MOLEAER NEXUS NANOBUBBLE GENERATOR

INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

IMPORTANT SAFETY INSTRUCTIONS
READ AND FOLLOW ALL INSTRUCTIONS
SAVE THESE INSTRUCTIONS

MOLEAER

ADVANCING NANOBUBBLE TECHNOLOGY

CUSTOMER SERVICE / TECHNICAL SUPPORT

If you have questions about ordering Moleaer, Inc. replacement parts and products, please use the following contact information:

Customer Service
Monday to Friday: 8 AM to 5 PM PST
Phone: +1 (424) 558-3567
Email: info@moleaer.com

Website
www.moleaer.com

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1 INTRODUCTION

Moleaer (Latin for “tiny air”) is a technology company that integrates nano-scale materials into proprietary technologies to develop highly efficient and simple solutions for transferring gas into liquids. These solutions enhance the performance and modify the functionality of liquids for a wide variety of applications.

The Moleaer Nexus product is an inline nanobubble gas-injection technology tailormade for the horticulture and aquaculture markets. Its principle function is to alter the economics of using oxygen to improve the quality of water, promote plant and fish growth and suppress disease. With simplicity and near perfect efficiency, the Nexus nanobubble generator saturates water with dissolved oxygen and trillions of negatively charged nanobubbles. These tiny bubbles, about 100x smaller than a red blood cell, have several unique physical properties that make them behave very different from normal bubbles. Nanobubbles are neutrally buoyant and remain stable in solution for prolonged periods of time, creating an oxygen buffer in the water. The combination of the Nexus’s high oxygen transfer efficiency and stable oxygen enriched nanobubbles enable more readily available oxygen to reach oxygen dependent organisms to promote healthy growth.

2 SAFETY INSTRUCTIONS

IMPORTANT NOTICE

This guide provides installation and operation instructions for this product. Consult Moleaer with any questions regarding this equipment.

Attention Installer: This guide contains important information about the installation, operation and safe use of this product. This information should be given to the owner and / or operator of this equipment after installation. This Nexus nanobubble generator is for use for horticulture and aquaculture installations ONLY.

Attention User: This manual contains important information that will help you in operating and maintaining this product. Please retain it for future reference. Warnings and safety instructions for Moleaer Nexus nanobubble generators and other related products are available at: http://www.moleaer.com or call U.S. +1 (424) 558-3567 for additional free copies of these instructions.

READ AND FOLLOW ALL INSTRUCTIONS. SAVE THESE INSTRUCTIONS

This is the safety alert symbol. When you see this symbol on your system or in this manual, look for one of the following signal words and be alert to the potential for personal injury.

Warns about hazards that can cause death, serious personal injury, or major property damage if ignored.

Warns about hazards that may or can cause minor personal injury or property damage if ignored.

NOTE indicates special instructions not related to hazards. Carefully read and follow all safety instructions in this manual and on equipment. Keep safety labels in good condition; replace if missing or damaged.

When installing and using this electrical equipment, basic safety precautions should always be followed, including the following:

RISK OF ELECTRICAL SHOCK. Connect only to a branch circuit protected by a ground-fault circuit- interrupter (GFCI). Contact a qualified electrician if you cannot verify that the circuit is protected by a GFCI.

This unit must be connected only to a supply circuit that is protected by a ground-fault circuit-interrupter (GFCI). The GFCI should be provided by the installer and should be tested on a routine basis. To test the GFCI, push the test button. The GFCI should interrupt power. Push the reset button. Power should be restored. If the GFCI fails to operate in this manner, the GFCI is defective. If the GFCI interrupts power to the pump without the test button being pushed, a ground current is flowing, indicating the possibility of an electric shock. Do not use this pump. Disconnect the pump and have the problem corrected by a qualified service representative before using.

3 GENERAL WARNINGS

The Nexus system can come with and without a pump. When a pump is included with the system, never open the inside of the pump drive motor enclosure. There is a capacitor bank that holds a 230 VAC charge even when there is no power to the unit.

The Nexus pump is capable of high flow rates; use caution when installing and programming to limit pump's performance potential with old or questionable equipment.

