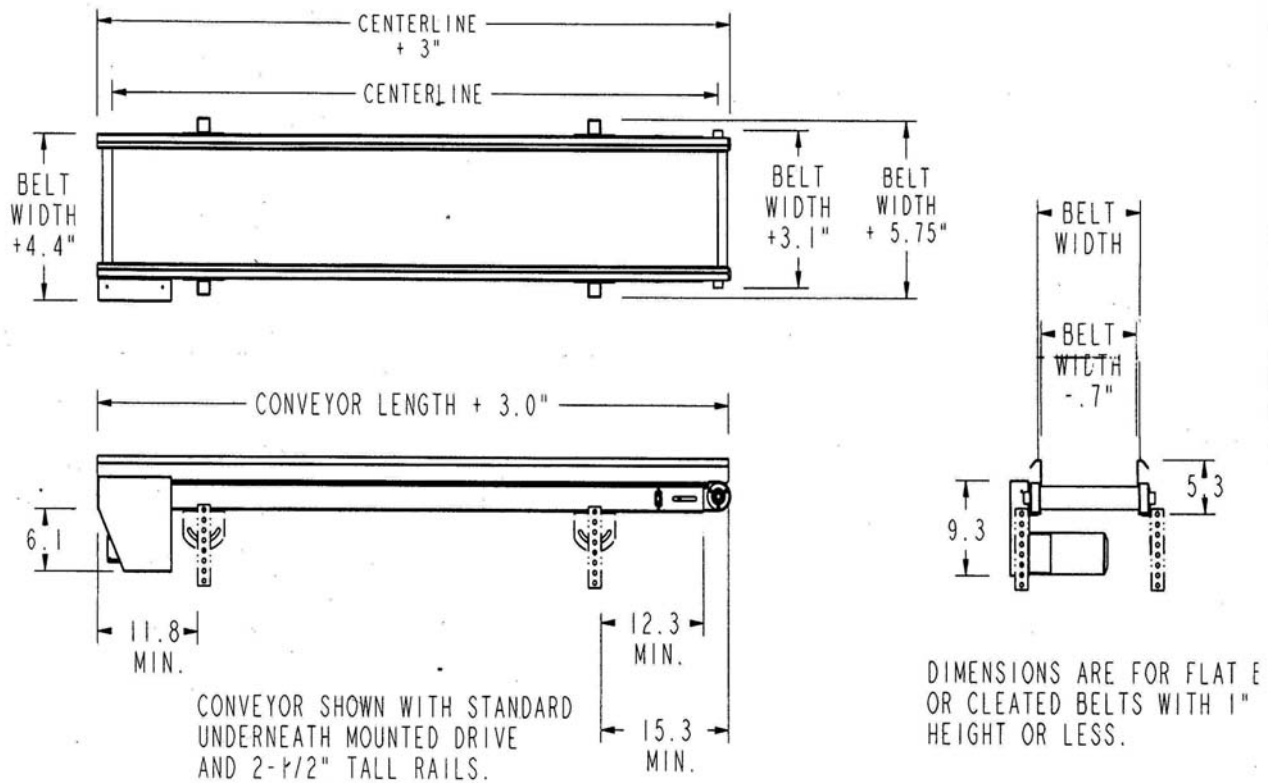


# MAC

**AUTOMATION CONCEPTS**

## MAC SF Series Small Frame Steel Conveyor And Installation and Maintenance Manual



**IMPORTANT! PLEASE READ INSTRUCTIONS CAREFULLY**

Failure to install and operate MAC products according to our specified instructions could result in equipment malfunction or serious injury. In addition, your warranty may be void if our instructions have not been followed.

**Questions? Call Toll-Free 1-800-435-6979**

MAC Automation Concepts, Inc., 1760 Kilkenny Ct., Woodstock, IL 60098

## *Congratulations*

1760 Kilkenny Ct.  
Woodstock, IL 60098  
Phone: 815-337-3000

Dear Valued Customer,

Congratulations on your purchase of one of MAC's many quality engineered products. We're glad that you have chosen us as your parts handling equipment supplier.

The first step in getting your machine up and running quickly and easily is to read this instruction manual. In it you will find detailed drawings illustrating the parts and components along with information explaining how to properly use your machine. Please read these instructions carefully before attempting to run your machine.

