University of Kentucky / UK HealthCare Policy and Procedure	Policy # RC04-04P
Title/Description: **Neopuff Infant Resuscitator**	
Purpose:	

Policy

REFERENCE: AARC Neonatal Guidelines

Introduction

The Neopuff Infant Resuscitator is an easy to use, manually operated, gas-powered resuscitator which provides consistent set PEEP pressure. The unit can accept and deliver oxygen concentrations from 21-100% by using a flow meter or blender. The unit can be connected to a neonatal mask or endotracheal tube. Room air should be used initially, but if the patient's condition does not improve within the first minutes then oxygen should be used at lowest possible concentration to meet gas exchange goals.

Advantages of the Neopuff Resuscitator

Operator sets PIP and PEEP pressures

Resuscitator will not deliver PIP or PEEP above set pressures

PIP and PEEP pressures are displayed on unit

Operator controls the length of inspiratory time

Resuscitator delivers 100% free flow oxygen reliably

Equipment/Supplies Needed

Resuscitator

Compressed gas source

Oxygen gas supply line with connector

Patient supply line

Patient T-piece device

Test lung

Recommended Settings

Attach a test lung to unit

Gas flow at 8 LPM

Pressure relief valve set at maximum 50 cmH2O

PIP at approximately 30 cmH2O

PEEP at 5-8 cmH2O

Inspiratory time at 0.5 seconds

Respiratory rate at 60 bpm

Setting the Maximum Pressure Relief Valve

Before opening the cap covering of the maximum pressure relief control, the inspiratory pressure control must first be turned fully clockwise until it cannot be turned any further (10-15 turns).

Once the inspiratory pressure control is fully open, occlude the PEEP cap on the patient T-piece and then set the maximum pressure to 50 cmH2O. There must be gas flowing through the gas inlet to set all of the pressures such as PIP, PEEP and Max Pressure.

Setting the Peak Inspiratory Pressure

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

Turn the inspiratory pressure control clock wise to increase the PIP, or counter clock wise to decrease PIP.

After the pressure is set to 30 cmH2O, the PIP will be displayed on the manometer.

Setting the PEEP

Set the PEEP by turning the cap on the patient T-piece, either + or -; the cap doesn't need to be occluded to set the PEEP.

Set the PEEP a 5 cmH2O and the PEEP pressure should be displayed on manometer.

Patient Interface

Once the gas flow, PIP, and PEEP have been set, remove the test lung and attach a mask.

Fit mask securely over the infant's mouth and nose and ensure the mask is not cupped underneath the chin.

Confirm a good seal using visual and auditory checks such as a PEEP of 5 cmH2O on manometer and hearing gas escape through the PEEP cap. If not, try to seal again.

Occlude the PEEP cap on the T-Piece for 0.5 seconds inspiration and then release for 0.5 seconds for exhalation. Continue at this rate to deliver 60 bpm.

Observe chest wall movement with each breath.

Patient Monitoring

Pressures required are variable, unpredictable and should be individualized with each breath. Higher inflation pressures (>30 cmH2O) may be needed for the initial breaths. Improvement in heart rate is the primary measure of adequate inflation. If the heart rate is not improving, assess chest wall movement and higher PIP may be required. Higher pressure inflations can be given by increasing the inspiratory pressure control and can be changed while resuscitating, but requires a second person. The patient supply line must be connected to adjust the PIP and PEEP.

Common Problems and Solutions

If the desired PIP is unable to be achieved, or the PIP will only reach a certain level, make sure flow is at least 8-10 LPM and check to see if the maximum pressure valve limit is readjusted to 50 cmH2O. If the desired PIP is unable to be achieved when ventilating despite achieving the desired PIP with the test lung, readjust the patient's mask to achieve a better seal. Always monitor the patient first. Achieving the set PIP and PEEP on the manometer is not a guarantee of effective ventilation. Look for an increase in heart rate above 100 per minute, a rise of the chest and upper abdomen with each inflation and pinkness in skin color.

If the heart rate is less than 100 per minute, despite the unit being correctly assembled and ventilating with good technique, then turn up the peak pressure, 30-40-50-60 cmH2O, and continue ventilating until the heart rate is above 100 per minute.

