CLAIMS

1. A lift apparatus for use in a substrate processing chamber, comprising:

a plurality of first lift pin assemblies configured to raise or lower a substrate having a given diameter when disposed thereon, wherein each of the first lift pin assemblies includes a first lift pin disposed on a first bellows assembly;

a plurality of second lift pin assemblies arranged in a circle having a diameter greater than the given diameter and configured to raise or lower an annular chamber component, wherein each of the second lift pin assemblies includes a second lift pin disposed on a second bellows assembly;

an actuator; and

a lift assembly coupled to the actuator and configured to raise or lower each of the first lift pin assemblies and the second lift pin assemblies by movement of the actuator.

2. The lift apparatus of claim 1, wherein the lift assembly includes a first lifter coupled to the first lift pin assemblies and the second lift pin assemblies.

3. The lift apparatus of claim 2, wherein the first lifter includes a base having an opening, and a shaft of the actuator extends into the opening of the base.

4. The lift apparatus of claim 2, wherein the first lifter includes a base and a plurality of branches extending from the base to the first lift pin assemblies and the second lift pin assemblies.

5. The lift apparatus of claim 4, wherein one or more of the plurality of branches include a fork, wherein a first prong of the fork is coupled to one of the first lift pin assemblies, and wherein a second prong of the fork is coupled to one of the second lift pin assemblies.

6. The lift apparatus of claim 4, wherein one or more of the plurality of branches extend from the base to one of the plurality of first lift pin assemblies to one of the plurality of second lift pin assemblies.

7. The lift apparatus of claim 4, wherein one of the plurality of first lift pin assemblies is coupled to the base of the first lifter.

8. The lift apparatus of claim 1,

wherein the lift assembly includes a first lifter coupled to each of the second lift pin assemblies;

wherein a second lifter is disposed above the first lifter and coupled to each of the first lift pin assemblies;

wherein there is a gap between the first lifter and the second lifter when the lift assembly is in a lower position; and

wherein the first lifter is configured to raise the second lifter when the first lifter is moved to an upper position.

9. The lift apparatus of claim 1, further comprising a linear guide bracket coupled to the actuator, and wherein the lift assembly is configured to engage with the linear guide bracket to facilitate linear vertical motion of the lift assembly.

10. A substrate support for use in a substrate processing chamber, comprising:

a base plate;

a dielectric plate coupled to the base plate and having a support surface for supporting a substrate and having one or more chucking electrodes disposed therein; and

the lift apparatus comprising:

a plurality of first lift pin assemblies having a plurality of first lift pins that extend through the base plate and the dielectric plate to raise or lower a substrate when disposed thereon;

a plurality of second lift pin assemblies having a plurality of second lift pins extending through the base plate and configured to raise or lower an annular chamber component disposed above the substrate;

an actuator; and

a lift assembly coupled to the actuator and configured to raise or lower each of the first lift pin assemblies and the second lift pin assemblies by movement of the actuator.

11. The substrate support of claim 10, wherein the lift assembly includes a first lifter, wherein the first lifter includes a base and a plurality of branches extending from the base, wherein each branch is coupled to one of the second lift pin assemblies.

12. The substrate support of claim 12, wherein the plurality of branches include two branches that are each coupled to one of the first lift pin assemblies and one of the second lift pin assemblies, and a third branch that is coupled to a third one of the plurality of second lift pin assemblies.

13. The substrate support of claim 12, wherein the lift assembly includes a second lifter disposed above the first lifter and having a second base disposed about the actuator and a plurality of second branches coupled to the plurality of first lift pin assemblies, wherein there is a gap between the first lifter and the second lifter when the first lifter is in a lower position, and wherein the first lifter is configured to raise the second lifter when the first lifter is moved to an upper position.

14. The substrate support of claim 10, wherein the plurality of second lift pins are configured to extend above the dielectric plate beyond the plurality of first lift pins.

15. The substrate support of claim 10, further comprising a cooling plate disposed between the dielectric plate and the base plate.

16. A process chamber for processing a substrate, comprising:

a chamber body defining an interior volume therein;

a substrate support disposed in the interior volume of the chamber body, wherein the substrate support comprises:

a pedestal for supporting the substrate; and

a lift apparatus comprising:

a plurality of first lift pin assemblies having a plurality of first lift pins extending through the pedestal and configured to raise or lower a substrate;

a plurality of second lift pin assemblies having a plurality of second lift pins extending through the pedestal radially outward of the plurality of first lift pins;

an actuator;

a lift assembly coupled to the actuator and configured to raise or lower each of the first lift pin assemblies and the second lift pin assemblies by movement of the actuator; and

a shadow ring disposed on the plurality of second lift pins.

17. The process chamber of claim 16, wherein the plurality of second lift pins are configured to support the shadow ring above a support surface of the pedestal.

18. The process chamber of claim 16, wherein the lift assembly includes a first lifter having a base and a plurality of branches extending from the base to the plurality of first lift pin assemblies and the plurality of second lift pin assemblies.

19. The process chamber of claim 16, wherein the lift assembly includes a first lifter coupled to the plurality of second lift pin assemblies and a second lifter coupled to the plurality of first lift pin assemblies.

20. The process chamber of claim 16, wherein the actuator is a pneumatic actuator.