CLAIMS

1. A power train for an amphibian, the power train comprising:
a first prime mover;
a first land propulsion means; and
a first marine propulsion means, wherein:
the first prime mover is arranged to selectively drive the first land propulsion means, or the first marine propulsion means, or both, characterised in that the power train further comprises:
a second prime mover, wherein:
the second prime mover is arranged to selectively drive the first land propulsion means, or the first marine propulsion means, or both, either in place of the first prime mover or in addition thereto.

2. A power train as claimed in claim 1, the power train further comprising a second land propulsion means, wherein the second prime mover is arranged to selectively drive the second land propulsion means, and the first prime mover is arranged to selectively drive the second land propulsion means, either in place of the second prime mover or in addition thereto.

3. A power train as claimed in claim 1 or claim 2, the power train further comprising a second marine propulsion means, wherein the second prime mover is arranged to selectively drive the second marine propulsion means, and the first prime mover is arranged to selectively drive the second marine propulsion means, either in place of the second prime mover or in addition thereto.

4. A power train as claimed in any one of the preceding claims, the power train further comprising a first and/or a second speed transmission, and wherein the first and/or second prime mover is arranged to selectively drive any one or more of the first land propulsion means and the first marine propulsion means through the first and/or second speed transmission.

5. A power train as claimed in claim 3, the power train further comprising a first and/or a second speed transmission, and wherein the first and/or second prime mover is arranged to selectively drive any one or more of the first and/or second land propulsion means and the first and/or second marine propulsion means through the first and/or second speed transmission.

6. A power train for an amphibian, the power train comprising:

a first prime mover;

a first speed change transmission;

a first land propulsion means; and

a first marine propulsion means, wherein:

the first prime mover is arranged to selectively drive the first land propulsion means, or the first marine propulsion means, or both, optionally through the first speed change transmission, characterised in that the power train further comprises:

a second prime mover;

a second speed change transmission;

a second land propulsion means; and

a second marine propulsion means, wherein:

the second prime mover is arranged to selectively drive the first and/or second land propulsion means, or the first and/or second marine propulsion means, or any combination thereof, optionally through the second and/or first speed change transmission, and

the first prime mover is additionally arranged to selectively drive the second land propulsion means, the second marine propulsion means, or both, optionally through the first and/or second speed change transmission.

7. A power train as claimed in any one of the preceding claims, the power train further comprising a first power take off coupled to receive drive from the first prime mover and/or the first speed change transmission.

8. A power train as claimed in any one of the preceding claims, the power train further comprising a second power take

off coupled to receive drive from the second primer mover and/or the second speed change transmission.

9. A power train as claimed in claim 7 or claim 8, wherein the first power take off is arranged to drive the first land propulsion means through a first land propulsion drive shaft and a first differential.

10. A power train as claimed in any one of claims 7 to 9, wherein the second power take off is arranged to drive the second land propulsion means through a second land propulsion drive shaft and a second differential.

11. A power train as claimed in any one of claim 7 to 10, wherein the first speed change transmission is arranged to drive the first marine propulsion means directly or through the first power take off and then a first marine propulsion drive shaft.

12. A power train as claimed in any one of claim 8 to 11, wherein the second speed change transmission is arranged to drive the second marine propulsion means directly or through the second power take off and then a second marine propulsion drive shaft.

13. A power train as claimed in any one of the preceding claims, wherein the first land propulsion means comprises a front set of wheels or track drives and the second land propulsion means comprises a rear set of wheels or track drives.

14. A power train as claimed in claim 13, wherein the front set of wheels or track drives comprises at least one port and one starboard wheel or track drive and the rear set of wheels or track drives comprises at least one port and one starboard wheel or track drive.

15. A power train as claimed in any one of the preceding claims, further comprising one or more decouplers arranged to selectively decouple the first prime mover from one or more of either the first land propulsion means and/or the first marine

propulsion means.

16. A power train as claimed in any one of the preceding claims, further comprising one or more decouplers arranged to selectively decouple the second prime mover from one or more of either the second land propulsion means and/or the second marine propulsion means.

17. A power train as claimed in any one of the preceding claims, further comprising one or more decouplers arranged to selectively decouple any one or more of the components in the power train.

18. A power train as claimed in any one of claims 15 to 17, further comprising control means to selectively activate and deactivate any one or more of the decouplers in the power train.

19. A power train as claimed in any one of the preceding claims wherein first refers to port and second refers to starboard.

20. A power train as claimed in any one of the preceding claims wherein first refers to starboard and second refers to port.

21. A power train as claimed in any one of the preceding claims, wherein either one or both of the first prime mover and the second prime mover comprise an internal combustion engine, an electric motor, a hydraulic motor, a hybrid engine, a motor generator and/or any combination thereof.

22. A power train as claimed in any one of the preceding claims, wherein either one or both of the first marine propulsion means and the second marine propulsion means comprise either a water jet, or a propeller.

