

INSTALLATION AND SERVICE MANUAL

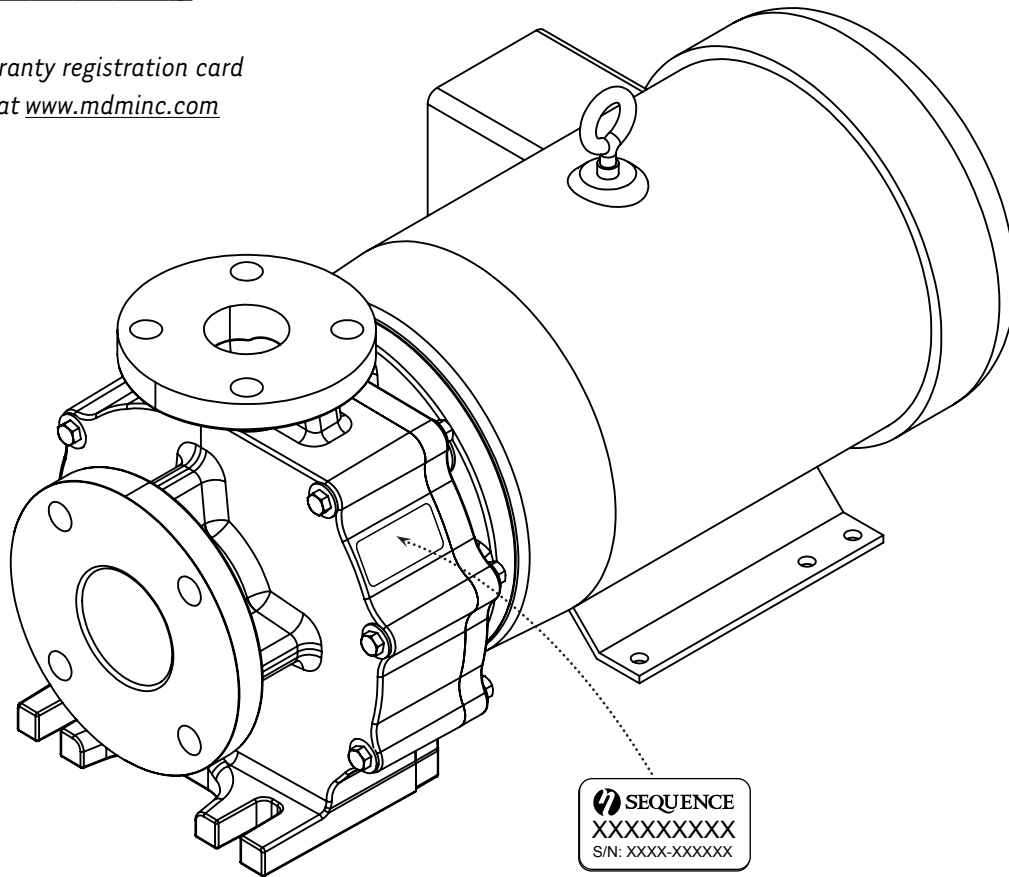
Please fill in for future reference:

MODEL: _____

SERIAL NUMBER: _____

DATE PURCHASED: _____

* Please fill out the warranty registration card
in this manual or online at www.mdminc.com



TYPE: END-SUCTION CENTRIFUGAL
MOTOR: NEMA 143JM-215JM
PORT SIZE: 3" FLANGED INLET, 2" FLANGED DISCHARGE

HORSEPOWER: 3/4 HP THROUGH 15 HP
HARDWARE: STAINLESS STEEL
SEAL OPTIONS: STAINLESS STEEL WITH BUNA AND VITON

WARNING: Please read completely before you install or operate your new pump! Do NOT allow this pump to become submerged!
Never run dry - Never reverse rotation. Never exceed an internal case pressure of: 100 PSI.



