NeoPuff Resuscitator Set up Guide (UHL Neonatal Units)

University Hospitals of Leicester NHS Trust

Trust ref: C13/2012

Contents

1. Introduction and Who Guideline applies to

This guideline is aimed at all Health care professionals involved in the care of infants within the Neonatal Service.

Key Points

1. Neopuff is a flow driven neonatal resuscitator.
2. The pressure delivered can be adjusted and measured.
3. The pressure delivered is dependent on gas flow which must be set at exactly **8 litres per minute**
4. The Maximum Pressure Relief should be checked by nursing staff each shift

Background

The Neopuff infant resuscitator allows the user to set both Peak Inspiratory Pressure (PIP) and Positive End Expiratory Pressure (PEEP). Breaths are delivered to the infant by occluding an opening in the T-piece PEEP cap with a finger or thumb.

The pressures delivered can vary depending on the gas flow. It is therefore very important that the Neopuff is set up and checked correctly at the start of each nursing shift so that it can be quickly used in an emergency.

The use of a T-piece resuscitator, such as the Neopuff, is preferred over the use of a self-inflating bag for emergency respiratory support (ILCOR Recommendations, 2021).

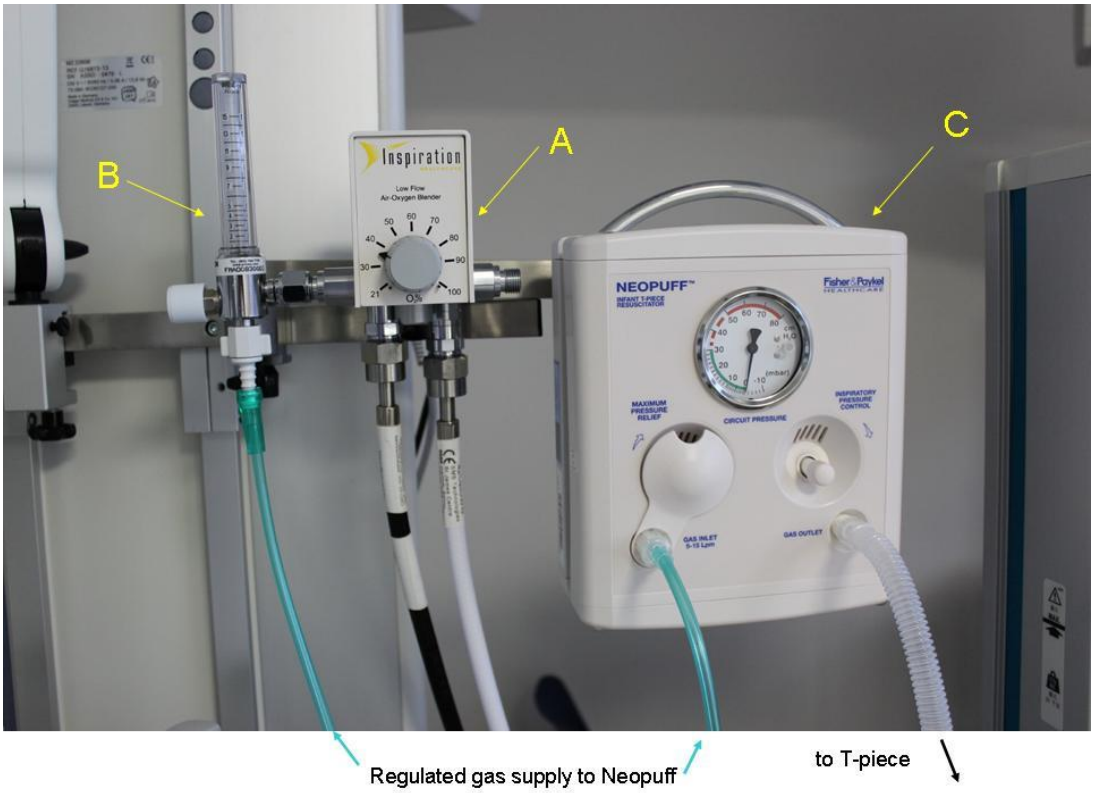
Aims
To provide a guide to setting up and checking of the Neopuff resuscitator

