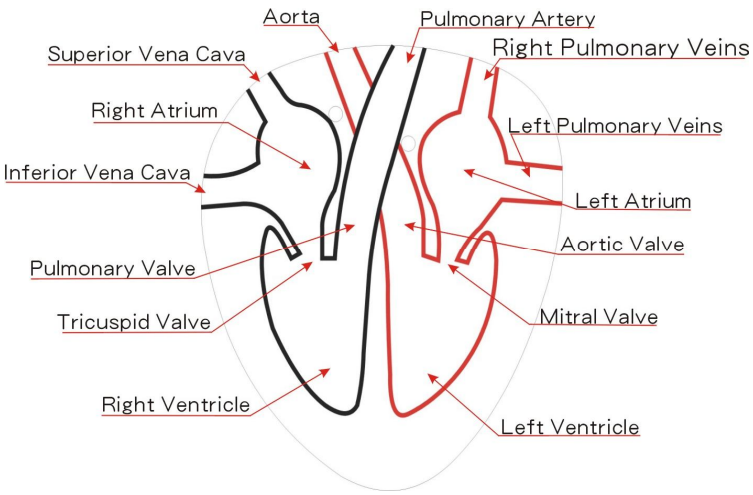
Functional Heart and Circulatory System



A Instrument Installation and Management

A-1 Install:

1. Put 25m1 of red solution in the syringe
2. Make sure that the model stays stable and check if the pipes are loose or banded.
3. Pull out the pipe which connects with superior vena cava.
4. Connect the syringe with the pipe of superior vena cava, and then inject the red solution into the pipes.
5. Connect the pipe back with the heart after injection.
6. Press the rubber pump to spread the red solution equally.

A-2 Operation:

1. Open the aluminum case, and then plug the power cord.
2. Turn on the switch, and then the blood begins to cycle.

A-3 Theory: the structure of the heart

1. The heart is composed of atriums, ventricles, mitral valve, tricuspid valve, aortic valve and pulmonary valve. There are four chambers in the heart - two atria and two ventricles.
2. The two ventricles are muscular chambers that propel the blood out of the heart. The two atria hold the blood going back to the heart, and at the right time empty into the right and left ventricles. The pressure exerted by circulating blood upon the walls of blood vessels, called blood pressure.
3. The valves open to allow the blood to flow in the right direction of the heart, and close to prevent the backflow of blood.

A-4 Circulatory System:

1. The circulatory system of a human body is composed of the heart and blood vessels.
2. The left ventricle pumps blood through the aortic valve, and into the aorta, the blood vessel that leads to the rest of the body.
3. Blood flows away from the heart to arteries, which follow into arterioles, and then narrow further into capillaries where the blood exchanges materials with the cells.
4. The red blood cells inside the capillary release their oxygen which passes through the wall and into the surrounding tissue. The tissue releases carbon dioxide, which passes through the wall and into the red blood cells.

The process of blood flow: The blood flows through the superior vena cava and the inferior vena cava → right atrium → tricuspid valve → right ventricle → pulmonary valve → pulmonary artery, then flows to the right and left lung.

5. Human gas-exchange occurs in the lungs. carbon dioxide passes from the blood into the alveoli and is then exhaled.