Your machine is covered by our Limited Warranty. Be sure to read our maintenance schedule for proper care of your machine. If you do experience a problem, please call us toll free at 1-800-435-6979.

Remember to call us for all your replacement part needs! MAC Automation sells all of the products and supplies required to maintain your machine!

Thanks again for choosing MAC Automation Concepts!

Sincerely,

*Frank Eltvedt*

Frank Eltvedt2  
President and CEO  
MAC Automation Concepts, Inc.

**Providing all your Parts Handling Needs!**

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## System Specification

**Input Voltage:** 115 VAC 60 HZ Single Phase  
**Input Current:** 1.4 Amp Fused Main

### Steel Conveyor, “Small Frame”, series

The “Small Frame” belt conveyor series is a profile that is used for light weight finished part applications. This conveyor is ideally suited for under-the-press application of small to medium sized injection molding machines, general purpose light weight parts. The fully welded construction of this model produces a solid, square frame for industrial use.

### Technical Information

**Frame:** 2.63” height, 13 gauge welded C channel steel frame fabricated with welded steel tubular cross members, optional steel slider bed for support

**Side Rails:** 2.5” extruded aluminum side rails with top return, overlap is .35” per side.

**Belt Widths:** 6”, 12”, 18”, 24”, 30”, 36”.

**Lengths:** 3’ to 15’ on 1’ increments (standard)

**End Drive:** Located at any one of the four corners, dependent upon length and application.

Positions M3, M4, M13, M14 are preferred, M1, M2, M11, M12 are available if applicable,

Side mounted drive is also available as an option. Standard drives are 120VAC/1/60 HZ motors.

**Speeds:** 20 FPM (standard), 33, 50 FPM - available at no charge

**AC Variable Speed:** (Available)

**Pulleys:** 2.125” diameter Drive and tail pulleys are both machined with trapezoidal crowns, shafts are 3/4” diameter and bearings are sealed self-aligning type. No lubrication is required.

**Take-up Assembly:** Allows for 2.5 inches of take-up of belt adjustment

**Electrical Controls:** NEMA 1 enclosure with push button manual motor starter with thermal overload protection and 12’ of SJ 16/3 cord with plug for 120VAC input power as standard.

**Supports:** Various telescoping legs, steel constructed with adjustable heights available

**Paint:** MAC metallic Silver (other colors available as options)

### Exclusive Series features

- **Frame:** Formed C-channel steel frame with welded cross members
- **Castings:** Supports bearings and pulleys, featuring a unique design for easy service and belt tracking adjustments
- **Side Rail Overlap:** Recessed belt edges, .335” per side, provide tight belt to rail tolerance
- **Pulleys:** Feature a machined trapezoidal crowned on head and tail which provides increased tracking signal
- **Motor Starter:** Includes manual push button with thermal overload
- **Hole pattern:** Pre-punched pattern on bottom of frame for repositioning leg supports along the frame length
- **Warranty:** Two year limited

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 UN-CRATING

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 parts (or any foreign pieces ) are removed.

## INSTALLATION

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- **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 ade-

## • SUPPORT INSTALLATION

1. Determine primary direction of product flow.
2. Refer to “Match-Mark” numbers on ends of conveyor sections.
3. Attach supports to both ends of drive section and to one end of intermediate or tail sections. Hand tighten bolts only at this time.
4. Adjust elevation to required height.

## • CONVEYOR SET-UP

1. Mark a chalk line on floor to locate center of the conveyor. ( floor mounted conveyors only)
2. Place the drive section in position.( If applicable when conveyor is broken down in pieces)
3. Install remaining sections.
4. Fasten all sections together , hand tighten bolts only.
5. Check to see that all sections and conveyor is level across the width of and length of unit. Adjust support legs as necessary to desired height.
6. Tighten all hardware, bolts, support legs.
7. Install electrical and motor wires. (If applicable)
8. Install belt (if applicable), center belt, and tighten or tension belt. See page 7 for belt tracking.

