

Job Aid

Assessing breast pump performance

The purpose of using a pressure gauge is to assess if the breast pump is working properly. Breast pump effectiveness is evaluated by measuring the *vacuum* (also called *suction*) of the pump with a pressure gauge, an instrument that measures negative pressure.

The reading on the gauge is then compared to a standard range for the specific breast pump that is being tested, to determine whether the pump is performing adequately or not.

The Medela gauge needle points to a number from 0 to 450 *mmHg* (the abbreviation for *millimeters of mercury* – *Hg* is the chemical symbol for mercury).



The Hygeia gauge needle points to a number from 0 to 300 mmHg.

Important: The pressure gauges are very delicate. Always take extreme care when handling this gauge to prevent possible damage due to impact.

Testing WIC Pumps

The gauge will primarily be used to obtain pressure readings on multi-user breast pumps. Use the Medela Gauge with Lactina and Pump in Style pumps and Hygeia's gauge with EnDeare and Pro pumps.

Lactina and EnDeare: test for vacuum level each time they are cleaned between users.

Pump in Style and Hygeia Pro: test only if a participant reports a problem with a pump. The participant can also call [Medela Customer](#)

[Service](#) or [Hygeia Health Breast Pump Customer Support](#) directly for troubleshooting.

Please Note: The gauge measures the *vacuum*, not the *speed*, of the pump. When there are questions about a pump's performance, the concern is usually about the vacuum, but not always. If it does appear to be a question of *speed*, turn the pump on and count the number of cycles for a minute.

- Lactina breast pump is 40-60 cycles per minute
- Pump in Style about 60 cycles per minute.

Prior to testing pump performance

1. Set aside one double pumping accessory kit to be dedicated to pump testing.
2. Ensure that the pump to be tested is assembled correctly. For an electric breast pump, **attach tubing for *single pumping*** (pumping just one breast)
3. Inspect all parts to the pump – the flange (breast shield), membrane, and valve. Even a small tear in the membrane can affect pump performance.
4. Securely attach a single bottle and pump parts to the tubing.
5. Firmly press the plug into the second opening for the tubing (needed when double pumping) and ensure that the opening is completely closed.
6. Turn the pump on and listen for any irregularities. Many pumps that have suction issues also make unusual squeaks or noises, or they just sound louder than usual.

Instructions for using pressure gauges

Recommendation for all pressure gauges

The pressure gauge does not need to be removed from the flange for storage. It is best if the gauge is not removed every time a pump is tested, because the gauges are very delicate. If the pressure gauge does need to be removed from the flange for some reason, grasp the gauge and stopper tab and carefully pull the unit out, and store it in a safe place.

Lactina and Pump in Style Pumps

1. If not already attached, insert the vacuum gauge into the hole in the rubber stopper.



2. The pull-tab on the rubber stopper should be in the back of the gauge.



3. Insert the rubber stopper containing the gauge firmly into the **24mm** flange (fits correctly only in the 24 mm flange). Ensure a complete seal by firmly pressing in all edges of the rubber stopper.

4. Connect this breast shield to one of the ports and close unused port with the provided

filter cap securely.5. Set the pump's vacuum regulator dial to the minimum/low setting.



Lactina: this is located on the pale-yellow arm of the pump (Minimum suction is achieved by setting the pointer on the regulator ring to MIN. For maximum suction, set the pointer to MAX.)

Pump in Style: the vacuum regulator dial is on the faceplate of the pump (labeled low, medium, and high)6. Turn on the pump and look at the gauge to read what the value is on MIN/low. Record this value.7. Gradually increase the suction level on the vacuum regulator dial and watch the gauge to see if the pressure values increase in response. Continue to adjust the suction level on the pump until it is on the MAX/high setting. Record this value.

8. Testing the other side of the pump –

Lactina: If the Lactina functions well on the first side, the pump is sound, and there is no need to check the other side.

Pump in Style: Test both sides. Unfasten the tubing and plug and switch sides. Repeat the process above and record values on the MIN/low and MAX/high settings.

9. Compare the values you obtained with the standard values listed below in the [Reference guides for testing pump pressure values](#) section.

