

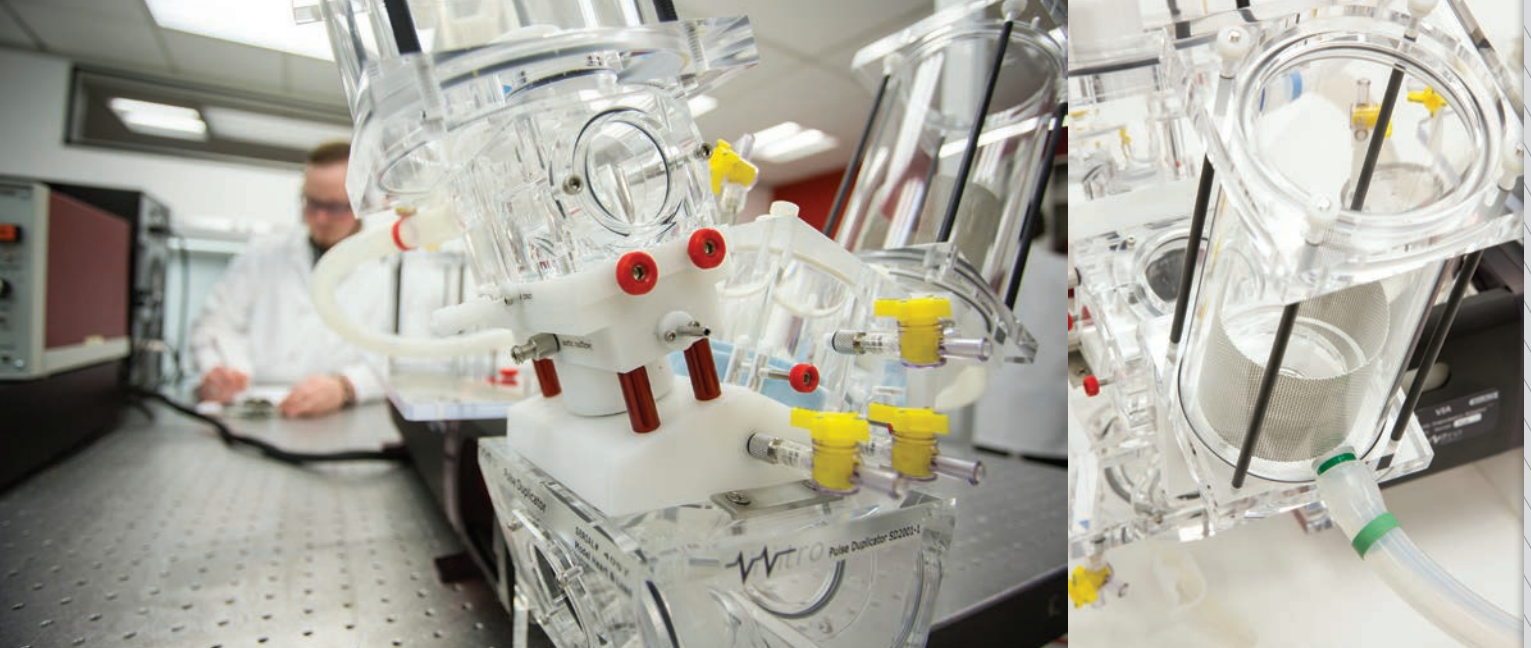
# PULSE DUPLICATOR

**Most cited in-vitro cardiovascular  
hydrodynamic testing system**

Product Code: 18363

*The ViVitro Pulse Duplicator simulates the function of the heart (left or right) by generating pulsatile flow through prosthetic heart valves placed in the Model Left Heart. Powered by the ViVitro SuperPump, it is composed of the ViVitro Model Left Heart, Flow Measuring System and ViVitest Data Acquisition System. The ViVitro Pulse Duplicator System is used by the US Food and Drug Administration and is recognised by regulatory bodies worldwide including TÜV, BSI and the Chinese SFDA.*





The Pulse Duplicator System assesses the performance of cardiovascular devices and prosthetic heart valves under simulated cardiac conditions. It simulates physiological or other complex flow variations while allowing the user to vary the peripheral resistance and compliance of the system. Pressure ports and flow measuring locations allow for data to be collected from aortic or mitral sites. Transparent viewpoints allow multiple viewing angles of the valve including inflow and outflow.

Combined with the ViVitest software control system, it quickly, easily and reliably collects and analyzes physiological flow and pressure data. The ViVitest software also allows the user to easily modify and customize waveforms.

