



Care and Feeding
of your
Neon John's Neon

Introduction

Welcome to the wonderful world of Neon. We hope you find the unique and dynamic glow of your neon as enchanting as we do. The neon tube itself will last a lifetime if it is not broken or abused. This instruction is designed to help you have a long and safe enjoyment of your neon.

Your neon consists of three main parts:

- The neon tube, the part that glows. It requires high voltage in order to operate.
- The base, made of either ceramic, plastic, metal or wood.
- The power supply that makes the high voltage necessary to operate the neon tube.

The neon tube consists of glass tubing that has been heated and bent into shape. After sculpting, the air is removed and the tube is filled with a small quantity of either neon gas or a mixture of argon gas and mercury. The tube may or may not be coated on the inside with phosphor (fluorescent powder) that contribute additional color and brilliance. The tube may also be painted in certain areas to lend colors to the device not normally available in neon tubing and to block out sections that do not light.

CAUTION: The paint is fairly soft and can be scratched and can be removed with ordinary household cleaners. Use only mild dish detergent and a soft towel on painted areas.

Caution: Very Fragile

The process of heating and forming the glass tubing leaves stresses (tendency to break) in the tubing. As part of the processing of the neon after it is formed, some, but not, all stress is relieved. Completely relieving the stress is impossible. Therefore the tubing is **VERY** easy to break, much easier than any other glass object you have ever handled! Please observe the following steps to minimize the possibil-

ity of breakage. **NOTE: Breakage is not covered by warranty!**

- In general, avoid touching the glass tubing.
- Never handle the neon device by the glass! Always pick the device up by the base or frame. Use both hands. If the neon slips, the jarring will likely break the glass.
- Never place the neon on anything that is jarred or that vibrates significantly. **On top of a refrigerator is a very poor place!** Solid shelves, mantles, etc., are best.
- Always place the neon out of the reach of children. "Kids touch what glows!"
- Carefully follow the cleaning instructions below.

Warning: High Voltage

Neon tubes require high voltage, up to 15,000 volts or more, to operate. While the small current associated with this high voltage will not normally cause harm to normal, healthy adults, it can cause people to hurt themselves as they jerk away and it can cause health problems in weak or ill people. Therefore contact with the high voltage must be avoided.

We chose an electronic high voltage power supply because it presents the least shock hazard and we carefully insulated all wires and connections. Nonetheless, some safety precautions are necessary:

- Never alter the wiring or attempt to open the power supply. There are no fuses or user-serviceable parts inside. If the unit quits working, call us for repair.
- Never allow the unit to get wet. If moisture (including dew that condenses after the unit is brought in from the cold) is present, the unit must be thoroughly dried before operating. Operating the unit with moisture present will almost surely burn out the power supply and such damage is not covered by warranty.
- This unit is designed for indoor use only but if you must take it outside, you must protect it from moisture and dew.
- If a tube becomes broken, **immediately turn the unit off!** In addition to presenting a shock hazard, operating the unit with a broken or missing tube will damage the power supply and this damage is not covered under warranty. The power supply is designed to turn itself off if the tube becomes broken but one should not take chances.

Operating your Neon

Neon isn't very particular about operating conditions. Observing these basic rules will make it last longer and operate brighter.

- Make sure nothing is touching the tubing or the wiring. Objects touching the glass concentrate the high voltage and will eventually break down the glass. **This is not covered under warranty!**
- Keep moisture away from the tubing, power supply and wiring. Very high voltage is involved so a little moisture goes a long way.
- Try to keep the temperature above 40 deg (see below)
- Attempting cleaning is risky because neon tubing is so fragile and easily broken. Cleaning should be avoided unless the dirt buildup is excessive. If cleaning is necessary, the first attempt should be with compressed air (canned air, air hose or vacuum cleaner on blow.) This generally removes all the dust unless there is cigarette smoke in the room. Cigarette smoke is sticky and very difficult to remove. For more details, see the section on cleaning.

