The ResMed VPAP Auto 25 CPAP Device Functional Description

ResMed Corporation

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Introduction

The ResMed VPAP Auto 25 Continuous Positive Airway Pressure (CPAP) device is a respiratory apparatus used to remedy moderate to severe obstructive sleep apnea. Obstructive sleep apnea is a medical condition where deep sleep is interrupted by a constriction or collapse of the airway caused by a relaxation of the soft palate muscle in the back of the throat. This constriction prevents the body from breathing regularly and reduces the flow of oxygen to the brain.

A CPAP device is the most common and preferred treatment for diagnosed obstructive sleep apnea and is often selected over invasive and irreversible surgical options. The goal of CPAP therapy is to achieve long periods of deep sleep without interruptions that result from irregular and constricted breathing. The CPAP device is comprised of the following parts displayed in Figure 1 below.

Figure 1: The VPAP Auto 25 CPAP Device Parts

CPAP Control Unit

The CPAP control unit is the main component of the CPAP system. The CPAP Control Unit contains the major mechanisms and electronics needed to produce and control the pressured air supply and record sleep data. The details of the CPAP control unit are displayed in Figures 2 and 3 below.

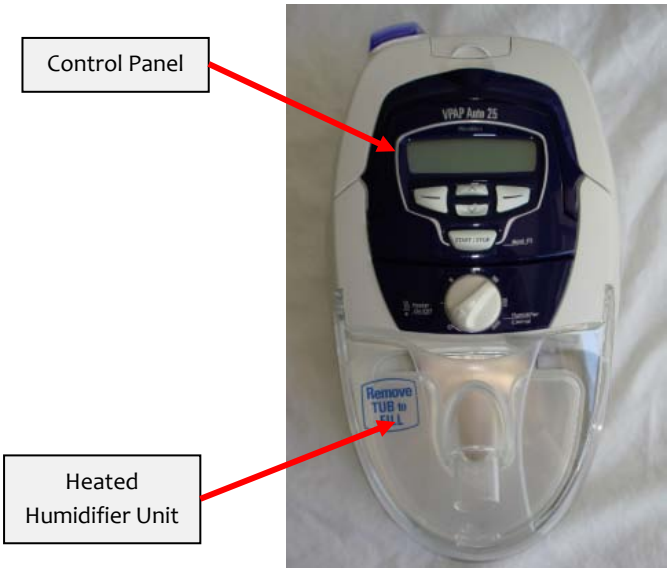

Figure 2: Control Unit Top

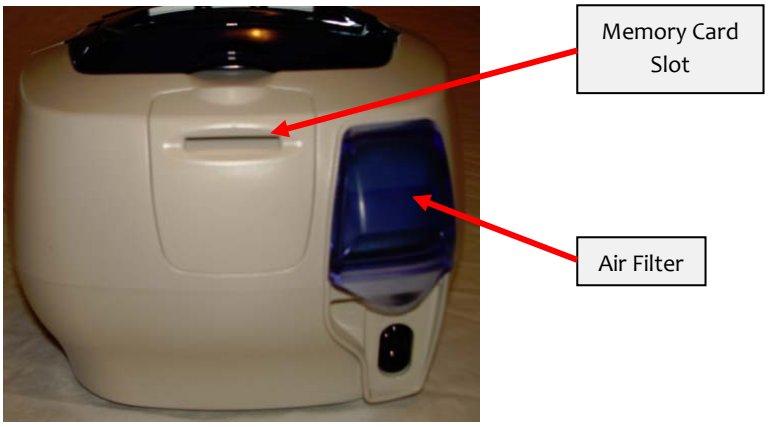

Figure 3: Control Unit Back

Control Panel

The details of the control panel are displayed in Figure 4 below.