Initiation/Discontinuation, Contraindications and Quality Assurance

The decision to initiate or discontinue, to determine potential contraindications such as significant airway obstruction, air leak syndrome (pneumomediastinum, pneumothorax), and hypotension, and to assure quality assurance related to the use of the Neopuff Infant Resuscitator lies with the attending neonatologist or neonatology fellows or advanced practice nurses working under their direction.

Authorized: Barbara F. Atkins, Director of Therapeutic Services

Approved: Approved: James Laham, D.O.

Department of Pediatrics

Division of Pediatric Critical Care

Medical Director, Pediatric Respiratory Therapy

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RD900 & 900IW130 NEOPUFF™ INFANT RESUSCITATOR OPERATING INSTRUCTIONS

Symbol Definitions ⚠ Attention: Consult Accompanying Documents

93/42/EEC Class IIb CE 0123

WARNING A WARNING statement refers to the conditions when the possibility of injury to the patient or user exists if a procedure is not followed correctly.

NOTE A Note statement provides additional information intended to clarify points, procedures or instructions.

WARNING

- *Please read and understand the instructions fully before using the Neopuff™ infant resuscitator and related accessories. The Neopuff™ infant resuscitator is to be used only by persons trained in infant resuscitation.*
- *It is the responsibility of the purchaser to ensure that all users of this device have been adequately trained in resuscitation techniques.*

WARNING

The Neopuff™ resuscitator should only be used after checking that correct pressures will be delivered to the baby.

Ensure no smoking, naked flames or sources of ignition are present while the unit is in use.

- *For connection to flow regulated oxygen or oxygen/air mixture only.*
- *Recommended operating gas flow range is 5 to 15 L/min.*
  Do not attempt to use a higher flow than 15 L/min.
- *The Maximum Pressure Relief can be adjusted up to a nominal 80 cm H_2O/mbar, and should only be done in exceptional circumstances by persons trained in infant resuscitation.*
  Do not attempt to set the Maximum Pressure Relief above 80 cm H_2O/mbar.
- *Use only a Fisher & Paykel patient T-piece.*

WARNING

Ensure all oxygen and air supplies are turned off and disconnected from the Neopuff™ before performing cleaning procedures. Explosion and fire hazards can exist when performing cleaning procedures in an oxygen-enriched environment.

WARNING

- *The test lung contains natural rubber latex which may cause allergic reactions.*
- *US Federal law restricts this device to sale in the USA by or on the order of a physician.*

NOTE

- *Ensure the oxygen concentration of an oxygen / air supply is either monitored using an oxygen analyzer, or preset using oxygen/air flow rate graphs.*
- *The factory setting of the Maximum Pressure Relief is 40 cm H_2O/mbar.*
- *The Maximum Pressure Relief valve acts as an overall limit on the achievable circuit pressure. Resuscitation above 40 cm H_2O/mbar cannot be achieved unless the Maximum Pressure Relief valve is adjusted.*
- *Internally the Maximum Pressure and Inspiratory Pressure valves are in the same circuit. The Inspiratory Pressure valve is intended for regular use to adjust and control the desired patient supply line pressure, up to the pressure set by the Maximum Pressure valve.*
- *The Neopuff™ infant resuscitator can be used with either reusable or single-use patient supply lines.*
- *Single-use patient supply lines can eliminate the possibility of cross-patient infection without requiring time-consuming and expensive cleaning and sterilization procedures.*

ABOUT YOUR NEOPUFF™ INFANT RESUSCITATOR

The Fisher & Paykel Neopuff™ infant resuscitator is an easy to use manually operated, gas powered resuscitator which provides controlled and accurate resuscitation of newborn babies in delivery suites, nurseries and neonatal intensive care units.

CLEANING AND SERVICING

- Clean external surfaces of the Neopuff™ infant resuscitator using a damp cloth and mild soapy water or Isopropyl Alcohol.
- Dry all surfaces after cleaning with a clean soft cloth or paper towel.
- The Neopuff should require minimal servicing or maintenance when used under normal conditions.
- Latex is susceptible to attack by solvents. Ensure no solvents are used to clean the test lung.
- If required, the test lung can be sterilized using ethylene oxide gas only. Some carrier gases can cause stress cracking and are not suitable. If in doubt, check with the chemical supplier.
- For more information on cleaning and maintenance of the Neopuff™ infant resuscitator, please refer to the Technical Manual (REF 185041597).

