

CLAIMS

1. A pressure gradient wound therapy apparatus comprising a pump assembly, the pump assembly comprising:
 - a diaphragm comprising a magnetic material;
 - 5 an electromagnetic actuator switchable between two or more operational states, at least one of which comprises a state in which the actuator induces a magnetic field for moving the diaphragm; and
 - a valve arrangement including an inlet valve and an outlet valve configured to allow for the introduction and/or removal of fluid into a fluid
 - 10 chamber of the pump assembly;
 - wherein the actuator is fixed in position within the apparatus and is spatially separated from the diaphragm; and the actuator is configured to move the diaphragm with respect to the actuator between a first position corresponding to a first operational state of the actuator and a second position
 - 15 corresponding to the second operational state of the actuator.
2. A pressure gradient wound therapy apparatus of claim 1, wherein the actuator is configured to move the diaphragm towards or away from the actuator when in the first or second operational state.
3. A pressure gradient wound therapy apparatus of claim 2, wherein the actuator
- 20 is configured such that upon switching between the first operational state and the second operational state the actuator is configured to move the diaphragm towards or away from the actuator.
4. A pressure gradient wound therapy apparatus of any preceding claim, wherein in switching from the first operational state to the second operational state the
- 25 actuator is configured to move the diaphragm in a first direction from the first position towards the second position, and in switching from the second operational state to the first operational state the actuator is configured to move the diaphragm in a second direction from the second position to the first position.
- 30 5. A pressure gradient wound therapy apparatus of claim 4, wherein the first direction is away from the actuator, and the second direction is towards the actuator.

6. A pressure gradient wound therapy apparatus of any preceding claim, wherein the electromagnetic actuator is operable to: induce a first magnetic field in the first operational state; and induce a second magnetic field in the second operational state.
- 5 7. A pressure gradient wound therapy apparatus of claim 6, wherein the first magnetic field and second magnetic field are opposing magnetic fields.
8. A pressure gradient wound therapy apparatus of claim 6 or claim 7, wherein the actuator is configured to move the diaphragm in a first direction to the first position under the influence of the first magnetic field, and to move the
10 diaphragm in a second direction towards the second position under the influence of the second magnetic field.
9. A pressure gradient wound therapy apparatus of any of claim 1 to 5, wherein the electromagnetic actuator is operable to induce a magnetic field in the first operational state, only.
- 15 10. A pressure gradient wound therapy apparatus of claim 9, wherein the actuator is configured to move the diaphragm in a first direction towards the first position under the influence of the magnetic field; and wherein the actuator is configured such that the diaphragm moves in a second direction towards the second position in the absence of the magnetic field.
- 20 11. A pressure gradient wound therapy apparatus of claim 10, wherein movement of the diaphragm in the second direction is provided by a biasing force provided by or applied to the diaphragm.
12. A pressure gradient wound therapy apparatus of any preceding claim, wherein the apparatus is configured such that a biasing force is provided which acts to
25 bias the diaphragm to a resting position, wherein the resting position corresponds to the first position, the second position or an intermediary position between the first and second positions.
13. A pressure gradient wound therapy apparatus of claim 11 or claim 12, wherein the diaphragm comprises a resilient material configured to provide the biasing
30 force upon extension or compression of the diaphragm.

14. A pressure gradient wound therapy apparatus of any preceding claim, wherein the diaphragm is formed of a non-magnetic material comprising a magnetic component attached, coupled or otherwise fixed thereto.
15. A pressure gradient wound therapy apparatus of any preceding claim, wherein
5 the magnetic material of the diaphragm comprises a permanent magnetic material.
16. A pressure gradient wound therapy apparatus of any preceding claim, wherein the electromagnetic actuator is configured to periodically switch between the first and second operational states to cause a pumping action of the diaphragm,
10 periodically moving between the first and second positions.
17. A pressure gradient wound therapy apparatus of any preceding claim, wherein the diaphragm is configured to deflect between first and second positions under the operation of the actuator.
18. A pressure gradient wound therapy apparatus of claim 17, wherein the
15 diaphragm is fixed at its peripheral edge(s), and deflects between a concave shape and a convex shape.
19. A pressure gradient wound therapy apparatus of any preceding claim, wherein the apparatus comprises a negative pressure wound therapy apparatus.
20. A pump assembly for a pressure gradient wound therapy apparatus, the pump
20 assembly comprising:
- a diaphragm comprising a magnetic material;
 - an electromagnetic actuator switchable between two or more operational states, at least one of which comprises a state in which the actuator induces a magnetic field for moving the diaphragm; and
 - 25 a valve arrangement including an inlet valve and an outlet valve configured to allow for the introduction and/or removal of fluid into a fluid chamber of the pump assembly;
- 30 wherein the actuator, in use, is fixed in position within the apparatus and is spatially separated from the diaphragm; and the actuator is configured to move the diaphragm with respect to the actuator between a first position corresponding to a first operational state of the actuator and a second position corresponding to the second operational state of the actuator.