unusable or would be impracticable should have prominent and legible warnings posted in the area or on the equipment, and, where feasible, lines should be painted on the floor delineating the danger area.

When a conveyor passes over a walkway, roadway or work station, it is considered guarded by location if all moving parts are at least 2.44 meters (8 feet) above the floor or walking surface or are otherwise located so that personnel cannot inadvertently come in contact with hazardous moving parts. Check your state and local laws and codes for overall compliance.

Although overhead conveyors may be guarded by location, spill guards, pan guard, or equivalent should be installed if material may fall off the conveyor and endanger personnel.

HEADROOM CLEARANCE

When conveyors are installed above exit passageways, aisles or corridors, there should be provided a minimum clearance of 2.00 meters (6 feet 8 inches) 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 2.00 meters (6 feet 8 inches) through an emergency exit, alternate passageways should be provided.

It is permissible to allow passage under conveyors with less than 2.00 meters (6 feet 8 inches) clearance from the floor for other than emergency exits if a suitable warning indicates low headroom. Check your state and local laws and codes for overall compliance.

SAFETY INFORMATION - OPERATION

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

Where safety is dependent upon stopping / starting devices, they should be kept free of obstructions to permit access.

The area around loading and unloading points should be kept clear of obstructions that could endanger personnel.

Do not ride the load-carrying element of a conveyor under any circumstances. Warning labels reading **“DO NOT RIDE CONVEYOR”** should be affixed by the manufacturer of the conveyor.

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

A conveyor should be used to transport only a load that it is designed to be handle safely.

Under no circumstances should the safety characteristics of the conveyor be altered.

Routine inspections and preventative and corrective maintenance programs should be conducted to ensure that all safety features and guards are retained and functioning 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.

SAFETY INFORMATION - MAINTENANCE

ATTENTION: ELECTRICAL POWER MUST BE TURNED OFF AND LOCKED / TAGGED OUT following your company's machine specific procedures when servicing the conveyor to prevent accidental restarting by other persons or interconnecting equipment.

Maintenance and service should be performed by trained, qualified personnel only.

Where lack of maintenance and service would cause a hazardous condition, the user should establish a maintenance program to ensure that conveyor components are maintained in a condition that does not constitute a hazard to personnel.

ADJUSTMENTS OR MAINTENANCE/SERVICE DURING OPERATION

Conveyors should **NOT** be maintained or serviced while in operation.

When a conveyor is stopped for maintenance or service, the starting devices, prime mover, powered accessories or electrical must be locked / tagged out in accordance with your company machine specific formalized procedure designed to protect all persons or groups involved with the conveyor against an unexpected restart. Personnel should be alerted to the hazard of stored energy, which may exist after the power source is locked/tagged out. All safety devices and guards should be replaced before starting equipment for normal operation.

GUARDS AND SAFETY DEVICES

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

LUBRICATION

Conveyors should **NOT** be lubricated while in operation.

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

SAFETY INFORMATION - ELECTRICAL

ELECTRICAL CODE

All electrical installations and wiring should conform to federal, state and local codes.

When conveyor operation is not required for a maintenance procedure, electrical power must be turned off and locked / tagged out following your company's machine specific procedure.

CONTROL STATIONS

Control stations should be so arranged that the operation of the affected equipment is visible from them. Control stations should be clearly marked or labeled to indicate the function controlled.

A conveyor that would cause injury when started should not be started until personnel in the area are alerted by a signal or by a designated person that the conveyor is about to start.

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 associated devices), a clear, concise and legible warning sign needs to be provided. The warning sign should indicate that conveyors and associated equipment may be started at any time, that danger exists and that personnel must keep clear. These warning signs should be provided along the conveyor at areas not guarded by position or location.

Remotely and automatically controlled conveyors, and conveyors where operator stations are not manned or are beyond voice or 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 should be furnished with emergency stop buttons, pull cords, limit switches or similar emergency stop devices.

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

Inactive and unused actuators, controllers and wiring should be removed from control stations and panel board, together with obsolete diagrams, indicators, control labels and other material that might confuse the operator.

SAFETY DEVICES

All safety devices, including wiring of electrical safety devices, should be arranged to operate such that a power failure or failure of the device itself will not result in a hazardous condition.

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

Before restarting a conveyor that has been stopped because of an emergency, an inspection of the conveyor should be made and the cause of the stoppage determined. The starting device and electrical power must be turned off and locked / tagged out according to your company's machine specific procedure before any attempt is made to remove the cause of the stoppage, unless operation is necessary to determine the cause or to safely remove the stoppage.

Replace all safety devices, guards and guarding prior to equipment start-up.

INSTALLATION

FLOOR SUPPORT INSTALLATION

Floor supports are typically mounted at Drive, Tail, and across splice locations. Fasten leg supports to conveyor sections with the provided fasteners as shown below in Figure 7.1.

