



Long Term Preservation and Storage Procedure

**This procedure must be performed by an Authorized
Generac Industrial Trained Service technician.**

Notice to users of this manual:

This manual has been written and published by Generac to aid our servicing dealer network and technicians when servicing the products described herein.

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NOTICE TO USERS OF THIS MANUAL

This MANUAL has been written and published by Generac to aid our servicing dealer network and technicians, when servicing the products described herein.

It is assumed that these personnel are familiar with the servicing procedures for these products, or like or similar products manufactured and marketed by Generac. That they have been trained in the recommended servicing procedures for these products, including the use of common hand tools and any special Generac tools or tools from other suppliers.

Generac could not possibly know of and advise the service trade of all conceivable procedures by which a service might be performed and of the possible hazards and/or results of each method. We have not undertaken any such wide evaluation. Therefore, anyone who uses a procedure or tool not recommended by Generac must first satisfy themselves that neither his nor the products safety will be endangered by the service procedure selected.


All information, illustrations and specifications in this manual are based on the latest product information available at the time of publication.


When working on these products, remember that the electrical system and engine ignition system are capable of violent and damaging short circuits or severe electrical shocks. If you intend to perform work where electrical terminals could be grounded or touched, the battery cables should be disconnected at the battery.

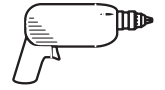
Any time the intake or exhaust openings of the engine are exposed during service, they should be covered to prevent accidental entry of foreign material. Entry of such materials will result in extensive damage when the engine is started.

During any maintenance procedure, replacement fasteners must have the same measurements and strength as the fasteners that were removed. Metric bolts and nuts have numbers that indicate their strength. Customary bolts use radial lines to indicate strength while most customary nuts do not have strength markings. Mismatched or incorrect fasteners can cause damage, malfunction and possible injury.



 **It is highly recommended that the unit is stored indoors and covered with a tarp and secured in order to prevent possible rusting of the alternator.**

 **If the unit can only be stored outside, it must be completely covered. The base frame and/or base tank cannot be covered by water at any time.**



⚠ Unit must be stored in a rodent proof environment, unless the base frame is in full contact with concrete or other permanent structure and ANTI-RODENT PLUGS HAVE BEEN INSTALLED. This means it must be removed from the shipping pallet!! Gravel is NOT considered suitable structure for storage.

NOTE:

The Addendum of Start-Up/Commissioning Form MUST be filled out before preserving the unit. Bulletin (0166430MMM).

If the unit will not be put into service for six months to one year, it is highly recommended that anti-fungal coating be requested when ordering the unit.

EQUIPMENT NEEDED

- One Clean Five Gallon Diesel Can
- Nox-Rust VCI Liquid 1100
- Nox-Rust VCI Liquid 1200
- Dielectric Grease
- One Quart of Stanadyne Diesel Treatment
- Two to Four 11 oz. Aerosol Cans of Nox-Rust 1101 – depending on engine size
- Five Silica Gel Desiccant Bags - 8.5" x 5.0" (P/N 2189K21)
- One Air Blow Gun with Venturi Line or Siphon gun (used to spray Nox-Rust 1100)
- Fully charged battery(s)
- Stanadyne Diesel Performance Plus can be purchased at any Authorized Stanadyne Diesel Injection Shop (www.stanadyne.com/dsg.asp) Use Dealer Locator.
- Nox-Rust VCI Liquid 1100, 1101 and 1200 can be purchased through Daubert Cromwell (www.daubertcromwell.com) Use Dealer Locator.
- Desiccant can be purchased through Mc Master – P/N 2189K21 (mcmaster.com).

Once all three systems are treated (Fuel, Oil, and Coolant) – start the engine and run the unit for at least 15 minutes.

Check the coolant temperature, it must reach the thermostat opening temperature (165 – 185).

The upper radiator hose should be hot and pressurized.

Shut the unit down after the time and temperature minimums are met.

When the preservation procedure is complete, fill out the preservation form, and send it in to the warranty department.

