

Ion Technologies EF50-EF100

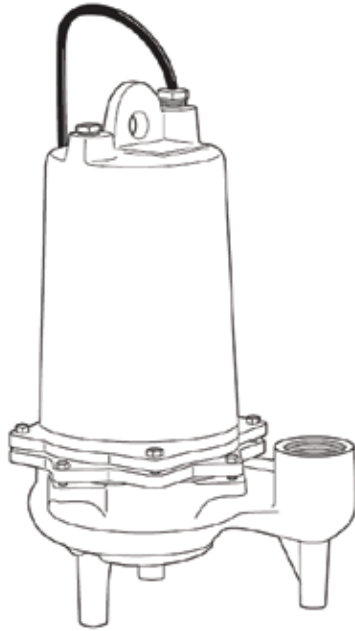
Submersible Effluent & Sewage Pumps

OPERATION MANUAL

Dated: 11/22/2017

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SAFETY WARNINGS

Thank you for purchasing your Ion Technologies Pump. To help ensure years of trouble-free operation, please read the following manual carefully.



CAUTION: Read these safety warnings first before installing, servicing, or operating any pump.

This manual contains important information for the safe use of this product. Read this manual completely and follow the instructions carefully. Reasonable care and safe methods relating to the installation and operation of this product should be practiced. Check local codes and requirements before installation.



WARNING: Risk of electrical shock or electrocution. May result in serious injury or death or fire hazard. Installer must disconnect all electrical sources prior to installation, handling or servicing. Only qualified personnel may install this system. NFPA 70/National Electric Code (NEC) or local codes must be followed. System must be properly grounded according to NEC. Do not lift pump by power cord.



WARNING: Biohazard risk. Once waste water source has been connected to system, biohazard risk exists. Installer(s) and/or service personnel must use proper personal protective

equipment and follow handling procedures per OSHA 29 CFR 1910.1030 when handling equipment after waste water source has been connected to system.



WARNING: Risk of Asphyxiation. Installer(s) and/or service personnel must use proper personal protective equipment and follow OSHA 29 CFR 1910.146 or OSHA 29 CFR 1926. Pump may be installed in a location classified by as a confined space.



WARNING: Risk of fire or explosion. Do not smoke or use open flames in or around this system. This system is not intended for use in hazardous locations per NFPA 70 National Electric Code. Do not pump flammable liquids. Consult factory for optional equipment rated for hazardous location use.



WARNING: Cutting Risk. Risk of serious cutting or amputation exists. Disconnect all power sources prior to servicing pump. Pump may start without warning.



CAUTION: Do not modify the cord and plug. When using the cord plug into a grounded outlet only. When wiring to a system control, connect the pump ground lead to the system ground.



CAUTION: Do not run the pump dry. Dry running can overheat the pump (causing burns to anyone handling it) and will void the warranty.

The pump normally runs hot. To avoid burns, allow it to cool for 30 minutes after shut down before handling it.

Submersible sump pumps are not approved for use in swimming pools, recreational water installations, decorative fountains or any installation where human contact with the pumped fluid is common. These pumps are designed to pump liquid forms of waste mixed with water and sewage consisting of solid wastes mixed with water. Do not throw away or lose this manual. Keep it in a safe place so that you may refer to it often for the continued safe operation of the product.

OVERVIEW

The MSP-EF50 & MSP-EF100 models are designed to handle 3/4" spherical solids. When used in effluent

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dosing or S.E.P. applications, the pump must be installed in a separate tank or compartment at the discharge side of the septic tank. Never install pump in main tank where sludge collects. These pumps are available in single phase and three phase. All three phase units and all duplex installations must be used with a control box. The impellers are enclosed two vane type to handle $\frac{3}{4}$ " spherical solids and are available made of engineered thermoplastic. All pumps have a 2" NPT discharge. These pumps are not for use in swimming pools, fountains, or marine areas.

AIR LOCKING

A sump pump is said to be air locked if water traps air in the pump and it cannot get out, thus preventing the pump from operating. In installation of this type a $\frac{1}{8}$ " hole should be drilled in the discharge pipe below the check valve. The check valve should be 12 to 18 inches above pump discharge. Do not put check valve directly into pump discharge opening.

PACKAGING

Each pump is packaged separately in a carton marked with a catalog number.

