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Electric pump

Abstract

An electric pump includes: a motor including a shaft; a pump mechanism coupled to an axial one side of the shaft; a circuit substrate located outward in a radial direction orthogonal to the axial direction of the shaft, and a housing capable of accommodating the motor and the circuit substrate. The circuit substrate includes a plate surface facing the shaft and following the axial direction. The housing includes a motor housing part, a substrate housing part, a pump housing part, and an attachment plate part located outward in a radial direction. The attachment plate part includes an attachment surface facing the shaft and following the axial direction. The motor and the pump mechanism are located on an inner angle side of an angle at which a third surface including the plate surface and a fourth surface including the attachment surface intersect.

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Background/Summary

CROSS REFERENCE TO RELATED APPLICATIONS

(1) The present invention claims priority under 35 U.S.C. § 119 to Japanese Application No. 2022-

032957 filed on Mar. 3, 2022, which claims priority to Japan Application No. 2021-058304, filed on Mar. 30, 2021. The present invention also claims priority under 35 U.S.C. § 119 to Japanese Application No. 2022-035267 filed on Mar. 8, 2022. The entire content of each of the above applications is incorporated herein by reference.

FIELD OF THE INVENTION

(2) The present disclosure relates to an electric pump.

BACKGROUND

(3) Conventionally, a configuration in which a heat sink is provided outside a motor unit, a power-system circuit component such as an FET is secured to the heat sink with a screw, and heat generated in the power-system circuit component is dissipated is known.

(4) In a conventional motor unit, there are a concern that it may not be possible to quickly dissipate heat generated from the motor and the motor may break down due to a high temperature, a concern that it may not be possible to extend an operating time in a high output state, and a concern that the body of the motor may have an increased size.

SUMMARY

(5) According to an exemplary embodiment, an electric pump includes: a motor including a shaft that is rotatable about a center axis; a pump mechanism coupled to one side of the shaft in an axial direction; a circuit substrate located outward in a radial direction orthogonal to the axial direction of the shaft; and a housing capable of accommodating the motor and the circuit substrate. The circuit substrate includes plate surfaces that are a first surface that faces the shaft, follows the axial direction, and includes an electronic component and a second surface on a side opposite to the first surface. The housing includes a motor housing part accommodating the motor, a substrate housing part accommodating the circuit substrate, a pump housing part accommodating the pump mechanism, and an attachment plate part located outward in a radial direction orthogonal to the axial direction of the shaft. The attachment plate part includes an attachment surface that faces the shaft and follows the axial direction. The motor and the pump mechanism are located on an inner angle side of an angle at which a third surface including the plate surfaces and a fourth surface including the attachment surface intersect each other.

(6) The above and other elements, features, steps, characteristics and advantages of the present disclosure will become more apparent from the following detailed description of the preferred embodiments with reference to the attached drawings.

Description

BRIEF DESCRIPTION OF THE DRAWINGS

(1) FIG. **1** is a sectional view of an electric pump according to the present embodiment.

(2) FIG. **2** is a perspective view illustrating an internal structure of the electric pump according to the present embodiment.

(3) FIG. **3** is a perspective view illustrating a busbar unit according to the present embodiment.

(4) FIG. **4** is a sectional view of the electric pump along a first coupling part.

(5) FIG. **5** is a partial sectional view of a housing and a motor.

(6) FIG. **6** is a perspective view illustrating inside of a third accommodation recessed part.

(7) FIG. **7** is a diagram of the inside of the third accommodation recessed part when seen from a −side to a +side in a Z direction.

(8) FIG. **8** is a sectional view of a section of a portion of the electric pump according to the present embodiment in a direction that intersects an axial direction on a side further rearward than a second coupling part.