## • 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 manufactured.**

### **Controls:**

- A) Controls 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 alerted by a signal or by a designated person that the conveyor is about to start.
- C) Remotely and automatically controlled conveyors, and conveyors where operator are not manned or are beyond voice and visual contact from drive areas, loading areas, transfer points, and other potentially hazardous locations or areas on the conveyors path not guarded by location, position, or guards, shall be furnished with emergency stop buttons, pull cords, limit sensors or switches, or similar emergency stop devices.

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 or system. The emergency stop switch shall be installed so that they cannot be overridden from other locations.

## Operation

### • Operation Safety Precautions

- A) Only trained employees should be permitted to operate conveyors. Training shall include instruction in operation under normal conditions and emergency situations.
- B) Where employees safety is dependent upon stopping and/or starting conveyors, they shall be kept free of obstructions to permit ready access.
- C) No person should ride conveyors under any circumstances unless the person is specifically authorized by owner of employer to do so. Under those circumstances, such employee shall 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**.
- D) Employees or personnel working on or near a conveyor shall be instructed as to the location and operation of pertinent stopping devices or switches.
- E) A conveyor should be used only to transport material it is capable of handling safely.
- F) Under no circumstances shall be the safety characteristics of the conveyor be altered if such alterations would endanger employees or personnel near conveyor.
- G) Routine inspections should be performed to insure conveyor is running to specifications, and corrective maintenance programs shall be conducted to insure that all safety features or devices are function properly.
- H) 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 or employees 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 the conveyor during installation. These objects causes serious damage during start-ups.

After conveyor has been turned on and is operating, check motors, reducers, and moving part to make sure they are working properly and 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

### **BELT TRACKING**

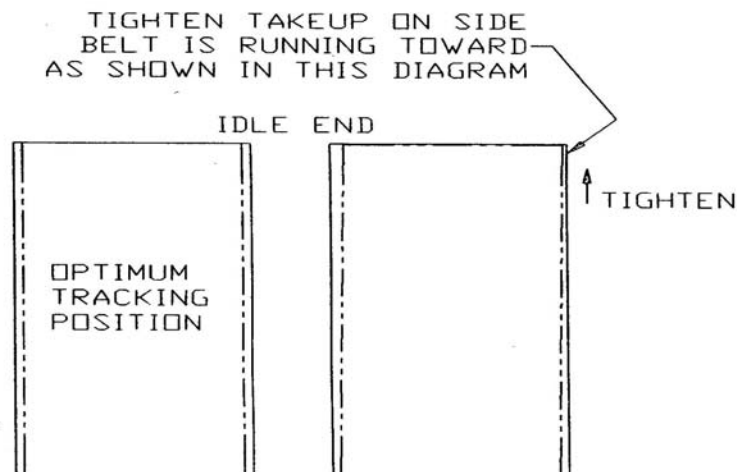
*MAC uses the most highly recommended pulley design by belt manufacturers. It is a trapezoidal style crown. The monofilament backed belt we use has a high resistance to belt stretch which results in minimal maintenance. If your conveyor comes:*

#### **A) Completely assembled with belt installed:**

*We recommend that upon initial power up, the belt be monitored for a short period of time to ensure nothing has loosened up during shipment, and the belt remains centered on the pulleys.*

#### **B) Requiring belt installation:**

- 1) *Square up drive pulley with frame.*
- 2) *Install belt according to assembly instructions guide.*
- 3) *Center the belt on the idle pulley.*
- 4) *Tighten up the idle pulley and maintain belt center.*
- 5) *Turn on power. If belt tracks off center of idle pulley follow the diagram below.*



**SERVICE LOG**

<b>Oil Chain/Sprockets</b>				
<b>Change Reducer Oil</b>				
<b>Checked Belt Tracking</b>				

<b>Oil Chain/Sprockets</b>				
<b>Change Reducer Oil</b>				
<b>Checked Belt Tracking</b>				

<b>Oil Chain/Sprockets</b>				
<b>Change Reducer Oil</b>				
<b>Checked Belt Tracking</b>				

<b>Oil Chain/Sprockets</b>				
<b>Change Reducer Oil</b>				
<b>Checked Belt Tracking</b>				



MAC utilizes two styles of drive packages. Please determine which style fits your conveyor, and maintain it according to the instructions relative to the particular conveyor model you have purchased.