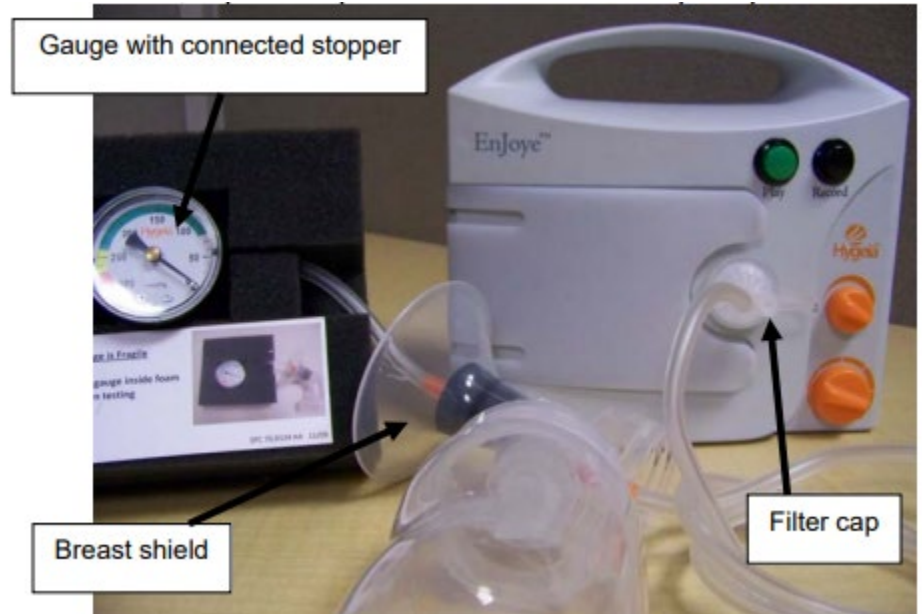
Hygeia Pumps (EnDeare and Pro)

1. Insert the gauge with connected stopper firmly into one breast shield.

2. Connect this breast shield to one of the ports and close unused port with the provided filter cap securely.

3. Turn the Speed control knob to maximum.

4. Turn the Strength control knob to maximum.



5. Take a reading from the gauge and compare the values you obtained with the standard values listed below in the [Reference guides for testing pump pressure values](#) section.

Reference guides for testing pump pressure values

Standard Values for Medela Pumps

Symphony

- 50 – 250 mmHg

Lactina

- MIN setting: 90 – 100 mmHg
- MAX setting: 240 – 250 mmHg

(Values should go up as dial is adjusted from MIN to MAX)

Pump in Style

- First phase: 50 – 200 mmHg
- Second phase: 100 – 250 mmHg
- Low setting: 90 – 100 mmHg
- High setting: 240 – 250 mmHg

Standard Values for Hygeia Pumps

EnDeare

- MAX setting: 230 mmHg or greater
(suction is low if less than 230 mmHg)

EnJoye

- MAX setting: 230 mmHg or greater
(suction is low if less than 230 mmHg)

Pro

- First phase (Stimulation mode): 40 to 100mmHg +/- 5% (6 levels)
- Second phase (Expression mode): 50 to 270mmHg +/- 5% (12 levels)

Express

- First phase (Massage mode): 50mmHg to 170mmHg +/-5%. (9 levels)
- Second phase (Expression mode): 70mm to 250mmhg +/- 5% (9 levels)
- Third phase (Stimulation mode): 70mmHg to 250mmHg +/- 5% (9 levels)

Weather and elevation considerations

Vacuum levels can vary based on weather and elevation. Avoid testing pumps during stormy conditions.

The values listed for the MAX/High setting in the section above are accurate if the elevation of your clinic is from sea level to 1650 feet above sea level. For elevations above 1650 feet, see the chart below to see the values for the MAX/High setting. You will notice that the higher the elevation, the lower the normal values. Contact the State Breast Pump Coordinator if you have any questions about your elevation and the correct pressure values to use.

Sea level to 1650 ft (0-500 meters)	255 mmHg (235 – 275 mmHg)
1650 to 3300 ft (500-1000 meters)	240 mmHg (220 – 260 mmHg)
3300 to 6600 ft (1000-2000 meters)	225 mmHg (205 – 245 mmHg)
Above 6600 ft (2000 meters)	199 mmHg (179 – 219 mmHg)

Pump not working properly

Lactina and EnDeare: remove it from service, dispose of it on-site and contact the State Breast Pump Coordinator who will remove the pump from your agency's pump inventory.

Pump in Style: These pumps are no longer under warranty. Have the participant check with their insurance for a replacement pump. If needed,

a WIC pump can be issued as a replacement pump. Contact the State Breast Pump Coordinator.

Hygeia Pro: These pumps have a one-year warranty from date of issuance. Have the participant contact [Hygeia Health Breast Pump Customer Support](#).

Manual (hand) pumps:

- Although manual pumps can be tested, there are no optimal pressure ranges for the manual two-handed pump or the one-handed pumps. If a manual pump is not working properly, ask the participant to seek a replacement pump from their health insurance provider, a WIC pump can be issued as a replacement pump, as needed. Contact the State Breast Pump Coordinator.

Pump Assessment Chart

Clinic Location _____

Elevation _____

Date	Serial #	Value on MIN/Low	Value on MAX/High	Functional (Y/N)	Comments	Name of Tester