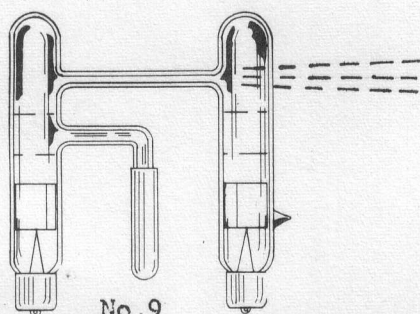
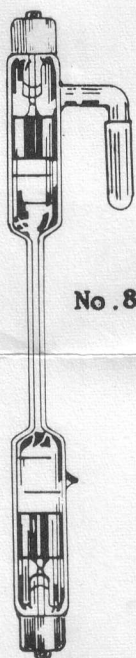


## INSTRUCTIONS FOR USING NASCENT HYDROGEN LAMPS.

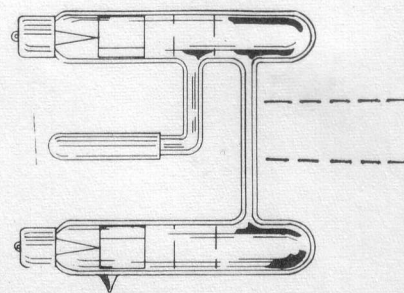
Contrary to the usual construction of discharge tubes, the electrodes in these tubes are designed to have a constant rate of "sputtering" (metallic deposition from the electrodes on to the glass walls) which is confined within the electrode chambers. This "sputtering" serves two purposes, it maintains a fresh active surface on the electrodes and also maintains the gas pressure at a desired minimal value for the least Doppler effect and a brighter discharge.

Both lamps Nos. 8 and 9 should preferably be operated with the reservoirs in a downward position so there can be no possibility of an excessive seepage of moisture into the electrode chambers, which will cause the pressure to increase too rapidly and interfere with the glow discharge.

The vapor reservoir should be kept at an ambient temperature of 25°C. If the lamp is in a closely confined space where the temperature can build up, a small air blower should be used to circulate the air, or the reservoir may be cooled by covering with a piece of wet plastic sponge.



End-on viewing position



When storing the tubes for long periods of time, the lamps should lay in a flat position. If lamps have been stored in a very cold room, they may have acquired too low a vapor pressure to start the discharge working properly immediately. To restore the red color quickly, apply GENTLE HEAT intermittently to the side of the metal reservoir for a second at a time until the red color holds permanently, the lamp will then operate automatically.

Once started, the lamp will operate continuously for hours without any attention.

These lamps are rated at 25 milliamperes on continuous operation and are guaranteed to have a minimum life of 750 hours, during which time they will maintain the atomic spectrum. If a brighter light is desired, the current may be increased to 50 ma. At this increased power the lamps should be operated intermittently for a 30 minute period and then a ten minute cooling period. However the life at 50 ma. can be expected to be reduced one-half.

Power supplies for these lamps are the gas-tube transformers available everywhere. The current is limited by a self contained magnetic shunt and the transformer is rated by its short-circuit current. None of these transformers deliver their name-plate rating. A rated 30 ma. transformer delivers 25 ma. and one with an 18 ma. rating delivers 15 ma. Instead of purchasing an expensive 50 ma. transformer, two of the 25 milliamper transformer may be operated in parallel. The voltage required need not exceed 4000 volts, but 5000 volt transformers are usually more readily available.

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