Sterilization

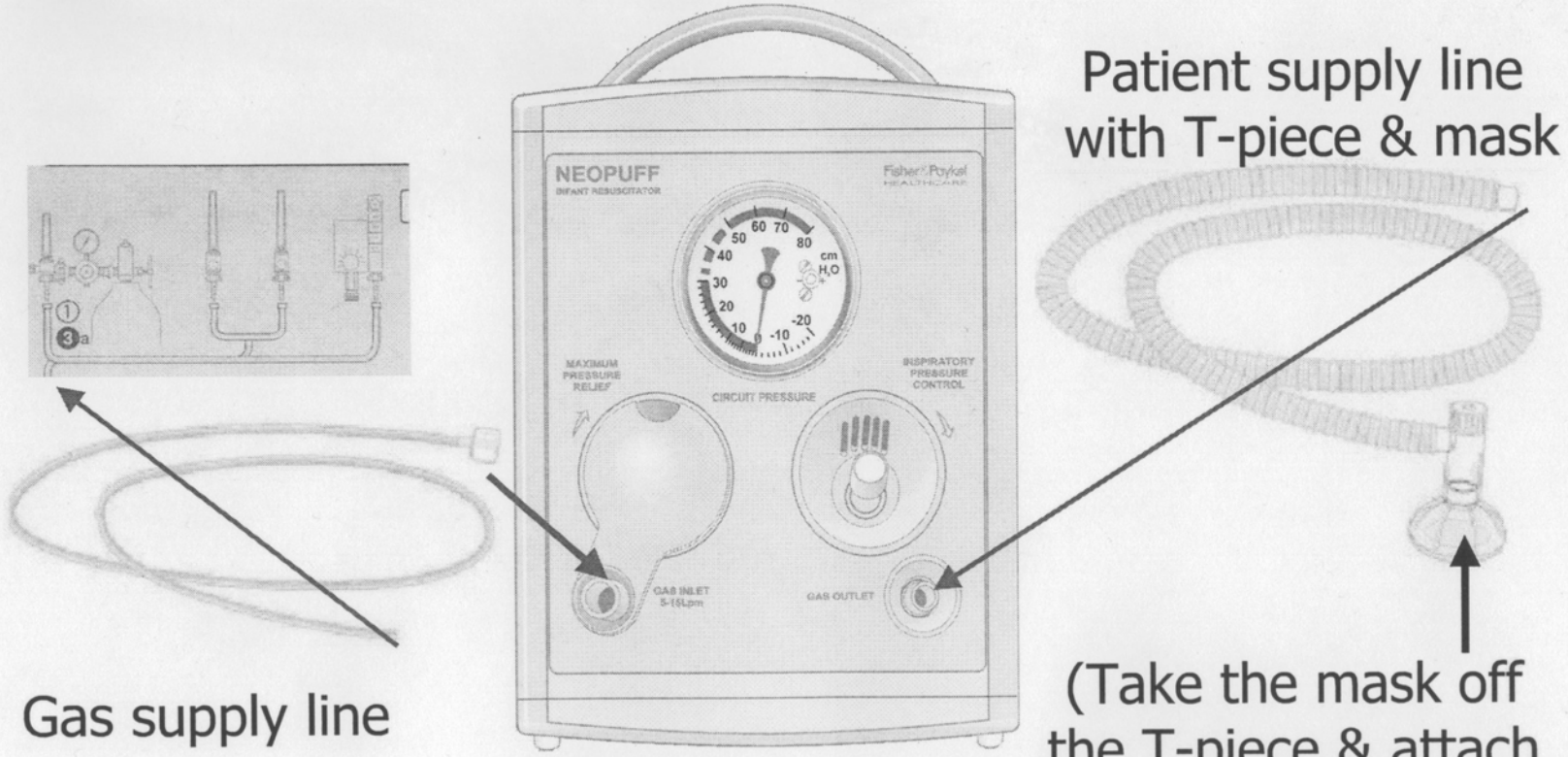
- Reusable accessories can be autoclaved at up to 136°C, 220 kPa for 4 minutes.