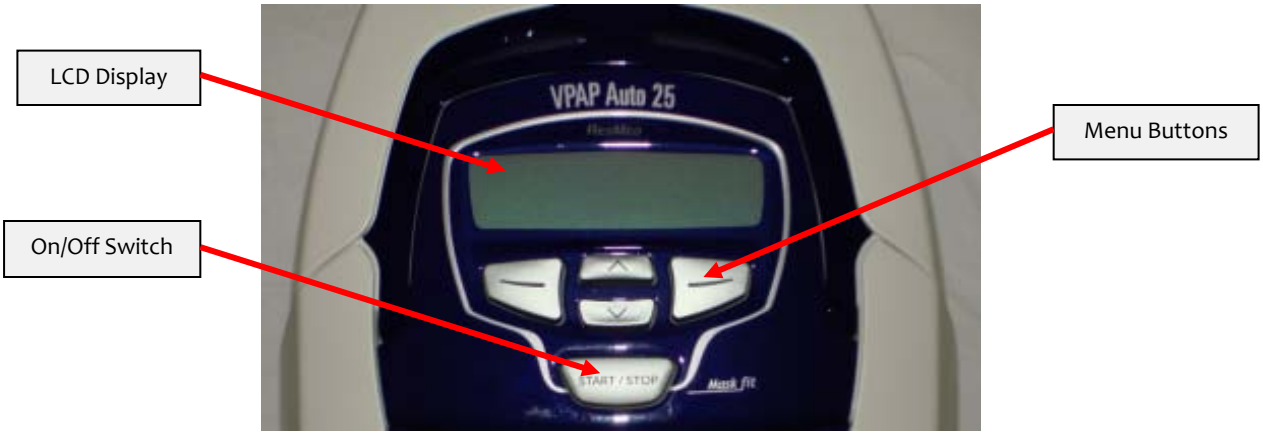

Figure 4: Control Panel

The LCD display lists program information and pressure settings during operation of the CPAP control unit. The on/off switch powers the CPAP control unit on and off and begins or ends the sleep cycle programs. The menu buttons are used to navigate menu options and control the pressure settings and sleep cycle programs.

Heated Humidifier Unit

The heated humidifier unit attaches to the CPAP control unit and contains the water supply and heating plate. During CPAP operation, dry outgoing air from the CPAP control unit is mixed with water to deliver a moist air supply to the full face mask. The details of the heated humidifier unit are displayed in Figures 5 and 6 below.

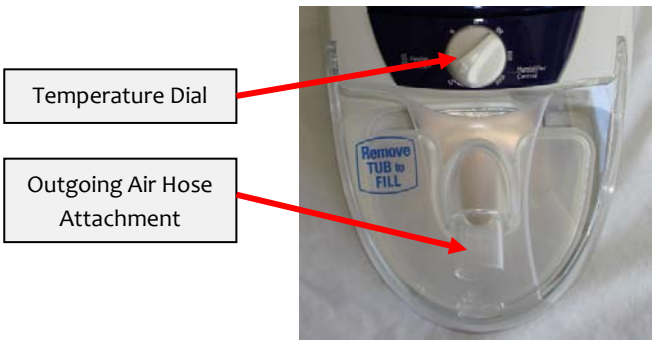

Figure 5: Heated Humidifier Unit

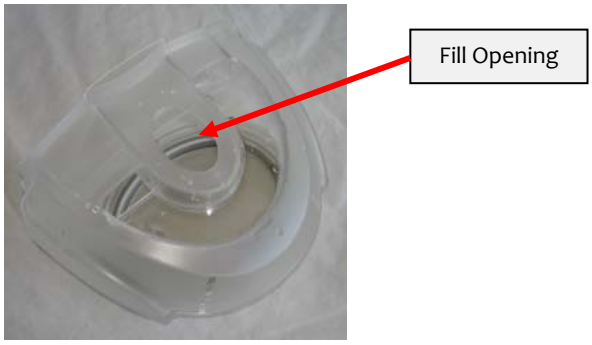

Figure 6: Water Tank

The temperature dial is used to adjust the air temperature of the outgoing air supply traveling to the full face mask. The outgoing air hose attachment is the opening where the outgoing air supply is released from the CPAP control unit. One end of the air hose attaches to this port. The water tank is the reservoir where the water supply is kept. The tank is filled with distilled water and mixes with air to deliver a moist air supply to the full face mask during breathing. The water tank sits inside the heated humidifier unit.

Memory Card Slot

The memory card slot is where the memory card is inserted. The memory card retrieves sleep data from the CPAP control unit's main memory and stores the data on a memory chip embedded in the card. The memory card data is analyzed by a sleep doctor or technician and is used to adjust machine settings to optimize sleep performance. The images displayed in Figures 7 and 8 below show the memory card and how it is inserted into the memory card slot.

Figure 7: Memory Card

Figure 8: Memory Card Slot

Air Filter

The air filter purifies incoming air to the CPAP control unit and removes dust and other particulate matter from the outgoing air supply.

Air Hose

The air hose is a 6 foot long flexible rubber tube that connects the CPAP control unit to the full face mask. The hose is reinforced using a hard plastic coil wrapped around the outside to prevent kinking or crushing. Each end of the hose contains a soft rubber fitting to ensure an air tight seal when connected. The connection details of the air hose are displayed in Figure 9 below.