Appendix 1: Diagram of Neopuff Control Panel
Appendix 2: Nitric Oxide – INOblender Connection to the Neopuff Resuscitator

2. Introducing the Neopuff equipment

Components:

- A blender connected to both air and oxygen gas supplies **(A)**
- A gas flow meter which needs to be set at 8 litres/minute **(B)**
- The neopuff resuscitator with gas inlet on the front, pressure dial and two pressure adjustment controls **(C) and Appendix 1**
- T-piece with adjustable PEEP cap **(D)**
- Peak pressures are delivered by occluding the opening in the PEEP cap



Introduction to the Quick Set up guide

In all cases

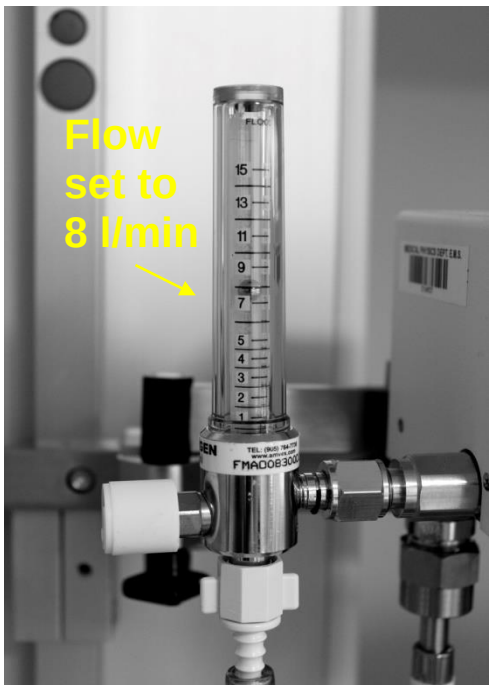
- The gas flow meter needs to be set to **8 litres/minute**

Includes

- **Neopuff 'Safe Pressure' Check** (setting the maximum pressure relief)
  and
- **Three step approach to adjust the Neopuff for your patient**

  - **Step 1**: Setting the PEEP pressure
  - **Step 2**: Setting the PIP pressure
  - **Step 3**: Setting the appropriate inspired oxygen

- Then proceed to the 'Safe Pressure' check(pressure units in this guide are in cmH_2O)

