

# SimNewB™



ENGLISH

Directions for Use



**Table of Contents****INTRODUCTION**

Introduction and Intended Use .....	2
Important Information .....	2
SimNewB™ Neonatal Simulator Features .....	3

**SETUP GUIDE**

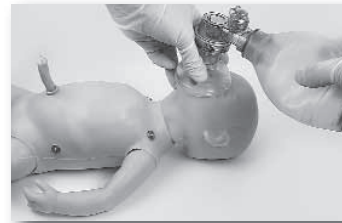
SimNewB™ Package Contents .....	4
Catalog no./Description .....	5
Set up of SimNewB Standard Components .....	6
Set up of SimNewB Advanced Components .....	7
Manikin Connectors .....	8
Calibration of Blood Pressure .....	9
Operation of Compact Compressor Unit .....	10

**CLINICAL SIMULATION**

General Handling .....	11
Preset Patient State Levels .....	12
Airway Simulation Features .....	13
Breathing .....	15
Circulation .....	17
Drug & IV Administration .....	19
Manikin Preparation Before Use .....	20
Maintenance After Use .....	21
Periodic Maintenance .....	21

COMPACT COMPRESSOR UNIT .....	22
-------------------------------	----

TROUBLE SHOOTING .....	23
------------------------	----

**ENGLISH**

## Introduction and Intended Use

### SimNewB™ Neonatal Simulator

SimNewB™ is an interactive simulator designed by Laerdal with the American Academy of Pediatrics to meet the training requirements of Neonatal emergency medicine and resuscitation courses including the Neonatal Resuscitation Program (NRP). With realistic newborn traits and lifelike clinical feedback, SimNewB is ideal for training for the specific needs of neonates.

### Scalable Training Solution

SimNewB is available in standard and advanced versions enabling instructors to vary simulations from the delivery room to the NICU. The Standard version utilizes the SimPad System and the Advanced version can operate the simulator from either the SimPad System or SimNewB PC Software.

Note:

- When using the PC User Interface, the SimPad should not be used.
- When using the SimPad, the PC User Interface should not be connected to the Link Box.

### SimNewB System Description

The Link Box connects to the manikin and allows operation of the simulator. The Link Box can be battery operated, allowing simulations to be performed anywhere. The operator controls simulations with a user-friendly SimPad, communicating with the Link Box through radio frequency (RF) communication. RF communication allows the operator to move freely around the scene, up to a distance of 10 meters (30 ft.) from the Link Box.

### Important Information

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

**Caution:** Changes or modifications not expressly approved by Laerdal could void the user's authority to operate this equipment.

Hereby, Laerdal Medical AS declares that when carrying the CE-mark, the SimNewB system product is in compliance with



the essential requirements and other relevant provisions of Directive 1999/5/EC.



## SimNewB™ Neonatal Simulator Features

### Airway Features:

- Anatomically accurate, realistic airway
- ET tube insertion
- LMA insertion
- Sellick Maneuver
- Positive pressure ventilation
- Right mainstem intubation
- Suctioning
- Variable lung resistance
- Gastric tube insertion

### Breathing Features:

- Spontaneous breathing, with variable rate
- Bilateral and unilateral chest rise and fall with mechanical ventilation
- CO<sub>2</sub> exhalation
- Normal and abnormal breath sounds
- Oxygen saturation (optional PM)

### Breathing Complications:

- Central cyanosis presentation
- Pneumothorax
- Unilateral chest movement with mechanical ventilation
- Unilateral breath sounds
- Unilateral needle thoracentesis, mid-axillary

### Cardiac:

- Extensive ECG library with rates from 10 – 300 /min.
- ECG monitoring via 3 lead monitor

### Circulation:

- Heart sounds
- Umbilical and brachial pulse
- Blood pressure measured manually by auscultation of Korotkoff sounds

### Vascular Access:

- Patent, cuttable umbilicus with venous and arterial access for bolus or infusion
- Intraosseous access, bilateral
- Simulated blood flashback upon cannulation

### Sounds:

- Vocal: grunt breathing, crying, hiccups and others
- Lung: normal, stridor, pneumonia and others
- Heart: normal, systolic murmur and others

### Other Features:

- Interchangeable pupils with normal, dilated and constricted pupils
- Movement in all four limbs: limp, tone, spontaneous motion and seizure

### Debriefing viewer: (Advanced version only)

- Web-camera recording
- Review event log together with synchronized recording of the patient monitor and in-room video
- Stand alone debrief viewer for off-site review

### Simulated Patient Monitor: (Optional)

- Highly configurable
- Simulates several parameters including:
  - Heart rate
  - NIBP
  - ECG
  - SPO<sub>2</sub>
  - ETCO<sub>2</sub>
- Respiratory rate
- Touch screen operation

# Setup Guide

## SimNewB™ package contents

The following parts are included in the SimNewB shipping carton. The kit may change over time.



