NOVATIO
ENGINEERING, INC

Waltham MA

www.novatioengineering.com

QUICK START GUIDE

Ex-Power 2000
MAP0002200-E
MAP0002200

SAFETY PRECAUTIONS

Exhaust discharge contains deadly gases. Do not operate generator in enclosed area unless exhaust discharge is properly vented outside. Position as far away from personnel, shelters, and occupied vehicles as possible. Failure to comply may result in injury or death to personnel.

Fuel is flammable and may be ignited by heat, sparks, flames, and static electricity. Avoid open fire and smoking while working around fuel system. Keep fire extinguisher within easy reach when working with fuel system. Failure to comply may result in injury or death to personnel.

Use extreme care when working with electrical system. Remove all jewelry such as rings, ID tags, bracelets, etc., prior to working on generator. If jewelry or tools contact electrical circuits, a direct short may result in instant heating, severe burns, or electric shock. Failure to comply may result in injury or death to personnel and/or damage to equipment.

Allow generator to cool for at least 15 minutes before loading onto transport vehicle. A hot engine and exhaust system can cause burns and can ignite some material. Failure to comply may result in injury to personnel.

BEFORE OPERATION

Check Oil – Engine will not operate with incorrect oil level (P. 16-17).

Check Fuel Level and move fuel cap vent to 'ON' position – Starting with a full tank will help to eliminate or reduce operating interruptions for refueling.

Check Eco-Mode switch* – Switched to off position

Check Loads - The generator may be hard to start if a load is connected. It is recommended that all loads are disconnected from generator during start.

Fuel Type – Ensure fuel type selector switch is set to correct fuel. If switching fuel type, see P. 12-14 of this guide for fuel changing procedure.
Note: – JP-8/F-24/Jet-A/Kerosene-1 are primary fuels for this generator. Generator will run optimally on these kerosene-based fuels.

Check Air Filter – Check air filter per the maintenance schedule (P. 16).

Helpful hints:
Oil level: Engine will not operate if oil level is too low OR too high. Fill oil to correct level (see P. 16-17). If many attempts to start are made with inadequate or too much oil, spark plug may become fouled. Spark plug may need to be cleaned or replaced with a new spark plug before engine will start.

Fuel type change: Generators are shipped ready to operate on JP-8 or F-24. Switching fuel type, from JP-8 to gasoline for example, requires careful attention. Please refer to P. 12-14 for instructions on switching fuels.

*applies to generators equipped with Eco-mode

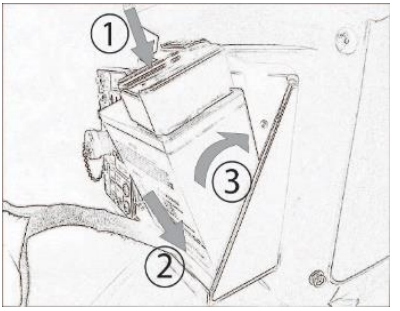
SYSTEM SPECIFICATIONS

Platform Technology	Honda EU2200i
Dry Weight	53 Pounds
System Dimensions L x W x H	23” x 11.4” x 16.7”
AC Output	120V 0-1500 W continuous sea level 120V 2000 W Peak 120V 0-1200 W continuous 4000 ft, 95°F
Operating Range	0°F - 120°F
Fuel Tank	0.95 gallons
Fuel(s)	Primary: JP-8,F-24,Jet-A, Kerosene-1 Emergency Fuels: Gasoline, DF-2* (rated 1000W)
Run Time on JP-8 @ 1500 W	3.5 hours

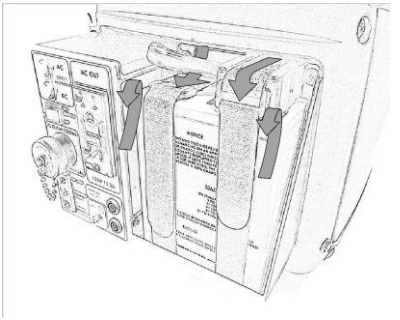
*applies to generators equipped with Diesel mode