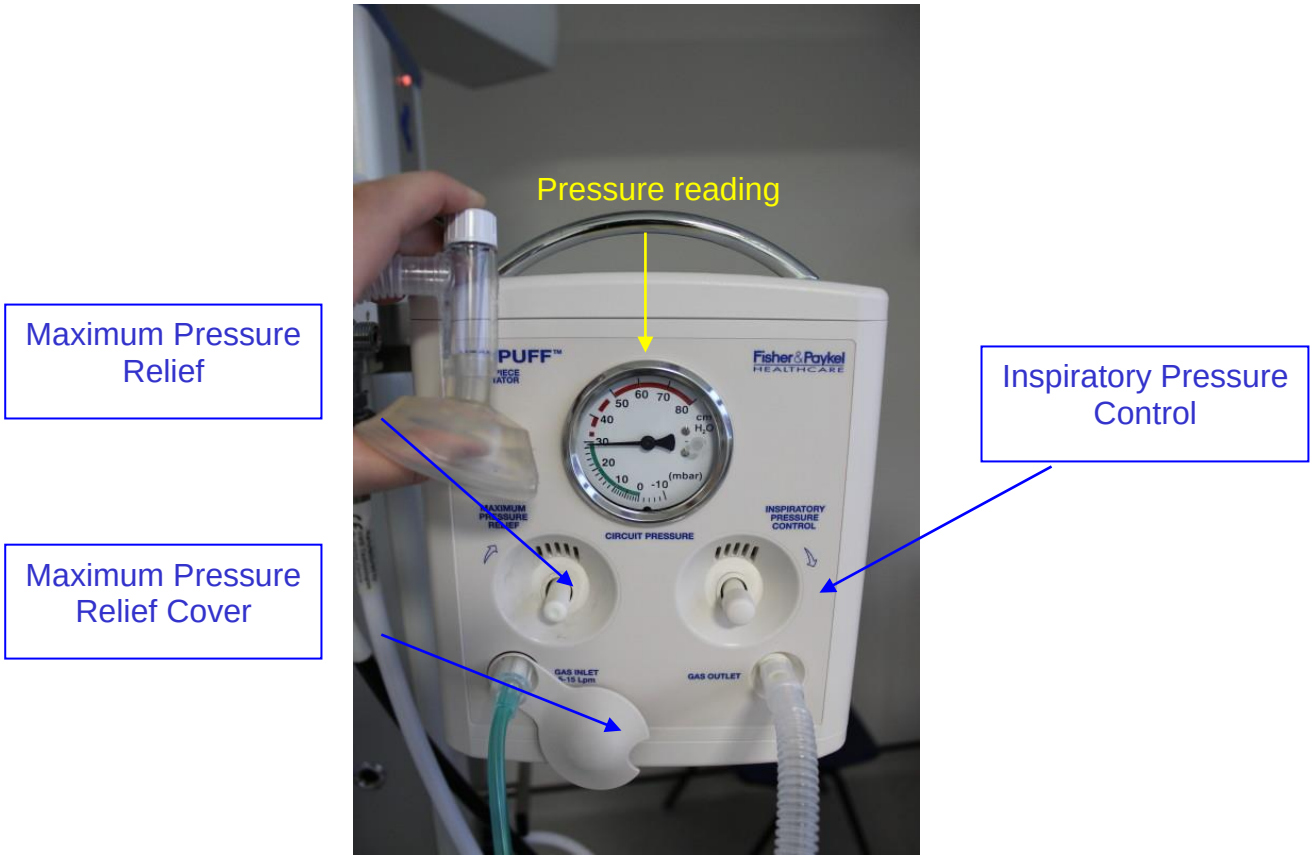


Neopuff Quick Set up guide: Page 1

Neopuff 'Safe Pressure' Check
(to be performed once per shift)

Setting the **MAXIMUM** pressure limiter

- The MAXIMUM PRESSURE RELIEF *(covered knob on left)* is for **SAFETY** and acts as a 'blow off valve' or 'safety cutoff'
- This should be set at **30 cmH_2O**. To do this:
- Ensure the gas flow meter is set to **8 litres/minute**
- With the INSPIRATORY PRESSURE CONTROL *(on right)* turned completely clockwise,
- Occlude both the mask *and* white cap then …..
- … remove the cover and adjust the MAXIMUM PRESSURE RELIEF *(on left)* until set to 30.



After this adjustment has been made, replace the cover and readjust delivered pressures as indicated in Step One and Step Two (next page)

Neopuff Quick Set up guide: Page 2
Adjusting the settings for your patients

In all cases

The gas flow meter needs to be set to **8 litres/minute**

Step One

To set **PEEP** (baseline pressure)

- While occluding the mask *only*, twist the PEEP cap to adjust the PEEP.
- This pressure is usually set to **5 cmH_2O**

Step Two

To set **PIP** (Peak inspiratory pressure)

- While occluding both the mask *and* PEEP cap adjust the PIP by turning the INSPIRATORY PRESSURE CONTROL *(on right)* knob on the front of the neopuff.
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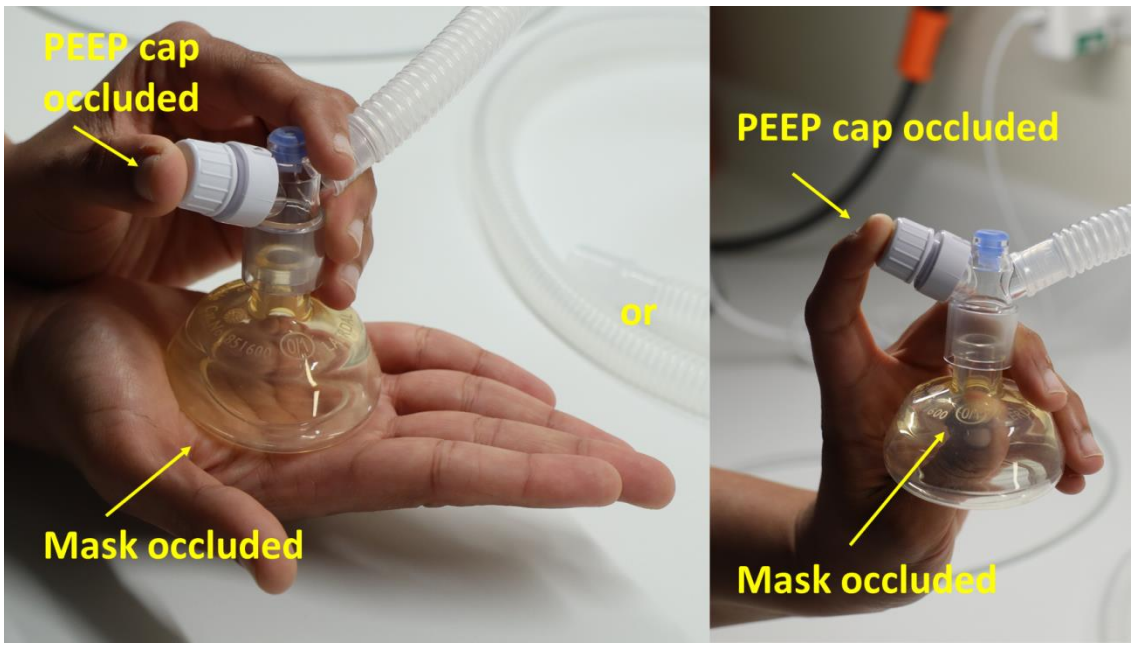

