3.2.3 Sidestream and Microstream CO_2 Module Tests

Leakage test

Follow this procedure to perform the test:

1. Plug the module into the module rack.

2. Wait until CO_2 warmup is finished and then use your hand or other objects to completely block the gas inlet of the module or watertrap. The sidestream and microstream CO_2 modules will behave as follows:

   ◆ Sidestream: The alarm message [**CO_2 FilterLine Err**] is displayed on the screen after certain time. Block the gas inlet for another 30 s. If the alarm message does not disappear, it indicates that the module does not leak.

   ◆ Microstream: The alarm message [**CO_2 Purging**] is displayed on the screen after certain time. Block the gas inlet for another 30s. If alarm message [**CO_2 FilterLine Err**] is shown, it indicates that the module does not leak.
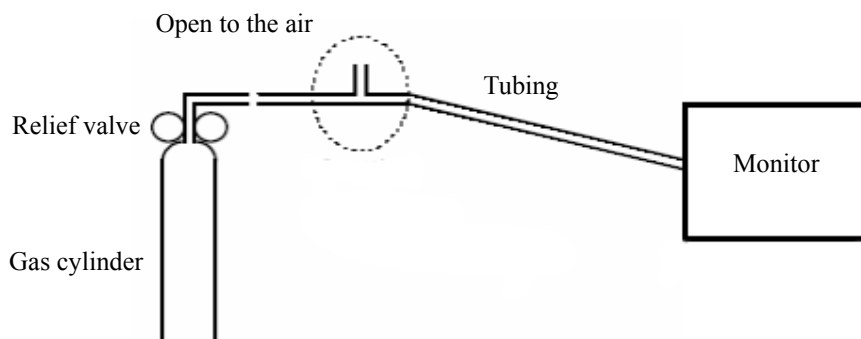
Accuracy Test

Tools required:

■ A steel gas cylinder with $6\pm0.05\%$ CO_2 and balance gas N_2

■ T-shape connector

■ Tubing

Follow this procedure to perform the test:

1. Plug the module into the module rack.

2. Wait until the CO_2 module warmup is finished, and check the airway for leakage and perform a leakage test as well to make sure the airway has no leakage.

3. Enter [**User Maintenance**]→ [**Maintain CO_2 Purging**]→ [**Calibrate CO_2>>**].

4. Connect the test system as follows:

5. Open the relief valve to vent standard CO_2 and make sure that there is an excess gas flow through the T-shape connector to air..

6. Check the realtime CO_2 value is within $6.0\pm0.3\%$ in the [**Calibrate CO$_2$**] menu.
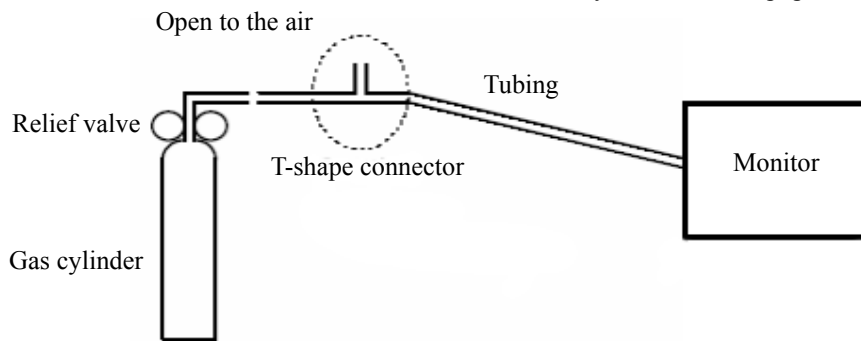
Calibration

Tools required:

- A steel gas cylinder with $6\pm0.05\%$ CO_2 and balance gas N_2
- T-shape connector
- Tubing

Follow this procedure to perform a calibration:

1. Make sure that the sidestream or microstream CO_2 module has been warmed up or started up.

2. Check the airway for leakage and perform a leakage test as well to make sure the airway has no leakage.

3. Select [**Main Menu**]→ [**Maintenance >>**]→ [**User Maintenance** >>]→ enter the required password→ [**Maintain CO$_2$ >>**]→ [**Calibrate CO$_2$ >>**].

4. In the [**Calibrate CO$_2$**] menu, select [**Zero**].

5. After the zero calibration is finished successfully, connect the equipment as follows:

6. Open the relief valve to vent standard CO2 and make sure that there is an excess gas flow through the T-shape connector to air.

7. In the [**Calibrate CO$_2$**] menu, enter the vented CO_2 concentration in the [**CO$_2$**] field.

8. In the [**Calibrate CO$_2$**] menu, the measured CO_2 concentration is displayed. After the measured CO_2 concentration becomes stable, select [**Calibrate CO$_2$**] to calibrate the CO_2 module.

If the calibration is finished successfully, the message [**Calibration Completed!**] is displayed in the [**Calibrate CO$_2$**] menu. If the calibration failed, the message [**Calibration Failed!**] is displayed. In this case, perform another calibration.