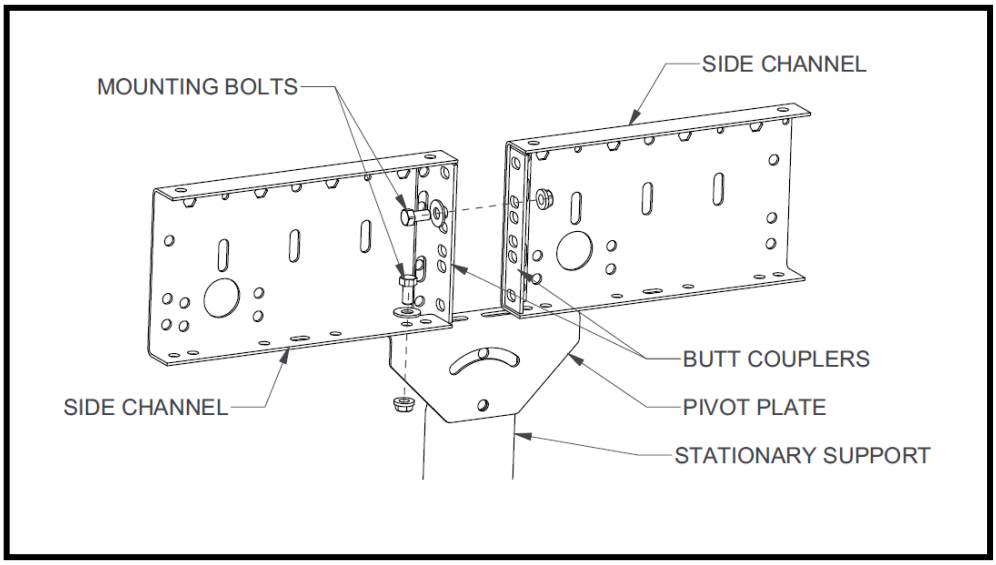


FIGURE 7.1

CEILING HANGERS INSTALLATION

Ceiling hangers may have been supplied in lieu of floor supports if conveyors are to be used in an overhead application. Figure 7.2, below, illustrates how ceiling hangers mount to a conveyor section. Mount ceiling hangers on each section joint. See safety information regarding overhead mounted conveyors.

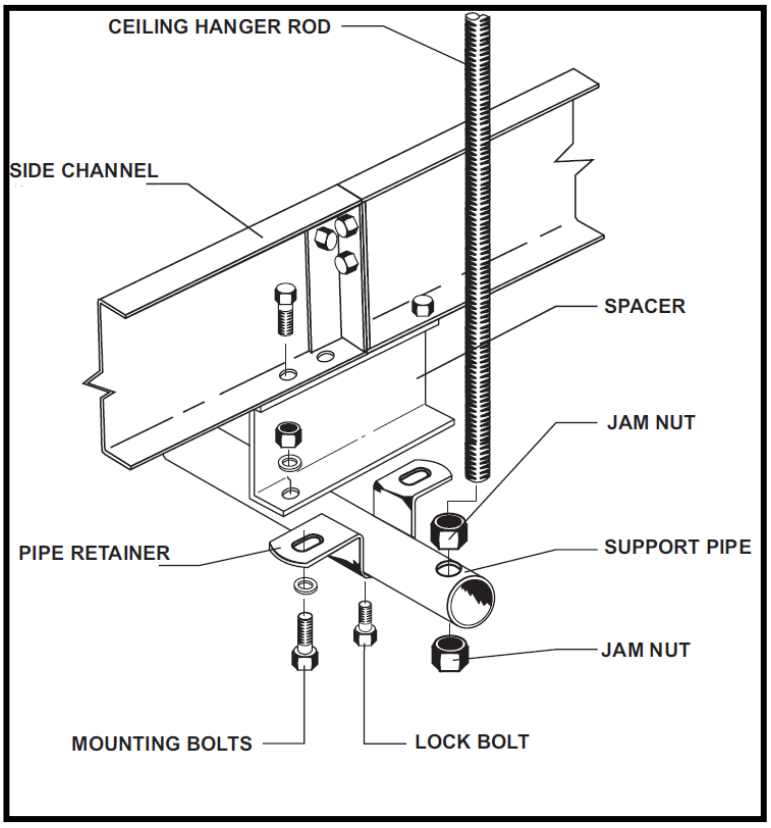


FIGURE 7.2

NOTE: When installing ceiling hangers, refer to local building codes to ensure that materials comply. Only experienced material handling installers should attempt to install conveyors.

INSTALLATION

CONVEYOR SET-UP

1) Locate center line of the conveyor by marking a chalk line on floor.
2) Position infeed section and remaining sections using match-mark labels as a guide (See Figure 8.1).
3) Fasten floor or ceiling supports at each bed joint and at ends of conveyor.
4) Fasten sections together with butt couplers and pivot plates (See Figure 7.1). Only hand tightening is required at this time.
5) Adjust leg supports and/or ceiling hangers as necessary to achieve desired height.
6) Check to ensure that the conveyor is square and level across the length (See Figure 9.2).
7) Tighten all butt coupler and pivot plate bolts. Verify that conveyor is still square and level, then lag to floor.
8) Connect the communication and power cables at each bed joint (See Figure 10.1).
9) Install communication terminating ends at the infeed and discharge of the zero pressure system (See Figure 11.1).
10) Connect AC power to power supply. Ensure power supply DC output is connected to ***ProLogic*** system power cables. **Note: See *ProLogic* manuals for more information on power requirements, auxiliary I/O, default settings, and configurable settings.**
11) Install additional I/O and modify configurable settings if applicable.
12) Adjust motor speed if applicable (See Figure 13.1).