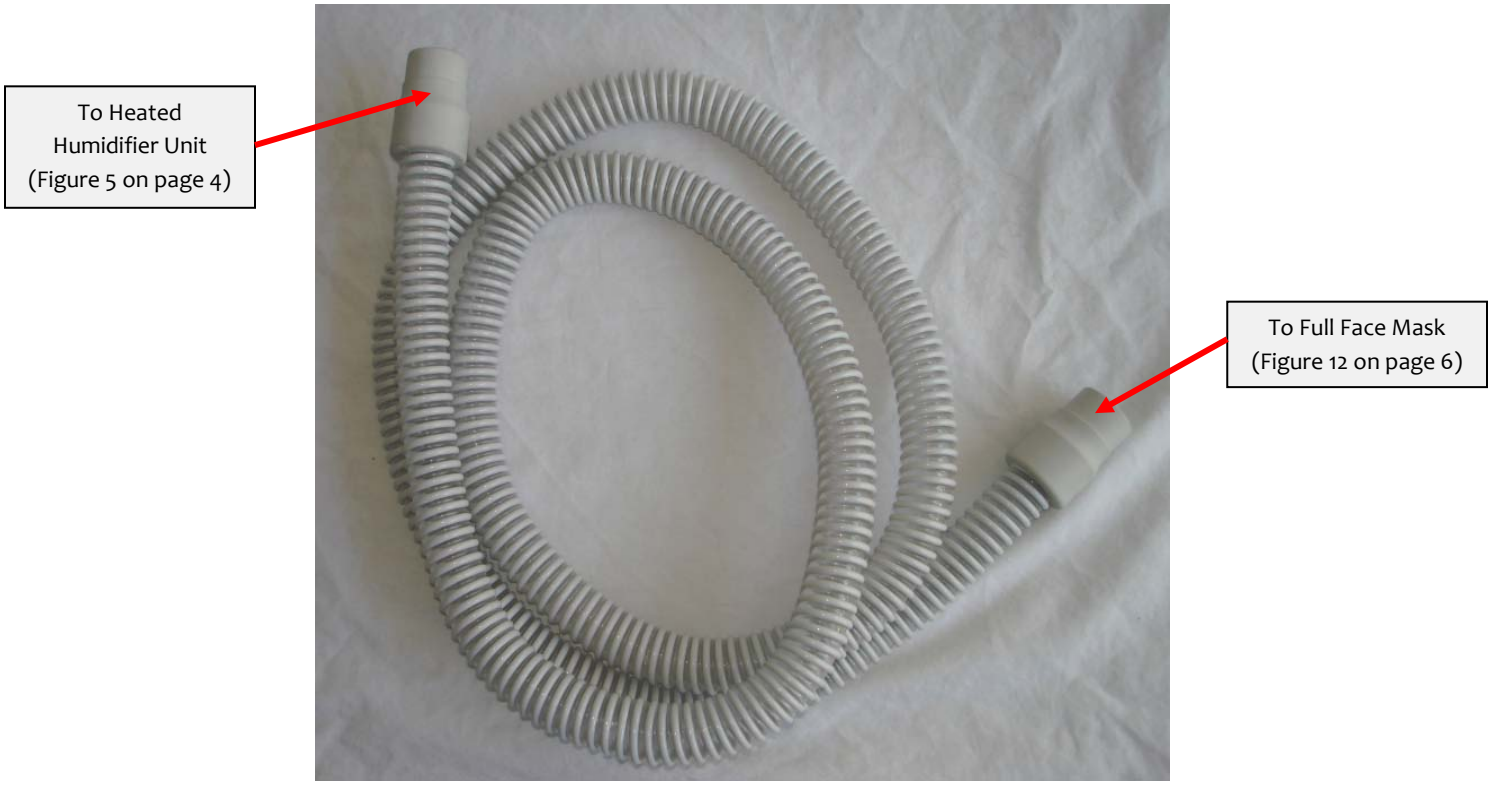

Figure 9: Air Hose

AC Power Cord

The AC power cord is used to supply power to the CPAP control unit using a US-Standard 12 volt AC wall outlet. The connection details of the AC power cord are displayed in Figures 10 and 11 below.

