

Annual Maintenance Procedure

FOR USE WITH CD1500P, CD2000P, CD15nx & CD30nx

Maintenance of the ozone system is critical to its longevity and operating efficiency. Follow the steps below to perform the preventative annual maintenance. If you have additional questions regarding the maintenance of your ozone installation, please consult the operation manual or contact your dealer.

Before you start:

System Shutdown Procedures

- Step 1:** Turn off power to any peripheral system hydraulic components and air prep system.
- Step 2:** Turn the Main Power switch on the ozone generator to the "OFF" position.
- Step 3:** Disconnect the power to the ozone system at the service disconnect box (if so equipped), main circuit breaker or by disconnecting the power cord.

Recommended Tools

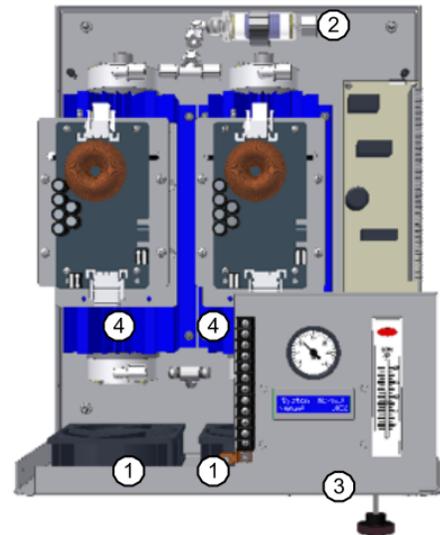
- Nut Driver: 11/32", 3/8"
- Screwdrivers: Phillips and flat-head
- O-Ring Removal Pick
- Hex Key: 7/64"
- Wrench: 5/8" or adjustable
- 2" Ball hone (optional)
- Cloth Shop Towel
- Denatured Alcohol
- Scissors
- Teflon Sealing Tape

Video Walkthroughs

Visit our video channel at:
<http://www.youtube.com/ClearWaterTech>
 These, and other procedures are shown.



CD30nx – Ozone Generator



Included in this maintenance kit:

Pictured are overview images of the CD30nx and the contents of a CD30nx maintenance kit.

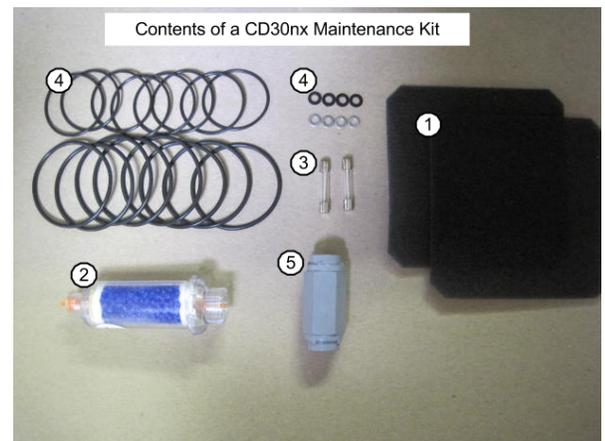
Numbered items correspond to descriptions below and their installed locations within the ozone generator.

CD1500P, CD2000P & CD15nx systems will have similar maintenance kits and generator layouts. They will have differences in quantity of parts and type of circuit boards however the steps will be the same.

The CD1500P & CD15nx models will have a single set of o-rings (#4), as the units have one reaction chamber.

Maintenance Will Involve the Following:

- 1. Cooling Filter:** Clean or replace the cooling fan filter elements as required.
- 2. Inline Particulate Filter:** Remove colored protective caps before installing the new filter. Re-tape threads with Teflon tape. Orientation is universal.
- 3. Fuses:** Save the replacement fuses for use as needed.
- 4. Reaction Chamber O-Ring Replacement:** See page 2 for reaction chamber maintenance instructions.
- 5. Check Valve:** Replace the check valve at the injector. Make note of check valve direction before removing old check valve and reinstall new valve in same direction. Re-tape threads with Teflon tape.



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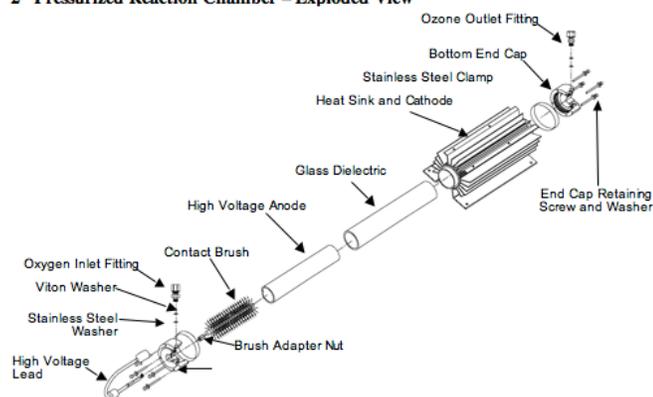
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Reaction Chamber Removal and Disassembly:

2" Pressurized Reaction Chamber – Exploded View

Note: Read through all the steps before disassembling the reaction chamber.