Operating Temperature

An off-the-shelf neon or a custom neon you specified to work at room temperature will not reliably work under 40° F. A different fill gas that generates more heat during operation (at the expense of tube life) is necessary for low temperature operation. For that reason, if you ordered a custom unit, we asked you whether it would need to operate at low temperature (such as inside a refrigerated display case or next to a window in the winter.) It is generally impossible to change the fill gas to a low temperature fill gas once the neon is finished. If your conditions change and you need low temperature operation, contact us and we'll tell you whether it is possible or not, depending on the nature of your unit. Note that there is a great risk of breaking the tubes during the gas-change operation and we disclaim any liability in that event.

If you must operate a room temperature unit in a cold environment, try the following things before considering asking us to change your fill gas:

- Move it to a slightly warmer place if possible.
- Block drafts around the neon. The tube generates a small amount of heat once it is operating so it may work OK in still air.
- Try turning it on in a warm environment and then placing it in the cold space. The small amount of heat

generated may be enough to keep it lit once it is working.

- Place a heater nearby.
- Warm the tubes with a heat gun or hair dryer.

Preventative Maintenance

The only preventative maintenance normally necessary is to keep the unit dry and to occasionally clean the tube. The high voltage inside the tube tends to draw dust and smoke just like your TV screen does, so it will need fairly frequent cleaning.

Cleaning

Caution: Use only mild dishwashing detergent and a soft towel on the tube!

To prepare for cleaning, follow this procedure:

- **TURN IT OFF.**
- If the neon is a sign that can be dismounted and laid flat on a table, do so.
- Place the unit in front of you with the back of the unit toward you.
- If your unit is the type where the tube can be lifted out (the tube sits loosely in its base.), carefully lift it out of the base and place it face-down on a soft towel.

The Neon Tube

- Draw up some warm dishwater. Wet and wring a towel with the water. Carefully wipe all accessible areas of the tube. **BE VERY GENTLE! Caution: Do not scrub hard or use harsh cleaners, as the paint can be loosened.**
- If a spot of soil must be removed, gently support that section with one hand while GENTLY wiping the tube with a soft towel or paper towel.
- Carefully wipe the tube with a clean, dry, soft towel. A hair dryer can be used to speed the drying. Make sure the tube is completely dry before plugging in.

Plastic

If your neon is mounted on plastic, the plastic can be cleaned with warm dishwater or window cleaner and a soft towel. **Caution: The plastic is easily scratched. Use no abrasive cleaner. Use no solvent-based cleaners such as paint thinner or turpentine.**

DO NOT try to remove the neon from its mounts! If you do, breakage is the likely result.

Radio or TV Interference

The power supply generates high frequency, high voltage to operate the neon tube. This high frequency (normally 25-35 kHz) minimizes the shock hazard potential and lights the neon tube brighter than low frequency power supplies but it is capable of interfering with TV and radio (RFI). This is normally a problem only when the neon is near the receiver (such as on top of a TV). The interference is normally easy to remedy. Try the following:

- Move the neon or receiver away. RFI intensity drops with the square of the distance so doubling the distance between the receiver and the neon decreases the RFI by a factor of 4. We have yet to see a receiver bothered by a neon located more than 10 feet away.
- Turn the neon slightly. The neon tube acts as the antenna and is somewhat directional so turning it slightly may solve the problem.
- Move the neon nearer or farther away from nearby objects. This changes the operating frequency of the power supply and this will normally make the receiver no longer pick it up.
- Plug it into a different outlet. Some RFI is conducted through the power cord so plugging the neon into a different outlet from the receiver will block this path.
- Plug the receiver and/or the neon into a surge protector. Surge protectors normally also block conducted RFI and so will keep the RFI out of the receiver.
- As a last resort, contact us and for an extra charge, we may be able to install a low frequency power supply in the base. The low frequency power supply is larger, generates more heat, hums and cannot operate as much tubing so it may or may not work.

Repairs

If your neon quits working we can normally fix it very rapidly and for a flat fee. Non-warranty repairs must be pre-paid. We accept cash, Mastercard, Visa and checks (with a delay to allow clearing.) We charge a \$20 dishonored check service charge.