(9) FIG. **9** is a sectional view of a section of a portion of the electric pump according to the present embodiment in a direction that intersects the axial direction on a side further frontward than the

second coupling part.
(10) FIG. **10** is an overview diagram of the electric pump according to the present embodiment when seen from the axial direction.
(11) FIG. **11** is a perspective view illustrating an appearance structure of the electric pump according to the present embodiment.
(12) FIG. **12** is a perspective view schematically illustrating each flow path according to the present embodiment.
(13) FIG. **13** is a schematic view illustrating a heat generating component is soldered on a circuit substrate.
DESCRIPTION OF THE EMBODIMENTS
(14) Hereinafter, an electric oil pump will be described as an example of the present embodiment of an electric motor and an electric pump. The electric oil pump in the embodiment is used to supply oil to equipment mounted in a vehicle or the like.
(15) In each drawing referred to below, an XYZ coordinate system will be appropriately illustrated as a three-dimensional orthogonal coordinate system. In the XYZ coordinate system, the X-axis direction is assumed to be a direction that is parallel to an axial direction of a center axis J illustrated in FIGS. **1** and **5**. The center axis J is a center axis line of a shaft **21** of a motor **220**, which will be described later. The Y-axis direction is a direction that is parallel to the depth direction in FIGS. **1** and **5** out of the directions orthogonal to the X axis. The Z-axis direction is a direction orthogonal to both the X-axis direction and the Y-axis direction and is a direction that is parallel to the up-down direction in FIGS. **1** and **5**. The sides on which the arrows in the drawings are directed are the + side, and the opposite sides are the − sides in all of the X-axis direction, the Y-axis direction, and the Z-axis direction.
(16) In the following description, the direction (X-axis direction) that is parallel to the center axis J will be simply referred to as an “axial direction” unless particularly indicated otherwise. A radial direction centered on the center axis J will be simply referred to as a “radial direction”. A circumferential direction around the center axis J, that is, the direction around the center axis J (θ direction) will be simply referred to as a “circumferential direction”.
(17) Also, the positive side (+X side) in the X-axis direction may be referred to as a “front side”. Similarly, the negative side (−X side) in the X-axis direction may be referred to as a “rear side”. The front side (+X side) corresponds to one side in the axial direction in the present disclosure. The rear side (−X side) corresponds to the other side in the axial direction in the present disclosure.
(18) Hereinafter, an electric oil pump **200** according to the present embodiment will be described with reference to FIGS. **1** to **13**.
(19) The electric oil pump **200** according to the present embodiment includes a housing **210**, a motor **220**, a pump mechanism **30**, and a circuit substrate **40** as illustrated in FIGS. **1** and **2**. The housing **210** includes a motor housing **211** (motor accommodation part) that accommodates the motor **220**, a pump housing **212** that accommodates the pump mechanism **30**, a substrate housing **213** (circuit substrate accommodation part) that accommodates the circuit substrate **40**, a partition wall part **330** that partitions the motor housing **211** (motor accommodation part) and the substrate housing **213** (circuit substrate accommodation part), a projecting part **300** that projects from the partition wall part **330**, a coupling part **310**, and a substrate cover **241**. In the case of the present embodiment, the motor housing **211** that is the motor accommodation part, the pump housing **212**, the substrate housing **213** that is the circuit substrate accommodation part, the partition wall part **330**, and the projecting part **300** are parts of a single member.
(20) The motor housing **211** that is the motor accommodation part is located on the rear side (−X side) of the housing **210**. The motor housing **211** has a cylinder shape extending in the axial direction. The motor housing **211** includes a first accommodation recessed part **211***a* that is a recessed portion opening on the rear side. The first accommodation recessed part **211***a* is blocked with a bearing holder **226**, which will be described later, from the rear side.

