

Precision Resuscitation:

Calibrating the T-Piece

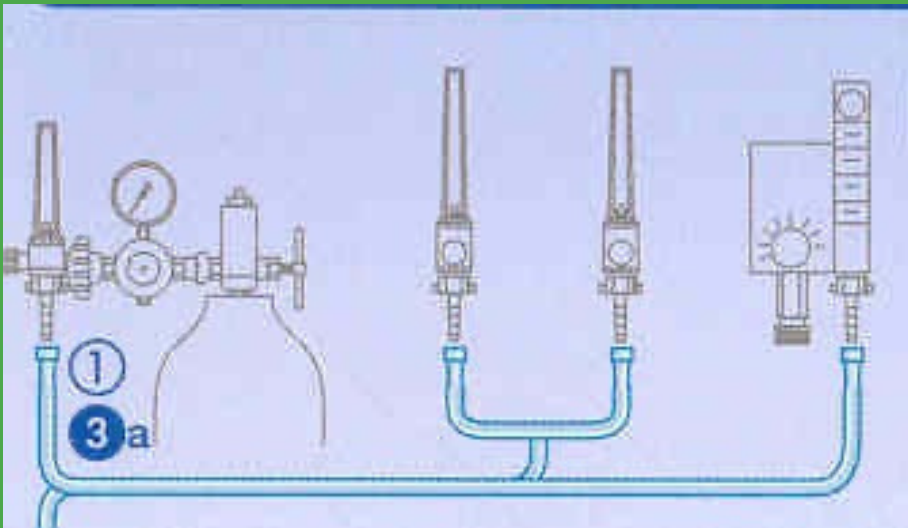
Device A Clinical Guide to Neopuff™ Setup and Operation for Neonatologists



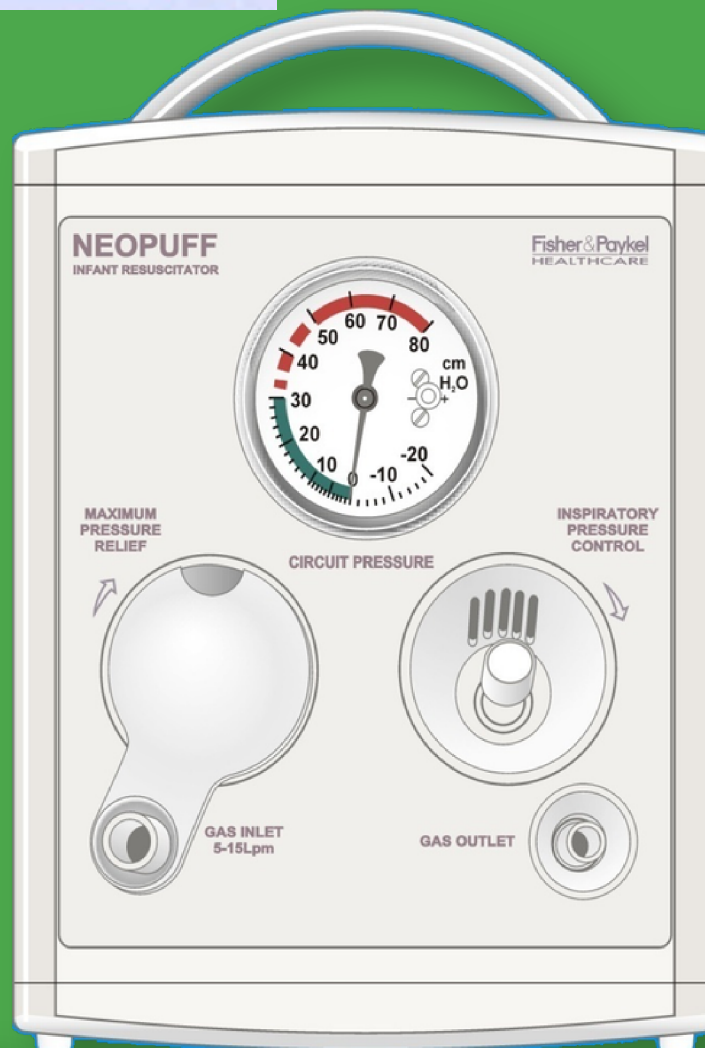
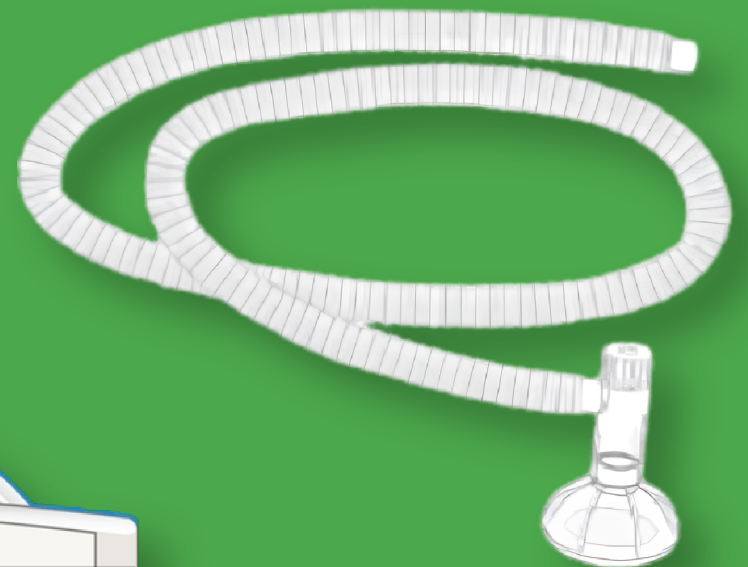
Based on the Victorian Newborn Resuscitation Project (NeoResus) & ANZCOR Guidelines.
Textbook of Neonatal Resuscitation, 9th Edition