⚠ WARNING ⚠

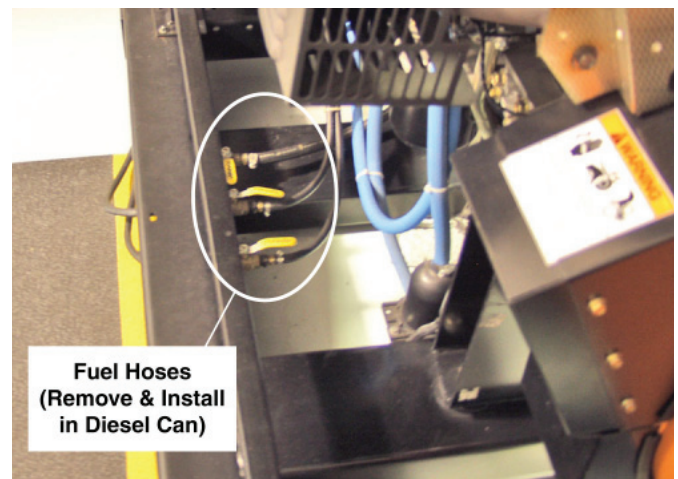
⚠ Follow all PPE (NFPA 70E) requirements to safely complete this procedure.

FUEL SYSTEM

◆ DIESEL UNITS

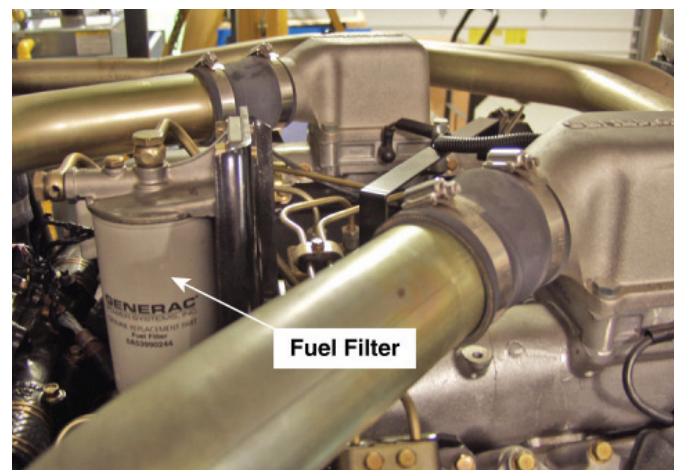
1. Treat the fuel system with Stanadyne Diesel Performance Plus.
2. Add 8 oz. of Stanadyne to a five (5) gallon diesel can – fill the can with at least 3 gallons of clean diesel fuel.
The supply and return hoses (Figure 1) will go into this can – Cover the openings to the can so debris cannot enter.
3. Additional fuel hose(s) might be necessary to conveniently locate the supply and return lines to our treated fuel can. If the unit is on a base tank, leave the supply and return check valves installed in the base tank.

Figure 1 - Fuel Supply & Return Hoses



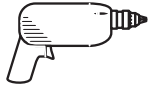
4. Remove all fuel filter(s) and add 1-2 oz. of Stanadyne in all filters – reinstall filter (Figure 2).

Figure 2 - Fuel Filter



NOTE:

Natural Gas and LPV/L systems do not require fuel system preservation.



OIL SYSTEM

Add 1 oz. of Nox-Rust 1100 to the crankcase for every quart of engine oil. The oil level once treated cannot be above the full mark on the dip stick. It might be necessary to drain some oil to ensure the proper level.

COOLANT SYSTEM

1. Drain some of the coolant to make room for the N.R. 1200. Use specification sheet to determine coolant capacity and divide by 5 to determine how much coolant you must drain and how much NR 1200 you will need.
2. Add 1 part Nox-Rust 1200 to five (5) parts coolant to the coolant system.

Base tank can be fogged before or after running the unit.

Start the engine and run the unit for at least 15 minutes, NO LOAD, Circuit Breaker open.

Check the coolant temperature; it must reach the thermostat opening temperature (165 – 185).

The upper radiator hose should be hot and pressurized.

Shut the unit down after the time and temperature minimums are met. Make sure the data sheet at the end of this procedure is filled out completely.