### **INTEGRAL GEAR-MOTOR**

**(Used on MAC Model SF, most HI, LF, MAC-TRAC 100 & MAC Aluminum conveyors)**

*These units are designed for round the clock use and utilize a semi-fluid grease in the gear case. No change of lubricant is required as it is lubed for life.*

### **C-FACE MOTOR & RIGHT ANGLE REDUCER**

**(Used on MAC Model HD, and some HI conveyors)**

*These units use Mobil 600W lubricant. The lubricant should be changed after the first 250 hours of use, and thereafter, at regular intervals of 2500 hours or every six (6) months. Should an overload occur, the oil could degrade from heat and must be replaced. Failure to comply with these recommendations will void any written warranty from MAC.*

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### **CHAIN & SPROCKETS**

*It is recommended for long life and optimum operating conditions to lubricate with a quality chain lubricant every 4-6 weeks in a continuous run operation. In a periodic operating environment, every 6-8 weeks.*

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### **ELECTRICAL**

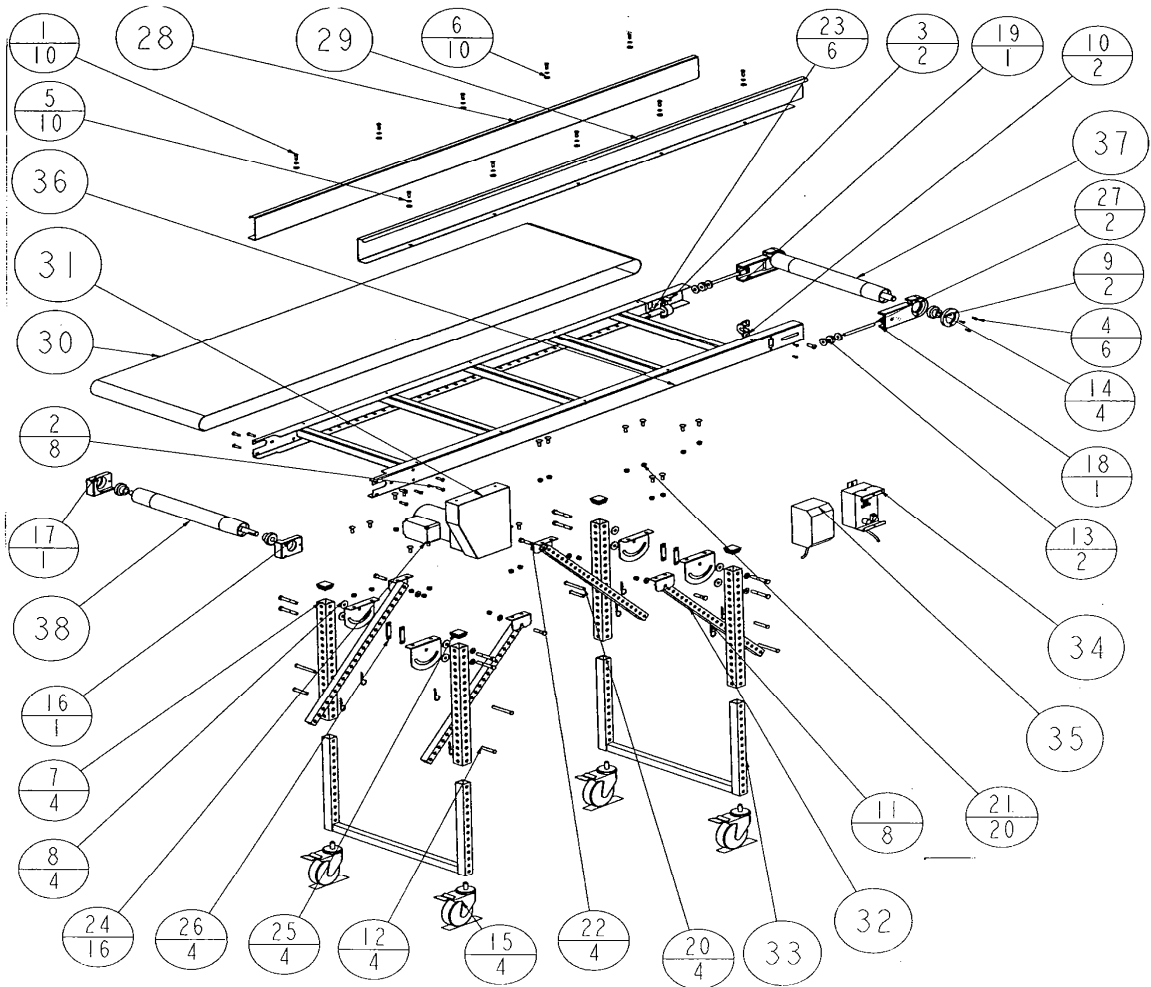
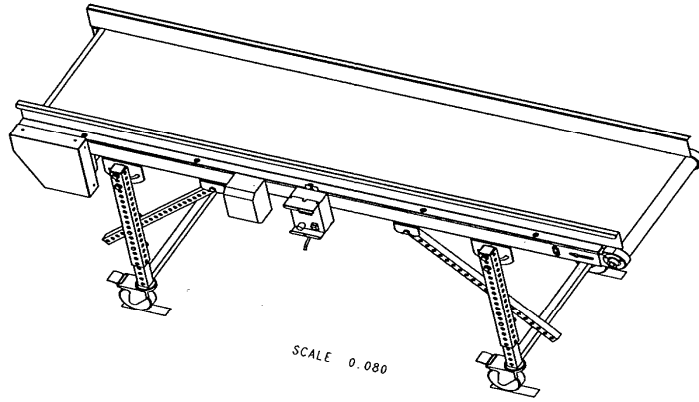
*Standard equipment is a UL approved IEC style starter. No maintenance is required as the unit comes from our factory adjusted and matched to the motor used. A 110/60/1 power source is the standard requirement. If you have ordered one of the many electrical options MAC has available, please refer to the accompanying electrical manual for any questions or call our factory.*