The components of the Neopuff

Gas supply



Patient supply line
with T-piece & mask



Test lung

Gas supply line



Anatomy of the Neopuff Interface

Manometer

Maximum pressure Relief

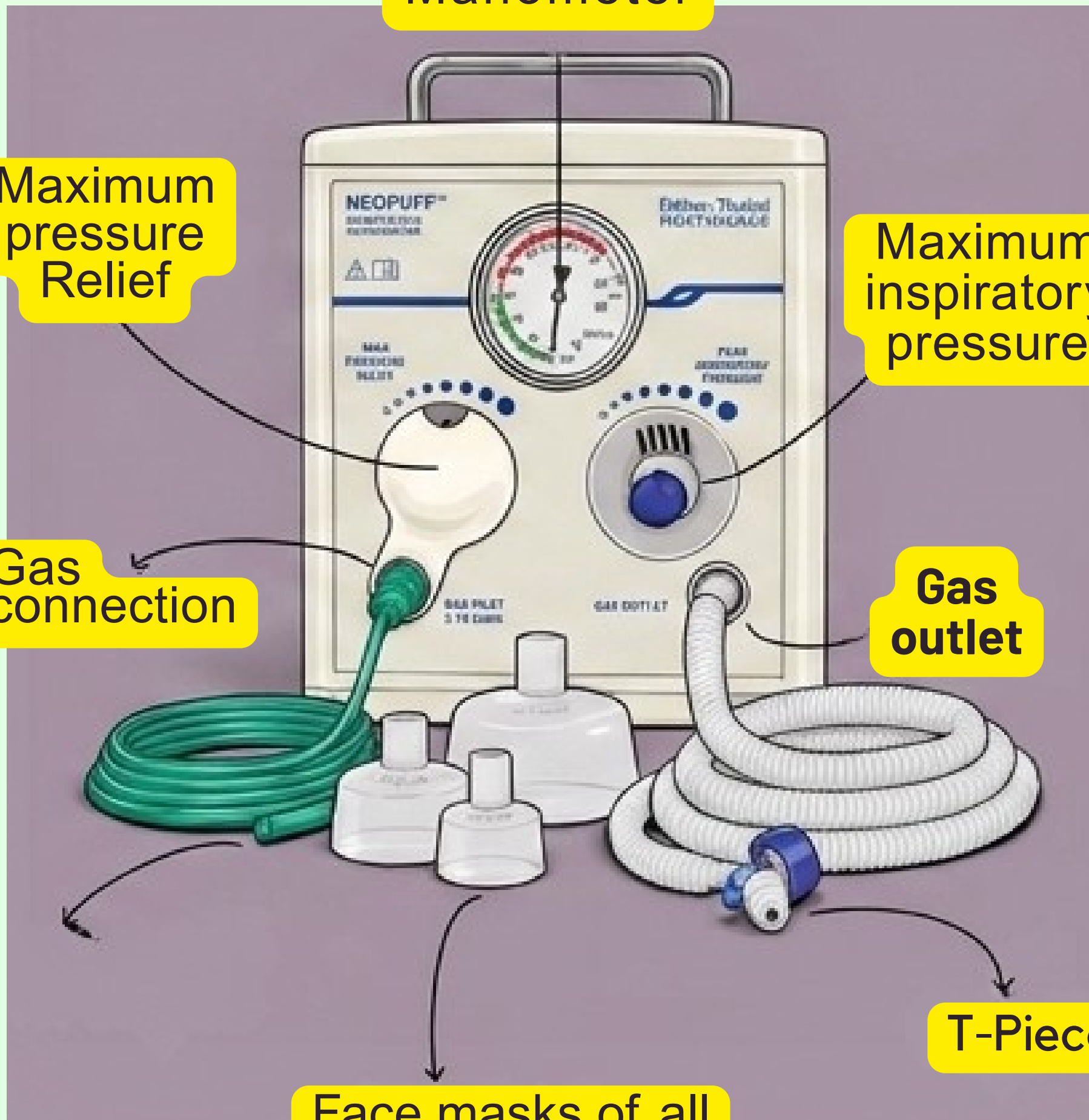
Maximum inspiratory pressure

Gas connection

Gas outlet

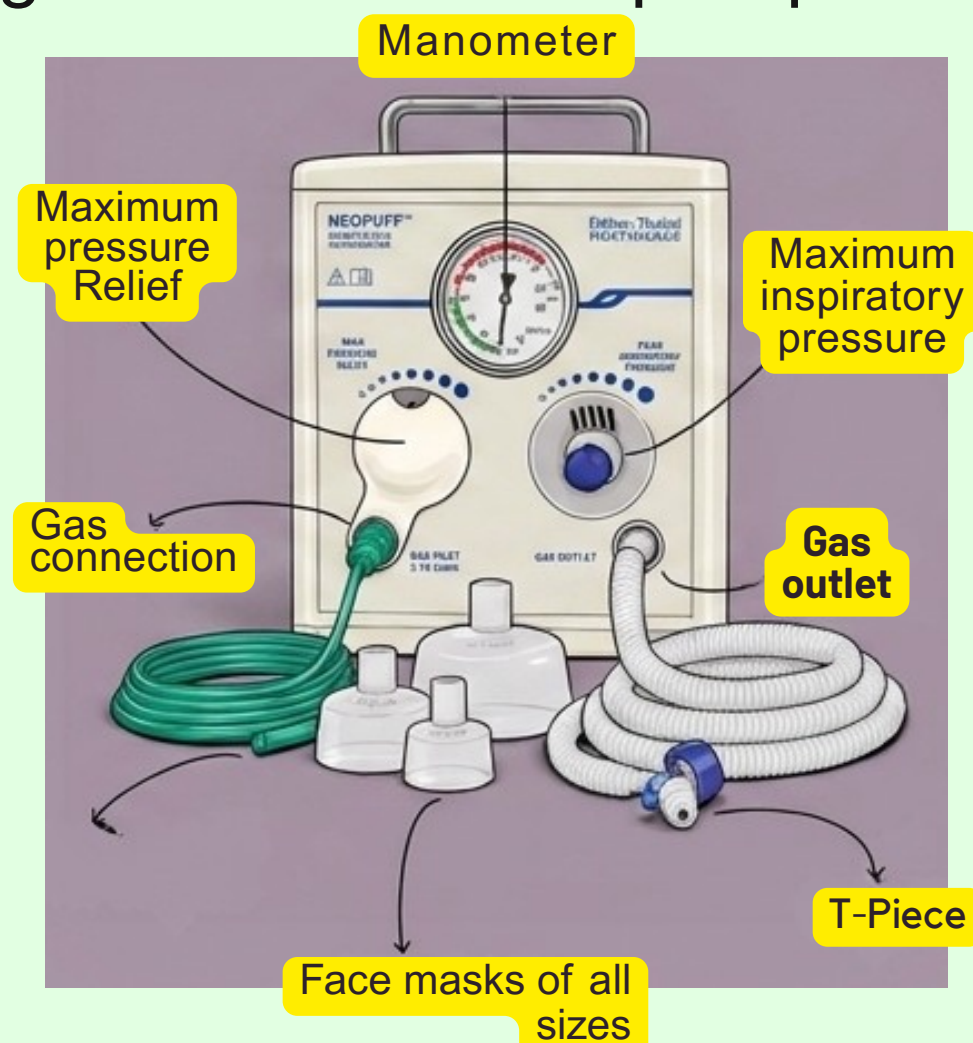
T-Piece

Face masks of all sizes



Anatomy of the Neopuff Interface

- Gas Inlet: Connects to the primary oxygen/air blender.
- Gas Outlet: Connects to the patient supply line.
- Manometer: Displays real-time circuit pressure.
- Maximum Pressure Relief: The hidden safety valve to prevent barotrauma.