SimNewB Manikin /  
SimNewB Advanced Manikin



Umbilical  
Cords  
(4)



CO<sub>2</sub> Regulator



Power Cable



CO<sub>2</sub> Tube



(Intermittent use only -  
not shown)

Not shown:  
\* Laerdal Global Warranty Leaflet  
\* Laerdal WEEE Leaflet  
\* Carry Case

Right IO Mandrel  
and Leg Skin



Left IO Mandrel  
and Leg Skin



Cat.no.	Description
220-00150	Umbilical Cords (4)
220-00550	Blood Pressure Cuff
220-00250	IV Bag and Tubing Kit
220-00750	Blanket
220-00650	Baby Pants
220-00450	Hat
200-03050	Eye Kit
250-21050	Airway Lubricant
300-00750	Red Simulated Blood, 4 oz
240-00250	Umbi Simulated Blood, 4 oz
276-15550	Liquid Soap
220-00350	Kit, Right IO Mandrel and Leg Skin and Left IO Mandrel and Leg Skin
277-00150	Baby Powder
1003296	CO <sub>2</sub> Regulator
220-04450	CO <sub>2</sub> Connector Tube
220-01550	Air/CO <sub>2</sub> Tubes
220-19050	Directions for Use
5527	Laerdal Global Warranty
8953	WEEE Statement

Compressor Unit and Power Cable  
- Contact Laerdal sales office

#### SimPad System (Not Shown)

200-30001	(US)
200-30005	(JAP)
200-30033	(EUR)
200-30026	(CHI)
200-30027	(KOR)
200-30003	(UK)
200-30015	(AUS)

- Contact Laerdal Sales Office for other Language Options

#### Optional Accessories: (not shown)

381850	Portability Kit
381220	Regulator
220-05350	Transportation Case (Manikin)
210-05250	Transportation Case (Peripherals)
225-09001	Peripheral Kit
225-09101	Peripheral Kit

**NOTE:** For additional parts provided with the SimNewB ADVANCED, please see the SimNewB Advanced system Installation Guide. This is a brochure shipped with your manikin.

## Setup of SimNewB Standard Components

Check that the Link Box and SimPad have charged batteries.

The Link Box can also be connected to external power using the DC Power Supply

### External Air

- The air tube can be attached to the Compact Compressor or external air regulator.

### Manikin Cable

- Connect the manikin to the Link Box, an adapter cable (included) may be required.

### Link Box Power

- Power is supplied to the Link Box from battery or from the AC power adapter. The same power adapter can be used to charge the battery. See SimPad DFU for charging instructions.

### BP Cuff

- The air tube from the BP cuff is connected directly to the Link Box.

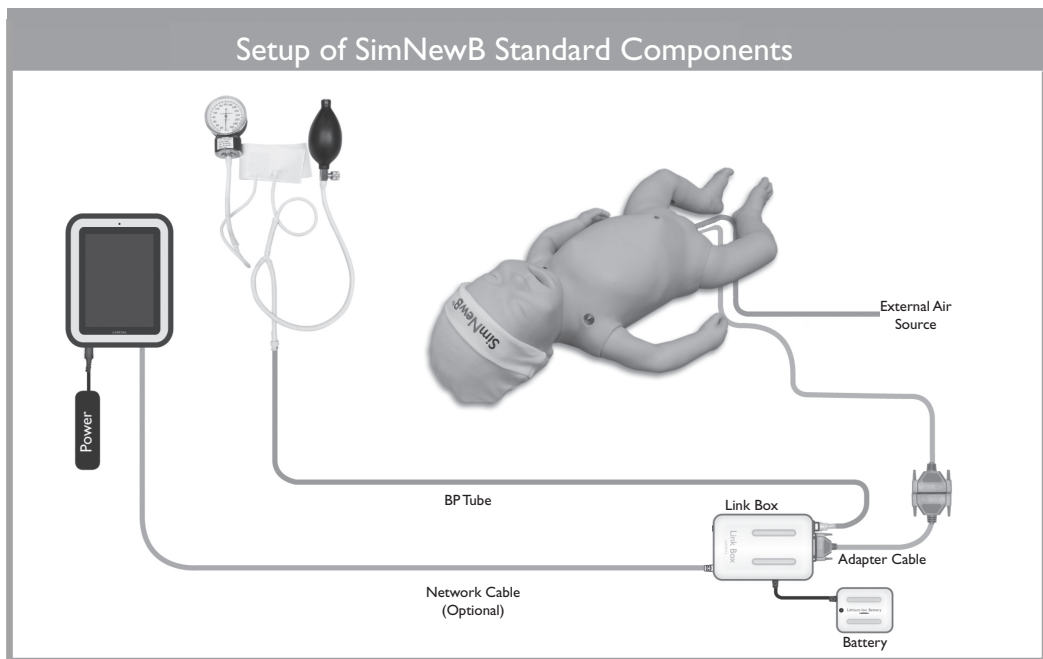
### IV Bag

- Connect the empty IV-bag set to the Umbilical Reservoir Overflow tube.

**Note**-The overflow tube has a valve to prevent leakage from the tube when not attached to IV-bag set.

### Network

- The Link Box is connected to either the SimPad (wireless or wired) or to a PC.  
See the associated DFU for connection and setup.



## Setup of SimNewB Advanced Components

### Start the Instructor Computer

- Connect the mouse and power supply to the computer and power ON.
- Make sure that the SimNewB simulator icon is displayed on the Instructor PC desktop.

### Install the USB HUB

- Connect Power to the USB hub
- Connect smaller end of included USB cable into the upstream port of the usb hub.
- Plug the rectangular end of the included USB Cable into a USB port on the Instructor Computer

### Connect the Patient Monitor Cables

- Put aside the software CD that comes with the monitor. DO NOT INSTALL software CD.
- Route the cables through the Patient Monitor stand and connect them to the corresponding outlets located at the bottom of the screen.
- Secure the cable using the strain reliefs.
- Connect power cable to a wall outlet and power ON. the Patient Monitor.

