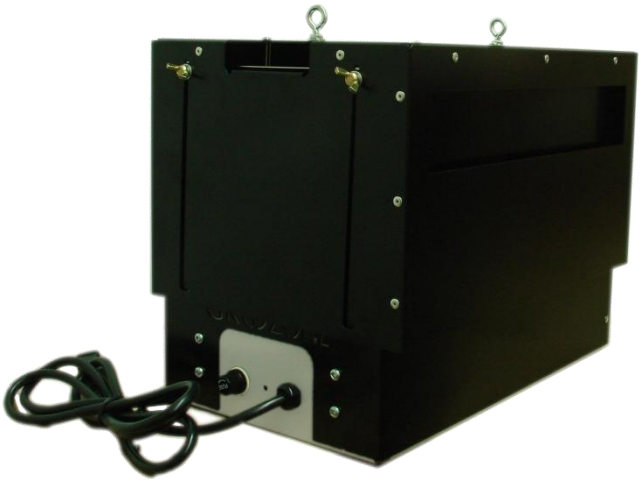
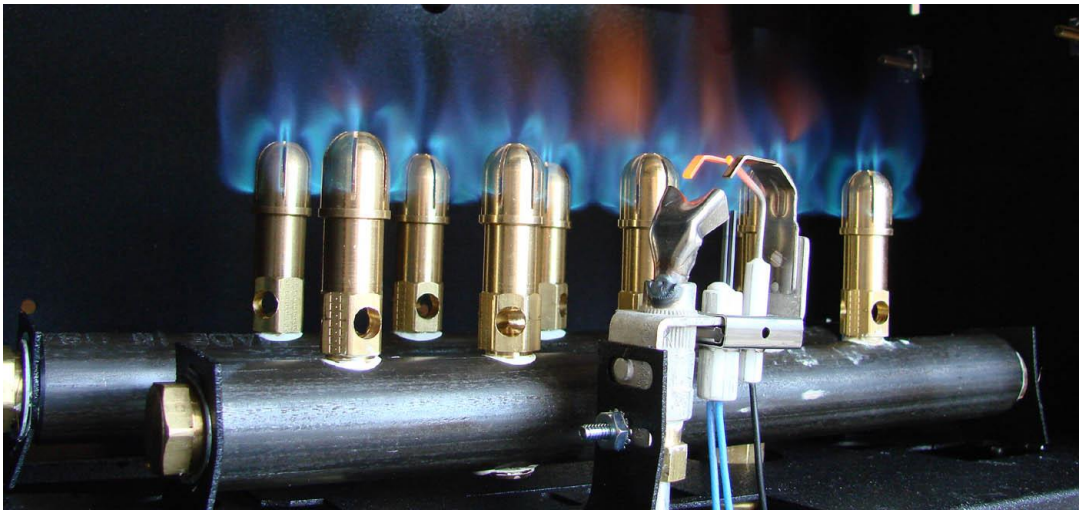
Propane CO2 Generator
LP5 / LP10
Repair & Maintenance Guide





Version 1.2
May 2012

CONTENT

A- IMPORTANT WARNINGS

- **Unit works with PROPANE ONLY. Connectors and fittings will not connect to NATURAL GAS line.**
- **RAISE the FLAME SHIELD before using the burner, see Section D**
- **It is NOT SAFE to use the generator WITHOUT the FLAME SHIELD. However, it is possible to use the burner without the shield for maintenance purpose, in a SAFE AND VENTILATED LOCATION. In this case, use the generator away from combustible or explosive material.**

B- TOOL KIT AND REPLACEMENT PARTS

TOOL KIT

# Ref.	Qty	Tool
1	1	0.020 Orifice Cleaning Drill
2	1 tube	White Grease "Gimme the White Stuff"
3	1	Burner and Cap Cleaning Brush
4	1	1/2 inch Key to screw/unscrew slotted cap burner on manifold
5	1	3/4 inch Key to screw/unscrew hose on gas intake
6	1	Robertson (Square or socket head) Screwdriver (#2 or Red)
7	1 roll	Teflon Tape Roll