(21) The pump housing **212** is located on the front side (+X side) of the housing **210**. The pump housing **212** includes a second accommodation recessed part **212***a* that is a recessed part opening on the front side. The electric oil pump **200** includes a pump cover **212***b* that blocks the second accommodation recessed part **212***a* from the front side.
(22) The substrate housing **213** that is the circuit substrate accommodation part is located on side surfaces of the motor housing **211** (motor accommodation part) and the pump housing **212** that are aligned in the axial direction. The substrate housing **213** is located on the lower side (−Z side) of the motor housing **211** and the pump housing **212** in the drawing. The substrate housing **213** has a substantially rectangular shape when seen from the outer side in the radial direction. The substrate housing **213** has a shape with a long side in the axial direction and a short side in a direction that intersects the axial direction. The substrate housing **213** includes a third accommodation recessed part **213***a* that opens toward the lower side of the housing **210** in the drawing.
(23) The housing **210** includes a first through-hole **210***a* that connects, in the axial direction, the first accommodation recessed part **211***a* of the motor housing **211** that is the motor accommodation part and the second accommodation recessed part **212***a* of the pump housing **212**. The housing **210** includes a second through-hole **210***b* that connects, in the radial direction, the first accommodation recessed part **211***a* and the third accommodation recessed part **213***a* of the substrate housing **213** that is the circuit substrate accommodation part. In other words, the second through-hole **210***b* is an accommodation part that extends in the radial direction between the motor housing **211** and the substrate housing **213** and accommodates joint busbars **251***a* to **251***c*, which will be described later. The accommodation part may be a groove that opens in the axial direction and extends in the radial direction.
(24) The motor **220** includes a rotor **22** that includes a shaft **21**, a stator **23** that includes a winding, a busbar assembly **224**, a busbar cover **225**, a bearing holder **226**, a first bearing **27**, and a second bearing **28**. An end of the shaft **21** on the front side is coupled to the pump mechanism **30**.
(25) The stator **23** of the motor **220** is assembled with the housing **210** from the rear side (−X side) of the housing **210** through shrink-fitting, pressure-fitting, or insertion, for example. In a case of shrink-fitting, satisfactory assembly properties are achieved, the housing **210** holds the entire outer periphery of the stator **23** after the assembly, and satisfactory holding properties are thus obtained. In other words, the motor housing **211** that is the motor accommodation part of the housing **210** and the stator **23** are in a contact state.
(26) Also, in a case in which assembly is achieved by insertion (gap fitting), a through-hole and a screw hole in the axial direction of the housing **210** may be provided on the outer side of the stator **23** in the radial direction, and the stator **23** may be inserted into the housing **210** (motor housing **211**) and screwed with bolts or the like. In this case, an adhesive may be applied to a gap between the stator **23** and the housing **210** (motor housing **211**) in the radial direction such that the gap is filled with the adhesive to enhance holding properties of the stator **23** in the radial direction. In other words, the motor housing **211** that is the motor accommodation part of the housing **210** and the stator **23** are connected via the adhesive.
(27) Also, in the case in which assembly is achieved by insertion, the stator may be screwed in a state in which the stator **23** is placed to be close to the side of the circuit substrate **40** (+Z side) or the like (a state in which the stator **23** is in contact with the motor housing **211** of the housing **210**) achieved using a jig in advance.
(28) The circuit substrate **40** is a control substrate that includes, for example, a motor drive circuit **451**, a control part **452** that controls driving of the motor, and a circuit (not illustrated) for preventing reverse connection. Also, the circuit substrate **40** includes a power source input part **454** and a motor power source output part **455**. The circuit substrate **40** includes a plurality of heat generating components **43**. Plate surfaces of the circuit substrate **40** include a first surface **411** that includes the heat generating components **43** and a second surface **412** on a side opposite to the first surface **411**.

(29) In the present embodiment, the circuit substrate **40** has a rectangular shape extending in the axial direction. In the present embodiment, the circuit substrate **40** has an oblong shape with rounded corners and with a long side in the axial direction and a short side in the direction (Y-axis direction) that intersects the axial direction. The circuit substrate **40** is located further outward than the motor **220** and the pump mechanism **30** in the radial direction, and the plate surfaces of the circuit substrate **40** are directed to the motor **220** and the pump mechanism **30**. The circuit substrate **40** in the present embodiment includes a power source input part **454** at an end on the front side in the axial direction and a motor power source output part **455** at an end on the rear side in the axial direction.

