

# NOVATIO

E N G I N E E R I N G , I N C

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**900W DEFENDER  
MAP0002000-E**

QUICK START GUIDE

TROUBLESHOOTING

CONTACT INFO

# SYSTEM SPECIFICATIONS

<b>Platform Technology</b>	Honda EU1000i
<b>Dry Weight</b>	33Pounds
<b>System Dimensions L x W x H</b>	17.8" x 11.5" x 14.9"
<b>AC Output</b>	120V 0-900 W continuous sea level 120V 0-750W W continuous above 4000 ft, 104°F 120V 1000W Peak
<b>Operating Range</b>	0°F - 125°F
<b>Fuel Tank</b>	0.6 gallons
<b>Fuel(s)</b>	JP-8, F24, JET A, JP-5 (gasoline andnDF2 can be used in select models.
<b>Run Time on JP-8 @ 1250 W AC</b>	5.2 hours

# BEFORE OPERATION

Prior to starting engine, inspect the following every time:

Refer to manual for detailed instructions.

**Check Oil** – A low oil level will cause the Oil Alert system to shut down the engine.

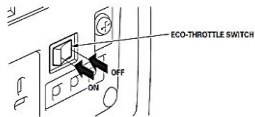
**Check Air Filter** – A dirty air filter will restrict air flow to the engine, reducing engine and generator performance.

**Check Fuel Level** – Starting with a full tank will help to eliminate or reduce operating interruptions for refueling.

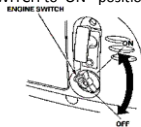
Check that any appliances are turned off or disconnected from generator. The generator may be hard to start if a load is connected.

# STARTING ENGINE

1. Turn FUEL TANK CAP VENT LEVER to 'ON' position.

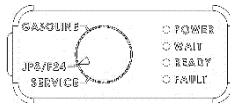


4. Turn ENGINE SWITCH to 'ON' position.

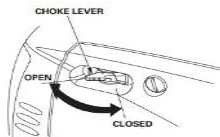


2. Turn ECO-THROTTLE SWITCH to 'OFF' position.

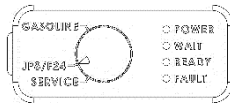
5. Ensure fuel selector switch is set to appropriate fuel.



3. Make sure CHOKE LEVER is in 'open' position to start.

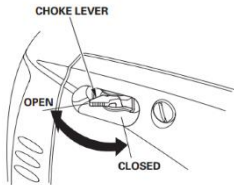


6. Begin pulling the STARTER GRIP once the 'READY' indicator (green) has lit up. Engine should start in 1-3 pulls. If engine does not start, see troubleshooting guide. **DO NOT PULL MORE THAN 25 TIMES.**



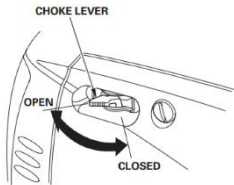
# STARTING ENGINE (cont'd)

1. If engine does not speed up after several seconds , briefly turn CHOKE LEVER to 'CLOSED' position.



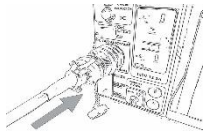
3. Choke can typically be opened and some load applied at less than 1 minute after start-up, slightly longer if ambient temperatures are cold. If opened or too large a load applied too early, engine operation can become unsteady. Yellow light on User Interface indicates system "warm-up" mode during start-up. When yellow light is no longer illuminated, engine is fully warmed up and full load can be applied.

2. Allow engine to warm up for 20 seconds to 1 minute then turn the CHOKE LEVER to the 'OPEN' position.

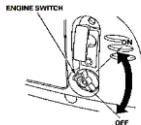


# STARTING ENGINE (USING E-start)

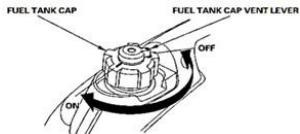
1. Plug Amphenol connector into front of generator.



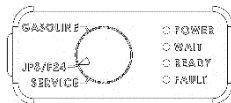
4. Turn ENGINE SWITCH to 'ON' position.



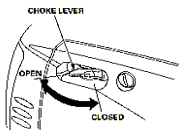
2. Turn FUEL TANK CAP VENT LEVER to 'ON' position.



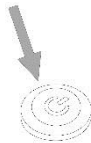
5. Ensure fuel selector switch is set to appropriate fuel.



3. Make sure CHOKE LEVER is in 'OPEN' position to start.



6. Press power button to start generator



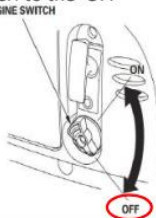
# JUMP STARTING ENGINE



Turn off or disconnect all appliances connected to the generator.