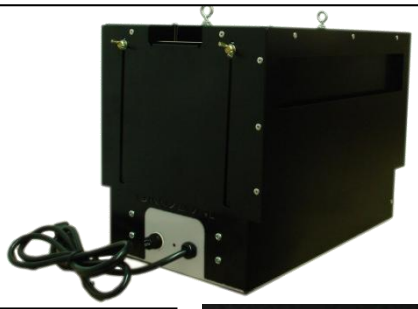
REPLACEMENT PARTS

# Ref.	Qty	Tool
A	10	3000 BTU/hr Slotted Cap Burner
B	12	Rubber Feet
C	2	10-ft Hose / Regulator Assembly
D	10	1A SLOW BLOW Fuse (do not use Fast Blow Type)

C- ILLUSTRATED GLOSSARY

The FLAME SHIELD is made from the enclosure's BLACK PARTS. The Flame Shield can be raised or collapsed over the **REPLACEABLE BASE**. Bases are available separately. They are made from the enclosure's GREY part, where the electrical and gas components are mounted.

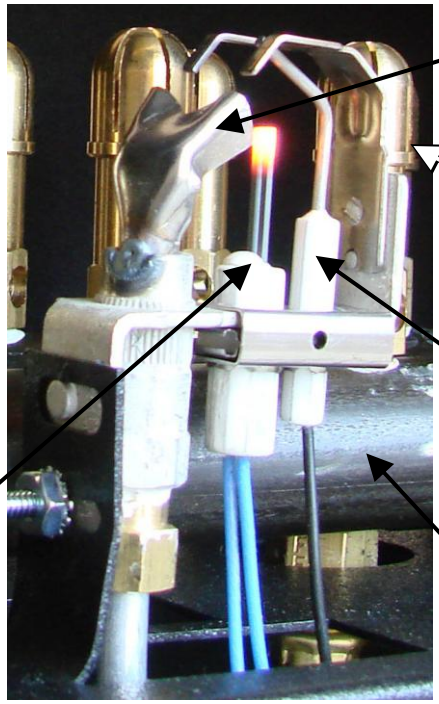
The **POWER CORD** and **FUSE HOLDER** are located on this side of the unit.



The **GAZ CONNECTOR** is located on this opposite side of the unit.

PILOT ASSEMBLY: mounted next to the manifold inside.
GP – **Glow Plug**
TS – **Temperature Sensor** (Rod Shape)
GFG – **Gas Flow Guide**

MANIFOLD / BURNER ASSEMBLY:
MF – **Manifold (Single LP5, Dual LP10)**
SCB – **Slotted Cap Burners (5 or 10)**



GFG: gas will be guided toward the Glow Plug to ignite.

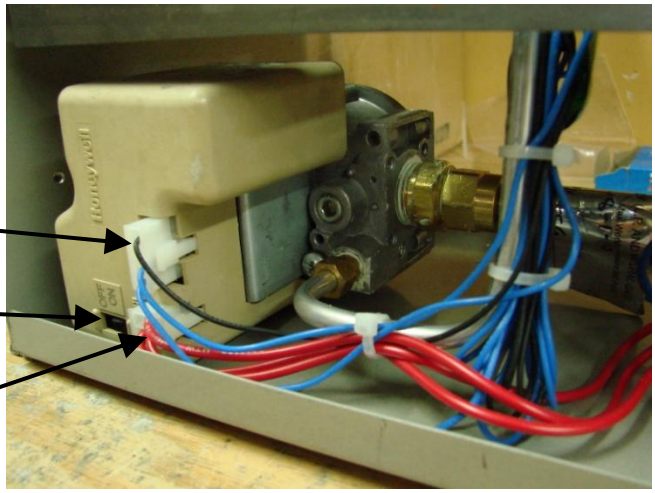
SCB: gas flows from the tiny orifice at the bottom and up to the slotted cap at top. Caps are removable.

TS: the sensor is a thermo-electrical device: once heated by the pilot flame, it allows the main valve to let gas flow through the manifold/ /burner assembly.

MF: gas is fed to the manifold (round tubing) before flowing through the 5 burners per manifold.

GP: do not bend, it is made of ceramic-like metal that breaks easily (not covered by warranty). Glow Plug will turn red and hot in attempt to ignite the pilot flame.