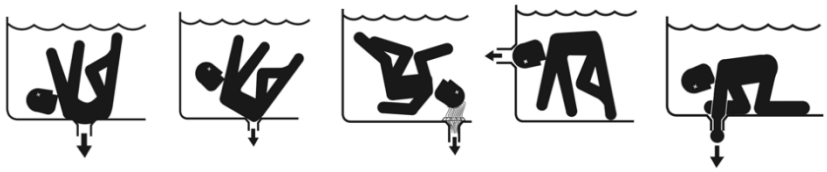
Code requirements for the electrical connection differ from state to state. Install equipment in accordance with the current National Electrical Code and all applicable local codes and ordinances.

Before servicing the pump switch OFF power to the pump by disconnecting the main circuit to the Nexus generator.

This appliance is not intended for use by persons (including children) of reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning the use of the appliance by a person responsible for their safety.

⚠ DANGER FAILURE TO FOLLOW ALL INSTRUCTIONS AND WARNINGS CAN RESULT IN SERIOUS BODILY INJURY OR DEATH. THIS PUMP SHOULD BE INSTALLED AND SERVICED ONLY BY A QUALIFIED SERVICE PROFESSIONAL. INSTALLERS, OPERATORS AND OWNERS MUST READ THESE WARNINGS AND ALL INSTRUCTIONS IN THE OWNER'S MANUAL BEFORE USING THIS PUMP. THESE WARNINGS AND THE OWNER'S MANUAL MUST BE LEFT WITH THE PRODUCT OWNER.

SUCTION ENTRAPMENT HAZARD: STAY OFF THE MAIN DRAIN AND AWAY FROM ALL SUCTION OUTLETS!



THIS GENERATOR PRODUCES HIGH LEVELS OF SUCTION AND CREATES A STRONG VACUUM AT THE MAIN DRAIN AT THE BOTTOM OF THE BODY OF WATER. THIS SUCTION IS SO STRONG THAT IT CAN TRAP ADULTS OR CHILDREN UNDER WATER IF THEY COME IN CLOSE PROXIMITY TO A DRAIN OR A LOOSE OR BROKEN DRAIN COVER OR GRATE.

⚠ DANGER **RISK OF ELECTRICAL SHOCK OR ELECTROCUTION: PUMPS REQUIRE HIGH VOLTAGE WHICH CAN SHOCK, BURN, OR CAUSE DEATH.**

BEFORE WORKING ON THE Nexus PUMP! Always disconnect power to the pump at the circuit breaker from the pump before servicing the pump. Failure to do so could result in death or serious injury to service person, system users or others due to electric shock.

NOTE: ALL SUCTION PLUMBING MUST BE INSTALLED IN ACCORDANCE WITH THE LATEST NATIONAL AND LOCAL CODES, STANDARDS AND GUIDELINES.

⚠ WARNING A clearly labeled emergency shut-off switch for the pump must be in an easily accessible, obvious place. Make sure users know where it is and how to use it in case of emergency.

⚠ CAUTION Install all electrical equipment, such as on/off switches, timers, and control systems, etc. to allow the operation (startup, shut-down, or servicing) of any pump or filter so the user does not place any portion of his/her body over or near the pump strainer lid, filter lid or valve closures. This installation should allow the user enough space to stand clear of the filter and pump during system start-up, shut down or servicing of the system filter.

⚠ CAUTION This generator has been evaluated for use with water only.

⚠ CAUTION Before operation, be sure to completely rinse the pump volute with water.

WARNING

RISK OF ELECTRICAL SHOCK.
This pump is supplied with a grounding conductor and grounding type attachment plug. To reduce the risk of electric shock, be certain that it is connected only to a properly grounded, grounding-type receptacle.

WARNING

Pumps improperly sized or installed or used in applications other than for which the pump was intended can result in severe personal injury or death. These risks may include but not be limited to electric shock, fire, flooding, suction entrapment or severe injury or property damage caused by a structural failure of the pump or other system component.

WARNING

The pump can produce high levels of suction within the suction side of the plumbing system. These high levels of suction can pose a risk if a person comes within close proximity of the suction openings. A person can be seriously injured by this high level of vacuum or may become trapped and drown. It is absolutely critical that the suction plumbing be installed in accordance with the latest national and local codes for aquaculture systems.

