

Claims of US Patent No. 9,186,224

1. A method for operating an accelerated cyclic test system for evaluating a valved prosthetic device comprising driving a test system fluid cyclically above a normal physiological rate, at an accelerated pulsed rate of greater than 200 beats per minute within the test system; storing a volume of test system fluid in an excess volume area during a system driving stroke that opens the valved prosthetic device; and releasing the stored volume of test system fluid during a return stroke that closes the valved prosthetic device.
2. The method of claim 1, wherein the excess volume area enlarges in response to a pressure on the test system fluid during the driving stroke and decreases during the return stroke.
3. The method of claim 2, wherein the excess volume area provides a spring force counter to and in response to the pressure on the test system fluid.
4. The method of claim 3 further comprising altering a spring factor of the spring force provided by the excess volume area through selection of a material forming at least a portion of a boundary of the excess volume area.
5. The method of claim 4, wherein the material is an elastomeric material that expands and contracts in response to the pressure on the test system.
6. The method of claim 1, further comprising compressing a volume of a compressible gas with the volume of test system fluid to provide a spring force counter to and in response to a pressure on the test system fluid when the volume of test system fluid is stored in the excess volume area.
7. The method of claim 6 further comprising altering a spring factor of the spring force provided by the excess volume area by adjusting the volume of the compressible gas.