HONEYWELL SMART VALVE::
PC – **Pilot Connector and Wiring (Blue)**
PS – **Power Switch, <u>must be ON</u>**
PSC – **Power Supply Connector**

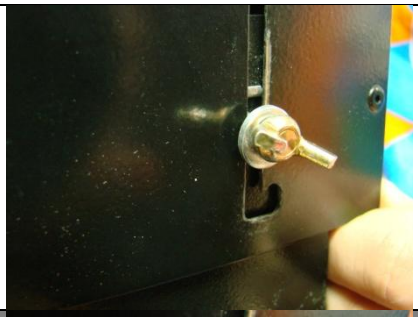
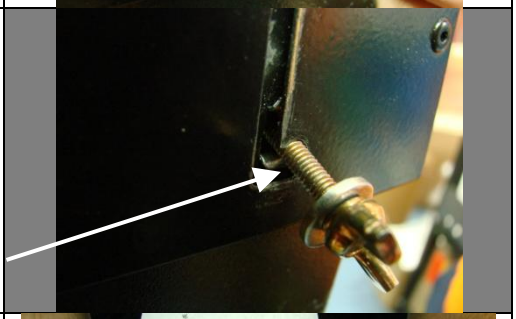
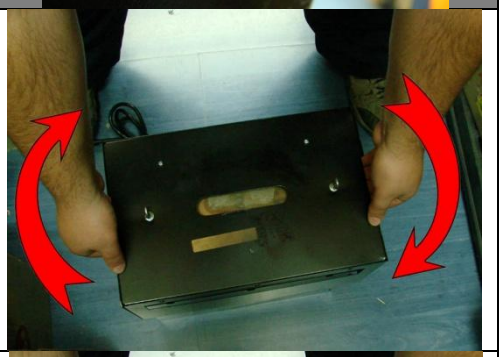
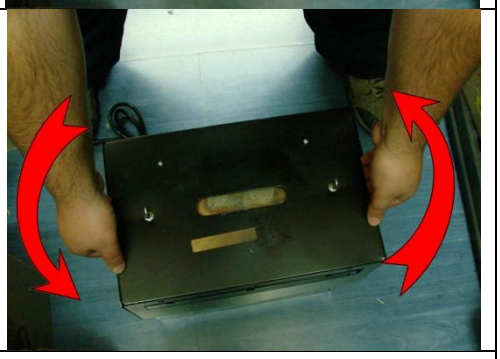


PC

PS

PSC

D- LIFTING AND COLLAPSING THE ENCLOSURE TOP PART (FLAME SHIELD)

Step #	Description	Photos or comments
1	Before RAISING: the 4 Wing Screws (2 on each side) must be loosened (from tight position) about 4 to 5 half-turns.	
2	Before RAISING: holding the flame shield in open (up) position, the wing screw should fit into the L-Notch at the bottom of the SLIDE SLOTS. In this example, a wing screw has been unscrewed many turns to show the L-Notch at the bottom of the slide slot. **Slide L-Notch**	
3	To RAISE and HOLD the Flame Shield in OPEN POSITION: ❖ Unscrew wing nuts 4 to 5 half turns ❖ Lift the cover placing your hands inside the openings on the top sides of unit. Wing screws will be guided to the bottom of the slide slots while lifting the part. ❖ Once lifted, twist the whole shield <u>clockwise</u> to lock the 4 wing screws into the Slide L-Notch. ❖ Tighten the 4 wing screws by hand (no tool required).	
4	To COLLAPSE and HOLD the Flame Shield in CLOSE POSITION: ❖ Unscrew wing nuts 4 to 5 half turns ❖ Place your hands inside openings towards the top of the unit. Twist the whole shield <u>counter clockwise</u> to take the 4 wing screws out of the Slide L-Notch. ❖ Lower the cover. The wing screws will be guided towards the top of the slide slots. ❖ Once fully collapsed, tighten the 4 wing screws by hand (no tool required).	
5	Once the wing screws are tightened, you can manipulate the unit using the large opening on top.	