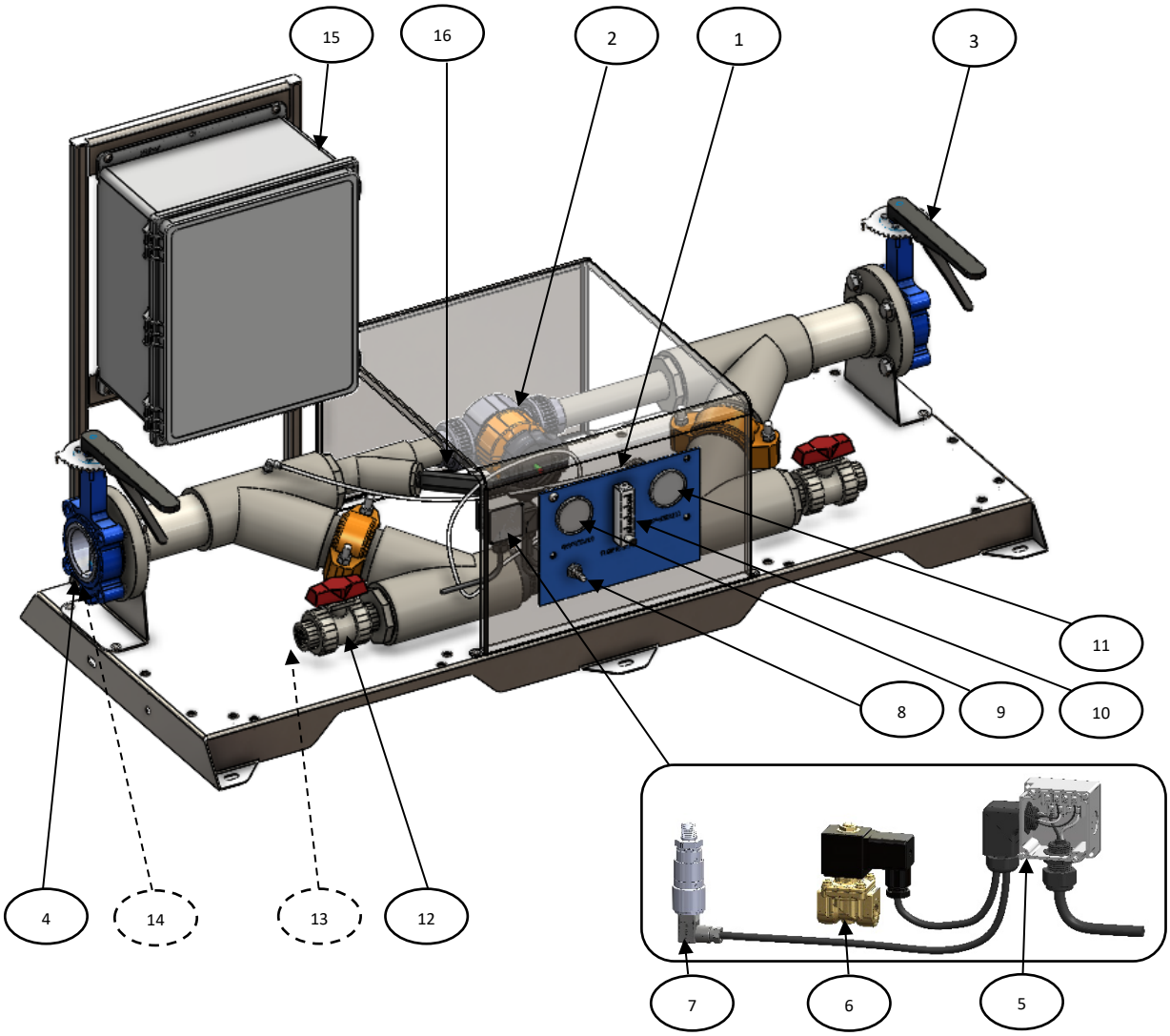
DANGER

HAZARDOUS PRESSURE: STAND CLEAR OF PUMP AND FILTER DURING STARTUP
Circulation systems operate under high pressure. When any part of the circulating system (i.e. locking ring, pump, valves, etc.) is serviced, air can enter the system and become pressurized. Pressurized air can cause the pump housing cover and valves to violently separate which can result in severe personal injury or death. Stand clear of all circulation system equipment when turning on or starting up pump. Before servicing equipment, make note of the filter pressure. Be sure that all controls are set to ensure the system cannot inadvertently start during service. Turn off all power to the pump.

