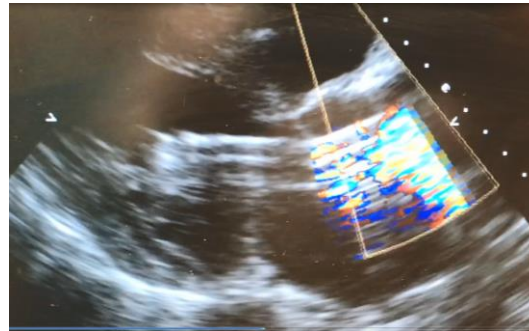
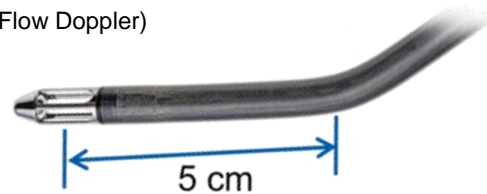
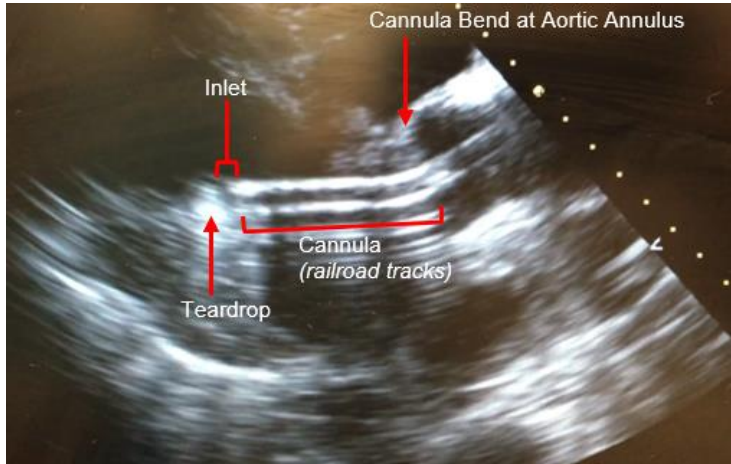


ECHO AND IMPELLA 5.5[®] WITH SMARTASSIST[®]: PROPER PLACEMENT (TTE)

Verify Proper Catheter Placement

- ✓ Stable position in mid-ventricular space
- ✓ Catheter directed toward apex
- ✓ Inlet free of mitral subvalvular structures and LV walls
- ✓ Distance from aortic valve annulus to the mid-inlet should measure approximately 5 cm
- ✓ Outlet in the aorta, well above the aortic valve (Use Color Flow Doppler)



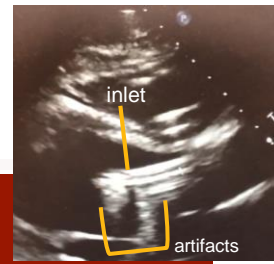
Preferred view for TTE: Parasternal long axis view



Because TTE and TEE views provide 2D images, visualizing catheter position in multiple views is recommended.

Tips and Tricks

- For better accuracy, be sure you can visualize the catheter throughout measurement length (off-axis views may be required)
- Ends of echogenic double lines of cannula indicate the inlet
- Reverberation artifacts posterior to the distal cannula and/or teardrop may help you locate the inlet in between (see image above)
- Inlet may appear anechoic if sound beam passes through blood entering inlet windows (shown on TEE guide)
- Utilize Color Flow Doppler to visualize outflow limited to ascending aorta
- Due to pump preload dependence, on every echo assess LV volume status and RV function



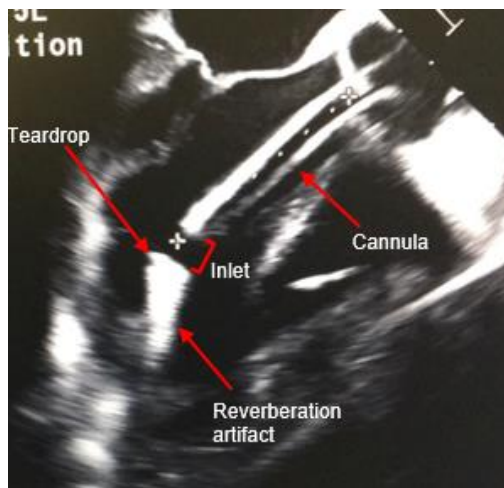
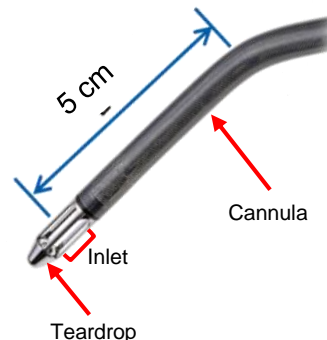
ECHO AND IMPELLA 5.5[®] WITH SMARTASSIST[®]: PROPER PLACEMENT (TEE)



Scan QR code for important risk and safety information associated with the use of Impella heart pumps.

Verify Proper Catheter Placement

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Tips and Tricks



- For better accuracy, be sure you can visualize the catheter throughout measurement length (off-axis views may be required)
- Ends of echogenic double lines of cannula indicate the inlet
- Reverberation artifacts posterior to the distal cannula and/or teardrop may help you locate the inlet in between (see images on left)
- Inlet may appear anechoic if sound beam passes through blood entering inlet windows (see images on left)
- Utilize Color Flow Doppler to visualize outflow limited to ascending aorta
- Due to pump preload dependence, on every echo assess LV volume status and RV function

Preferred view for TEE: Mid-esophageal long axis view



Because TTE and TEE views provide 2D images, visualizing catheter position in multiple views is recommended.

For 24-Hour Impella heart pump assistance call Abiomed's Clinical Support Center at 1-800-422-8666