E- TROUBLESHOOTING STEPS AND CONTACT INFORMATION

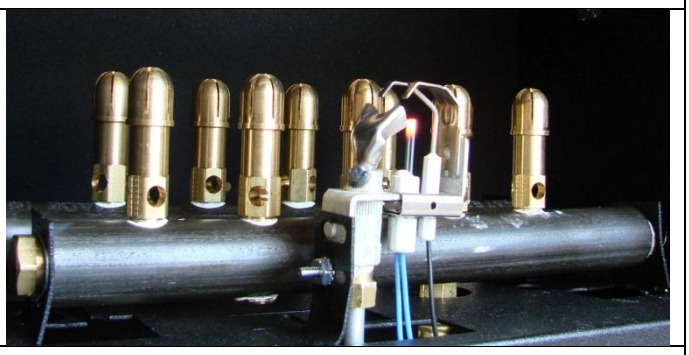
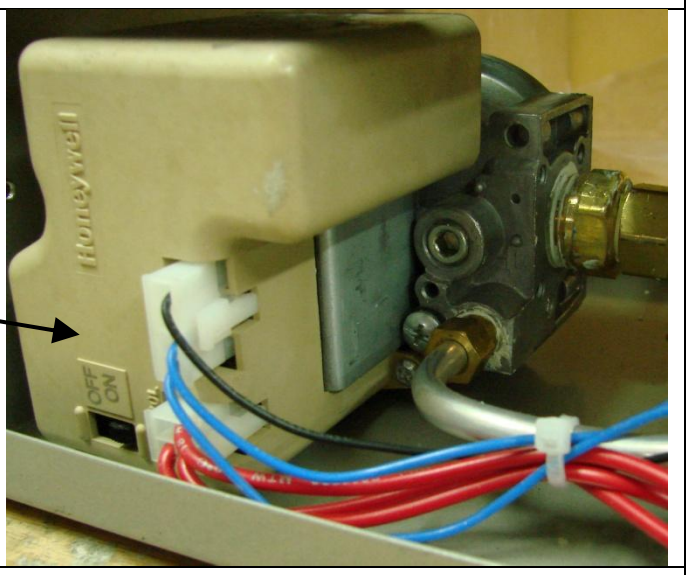
Step #	Description
1	Basic Functional Test WITHOUT gas (Section F)
2	Basic Functional Test WITH gas (Section G)

NOTE:
Repair Tips and Suggestions are provided while performing the tests. If problems persist, the base may need to be replace: in this case refer to Sections L and M.

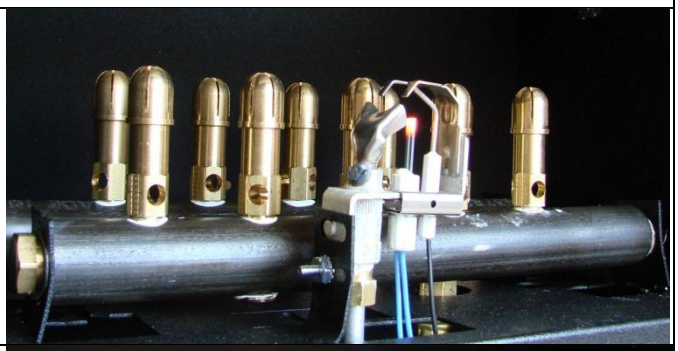
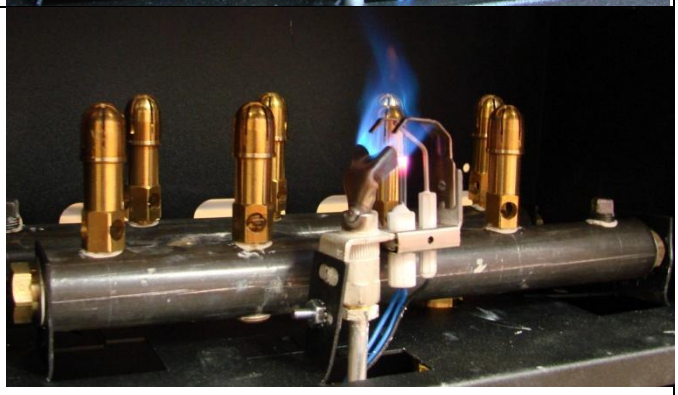
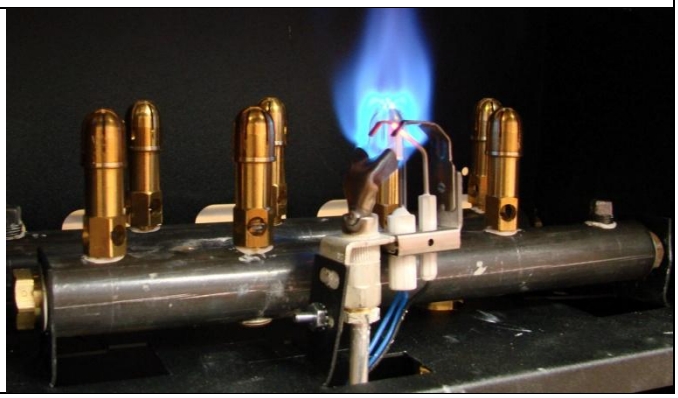
CONTACT:

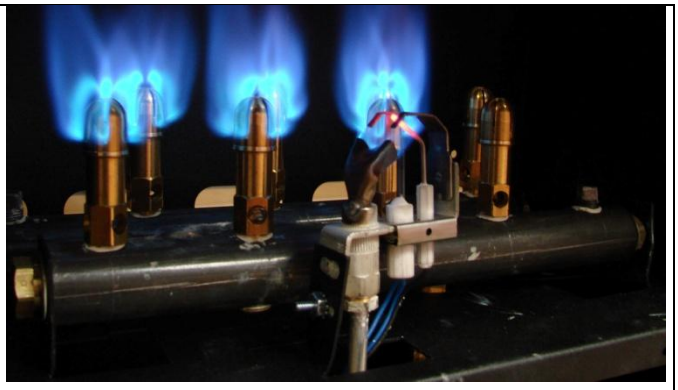
All email inquiries can be sent to service@grozonecontrol.com or by phone at 418-308-0940 / 1-855-262-1800 Monday to Friday, 8am to 5pm EST

F- Basic Functional Test WITHOUT gas

Step #	Description	Photos or comments
1	Raise top part of **FLAME SHIELD** to check up the Pilot **Glow Plug** through one of the large openings on the top.	
2	Connect the **Power Cord** into 120V outlet. After 3-4 seconds, a clicking sound will indicate that the PILOT VALVE and GLOW PLUG have been activated.	
3	Verifying the Pilot Glow Plug: the PILOTE VALVE and GLOW PLUG turn red and become hot after only a few second once they are activated. If successful, it means the fuse is good and the whole unit is likely to work properly when connected to the gas tank.	
4	If this test fails:	
4a	Verifying the fuse : **see Section J**	
4b	Verifying the Valve ON/OFF Switch : see the Power Switch in Definition of Terms. **The Switch must be ON at all times**. ON Position is RIGHT →	
4c	Verifying the Pilot Wiring : blue wires run from the Valve to the Pilot Assembly, mounted next to the 5-burner or 10-burner manifold. The Insulation may have melted causing the copper to touch, creating a short circuit. **In this case, the fuse is likely to blow up each time the power cord is connected! If pilot needs to be changed: change replaceable Base.**	