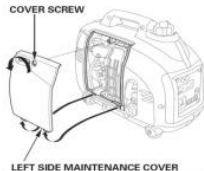
1. Turn ENGINE SWITCH to the 'OFF' position.



3. Unbundle the JUMP START CABLE and remove the DUST CAP.



2. Remove MAINTENANCE COVER by removing COVER SCREW and tilting the cover away from the engine.



4. Attach JUMP START CABLE to a fully charged 2590 BATTERY and allow 1 minute to charge before powering up generator.

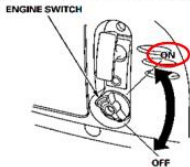
**NOTE:** Fuse may fail if unit is powered up too soon.



# JUMP STARTING ENGINE (continued..)

**!** Turn off or disconnect all appliances connected to the generator. **!**

5. Turn ENGINE SWITCH to the 'ON' position and start the generator. Allow the system to run for 2-5 minutes.



7. Bundle the JUMP START CABLE back inside the generator.



6. With the generator running, disconnect the JUMP START CABLE and install the DUST COVER.



8. Reinstall the SIDE COVER and allow the generator to run for at least 1 hour.



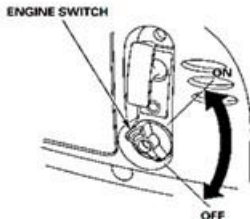


# STOPPING ENGINE

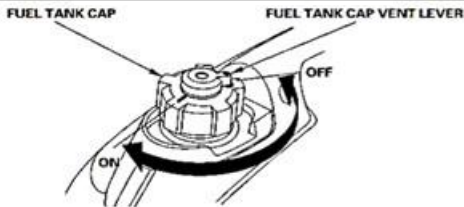


Turn off or disconnect all appliances connected to the generator.

1. Turn ENGINE SWITCH to the 'OFF' position.



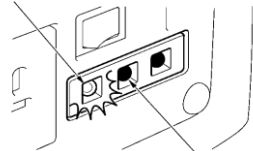
2. Allow engine to cool, turn FUEL TANK CAP VENT to 'OFF' position.



# AC OPERATION

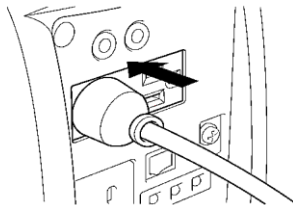
1. Ensure that OUTPUT INDICATOR is illuminated.

OUTPUT INDICATOR  
(GREEN)



OVERLOAD INDICATOR  
(RED)

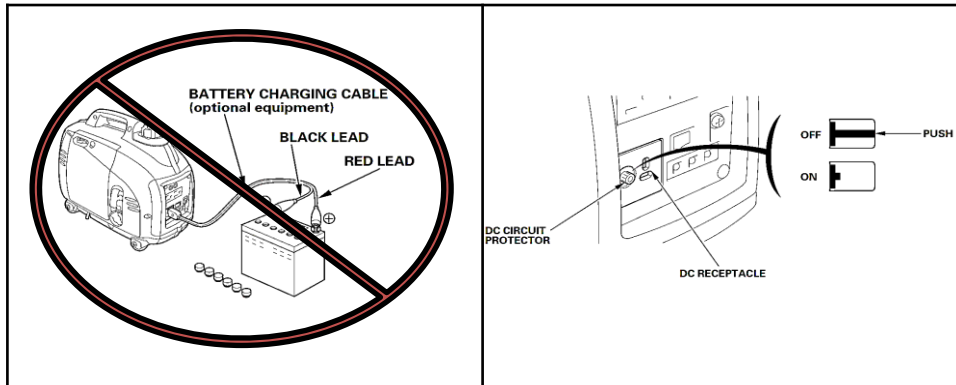
2. Plug appliance into the receptacle.



# DC OPERATION

The NEI-1001-H-E has not been approved for charging external batteries, so caution must be used with generator DC output.

Please contact Novatio for support if DC power is required.



# MAINTENANCE & SERVICE

Unless otherwise noted, maintenance procedures should be performed regularly according to the maintenance schedule. For complete maintenance schedule, review full user manual.

The maintenance schedule applies to normal operating conditions. If generator is operated under unusual conditions, such as sustained high-load, or high-temperature or low-temperature operation, or operated in dusty conditions, consult the full user manual for maintenance directions. Otherwise, consult Novatio Engineering for recommendations applicable to your individual needs and use.