- Step 1:** Make sure all power to the ozone generator has been disconnected according to the "System Shutdown Procedures" outlined above.
- Step 2:** Disconnect the white high voltage lead from the black transformer, the black insulation boot will have to be drawn back to expose the connection.
- Step 3:** If rebuilding a CD1500P: Disconnect wire connections to the drive board and remove the 4-20mA control board with mounting bracket from the reaction chamber.
- Step 4:** Disconnect the tubing connections on both ends of the reaction chamber.
- Step 5:** Remove the 4 nuts securing each chamber and remove the reaction chamber from ozone generator.
- Step 6:** Remove retaining screws and washers from the end caps (4 each).
- Step 7:** Using a gentle back-and-forth twisting motion, remove the non-high voltage end cap (the one *without* the high voltage attachment screw) from the heat sink/cathode assembly. A flat-head screwdriver may be used to gently pry the end cap off, as long as equal pressure is applied to each side of the end cap. **Note:** The stainless steel straps should not be removed.
- Step 8:** Remove the high voltage end cap and dielectric from the heat sink/cathode assembly.
- Step 9:** Draw back the white cap along the white high voltage lead at the end cap, this will expose a screw to be removed. Pull/twist the end cap off the glass. Push the contact brush out of the dielectric glass. Also remove the anode (foil-like material) from within the glass, it may come out with the brush.
- Step 10:** Inspect the dielectric, foil, end caps and cathode for breakage, corrosion or debris; then follow the assembly and re-installation steps below.



Reaction Chamber Assembly and Re-installation:

- Step 1:** Remove o-rings from end caps, then clean the dielectric glass, end caps and interior of the stainless steel cathode cylinder. Use denatured alcohol and shop towels to clean and be sure to remove all old o-ring debris. A 2" ball hone can be used to clean the major debris out of the cathode if there is heavy buildup. **Note:** If the brush's core is intact, but discolored, it is likely fine. The anode foil may also have been discolored from residual oil and heat; it will not require replacement. If there are ragged ends on the foil, trim them off (1/8"-1/4") with a pair of scissors.
- Step 2:** Prepare the end caps for re-assembly by replacing the o-rings and replacing the Viton washers installed under the elbow fittings. **Notes:** A small amount of dielectric silicon lubricant can be used on the o-rings, cathode and/or dielectric glass to make installation easier. When replacing washers under the elbow fittings, the stainless steel washer is installed first, then the Viton washer. Re-tape the elbow fittings. The stainless steel elbow fitting is used on the non-high voltage (bottom) end cap. Attach the high voltage lead to the screw and install it onto the high voltage end cap. Thread the hex brush adapter nut, with contact brush attached, onto the interior of the high voltage end cap.
- Step 3:** Using a gentle twisting motion, press the *non*-high voltage end cap onto the heat sink/cathode assembly until flush with the heat sink cooling fins. Turn the end cap to the correct orientation.
- Step 4:** Slide the four end cap retaining screws with washers through the holes in the non-high voltage end cap, aligning them with the heat sink screw bosses. Thread screws into screw bosses until heads are snug against the end cap.
- Step 5:** Next we focus on assembling the rest of the subcomponents before installing them into the reaction chamber. Roll and insert the anode foil into the glass dielectric, center the anode foil in the glass. Secure the foil with a finger against the inside of the glass to keep it centered and insert the contact brush into the dielectric. Insure the foil is centered before fully seating the glass into the high voltage end cap. Clean the glass with denatured alcohol once more, and do not retouch the glass without re-cleaning.
- Step 6:** Hold the reaction chamber upright on a flat surface, empty side up. Grasp the high voltage end cap and lower the glass into the reaction chamber. Press directly downwards on the high voltage end cap to fully seat the dielectric assembly; the end caps should be flush with the heat sink cooling fins. Turn the end cap to the correct orientation.
- Step 7:** Slide the four end cap retaining screws with washers through the holes in the end cap, aligning them with the heat sink screw bosses. Thread screws into screw bosses until heads are snug against the end cap.
- Step 8:** Re-install the complete reaction chamber assembly into the ozone generator by securing the reaction chamber to its mounts, securing delivery line and connecting the high voltage insulated wire. If the ozone generator is a CD15000P, reinstall the 4-20mA control board with bracket, and reconnect disconnected wires. **Note:** Insure the black and red wires are reconnected to the proper slots to prevent damage to the 4-20mA control board.



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