- Inspiratory Pressure Control: The main dial to set target PIP.
- T-Piece: The patient interface where PEEP is regulated via the top cap.



Setting up the Neopuff

you will need:

- A compressed gas source;
- A gas supply line (green oxygen tubing) with
- the plastic connector (supplied);
- The patient supply line (tubing & T-piece);
- A test lung.

Initial recommended settings

Gasflow rate

Set at 10 L/min (8L /min if using cylinders)

Maximum pressure relief valve

Set at 50 cm H₂O

Peak inspiratory pressure (PIP)

Set at 25 - 30 cm H₂O ($\geq$ 32 weeks)

Set at 20 -25 cm H₂O (preterm < 32 weeks)

Positive end expiratory pressure (PEEP)

Set at 5-8 cm H₂O

ANZCOR 2021, Guideline 13.4, p.2

Textbook of Neonatal Resuscitation, 9th Edition

Setting up the Neopuff: 6 steps

Step 1



Connect the gas supply line to the gas inlet and the patient supply line to the gas outlet

Step 2



Attach a test lung to the patient supply line and turn the gas flow to 8 -10 L/min

Step 3



Check the maximum pressure relief valve is set to 50 cm H₂O (adjust as necessary)

Step 4



Set the peak inspiratory pressure (PIP) to 25 - 30 cm H₂O (term) or 20 –25 cm H₂O (preterm)

Step 5



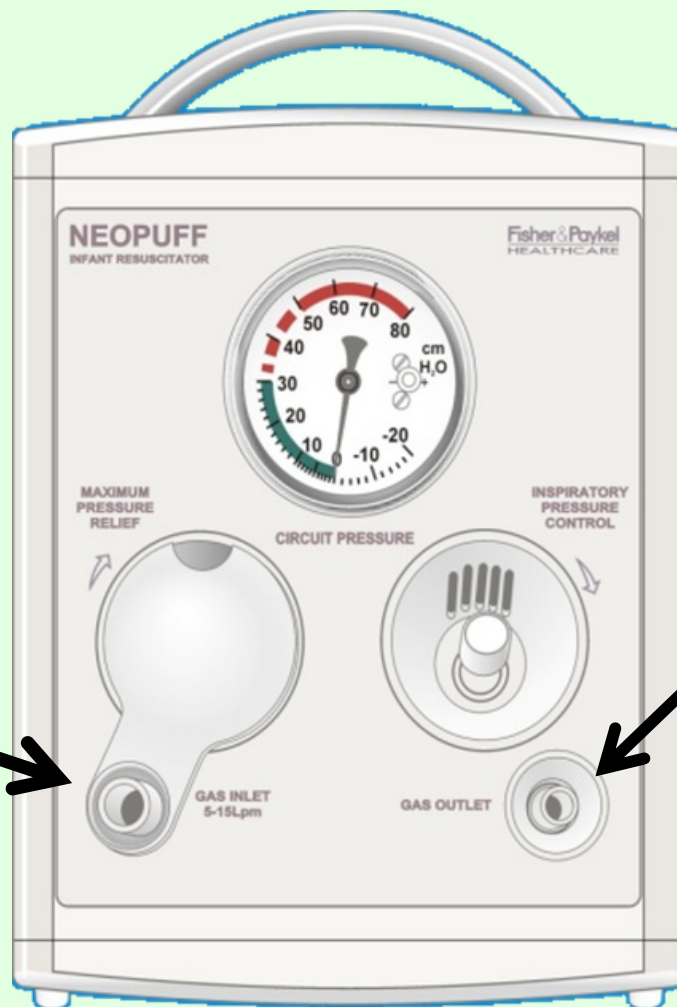
Set the positive end expiratory pressure (PEEP) to 5 – 8 cm H₂O