## > Features

- Meets ISO 5840 requirements to collect and analyze flow and pressure readings in real-time
- Controls pulsatile fluid flows to simulate cardiac flow conditions including arrhythmia, normal, hypo and hypertensive states at specified cardiac outputs and beat rates
- Measures wall pressures in the atrium, ventricle, and aortic outflow
- Measures flow at the aortic or mitral sites
- Simulates cardiovascular peripheral resistance and compliance
- Ventricle membrane replicates natural chamber flow
- Enables echo imaging, Doppler flow measurements, and PIV for interrogation of flow field regions

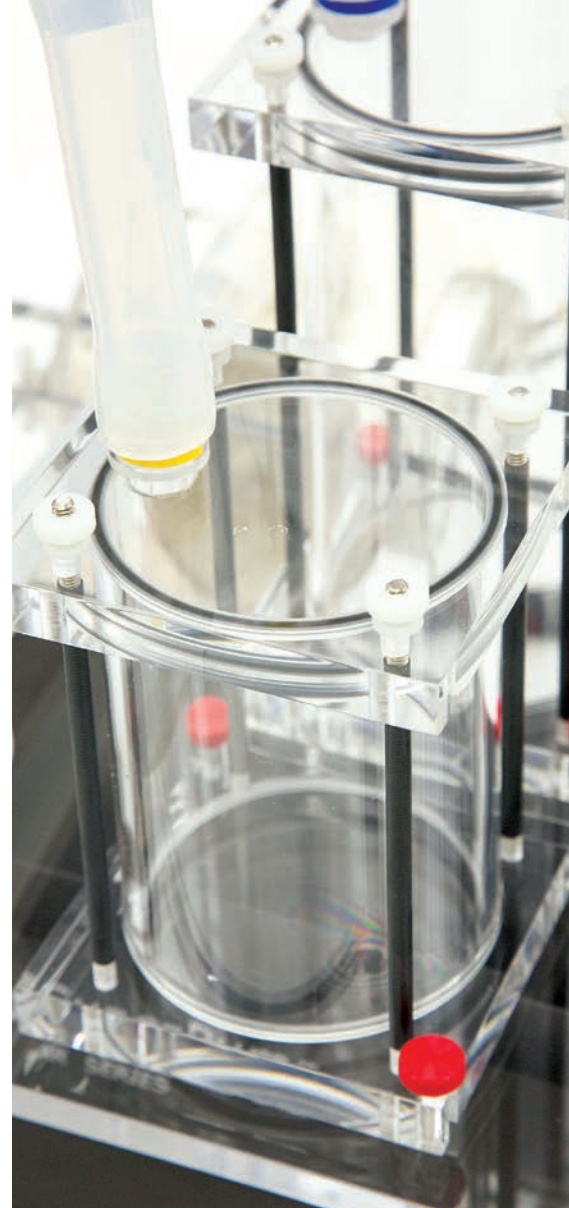
## > Testing Capabilities and Applications

- Transcatheter valves (Aortic or Mitral)
- Surgical valves (Mechanical and Biological)
- Stentless valves
- Structural heart and peripheral vascular devices
- Occluder and Closure Devices (with customization)
- Evaluate LVAD or other assist devices (with customization)

## > Specifications

<b>Pump &amp; MLH</b>	53 x 92 x 45 cm
<b>DAS &amp; Flow System</b>	48 x 33 x 32 cm
<b>Dry Weight: Actuator + Model Left Heart + VIA</b>	18 kg
<b>Temperature Range</b>	Ambient up to 40°C ± 1.0°C
<b>Flow Rate</b>	0 – 15 L/min
<b>Heart Beat Rate</b>	3 – 200 BPM
<b>Valve size</b>	
<b>Aortic</b>	Up to Ø 35mm
<b>Mitral</b>	Up to Ø 35mm*