PERFORMANCE DATA

Recommended body weight range:	Up to 10 kg
Peak inspiratory pressure (typ.):	@ 8 L/min 2 to 73cm H_2O/mbar @ 10 L/min 2 to 80cm H_2O/mbar *If the gas flow rate increases from 5 to 15 L/min, peak inspiratory pressure typically increases approximately 8 cm H_2O/mbar*
Positive end expiratory pressure (typ.):	@ 5 L/min 1 to 5cm H_2O/mbar @ 8 L/min 1 to 9cm H_2O/mbar @ 10 L/min 2 to 15cm H_2O/mbar @ 15 L/min 3 to 25cm H_2O/mbar
Operating time (400 litre cylinder):	@ 5 L/min 80 minutes @ 10 L/min 40 minutes @ 15 L/min 26 minutes

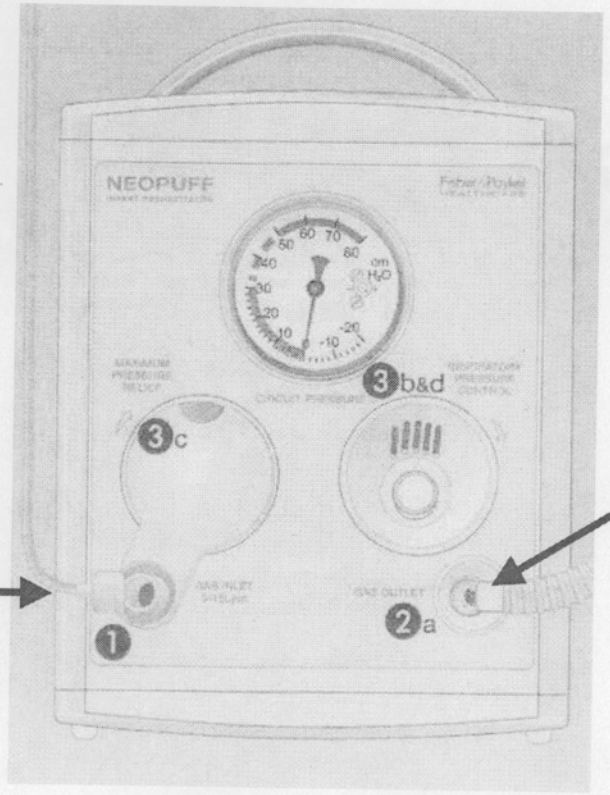
REF 185041726 Rev B 2004-02 en

The components of the Neopuff®



Connect the gas & patient supply lines

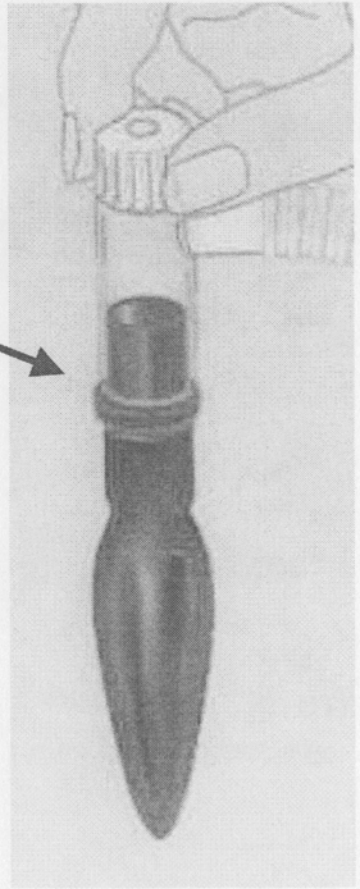
- Connect the gas supply tubing via the plastic connector to the 'gas inlet' (1)



- Connect the patient supply line to the 'gas outlet' (2a)