- In a term baby you can use a PIP of up to 30, but the PIP is more usually set between 20-25. Ventilator pressures can be used as a guide in those infants receiving respiratory support.

Step Three

- Adjust the required inspired oxygen using the blender.

Please note

- Under the vast majority of circumstances, there will be no need to uncover or adjust the MAXIMUM PRESSURE RELIEF control *(covered on left)* while the Neopuff is being used on a patient.

- The PIP can always be adjusted using the INSPIRATORY PRESSURE CONTROL *(on right)*

- Do remember to check the PEEP cap adjustment should there be a problem with delivering the appropriate pressures (in particular if the delivered pressure fails to drop after the PEEP cap is released).

- Do remember to review the oxygen concentration being delivered if the infant has low oxygen saturations that are not responding to Neopuff ventilation.

3. Education and Training

None

4. Monitoring Compliance

What will be measured to monitor compliance	How will compliance be monitored	Monitoring Lead	Frequency	Reporting arrangements
The Neopuff has been checked daily (100% target)			Daily	
The Neopuff is set to the appropriate pressures at ventilated bed spaces (100%)			Daily	
The Neopuff maximum pressure relief is set correctly (100%).			Daily	

5. Supporting References

Manufacturer Guides - Neopuff Infant Resuscitator - Fischer & Paykel Healthcare

INOMax Delivery System Pocket Guide

Resuscitation at Birth - The NLS Provider Course Manual 5e, Resuscitation Council, UK, 2021

Finer NN, Rich W, Craft A, Henderson C (2001) Comparison of methods of bag and mask ventilation for neonatal resuscitation. Resuscitation 49(3):299-305.

Hawkes CP, Oni OA, Dempsey EM, Ryan CA. (2009) Potential hazard of the Neopuff T-piece resuscitator in the absence of flow limitation. Arch Dis Child Fetal Neonatal Ed 94(6):F461-3.

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O'Donnell CP, Davis PG, Morley CJ (2003) Resuscitation of premature infants: what are we doing wrong and can we do better? Biol Neonate 84(1):76-82. Review.

Trevisanuto D, Roehr CC, Davis PG, Schmölzer GM, Wyckoff MH, Rabi Y, de Almeida MF, El-Naggar W, Fabres JG, Fawke J *et al.* Devices for administering PPV at birth (NLS#870 [Internet] Brussels, Belgium). International Liaison Committee on Resuscitation (ILCOR) Neonatal Life Support Task Force, February 15, 2021. Available from http://ilcor.org