**IMPORTANT: Do NOT connect the USB cable to the USB hub yet.**

**IMPORTANT: Do NOT use the Patient Monitor software CD that comes with the Manikin.**

### Connect the Patient Monitor to the Instructor Computer

- Connect the Patient Monitor video cable and 3-way audio cable (black mini jack with double wire) to the Instructor PC.

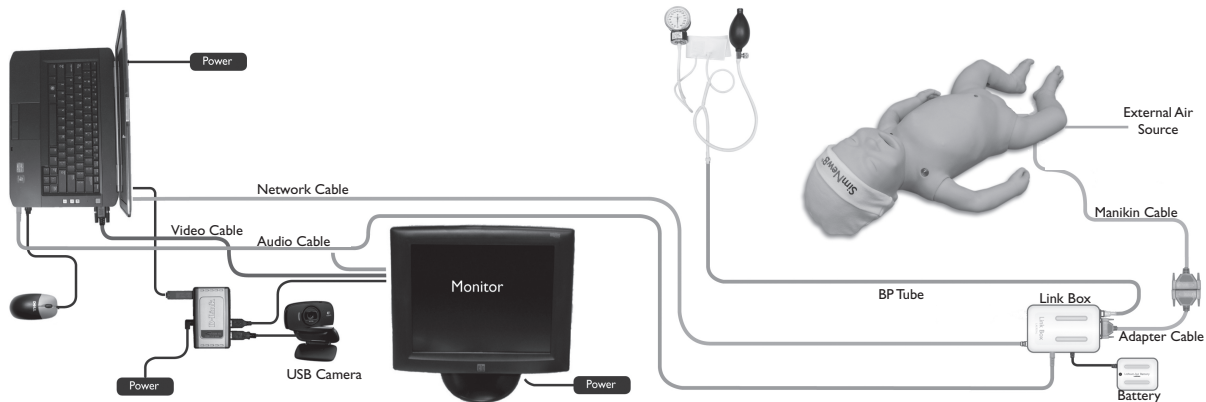
**IMPORTANT: Do NOT connect the USB cable to the Patient Monitor yet.**

### Set Up the Instructor PC for Extended Desktop Display to Support the Patient Monitor

- Right click on the instructor PC desktop
- In the drop down menu select <Screen Resolution>.
- In the <Multiple Displays> option, select <Extend these displays>.
- Click <Apply>.
- The Instructor PC (display 1) should have a resolution of 1600 x 900.
- The Patient Monitor (display 2) should have a resolution of 1280 x 1024.
- Click <OK>.

### Connect the Monitor to the USB HUB

## Setup of SimNewB Advanced Components



## Manikin Connectors

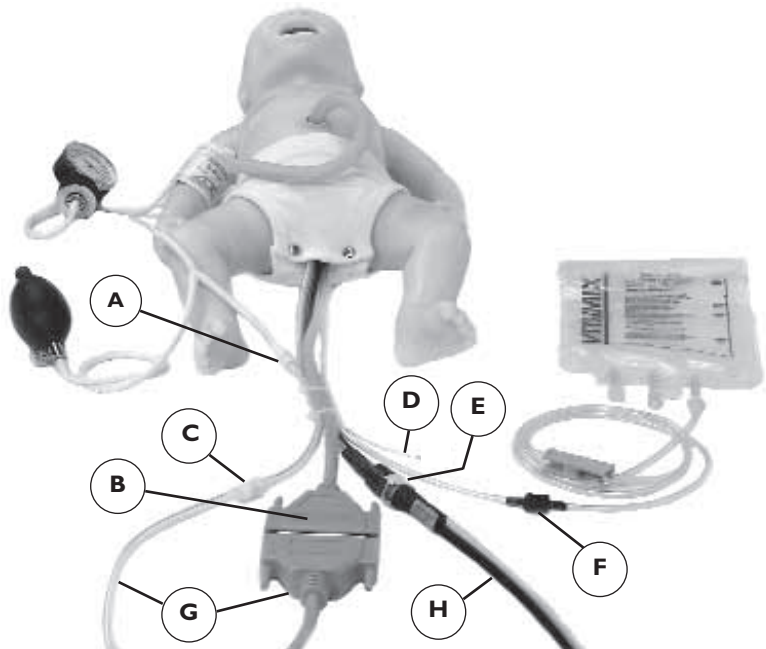
The SimNewB™ manikin is shipped ready for use. It must be connected to the Link Box and the Compact Compressor Unit to function.

The manikin's control cable and tube bundle has the following connectors:

- A - Blood Pressure Cuff connector
- B - Manikin connector
- C - Manikin Blood Pressure connector (to Link Box)
- D - Air exhaust tube (no connections)
- E - Manikin Air/CO<sub>2</sub> connector
- F - Umbilical Reservoir Overflow tube

Extension cables are used to connect the manikin to the Link Box and the Compressor Unit.