G- Basic functional Test WITH gas

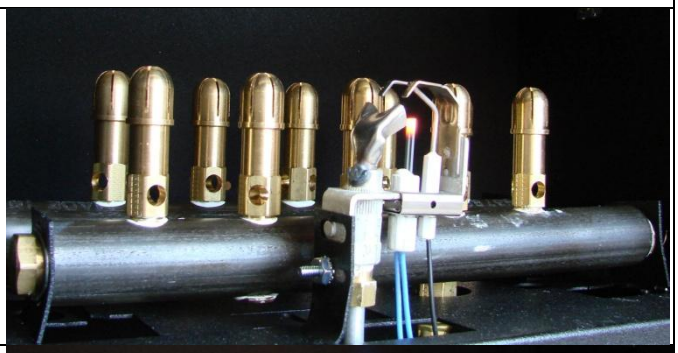
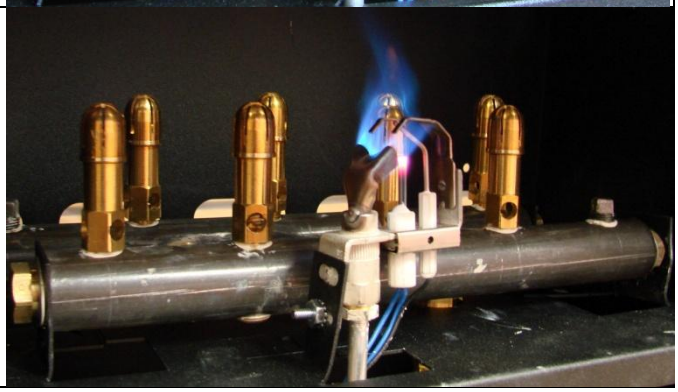
Step #	Description	Photos or comments
1	Raise the FLAME Shield top part. Note: using the generator with the flame shield in collapsed position is UNSAFE.	
2	Connect the Hose / Regulator Assembly into the gas intake fitting. **See Section H**	
3	Screw in the Regulator Quick Connect into the Tank connector. OPEN the tank valve.	
4	Connect Power cord in 120V outlet. **Has the gas line been bleeded** (purged from air) ?? If not **See Section I.**	
5	Verifying the Pilot Glow Plug: the PILOTE VALVE and GLOW PLUG turn red and become hot after only a few second once they are activated.	
6	The gas flowing on the Glow Plug should ignite. THEN the Temperature Sensor (bent rod) will turn red and send a thermo-electric signal to the smart valve, it will then activate its MAIN GAS VALVE to let gas flow through the manifold(s). The first burner next to the pilot will ignite quickly. If burners does not lit up, unplug the power cord and return to Step 4. If ONLY the pilot ignites, the VALVE may be damaged. The base needs to be changed.	
7	In normal AIR CIRCULATION conditions, the other burners will ignite in just seconds. It may be longer when using the unit for the first time (the manifold need to fill up with propane before flowing through the burners).	

8	The other burners will ignite quickly once the first burner is lit. It may take up to 10 seconds for the burners located at the ends of the manifold to turn on. It is normal and is not dangerous. At the next power up, all burners should lit in just seconds. One burner among 5 or 10 is not lighting up ? Soot or dirt may obstruct the burner's tiny orifice. **See section K**.	
9	Flames are BLUE when burning condition and valve setting have been optimized. BLUE flames means GOOD COMBUSTION, generating CO2 and WATER VAPOR (causing humidity in the room), and VERY FEW CO (Dangerous Carbon Monoxide). ORANGE flames are observed when a lot of air circulates across the unit (room fan being too close to the unit). It is normal to observe ORANGE flames around the pilot near the center of the manifold) When flames are mainly ORANGE, you may need to clean up the burners: **see Section K**. Air quality in your environment is also likely to influence the flame color. If the **flames are "dancing**" (going up and down every 2-3 seconds), the gas tank pressure or level is probably too low: fill up the tank with propane.	

H- CONNECTING THE HOSE / REGULATOR ASSEMBLY

Step #	Description	Photos or comments
1	In order to prevent gas leaks, it is good practice to add a 2-inch Teflon tape to the gas intake fitting before connecting the hose.	
2	Place the Teflon tape CLOCKWISE around the MALE fitting. Stretch and apply the tape once or twice around the fitting.	
3	Tighten the hose female connector by hand then **complete with 1/8 turn using a 3/4 inch key**. DO NOT apply excessive strength, assure a tight connection. **SOAP WATER SOLUTION** can be used to check gas leak. Bubbles are formed where gas is leaking.	