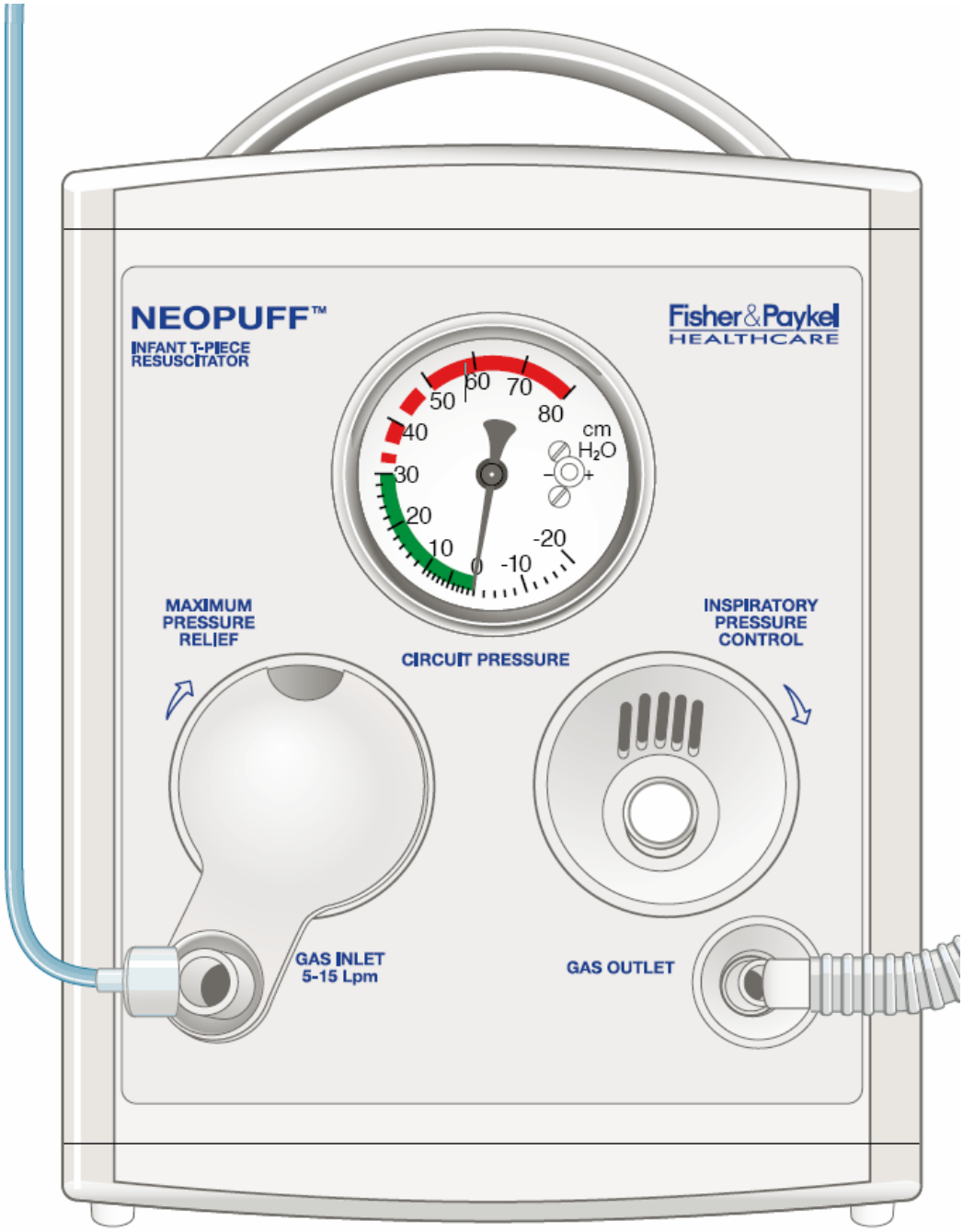
6. Key Words

Peak Inspiratory Presssure (PIP), Positive End Expiratory Pressure (PEEP)

The Trust recognises the diversity of the local community it serves. Our aim therefore is to provide a safe environment free from discrimination and treat all individuals fairly with dignity and appropriately according to their needs.
As part of its development, this policy and its impact on equality have been reviewed and no detriment was identified.