Installing BB2590 Battery

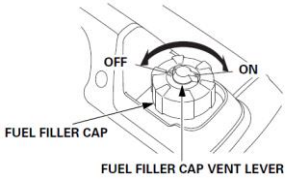
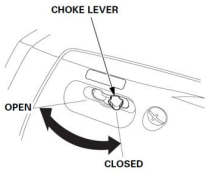
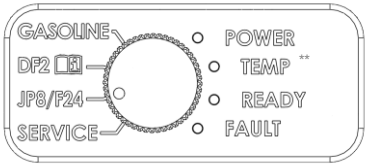
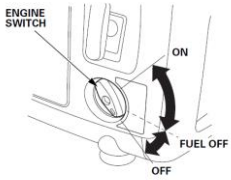
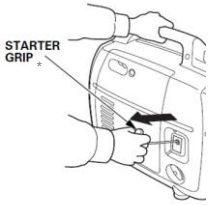
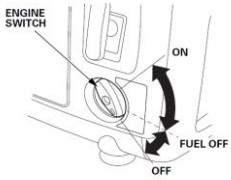
1. Connect battery connector to battery
2. Place battery on tray bottom
3. Rotate top into place
4. Secure with straps



5. Left strap goes underneath power cord
6. Right strap goes over connector
7. Front straps are pulled toward user and then tightened downward to be secured



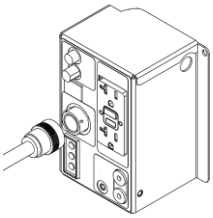
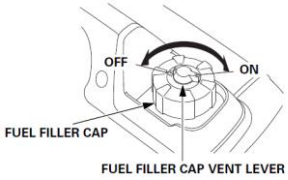
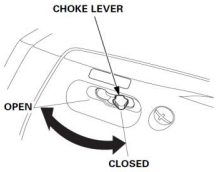
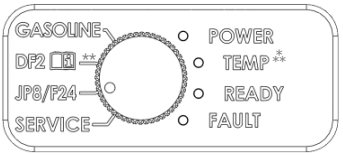
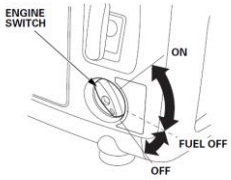
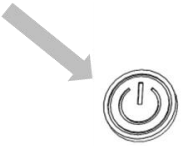
STARTING ENGINE (Pull start)

1. Turn FUEL TANK CAP VENT LEVER to 'ON' position.  	2. To start a cold engine, turn choke lever to the CLOSED position. To restart a warm engine, leave choke lever in OPEN position. 
3. Ensure fuel selector switch is set to correct fuel. **NOTE: Fuel type must be selected before generator is powered on.**  	4. Turn ENGINE SWITCH to 'ON ' position. 
5. Begin pulling the STARTER GRIP once the 'READY' indicator (green) is ON.  	6. If generator does not start within 5 pulls, toggle engine switch (OFF/ON) and try again. 

*DF2 option available only on generators equipped with Diesel mode

**WAIT or TEMP

STARTING ENGINE (USING E-start*)

1. Engage E-Start connector. 	2. Turn FUEL TANK CAP VENT LEVER to 'ON' position. 
3. To start a cold engine, turn choke lever to the CLOSED position. To restart a warm engine, leave choke lever in CLOSED position. If difficult to start, try in OPEN position 	4. Ensure correct fuel is selected. **NOTE: Fuel type must be selected before generator is powered on.** 
5. Turn ENGINE SWITCH to 'ON ' position. Indicator lights on UIB may briefly flash. 	6. Press E-Start Power Button to start generator. 

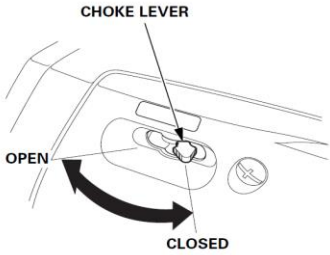
*applies to generators equipped with E-Start

**DF2 option available only on generators equipped with Diesel mode

⁂ WAIT or TEMP

STARTING ENGINE (cont'd)

Once the engine has started, manually or with E-start, allow engine to operate for 5 seconds to a minute then turn choke lever to 'OPEN' position.



Load may be applied within a few seconds to 1 minute after start-up, slightly longer in cold environments.

If choke is opened or large load applied too early, engine operation can be unsteady. Engine has reached optimum temperature when yellow 'WAIT/TEMP' LED is OFF.

Note: Load CAN be applied while the 'WAIT/TEMP' LED is ON.

STARTING ENGINE
in cold conditions
(below 30°F)

Choke – Make sure choke lever is in the 'CLOSED' position (lever pointed to the right). Leave system choked until operation is smooth (may be up to several minutes).

Manual Start – Turn switch to 'ON'. Pull starter cord up to 5 times. If engine does not start, turn switch to 'OFF' and wait ~ 5 seconds. Repeat until generator starts. System may take up to 50 pulls to start in ambient conditions between 0 and 15°F.

