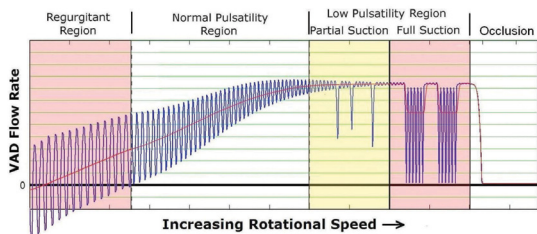


Flow Waveform Characteristics



EMERGENCY PROCEDURES

- Patients may be defibrillated without disconnecting the pump
- Anti-arrhythmic drugs, pacemakers, and ICDs are compatible with the HVAD System
- Institute appropriate ACLS protocols
- If chest compressions have been administered, confirm function and positioning of pump

Expected HVAD Pump Parameters

Speed (rpms)	Power (watts)	Flow (L/min)
2400	2.5	3
3200	8.5	8

Setting the HVAD Pump Alarm Limits

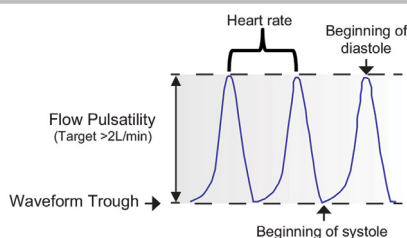
- Set High Power alarm at 2 Watts above the average power
- Set Low Flow alarm at 2 L/min below average flow, but no lower than 2 L/min
- Enable Suction Response alarm once patient is stable

Alarm Guide

Alarm Type	Alarm Display (line 1)	Action Display (line 2)
High - Critical (Flashing Red)	no message*	no message*
	VAD Stopped	Connect Driveline
	VAD Stopped	Change Controller
	Critical Battery 1	Replace Battery 1
Medium (Flashing Yellow)	Critical Battery 2	Replace Battery 2
	Controller Failed	Change Controller
	Controller Fault	Call
	Controller Fault	Call: ALARMS OFF
Low (Solid Yellow)	High Watts	Call
	Electrical Fault	Call
	Low Flow	Call
	Suction	Call
Low (Solid Yellow)	Low Battery 1	Replace Battery 1
	Low Battery 2	Replace Battery 2
	Power Disconnect	Reconnect Power 1
	Power Disconnect	Reconnect Power 2

*When both power sources are removed, NO message will display on the controller. The "No Power" alarm (loud and continuous) will sound but the alarm indicator WILL NOT light. The pump has stopped. Immediately connect two power sources and confirm that the pump has restarted.

Flow Pulsatility Components



HVAD Pump

- Continuous flow VAD
- Weight = 160g
- Device design allows for pericardial placement, eliminating the need for abdominal surgery and device pockets
- Provides up to 10 L/min blood flow



Impeller

- Magnetically and hydrodynamically suspended
- Wide-bladed



Driveline

- Percutaneously connects the HVAD Pump to an external controller
- Constructed with conductor wires similar to those used in pacemaker



HeartWare® Monitor

- Touch screen tablet PC
- Used by clinicians to set and change pump parameters
- Displays adjustable real-time and historical pump information and alarm conditions



HeartWare® Controller AC Adapter

- Uses power from an electrical wall outlet to power the controller



HeartWare® Controller DC Adapter

- Uses power from an electrical outlet in an automobile to power the controller



HeartWare® Controller

- Provides feedback on pump operation through text, lights and sounds
- Requires 2 power sources at all times
- Contains an internal battery to run an audible "No Power" alarm



HeartWare® Battery

- Lithium Ion battery used to power the pump
- Each battery provides 4-6 hours of operation when fully charged



Driveline Cover

- Protects the pump/ controller connection and keeps it clean



Alarm Adapter

- Silences the "No Power" alarm when power is removed from a controller no longer in use



HeartWare® Battery Charger

- Charges and tests up to 4 batteries simultaneously
- Patient-worn controller and batteries weigh approximately 3.5 lbs. (1.59 kg)



HeartWare® Patient Packs

- Available styles: Shoulder Pack, Waist Pack, Convertible Patient Pack*
- Designed to support an active lifestyle
- * Convertible Patient Pack not shown



HeartWare® Shower Bag

- Designed to allow patients to shower (with clinician approval)
- Protects the controller and batteries from direct water spray and moisture

24-Hour Clinical Support

Austria: +49 511 676936911
Belgium: 0800-76-052
Denmark: 808-865-69

France: 0800-91-6817
Germany: +49 511 676936911
Greece: 00800-1809-204-2613

Israel: 180-931-5751
Italy: 800-875-063

Norway: 800-16825
Poland: 00800-141-0046

Sweden: 020-790855
Switzerland: +49 511 676936911

United Kingdom: 0808-234-9223
United States: (888) 494-6365

WARNING: Serious and life-threatening adverse events, including stroke, have been associated with use of this device. A user must fully consider the risks of this device with that of other treatment modalities before deciding to proceed with device implantation.

In the USA the HVAD System is intended for use as a bridge to cardiac transplantation in patients who are at risk of death from refractory end-stage left ventricular heart failure.

CAUTION: Federal law (USA) restricts this device to sale by or on the order of a physician. Refer to the "Instructions for Use" for complete Indications for Use, Contraindications, Warnings, Precautions, Adverse Events and Instructions prior to using this device. The IFU can be found at www.heartware.com/clinicians/instructions-use.

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