What is claimed is:

1. A system for determining a heightwise location of a component of interest relative to a pumping chamber of a fluid handling set, the system comprising:

a pumping cassette including the pumping chamber and at least a first fluid valve and a second fluid valve leading to a port connected to a fluid line coupled to the component of interest, thereby, establishing a flow path between the pumping chamber and the fluid line coupled to the component of interest; and

a controller configured to receive first data from a pressure sensor indicative of pressure in the pumping chamber;

in order to detect a feature profile in the first data; and

to determine the heightwise location of the component of interest using the first data and additional temporal data associated with the feature profile before the first data indicates that the pressure in the pumping chamber is stable.

2. The system of claim 1, wherein the system further comprises one or more pneumatic valves of a pressure distribution module configured to be actuated to apply pressure to a control surface adjacent a portion of the fluid handling set including the pumping chamber to consequentially place the pumping chamber in an intermediary state between a fully filled and fully delivered state before establishing the path from the pumping chamber to the fluid line coupled to the component of interest.

3. The system of claim 2, wherein the intermediate state is a state that allows for the detection of a maximum positive and maximum negative head height of about the same absolute value.

4. The system of claim 1, wherein the system further comprises one or more pneumatic valves of a pressure distribution module configured to be actuated to apply pressure to a control surface adjacent a portion of the fluid handling set defining the pumping chamber to consequentially place the pumping chamber in a negative head height detection biased state before establishing the path from the pumping chamber to the fluid line coupled to the component of interest.

5. The system of claim 1, wherein the system further comprises one or more pneumatic valves of a pressure distribution module configured to be actuated to apply pressure to a control surface adjacent a portion of the fluid handling set in which the pumping chamber is disposed to consequentially place the pumping chamber in a positive head height detection biased state before establishing the path from the pumping chamber to the fluid line coupled to the component of interest.

6. The system of claim 1, wherein the system further comprises comparing the heightwise location determined by the controller to an expected range and generating an error signal when the determined heightwise location is outside of the expected range.

7. The system of claim 1, wherein the system further comprises a behavior model based off an ideal second order under dampened system.

8. The system of claim 1, wherein the system further comprises the controller being configured to detect the feature profile by detecting one or more pressure peaks.

9. The system of claim 1, wherein the system further comprises the controller being configured to detect the feature profile by detecting a first pressure peak and a second pressure peak lower in magnitude than the first peak.

10. The system of claim 1, wherein the system further comprises the controller being configured to set an adjusted pumping pressure value based on the heightwise location of the component of interest.

11. The system of claim 1, wherein the system further comprises the controller being configured to orchestrate pumping of fluid through a pumping cassette of the fluid handling set in which the pumping chamber is disposed via actuation of one or more pneumatic valves in a pressure distribution module to apply pressure to a control surface associated with a second pumping chamber in the pumping cassette while detecting the feature profile.

12. A method of determining a heightwise location of a reservoir relative to a pumping chamber of a fluid handling set, the method comprising:

establishing fluid communication between the pumping chamber and the reservoir;

receiving, with a controller, first data from a sensor indicative of pressure in the pumping chamber;

detecting, with the controller, pressure peaks in the first data; and

determining, with the controller, the heightwise location of the reservoir using the first data and an amount of time between the pressure peaks before the first data indicates that the pressure in the pumping chamber is stable.

13. A method of determining a heightwise location of a reservoir relative to a pumping chamber of a pumping cassette, the method comprising:

establishing a fluid communication between the pumping chamber and the reservoir;

receiving, with a controller, first data from a sensor indicative of pressure in the pumping chamber;

detecting, with the controller, a number of expected features in the first data; and

determining, with the controller, the heightwise location of the reservoir before the first data indicates that the pressure in the pumping chamber is stable based upon the first data and temporal characteristics of the number of expected features.

14. A method of determining a heightwise location of a reservoir relative to a pumping chamber of a pumping cassette, the method comprising:

establishing a fluid communication between the pumping chamber and the reservoir;

receiving, with a controller, first data from a sensor indicative of pressure in the pumping chamber;

detecting, with the controller, a feature profile in the first data; and

determining, with the controller, the heightwise location of the reservoir before the first data indicates that the pressure in the pumping chamber is stable based upon the first data and temporal data of the feature profile.

15. A method of determining heightwise location data for a reservoir's position relative to a pumping chamber of a pumping cassette, the method comprising:

establishing a fluid communication between the pumping chamber and the reservoir;

receiving, with a controller, first data from a sensor indicative of pressure in the pumping chamber;

detecting, with the controller, a feature profile in the first data; and

calculating, with the controller, a value indicative of the heightwise location of the reservoir before the first data indicates that the pressure in the pumping chamber is stable, based upon temporal characteristics of a set of expected features of the feature profile.

16. The method of claim 15, wherein the method further comprises actuating one or more pneumatic valves of a pressure distribution module to apply pressure to a control surface adjacent a portion of the pumping cassette including the pumping chamber to place the pumping chamber in a predefined state before establishing fluid communication between the reservoir and pumping chamber.

17. The method of claim 16, wherein the predefined state is one of an intermediary state that allows for the detection of a maximum positive and maximum negative head height of about the same absolute value, a negative head height detection biased state, and a positive head height detection biased state.

18. The method of claim 15, wherein the method further comprises comparing the calculated value indicative of the heightwise location to an expected range and generating an error signal when the value is outside of the expected range.

19. The method of claim 15, wherein detecting the feature profile comprises detecting one or more pressure peaks.

20. The method of claim 15, wherein the method further comprises setting an adjusted pumping pressure value based on the value indicative of the heightwise location of the reservoir.

21. The method of claim 15, wherein the method further comprises orchestrating pumping of fluid through the pumping cassette via actuation of one or more pneumatic valves in a pressure distribution module to apply pressure to a control surface associated with a second pump chamber in the pumping cassette while detecting the feature profile.

22. A method of determining heightwise location data for a reservoir's position relative to a pumping chamber of a pumping cassette, the method comprising:

establishing a fluid communication between the pumping chamber and the reservoir;

receiving, with a controller, first data from a sensor indicative of pressure in the pumping chamber;

detecting, with the controller, a feature profile in the first data; and

calculating, with the controller, a value dependent upon the heightwise location of the reservoir before the first data indicates that the pressure in the pumping chamber is stable based upon the first data and temporal data of the feature profile.

23. The method of claim 22, wherein the method further comprises setting an adjusted pumping pressure value based on the value dependent upon the heightwise location of the reservoir.

24. The method of claim 22, wherein the method further comprises actuating one or more pneumatic valves of a pressure distribution module to apply pressure to a control surface adjacent a portion of the pumping cassette including the pumping chamber to place the pumping chamber in a predetermined state before establishing fluid communication between the reservoir and pumping chamber.

25. The method of claim 22, wherein detecting the feature profile comprises detecting one or more pressure peaks.