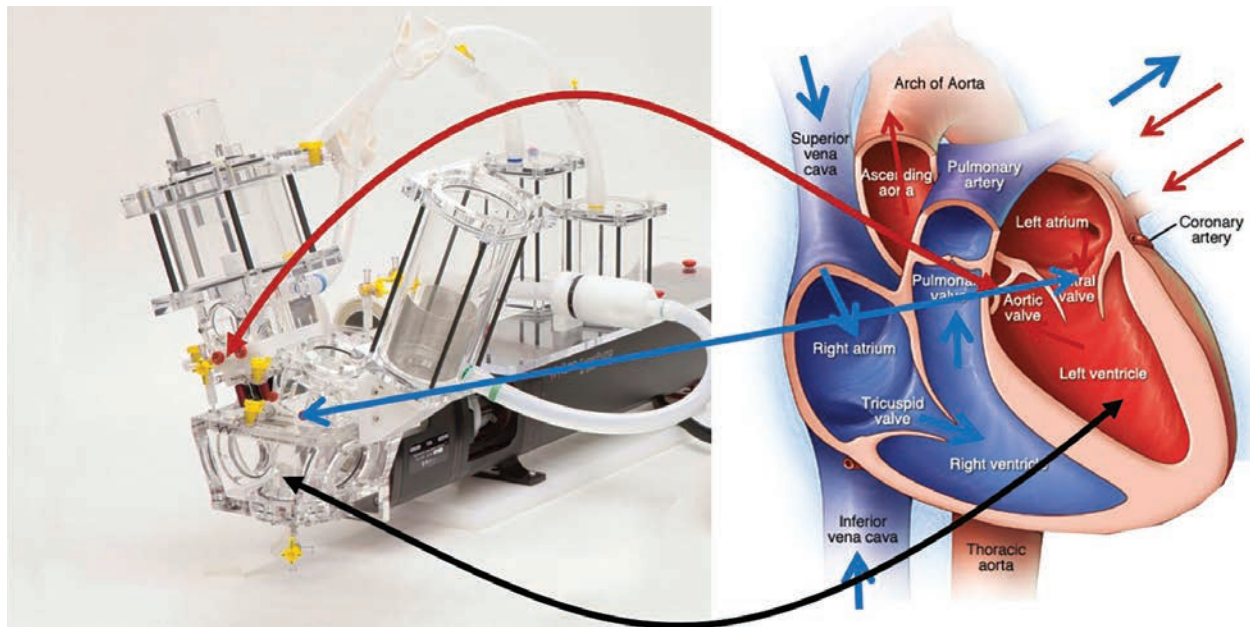
\* Ø 55mm with Large Atrium Accessory



# Left Heart Model

Product Code: SD2001-1

The ViVitro Left Heart Model emulates the pressures and flows of the left heart allowing insertion of valves and other devices into the Pulse Duplicator system for testing. It includes transparent elements to visualize valve function and adjacent flow fields. Ports are available for transducers to measure wall pressures in the left atrium, left ventricle, aortic outflow tract, and downstream of the aortic valve.

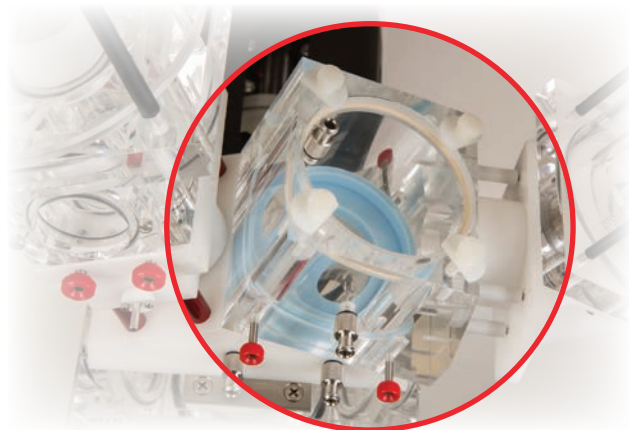


# Large Atrium Chamber (Mitral)

Product Code: 21179

The Large Atrium chamber allows devices with an outer diameter of up to 55mm to be tested in the Pulse Duplicator.

- Expands the mitral device testing capabilities of the system
- Quick-release system allows fast device changes
- Accurate flow measurements from flow probe at Atrium inflow
- Enhanced visibility using large viewing window for mitral device inflow
- Customizable Valve Mounting
- Easily added to a ViVitro Pulse Duplicator



# ViVitest Data Acquisition System (DAS)

Product Code: 08530 // Related Part Numbers: 08311 I/O Module, AP9991 AmPack



ViVitest is part of the ViVidro Data Acquisition System (DAS) family of software products. Combined with the Pulse Duplicator System, it collects hydrodynamic testing data to meet ISO 5840 requirements. ViVitest software controls the SuperPump while simultaneously measuring pressure and flow data. It monitors, processes, and reports data such as regurgitant fraction, effective orifice area (EOA), and other valve performance indicators.

A calibration wizard walks new users through the set-up process for quick system preparation for testing. Output files are available in .CSV format for easy analysis in Excel and MatLab.

*ViVitest features an intuitive User Interface*

The software is pre-installed on a laptop and tested with all hardware and A-D converters prior to shipment. Each system includes the following components:

- I/O Module – inputs/outputs signals from the software
- AmPack - Pressure Measuring System including transducers and amplifier
- Laptop + connecting cables
- ViVitest Software (compatible with Windows 7 & 10)



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