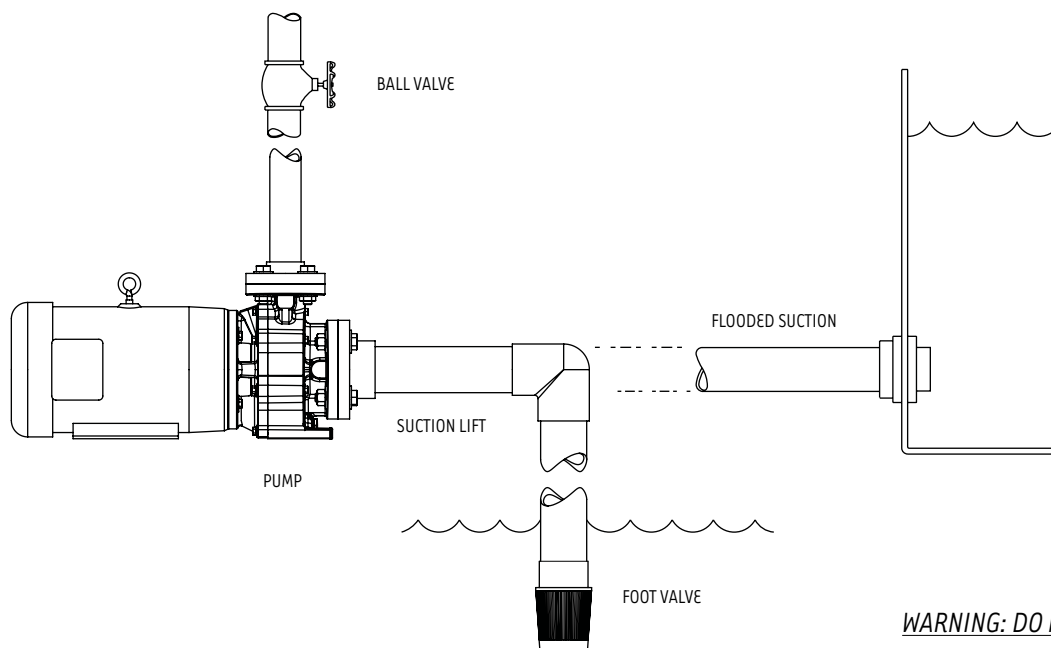
SEQUENCE® TITAN

We congratulate you on your choice of the Sequence® Centrifugal Pump! It has been carefully designed using the advantages of today's technology and carefully constructed to give you the dependability of yesterday. To insure proper performance, we urge you to carefully follow the instructions in this manual. If you have any questions, call your nearest distributor or MDM for assistance.

INSTALLATION

Please read carefully! When properly installed, the Sequence® Pump will provide dependable trouble-free service.

1. Locate the pump as near the fluid source as possible. A flooded suction situation is preferred.
2. Mount motor base to a secure, immobile foundation.
3. The pipe fittings should be self-supported and in neutral alignment with each port. (i.e. Fittings must not be forced into alignment which may cause premature line failure or damage to the pump volute.)
4. Never restrict the intake. Keep both input and discharge lines as free of elbows and valves as possible. Always use pipe of adequate diameter. This will reduce friction losses and maximize output.
5. The Sequence® Pump is not self-priming! It must not be run dry! We recommend a flooded suction installation. Please read carefully! When properly installed, the Sequence® Pump will provide dependable, trouble-free service.
6. For additional plumbing tips, review MDM's website: www.mdminc.com for pond plumbing and pump installation hints.



WARNING: ALWAYS SHUT OFF ELECTRICAL POWER BEFORE INSTALLATION AND / OR SERVICING THIS PUMP! ALL ELECTRICAL WIRING SHOULD MEET STATE AND LOCAL ORDINANCES. IMPROPER WIRING MAY NOT ONLY BE A SAFETY HAZARD BUT MAY PERMANENTLY DAMAGE THE MOTOR AND/OR PUMP! 50 HZ MOTORS AVAILABLE - CONTACT YOUR SUPPLIER FOR INFORMATION.

