CLAIMS

1. A catheter assembly comprising:

a catheter; and

a catheter hub connected to the catheter, the catheter hub including:

a valve that selectively permits or blocks a flow of fluid through the catheter; and

a valve actuator that moves between a first position and a second position, the valve actuator including a distal portion configured to engage the valve, a central flow passage, and one or more external grooves that extend axially from the distal portion of the valve actuator, at least portions of the one or more external grooves not being in direct fluid communication with the central flow passage.

2. The catheter assembly of claim 1, wherein the one or more external grooves do not extend into the central flow passage.

3. The catheter assembly of claim 1, wherein the one or more external grooves extend from the distal portion of the valve actuator to at least a central portion of the valve actuator.

4. The catheter assembly of claim 1, wherein an axial length of the one or more external grooves is greater than a width of the one or more external grooves.

5. The catheter assembly of claim 1, wherein the one or more external grooves extend axially in a plane parallel to a centerline of the valve actuator.

6. The catheter assembly of claim 1, wherein the distal end of the valve actuator includes a chamfered surface.

7. The catheter assembly of claim 1, wherein the valve actuator includes a circular groove configured to engage a spring coil.

8. The catheter assembly of claim 1, wherein the valve actuator includes a radial protrusion that is configured to retain the valve actuator in the catheter hub.

9. The catheter assembly of claim 8, wherein the radial protrusion comprises a frusto-conical flange extending around an outer surface of the valve actuator.

10. The catheter assembly of claim 8, wherein the radial protrusion comprises a tab extending from an outer surface of the valve actuator.

11. The catheter assembly of claim 1, wherein the valve actuator includes a circular groove configured to engage a biasing member.

12. The catheter assembly of claim 11, wherein the biasing member comprises one of an elastic washer, an elastic band and an elastic disk.

13. The catheter assembly of claim 1, wherein the valve actuator includes a first biasing member and a second biasing member.

14. The catheter assembly of claim 13, wherein the first biasing member and the second biasing member are each attached to an inner diameter of the catheter hub and configured to engage the valve actuator.

15. The catheter assembly of claim 1, further comprising:

a spring including a first series of windings and a second series of windings; wherein

the first series of windings surrounds the valve actuator; and

the first series of windings and the valve actuator are configured to pierce the valve.

16. The catheter assembly of claim 15, wherein:

the second series of windings extend around at least a portion of the first series of windings; and

a portion of the second series of windings forms an interference fit with an inner surface of the catheter hub.