UNITS WITH BASE TANKS

1. Remove all fuel from tank.
2. Locate the two pipe plugs furthest apart.
3. Remove plugs and fog with Nox-Rust VCI Liquid 1100. (Fog unit until vapor comes out of the furthest hole) this should take 15-30 seconds.
4. Reverse procedure and fog from the vent hole, fog must come out of the previous hole we fogged in to.
5. Re-install plugs, remove vent, spray the inside of vent with NR 1101 and re-install.

GOVERNOR SYSTEMS

THESE STEPS WILL INSURE THE ENGINE WILL NOT START DURING CRANKING.

- Current production John Deere and Volvo's engines do not have a governor driver, the ECU controls engine speed. Tier one JD's had an external governor, remove the (2) actuator wires from the governor and secure to prevent unit from starting.
- For Tier 2 and higher JD and Volvo units unplug the camshaft and crankshaft sensors.
- For Doosan's engines unplug the governor driver in the relay box.
- For export Mitsubishi engines and any other diesels that use the Generac actuator, remove the rod between the actuator and the injection pump. Use lock wire or a wire tie and secure the injection pump fuel rack in the no-fuel position, and make sure it cannot move.
- For all Mechanically Governed units remove drive belt and secure fuel rack in the no-fuel position.

If there are any questions on how to disable the unit from starting, call the service department at 262-544-4811 (ext. 2006).

INTERNAL PARTS

1. Fog the intake system, valves, combustion chambers, liners, pistons etc. using Nox-Rust 1100 and a siphon gun, or the Nox-Rust 1101 Aerosol Can and a siphon gun.

NOTE:

An automotive paint sprayer will also work well.

The fog should be free of any heavy droplets.

2. If using a sprayer, set the delivery of your sprayer to approximately 10 oz. per minute delivery of the Nox-Rust 1100.

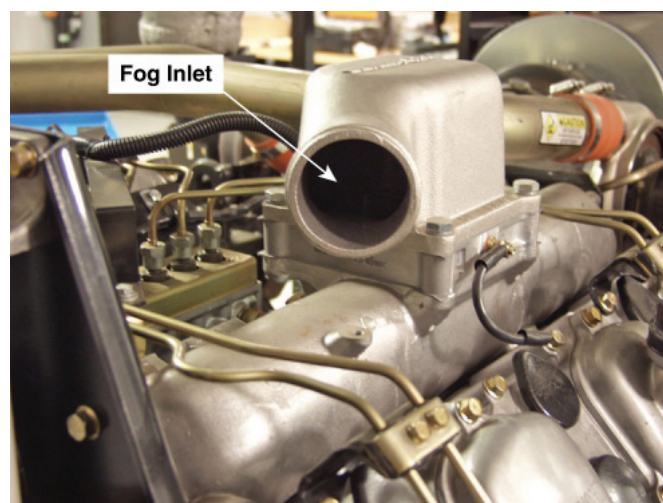


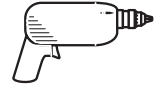
Make sure you have no loose clothing or items that could be sucked into the intake. DO NOT perform this procedure if the unit is in a dusty environment, doing so can cause internal engine damage.

3. After two or more 15-second crank cycles, approximately 5 - 5 1/2 oz. of N.R. should have been used (approximately 1/2 can).

If preserving a V-type engine, you should deliver 5 1/2 oz. per bank or side (one (1) can for the whole engine).

Figure 3 - Fog Inlet





NATURALLY ASPIRATED, DIESEL & GAS

1. Remove the air cleaner assembly.
2. Disable the unit from starting by disconnecting the governor driver and/or sensors, see previous section covering Governor Systems.
3. Place the unit in manual and start fogging once the unit begins to crank.
4. Fog the air inlet opening while the unit is cranking. Do this for two 15-second crank cycles. An additional crank cycle might be necessary to deliver the appropriate amount of preservative.

IMPORTANT: DO NOT FOG, IF THE UNIT IS NOT CRANKING.

TURBO CHARGED DIESEL & GAS

1. Remove the intercooler discharge pipe(s) to the intake manifold(s).
2. Remove the air filter and store in a clean dry bag.
3. Disable the unit from starting by disconnecting the governor driver (see previous sections covering Governor Systems).
4. Place the unit in manual and start fogging once the unit begins to crank.
5. Fog the manifold inlet opening while the unit is cranking. Do this for two or more 15-second crank cycles. An additional crank cycle might be necessary to deliver the appropriate amount of preservative.
6. Once the fogging procedure is completed, fog pipes that were removed and re-install all piping.