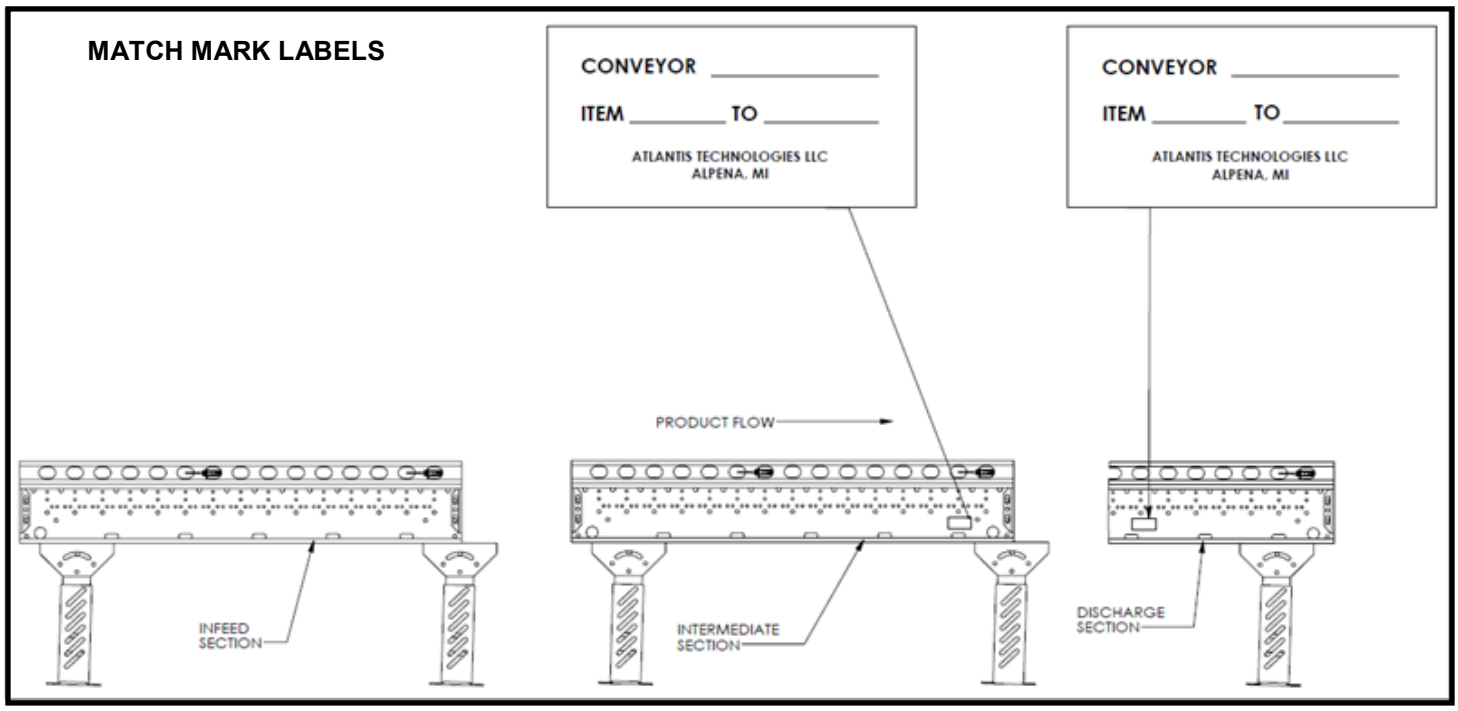


FIGURE 8.1

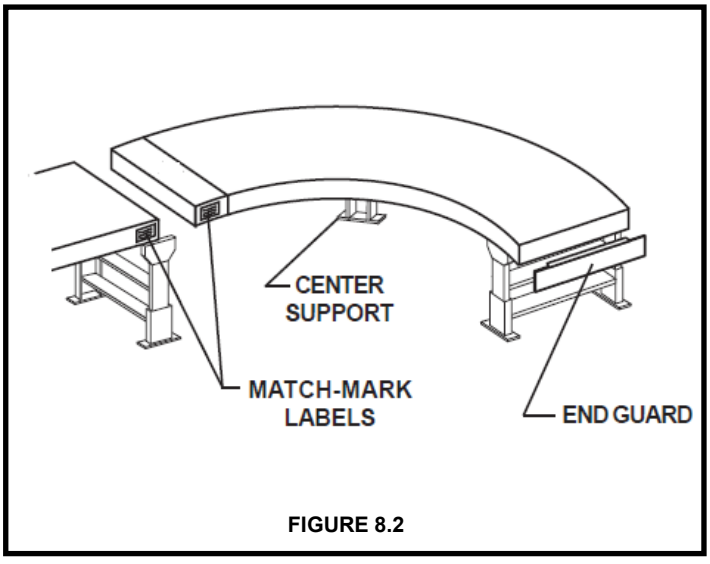


FIGURE 8.2

INSTALLATION

RACKED SECTIONS

Important: Bed sections on the conveyor should be checked for a “racked” or un-squared position. Problems with tracking will occur if the conveyor is not square. Turnbuckles are supplied on conveyors 30’ or longer.

1) Measure diagonally from corner at one end to opposite corner on the other end. Repeat for other corner. The section will not be square if these dimensions are not equal. (See dimensions A & B in figure 9.2)
2) On the underside of the conveyor, where diagonal dimension was the longest, use the supplied cross-bracing to pull section in to square. Adjust the turnbuckle until both dimensions are equal.
3) Tighten all pivot plate bolts and butt couplings after bed sections have been checked and corrected for “racked condition”.
4) Make a final check to verify that all conveyor sections are level across width and length. Supports can be lagged to the floor once the entire conveyor is level.