Battery – Make sure to use a battery that has at least 3 bars showing on the state of charge indicator to improve starts.

Re-charge – Run system for approximately 2 hours every 2 starts with a load to recharge batteries and reduce oil dilution.

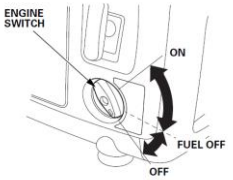
Oil Dilution – Extended operation with no load in cold ambient conditions will lead to excessive oil dilution (fuel in the oil), which could result in 'OIL ALERT' fault and/or smokey operation.

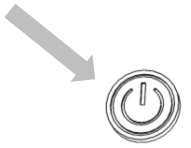
STOPPING ENGINE

NOTE

Turn off and disconnect all loads/appliances connected to the generator

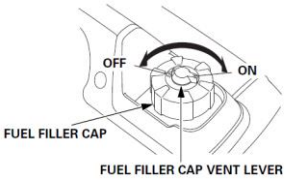
1. Turn ENGINE SWITCH to the 'OFF' position.*





*If equipped with E-Start, turn off E-Start system also

2. Allow engine to cool, turn fuel tank vent to 'OFF' position



ECO-Mode Operation*

1. ECO-Mode is **not recommended for sustained use.**
   - *Engine will not run as reliably in ECO-mode.*
   - *Oil dilution rate will increase while running in ECO-Mode, requiring more frequent oil changes.*
   - *Spark plug fouling may increase while running in ECO-Mode, potentially making engine start more challenging and requiring more frequent spark plug changes.*
2. To operate in ECO-Mode, toggle the ECO-Mode switch to the 'ON' position before starting generator or while generator is already running.
3. Performance will be limited in ECO-Mode.
4. ECO-Mode operation with no load (while idling) is never recommended.

*applies to generators equipped with Eco-mode

FUEL TYPE CHANGE

JP-8 (or Diesel*) → Gasoline

1. Operate engine until tank is empty of JP-8 (or Diesel) OR turn off generator and turn over generator to empty tank of JP-8 into a fuel container.
2. With engine off, fill fuel tank with gasoline.
3. Immediately restart engine with fuel selector switch set to JP-8 (or Diesel) (5-10 pulls are likely if system has run dry). Operate for ~2 minutes and then turn engine switch to OFF. If engine stalls or fails to start, proceed to next step.
4. Set fuel selector to gasoline, turn engine switch to ON and attempt to start engine.
    - If the engine does not start within 5-10 pulls, repeat Step 3.

*applies to generators equipped with Diesel mode

FUEL TYPE CHANGE

Gasoline → JP-8 (or Diesel*)

1. Operate engine until tank is empty of gasoline OR turn off generator and turn over generator to empty tank of gasoline into a fuel container.
2. With engine off, fill fuel tank with JP-8 (or Diesel).
3. Immediately restart engine with fuel selector switch set to gasoline (5-10 pulls are likely if system has run dry). Operate for ~2 minutes and then turn engine switch to OFF. If engine stalls or fails to start, proceed to next step.
4. Set fuel selector to JP-8 (or Diesel), turn engine switch to ON and attempt to start engine.
    - If the engine does not start within 5-10 pulls, repeat Step 3.

*applies to generators equipped with Diesel mode

FUEL TYPE CHANGE

JP-8 ↔ Diesel*

1. Operate engine until tank is empty OR turn off generator and turn over generator to empty tank into a fuel container and run dry afterwards.
2. Fill fuel tank with Diesel.
3. Set fuel selector to Diesel, turn engine switch to ON and attempt to start engine (5-10 pulls are likely if system has run dry).
4. Choke lever may have to be managed to help engine run steady for first few minutes.

This method will work in reverse (Diesel to JP-8), swapping JP-8 and Diesel for each other in all instances of instructions.

*applies to generators equipped with Diesel mode

MAINTENANCE & SERVICE

Unless otherwise noted, maintenance procedures should be performed regularly according to the maintenance schedule. For complete maintenance schedule, refer to 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, refer to 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 AND BATTERY DISCONNECTED.

