

Jarvik 2000 VAD



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The Pump

- An axial flow blood pump that uses electrical power to rotate a vained impeller—its only moving part
- The device is 2.5 cm wide, 5.5 cm long, and weighs 85 grams.
- A small cable, which exits the body through the abdominal wall or behind the ear, delivers power to the impeller
- The normal operating range for the control system is 8,000 to 12,000 revolutions per minute, which will generate an average pump flow rate of 5 liters per minute.

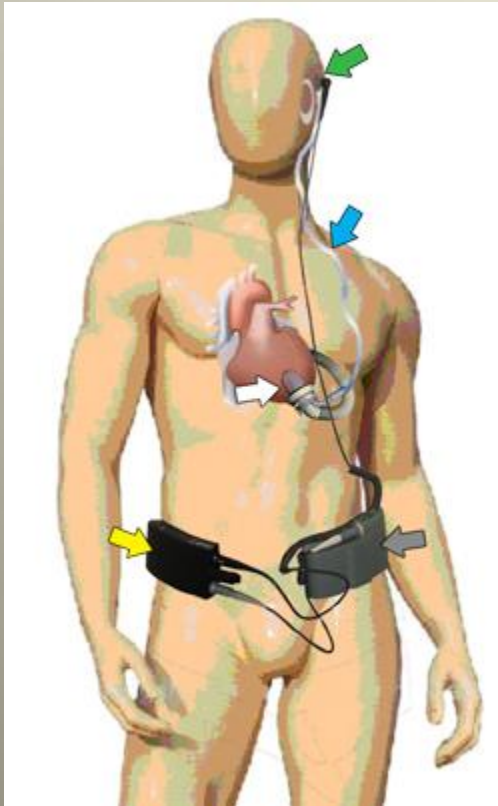
The Control System

- The pump speed is controlled by the FlowMaker, an analog system controller
- The pump speed can be manually adjusted from 8,000 to 12,000 rpm in increments of 1000.
- The control unit monitors the pump function and the remaining power in the batteries. Audible and visual alerts notify the user of any problems.

How it Works

- The Jarvik 2000 pump does not "beat."
- It uses a spinning rotor to propel blood from the left ventricle into the aorta
- But the natural heart continues to contract and relax, and the volume of blood moved by the spinning rotor rhythmically increases and decreases in synchrony with those contractions.
- *Jarvik 2000 patients do, therefore, retain a pulse*

Things to Know



- Green Arrow
 - Post auricle connection
- Blue Arrow
 - Tunneled internal cable
- Grey Arrow
 - Portable battery
- Yellow Arrow
 - Controller

Components

- This equipment includes the external controller, two different types of batteries (Lithium Ion - Portable, Lead Acid – Reserve batteries), and various cables and connectors.
- Depending on whether the pump is implanted for temporary or permanent use, the power cable exits the patient's body either through the abdominal wall or through a connector mounted on the head, behind the ear.

Continued

- The Jarvik 2000 FlowMaker[®] can run for 8-10 hours on a single, portable, Lithium-ion battery
- The total weight of the battery pack, controller, and cables is less than three pounds.



Manual control

- The Jarvik 2000 pump is monitored and its output adjusted manually by each patient according to his or her circumstances and needs.
- Using a dial numbered from 1 to 5, the patient manually adjusts the rate at which the Jarvik 2000 pumps blood to suit his or her level of activity
 - (turning it up when exercising and down to go to sleep)

- The patient should have a card with the VAD coordinator name and number
- The Jarvik 2000 Heart **never runs from wall power** even if the reserve battery charger is plugged into the wall.
- **At all times, the pump is only run from batteries**
- The Jarvik 2000 Heart is designed to act as a true booster pump and permits your natural heart to do as much of the pumping work as possible.

Flowmaker Controller



This represents only the flow through the Jarvik 2000 Heart

- Setting Number Pump Speed Approximate Flow

Pump Speed Setting	RPM	Approximate Flow Rate (L/min)
1	8000	1-2
2	9000	2-4
3	10000	3-5
4	11000	4-6
5	12000	5-7

Alarms

- Alarms are communicated to the user by both a visual indicator and an audible alarm.
- **All alarms require immediate attention.**

You need to know

- **Faint or no palpable pulse**
 - Weak intrinsic heart (More support through VAD)**
- **Faint or no palpable BP**
 - May need to use doppler**
 - MAP 65-80 mmHg**
 - Narrow or no pulse pressure**
- **Hypertension**
 - Impairs output due to high systemic vascular resistance**
- **Hypotension**
 - Suck-down if speed is too high**
- **Auscultate VAD as part of your assessment**

Emergency Procedures

- No need to disconnect power / controller to defibrillate
- CPR: chest compressions as last resort
- Notify VAD team for any change in status