If we find nothing wrong with your unit, we must charge a \$35.00 diagnostic fee even if the unit is still in warranty. To avoid this charge, do the following prior to sending your unit back:

- Make sure you have your unit plugged into a live outlet. Plug something else into the outlet and make sure it works. Nothing more embarrassing than finding that your unit is “broken” because of a blown fuse, tripped breaker or a wall switch turned off.

- Carefully examine your tube to make sure it is not cracked. Even the smallest crack will let air in the tube and spoil it. If the unit quits working after it has been jarred, the tube is probably cracked. Pay particular attention to where the tubing is welded together and at sharp bends, as most cracks develop at these points. Such cracks are **NOT** warranted.
- Place an AM radio nearby and with the neon turned on, tune across the dial. At some point you should hear a high pitched whistle if the unit is working. The whistle will go away if the unit is unplugged.
- If your neon got dim, or in the case of clear Neon Red, the red glow took on a bluish tinge before it quit, your tube is cracked and air has leaked in.

If you live near our studio, simply bring it by and we'll give you an estimate. (Call before you come to make sure someone is in.) Be sure to properly pack the neon tube for transportation.

If you must ship the unit back to us you must contact us prior to shipping and get a Return Authorization Number (RA). This number must be placed on the outside of the box. We will not accept a package that does not bear an RA number. If the unit is under warranty, you must pay for shipping to us and we will pay the return shipping. If it is not under warranty or we determine the warranty to be voided, you must pay shipping both ways.

If we must visit your facility for out-of-warranty repairs, there is a flat \$35 service fee in addition to any other repair charges.

Broken Tubes

Repairing broken tubes ranges from difficult for clear glass Neon-filled tubing to almost impossible for Argon/Mercury-filled tubing (colors other than neon-orange). It is frequently easier and cheaper just to fabricate a new unit from scratch. We take photographs of and keep construction records on each neon so if you contact us, we can look in our files and estimate the feasibility of repair. Repair charges are based on an hourly rate of \$45.00 per hour. Fabricating a new unit will be quoted on a flat-rate basis.

If the tube is broken into more than 2 pieces, if the tube split along its axis (like slicing a potato for french fries) or if it is broken in a sharp bend, repair is likely not feasible.

It is not uncommon during repair attempts for the tube to shatter from the stress of heating it. If that happens, you must still pay for the time we expended to that point. If you choose to then have a new unit fabricated, we will give you a 50% credit for the attempted repair charges against the cost of the new unit.

Mercury

All Neon tubes, other than those made of clear glass (glows Neon Orange when operating), orange and certain other reddish colors contain a mixture of argon and mercury. These tubes work exactly like a fluorescent lamp in your house where the mercury and argon give off ultraviolet light that then stimulates a phosphor coating inside the tube, causing it to give off the colored light. The amount of mercury in a neon tube is tiny — about the same amount as in a fluorescent lamp or a common fever thermometer. As long as the tube is intact the mercury is contained completely within the tube. Even if the tube is broken, the tiny amount of mercury involved in our opinion presents no health hazard. We are aware, however, that some people are chemophobic (frightened of chemicals), particularly regarding mercury so we offer these suggestions regarding the handling of a broken tube.

- If you are truly frightened of mercury, we suggest you not buy a neon (or get rid of any you now have, along with your fever thermometer, your thermostat, your watch batteries and your silent light switches.) If you have bought a neon unit and are just now learning of the mercury contained within and you are really scared of it, we will take your neon, place it in our studio on consignment and attempt to sell it for you at no cost to you. Contact us for details.
- If you break your neon, **STOP!** Don't handle it until you observe the situation. In almost all cases, unless the tube is completely shattered by being dropped or whatnot, the air rushing in will sweep the mercury droplets inward toward the electrodes. If you carefully pick up the tubes so that the broken ends point up, the mercury will remain inside the tube. Simply bag the pieces and toss 'em in the garbage.
- If the tube is shattered, simply sweep up the residue, bag it and toss it. Most of the mercury will remain adhered to the glass fragments.
- If you see droplets of mercury laying around, you have several options. You can use an old toothbrush and a folded business card or pill bottle to sweep the droplets up. Toss them in the outside garbage.
- Any remaining mercury (and that you've swept up if you feel the need) can be immobilized with one of several techniques:
- Mercury alloys with copper, silver, gold and other similar metals and forms solid amalgams. (Don't let it touch your jewelry!) If you daub the mercury with NEW, CLEAN copper "steel wool", the mercury will alloy with the copper. The amalgam can be

seen as off-color stains on the steel wool. Toss the copper wool in the garbage.