Step 6

Create a good seal between the infant's face and the face mask using the “two-point top hold”

1. Connect the gas & patient supply lines

Connect the gas supply line via the plastic connector to the 'gas inlet'



Connect the patient supply line to the 'gas outlet'



2. Attach the test lung

Attach the test lung to the end of the patient supply line (patient T- piece)

It is much easier to use the test lung (as opposed to a face mask or the ball of your hand) to set and test the Neopuff™

Turn the gas flow to 8 -10 L/min



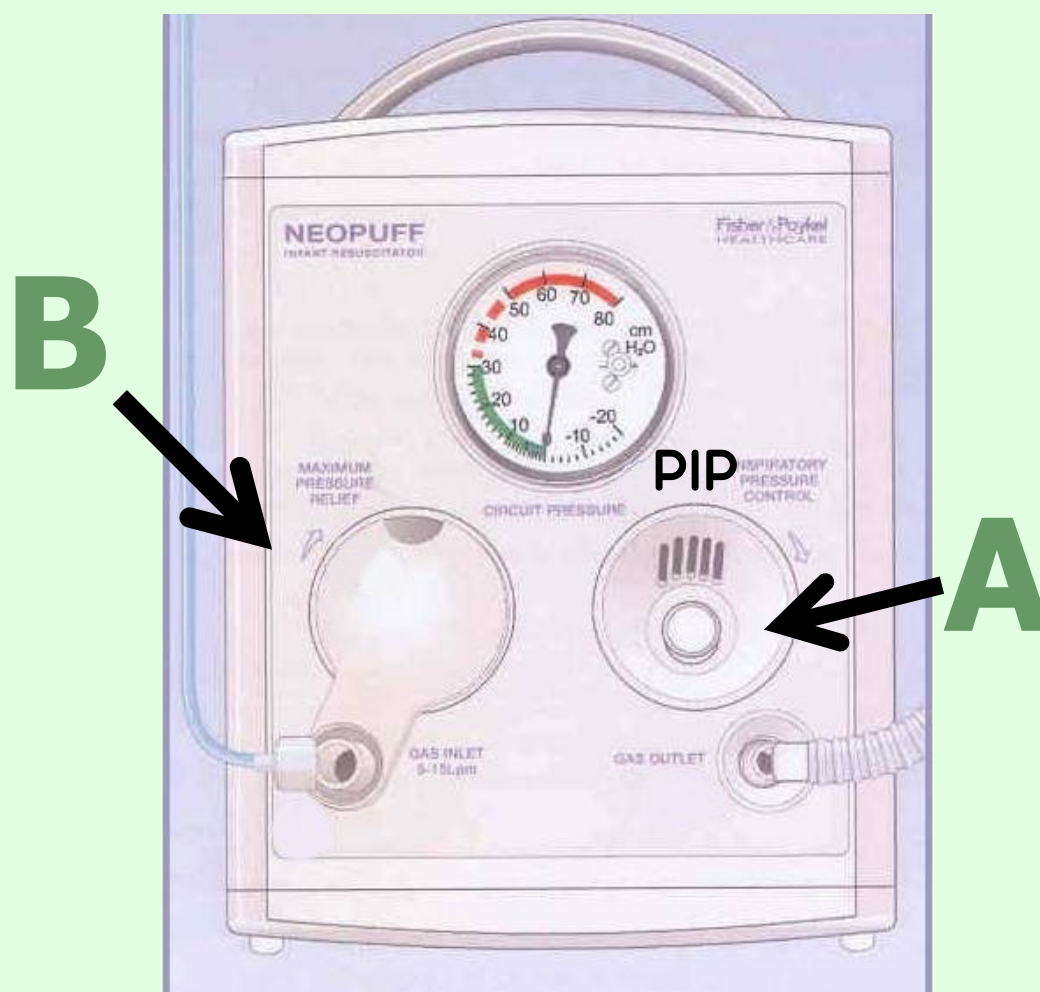
3. Check the maximum pressure has been pre-set to 50 cm H₂O