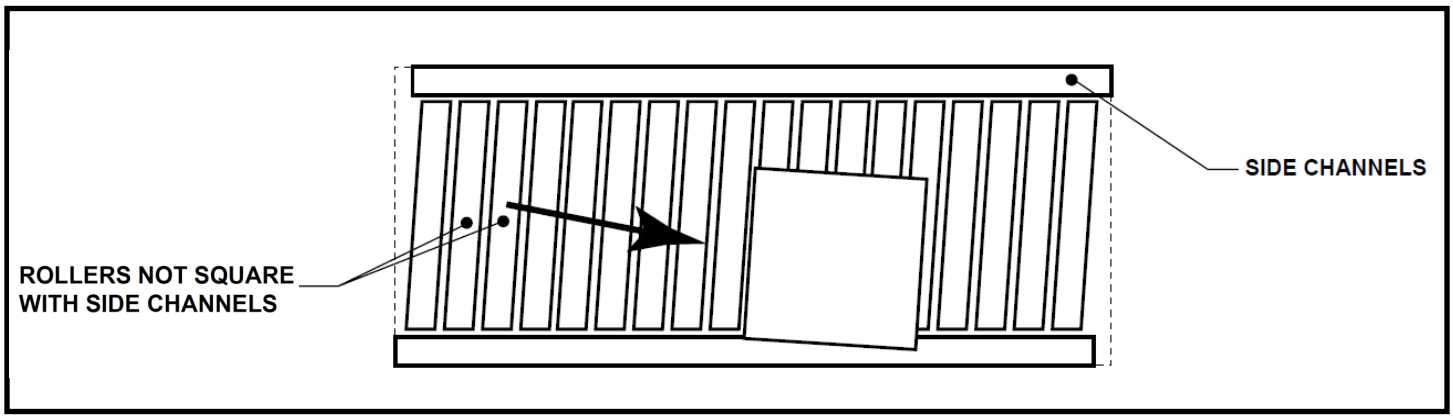


FIGURE 9.1

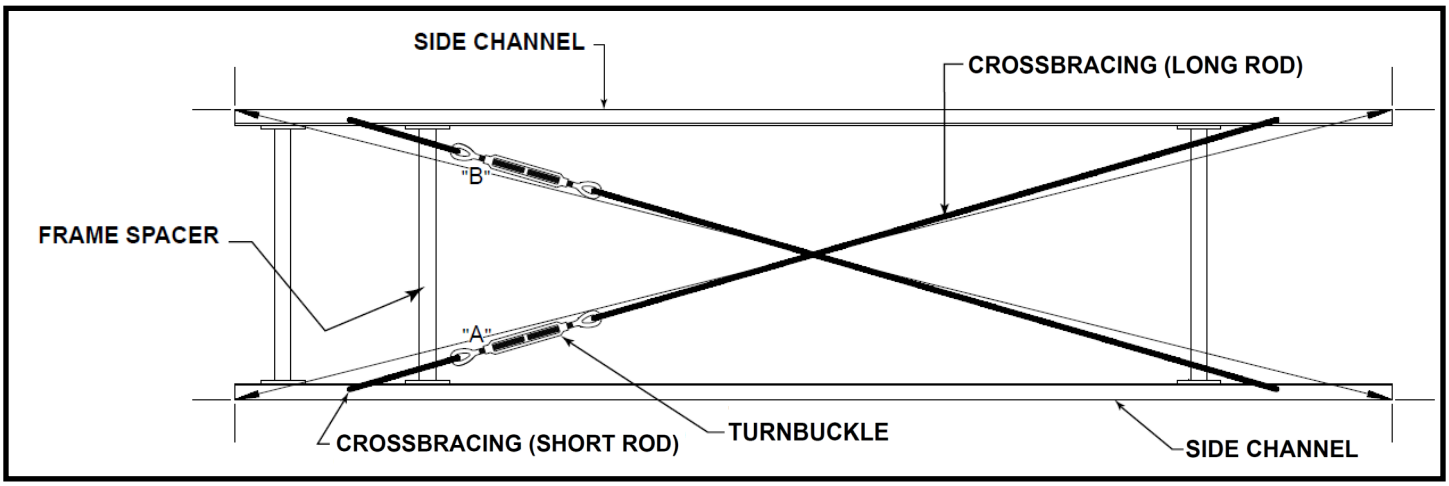


FIGURE 9.2

OPERATION

ELECTRICAL CONNECTIONS BETWEEN BED SECTIONS

At the discharge end of each zero pressure bed section, you will find a communication cable and power cable that needs to be plugged into infeed zone of the downstream bed section (See Figure 10.1). All other connections internal to the bed are prewired.

1) Connect communication cable as shown.
2) Connect power cable as shown.

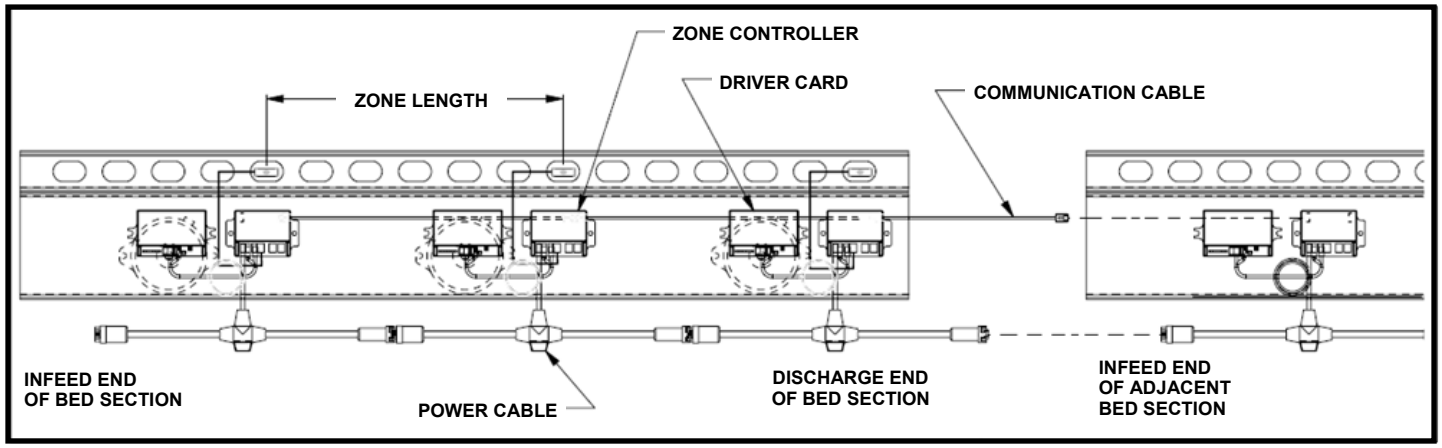


FIGURE 10.1

Note: If at a bed joint, power switches from one side of conveyor to the other, power extension cable and a longer communication cable will be required.