- G - SimPad Adapter Cable (from Manikin Connector and Manikin Blood Pressure connector to Link Box)
- H - Air/CO<sub>2</sub> tube (from Manikin Air/CO<sub>2</sub> connector to Compressor Unit)



### Calibrating the Touchscreen Patient Monitor

- Double click on the Elo logo in the system tray in the lower right corner of the screen
- In the menu that appears select <Elo Touchscreen Properties>.
- Click the <Align> button in the dialog box.
- If target indicators first appear on the Instructor PC (laptop computer) screen, press Esc, or wait until they appear on the Patient Monitor.
- When the target indicator appears on the Patient Monitor; touch each target as it changes position.
- Follow the on screen instructions then touch the green "checkbox" button.
- Click OK.

#### Note:

##### Calibration of Blood Pressure

- To ensure correct measurements of simulated BP, the sphygmomanometer used with the cuff needs to be calibrated to the pressure sensor in the SimNewB system. This is done by selecting the **Calibrate BP** function, inflating the cuff to 100 mmHg and pressing the **Calibrate** quick execution key as the pressure is held at exactly 100 mmHg.

### Connect the USB Camera to the USB HUB

#### Connect the Link Box to PC

- Connect the Network cable from the Link Box to the PC.
- Connect the audio cable (white mini jack with single wire) to the Link Box.
- Connect power supply or battery to the Link Box.

#### Connect the Manikin to the Link Box

- Connect the 37-Pin Serial Cable from the manikin to the Cable Adapter then connect the Cable Adapter to the Link Box.
- Place the Blood Pressure cuff on the left arm of the manikin.
- Connect the clear tubing from the Blood Pressure cuff to the Link Box.
- Power on the Link Box.

## Operation of Compact Compressor Unit

The Compact Compressor provides air for the SimNewB™ manikin's breathing, movements and pulses, and CO<sub>2</sub> to be mixed into the manikin's expired air:

### Setup procedure:

- 1) Check that Power switch (1) is set to OFF position.
- 2) Plug power supply cable into plug (4).
- 3) Plug power supply cable into power source.
- 4) Connect the Air/CO<sub>2</sub> tube to the **Output to Manikin** connector (2).

*Optional - this is not required for operation if CO<sub>2</sub> detection is not used:*

- 5) Connect the CO<sub>2</sub> regulator to a suitable CO<sub>2</sub> tank.
- 6) Connect the blue CO<sub>2</sub> tube between the CO<sub>2</sub> regulator and the **Input CO<sub>2</sub>** connector (3) at the back of the compressor.

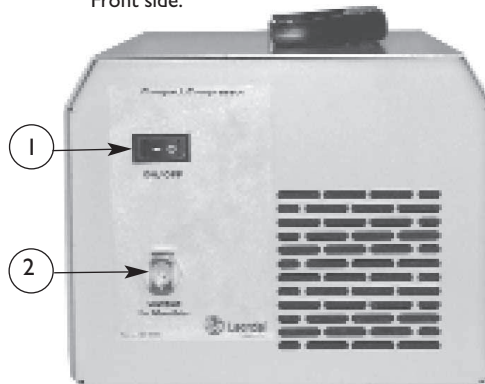
### Compressor start:

Press Power switch (1) to ON position.  
The compressor will run continuously when turned on.  
The flow of CO<sub>2</sub> to the manikin valve will begin.

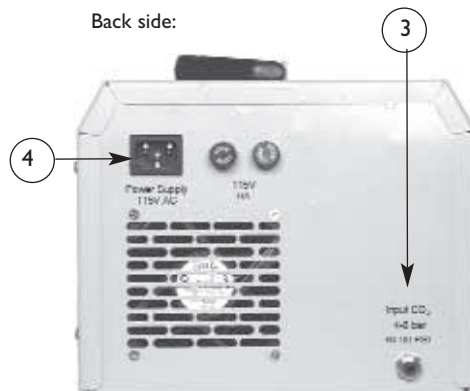
### Compressor stop:

Press Power switch (1) to OFF position.  
The compressor will stop and vent automatically.  
The flow of CO<sub>2</sub> will stop.

Front side:



Back side:



### Cautions:

Safety may be compromised if the System or any of its components are used in a manner other than specified by Laerdal.

- Do not open compressor housing. Dangerous voltage inside. Only to be opened by authorized personnel.
- Do not use in an explosive environment.

The Compact Compressor must be powered from a grounded outlet with the appropriate specified voltage and current. Do not use an adapter or cord other than provided unless installed by a qualified electrician according to relevant electrical codes.

- The Compact Compressor must be positioned to easily access and disconnect the power cord.
- To comply with CE Standards, the Compact Compressor must be positioned within 3 m/9 ft of the electrical outlet.
- Position Compact Compressor to prevent blocking air vents.

No external ventilation is required to operate the system. If CO<sub>2</sub> is attached, small amounts will be released during use. If CO<sub>2</sub> is attached and the Compact Compressor is operated without the Output Hose connected to both compressor and manikin, a substantial quantity of CO<sub>2</sub> will be released.

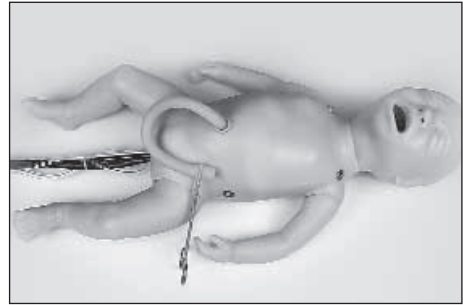


## Clinical Simulation Using the SimNewB™ Manikin

### I. General Handling

The Neonatal Simulator is the size and weight of a newborn baby girl delivered at term with approximately 3.5 kg (7 lbs) body weight and 51 cm (21 inches) length.

