

## PATIENT ASSESSMENT & DEVICE PREPARATION

# Bubble CPAP

Bubble CPAP (bCPAP) devices provide both positive pressure and increased fractional concentration of oxygen (FiO<sub>2</sub>) to newborns with respiratory distress

### USE FOR

- Respiratory distress syndrome
- Increased work of breathing

### STANDARD OF CARE

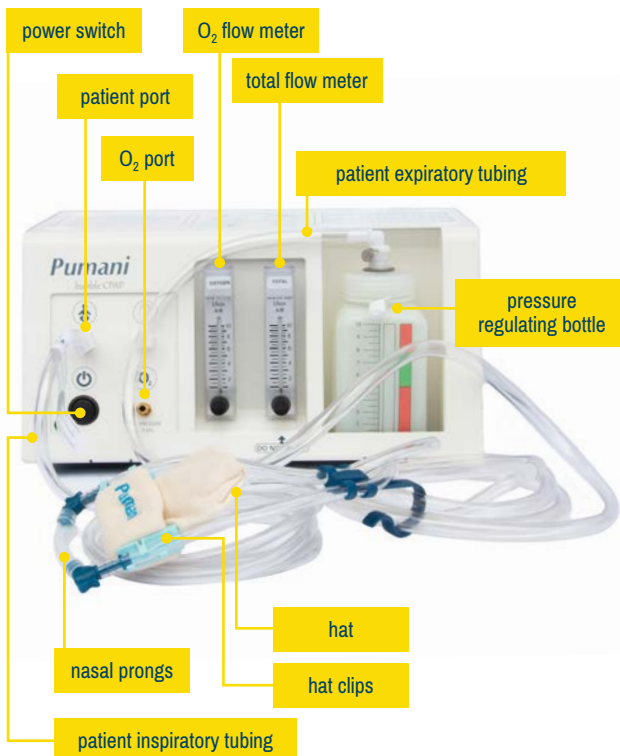
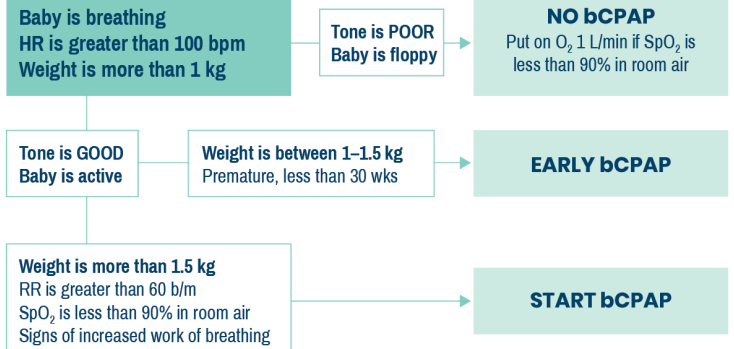
Neonatal patients should reach oxygen saturations of **90–95%** by 15 minutes after birth

**Assess and manage using the TRY algorithm**

## 1 ASSESS WHICH PATIENT TO PUT ON CPAP

Always perform **ABC assessment** and resuscitation as needed **before using the Try CPAP algorithm**

- T** **TONE** is good
- R** **RESPIRATORY DISTRESS**  
SpO<sub>2</sub> is less than 90% on O<sub>2</sub> 1 L/min
- Y** **YES** HR is greater than 100 bpm