OPERATION

ELECTRICAL CONNECTIONS BETWEEN BED SECTIONS

At infeed and discharge end of zero pressure system, terminating ends are required (See Figure 11.1). Two are supplied for every system. Note that a system may be one section or multiple sections including zero pressure curves.

1) Install terminating end into RJ45 port of the first zone controller at the infeed end of zero pressure system (Location A).
2) Install terminating end into RCJ45 port of the last zone controller at the discharge end of zero pressure system (Location B).

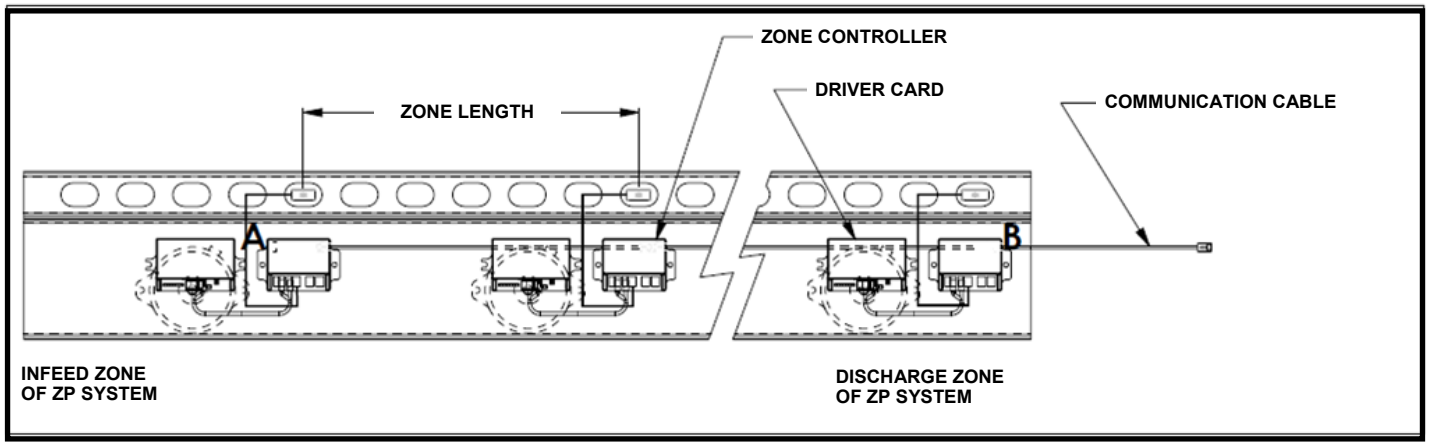


FIGURE 11.1

Notes: Zero pressure systems exceeding 60 zones will require a split in the communication runs with a hardwired interface between the two runs. Terminating ends will also be required at this split.

OPERATION

POWER SUPPLY

Each power supply provides power to the flat motors, photo eyes, and appropriately rated input or output devices. Dependent upon the amperage rating, a maximum number of motors can be driven from each power supply.

- 40 amp power supply - maximum of 20 motors either side of power supply (40 motors total)
- 20 amp power supply - maximum of 20 motors per power supply
- 5 amp power supply - maximum of 3 motors per power supply

***ProLogic* SYSTEM REQUIREMENTS AND OPERATION**

Review the ***ProLogic*** manuals for power requirements, modes of operation, auxiliary I/O, default settings and configurable settings and more.

- ***ProLogic*** System Flat Motor Setup Guide
- ***ProLogic*** System BDLR Setup Guide
- ***ProLogic*** Operational Manual
- ***ProLogic*** System Default System Setup Guide
- ***ProLogic*** System Configurator Manual
- ***ProLogic*** System Programmer Manual

OPERATION

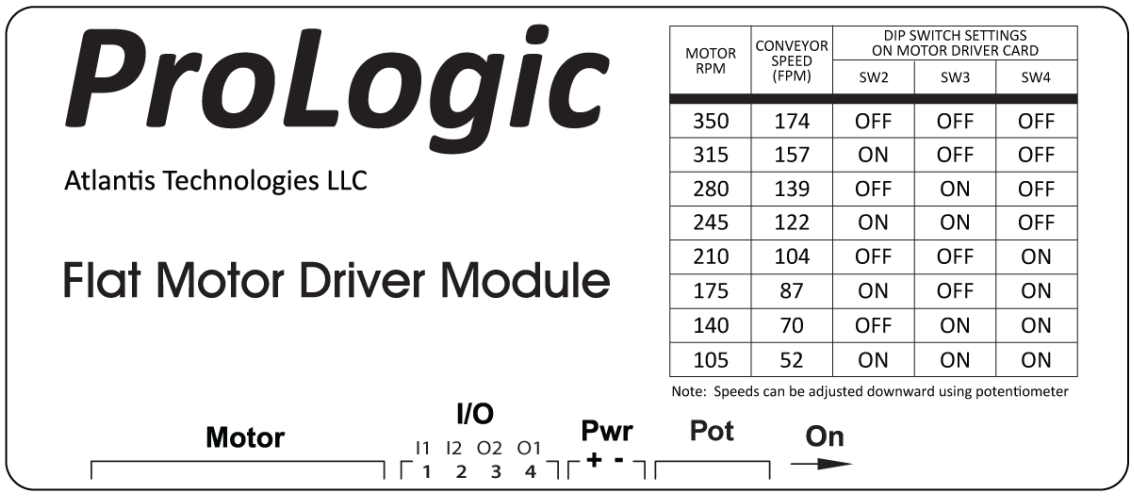
ADJUSTING MOTOR SPEED

Each zone includes a motor driver card that controls the speed of the motor. See Figure 13.1, below.