The arms, legs and neck articulate realistically and encourage care and proper handling. The simulator can be handled appropriately for care and resuscitation of a normal newborn. The SimNewB manikin can be carried to the resuscitation table, for a realistic start of the resuscitation case. Ensure that the control cables are free and do not snag.



### Muscle tone and motions:

The muscle tone of the SimNewB's limbs can be set to represent either a limp (poor muscle tone) or a normal newborn. The muscle tone impression can be enhanced with spontaneous vigorous motions.

The SimNewB manikin can also be set to have seizure-like movements of the limbs.



**Umbilical cord:** The SimNewB manikin has a replaceable umbilical cord which can be clamped, tied, cut, sutured, catheterized, or palpated for the umbilical pulse.

IV fluids or medications may be injected into the vein in the umbilical cord.



### Interchangeable pupils:

The SimNewB manikin is delivered with normal pupils mounted in the head. A separate case contains 3 sets of plastic pupil inserts (normal, constricted and dilated pupils) for use in simulating different patient conditions.



**Clothing:** The SimNewB™ manikin is delivered with baby pants with snaps at the bottom to allow cable and tubes to pass through.

For more realism at the resuscitation table, the control cables to the simulator can be hidden under the blanket provided with the manikin.



## 2. Preset Patient State Levels

The NewSimB Neonatal Simulator system has six predefined patient state levels, L0-L5. For each level, seven clinical parameters are set, as defined in Table 1. Progressing between the levels simplifies running resuscitation simulations.

Table 1

PATIENT LEVEL	CYANOSIS	HEART RATE	MUSCLE TONE	RESPIRATIONS	VOCAL SOUNDS	LUNG SOUNDS	BLOOD PRESSURE
L5	Off	140/min	Motion	Regular 40/min	Strong cry	Normal	60/40
L4	On	160/min	Motion	Regular 60/min	Grunting	Coarse crackles	60/40
L3	On	120/min	Tone	Irregular 10/min	Weak cry	Coarse crackles	45/20
L2	On	70/min	Limp	Gasping 4/min	-	Coarse crackles	30/20
L1	On	40/min	Limp	0	-	-	30/20
L0	On	0	Limp	0	-	-	0/0

### 3. Airway Simulation Features

**Caution:**

*Do not use for mouth to mouth.*

#### Opening the airway

The neck of SimNewB™ manikin is realistically flexible, from hyperextension to flexion. The simulation team members may demonstrate correct head position for opening of the airway.

#### Clearing the upper airway

Simulated meconium (Meconium Aspiration Module) may be suctioned from the SimNewB manikin's mouth and nose using a bulb syringe or suction catheter.

By using the Meconium Aspiration module, the simulation team members can assume that there is meconium in the trachea, instigating proper procedures for removal of meconium.

The head can be turned to the side as normal.

**NOTE/Warning:**

*Do not insert fluids into the SimNewB manikin's airways.*

#### Clearing the lower airway

One can dry simulate removal of meconium from the SimNewB manikin's mouth and trachea by laryngoscopy, using a suction catheter to clear the mouth.

**NOTE/Warning:**

*Do not insert fluids into the SimNewB manikin's airways.*

#### Securing the airway

The SimNewB manikin's neck, jaw and airway is modeled to enable a normal newborn intubation scenario. The airway can be intubated either by direct laryngoscopy (straight blade size No. 1 recommended) and an uncuffed ET tube (size ID 3.5 mm recommended), or with the LMA (size #1 recommended).

Nasal intubation can be done.

**NOTE:**

*Lubricate the ET tube or LMA before insertion.*



The "sniffing" position aligns the trachea for the best view of the glottis and vocal cords when properly using a laryngoscope. Cricoid pressure may be used by the simulation team member.

The SimNewB™ manikin jaw is realistically hinged and flexible, for airway and intubation maneuvers.

The SimNewB manikin vocal cords are realistically shaped and at a depth of 9.5 cm from the upper lip. If the ET tube is inserted too far, it will pass into the right main bronchus, giving only right side chestrise during positive-pressure ventilation. The breath sounds on the left side of the chest then disappear.

An ET tube may be secured by means suitable for a neonatal baby. Tape residues should be cleaned off the skin with soap and water.

To simulate airway obstructions or very low lung compliance, the instructor can select the lungs to be partially or fully closed.

Oropharyngeal or nasal pharyngeal airways suitable for neonates may be used.

*Lubricate the oropharyngeal or pharyngeal airways before insertion.*

### Detection of esophageal intubation

If the esophagus is intubated instead of the trachea, the abdomen will then visibly distend for each positive-pressure ventilation.

Stomach ventilation is detectable with the stethoscope.

A capnographic sensor suitable for neonatal use can be used to detect ETCO<sub>2</sub> output, for example as a means to confirm tracheal intubation contrary to esophageal intubation.