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 onto 8L/min



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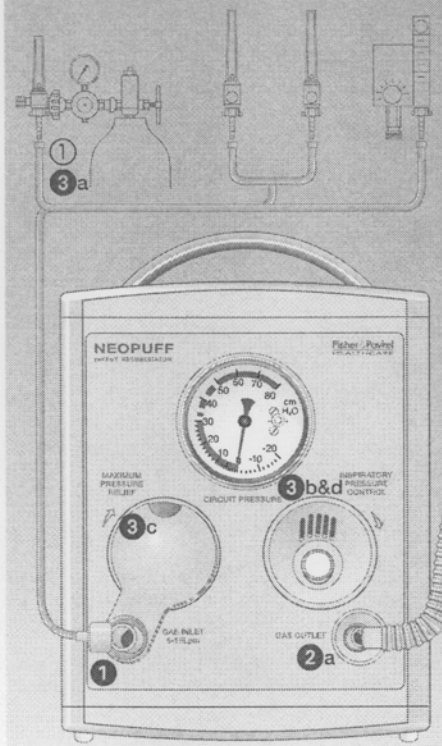
3 STEPS TO OPTIMAL RESUSCITATION



To Resuscitate

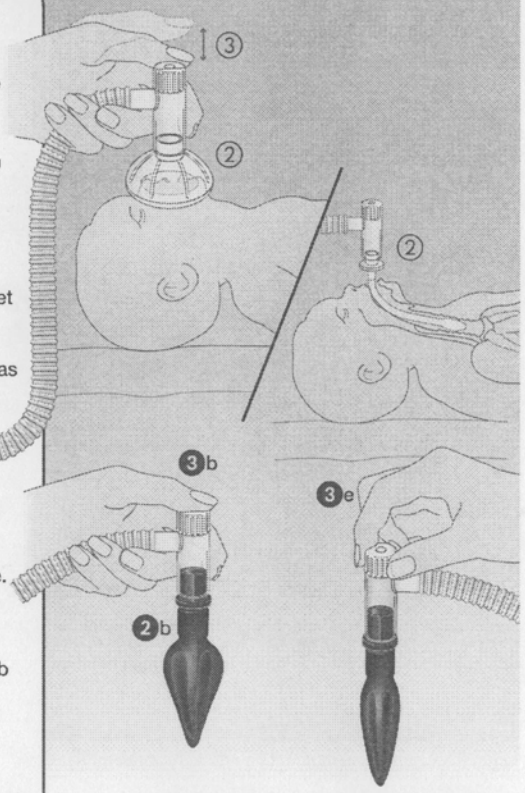
NEOPUFF™
INFANT RESUSCITATOR

1. Adjust gas supply to the desired flowrate.
2. Fit patient T-piece to neonatal resuscitation mask and place over the baby's mouth and/or nose.
   OR
   Fit patient T-piece to the endotracheal tube.
3. Resuscitate by placing and removing thumb over the PEEP[1] cap to allow inspiration and expiration.

Setup

1. **Connect Gas Supply**
   Connect an oxygen or blended oxygen/air supply to gas inlet port using gas supply line.
2. **Connect Patient Supply Line**
   a) Connect patient supply line and patient T-piece to the gas outlet port.
   b) Connect test lung to patient T-piece.
3. **Check Settings**
   a) Adjust gas supply to desired flowrate between 5 and 15 LPM.
   To check Maximum Pressure:
   b) Occlude PEEP[1] cap and turn PIP[2] control fully clockwise.
   c) Adjust maximum pressure control knob clockwise or counter-clockwise to set desired maximum pressure.
   To set PIP:
   d) While still occluding the PEEP cap, turn PIP control knob counter-clockwise until the desired peak inspiratory pressure is set.
   To set PEEP:
   e) Adjust PEEP cap to the desired PEEP level.
4. Turn off gas supply and remove test lung from patient T-piece.

1. Positive End Expiratory Pressure 2. Peak Inspiratory Pressure



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(en)

Persons and Sites Affected

☐ Enterprise ☐ Chandler ☐ Good Samaritan ☐ Kentucky Children's ☐ Ambulatory ☐ Department x

Policies Replaced

☐ Chandler HP ☐ Good Samaritan ☐ Kentucky Children's CH
☐ Ambulatory KC ☐ Other

Effective Date: 3/16/12	**Review/Revision Dates**:

Approval by and date:

Barbara Atkins, Director of Therapeutic Services, 3/16/12

Dr. James McCormick, Medical Director, 3/16/12

Gary King, Clinical Services Director, 3/16/12