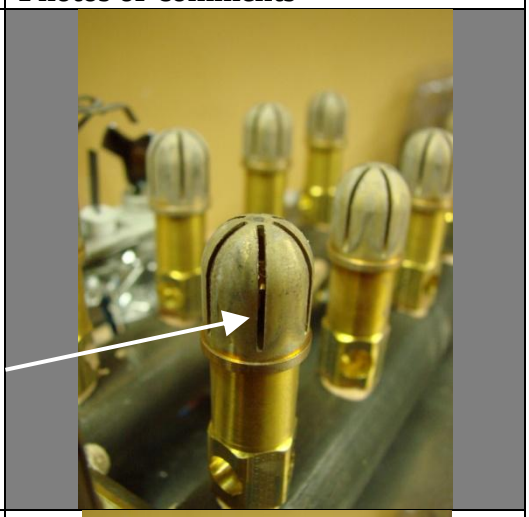
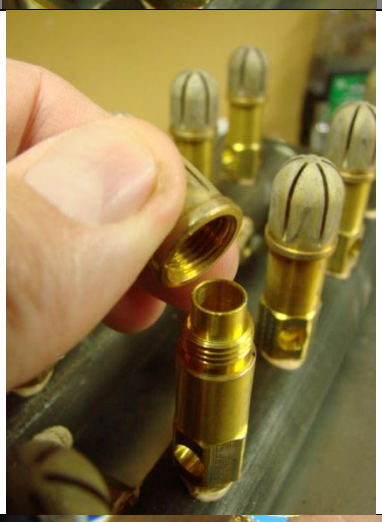
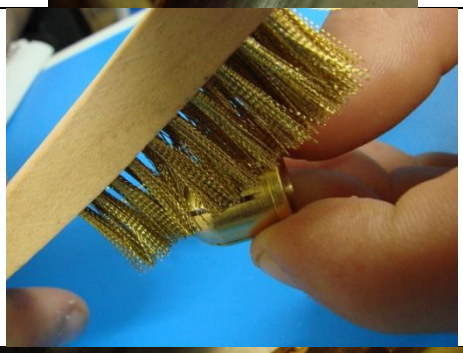
I- BLEEDING THE GAS LINE

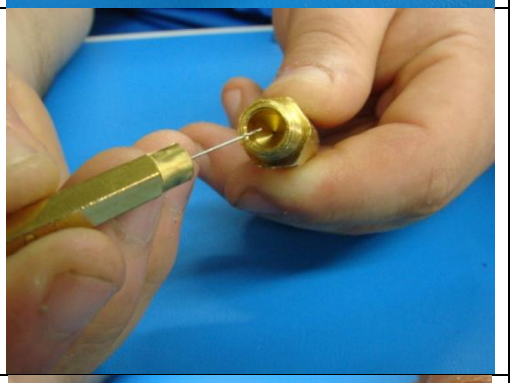
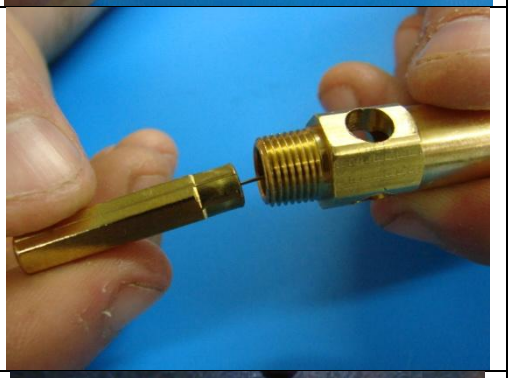
Step #	Description	Photos or comments
1	When connecting the Hose and Tank to the Generator for the first time, bleeding the gas line may be required. BLEEDING the line means purging the air in the hose and filling it up with enough propane to maintain gas combustion once the unit is ignited.	
2	After connecting the hose / regulator assembly to the tank, plug the power cord: the Glow Plug will turn RED with NO gas ignition. **Wait about 30 seconds** until the Glow Plug turns OFF automatically (the Smart valve does it for safety purpose, when no ignition has occurred after a delay). **Then, unplug the power cord again and connect it back right away**. The Pilot will go through a new 30-seconds ignition cycle. It may take up to 2or 3 cycles to bleed the line, before the pilot finally ignites. If it take more than 3 cycles to bleed the line, check the tank valve level or pressure.	 

J- REPLACING A FUSE

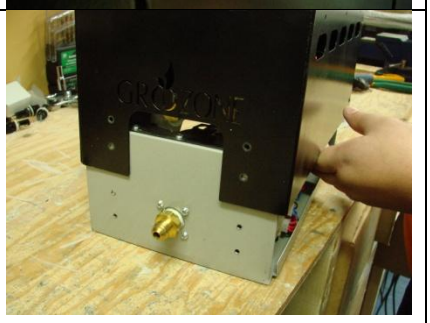
Step #	Description	Photos or comments
1	The Fuse Holder is located next to the power cord strain relief. Unscrew Fuse Holder CAP.	
2	Pull CAP from holder.	
3	Remove fuse from CAP and place a new fuse. Fuse has no polarity: any end can be placed in the Holder CAP. Verifying that the fuse is good: the tiny filament inside the glass compartment shall not be melted or cut !	