MOTOR TYPE

Motors are single or three phase, 60 hertz, 3450 RPM with class B insulation. All single phase motors are permanent split-capacitor (PSC) type with built-in on-winding overload protection and do not require a start switch or start relay. The three phase pump motors require a magnetic starter with 3 leg overload protection. All motors have upper and lower ball bearings and all are oil-cooled and lubricated.

INSTALLATION



WARNING: Basin or tank must be vented in accordance with local plumbing codes. These pumps are not designed for and can not be installed in locations classified as hazardous in accordance with the National Electric Code ANSI/NFPA 70. The discharge pipe must be the same

size as the pump discharge (2 inches) or larger. In order to ensure sufficient fluid velocity to prevent any residual solids from collecting in the discharge pipe, it is recommended that a minimum flow of 2 feet per second be maintained (21 GPM through 2" pipe and 46 GPM through 3" pipe). It is recommended that PVC or equal pipe is used for corrosion resistance. A full flow (ball or gate) shut-off valve must be installed to prevent back flow of effluent if the pump must be removed for service. A check valve must be installed on sewer systems where conditions allow to prevent back flow and to reduce wear on the pump system.

INSTRUCTIONS

Pumps to be installed by qualified personnel only.



CAUTION: Risk of electric shock. Do not remove cord and strain relief. Do not connect conduit to pump.

Three phase pumps are always installed with control boxes having magnetic starters with 3 leg overload protection. Do not try to run three phase pumps directly across the line.

To Connect Pump:

Run wire from pump to control box or appropriate junction box suitable for enclosing splice connections. With power to control box off, connect green (ground) line to ground lug. Connect black (power) wires to power lead terminals. Note: for a typical CE style control box, these terminals are marked M1, M2 and M3. Make sure that all wires are inside control box and not in a position to be pinched or shorted when the door is closed.

All three phase motors can run either direction. Rotation can be changed by interchanging any two line leads at magnetic starter. Be sure circuit breaker is off before making this change. To find if rotation is correct operate pumps and check delivery operation. If flow and head is low (refer to pump curves shown in this manual) the rotation is wrong. With duplex pumps check operation of both pumps.

All pump impellers either single or three phase must turn counterclockwise when looking into pump inlet. If uncertain of rotation, turn off power and lift pump from basin with cord connected and lay pump on side so impeller can be seen. Turn on power and start pump

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using hand position of h-o-a switch. Turn on and off fast so that coast of impeller can be seen. Never put hand or fingers on the impeller. Interchange any two l line leads at the magnetic starter to change rotation.

TROUBLESHOOTING

Pump does not run or start when water is up in tank.

1. Check for blown fuse or tripped circuit breaker.
2. Where control panel is used be sure H-O-A switch is in the auto position. If it does not run, turn switch to the hand position and if the pump runs then the trouble is in the automatic electrical system. Have an electrician make electrical checks.
3. Check for burned-out motor. Occasionally lightning can damage a motor even with lightning protection.
4. Where plug-in cords are used be sure contact blades are clean and making good contact. Do not use plug-in cords inside a sump or wet well.

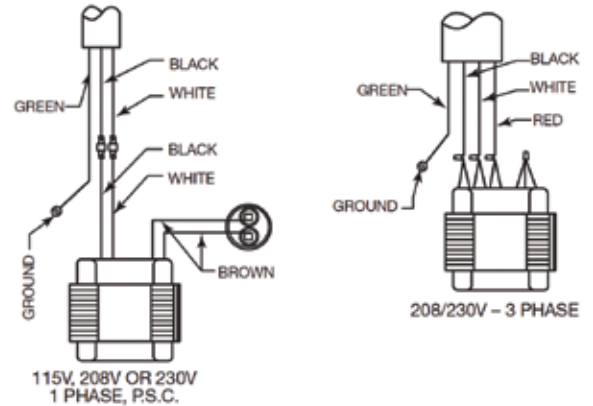
Pump runs but does not deliver flow.

1. Check air lock. Start and stop pump several times; if this does not help it may be necessary to loosen a union in the discharge line to relieve air lock.
2. Check valve may be installed backward. Check flow arrow on valve bod. Check shut-off valve. It may be closed.
3. Check vertical elevation. It may be higher than pump can develop. (See pump curve.)
4. Pump inlet may be plugged. Remove pump to check.