CONTACT AND REVIEW DETAILS			
Original author: Robin Miralles **Guideline Lead (Name and Title)** R Miralles – Neonatal Consultant			**Executive Lead** Chief Nurse
Details of Changes made during review:			
Date	**Issue Number**	**Reviewed By**	**Description Of Changes (If Any)**
Sept 2012	**1**	Robin Miralles	New guideline
August 2015	**2**	Neonatal Guidelines and Governance Meetings	minor amendments only
June 2018	**3**	Neonatal Guidelines and Governance Meetings	
June 2021	**4**	Neonatal Guidelines and Governance Meetings	Update to T-piece illustrations and Neopuff with iNO
July 2021	**5**	Neonatal Guidelines and Governance Meetings	Added use of T-piece resuscitator is preferred over self-inflating bag for emergency respiratory support. Added illustration of mask occlusion using palm References updated Added illustrations of preparation of mask ventilation with nitric oxide. format update

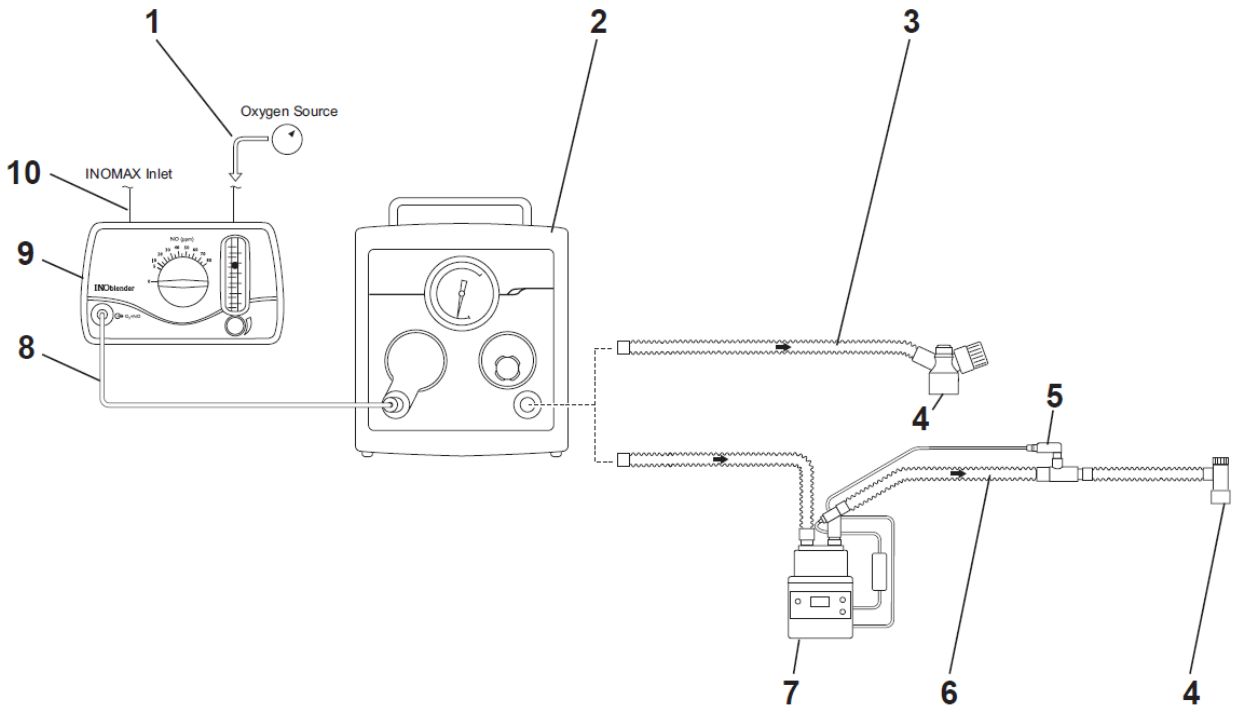
Appendix 1: Diagram of Neopuff Control Panel



Appendix 2: INOblender circuit connection

INOblender Circuit Connection Diagram

INOblender Connection to the Fisher & Paykel Neopuff Resuscitator



1. Oxygen Source
2. Neopuff
3. T-Piece Circuit (with Duckbill Port)
4. Patient Connection
5. Temperature Probe
6. Humidified Resuscitation System Circuit
7. Humidifier
8. Oxygen Tubing
9. INOblender
10. INOMAX Inlet

Preparing the Neopuff resuscitator for mask ventilation with nitric oxide

1. Disconnect green tubing from the flow meter next to the oxygen blender …

….and attach to the INOblender outlet

2. Set the NO ppm with the dial

3. The flow meter should be set to 8 litres/min for use with the neopuff resuscitator