ELECTRICAL HOOK-UP

1. Check that supply voltages match the motor's requirements.
2. Check motor wiring and connect, according to instructions on motor, to match supply voltage.
3. Verify motor rotation with rotation meter. Incorrect rotation can cause serious damage to pump and/or motor. MDM does not recommend checking rotation by quickly switching power on and off because serious damage can occur.
4. Power cord should be protected by conduit or by cable and be of proper gauge. It should be no longer than necessary.
5. Power should be drawn directly from a box with circuit breaker protection or with a fused disconnect switch.



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Sustainable, Efficient.

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PUMP END ASSEMBLY

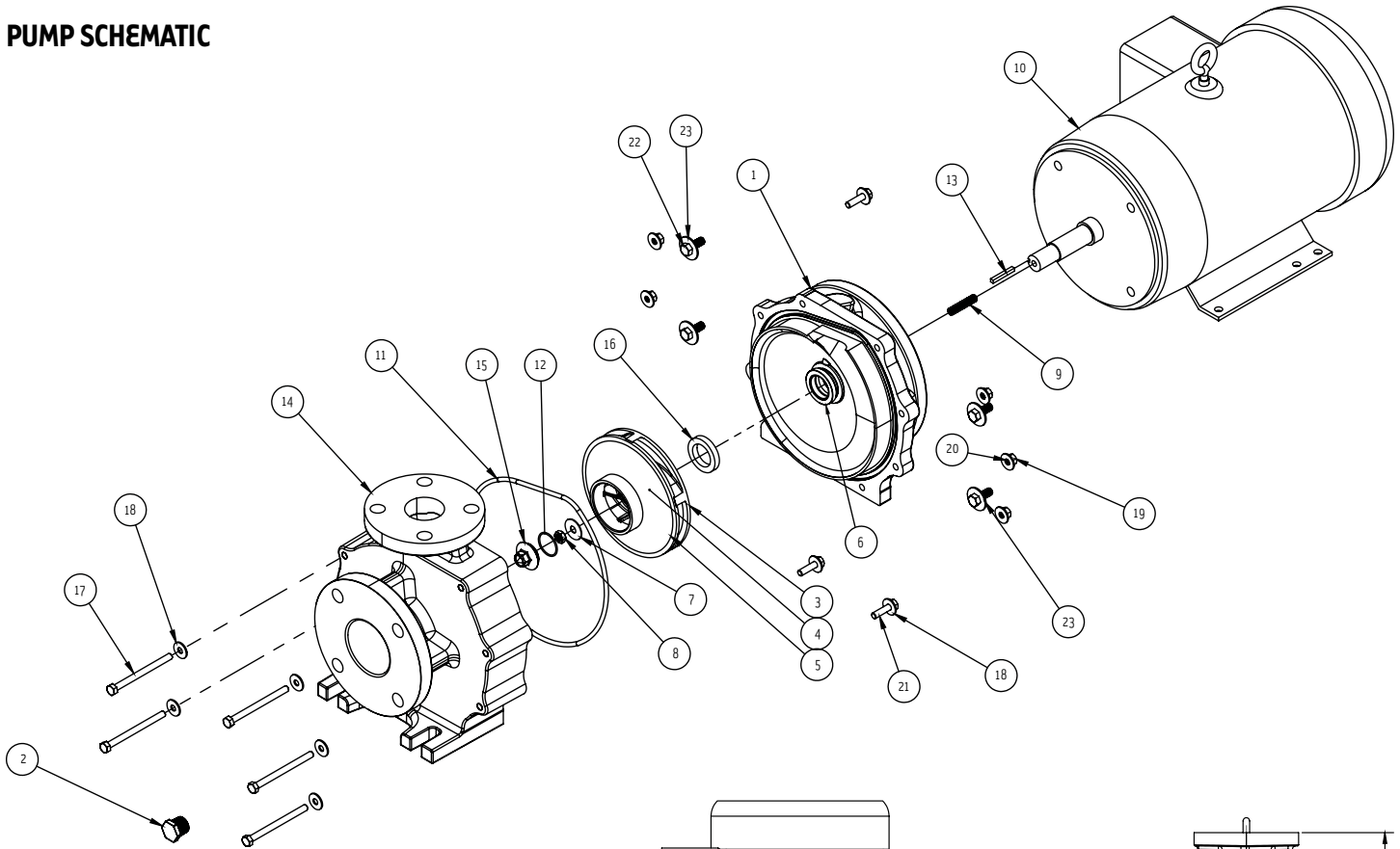
1. Clean and inspect all pump parts (o-rings, seal heads, seal seats, motor shaft, etc.).
2. Place slinger (rubber washer) over motor shaft. Pump/bracket/impeller assembly can now be pulled back from Volute.
3. Where applicable, check motor for rotation prior to assembling pump to motor.
4. For metallic seal head assembly installation: apply sealant to the bracket bore ID wall and around the seal case - follow sealant mfg instructions. We recommend using Gasgacinch®, Perrmatex®, or 3M™ 1300L. Silicone sealant can also be used. Press seal head into bracket using a tool that will apply pressure to the seal case shoulder; do not apply pressure to the carbon or silicon carbide seal head.
5. For seal seat installation: carefully lubricate the seal seat elastomer OD and impeller hub ID with water. Press the seal seat into the impeller hub making certain that the ceramic is bottomed and sits evenly - the sealing surface should be parallel with the impeller hub.