(30) The heat generating component **43** is, for example, a plurality of transistors **431** and a microcomputer **432**. The plurality of transistors **431** constitute the motor drive circuit **451**, for example, and the microcomputer **432** controls power distribution to the motor drive circuit **451**.

(31) The heat generating component **43** (see FIG. **13**) is soldered to the first surface **411** of the circuit substrate **40**, for example. The heat generating component **43** includes a metal surface **434** made of a metal plate to be soldered to the first surface **411** of the circuit substrate **40** and a resin surface **435** made of a resin that is not to be soldered to the first surface **411** of the circuit substrate **40**. Once the metal surface **434** of the heat generating component **43** is soldered to face the first surface **411** of the circuit substrate **40**, the resin surface **435** on the side opposite to the metal surface **434** is directed in the same direction as that of the first surface **411** of the circuit substrate **40**.

(32) The circuit substrate **40** (see FIG. **13**) includes, in a region where the metal surface **434** of the heat generating component **43** is soldered, a substrate through-hole **413** (through-hole) that penetrates from the first surface **411** to the second surface **412** that is the plate surface on the side opposite to the first surface **411**. The substrate through-hole **413** includes a copper foil on the inner surface of the hole and the surroundings of the location where the substrate through-hole **413** opens in the first surface **411** and the second surface **412**. The copper foil is continuously defined and is connected between the first surface **411** side and the second surface **412** side. The location where the substrate through-hole **413** opens in the first surface **411**, the inner surface of the substrate through-hole **413**, and the location where the substrate through-hole **413** opens in the second surface **412** is able to transmit heat from the heat generating component **43** from the first surface **411** to the second surface **412** through the continuous copper foil. With this configuration, the circuit substrate **40** is able to dissipate heat of the heat generating component **43** from the side of the first surface **411** (from the heat generating component **43** itself) and is also able to dissipate the heat from the side of the second surface **412** as well.

(33) The circuit substrate **40** is attached to the substrate housing **213** that is the circuit substrate accommodation part of the housing **210** with the first surface **411** or the second surface **412** that is a plate surface of the circuit substrate **40** directed to the side of the projecting part **300** (the side of the motor **220**) such that the heat generating component **43** overlaps the projecting part **300** of the housing **210**, which will be described later. In other words, the heat generating component **43** is disposed to overlap the projecting part **300**. In a case in which the attachment is achieved with the first surface **411** directed to the side of the projecting part **300**, it is possible to transmit the heat of the heat generating component **43** to the projecting part **300** by assembling the resin surface **435** of the heat generating component **43** such that it comes into contact with the projecting part **300**. In other words, it is possible to dissipate the heat of the heat generating component **43** to the projecting part **300**.

(34) Also, in a case in which the attachment is achieved with the second surface **412** directed to the side of the projecting part **300**, the circuit substrate **40** is attached to the substrate housing **213** that is the circuit substrate accommodation part of the housing **210** such that the heat generating component **43** overlaps the projecting part **300**. Since the heat generating component **43** overlaps the projecting part **300**, the attachment is achieved such that the substrate through-hole **413** in the

region where the heat generating component **43** is soldered also overlaps the projecting part **300**. The assembly may be achieved with a heat dissipating member **51** sandwiched between the second surface **412** of the circuit substrate **40** and the projecting part **300**.

(35) The busbar assembly **224** includes three busbars **224***a*, **224***b*, and **224***c* and a busbar holder **224***d* made of a resin for holding the busbars **224***a* to **224***c* as illustrated in FIG. **6**. The busbar holder **224***d* has an annular shape when seen from the axial direction. The three busbars **224***a* to **224***c* are screwed to the surface of the busbar holder **224***d* directed on the rear side.