General Installation Information

- All work must be performed by a qualified service professional, and must conform to all national, state, and local codes.
- Install to provide drainage of compartment for electrical components.
- The Nexus generator will function correctly only if it is properly sized to the specific application and properly installed.

4 EQUIPMENT DRAWING



1. Nanobubble Generator
2. Bypass Flow Valve
3. Discharge – Isolation Valve (Flange Mount)
4. Inlet – Isolation Valve (Flange Mount)
5. Terminal Box
6. Gas Solenoid
7. Mechanical Pressure Switch
8. Gas Inlet
9. Diffused Gas Pressure
10. Rotameter
11. Pump Pressure
12. CIP Valve
13. Metric Adapter CIP (Optional – Not Shown)
14. Metric Flange Adapter (Optional – Not Shown)
15. Control Panel (Optional)
16. DO Probe (Optional)

5 INSTALLATION

Only a qualified plumbing professional should install the Moleaer Nexus nanobubble generator. Refer to “Warning and Safety Instructions” on pages 3-5 for additional installation and safety information.

LOCATION

Be sure the Nexus generator location meets the following requirements:

1. Provide short, direct suction piping returns (reduces friction loss). For suction lifts over 10' (3 m) and liquid temperatures over 120º F (49ºC), consult pump performance curve for net positive suction head required (NPSH R).
2. The Nexus should be installed downstream and on the pressure side of the pump.
3. Install the Nexus generator in a sheltered, well ventilated area to protect from excess moisture (i.e., rain, splashing, etc.) and flooding.
4. Install and secure the Nexus generator on level concrete slab or firm surface (reduces vibration noise).
5. The Nexus generator location should allow access for servicing and maintenance.

PIPING - INTAKE

1. Be sure all plumbing connections are clean and tight to avoid possible air leaks and entrainment of air on the suction side of the pump.
2. Use larger pipe sizes for improved plumbing. Suction pipe diameter should be the same or larger than the pump inlet.
3. Plumbing on the suction side of the pump should be short as possible.
4. Install piping as close to the water level as possible.
5. Run straight, horizontal piping for the suction side of the pump. The length of the piping should be equal to five (5) pipe diameters.
6. Install screen filter on the intake pipe when using the Nexus generator in recirculating systems where debris can enter the system. Ensure mesh size does not restrict flow at the generator’s designed flow rate.

   Example: If system is plumbed with 3 in. diameter PVC pipe, then a straight section of pipe 15 in. long should be used for suction side of the pump.

If the Nexus generator is installed above the liquid source, the following MUST be provided:

7. Slope piping upward from liquid source.
8. Use a foot valve or check valve ONLY if necessary, for priming or to hold prime during intermittent duty.
9. The suction strainer or suction bell MUST be at least 3 times the suction pipe diameter area.
10. Ensure that the size and minimum submergence over suction inlet is sufficient to prevent air from entering through a suction vortex.

PIPING - DISCHARGE

1. Install a check valve suitable to handle the flow and liquids, and to prevent backflow. After the check valve, install an appropriately sized gate valve to be used to regulate the pump capacity, pump inspection, and for maintenance. When required, the pipe increaser should be installed between the check valve and the pump discharge.
2. Install discharge pipe at least 2’ below the water surface.

⚠CAUTION **LEAVING AIR VALVE OPEN WHEN PUMP IS NOT OPERATIONAL MAY CAUSE LOSS OF PRIME.**

FITTINGS

1. Install fittings (valves, elbows, tees, etc.) in the suction line no closer than five (5) times the pipe diameter to the front of the pump (e.g. 3” pipe = 15 in).
2. Do not install 90° elbows directly into pump inlet.