CAUTION: always unplug power cord and turn off all main and branch circuit breakers before doing any work on the pump. Proper lockout procedure should be followed. If control panel is remote from pump, disconnect lead wires to motor so that no one can turn the circuit breaker back on. If motor is three phase mark the leads so they can be replaced in the same order.

WIRING DIAGRAM



3 Year Residential Warranty

1. **Coverage and Term.** Metropolitan Industries, Inc. (“**Metropolitan**”) warrants to the original purchaser (the “**Buyer**”) of each Ion® product (the “**product**”), that any part thereof which proves to be defective in material or workmanship within three (3) years from date of manufacture, will be replaced at no charge with a new or remanufactured part, F.O.B. factory. Buyer shall be responsible for all freight charges and all costs of field labor or other charges incurred in the removal and/or reinstallation of any product, part or component thereof.
2. **Exclusions. THE WARRANTY IS SUBJECT TO THE FOLLOWING CONDITIONS AND EXCLUSIONS:**
 - (a) The Warranty excludes products or workmanship which becomes defective as a result of: (i) earthquake, fire, storms, the elements or any other acts of God; (ii) normal wear and tear from use; (iii) accident, misuse, abuse or neglect; (iv) modifications made by Buyer or any third party, other than **Metropolitan**; and (v) Buyer’s failure to properly install, maintain, service and/or operate the product under normal conditions and according to manufacturer’s instructions.
 - (b) **Metropolitan** shall not be responsible for, and the Warranty shall not cover, extended damage which occurs because of Buyer’s failure to notify **Metropolitan** promptly in writing of apparent defects.
 - (c) Any part or component designated as manufactured by anyone other than **Metropolitan** shall be covered only by the express warranty of the manufacturer thereof.
 - (d) The Warranty shall lapse upon Buyer’s failure to fully comply with the terms and conditions of its contract with **Metropolitan**, including Buyer’s failure to pay the purchase price for the product or any portion thereof. Buyer’s subsequent compliance with the terms and conditions of any such contract, will not cause the term of the Warranty to extend beyond the time period set forth above.
 - (e) No actions taken by **Metropolitan** to correct a defect in a product shall extend the Warranty beyond the period set forth above. **Metropolitan** shall not be obligated to remedy any defect, where otherwise required pursuant to the Warranty unless and until Buyer notifies **Metropolitan** in writing of the defect and then only if such notification is made prior to the expiration of the period set forth above.
3. **Process of Claims and Repairs.** **Metropolitan** agrees that if the product or any part or component thereof shall fail to conform to the terms of this Warranty, **Metropolitan** shall replace such nonconforming product, part or component at the original point of delivery and furnish instruction for its disposition. Any transportation charges involved in such disposition and all costs of field labor or other charges incurred in the removal and/or reinstallation of any product, part or component thereof shall be the responsibility of Buyer.
4. **Limitation on Liability.** Notwithstanding any provision to the contrary, **Metropolitan’s** entire liability under this Warranty shall not in the aggregate exceed, and Buyer’s exclusive and sole remedies are, to the extent permitted by law, shall be to secure replacement of the defective product. **UNDER NO CIRCUMSTANCES SHALL METROPOLITAN BE LIABLE UNDER THE WARRANTY FOR ANY INDIRECT, PUNITIVE, SPECIAL, EXEMPLARY, CONSEQUENTIAL OR INCIDENTAL DAMAGES (INCLUDING LOST PROFITS, REVENUE, USE OR ECONOMIC ADVANTAGE).**
5. **Express Waiver of Any Other Warranties.** **THE EXPRESS WARRANTY SET FORTH IN THIS WRITTEN WARRANTY IS THE ONLY WARRANTY MADE BY METROPOLITAN, OR ANY OTHER PARTY, IN CONNECTION WITH ANY PRODUCT PURCHASED FROM METROPOLITAN. NEITHER METROPOLITAN, NOR ANY OTHER PARTY, MAKES ANY OTHER EXPRESS OR IMPLIED WARRANTY WHICH IS NOT SET FORTH HEREIN, AND METROPOLITAN HEREBY DISCLAIMS AND BUYER HEREBY WAIVES ALL IMPLIED WARRANTIES, INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY AND THE IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.**
6. **Not Transferable.** The Warranty may not be transferred and shall be void on the sale or other transfer of the product.
7. **Products and Warranty Subject to Change.** **Metropolitan** reserves the right to make revisions to its products and their specifications, and to revise this Warranty and related information without notice.