- Elemental sulfur (commonly available at the drug store or garden supply stores as "flowers of sulfur") will chemically combine with mercury and form a solid powder. Simply sprinkle the sulfur powder on the affected area, optionally grind it in a bit with a towel or brush, allow it to sit for a half hour or so and sweep it up. Sweep up the powder and toss it in the garbage.
- Clay-type (old style) kitty litter will trap mercury. Simply apply and grind in a bit with a towel or brush, sweep up and toss.
- Of course, you could call your local HAZMAT team who will show up with the media, perhaps condemn your house and tear it down, make a media event out of it and then bill you several thousand dollars for the "cleanup".

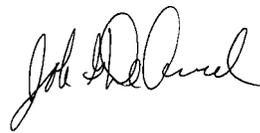
Since people have broken thermometers for hundreds of years without anyone dropping over dead from mercury poisoning, we suggest you simply clean up the mess, toss it in the garbage and forget about it.

Finally, if you someday decide you no longer want your neon and don't want to go to the effort of selling it or otherwise disposing of it and feel uncomfortable about throwing it away, simply bring it back to us. We'll be happy to dispose of it at no cost to you..

We hate to give this much attention to mercury, for we believe that the risks are almost nonexistent and even this scant attention tends to overstate the risk but the media has so hyped mercury in recent years that we feel like we must at least mention it.

Thank you again for buying my neon!

Sincerely,



John De Armond

Limited Warranty

Neon John's Custom Neon warrants the neon tubing we manufacture against defects in materials and workmanship for a period of **2 years** from the date of manufacture. We engrave the date of manufacture on each tube. This warranty covers staining, leaks, excessive dimming (some dimming over time is normal) or other manufacturing or materials-oriented defects. **We do not warrant against breakage.** This warranty is voided by any modifications performed on the unit after it leaves our custody. In particular, trying to add additional neon to an existing installation will shorten the life of the tubes and the power supply. Such damage is NOT warranted.

During the course of this warranty, we will replace defective neon units at no cost to you. If the neon must be shipped, you must pay the shipping to our facility. We will pay the return shipping.

We warrant anything else that we manufacture for 90 days from the date of manufacture. A code date is engraved in anything we manufacture.

For components such as transformers and power supplies manufactured by others, the manufacturer's warranties apply. If a non-Neon John's component fails during the manufacturer's warranty, we will replace it with a similar unit. You must pay the labor involved, as the manufacturer's warranty typically does not cover labor. If shipping is involved, you must pay for shipping to our facility. We will pay return shipping. If a non-Neon John's component fails within 10 days of installation (infant mortality), we will replace it at no cost to you including labor except for shipping.

This is your total and exclusive warranty. We disclaim any liability for incidental or consequential damages of any type. We disclaim any implied warranty of merchantability or suitability for a particular purpose. The remedies stated above are your sole remedies under this warranty. Any disputes that cannot be resolved between us will be submitted to binding arbitration to be conducted at a time and place convenient to Neon John's. Each party to the arbitration shall bear his own expenses and any arbitration expenses shall be split evenly among the parties.

Minimum Charges

For non-warranty repairs, the following **minimum** charges apply:

- Service call - \$35.
- Delivery - In town - \$25. Out of town - \$50 plus 50 cents per mile both ways.
- Bench charge (minimum in-house charge) - \$35
- Troubleshooting/Diagnostics - \$35
- Glass repair - \$35
- Glass repair - multiple units at once - \$20 minimum each unit

These are the minimum charges that apply. Labor over and above the minimum is \$45 per hour.