VALVES

1. Install gate or ball valves on suction and discharge pipes for maintenance of flooded suction systems - install no closer than five (5) times the suction pipe diameter.
2. Use a check valve in the discharge line when using this pump for any application where there is significant height to the plumbing after the pump.

3. Be sure to install check valves when plumbing in parallel with another pump. This helps prevent reverse rotation of the impeller and motor.
4.

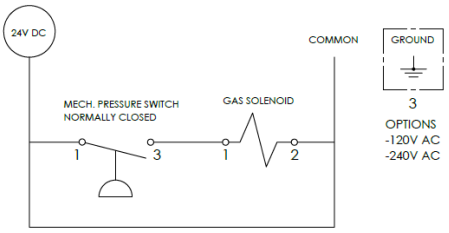
NOTICE: DO NOT USE THE ISOLATION VALVE TO THROTTLE PUMP. THIS MAY CAUSE LOSS OF PRIME, EXCESSIVE TEMPERATURES AND DAMAGE TO PUMP, VOIDING WARRANTY.

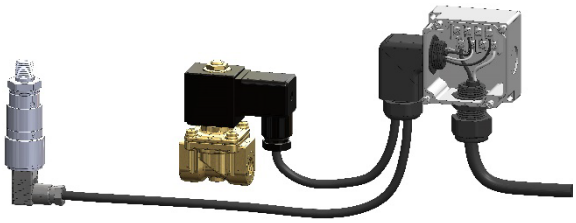
ELECTRICAL

1. Install all equipment in accordance with the National Electrical Code and all applicable local codes and ordinances.
2. A means for disconnection must be incorporated in the fixed wiring in accordance with the wiring rules.
3. If the supply cord is damaged, it must be replaced to avoid a hazard. The supply cord can be purchased separately from the manufacturer, its service agent or a qualified electrician.

- Solenoid needs to be operated by onsite controls in parallel with the pump circuit.
- If pump is on, the solenoid should be open, allowing gas to pass through.
- If pump is off, Solenoid needs to be closed/off.

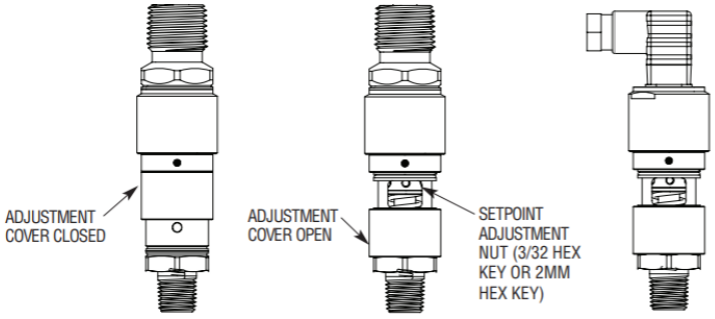
ELECTRICAL WIRING INSTALLATION





PRESSURE SWITCH

1. If pump is on but the solenoid is not open, adjustment to the mechanical pressure switch may be necessary. (Please see the note below)



WARNING

RISK OF ELECTRICAL SHOCK OR ELECTROCUTION. This Nexus nanobubble generator must be installed by a licensed or certified electrician or a qualified service professional in accordance with the National Electrical Code and all applicable local codes and ordinances. Improper installation will create an electrical hazard which could result in death or serious injury to users, installers, or others due to electrical shock, and may also cause damage to property.

Always disconnect power to the Nexus generator at the circuit breaker before servicing the pump. Failure to do so could result in death or serious injury to service people, users or others due to electric shock.

PUMP (OPTIONAL)

To connect the pump to an AC power source (for non-cord connected pumps):

1. Be sure all electrical breakers and switches are turned off before wiring the Nexus generator.

2. Be sure that the supply line voltage matches the motor voltage listed on the motor plate (example 230 VAC or 115 VAC). If they do not match, permanent motor damage may occur.

3. Size wiring for the Nexus generator according to the National Electrical Code. When in doubt, use a heavier gauge (larger diameter) wire. Heavier gauge will allow the motor to run cooler and more efficiently.

4. Use strain relief and be sure all electrical connections are clean and tight.

5. Cut the wires to the appropriate length so they do not overlap or touch when connected.

6. Permanently ground the Nexus generator using the green ground wire, as shown below. Use the correct wire size and type specified by National Electrical Code. Make sure the ground wire is connected to an electrical service ground.

