

Nipple Tunnel Diameter

Flange Brand/Type	Diameter
Ameda Custom Flange	30.5 mm
Ameda Custom Flange with Insert	28.5 mm
Ameda Standard Flange.	25.0 mm
Ameda Standard Flange with Reducing Insert.	23.0 mm
Ameda Standard Flange with Flexishield.	21.0 mm
Medela SoftFit.	25.0 mm
Medela PersonalFit Standard.	24.0 mm
Medela PersonalFit Large Breastshield.	27.0 mm
Medela PersonalFit Extra Large Breastshield	30.0 mm
Medela Extra Large Glass Breastshield	40.0 mm

is too large for the tunnel, it will be dragged along the sides of the tunnel, causing friction, damage, and pain. If the nipple is small and the tunnel too large, a portion of areola tissue may be drawn into the tunnel and there is often a ring shape imbedded into the breast when it is removed from the pump flange. Breast pump companies are looking for solutions to the fit problem (See sidebar: "Nipple Tunnel Diameter"):

- Both Ameda and Medela offer a variety of different sized flange/tunnels and inserts, which can further change the interior diameter. However, not all flanges are available with all breast pumps.
- Many breast pumps include an optional soft silicone insert or soft flange, which can give a better and/or more comfortable fit; the Avent Isis has a particularly comfortable and effective insert.
- Medela has a template, which can be used to estimate the probable best flange size

based on nipple size (remember that nipples often increase in size during pumping).

- **Whisper Wear** reports good results with a wide variety of breast sizes as long as the pump maintains good contact with the breast tissue. Some women find that a sports bra keeps these pumps in place better than a regular bra.

Efficiency is another way of rating breast pumps, and this can also go hand in hand with comfort. An efficient pump will stimulate a milk-ejection reflex

(MER) or let-down and remove milk thoroughly and quickly, an especially important consideration for employed mothers with time constraints or those pumping frequently to maintain a milk supply for a baby who is sick, was born prematurely, or is not sucking properly. The biggest step forward in this area was the development of breast pumps that can drain both breasts at one time, better known as double-pumping. A mother who lets down easily with a good pump can be finished in as little as 10 minutes rather than at least twice that time for pumping one breast at a time. Double-pumping has also been shown to stimulate a greater release of prolactin than single pumping. Some mothers will respond better to pumps that can simply achieve the most suction. Other mothers do better with pumps offering a wider range of pressure and cycling options. The "Natural Expression Pumping" now available on some Medela pumps is an attempt to more closely simulate what a baby

does during a nursing session. The **Whisper Wear** also includes an option for more rapid cycling to stimulate the milk ejection reflex.

Hygiene and possible contamination can also be an important consideration. Breast pumps with special traps built in, such as the Ameda and the Nurture III, prevent pumped milk from entering the tubing and then getting into the pump motor itself. The Medela pumps do not have such a system and milk can go into the tubing and even get into the motor, which is very difficult to clean. The diaphragm of the Pump in Style often becomes contaminated. This is one reason why buying a used Pump in Style may not be a good idea (see sidebar). Mothers need to be careful while pumping in order to prevent this from happening; keeping the pump at chest level helps protect against contamination.

Intended use of the breast pump is another important way of determining what might be the best choice for any particular mother. The chart below gives an idea of the most commonly accepted ways of categorizing pumps according to use. Be aware, however, that every mother is different. In general, full-size automatic cycling pumps are recommended for use by mothers whose babies are not yet nursing well and who are trying to use the pump to establish and maintain a full milk supply. However, some mothers have accomplished this using manual or inexpensive electric pumps or even hand expression. This is most likely to be an option if the mother is able to pump easily and quickly using the lowest setting on the hospital grade pump. A mother already using high settings on a big pump will most likely see a drop in production when switching to a smaller model. The **Whisper Wear** is proving to be very useful to mothers who are busy with other children or work and are trying to provide for a premie or sick

<i>Your situation</i>	<i>Types of pumps</i>			
	High-quality rental pumps	Personal use electric	Battery-operated, manual cycling	Hand pumps
One to three times monthly			X	X
Weekly		X	X	X
Two to three times weekly	X	X		
Daily	X	X		
Complete pumping (ill or premature baby)	X			

