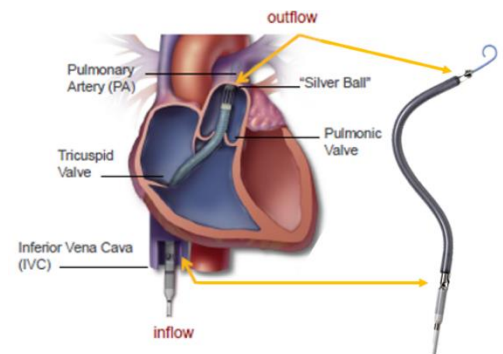
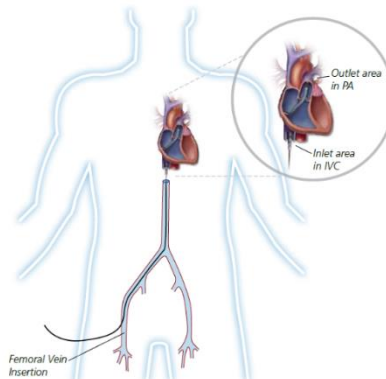
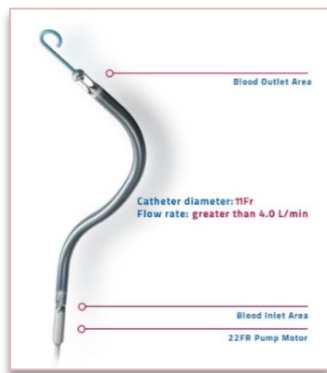


The Impella RP with SmartAssist is a single vascular access pump designed for right heart support. The Impella RP with SmartAssist is inserted percutaneously through the femoral vein and into the pulmonary artery, with the inlet sitting in the IVC and the outlet in the PA. It enables biventricular support when the left side is supported with a left-sided Impella<sup>®</sup>.

**IMPELLA RP WITH SMARTASSIST - TECHNOLOGY OVERVIEW**

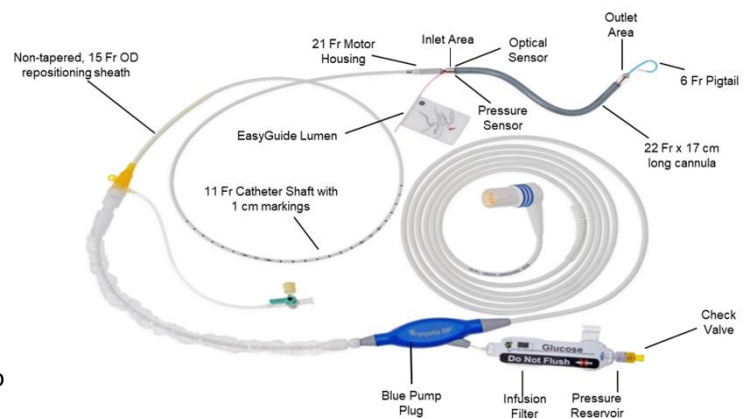


Inserted via femoral vein

**Key Components**

- Inlet Area – where blood is drawn into the cannula (sits in the inferior vena cava, at or below the level of the diaphragm)
- Outlet Area – where blood exits the cannula (placed in the pulmonary artery)
- Dual sensor (Differential Pressure Sensor and Optical Pressure sensor) assists in positioning, managing, and weaning the Impella heart pump

When the Impella RP device is properly positioned, it pumps blood from the interior vena cava to the pulmonary artery. This flow reduces right ventricular workload, decreasing central venous pressure, and increasing overall blood flow to the left heart.

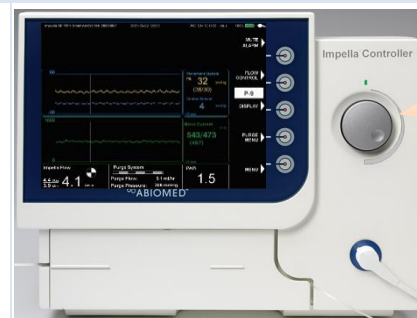


**Automated Impella Controller™ (AIC)**

The Automated Impella Controller provides:

- An interface for monitoring and controlling the Impella heart pumps
- Purge fluid to the Impella devices
- Backup power (when fully charged, can operate on its battery for at least 60 min.)

The AIC display provides insight to catheter function at a glance.



Push selector knob to open/close menus; Rotate to navigate through menus

AIC Placement Screen Waveforms



AIC Placement Screen

Bottom of each SmartAssist AIC screen shows Impella flow and current purge flow and purge pressure.

The AIC Placement Screen displays real-time operating data. The screen displays a Pulmonary Artery and Central Venous Placement Signal waveform and below it the Motor Current waveform. In addition, a calculated PAPI score is shown.

When correctly positioned, the **Placement Signal resembles a Pulmonary Artery waveform.**



AIC OVERVIEW

IMPELLA RP WITH SMARTASSIST – PATIENT MANAGEMENT



ICU Checklist

Follow these ICU proactive actions and processes to ensure successful Impella patient management.

