Knowledge Domain: Plumbing
Unit: Seal
Skill: Sealing Autoclave Doors

Tools and Parts Required:

1) **Autoclave**
2) **Rubber Gasket**
3) **Silicone Sealer**

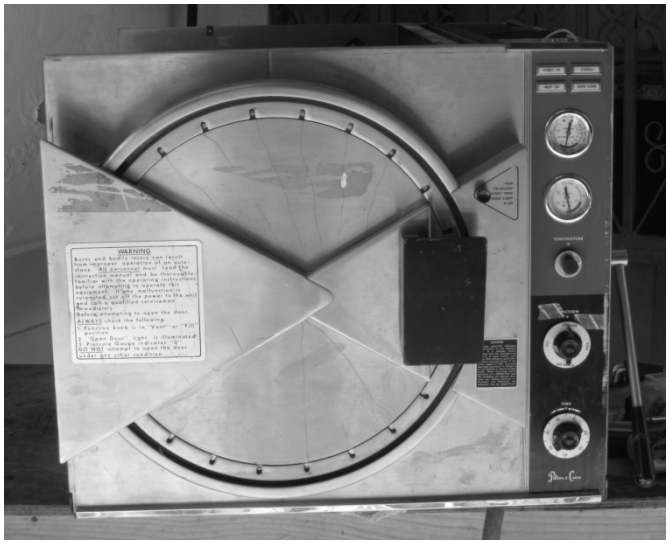
Introduction

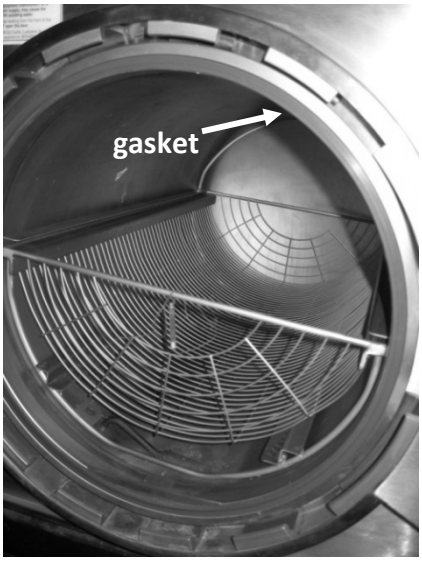
Sterilizers and autoclaves sterilize medical equipment with very high temperature and high pressure conditions. Sterilization is necessary for treating patients safely. Without sterilization, dangerous diseases can spread.

Sterilizers have a flexible gasket that allows the door to seal completely. Without a perfect seal, pressure leaks and the sterilizer will not reach the necessary temperature.

Example

Below is a picture of Pelton-Crane tabletop sterilizer with the door closed (left) and the door open (right). Notice the gasket surrounding the opening.

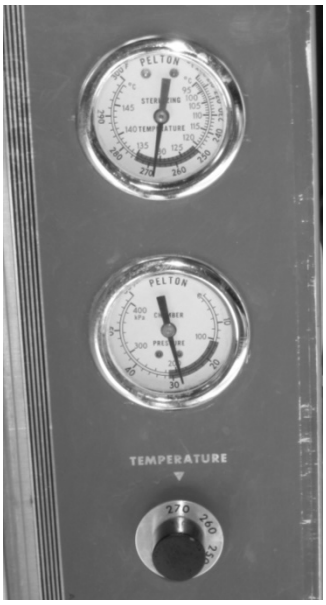




Identification and Diagnosis

As temperature increases, water turns to steam and the air expands. Heating water in a hot pot is an example of this phenomenon. Sterilizers and autoclaves hold the pressure inside. If you can see, hear, or feel steam escaping from the sterilizer as it heats, the seal is not adequate. Immediately repair or replace inadequate seals.

Gaskets may leak for different reasons. (1) Some gaskets may have visible damage that causes leaks. (2) Old gaskets become hard and inflexible. Old gaskets will not seal



adequately. Sometimes very small cracks are present that allow pressure to leak. Press your fingernail into the gasket to create an indentation. The indentation should disappear within 2 to 3 seconds. If the indentation does not disappear or is slow to disappear, the gasket is old and should be replaced.