## Trouble Shooting

The following chart list is possible that may occur in the operation of a power conveyor.

TROUBLE WITH DRIVES	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 may have caused to stretch and created an 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. 3) Tighten chain.
Loud popping or grinding noise.	1) Defective bearing. 2) Loose set screws. 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.
Belt doesn't move, but drive runs	1) Conveyor is overloaded 2) Belt is too loose.	1) Reduce load. 2) Use belt take-up to tighten belt.

TROUBLE WITH BELT TRACKING	CAUSE	SOLUTION
Entire length of belt creeps at one spot only.	1) Idle or drive ends are out of line. 2) One conveyor section is not level or square. 3) Material build-up on pulleys or idles.	1) Adjust idles or drive pulleys as necessary. Please refer to belt tracking instructions. 2) Make necessary adjustment to leg supports. 3) Remove residue from idle or drive pulleys. Install belt, cleaners, or scrapers if possible.
Belt creeps to one side of tail pulley.	1) Idle pulley not properly aligned or square with bed.	1) Adjust as necessary. See belt tracking information.
Entire belt creeps to one side	1) Conveyor not straight. 2) Conveyor not level correctly. 3) Material build-up on idle, and drive pulleys.	1) Re-align bed or sections as necessary. 2) Correct as necessary. 3) Remove residue and install cleaners or scrapers if possible.