## 2 PREPARE DEVICE

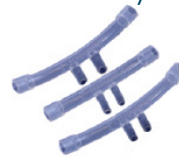
### Follow handwashing protocol

**A** Plug the power cable into the back of the machine and plug into a socket or extension

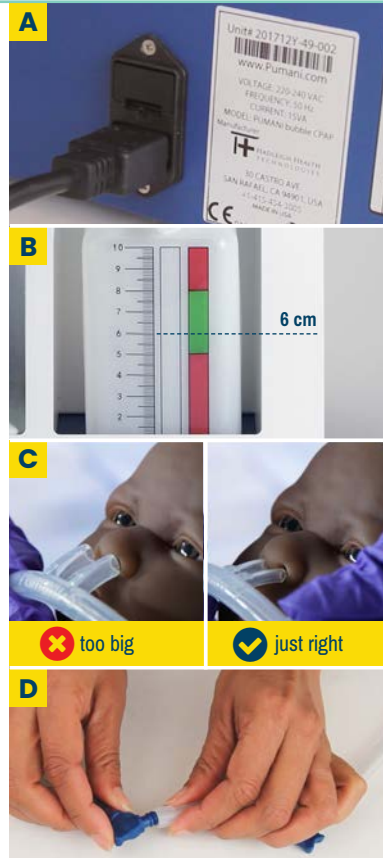
**B** Fill to **6 cm** with **clean water** then place bottle back into bottle holder

**Connect the inspiratory tubing** to the patient port and the **expiratory tubing** to the bottle port

**C** Choose correctly sized prongs



**D** **Connect the correctly sized bCPAP prongs** between the inspiratory and expiratory tubing



## ? COMPLICATIONS

- Nasal blockage and necrotic septum
- Gastric distention
- Pneumothorax
- Decreased cardiac output
- Pressure leaks
- Power failure

**!** If no back up power is available, the baby should receive oxygen from an oxygen cylinder until they can be safely returned to a bCPAP device

## ! DISINFECTION & INFECTION PREVENTION

- Clean hands with soap and water or alcohol before and after handling bCPAP materials that will be used on patients
  - Ensure patient related tubing is new or has been cleaned thoroughly before use
  - Tubing should be stored in loose rolls, preventing sharp bends or kinks
- i** Refer to the General Infection Prevention Module

## MANAGEMENT OF A PATIENT

# Bubble CPAP

Check patient response 15 minutes after bCPAP initiation. Refer to increasing and decreasing bCPAP treatment algorithms to guide management.

### USE FOR

- Respiratory distress syndrome
- Increased work of breathing

### STANDARD OF CARE:

Prior to changing bCPAP settings ensure bCPAP is functioning well using **DOPE**:

- **D**: Displacement of prongs
- **O**: Obstruction of prongs or tubing
- **P**: Patient problem (e.g., pneumothorax)
- **E**: Equipment failure (e.g., power cut, tubing leak, see "complications")

### 3

#### SET INITIAL FLOWS

Start with total flow 6 L/min with 50% FiO<sub>2</sub>

Occlude prongs and check for bubbling



### 4

#### START PATIENT ON bCPAP

Follow handwashing protocol, wear gloves if needed

**A** Suction secretions, apply nasal saline and insert OGT

**B** Put hat on baby. If no hat is available one can be made using stockinette.



Attach clips to fold of the hat (the clip is between the fold of the hat and the hat—it is not touching the patient's skin)

**C** Place prongs in patient's nose leaving 1 mm of space. Attach tubing to hat clips.



### 5

#### MANAGE & MONITOR PATIENT

Routinely every 4 hours

**A** Provide a drop of saline to each nostril

**B** Ensure prongs completely fill the nostrils and do not touch nasal septum

Re-check for bubbling at desired water level

**Review DOPE at every monitoring checkpoint (15 minutes after any management change and every 4 hours)**

**Continue, increase, decrease or stop bCPAP treatment according to algorithms**



Calculate O <sub>2</sub> Blend		Determine	
Choose FiO <sub>2</sub>	Choose TOTAL FLOW	O <sub>2</sub> FLOW	FiO <sub>2</sub>
90	10	0	2.5 3.5 5 6 7 7.5 8.5
80	9	0	2 3.5 4.5 5.5 6 7 7.5
70	8	0	2 3 4 5 5.5 6 7
60	7	0	1.5 2.5 3.5 4.5 5 5.5 6
50	6	0	1 2 2.5 3 3.5 4 4.5 5
40	5	0	1 2 2.5 3 3.5 4 4.5
30			
20			

titration table

O<sub>2</sub> flow meter

total flow meter

pressure regulating bottle



## COMPLICATIONS

- Nasal blockage and necrotic septum
- Gastric distention
- Pneumothorax
- Decreased cardiac output
- Pressure leaks
- Power failure