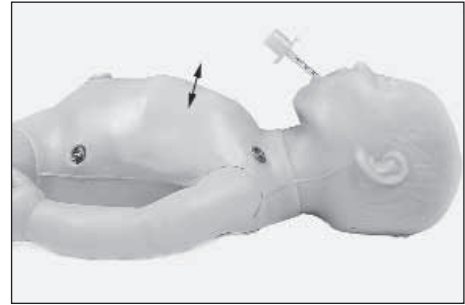


## 4. Breathing

### Spontaneous breathing

The SimNewB™ manikin's breathing activity can be assessed from visible chest movement, from vocal sounds (grunting, crying, etc) and from breath sounds audible with a stethoscope.

The manikin's spontaneous breathing can be initiated or stopped by the instructor. The breathing rate can be set to 0-100 breaths per minute, with 40 breaths per minute as the default setting.



When connected to a CO<sub>2</sub> source, the SimNewB manikin can expire CO<sub>2</sub>. This function can be turned on and off from the SimPad or the PC Software.

### Central cyanosis

To simulate central cyanosis, activate the SimNewB manikin cyanosis function, which changes the color of the face surrounding the lips to blue.

#### The brightness can be controlled from the SimPad

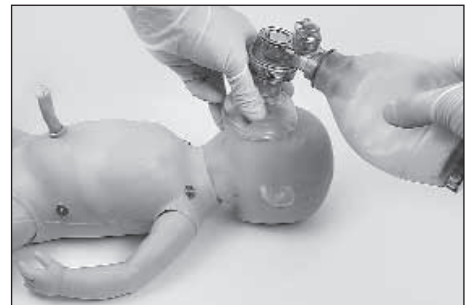
Cyanosis is controlled from SpO<sub>2</sub> and is turned on and off from the SpO<sub>2</sub> menu.



### Assisted breathing

The SimNewB manikin is designed for airway devices such as face masks, ET tubes (size ID 3.5mm recommended) and LMAs (size 1 recommended).

The manikin is suitable for use with self-inflating bags and flow-inflating bags. It is not designed for use with automatic ventilators.



Airway restrictions and different airway compliances can be simulated for each lung in 3 settings each:

- Fully open, with no noticeable restriction when ventilating
- Partially closed, with noticeable restriction when ventilating
- Fully closed, with no air movement when ventilating

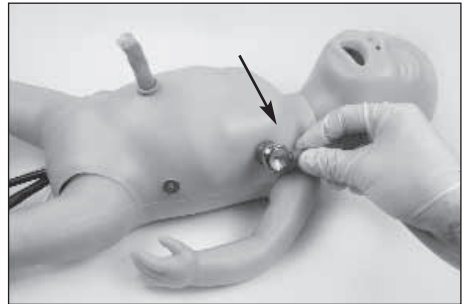
A size 0/1 face mask is recommended for mask-ventilation with the SimNewB™ manikin. During mask ventilation with elevated airway pressure, air may realistically leak through the esophagus to the abdomen, visibly distending the stomach.

To vent out accumulating air from the stomach, an orogastric tube (size 8 FR recommended) can be in place simultaneously with mask ventilation.



### Breathing sounds audible by auscultation

Breath sounds can be listened to with a stethoscope at the left and right mid-axillary areas and the mid-clavicular sites.

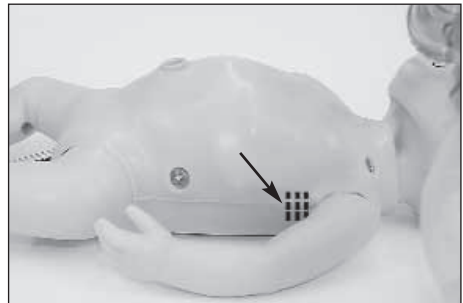


#### NOTE:

*Only use appropriate size neonate/infant stethoscope*

### Pneumothorax decompression

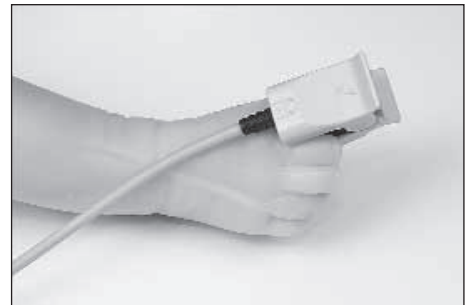
The needle decompression procedure can be performed by inserting a needle at the left chest side (fourth intercostal space) into the pleural space. The rib structure can be palpated through the skin. The SimNewB manikin's pleural space is enclosed so that the needle can not damage the inner components of the manikin.



## Oxygen Saturation

### *Optional Patient Monitor*

A standard SPO<sub>2</sub> probe (not included) can be attached to the SimNewB system during the simulation to add visual realism only. There is no interface between the SPO<sub>2</sub> probe and the SimNewB system. It is up to the instructor to set the SPO<sub>2</sub> value that shall be visible to the simulation team members on the optional monitor:



## 5. Circulation

### Heart rate and Pulse

The SimNewB manikin has a heartbeat and palpable umbilical and right brachial pulses. The palpable pulses can be switched on or off by the instructor. The heartbeat can be listened to using a stethoscope at the left side of the chest. The heart rate can be varied between 0 and 300 bpm.

Even if the SimPad sets the pulse to off, palpating the brachial pulse will turn on all pulses unless the BP cuff is inflated to 10 mmHg or more.