Manufacturer Pump Name	Pump Type	Pressure in mmHg (+/- 20)	Cycles per minute (+/- 2-4)	Auto or Manual Cycling	Other
Ameda SMB *	Hospital Grade Electric **	50 - 275	48	Auto	The first full-size electric pump set the standard for those that came later; still excellent after all these years—very durable. Cast iron base adds weight.
Ameda Lact-e *	Hospital Grade Electric **	50 - 275	48	Auto	Max. pressure drops during double-pumping to the 200-220 range—not a bad thing for mothers who cannot tolerate higher suction.
Ameda Elite	Hospital Grade Electric **	0 - 250	30 - 60	Auto	Offers more possible pressure/cycling speed choices than any other pump; this gives mothers more options to find the setting that is just right for them. Most gentle suction level.
Ameda Purely Yours	Personal Use Electric **	80 - 240	30 - 60	Auto	Four speed control settings + eight non-linked pressure settings gives mother lots of cycle/pressure choices Especially for working mothers with normal milk supply, pumping three times a day.
Ameda One Hand	Personal Use Manual	0 - 250	Variable—40 - 60	Manual	Mother controls amount of vacuum and cycling speed according to how hard and how quickly she squeezes the handle; could double-pump with one in each hand.
Avent Isis	Personal Use Manual	0 - 200	Variable—40 - 60	Manual	A squeeze-handle pump that is considered very effective.
Bailey Medical Nurture III	Personal Use Electric **	0 - 220	Variable—15 - 20	Semi-Auto	Although this pump does not cycle at the optimum rate, many mothers have used it successfully—could cause nipple trauma due to slower cycle time. Semi automatic; cycling is user regulated.
Expressly Yours by Camp (White River)	Personal Use Electric **	50 - 260	50 - 60	Auto	Only pump with a choice of plastic or all-silicone flange; soft flange can collapse and pinch at high pressures; motor is quite heavy and very noisy.
Gerber, Evenflo	Personal Use Manual	250	5	Auto	Due to numerous reports of poor performance, these pumps are not recommended.
Medela Classic *	Hospital Grade Electric **	80 - 240	60	Auto	Often reported to have best double-pumping suction of all the large electric pumps.
Medela Symphony	Hospital Grade Electric **	50 - 250	Up to 120 in let-down mode; 64-68 in expression mode; cycle speeds auto-linked to pressures	Auto	New pump that features “Natural Expression” Let-down and Expression modes to simulate what happens when baby first goes to breast and suckles quickly for MER and then more slowly and deeply as milk lets down.
Medela Lactina (Plus or Select)	Hospital Grade Electric **	80 - 220	40 - 60; cycle speeds are auto-linked to pressures	Auto	Although listed as hospital-grade pumps, some mothers get better production when they switch from the Lactina to the Classic, especially for long-term, frequent pumping.
Medela Pump In Style	Personal Use Electric **	80 - 240	42 - 63; cycle speeds are auto-linked to pressures	Auto	Especially for working mothers pumping three times a day with normal milk supplies.
Medela Pump In Style Advanced	Personal Use Electric **	80 - 240	Up to 120 in let-down mode; 64-68 in expression mode; cycle speeds auto-linked to pressures	Auto	Especially for working mothers pumping three times a day with normal milk supplies. New model includes “Natural Expression” pumping.
Medela DoubleEase	Personal Use Electric **	100 - 220	33	Auto	When used for pumping both breasts, breasts are pumped alternately; lacks optimum cycling speed.
Medela SpringExpress/ManualElectric	Personal Use Manual	0 - 250	Variable—40 - 60	Manual	Manual piston pumps with auto-release of suction at top of stroke; a pedal-operated model is also available and can be adapted for double-pumping.
Medela Harmony	Personal Use Manual	0 - 240	Variable	Manual	Unique “Natural Expression” allows for quicker, shallower pumping to stimulate MER and then longer, deeper strokes in the expression mode.
WhisperWear Hands Free Pump	Personal Use Electric **	80 - 200	>60 in rapid mode (let-down mode) Up to 60 in other modes	Auto	Unique battery-powered pump features three speeds and contains a computer that resembles a large breast shell; worn inside the bra with collection bag; pump weighs 5.8 oz.
Whittlestone Breast Expresser	Personal Use Electric **	100	52	Auto	Uses compression and a constant underlying vacuum to produce a low, sinusoidal delivery of vacuum to the breast for milk expression—called pulsation rather than cycling. Unique design, good for mothers who need gentle suction.

*Metal - heavy

**Can doublepump

Note: Breast pump specifications may vary as pumps are improved.