**Always remove prongs from baby's nose during power outages or when bCPAP is turned off**



## DISINFECTION & INFECTION PREVENTION

- Clean hands with soap and water or alcohol before and after handling bCPAP materials that will be used on patients
- **Device:** Turn off and wipe down with alcohol
- **Bottle:** Dispose of water
- **Tubing & prongs:** Dispose of or IMMEDIATELY follow protocols for cleaning and reuse

**Refer to the General Infection Prevention Module**

## INCREASING TREATMENT

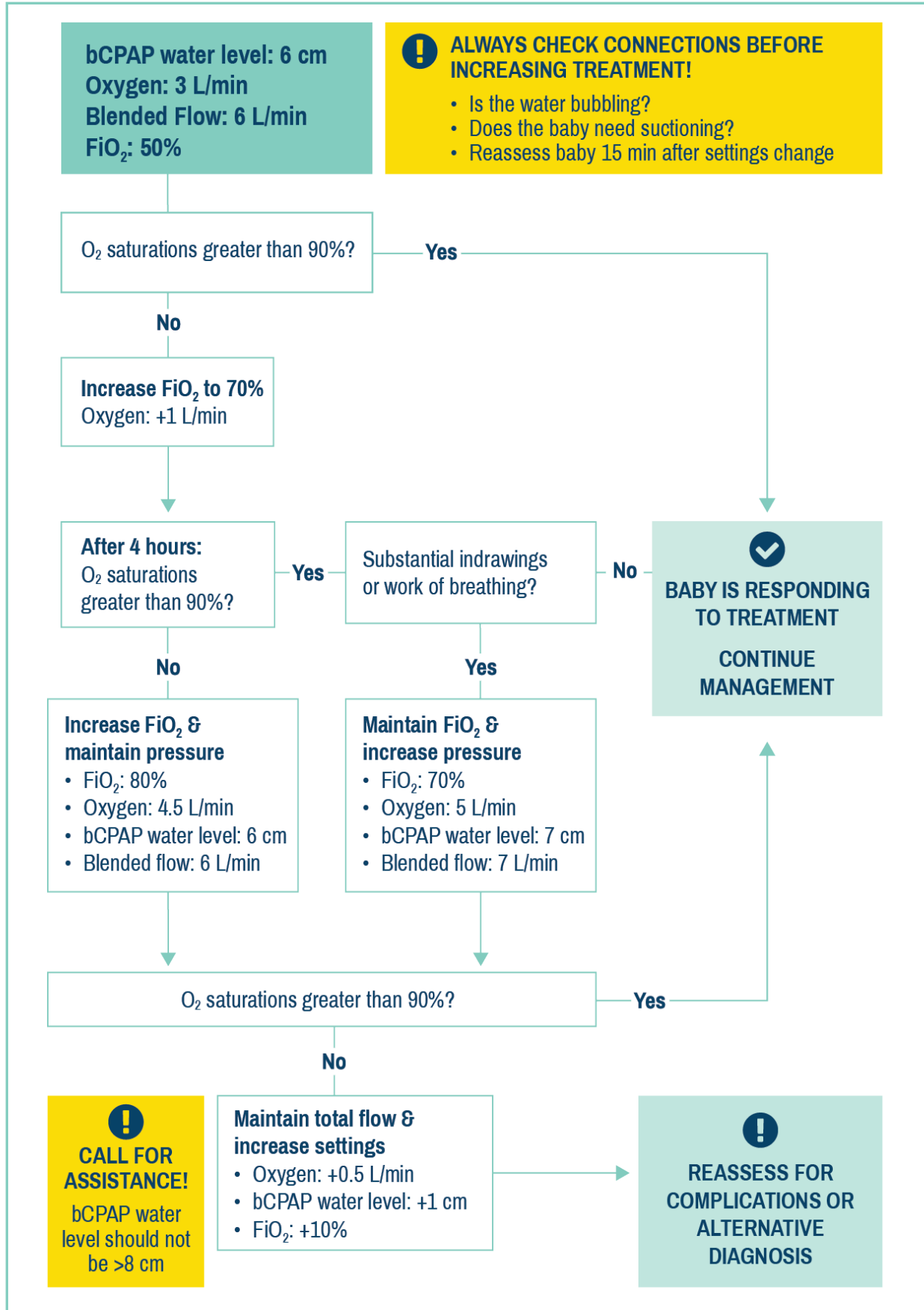