Speeds listed in the chart on the label are maximum speeds. Each speed is selectable by toggling the appropriate dip switch on or off. A plastic tip screwdriver is recommended. Once maximum speed is selected, potentiometer can also be adjusted to decrease speed.

Note:

- Speeds above 120 FPM can affect product accumulation and coast. At these higher speeds, photo eyes may need to be relocated in order for product to stop within the zone.
- Dip switch #1 controls motor direction not speed.



MOTOR RPM	CONVEYOR SPEED (FPM)	DIP SWITCH SETTINGS ON MOTOR DRIVER CARD		
		SW2	SW3	SW4
350	174	OFF	OFF	OFF
315	157	ON	OFF	OFF
280	139	OFF	ON	OFF
245	122	ON	ON	OFF
210	104	OFF	OFF	ON
175	87	ON	OFF	ON
140	70	OFF	ON	ON
105	52	ON	ON	ON

Note: Speeds can be adjusted downward using potentiometer

FIGURE 13.1

MAINTENANCE

WARNING: Before performing any maintenance, lubrication, or inspection on any powered conveyor, the electrical power must be turned off and locked/tagged out. NEVER operate the conveyor with any guard removed.

DAILY MAINTENANCE

- Inspect all conveyors to ensure that all guarding is securely in place.

WEEKLY MAINTENANCE

- Confirm placement of all warning labels.
- Inspect conveyor for loose bolts and set screws, unrestrained wiring, loose wiring connectors, nip points, and other hazards.
- Inspect conveyor for unusual or excessive noise or heat in drive rollers.
- Inspect rollers to ensure that they rotate freely without excessive noise.
- Check ZPA modules for any warning lights.

MONTHLY MAINTENANCE

- Ensure the drive roller is operating within its proper heat and noise range.
- Check for consistent band tension between rollers and replace bands as needed.

TROUBLE SHOOTING

TROUBLE	CAUSE	SOLUTION
No zones on the conveyor will run	No AC power to the power supply unit	Check AC power
	Main power disconnect on the power supply unit is "off"	Set disconnect to "on"
	Main fuses blown	Replace fuses
	No lights on motor/control board	Check output power of power supply
	No power to ***ProLogic*** Zone Controller	Check ***ProLogic*** connections and IOP
Individual zone will not run	Motor/control board power pins not connected to wiring harness	Connect wiring harness and pin connector to power pins on Control Board
	ProLogic zone controller output cable not connected to motor/control board	Connect cables
	Motor power connector not connected to control board	Connect motor power connector to motor control board
	Zone controller lens is dirty	Clean lens
	Reflector missing or damaged	Replace reflector
	Defective ***ProLogic*** zone controller	Replace ***ProLogic*** zone controller
	Blow fuse indicator "ON"	Replace fuse/motor
	Defective control board	Replace control board
	Defective motor	Replace motor
Zone will not restart after zone accumulation	Zone controller lens is dirty	Clean lens
	O-ring band(s) stretched or worn	Replace O-ring(s)
Zone will not "sleep"	Sleep feature disabled	Enable sleep feature
	Upstream zone is blocked	Clear upstream zone
Product will not accumulate from the discharge zone back	No zone stop signal to discharge conveyor	Check input cable and signal source
	Solenoid valve malfunction.	Inspect and repair/replace solenoid valve if necessary.
	Zone controller malfunction.	Inspect and replace controller if necessary.

Note: Troubleshooting based on LED error codes is covered in "*ProLogic* System Flat Motor Setup Guide".

MOTOR DRIVER CARD LED TROUBLE SHOOTING

L1 indicator light - Blown Fuse LED (Red)

- Fuse is blown

L2 - Fault LED (Red)

- 1 flash in 4 seconds - Board has hardware problem. Return to supplier.
- 2 flashes in 4 seconds - input voltage is too high. Adjust voltage.
- 3 flashes in 4 seconds - input voltage is too low. Adjust voltage.
- 4 flashes in 4 seconds - problem with motor cable connection.
- Constantly on - motor is stalled. Check for obstructions.