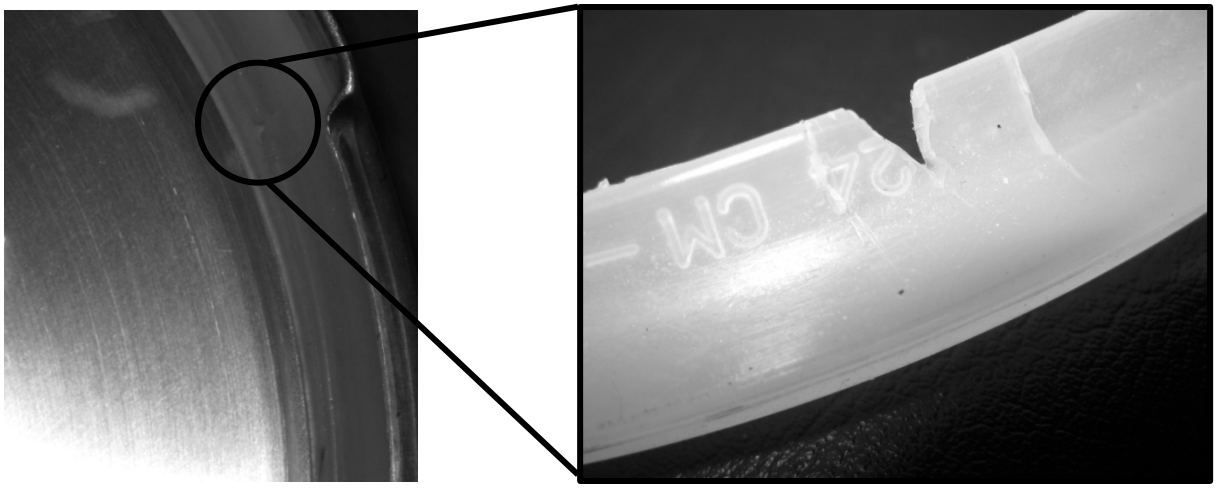
Sometimes a leak is not visible. When the temperature and pressure will not reach the settings, this may indicate a leak. Below is a photo of the temperature and pressure gauges reaching the settings.

Procedure

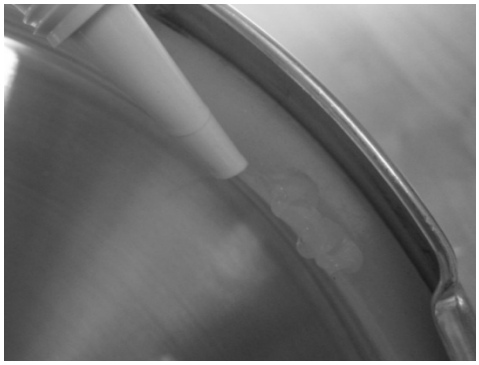
There are two ways to repair leaking gaskets. The best way to repair leakage is to replace the gasket with a new gasket. Do not use generic gaskets. The gasket must fit perfectly to create an adequate seal.

Sometimes replacing the gasket is impossible. In this case, you must repair the damage to the gasket. Visible damage and cracks can be filled with a silicone sealer. Silicone is a flexible plastic that tolerates water and high temperature conditions. Silicone seal is a soft material that is squeezed into spaces, much like caulk.

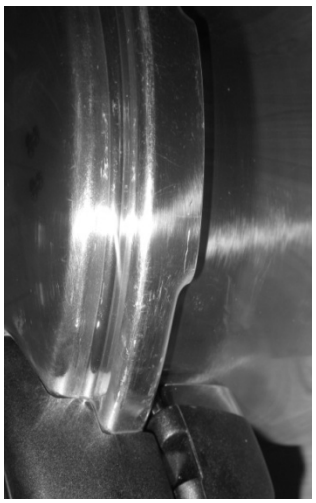
First, identify the defect in the gasket. Clean the area with a soft cloth, soap, and water. Ensure the gasket is dry before applying silicone.



Squeeze a small amount of silicone into the defect. Use excess silicone to fill the defect. Do not scrape off excess silicone.



Allow the silicone to set for about 30 minutes. It should be slightly tacky. Close the door of the autoclave or sterilizer. The door will press the silicone into the defect. Excess silicone ensures formation of a seal. Do not remove excess.



Leave the door closed for 2 to 3 hours, according to the directions on the silicone. The silicone should remain dry while it sets. After setting, the silicone will still be flexible. Do not use the autoclave or sterilizer for about one day.

After applying the silicone, test the autoclave or sterilizer. During testing, leave the sterilizer empty. Do not attempt to sterilize anything during testing.

Exercise

During your training, you will work on sterilizers and autoclaves. Check each gasket for damage. Remove the gasket and look for visible damage. Use your fingernail to check for old gaskets. Ask your instructor to help you identify the difference between gaskets with an adequate seal and gaskets without an adequate seal.

During your hospital visits, you may encounter an autoclave or sterilizer with a damaged seal. Use the above procedure to repair the gasket.

Preventative Maintenance and Calibration

Gaskets become stiff as they become old. Autoclave and sterilizer seals should be checked on a regular basis. Ask the staff using the device if they have seen or heard any leaks. Use the above procedures to check for old or damaged gaskets.

Always calibrate any medical device before returning it to use.