# Bubble CPAP

### INCREASING bCPAP TREATMENT

Increase fractional concentration of oxygen ( $\text{FiO}_2$ ) and/or pressure

If the device is functioning well, but some or all of the following are present consider increasing bCPAP:

- RR is greater than 60 bpm
- $\text{O}_2$  saturations less than 90%
- Persistent increased work of breathing



## WEANING TREATMENT

# Bubble CPAP

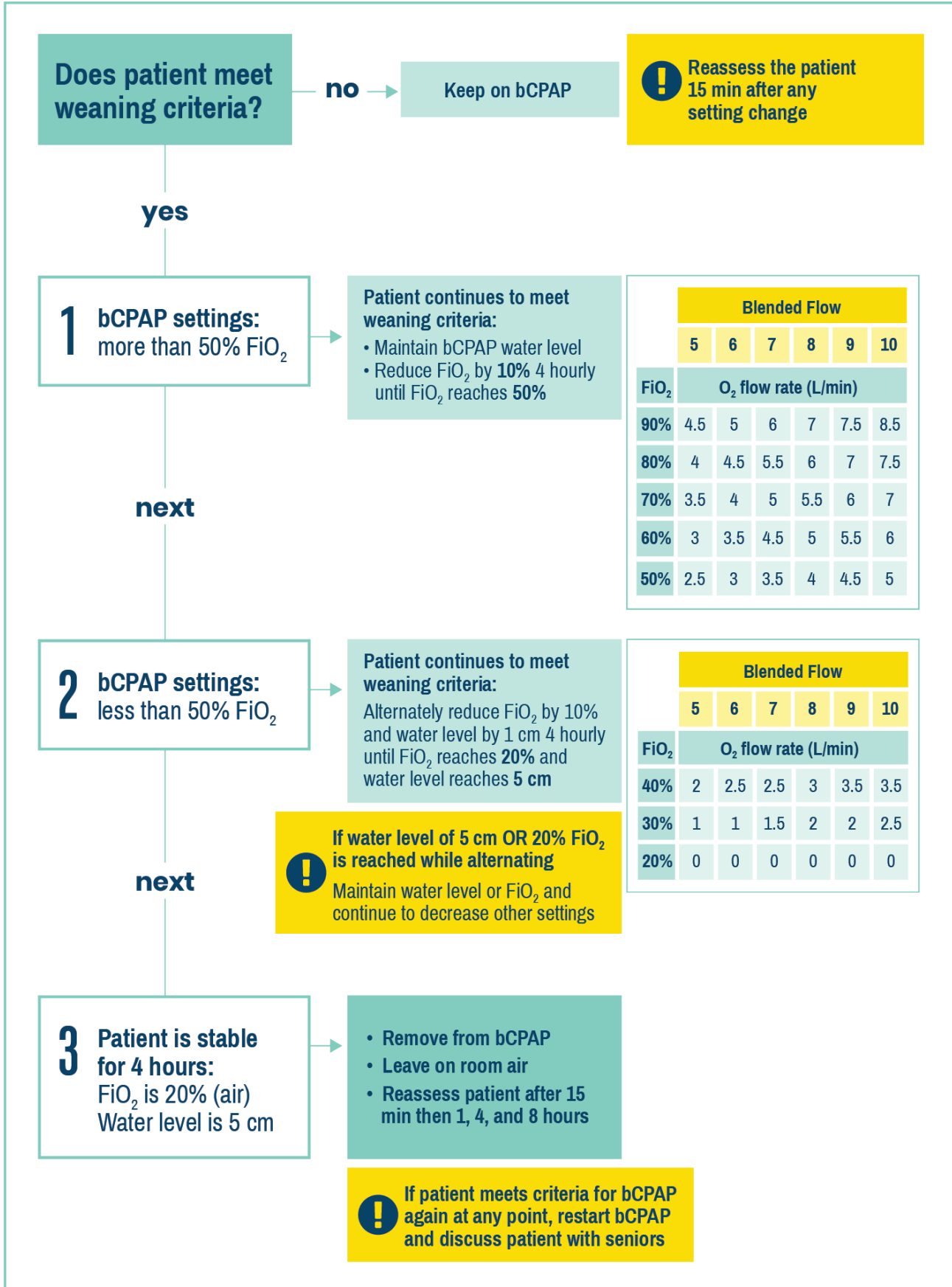
### WEANING A PATIENT FROM bCPAP TREATMENT