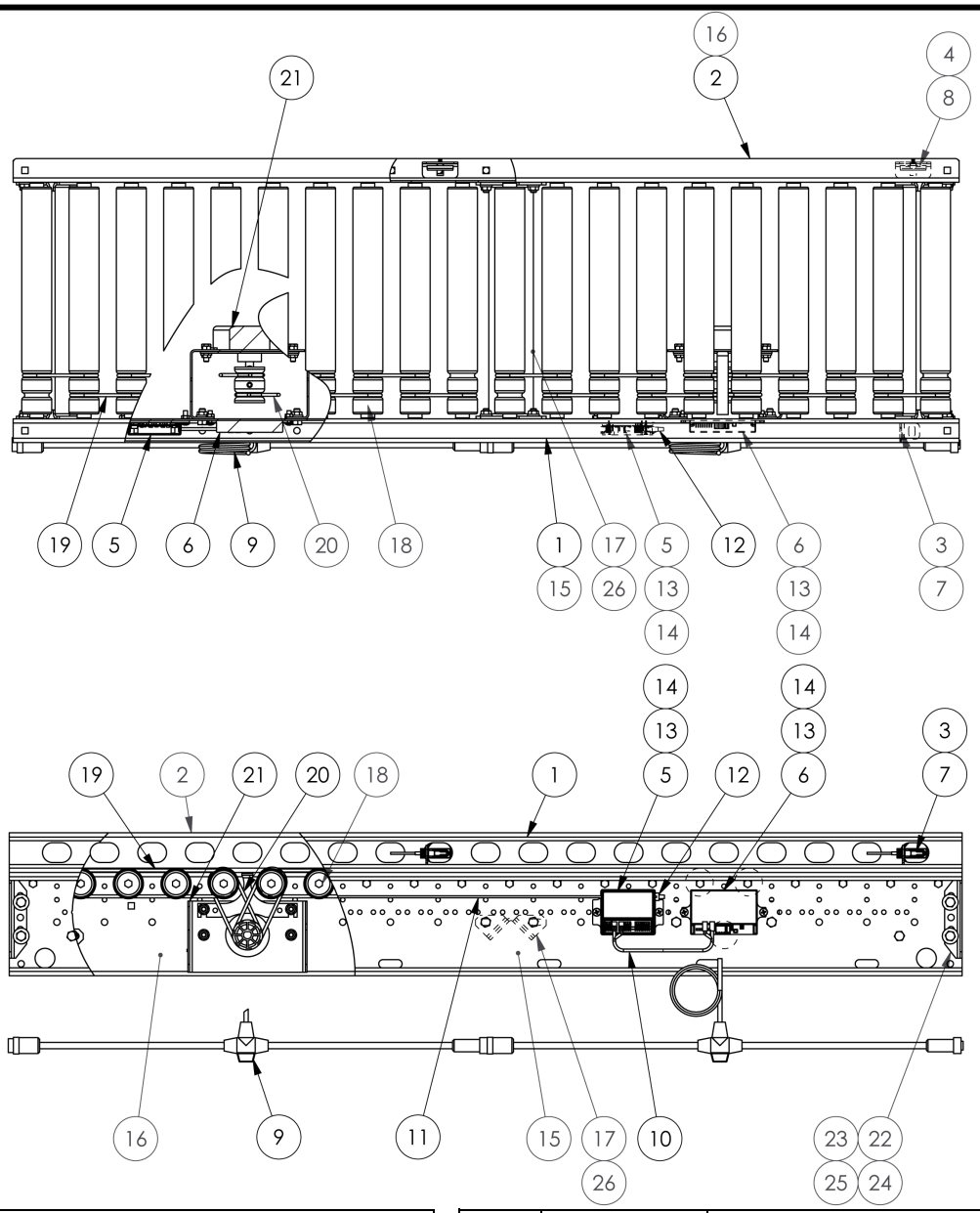
L3 - Motor LED (Amber)

- 4 flashes in 4 seconds - components on the board have overheated and circuit is limiting power to motor. Will correct itself when board cools adequately. Check for mechanical obstructions.
- Constantly on - motor current is maximum allowed and is being electronically limited. Check for mechanical obstructions.
- Flickering - if the motor starts under significant load, the current may be limited briefly causing the LED to flicker. If the LED flickers constantly, this is an indication that the motor is operating at its upper limit and may never reach the full speed as set by the potentiometer. This is not a critical cause for concern and no corrective action is required.

L4 - Power LED (Green)

- Should be constantly on when power is properly applied as long as fuse is not blown.

REPLACEMENT PARTS - DRAWING AND LIST (STRAIGHT)