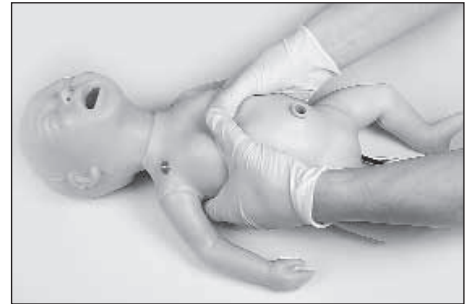
**NOTE:**

*Only use appropriate size neonate/infant stethoscope*

### Chest compressions

The SimNewB™ manikin has normal visible chest landmarks (xyphoid process, nipples) and underlying sternum structure. The SimNewB's maximum chest compression depth is one third of the AP distance.

Each series of chest compressions is logged.



### Blood pressure measurement

Using the blood pressure cuff supplied, the blood pressure can be measured on SimNewB manikin's right arm. See the Setup guide, page 8, for connecting the NewSimB blood pressure cuff properly, and page 10 for calibration.

The Korotkoff sounds can be listened to with a stethoscope at the antecubital area.

### Heart sounds

Heart sounds can be listened to with a stethoscope at the left side of the chest. The volume can be adjusted from level 1 to 9. Level 8 is default.



The available heart sounds are listed in the Detail Specifications section.

**NOTE:**

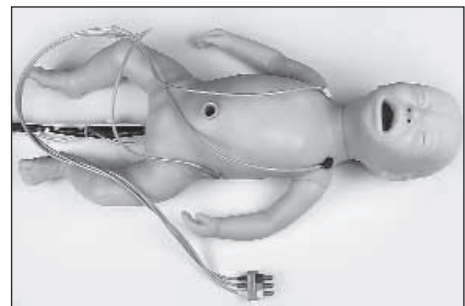
*Only use appropriate size neonate/infant stethoscope*

### ECG rhythms

3-lead ECG can be connected to the SimNewB manikin. ECG can be monitored with normal ECG monitors or ECG-capable defibrillators.

The available ECG rhythms and QRS wave types are listed in the Detail Specifications section.

In addition, pulseless electrical activity (PEA) can be set as the heart state.



### Defibrillation

**Warning:** The Laerdal SimNewB must not be defibrillated or paced. The ECG electrodes are not designed to absorb high voltage / high energy shocks. Application of such shocks will cause a hazard and destroy the SimNewB system's inner electronics.



## 6. Drug & IV Administration

### IV access via the umbilical vein

IV fluids or simulated medications may be injected into the vein in the umbilical cord. The fluids will accumulate in an abdominal fluid reservoir (40 ml capacity), which must be emptied after use (see page 21). More fluid may be injected if the empty IV-bag is attached to the umbilical reservoir overflow tube (see page 8).

Cannulation of the umbilical vein can be performed with an umbilical catheter (size 3.5F or 5F).

Artificial blood can be added to the reservoir, so that simulation team members can draw simulated blood when testing the catheter for proper insertion depth.



### Intraosseous access

Intraosseous access can be established bilaterally in the lower legs.

IV fluids or medications may be injected through the I/O needle. Each leg contains a fluid reservoir of approximately 35 ml.

To prevent leakage, it must be emptied after each use (see page 21).



### Stomach catheterization

A feeding tube (size 8FR) can be inserted into the stomach.

**NOTE/Warning:**

*Do not insert fluids into the SimNewB manikin's stomach!*

A suction catheter (size 10FR) can be inserted into the stomach for simulation of stomach content removal. Suction can be applied to the catheter as normal.



## Manikin Preparation Before Use

### Inserting fluids into the umbilical reservoir

Use a syringe to insert fluid into the abdominal reservoir. Do not fill more than 40 ml unless the IV bag is attached to the overflow tube.

### Attaching the umbilical cord

Lubricate the end of the umbilical cord to be inserted with liquid hand soap. Squeeze and press the umbilical cord into the umbilical opening. The cord should be pressed at least 50mm (2 inches) into the opening, but need not be pushed further down.

*Note: Ensure that the cord is properly inserted to the min. distance. Failure to do so will result in a moving umbilicus when pulse is on.*

To remove, gently pull on the umbilical cord.



### Changing eye pupils

1. Open the eyelids wide, take care not to rip the faceskin.
2. Using the suction cup provided in the kit or the edge of your fingernail, remove the pupil from the eye.
3. Replace with the pupil of choice, using the small suction cup provided or press into place with finger.



### Inserting the meconium module

1. Insert the module with a finger - do not use force.  
*Note: Do not add lubricant to the module.*  
*Note: Do not insert the meconium module past uvula.*
2. A suction catheter @ 100 mmHg will remove the meconium module.
3. A tether has been added to ensure removal of the object.

For intubation following the removal of the meconium module, add lubricant to the ET-tube before intubation.



## Maintenance After Use

The maintenance tasks listed below should be performed after the training session.

For other service needs, contact your local Laerdal Technical Service Center.

### Tucking in the neck skin

If the manikin's neck has been extended, the neck skin's lower edge may need to be tucked in under the body framework's collarline.

**To extend the cleanliness of your manikin,** Use a small towel and lightly dust the manikin head and chest with a small amount of powder (provided). Wipe away any excess.

*Apply baby powder beneath the body skin at the neck, shoulder and hip joints to prevent sticking.*

### Emptying the abdominal reservoir for fluids

Remove the umbilical cord, rinse and wipe it clean, and let it dry. Suction fluids from the reservoir overflow connection. Add clear or soapy water and suction until the reservoir is clean.