23. A power train according to any one of the preceding claims, wherein the first and/or second speed transmission comprises a manual, sequential shift, semiautomatic, or automatic gearbox, or a continuously variable transmission (CVT).

24. A power train according to any one of the preceding claims, wherein the land mode includes entry of the amphibian into the water and egress of the amphibian from the water.

25. A power train according to any one of the preceding claims, further comprising control means and wherein the control means comprises electronic processing means and/or electrical, mechanical, hydraulic or electromechanical actuation devices, or any combination thereof.

26. A power train according to any one of the preceding claims, wherein any one or both of the first and/or second prime movers comprises any one or a combination of the following:

a spark ignition internal combustion engine;
a compression ignition internal combustion engine;
an electric motor;
a hydraulic motor;
a motor generator; and/ or
a hybrid engine; and/or
any combination thereof.

27. A power train for an amphibian, the power train comprising:

a first prime mover;
a first speed change transmission;
a first land propulsion means; and
a first marine propulsion means, wherein:
the first prime mover is arranged to selectively drive the first land propulsion means, or the first marine propulsion means, or both, through the first speed change transmission, characterised in that the power train further comprises:
a second prime mover;
a second speed change transmission;
a second land propulsion means; and
a second marine propulsion means, wherein:
the second prime mover is arranged to selectively drive the second land propulsion means, or a second marine propulsion means, or both, through the second speed change transmission.

28. A power train for an amphibian, the power train comprising:
a first prime mover;
a first land propulsion means; and
a first marine propulsion means, wherein:
the first prime mover is arranged to selectively drive the first land propulsion means, or the first marine propulsion means, or both, characterised in that the power train further comprises:
a second marine propulsion means, wherein:
the first prime mover is arranged to selectively drive the second marine propulsion means either in place of the first marine propulsion means or in addition thereto.

29. A power train as claimed in claim 28, the power train further comprising a second prime mover, wherein the second prime mover is arranged to selectively drive the first land propulsion means, the first marine propulsion means and the second marine propulsion means, either separately or in any combination thereof.

30. A power train as claimed in claim 28 or claim 29, the power train further comprising a second land propulsion means, wherein the first prime mover is arranged to selectively drive the second marine propulsion means.

31. A power train as claimed in claim 29 or claim 30, the power train further comprising a second land propulsion means, wherein the first prime mover is arranged to selectively drive the second marine propulsion means, and the first prime mover is arranged to selectively drive the second marine propulsion means, either in place of the second prime mover or in addition thereto.

32. A power train as claimed in any one of claims 28 to 31, the power train further comprising a first and/or a second speed transmission, and wherein the first and/or second prime mover is arranged to selectively drive any one or more of the first land propulsion means and the first marine propulsion means through

the first and/or second speed transmission.

33. A power train as claimed in any one of claims 28 to 32, the power train further comprising a first and/or a second speed transmission, and wherein the first and/or second prime mover is arranged to selectively drive any one or more of the first and/or second land propulsion means and the first and/or second marine propulsion means through the first and/or second speed transmission.

34. An amphibian comprising the power train of any one of the preceding claims.

35. An amphibian as claimed in claim 34, wherein any one or both of the first prime mover and/or the second prime mover are positioned substantially in line or parallel to a longitudinal axis of the amphibian.

36. An amphibian as claimed in claim 34 or claim 35, wherein any one or both of the first power take off and/or the first speed transmission are located rearwardly of the first prime mover.

37. An amphibian as claimed in any one of claims 34 to 36, wherein any one or both of the second power take off and/or the second speed transmission are located rearward of the second prime mover.

38. An amphibian as claimed in any one of claims 34 to 37, wherein any one or both of the first prime mover and/or the second prime mover are positioned in the rear half lengthwise, from bow to stern, of the amphibian.

39. An amphibian as claimed in any one of claims 34 to 38, wherein any one or both of the first and/or second prime movers is arranged in line in the amphibian in a North-South or South-North configuration.

40. An amphibian as claimed in any one of claims 34 to 39, wherein one or more of the wheels may be retracted above the water line for use on water, and protracted below the hull for use on land.

41. An amphibian as claimed in any one of claims 34 to 40, wherein when the amphibian is operated in the marine mode any one or both of the first and second marine propulsion means can power the amphibian to a speed where sufficient hydrodynamic lift is achieved for the vehicle to plane.

42. An amphibian as claimed in any one of claims 34 to 41, wherein when the amphibian is operated in the land mode it can be driven in one, two, three or four wheel drive.

43. A power train for an amphibian substantially as hereinbefore described with reference to or as shown in the accompanying drawings.

44. An amphibian comprising a power train substantially as hereinbefore described with reference to or as shown in the accompanying drawings.

Claims

1. A power train for an amphibian substantially as hereinbefore described with reference to or as shown in the accompanying drawings.

2. An amphibian comprising a power train substantially as hereinbefore described with reference to or as shown in the accompanying drawings.