

CLAIMS

1. An intravascular blood pump (1), comprising a pumping device and a catheter (5),
wherein the pumping device comprises:
a drive shaft (12);
5 a rotor (10) located at a distal end of the drive shaft (12);
a housing (11), in which the rotor (10) is housed, and
a distal bearing (14) for rotatably supporting a distal end of the rotor (10),
characterized in that the distal bearing (14) comprises a static support member (18),
which protrudes into or up against the distal end of the rotor (10).
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2. The intravascular blood pump according to claim 1, wherein the intravascular blood
pump (1) is designed as an expandable pump, wherein a cannula (16) is provided around
a portion of the drive shaft (12), which lies in the vicinity of the rotor (10), the housing
(11) and the rotor (10) being configured to be transferred at least in part into the cannula
15 (12), wherein during such transfer an expandable section of the housing (11) and the rotor
(10) are compressed at least along a radial direction extending transversely to a
longitudinal direction, from an expanded state to a compressed state.
3. The intravascular blood pump according to claim 2, wherein in the expanded state of the
20 housing (11), the static support member (18) protrudes up against the distal end of the
rotor (10) with a force equal to or less than 1.8 N.
4. The intravascular blood pump according to claim 2 or 3, wherein in the compressed state
25 of the housing (11), the static support member (18) is located at a distance from the rotor
(10).
5. The intravascular expandable blood pump according to any one of the claims 2 to 4,
wherein the rotor (10) comprises a nose (21) at a distal end thereof and, when the housing
(11) is in its expanded state, the static support member (18) protrudes up against the distal
30 end of the rotor (10) with the nose (21) protruding into the static support member (18).
6. The intravascular blood pump according to any one of claims 1, 2 or 4, wherein the rotor
(10) comprises an axial stop for the static support member (18).

7. The intravascular blood pump according to any one of claims 1 to 6, comprising a fluid line (15) inside the distal end of the drive shaft (12), which is arranged to guide a purge fluid to the distal bearing.
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8. The intravascular blood pump according to claim 7, wherein the rotor (10) comprises a hollow section as a part of the fluid line (15), wherein the intravascular blood pump (1) is arranged to guide a purge fluid through the hollow section of the rotor to the distal bearing (14).
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9. The intravascular blood pump according to claim 7 or 8, wherein the distal bearing (14) is arranged such that, when purge fluid is guided through the fluid line (15) with sufficient pressure, at least a portion of the purge fluid exits between the static support member (18) and the distal end of the rotor (10), into which or up against which the static support
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- member (18) protrudes.
10. The intravascular blood pump according to any one of claims 1 to 9, wherein a distal end of the static support member (18) is mounted at a distal end of the housing (11).
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11. The intravascular blood pump according to any one of claims 1 to 10, wherein the static support member (18) comprises a pin (19) extending from distally to proximally, the pin (19) protruding into the distal end of the rotor (10).
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12. The intravascular blood pump according to claim 11, wherein a bearing gap between an outside of the pin (19) and a bearing surface opposing the outside of the pin (19) has a width in the range from 1 μm to 10 μm , preferably from 2 μm to 8 μm .
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13. The intravascular blood pump according to any one of claims 11 to 12, wherein a length of the pin (19) by which the pin protrudes into the distal end of the rotor (10) during an operational state of the intravascular blood pump (1) is in the range from 0.5 mm to 8 mm, preferably from 1 mm to 5 mm, most preferably from 1.5 mm to 2.5 mm.

14. The intravascular blood pump according to any one of claims 11 to 13 with claim 2,
wherein the pin (19) has a sufficient length to remain within the distal end of the rotor
(10) when the housing (11) and the rotor (10) are in the compressed state.
15. The intravascular blood pump according to any one of claims 11 to 14, wherein the pin
5 (19) is made of a material which comprises at least one of the following materials:
MP35N, 35NLT, Nitinol, stainless steel and ceramics.
16. The intravascular blood pump according to any one of claims 1, 2, 4 and 6 to 15, wherein
an inner diameter at the distal end of the rotor (10), into which the static support member
10 (18) protrudes, is in the range from 0.3 mm to 1.5 mm, more preferably from 0.5 mm to
1.2 mm and most preferably from 0.7 mm to 0.9 mm.
17. A method of using the intravascular blood pump (1) according to any one of claims 1 to
16 in a patient such that blood flow in the patient is supported by means of the
15 intravascular blood pump (1).