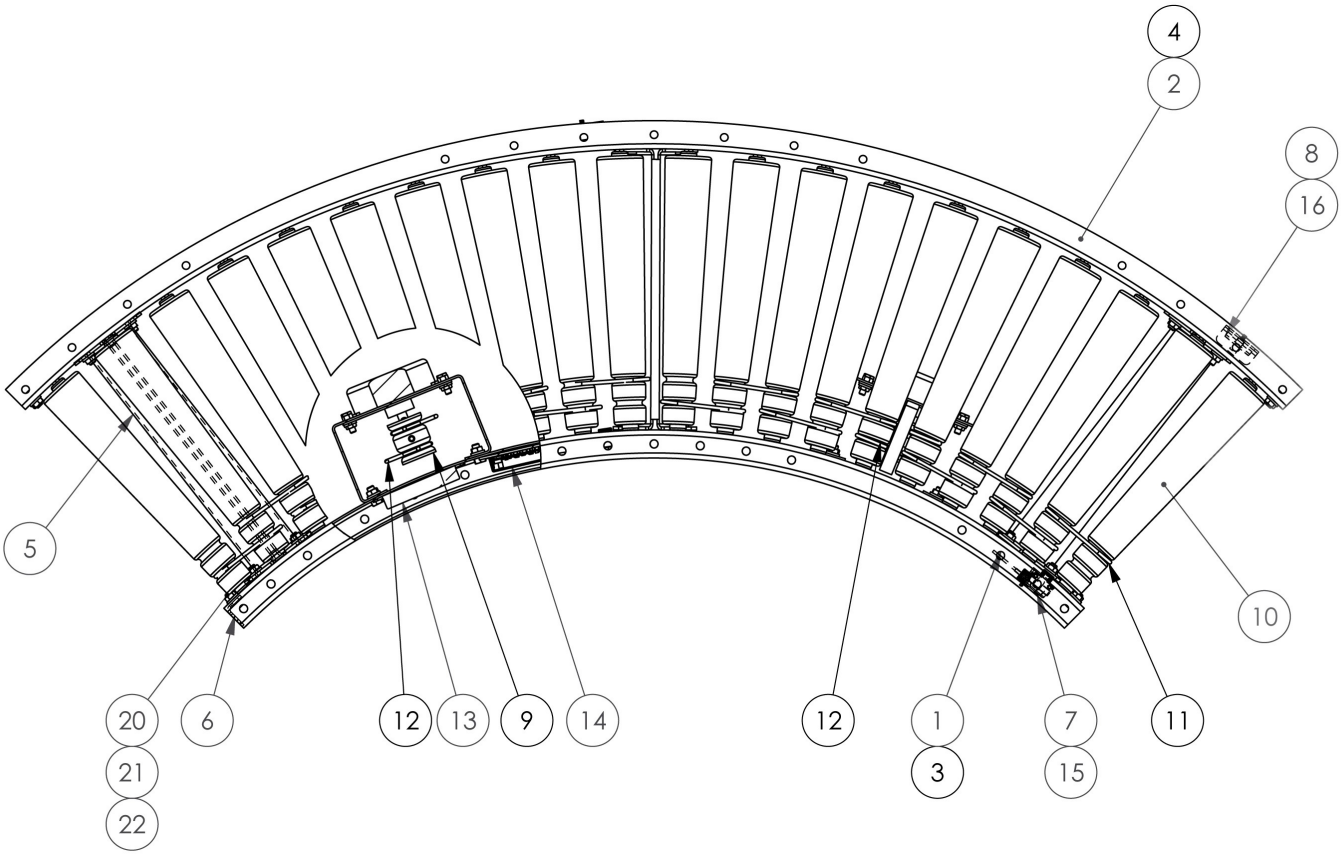


DET.	PART NO.	DESCRIPTION
1	SPECIFIC TO ORDER	RAIL GUIDE, ROLLED
2	SPECIFIC TO ORDER	RAIL GUIDE, STRAIGHT
3	ATL-15227	BRACKET: PHOTO EYE
4	ATL-15228	BRACKET: REFLECTOR
5	ATL-15216	ZONE CONTROLLER
6	ATL-13306	DRIVER CARD
7	ATL-15224	PHOTO EYE: RETRO-REFLECTIVE
8	ATL-15225	REFLECTOR
9	SPECIFIC TO ORDER	CABLE: POWER
10	ATL-15464	CABLE: ZONE CONTROLLER DRIVER CARD
11	SPECIFIC TO ORDER	CABLE: COMMUNICATION
12	ATL-15478	COMMUNICATION TERMINATOR
13	ATL-15659	MACHINE SCREW: 1/4-20 X 3/4" LONG

DET.	PART NO.	DESCRIPTION
14	ATL-15093	KEPS NUT: 1/4-20
15	SPECIFIC TO ORDER	SIDEFRAME: CONTROL SIDE
16	SPECIFIC TO ORDER	SIDEFRAME: NON-CONTROL
17	ATL-11695-BF	SPREADER
18	ATL-15445-BF	BED ROLLER: 1.9" OD, DOUBLE GROOVE
19	SPECIFIC TO ORDER	URETHANE ROUND BELT: 3/16" DIA., BLUE
20	SPECIFIC TO ORDER	URETHANE DRIVE BELT: 7/32" DIA., GREEN
21	ATL-15369	MOTOR SUB-ASSEMBLY
22	ATL-15229	BUTT COUPLER
23	110312	HEX HEAD BOLT: 3/8-16 X 1" LONG
24	101154	WHIZ NUT: 3/8-16
25	101087	WASHER: FLAT, 3/8"
26	112488	HEX HEAD BOLT: 3/8-16 X 3/4" LONG

HIGHLIGHTED ITEMS ARE RECOMMENDED REPLACEMENT PARTS

REPLACEMENT PARTS - DRAWING AND LIST (CURVE)



DET.	PART NO.	DESCRIPTION
1	SPECIFIC TO ORDER	SIDE FRAME: INSIDE RADIUS
2	SPECIFIC TO ORDER	SIDE FRAME: OUTSIDE RADIUS
3	SPECIFIC TO ORDER	SIDE GUIDE: INSIDE RADIUS
4	SPECIFIC TO ORDER	SIDE GUIDE: OUTSIDE RADIUS
5	ATL-11695-BF	SPREADER
6	ATL-15229	BUTT COUPLER
7	ATL-15227	BRACKET: PHOTO EYE
8	ATL-15228	BRACKET: REFLECTOR
9	ATL-15370	MOTOR SUB-ASSEMBLY
10	ATL-15660-BF	BED ROLLER: TAPER, 2 1/2” OD X 1 11/16” OD, DOUBLE GROOVE
11	SPECIFIC TO ORDER	URETHANE ROUND BELT: 3/16” DIA., BLUE
12	SPECIFIC TO ORDER	URETHANE DRIVE BELT: 7/32” DIA., GREEN
13	ATL-13306	DRIVER CARD
14	ATL-15216	ZONE CONTROLLER
15	ATL-15224	PHOTO EYE: RETRO-REFLECTIVE
16	ATL-15225	REFLECTOR
17	SPECIFIC TO ORDER	CABLE: POWER
18	ATL-15464	CABLE: ZONE CONTROLLER DRIVER CARD
19	SPECIFIC TO ORDER	CABLE: COMMUNICATION
20	112488	HEX HEAD BOLT: 3/8-16 X 3/4” LONG
21	101154	WHIZ NUT: 3/8-16
22	101087	WASHER: FLAT, 3/8”

HIGHLIGHTED ITEMS ARE RECOMMENDED REPLACEMENT PARTS

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