Once all systems have been treated and the unit has ran long enough to meet the previous requirements and the internal parts have been fogged, continue with the following steps.

BATTERIES

1. Remove batteries from the unit.
2. Store batteries in a clean and dry environment.
3. Once a month place batteries on a charger to keep them fully charged. Check electrolyte level and concentration before permanently installing. Consult manufacture for storage recommendations.

AIR FILTER ASSEMBLIES

1. Bag and seal air filter and assembly that was previously removed.
2. Leave the air filter housing bolts out so the entire assembly can be sealed.
3. Seal the intake opening with Duct taper or make a solid gasket to cover opening.

INTAKE & EXHAUST SYSTEMS

1. If the unit has a rain cap or an open flange, bag and seal the exhaust system outlet.
2. The intake and exhaust systems must be sealed to ensure no air flow through the engine.

BELT TENSIONER

1. Loosen the belt tensioner, but leave the belts in place.
2. Secure a note to the front of the engine (around the belts) stating:
The tensioner is loose. Belts need to be tightened BEFORE running the engine.
3. Make an identical note and secure it to the control panel. **(Belts not tight.)**

ELECTRICAL CONNECTIONS

All bolted and fastened electrical connections will be coated with dielectric grease; terminal strips, starter wires, etc.

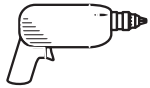
1. Using two (2) of the six (6) desiccant bags, tie one (1) to the starter and one (1) to engine alternator.
2. Bag each component and seal as best possible.
3. Using the Nox-Rust 1101 aerosol can, apply a light coat to any unpainted metal surfaces like the crankshaft dampener, etc.

Figure 4 - Wrap with Desiccant Bags



MISCELLANEOUS

1. Remove the black connection box panel and install (1) desiccant bag inside the connection box and re-install panel.
2. Install one (1) desiccant bag to the alternator cooling fan shroud and secure.
3. Tie a desiccant bag to the front and rear of the unit.
4. Cover the unit with a tarp and secure the tarp to the base frame.



MONTHLY

Once a month rotate the engine (2) revolutions.

DO NOT use the alternator cooling fan when performing this procedure!

Rotate the engine from the front at the crankshaft pulley/dampener.

NOTE:

If pulley/dampener uses a single nut that attaches it to the crankshaft, use a socket and ROTATE THE ENGINE IN THE TIGHTENING (CLOCKWISE) DIRECTION ONLY (As viewed from the Front).

STRICT COMPLIANCE WITH THIS PROCEDURE WILL PRESERVE THE UNIT FOR ONE YEAR!

IMPORTANT: Once this procedure is complete, the Preservation Form (available on OIS), must be filled out and fax to the attention of the Warranty Department (262) 472-6515. Model and serial number of the unit is required.

Failure to fill out the form completely will affect the Warranty of the unit.

If more than one year has elapsed, bring the unit back to running condition using the pre-start checks detailed below and perform this procedure again. Contact the Service Department for further information at 262-544-4811 Ext. (2006).

PRE-START CHECKS

1. General belt tension is 7/16" – 5/8" deflection in one direction with 22 lbs of force applied. Tighten tension belts per Service Manual (Disk Two: Engine Service – part number OC3409C).
2. Install all previously removed electrical connections.
3. Install fully charged battery(s).
4. Make sure air filter and housing is secure.
5. Remove ALL desiccant bags
6. Unwrap starter and DC alternator.

When the engine is started for the first time, it will have excessive smoke coming from the exhaust system. This smoke will clear up after 5 – 10 minutes of running and the coolant temperature is between 165 – 185 F.

The N.R. (1100 & 1200) can stay in the oil and water system until the maintenance interval calls for that fluid to be changed.

ESTIMATED TIME

Time: 3 – 4 hours depending on the unit size.

Disclaimer: This Preservation Procedure will greatly decrease the likelihood of any corrosion related problems.