Turn the inspiratory pressure control dial fully clockwise until it cannot turn any further. (A)

Occlude the PEEP cap on the patient T- piece with your thumb.

Look at the manometer & check that the pressure gauge points to 50 cm H₂O. (B)

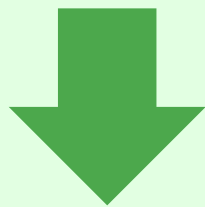
If it does, then the maximum pressure is set correctly. If it is not 50 cm H₂O, you will need to adjust it.



Adjusting the maximum pressure

Once the inspiratory pressure control dial is fully open:

Occlude the PEEPcap on the patient T-piece with your thumb.



Open the cap covering the maximum pressure relief dial.



Turn the maximum pressure relief dial clockwise or anti-clockwise to adjust the maximum pressure to 50 cm H₂O.



Close the maximum pressure relief cap.



4. Set the peak inspiratory pressure (PIP)

Occlude the PEEP cap on the end of the patient T-piece with your thumb.

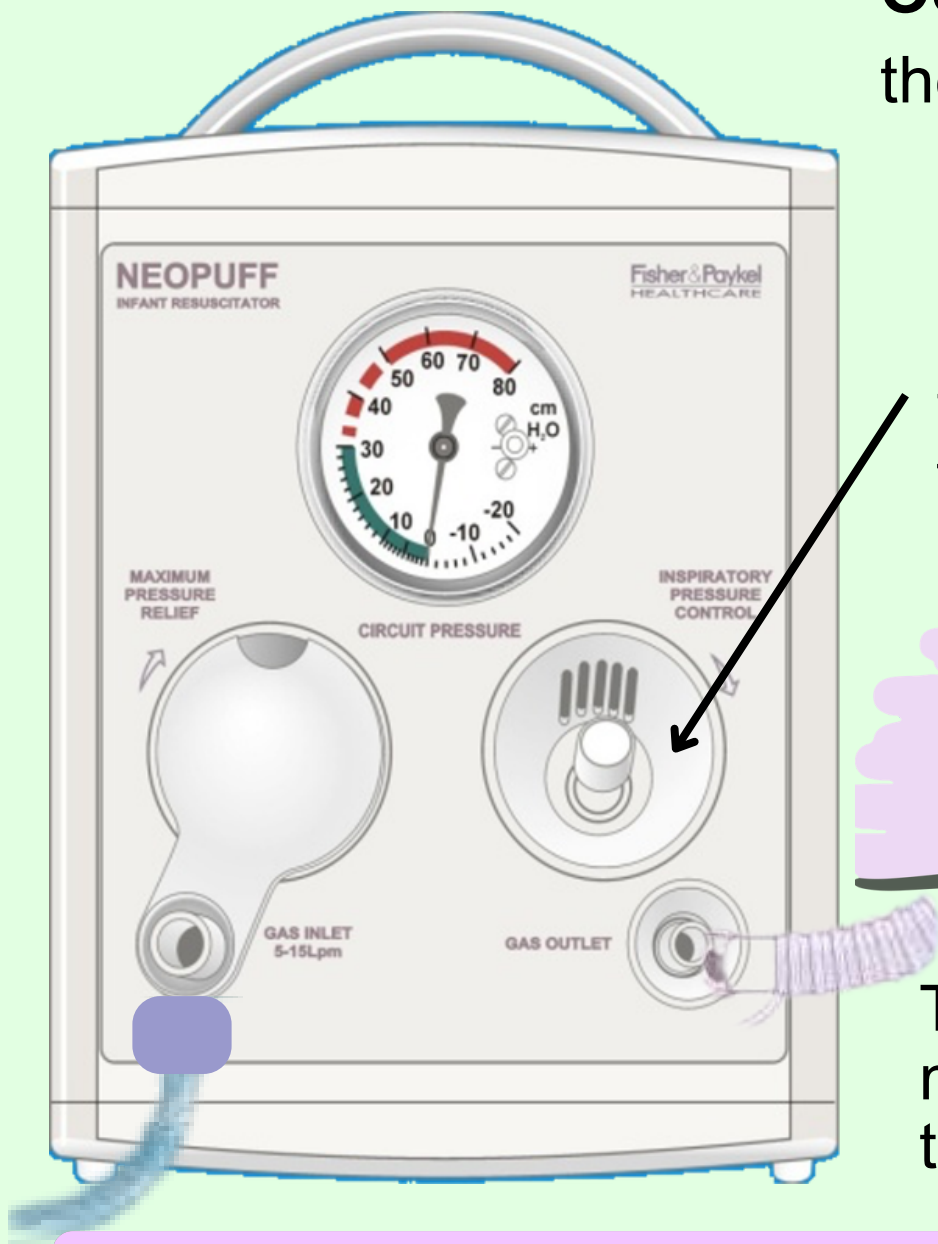


Turn the inspiratory pressure control anti-clockwise (several times) to decrease the pressure from 50 cmH₂O down to the recommended PIP:

20 –25 cm H₂O for a premature infant or 25- 30 cm H₂O for a term infant.



The set PIP is displayed on the manometer when the PEEP cap on the patient T-piece is occluded.



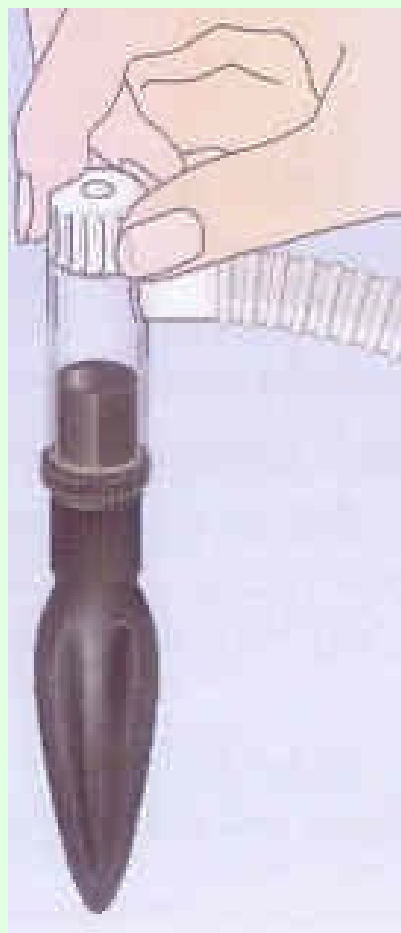
If the test lung is unavailable, occlude the gas outlet to the patient with your palm and the opening of the T-piece with your finger, then proceed to calibrate the PIP.

5. Set the positive end expiratory pressure (PEEP)

Set the PEEP by turning the cap on the patient T-piece clockwise or anti-clockwise until a PEEP of 5 cm H₂O is displayed on the manometer.

Caution: If the PEEP has been set on a flow rate of 8 L/min, any increase in the flow rate will result in a dangerously high increase in PEEP. (Morley, Schmoelzer & Davis, 2009)

If you increased the flow rate to 10 L/min, then re-set and re-check the PEEP.



6. Create a good seal between the infant's face & the mask



Wood, et al. (2008).
*Archives of Disease in Childhood, Fetal
& Neonatal Edition* 93: p. F231



Occlude the PEEP cap using your thumb or finger for 0.5 seconds, then release for 0.5 seconds. This will provide a ventilation rate of 60 inflations per minute.

Effective ventilation is confirmed by three signs:

- An increase in the heart rate above 100/minute.

- A slight rise of the chest and upper abdomen with each inflation.

- An improvement in oxygenation.

Achieving the set PIP on the manometer is not sign of effective ventilation.



neofast