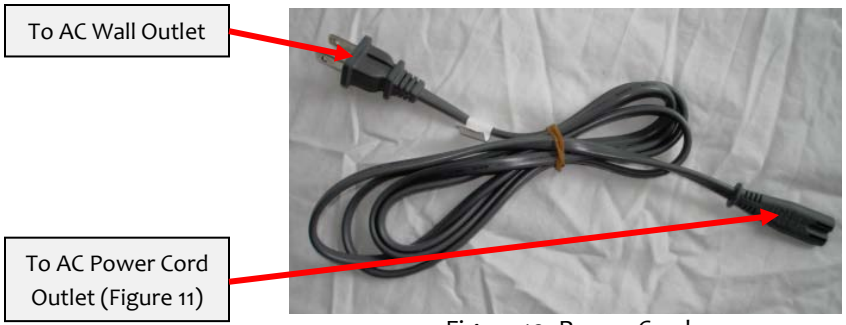

Figure 10: Power Cord

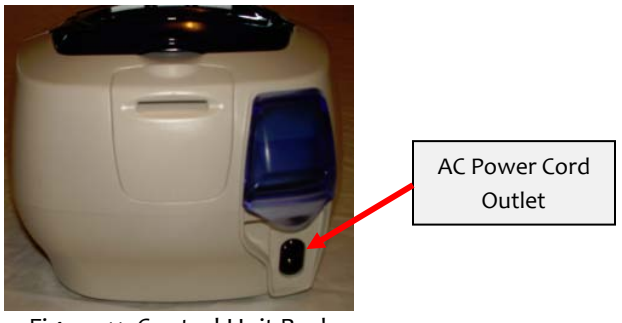

Figure 11: Control Unit Back

Full Face Mask

The full face mask is a clear plastic breathing appliance that covers both the mouth and nose. Soft rubber edges on the outside of the mask provide an airtight seal to insure that a stable and pressurized air supply is delivered into the airway during sleeping. The details of the full face mask are displayed in Figure 12 below.

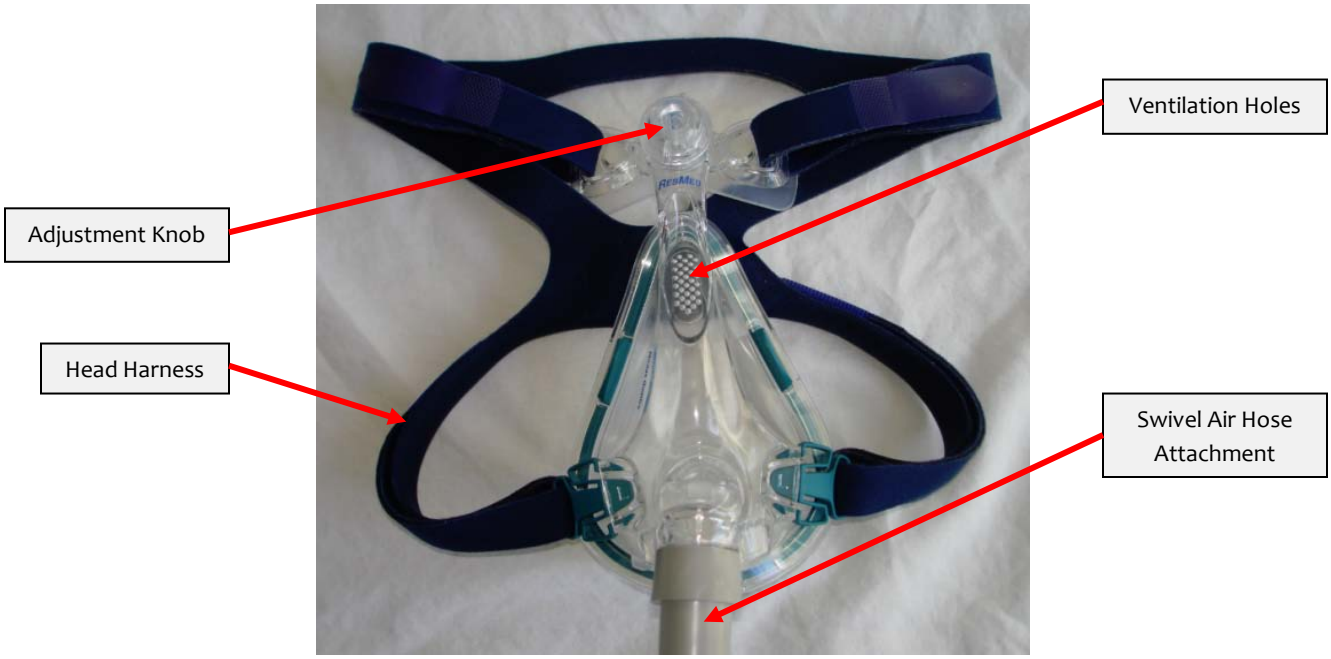

Figure 12: Full Face Mask

The adjustment knob is used to relieve pressure on the bridge of the nose when the mask is secured to the face. The head harness secures the full face mask to the face. The head harness is made from a comfortable foam material and is adjustable using Velcro straps. The head harness has release clips on either side of the mask for quick removal from the head. Ventilation holes expel carbon dioxide from the full face mask during breathing. The images displayed in Figures 13 and 14 below show the proper way to secure the full face mask to the face.

Figure 13: Front View

Figure 14: Side View

Summary

The ResMed VPAP Auto 25 CPAP device works similarly to a vacuum in reverse. Once the unit is plugged in and turned on, the CPAP device produces a steady and continuous supply of humidified air from the air pump mechanism in the CPAP control unit through the air hose and into the full face mask. This steady positive air pressure lifts up the soft palate muscle in the back of the throat and clears the airway to allow for hours of efficient breathing and uninterrupted deep sleep. The image displayed in Figure 15 below show all parts of the ResMed VPAP Auto 25 CPAP device properly connected and ready for operation.

Figure 15: The Connected VPAP Auto 25 CPAP Device