*SF Series Parts list*


<b>Item</b>	<b>Part #</b>	<b>Description</b>	<b>Qty</b>
1	0057	CAPSCREW, 1/4-20 X 3/4, BF BH	10
2	0058	CAPSCREW, 1/4-20 X 1,BF BH	8
3	0061	CAPSCREW, 3/8-18- X 1 BF BH	2
4	0062	CAPSCREW, 10-24 X 1/2 BF SH	6
5	0082	1/4 STAR LOCK WAHSER	10
6	0083	WASHER,FLAT, 1/4 IN, SAE ZINC	10
7	0085	WASHER, FLAT, 3/8 SAE ZINC	4
8	0087	WASHER NYLON	4
9	0090	RING, RETAINER, BEARING,OPEN HOLE	2
10	0091	SIM,MOLDED ADJUSTER NUT RETAINER	2
11	0095	CLIP,SPRING, 3/32 X 2	4
12	0096	PIN,CLEVIS, 3/8 X 2, PLATED	4
13	0100	CLM, 3/8-16 KNURLED NUT	2
14	0109	BEARING RRB, W/MOLDED ON RING	4
15	0127	CASTER, PAYSON, 054-4BF	4
16	1222	SF RIGHT DRIVE CASTING (FNSHD)	1
17	1225	SF LEFT DRIVE CASTING (FNSHD)	1
18	1228	SF RIGHT IDLE CASTING (FNSHD)	1
19	1231	SF LEFT IDLE CASTING (FNSHD)	1
20	3614	PIN, CLEVIS, 3/8 X 3, PLATED	4
21	3709	NUT,NYLOC, 5/16-18	20
22	4890	CAPSCREW, 3/8-16 X 1.5 ZC HH	4
23	7248	CAPSCREW, 10-24 X 1/2 BF BH	6
24	7598	BOLT,CARRIAGE, 5/16-18, PLAIN	16
25	7662	CAP,PLASTIC, 1.5 IN SQUARE TUBE	4
26	7937	NUT, 2-HOLE 3/8-16 ON 2.0 CENTERS	4
27	9938	3/8-16 THREADED ROD	2
28	OPTIONAL	LEFT SIDE RAIL	1
29	OPTIONAL	RIGHT SIDE RAIL	1
30	OPTIONAL	SF BELT	1
31	OPTIONAL	ASSY,DRIVE MOTOR KIT	1
32	OPTIONAL	ASSY,LEG BRACE	4
33	OPTIONAL	ASSY,LEG KIT	2
34	OPTIONAL	ASSY, AC VARIABLE SPEED CONTROLLER	1
35	OPTIONAL	ASSY,AC FIXED SPEED STARTER	1
36	OPTIONAL	ASSY,SF FRAME	1
37	OPTIONAL	WLDMNT,SF IDLE PULLEY	1
38	OPTIONAL	WLDMNT,SF DRIVE PULLEY	1

## • How to order replacement parts for SF Series

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

When ordering replacement parts

1. Contact factory from whom conveyor was purchase.
2. Give conveyor Model Number and Serial Number or Order number.
3. Give type of part number and complete descriptions form parts list.
4. If you are in a breakdown situation, tell us.



**MAC automation Concepts, Inc.**  
1760 Kilkenny Court  
Woodstock, Illinois 1-815-337-300

**Model Number**

**Serial Number**

**Volts**  **Phase**  **Amps**

An arrow points from the 'Phase' label to the 'Serial Number' input field.

**MAC Model Number and Serial Number**

### Two Year Limited Warranty

Molding Automation Concepts, Inc. warrants all products manufactured by it to be free of defects in workmanship and materials when used under normal operating conditions. Use or service with abrasive or corrosive chemicals or materials or in a corrosive or abrasive atmosphere shall not be deemed normal. This warranty shall be in effect for a period of twenty-four months from date of purchase. Molding Automation Concepts obligation under this warranty is limited to repairing at Molding Automation Concepts factory or furnishing a replacement for any part, or correcting any workmanship, which shall be demonstrated to Molding Automation Concepts satisfaction to have been defective at the time of delivery and with respect to which a written claim specifying the particular defect or defects shall have been delivered to Molding Automation Concepts within two (2) years from the date of delivery to the original purchaser.

No other warranty whether express or implied (including any warranty of merchantability of fitness) shall exist in connection with the sale or use of any Molding Automation Concepts products.

Molding Automation Concepts liability under this warranty shall be solely limited to repair or replacement of Molding Automation Concept's product within the warranty period and Molding Automation Concepts shall not be liable, under any circumstances for any consequential, incidental, direct, special, indirect, damages or expenses associated with warranted products including, without limiting the generality of the foregoing, liability for loss of production, or any damages to person or property.

Molding Automation Concepts, Inc. does not warrant equipment manufactured by other, but will submit the manufacture's warranty to purchase upon request.

Molding Automation Concepts will make no allowance for repairs, alterations or other work done unless specifically agreed to in writing, Purchaser agrees that purchaser's sole remedy for liability of any kind, including negligence with respect to the equipment and services furnished by Molding Automation Concepts shall be limited to the remedies provided herein.