6. Align Bracket with holes in motor face and mount bracket to motor with four 3/8" ID x 1" OD washers and four 3/8"-16 x 1.0" long stainless steel hex cap screws using 9/16" wrench. (Use 1/2"-13 x 1.0" long stainless steel hex head cap screws and 1/2" washers for frame sizes 213JM and above, using 3/4" wrench.)
7. Assemble 3/16" square x 1.50" long stainless steel key in groove of motor shaft.
8. Assemble 3/8"-16 x 1.75" long stainless steel threaded rod with hex recess into end of motor shaft, using 3/16" Allen wrench. Threaded rod should extend from shaft approximately .720 +/- .050" (reference Fig. 1 of insert drawing).
9. Carefully clean carbon-graphite and ceramic sealing surfaces with lint-free tissue and alcohol. Do not use silicone lubricants or grease!
10. Slide impeller on motor shaft, aligned with key.
11. Assemble special impeller washer over threaded rod. Secure with 3/8"-16 stainless steel hex jam nut using 9/16" long reach socket; hold impeller while tightening.
12. Lightly grease cap o-ring with silicone grease, assemble cap with o-ring over threaded rod and tighten with 11/16" socket. Do not over tighten.
13. Assemble large o-ring in groove in bracket. Use silicone grease only if necessary.
14. Assemble volute to bracket using five 5/16"-18 x 4" long stainless steel hex head cap screws, ten 5/16" flatwashers, five 5/16" lockwashers and five 5/16"-18 hex nuts. Use three 5/16"-18 x 1.25" long stainless steel hex head cap screws with flat washers, lockwashers and nuts in the threaded inserts in the volute), using 1/2" wrench.
15. Assemble drain plug in volute drain hole and tighten. Use teflon tape or equivalent.
16. Before operating pump, allow a proper cure time for the sealant used in step 4.
17. Note: For assembling a discharge flange, use 5/8" x 2 1/4" long bolts, narrow washers, and hex jam nuts (provided in the discharge piping hardware kit).