K- CLEANING THE BURNERS ORIFICES AND SLOTTED CAP

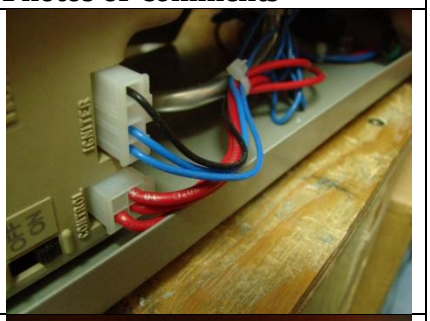
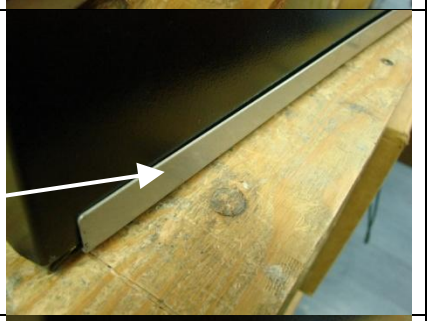
Step #	Description	Photos or comments
1	The burners slotted cap will cumulate soot, dirt and carbon burning residues with time. Such residues will degrade the combustion quality and is likely to generate ORANGE flames (less CO2, more CO). Cleaning a burner requires 2 steps: ❖ Cleaning the SLOTTED CAP ❖ Cleaning the BODY DIRT in Slotted Cap	
2	Cleaning the SLOTTED CAP: Caps must be removed to clean. Unscrew by hand or with a tool : avoid using excessive strength that could distort the part.	
2b	Use the metal brush included in the tool kit to remove dirt from cap slots.	
3	If dirt is present at the bottom of the burner's body, blow the dirt away (with or without an air compressor) from TOP or BOTTOM SIDE HOLES. SIDE HOLES are important for combustion quality and need to be free of dirt at all times. If the dirt cannot be removed, REMOVE THE BURNER FROM THE MANIFOLD USING THE ½ INCH KEY.	

4	Shake the burner head down (thread up) to remove dirt or combustion residues (carbon particles).	
5	If necessary, use the HAND DRILL. Warning: this tool is VERY fragile, any strength applied laterally will break the drill (1/50 inch diameter): keep the drill parallel to the hole direction. Dirt is normally easy to drill out.	
5b		
6	**IMPORTANT NOTICE :** **USE OF WHITE GREASE (GAS SEALANT)** If a burner needs to be replaced, use WHITE GREASE (see white tube in tool kit) around the MANIFOLD HOLE THREAD before screwing the new burner into place. Using too much grease (sealant) may obstruct the burner orifice. DO NOT use excessive strength when screwing the burner back into place. Use ½ inch key.	

L- REMOVING THE ENCLOSURE TOP PART (FLAME SHIELD) FOR MAINTENANCE

Step #	Description	Photos or comments
1	Use the Robertson Screwdriver (#2, Red, Square or Socket head) to remove the 4 screws on both sides of the units. The FLAME SHIELD can now be removed.	
2	Place both hands into the openings on top sides of enclosure. Lift the FLAME SHILED evenly.	
3	Once removed all gas and electrical components are accessible. Gas hose doesn't need to be disconnected before removing the flame shield. **<u>IMPORTANT WARNING</u>:** **It is NOT SAFE to use the generator WITHOUT the FLAME SHIELD. However, it is possible to use the burner without the shield for maintenance purpose, in a SAFE AND VENTILATED LOCATION. In this case, use the generator away from combustible or explosive material.**	

M- CLOSING THE ENCLOSURE TOP PART (FLAME SHIELD) AFTER MAINTENANCE

Step #	Description	Photos or comments
1	Valve wiring (blue wires to pilot, red wires to transformer) may need to be pushed back inside the enclosure to avoid stripping them off while sliding the flame shield back into place.	
1a		
2	Keep each BASE LIP inside the flame shield. Base have two right angle LIPS, one at the front, one at the back. BASE LIP	
3	TIP: Lifting the flame shield slightly may be needed (with a flat screwdriver) to align the 4 screws holes on flame shield with the 4 threaded holes on base.	

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