7. Bond the motor to the structure in accordance with the National Electrical Code. UL requires use of a solid copper bonding conductor not smaller than 8 AWG. Run a wire from the external bonding screw or lug to the bonding structure. Connect the wire from the accessible wire connector on the motor to all metal parts of the structure and to all electrical equipment, metal conduit, and metal piping within 5 feet (1.5 m) of the inside walls of the structure. For Canada, a 6 AWG or larger solid copper bonding conductor is required.

UNIT ROTATION IS CLOCKWISE, WHEN VIEWED FROM THE MOTOR END. INCORRECT ROTATION MAY CAUSE DAMAGE TO THE PUMP AND VOIDS THE WARRANTY.

6 GAS – SPECIFICATIONS

The Moleaer Nexus nanobubble generator is designed for use with compressed oxygen.

DO NOT MIX GASES WITH THIS SYSTEM.

ALL GAS FITTINGS AND HOSES MUST BE MAINTAINED FREE FROM OIL AND LUBRICANTS.

Do not permit smoking or open flames in any areas where liquid oxygen is stored or handled. The Nexus generator must be separated from flammables and combustibles by at least 20 feet or a half-hour fire wall.

GAS CONNECTION

Moleaer Nexus generators come with a standard ¼" NPT connection. Connect the oxygen supply hose to the unit, with a ¼" male NPT fitting.

GAS FLOW & PRESSURE

1. Adjust the gas regulator on the feed gas tank or oxygen concentration (PSA) to supply the Nexus generator with a **minimum** gas pressure of **100 PSI (6.89 bar)**.

DO NOT EXCEED 140 PSI (9.65 BAR) IN GAS PRESSURE. EXCESSIVE GAS PRESSURE MAY COMPROMISE SEALS INSIDE THE GENERATOR AND RESULT IN A SUDDEN DROP IN PRESSURE. IF THIS OCCURS, CLOSE THE GAS FLOW METER COMPLETELY, REDUCE THE GAS PRESSURE FEEDING THE GENERATOR, AND THEN SLOWLY REOPEN THE VALVE AGAIN TO THE DESIRED GAS FLOW SET POINT.

2. Apply soapy water to gas fittings and connectors to ensure there are no gas leaks. If leaks are detected, then tighten fittings and / or connectors.

3. Gas flow rates can be adjusted depending on application and desired effect. The Nexus generators are designed to deliver a spectrum of nano and / or microbubbles to meet the requirements of the process or application. Low gas flow rates produce more nanobubbles and have a higher gas transfer efficiency, whereas higher gas flow rates produce both nano and microbubbles that have a lower gas transfer efficiency but higher mass transfer rate. Refer to the specification table for suggested gas flow rates for the different size units.

7 Nexus GENERATOR OPERATION

⚠CAUTION PUMP MUST BE FULLY PRIMED BEFORE OPERATION.

⚠WARNING OPERATION AT OR NEAR ZERO FLOW CAN CAUSE EXTREME HEAT, PERSONAL INJURY OR PROPERTY DAMAGE.

1. Open intake and discharge valves to flood piping and prime the pump**.**
   Note, if the pump and the Nexus generator is located above the water line of the tank or water body, it is important to install a check valve just above the intake screen.

2. Turn on pump starter switch and run pump at normal operating conditions and check the piping for visible leaks. If necessary, adjust the pipe supports.

   NOTICE: NORMAL OPERATING PRESSURE RANGE ON THE PUMP IS BETWEEN 13-25 PSIG. PUMP FLOW RATES SHOULD BE +/- 10% OF THE SYSTEM'S DESIGNED FLOW. PUMP FLOW RATES LOWER THAN THE SYSTEM SPECIFICATIONS WILL RESULT IN LARGER BUBBLES AND LOWER OXYGEN TRANSFER EFFICIENCIES – IT IS NOT RECOMMENDED.