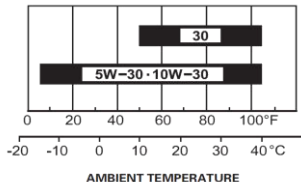
**ALL MAINTENANCE SHOULD BE PERFORMED WITH THE ENGINE TURNED OFF.**

## Service Items detailed below

- Engine Oil
- Electrical Connectors
- Measuring and External Charging of Battery Pack
- Clearing Fuel Lines

# ENGINE OIL

Engine oil should be changed according to the schedule below under normal operating conditions. If generator is operated under unusual conditions, refer to complete manual. Otherwise, consult Novatio Engineering .



Service Period		Each Use	First month or 10 hrs.	Every 3 months or 50 hrs.	Every 6 months or 100 hrs.	Every year	Every 2 years or 300 hrs.
Item							
Engine oil	Check	•					
	Change		•	•[1]			
Air cleaner	Check	•					
	Clean			•[2]			
Spark plug	Check-adjust				•		
	Replace						•
Spark arrestor	Clean				•		
Valve clearance	Check-adjust						•[3]
Combustion Chamber	Clean						•[3]
Fuel tank and filter	Clean					•[3]	
Secondary fuel filter	Clean					•[3]	
Fuel tube	Check						•[3]

[1] If operating generator in temperatures below 20°F, or if average load is less than 500W, change oil every 25 hours. If engine exhaust is carrying excessive white smoke, change oil.

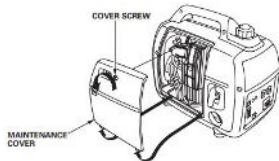
[2] Service more frequently when used in dusty areas.

[3] These items should be serviced by a qualified mechanic, unless you have the proper tools and are mechanically proficient.

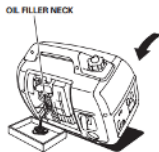
[4] For commercial use, log hours of operation to determine proper maintenance intervals.

# ENGINE OIL CHANGE

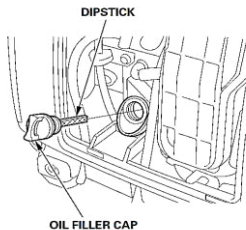
1. Open MAINTENANCE COVER carefully, tilting cover away from engine.



3. With a suitable container in place, pour the oil by tipping the engine toward the OIL FILLER NECK.



2. Tilt engine away from user (away from OIL FILLER NECK) to avoid spilling oil, and unscrew the OIL FILLER CAP.



4. With engine in level position, fill to the bottom of the first threads the oil filler neck (350ml) with the recommended oil .

5. Reinstall the OIL FILLER CAP and the MAINTENANCE COVER securely.

# TROUBLESHOOTING

## 1. Engine will not start or will not remain running

Possible cause	Troubleshooting action
Low fuel levels	Add fuel to fuel tank
Selector switch in wrong position	Confirm selector switch in appropriate position
Air in fuel line	Drain fuel through drain port until air bubbles are all pushed out.
Excessive fuel in cylinder	Turn SWITCH to 'SERVICE' position and try starting engine. After a few pulls, or after engine starts up and then stops, turn SWITCH to 'RUN' position in for appropriate fuel and re-start.
Oil alert system	Ensure correct oil levels
Low batteries	If LEDs on UI board do not illuminate, re-charge the batteries according to the instructions in the "JUMP START" section of this guide.
Weak/no spark	Remove and dry off spark plug
Other	Contact Novatio Engineering, Inc.

## 2. Engine operating but not producing AC power

GFCI disconnected	Reset GFCI
Overload	Reduce load (if load is already below 1250W, contact Novatio Engineering)
Other	See troubleshooting for "rough operation and unsteady AC voltage"

# TROUBLESHOOTING (cont.)

## 3. Rough operation or visibly dirty exhaust

Possible cause	Troubleshooting action
Choke in closed position	Make sure choke is in open position (lever pointed to the left) after engine has warmed up
High oil levels or diluted oil	Change oil and fill to recommended levels
Lack of fuel due to fuel cap vent "off"	Turn FUEL CAP VENT LEVER to 'ON' position
Wrong fuel	Make sure system is being run with the type of fuel selected.
Engine in "Eco-mode"	Set ECO-MODE SWITCH to 'OFF'
Other	Contact Novatio Engineering

## 4. Unsteady AC voltage or engine shuts down

Low fuel levels	Add fuel to fuel tank
Overload	Reduce load (if load is already below 1250W, contact Novatio Engineering)
Engine in "Eco-mode"	Set ECO-MODE SWITCH to 'OFF'



# CONTACT

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