

CLAIMS

1. A method of manufacturing an intravascular blood pump (P), the blood pump comprising a pumping device (1) including an impeller (6) and an electric motor for driving the impeller (6), the electric motor including a stator and a rotor (7), the rotor (7)
5 rotatable about an axis of rotation and coupled to the impeller (6) so as to be able to cause rotation of the impeller (6), the method comprising the steps of:
 - providing a molding base (30) sized and shaped for receiving stator components thereon;
 - placing the stator components on the molding base (30);
 - 10 - placing an outer sleeve (13) on the molding base (30) to thereby form at least a portion of an outer surface of the blood pump and an interspace (19) between the molding base (30) and the outer sleeve (13) in which the stator components are disposed; and
 - injecting a casting compound (18) into the interspace (19) via the molding base to
15 fix the stator components inside the outer sleeve (13).
2. The method of claim 1, wherein the outer sleeve (13) comprises a magnetically conductive material to form a yoke of the electric motor.
3. The method according to claim 2, wherein the outer sleeve (13) comprises a metal or metal alloy.
- 20 4. The method of any one of claims 1 to 3, wherein the step of injecting the casting compound (18) includes feeding the casting compound (18) through the molding base (30) into the interspace (19).
5. The method of any one of claims 1 to 4, wherein the step of injecting the casting compound (18) is carried out in a low-pressure atmosphere, in which the interspace (19)
25 is substantially evacuated.
6. The method of any one of claims 1 to 5, wherein the step of injecting the casting compound (18) comprises feeding an excess amount of casting compound into and through the interspace (19) into a riser (19a).

7. The method of any one of claims 1 to 6, wherein the molding base (30) is a disposable part.
8. The method of claim 7, wherein the molding base (30) is provided as an injection molded part.
- 5 9. The method of any one of claims 1 to 8, wherein the molding base (30) comprises a polymer.
10. The blood pump of claim 9, wherein the polymer is polyethylene (PE), polypropylene (PP) or polytetrafluoroethylene (PTFE).
11. The method of any one of claims 1 to 10, wherein the molding base (30)
- 10 comprises a pin (36) arranged along a central longitudinal axis of the molding base (30) and protruding from the molding base (30).
12. The method of claim 11, wherein the pin (36) is provided as a metal pin.
13. The method of any one of claims 1 to 12, wherein the casting compound (18) comprises a polymer material.
- 15 14. The method of claim 13, wherein the polymer material is an epoxy resin.
15. The method of any one of claims 1 to 14, the method further comprising the step of sealing the outer sleeve (13) against the outside before the step of injecting the casting compound (18).
16. The method of any one of claims 1 to 15, further comprising the step of
- 20 connecting an electric line (10) to at least one of the stator components before the step of placing the outer sleeve (13) on the molding base (30).
17. The method of any one of claims 1 to 16, wherein the step of placing the stator components on the molding base (30) includes placing an inner sleeve (14) on the molding base (30) such that the interspace (19) for injecting the casting compound (18)
- 25 is formed between the inner sleeve (14) and the outer sleeve (13), and the inner sleeve (14) forms a cavity (22) for receiving the rotor (7).

18. The method of claim 17, comprising the step of providing at least one sealing ring (40a, 40b) between the outer sleeve (13) and the inner sleeve (14) so as to form a seal there between.

19. The method of claim 18, wherein two of the at least one sealing ring (40a, 40b) are provided axially in a row.

20. The method of claim 18 or 19, further comprising the steps of:

- curing the casting compound to form a first casing section, and
- mounting a second casing section against the first casing section with a further sealing ring (40c) disposed between the first and second casing sections so as to seal the at least one sealing ring (40a, 40b) against the cavity (22).

21. The method of claim 17, further comprising the steps of:

- curing the casting compound to form a first casing section,
- mounting the first casing section to a second casing section with a liquid sealing material (40) arranged between the first casing section and the second casing section at an interface with the inner sleeve (14), and
- curing the liquid sealing material (40) to sealingly connect the first casing section to the second casing section at the interface with the inner sleeve (14).

22. An intravascular blood pump (P) for percutaneous insertion into a patient's blood vessel, comprising a pumping device (1) including an impeller (6) and an electric motor for driving the impeller (6), the electric motor including a stator and a rotor (7), the rotor (7) rotatable about an axis of rotation and coupled to the impeller (6) so as to be able to cause rotation of the impeller (6), the blood pump (P) further comprising an outer sleeve (13) which forms at least a portion of an outer surface of the pumping device (1), wherein stator components are fixed inside the outer sleeve (13) by means of a casting compound (18).

23. The intravascular blood pump of claim 22, wherein the outer sleeve (13) comprises a magnetically conductive material to form a yoke of the electric motor.

24. The intravascular blood pump of claim 23, wherein the outer sleeve (13) comprises a metal or metal alloy.
25. The intravascular blood pump of any one of claims 22 to 24, comprising an inner sleeve (14) to form a cavity (22) in which the rotor (7) is received, the inner sleeve (14) arranged inside the outer sleeve (13) to form an interspace (19) between the inner sleeve (14) and the outer sleeve (13) in which the stator components fixed by the casting compound (18) are disposed.
26. The intravascular blood pump of claim 25, wherein the inner sleeve (14) is made of a ceramic material.
27. The intravascular blood pump of claim 25 or 26, comprising at least one sealing ring (40a, 40b) between the outer sleeve (13) and the inner sleeve (14) forming a seal there between.
28. The intravascular blood pump of claim 27, wherein two of the at least one sealing ring (40a, 40b) are provided axially in a row.
29. The intravascular blood pump of claim 27 or 28, comprising a further sealing ring (40c) disposed so as to seal the at least one sealing ring (40a, 40b) against the cavity (22).
30. The intravascular blood pump of claim 25 or 26, comprising a dried liquid sealing material (40) disposed at an interface with the inner sleeve (14) so as to seal the casting compound (18) in the interspace (19) against the cavity (22).