⚠WARNING **DO NOT EXCEED 35 PSI (2.4 BAR) ON PUMP PRESSURE**

3. Open the needle valve on the Gas Flow Meter (item 6 on the diagram); the 200 can inject up to 20 CFH, the 500 can inject 60 CFH and the 1000 up to 100 CFH, as indicated on the rotameter. The optimal gas flow rate is 16 CFH on the 200 Nexus, 32 CFH on the 500 Nexus and 72 CFH on the 1000 Nexus. Use the center of the indicating ball on the flow meter as the index. Running the gas flow higher than this range will result in an increase in larger bubbles and a lower gas transfer efficiency.

8 DISSOLVED OXYGEN SENSOR (OPTIONAL WITH THE Nexus IQ)

Manual supplied separately

9 PUMP MAINTENANCE

See pump manual. Supplied separately.

10 CLEANING & SANITIZING

In normal operation, the internal elements of the Nexus generator can become fouled by mineral scale, biological matter, colloidal particles and insoluble organic constituents. Deposits can build up on the internal surfaces during operation and can cause diminished operation. Best practices include routine preventative cleaning with acid and alkali chemicals. In some instances, if large solids are allowed to pass into the generator, blockages can occur.

GENERAL CLEANING PROCEDURES

1. Prepare the cleaning solution
2. Introduce the cleaning solution
3. Recycle
4. Soak
5. Conduct high-flow pumping
6. Flush out
7. Restart

SAFETY PRECAUTIONS

1. Maximum temperature 100^{o} C or 212^{o}F
2. pH tolerance range 2-14
3. Each cleaning situation is different; therefore, specific cleaning recommendations are dependent on the type of foulant. Consult the general cleaning instructions for information that is common to all types of cleaning such as suggested equipment, pH and temperature limits and recommended flow rates; then apply the specific recommendation as needed.
4. When using any chemical indicated here or in subsequent sections, follow accepted safety practices. Consult the chemical manufacturer for detailed information about safety, handling and disposal.
5. When preparing cleaning solutions, ensure that all chemicals are dissolved and well mixed before circulating the solutions through the elements.

11 GENERAL MECHANICAL CLEANING PROCEDURES

Should blockage occur from single or multiple oversized solids being pumped into the generator, immediately stop operation. Disconnect the pump from generator block and backwash water through the unit until the blockage is removed.

12 TROUBLESHOOTING

Problem	Possible Cause	Corrective Action
Pump will not prime	• Air circulating in system • Gas valve open when pump not running • No water in the pump strainer pot	• Check suction piping and valve on any suction gate valves. • Secure lid on pump strainer pot and be sure lid gasket is in place. Check water level to make sure suction port is not drawing air. • Be sure suction lines, pump strainer, and pump volute are full of water. Be sure valve on suction line is working and open (some systems do not have valves).
Pump motor not running	• Motor thermal protector tripped • Open circuit breaker or blown fuse • Impeller binding • Motor improperly wired • Defective motor	• Reset overload. • Reset Breaker or replace fuse. • Clear the impeller. • Check the motor is wired correctly.
Pump gasket defective	• Defective gasket.	• Replace gasket.
Reduced capacity and/or head	• Air pockets or leaks in suction line • Pump will not prime — too much air	• Check suction piping and valve on any valve suction gate valves. • Secure lid on pump strainer pot and make sure lid gasket is in place. Check water level to make sure suction port is not drawing air. • Clean pump strainer pot. • Check to see if impeller or diffuser are clogged.

Clogged Impeller	• Debris in impeller	• Switch OFF electrical power at the circuit breakers to the pump. Remove the nuts that secure the volute to the seal plate.
		• Slide the motor and seal plate away from the volute. Clean debris from impeller.
		• If debris cannot be removed, complete the following steps.
		  • Remove impeller reverse screw and O-ring.
		  • Remove, clean and reinstall impeller.
		  • Reinstall anti-spin bolt.
		  • Reinstall diffuser and O-ring. Reinstall motor and seal plate into volute. Reinstall hardware around seal plate and volute and tighten securely.