### Emptying leg for fluid

If fluid is present in the legs, open the plug behind the knee and remove fluid with a syringe.

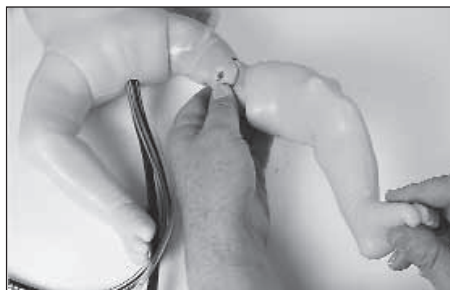
**NOTE:** Always remove fluids from the umbilical and IO reservoirs after use.

## Periodic Maintenance

### Changing Lower Leg Mandrels and Skins

After multiple uses with IO needle injections to the lower legs, the lower leg mandrels and skins should be replaced if fluid leakage is prominent during use.

1. Pull the leg skin carefully off the leg.
2. Unscrew and remove the knee bolt holding the lower leg.
3. Exchange the lower leg with a new one of the same type (right/left foot).
4. Reinsert the knee bolt and tighten carefully.
5. Apply Baby Powder to the inside surfaces of the leg skin.
6. Pull a new leg skin (same type left/right) over the foot/leg.



## Compact Compressor Unit

### Specifications:

Model 1008519:

Voltage: 115VAC

Frequency: 60Hz

Max. Current: 6A

Fuse Rating: 250V, 6A, Slow Blow

Air Outlet Pressure: 15 psi

Air Flow: 9 L/min

CO<sub>2</sub> Inlet Pressure: 60-90 psi

CO<sub>2</sub> Outlet Pressure: 10 psi

Dim: 7 5/8" X 9 1/4" X 12 1/8"

19.4 cm X 23.5 cm X 30.8 cm

Weight: 18 lbs/9 kg

Model 1008537:

Voltage: 230VAC

Frequency: 50Hz

Max. Current: 3A

Fuse Rating: 250V, 3A, Slow Blow

Air Outlet Pressure: 1 Bar

Air Flow: 9 L/min

CO<sub>2</sub> Inlet Pressure: 4-6 Bar

CO<sub>2</sub> Outlet Pressure: 0.7 Bar

Dim: 19.4 cm X 23.5 cm X 30.8 cm

7 5/8" X 9 1/4" X 12 1/8"

Weight: 18 lbs/9 kg

**Cleaning and Decontamination:** Clean Compact Compressor outside only with a soft cloth, mild soap and water. Do not spray with liquid or immerse in liquid. The unit is not intended for use where it might require decontamination. User is responsible for supplying the CO<sub>2</sub>. There is no preventative maintenance expected from user.

### Environmental Conditions:

Temperature

- Operating: 10 - 40C
- Storage: 15 - 50 C

Ambient pressure range for storage and use:

- Not applicable

Humidity range for storage and use:

- Humidity - non-condensing 0-90%

## Trouble-shooting

### **SimNewB™ manikin not breathing?**

- #1 Check that the chest rise is turned on in software.
- #2 Check that the compressor is on and is connected to the manikin.
- #3 Check that there is a blood pressure - BP of 0/0 will set the breathing rate to 0.
- #4 Check that a perfusing rhythm is set.
- #5 Check the batteries on the Link Box.
- #6 Check that exhaust hose is not occluded or kinked.
- #7 Check that lung closures are set to open or partial.
- #8 Still not working, call your local Laerdal Technical Support Office.

### **Link Box and SimPad not working?**

- #1 Check the batteries for both units.

### **Compressor not working?**

- #1 Check setup instructions.
- #2 Check the power connection to the compressor unit.
- #3 Check that the source of electrical power works with another device.
- #4 Still not working: call your local Laerdal Technical Support Office.

### **Manikin not making vocal sounds?**

- #1 Check that a breathing rate is set.
- #2 Check that a BP is set.
- #3 Check that a perfusing rhythm is set.
- #4 Check that vocal sound volume is not set to 0.

## Trouble-shooting

### **Manikin not making heart sounds?**

- #1 Check that heart sound is selected.
- #2 Check that heart rate is not set to 0.
- #3 Check that heart sound volume is not set to 0.
- #4 Check that perfusing heart rhythm is set.

### **Manikin not making Lung sounds?**

- #1 Check that lung sound is selected.
- #2 Check that lung sound volume is not set to 0.
- #3 Check that breathing rate is not set to 0.
- #4 Check that lung closures are open or set to partial.

### **Manikin not having pulse?**

- #1 Check that compressor is on and is connected to the manikin.
- #2 Check that pulse is enabled either through software or brachial switch.
- #3 Check that BP cuff pressure is below 10mmHg.
- #4 Check that perfusing heart rhythm is not set to 0.
- #5 Check that umbilical cord is inserted all the way into reservoir.

### **Manikin not having good motions?**

- #1 Check that compressor is on and is connected to the manikin.
- #2 Check that motion is enabled in software.
- #3 Check that exhaust hose is not occluded or kirked.
- #4 Check that limbs are not bound by cables or blanket.
- #5 Powder limb joint areas to reduce friction.

### **Laptop or any other peripherals not working?**

- #1 Call your local technical product manufacturer for support.





**Laerdal**

*helping save lives*