Select starting point by bCPAP FiO<sub>2</sub> settings

Stability criteria for weaning bCPAP treatment.

The patient is clinically stable as stated below:

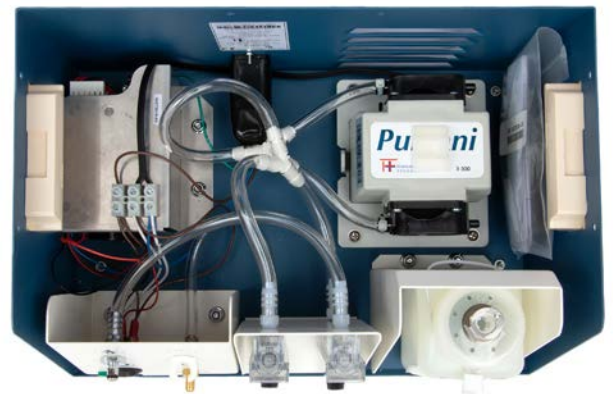
- RR is less than 60 bpm
- O<sub>2</sub> saturations greater than 90%
- No significant signs of increased work of breathing
- No other signs of respiratory distress



## REPAIR & MAINTENANCE

# Bubble CPAP

Test the device for use by setting up patient circuit. Cover or occlude prongs and check for bubbling.



## ⚙️ DAILY MAINTENANCE

Always wipe the bCPAP device with alcohol using gauze or a cotton swab before first use and between patients.

Make sure to change water daily. **Do not leave water in bCPAP bottle when device is not in use.**

## ⚙️ PREVENTIVE MAINTENANCE

The bCPAP device should be turned on weekly to a total flow of 10 L/min and allowed to run while connected to an oxygen source for at least 15 minutes

### If the bCPAP device is **not turning on**

Check that the power cable is securely attached



Check that the power socket is turned on

### If the silver ball within the O<sub>2</sub> or total flowmeter are **not moving**

Tap the front of the flowmeter firmly with your knuckle or the handle of a screwdriver



If the silver ball within the flowmeter still does not go up, contact the maintenance department to request cleaning of the flowmeter and to check that all internal tubing is still connected

### If total flowmeter does **not go up to 10 L/min**

Contact the maintenance department to request an internal filter change

### If the water in the bCPAP bottle is **not bubbling**

Check that the CPAP prongs fully fill the nostrils and that the patient's mouth is not open



If the prongs are well-fitted, remove from the patient's nose and occlude the prongs with your finger

If the water is still not bubbling check the seal at the patient port

If the seal is deteriorating or cracked, contact the maintenance department



! CONTACT A TECHNICIAN OR MAINTENANCE DEPARTMENT IF DEVICE CONTINUES TO NOT WORK PROPERLY AFTER ADDRESSING THE COMMON ISSUES !