CLAIMS

1. A pumping system for use with a hydraulic system include at least one of a swimming pool and a spa, the pumping system comprising:

a safety vacuum release system pump to circulate water in one of the swimming pool and the spa;

at least one check valve located on a discharge side of the safety vacuum release system pump; and

a discharge vacuum relief valve capable of venting a vacuum at the discharge side of the safety vacuum release system pump during a vacuum event at a suction side of the safety vacuum release system pump.

2. The pumping system of claim 1, wherein the safety vacuum release system pump includes an on-board controller capable of detecting the vacuum event and the discharge vacuum relief valve prevents delayed detection of the vacuum event due to the presence of the at least one check valve.

3. The pumping system of claim 1, wherein the discharge vacuum relief valve is positioned on the discharge side of the safety vacuum release system pump.

4. The pumping system of claim 1, wherein the safety vacuum release system pump includes a drain plug opening, and the discharge vacuum relief valve is coupled to the drain plug opening.

5. The pumping system of claim 1, wherein the discharge vacuum relief valve is a spring-loaded check valve.

6. The pumping system of claim 1 and further comprising a vacuum vent tube, a first end of the vacuum vent tube coupled to the discharge vacuum relief valve and a second

end of the vacuum vent tube positioned to be above a water level of one of the swimming pool and the spa.

7. The pumping system of claim 6 and further comprising a vacuum vent screen positioned over the second end of the vacuum vent tube.

8. The pumping system of claim 1, wherein a drain of one of the swimming pool and the spa is coupled to the suction side of the safety vacuum release system pump.

9. The pumping system of claim 1, wherein the pressure vent rating of the discharge vacuum relief valve is about 1.5 pounds per square inch.

10. A method of providing discharge vacuum relief for a safety vacuum release system pump in a hydraulic system with discharge check valves, the method comprising:

monitoring input power to the safety vacuum release system pump to detect a vacuum event on a suction side of the safety vacuum release system pump;

shutting down the safety vacuum release system pump when the vacuum event is detected on the suction side in order to relieve the vacuum event;

monitoring pressure on a discharge side of the safety vacuum release system pump; and

venting the discharge side of the safety vacuum release system pump when a vacuum is detected on the discharge side to prevent delayed response time in relieving the vacuum event on the suction side.

11. The method of claim 10 and further comprising detecting a vacuum on the discharge side when the monitored pressure is about 1.5 pounds per square inch.

12. The method of claim 10 and further comprising monitoring the pressure with a discharge vacuum relief valve and opening the discharge vacuum relief valve when the vacuum is detected in order to vent the discharge side.

13. The method of claim 12 and further comprising providing a vacuum vent tube coupled to the discharge vacuum relieve valve and positioning a free end of the vacuum vent tube above all bodies of water in the hydraulic system.

14. The method of claim 12 and further comprising coupling the discharge vacuum relief valve to a drain plug opening of the safety vacuum release system pump.

15. The method of claim 10, wherein the step of monitoring at least input power to the safety vacuum release system pump to detect a vacuum event includes monitoring a change in input power.

16. A discharge vacuum relief valve kit to provide vacuum relief for a suction vacuum release system pump in a hydraulic system including at least one of a swimming pool and a spa, the discharge vacuum relief valve kit comprising:

a vacuum vent tube including a first end and a second end;

a discharge vacuum relief valve coupled to the first end of the vacuum vent tube; and

a vacuum vent screen coupled to the second end of the vacuum vent tube.

17. The discharge vacuum relief valve kit of claim 16, wherein the discharge vacuum relief valve is a spring-loaded check valve.

18. The discharge vacuum relief valve kit of claim 16, wherein the discharge vacuum relief valve is capable of being coupled to a drain plug opening of the suction vacuum release system pump.

19. The discharge vacuum relief valve kit of claim 16, wherein the second end of vacuum vent tube is capable positioned above all bodies of water in the hydraulic system.

20. The discharge vacuum relief valve kit of claim 16, wherein the discharge vacuum relief valve is coupled to the first end of the vacuum vent tube by a compression fit.

CLAIMS

1. A pumping system for use with a hydraulic system include at least one of a swimming pool and a spa, the pumping system comprising:

a safety vacuum release system pump to circulate water in one of the swimming pool and the spa;

at least one check valve located on a discharge side of the safety vacuum release system pump; and

a discharge vacuum relief valve capable of venting a vacuum at the discharge side of the safety vacuum release system pump during a vacuum event at a suction side of the safety vacuum release system pump.

2. The pumping system of claim 1, wherein the safety vacuum release system pump includes an on-board controller capable of detecting the vacuum event and the discharge vacuum relief valve prevents delayed detection of the vacuum event due to the presence of the at least one check valve.

3. The pumping system of claim 1, wherein the discharge vacuum relief valve is positioned on the discharge side of the safety vacuum release system pump.

4. The pumping system of claim 1, wherein the safety vacuum release system pump includes a drain plug opening, and the discharge vacuum relief valve is coupled to the drain plug opening.

5. The pumping system of claim 1, wherein the discharge vacuum relief valve is a spring-loaded check valve.

6. The pumping system of claim 1 and further comprising a vacuum vent tube, a first end of the vacuum vent tube coupled to the discharge vacuum relief valve and a second end of the vacuum vent tube positioned to be above a water level of one of the swimming pool and the spa.

7. The pumping system of claim 6 and further comprising a vacuum vent screen positioned over the second end of the vacuum vent tube.

8. The pumping system of claim 1, wherein a drain of one of the swimming pool and the spa is coupled to the suction side of the safety vacuum release system pump.

9. The pumping system of claim 1, wherein the pressure vent rating of the discharge vacuum relief valve is about 1.5 pounds per square inch.

10. A method of providing discharge vacuum relief for a safety vacuum release system pump in a hydraulic system with discharge check valves, the method comprising:

monitoring input power to the safety vacuum release system pump to detect a vacuum event on a suction side of the safety vacuum release system pump;

shutting down the safety vacuum release system pump when the vacuum event is detected on the suction side in order to relieve the vacuum event;

monitoring pressure on a discharge side of the safety vacuum release system pump; and

venting the discharge side of the safety vacuum release system pump when a vacuum is detected on the discharge side to prevent delayed response time in relieving the vacuum event on the suction side.

11. The method of claim 10 and further comprising detecting a vacuum on the discharge side when the monitored pressure is about 1.5 pounds per square inch.

12. The method of claim 10 and further comprising monitoring the pressure with a discharge vacuum relief valve and opening the discharge vacuum relief valve when the vacuum is detected in order to vent the discharge side.

13. The method of claim 12 and further comprising providing a vacuum vent tube coupled to the discharge vacuum relieve valve and positioning a free end of the vacuum vent tube above all

bodies of water in the hydraulic system.

14. The method of claim 12 and further comprising coupling the discharge vacuum relief valve to a drain plug opening of the safety vacuum release system pump.

15. The method of claim 10, wherein the step of monitoring at least input power to the safety vacuum release system pump to detect a vacuum event includes monitoring a change in input power.