Pump strainer clogged	• Debris in pump strainer basket	• Clean suction trap.
Insufficient dissolved oxygen saturation	• Vacuum leaks in suction line • Gas flow too low	• Check plumbing connections and suction piping. Check to be sure suction port is not drawing air into the system. • Increase gas flow. • Increase system run time.
Excessive power consumption	• Impeller binding • NPSH too low – excessive suction lift or losses • Discharge head too low – excessive flow rate	• Clear the impeller. • Check the pump curve for NPSH requirements. • Check the flow.
Pump flow too low	• Voltage too low	• Check and correct the voltage.

Pump back pressure too high	• Discharge nozzle or piping obstructed • Discharge valve engaged too much	• Check for blockage in piping. • Ensure all valves are fully open.
Low gas pressure on system gauge	• Feed gas pressure too low • Internal fouling	• Follow specified “clean-in-place” procedures to internal cleaning. • Increase flow rate.
Gas flow meter not working	• Moisture in the rotameter • Blockage in needle valve	• Clean Rotameter
Too many large bubbles	• Gas flow too high	• Reduce gas flow.
Insufficient gas transfer	• Feed gas pressure too low • Delta gas pressure out of range • Excessive moisture and / or contaminant in the gas line • Internal system fouling	• Increase feed gas pressure at the gas regulator. • Clean rotameter, gas lines and fittings. • Follow specified “clean-in-place” procedures for internal cleaning.
Excessive noise & vibration	• Impeller binding • Pump is not primed fully - air or gases in pump cavity • NPSH too low – excessive suction lift or losses • Incorrect rotation (3 phase only) • Defective motor • Discharge, suction plugged or valve closed • Impeller worn or plugged	• Replace impeller if damaged. • Completely flood intake piping to prime fully. • Repair or replace motor if damaged. • Open discharge valve or reduce restriction.

13 LIMITED WARRANTY

WARRANTY. Moleaer warrants that the Goods will be free from defects in material and workmanship for a period of twelve (12) months from delivery. Moleaer shall in no event be liable for defects or damage attributable to modifications performed or repair work done other than by Moleaer personnel or to abuse, accident, catastrophe, force majeure event, shipment, improper use, maintenance, storage or application or any other external cause. EXCEPT FOR ANY WRITTEN PERFORMANCE WARRANTY THAT MOLEAER HAS EXPRESSLY INCORPORATED IN THIS CONTRACT, MOLEAER DISCLAIMS ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT.

CLAIMS; EXCLUSIVE REMEDY. Any warranty claim must be made to Moleaer in writing within ten (10) days of discovery of the alleged defect. After obtaining prior written authorization from Moleaer, Buyer shall return all allegedly defective Goods, freight pre-paid, for examination by Moleaer. If Moleaer finds that the Goods are defective and covered by the warranty, Moleaer's sole obligation shall be, at Moleaer's option, to repair or replace the Goods, or to refund the purchase price therefor, and to reimburse Buyer's reasonable shipping costs. Buyer shall be responsible for all charges for handling of returned items not found defective. The remedy set forth in this paragraph 4 is Buyer's sole and exclusive remedy for any breach of warranty or claim related to the Goods other than pursuant to any written performance warranty that Moleaer has expressly incorporated in this Contract.

LIMITED LIABILITY. MOLEAER SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, CONSEQUENTIAL OR INCIDENTAL DAMAGES, INCLUDING DAMAGES FOR LOST OR PROSPECTIVE PROFITS OR OTHER ECONOMIC DAMAGES, ARISING OUT OF OR RELATED TO THIS CONTRACT OR THE GOODS. MOLEAER'S TOTAL LIABILITY, WHETHER IN CONTRACT OR TORT OR OTHERWISE, SHALL NOT EXCEED THE PORTION OF THE PRICE PAID BY BUYER ALLOCABLE TO THE GOODS GIVING RISE TO THE LIABILITY. THE LIMITATIONS IN THIS PARAGRAPH WILL APPLY NOTWITHSTANDING THE FAILURE OF ESSENTIAL PURPOSE OF ANY LIMITED REMEDY. This limitation shall not apply to claims for personal injury directly caused by Moleaer's willful or reckless acts.

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REVISION HISTORY

Revision	Description	ECO#	Assignee	Date Finished
A	Initial Release	x	x	x
B	Revised content. Added rev and formatting. Dropped datasheet	1114	PM	8/25/2020
C	New base plate	1144	DN	10/12/2020