ICU Patient Check-In: Assessment

- Document baseline SmartAssist metrics and hemodynamics
- Check the Tuohy-Borst valve to be sure it is locked tightly on the repositioning sheath
- Record the centimeter marking on the Impella catheter closest to the sheath
- Assess the patient’s overall volume status (target CVP ≥ 10 mmHg if frequent suction alarms)
- Record the urinary output, both color and amount
- Call the Clinical Support Center or local Abiomed representative to check in patient



ICU Patient Check-In: Procedures

- Order a baseline chest X-ray to verify proper position (inflow area is outside the right atrium at or below the level of the diaphragm; outflow area is 2-4 cm distal to the pulmonic valve)
- Confirm D5W with heparin 25 U/mL\* is on-hand as the purge fluid. This should be the default purge solution and already be hung. Sodium Bicarbonate 25 mEq/1L is the preferred purge solution for patients with HIT or bleeding concerns.  
\*D5W with 25U/mL or 50U/mL is acceptable
- Address any alarms on the Automated Impella Controller (AIC)

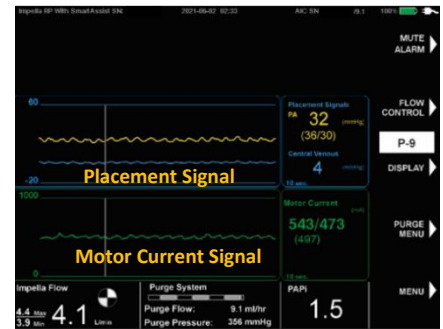


**AIC Monitoring and Troubleshooting**

To ensure that patients receive the benefits of Impella support, the Impella device must be correctly positioned in the pulmonary artery. Monitor the Automated Impella Controller (AIC) Placement screen and respond to alarms.

To address alarms, follow the on-screen prompts in the alarm window.

For **suction alarms**, decrease the Impella flow by 1 or 2 P-levels to break suction. Assess volume and maintain a CVP > 10mmHg. Evaluate position and adjust as needed using fluoroscopic guidance.



**AIC Placement Screen**  
Placement signal resembles a pulmonary artery waveform when the catheter position is correct.

**Pump Positioning**

Repositioning of the Impella heart pump may be required after transferring a patient to the ICU, with patient movement, or a change in medications. To ensure that patients receive the benefits of Impella support, the Impella device must be correctly positioned in the pulmonary artery. Monitor the AIC Placement Screen and respond to position alarms.



*Why is this a good Impella RP with SmartAssist position?*

- Inlet in the inferior vena cava (IVC) at or slightly below the level of the diaphragm
- Outlet is 2- 4 cm above the pulmonic valve (PV) with the pigtail in the pulmonary artery (PA)

**Patient Management**

- For insertion, administer heparin for an ACT at least 250 seconds
- For support, maintain ACT at 160-180 seconds
- Complete ICU Check-In above
- Ensure outlet is 2-4cm above the pulmonic valve
- Ensure inlet is positioned in the IVC at the level of the diaphragm or apex of heart and away from RA and TV
- Monitor placement signal and motor current waveforms on the AIC and address any alarms
- Manage patient fluid status/preload to obtain acceptable target flows; maintain a positive CVP
- Chart routine Impella device operational parameters every hour as per protocol
- Maintain the head of the bed no greater than 30 degrees; reverse Trendelenburg is acceptable
- Device should be maintained at P-6 or higher unless actively weaning
- Calculate Cardiac Output using FICK Equation
- If the swan needs to be repositioned or replaced turn the Impella RP with SmartAssist to P-1 or P-2 and utilize fluoroscopy prior to manipulation



If CPR is indicated for a patient being supported with the Impella device, initiate CPR per hospital protocol and reduce the Impella flow to P-2. When cardiac function has been restored, assess motor current; if pulsatile, return to previous setting. For defibrillation, it is not necessary to reduce P-level. *Note:* during resuscitation, placement monitoring and flow calculations will not be accurate.

Weaning and Explant

To initiate weaning a patient from Impella RP support, first perform a trial wean, then a slow wean.

**Trial Wean**

- Decrease to P-2 temporarily
- Monitor hemodynamics, P-level, and echo parameters for 15 minutes
- If patient remains hemodynamically stable and RV contractility is confirmed, resume to previous P-level and initiate slow wean.

**Slow Wean**

- Decrease by 2 P-levels every 2-3 hours
- Continue to monitor patient hemodynamics

Always maintain flow > 1.5 L/min until explant. If flows are ≤ 1.5 L/min for greater than 20 mins., consider increasing ACT to ≥ 250 sec.

The Impella RP device is ready to be removed when the weaning steps are complete and the ACT is < 150 sec.

Helpful Links - ICU



ALARMS



CARDIAC OUTPUT



DRESSING CHANGE



AIC PLACEMENT



CALCULATE TOTAL HEPARIN RATE



PURGE CASSETTE AND FLUID BAG



PURGE FLUID BAG



SUCTION TROUBLESHOOTING



IMPELLA POSITION WITH ECHO



HEPARIN-FREE PURGE

Resources



Contact the 24/7 Abiomed Clinical Support Center **1-800-422-8666**

- Clinical & technical expertise
- ICU patient check-in & proactive daily monitoring
- Patient transfer notification

To learn more about the Impella platform of heart pumps, including important risk and safety information associated with the use of the devices, please visit [www.abiomed.com/important-safety-information](http://www.abiomed.com/important-safety-information).