DISASSEMBLY

1. Shut off power to motor before disconnecting any electrical wiring from the motor.
2. Disassemble volute from bracket by removing the five 5/16"-18 x 4" long hex cap screws, and the three 5/16"-18 x 1.25" hex cap screws. Pump/Bracket/Impeller Assembly may now be pulled back from the Volute.
3. Remove impeller eye 'cap' by unscrewing counterclockwise. Remove 3/8" nut using 9/16" socket wrench, unscrew counterclockwise. Slide impeller off of motor shaft.
4. Remove ceramic piece from impeller. Eye protection is strongly recommended. (If you are replacing the seal)
5. Detach bracket from motor.
6. Remove mechanical seal from bracket by pressing out from the back. Do not dig out from the front! (If you are replacing the seal).



PUMP SCHEMATIC



NUMBER	DESCRIPTION	QTY.
1	BRACKET	1
2	DRAIN PLUG	1
3,4,5	IMPELLER	1
6	SEAL HEAD	1
7	IMPELLER WASHER	1
8	IMPELLER NUT	1
9	THREADED ROD, 3/8"-16 x 1.75" LONG, SS	1
10	MOTOR	1
11	O-RING, VOLUTE	1
12	O-RING, CAP	1
13	KEY, SQUARE, .188" x 1.5" LONG, SS	1
14	VOLUTE	1
15	CAP	1
16	SEAL SEAT	1
17	HEX HEAD CAP SCREW 5/16"-18X4" LONG, SS	5
18	WASHER, FLAT, 5/16", SS	13
19	NUT, HEX, 5/16"-18, SS	5
20	WASHER, LOCK, 5/16", SS	8
21	HEX HEAD CAP SCREW 5/16"-18X1.25" LONG, SS	3
22	HEX HEAD CAP SCREW, 3/8-16 X 1" LONG, SS (1/2"-13 x 1.25" LG for frame sizes 213JM and larger)	4
23	WASHER, FLAT, 3/8" X 1.0" OD, SS (1/2" WASHER for frame sizes 213JM and larger)	4

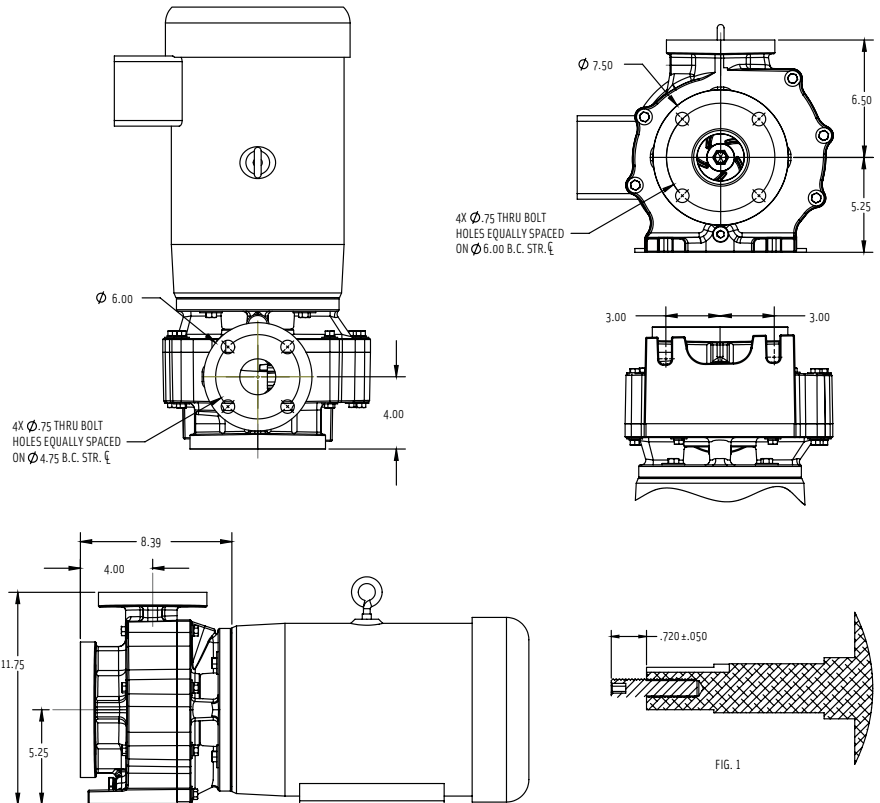


FIG. 1

MAINTENANCE

Lubrication:

Rotary Seal – Requires no lubrication after assembly.

**The pump must be drained before servicing or if stored below freezing temperatures. Periodic replacement of seals may be required due to normal carbon wear.*

TROUBLE SHOOTING AID

Motor Will Not Rotate

1. Check for proper electrical connections to motor.
2. Check main power box for tripped circuit breaker.

Motor Hums Or Will Not Rotate

1. Check for proper electrical connections to motor and proper wire size according to local electrical codes.
2. Check for foreign material inside pump.
3. Remove volute and check for impeller rotation without excessive resistance and/or noise.
4. Remove pump and check shaft rotation for excessive bearing noise.
5. Check start switch and/or capacitor.