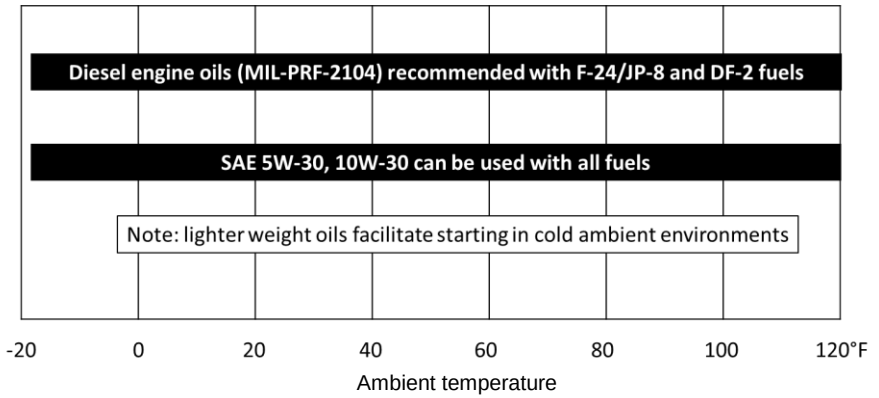
MAINTENANCE & SERVICE (cont'd)

Engine oil should be changed according to the schedule below under normal operating conditions. If generator is operated under unusual conditions, refer to user manual.

Regular Service Period - Perform at every indicated month or operating hour interval, whichever comes first.		Each Use	First Month OR 20 Hrs.	Every 3 Months OR 50 Hrs.	First 6 Months OR 100 Hrs.	Every year OR 200 Hrs.
Item						
Engine Oil	Check Level	x				
	Change		x		x(1)	
Air Filter	Check	x				
	Clean			x(2)		
Spark Plug	Check-adjust				x	
	Replace					x

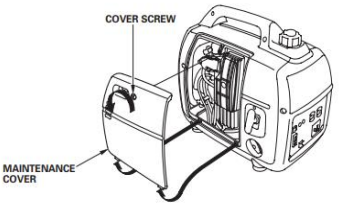
1. If operating in temperatures below 20°F, or if average load is less than 500W, or if operating with DF-2, change oil every 25 hrs. If operating above 104°F or operating with loads above 1200W, change every 50 hrs. If engine exhaust is carrying excessive white smoke, change oil.
2. Service more frequently when used in dusty areas.

Recommended oils:

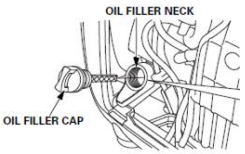


ENGINE OIL CHANGE

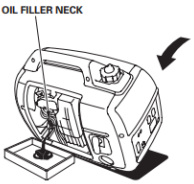
1. Open MAINTENANCE COVER carefully, tilting cover away from engine.



2. Tilt engine away from user (away from OIL FILLER NECK) to avoid spilling oil, and unscrew the OIL FILLER CAP**.** Install oil change funnel from sustainment kit, if available .



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



4. With engine in level position, fill to the bottom of the threads the oil filler neck (325ml, 11 oz) 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 after system has run dry	Engine may require more pulls than usual to start
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 'appropriate fuel and re-start. This procedure may have to be repeated two or three times if engine is very hot.
Oil alert system	Ensure correct oil level, too low or too high oil level will prevent the generator from starting or running
Low batteries	If battery status indicators are below 1 bar, recharge battery or replace with a fully-charged battery. If generator does not maintain charge level on a functioning battery, contact Novatio Engineering.
Wet plug	Remove and dry off spark plug, or replace spark plug.
Other	Contact Novatio Engineering, Inc.
2. Engine operating but not producing AC power	
GFCI disconnected	Reset GFCI
Overload	Reduce load and cycle generator OFF/ON. If load is already below 1500 W, contact Novatio Engineering.

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
Fuel cap vent 'OFF'	Turn FUEL CAP VENT LEVER to 'ON' position
Wrong fuel	Make sure fuel selector switch is in correct position BEFORE turning system 'ON'.
Engine in 'Eco-mode'	Set ECO-MODE SWITCH to 'OFF'
Other	Contact Novatio Engineering
4. Unsteady/loud operation or engine shuts down	
Low fuel levels	Add fuel to fuel tank
Overload	Reduce load and cycle generator OFF/ON. If load is already below 1500 W, contact Novatio Engineering.
Engine in 'Eco-mode'	Set ECO-MODE SWITCH to 'OFF'
Overheating Note: steady or blinking yellow LED indicates a non-optimal engine temperature.	• Make sure fuel selector switch is set to correct fuel • Stop the generator and check the position of the air flow control disc ('shutter') behind muffler protector. If fully closed (muffler not visible through protector), power cycle the generator to reset shutter operation. • Make sure engine is able to exhaust freely
High oil level	Ensure correct oil level

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Technical Support

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