

Knowledge Domain: Electrical Simple

Unit: Lighting/Indicators

Skill: Cleaning high temperature and high intensity bulbs

Tools and Parts Required:

- 1) Isopropyl alcohol**
- 2) Cotton Cloth**
- 3) Dirty bulbs**
- 4) Gloves (not rubber gloves)**

Introduction

Dirt is a problem for any medical equipment. Light bulbs are found in many types of medical equipment. Bulbs are used in spectrometers and surgery lights. Bulbs must be kept clean for efficient and safe functioning. Cleaning removes unwanted material. Cleaning is **NOT** disinfection or sterilization.

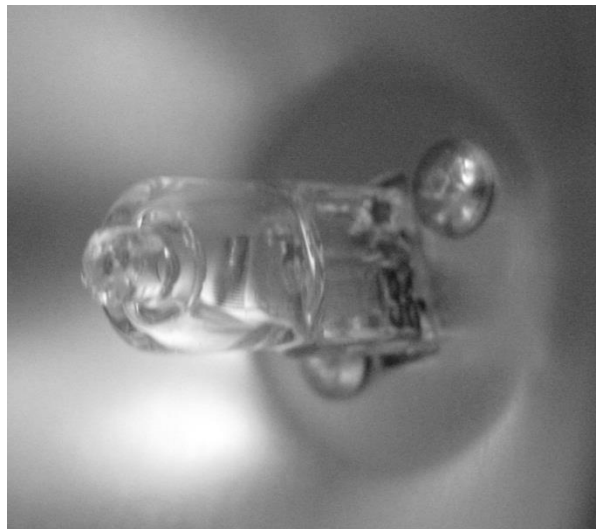
Types of bulbs

High intensity bulbs provide very high efficacy and long service life. High intensity bulbs are compact and powerful. The types of high intensity bulbs include halogen bulbs and high pressure sodium lamps. High intensity bulbs are subject to high pressure and temperature, and require special fixtures to operate safely. Halogen bulbs are commonly used in medical settings.

Halogen bulbs are made of tungsten filament contained within an inert gas and a small amount of a halogen such as iodine or bromine. The bulb assembly is contained in a quartz container. Surface contamination such as dirt or fingerprints can damage the quartz envelope when it is heated. Surface contaminants create a focal hot spot at the outer layer of the bulb. Heating of a contaminated bulb may cause failure, gas leakage or explosion.

Example

Below is a picture of a halogen bulb in the socket. Sometimes a bulb needs to be cleaned because of oils from someone's hands. These oils will not be easily visible on the bulb.



Identification and Diagnosis

A new bulb must not be handled with bare hands. A paper towel may be used to handle new bulbs. Bulbs in use may become dusty. Maintenance of the bulb and fixtures may also contaminate the bulb. Fingerprints and surface contamination may be identified by holding the bulb up to a light source and looking at the surface of the bulb. The bulb without fingerprint contamination should have clear and shiny surface.

Procedure

1. Wear protective gloves. Do not use rubber gloves. Petroleum in rubber gloves may transfer onto the bulb. Use powder-free latex, nitrile or cotton cloth gloves.
2. Verify that the power supply is switched off and the bulb has sufficiently cooled down. Grip the bulb by the base, if possible.
3. First, wipe off dust and dirt with a dry, lint free, cotton cloth. To remove fingerprints and oil, wet a portion of lint free, cotton cloth with isopropyl alcohol. Wipe the glass part of the bulb. Remove the alcohol by wiping the bulb with a dry, soft cotton cloth.
4. Do not replace the bulb until completely clean and dry. Do not touch the bulb with bare hands. Always use gloves to handle high temperature bulbs. Alcohol on the cleaning cloth makes the cloth flammable. Use care when disposing of the cleaning cloth.

Exercise

In this exercise you will practice cleaning a high intensity bulb. Your instructor will provide you with a bulb to clean. Be sure to wear appropriate protective gloves.

Your instructor must verify your work before you continue.

Preventative Maintenance and Calibration

Regular cleaning is recommended for maintenance of all health care equipment. Regular cleaning helps equipment function optimally and will significantly extend the life of the bulbs.

Inspect all bulbs often. Cleaning the device is not a substitute for disinfection or sterilization. Bulbs are not required to be disinfected or sterilized.