Pump Operates With Little Or No Flow

1. Check to insure that pump is primed.
2. Check for leaking seal.
3. Improper line voltage to motor or incorrect rotation.
4. Check for clogged inlet port and/or impeller.
5. Defective check or foot valve.
6. Check inlet lines for leakage, either fluid or air.

Pump Loses Prime

1. Defective check or foot valve.
2. Inlet line air leakage.
3. Seal leaking.
4. Fluid supply low.

Motor Or Pump Overheats

1. Check for proper line voltage and phase, also proper motor wiring.
2. Binding motor shaft or pump parts.
3. Inadequate ventilation.
4. Fluid being pumped should not exceed 194°F (90°C) for extended periods of time

MDM INCORPORATED LIMITED WARRANTY

This product is warranted to the initial purchaser to be free of defects in materials and workmanship at the time of initial purchase and for a period of 3 years for Sequence® products. In the event this product malfunctions within one year from the date of purchase, the sole obligation of MDM, Incorporated (hereinafter referred to as MDM) will be to repair the unit or replace with an equivalent new or factory refurbished unit at MDM's discretion, subject to the following conditions:

1. The malfunction is proved attributable to a defect in materials or workmanship, including repairs performed under this warranty. Malfunction for any other reason-including but not limited to misuse, negligence, accident, or tampering with parts, incorrect wiring, or improper installation-will not be remedied under this warranty.
2. MDM specifically does not guarantee chemical compatibility, and expressly does not warrant units from any problems caused by chemical attack or failure due to incompatibility of fluid being pumped with pump materials of construction.
3. **Purchaser shall also retain and present to MDM evidence of purchaser's compatibility tests under actual operating conditions.**
3. All warranty repairs must be performed by MDM or an MDM authorized company. Purchaser must retain the purchase receipt and present it with this certificate as proof of ownership and entitlement to warranty repairs. Unauthorized repairs will not be compensated by MDM, and are not the responsibility of MDM, and if such repairs damage the product, such damages are not remedied under this warranty.
4. Purchaser shall bear all shipping, packing and insurance costs and all other costs, excluding labor and parts necessary to effectuate repairs under this warranty.
5. Periodic check-ups are not covered by this warranty.
6. **This warranty is in lieu of all other express warranties which now or hereafter might otherwise arise with respect to this product.**

uct. Any and all limited warranties, including the warranties of merchantability and fitness for particular purpose, shall have no greater duration than the duration period of the express written warranty applicable to this product, and shall terminate automatically the expiration of such duration period. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. No action shall be brought for breach of any implied or express warranty after one year subsequent to the expiration of the duration period of the express written warranty.

7. Incidental and consequential damages caused by malfunction, defect, or otherwise, and with respect to breach of any express or implied warranty, are not the responsibility of MDM, and, to the extent permitted by law, are hereby excluded both for property damage and, to the extent not unconscionable, for personal injury damage. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

8. This warranty does not apply to any malfunction arising out of any application of this product other than normal use, unless such application is upon request specifically approved in writing by MDM.

9. The provisions of this warranty are severable and if any provision shall be deemed invalid, the remaining provisions shall remain in full force and effect.

10. Rights under this warranty are not assignable without the express prior consent in writing by MDM and, regardless of the terms of such consent in writing, such assignee shall have no greater rights than his assignor had against MDM.

11. After the warranty period, units requiring maintenance or repair may qualify for our exchange program. The exchange program provides an opportunity to repair/replace your pump and/or motor at a nominal charge. Please refer to the Exchange Policy or contact MDM for details and current pricing.

Name: _____
 Address: _____
 City: _____ State: _____ Zip: _____
 Model: _____ Serial Number: _____
 Date purchased: _____ Where purchased: _____



MDM INCORPORATED

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