(36) The busbar assembly **224** is located on the rear side of the stator **23**. The busbar assembly **224** is inserted, from the rear side, into the first accommodation recessed part **211***a* of the motor housing **211**. Ends of the three busbars **224***a* to **224***c* on one side are connected to a coil wire **23***d* extending from a coil **23***c* to the rear side. The three busbars **224***a* to **224***c* extend from the position of the connection to the coil wire **23***d* to the side of the substrate housing **213**. Ends of the three busbars **224***a* to **224***c* on the other side are disposed at an end of the busbar holder **224***d* on the side of the substrate housing **213** (lower side in the drawing). The ends of the three busbars **224***a*, **224***b*, and **224***c* on the other side are connected to three joint busbars **251***a*, **251***b*, and **251***c*, which will be described later, respectively.

(37) The busbar cover **225** is located on the rear side of the busbar assembly **224** as illustrated in FIG. **5**. The busbar cover **225** is inserted into the first accommodation recessed part **211***a* from the rear side. The busbar cover **225** has an annular shape when seen from the axial direction. The busbar cover **225** covers the busbar assembly **224** from the rear side. A bearing holder **226** is placed over the busbar cover **225** from the rear side. The bearing holder **226** blocks the first accommodation recessed part **211***a* from the rear side.

(38) The busbar cover **225** includes a stepped part **225***a* at an outer peripheral end of the surface directed to the rear side. The stepped part **225***a* includes a surface directed to the rear side and the surface directed outward in the radial direction. An elastic member **225***b* configured by an O ring is disposed inside the stepped part **225***a*. The elastic member **225***b* is sandwiched between the bearing holder **226** and the busbar cover **225** in the axial direction. The bearing holder **226** pushes the busbar cover **225** on the front side via the elastic member **225***b*.

(39) The busbar cover **225** functions as a spacer inserted between the busbar assembly **224** and the bearing holder **226**. The busbar cover **225** is pushed on the front side by the elastic member **225***b* and pushes the busbar assembly **224** on the front side. With this configuration, the busbar cover **225** fixes the busbar assembly **224** in the axial direction. The busbar cover **225** and the busbar assembly **224** may be parts of a single member.

(40) The bearing holder **226** is a circular plate-shaped member that covers the busbar cover **225** from the rear side. The bearing holder **226** includes a cylindrical part **226***a* extending along the center axis J and a holder main body **226***b* spreading outward in the radial direction from the outer peripheral surface of the cylindrical part **226***a*. The cylindrical part **226***a* opens on both sides in the axial direction. The first bearing **27** is inserted into the opening part of the cylindrical part **226***a* on the front side. The first bearing **27** is supported, from the rear side, by a bearing support surface **226***c* located inside the cylindrical part **226***a*.

(41) The bearing holder **226** spreads up to the outside of the busbar cover **225** in the radial direction. The bearing holder **226** is screwed to the housing **210** on the outer side of the busbar cover **225** in the radial direction. A breather **26***b* is inserted into an end of the cylindrical part **226***a* on the rear side.

(42) The second bearing **28** is inserted, from the rear side, into the first through-hole **210***a* that connects the first accommodation recessed part **211***a* to the second accommodation recessed part **212***a*. An oil seal **15**, a fixing ring **16**, a wave washer **17**, and a second bearing **28** are disposed in order from the front side inside the first through-hole **210***a*.

(43) The shaft **21** is inserted into inner holes of the second bearing **28**, the wave washer **17**, the fixing ring **16**, and the oil seal **15**. The pump mechanism **30** is coupled to an end of the shaft **21** on

the front side.

(44) The busbar unit **250** connects the motor **220** to the circuit substrate **40**. The busbar unit **250** is connected to an end of the circuit substrate **40** on the rear side. The busbar unit **250** is accommodated inside the second through-hole **210***b* that connects the third accommodation recessed part **213***a* to the first accommodation recessed part **211***a*. Also, the motor **220** and the circuit substrate **40** may be connected directly to each other with the three busbars **224***a* to **224***c* without using the busbar unit **250**. For example, the three busbars **224***a* to **224***c* and a member that serves as a fixing tool may be integrally molded using a resin, and the integrally molded article may be screwed to the housing **210** at a fixing location of the fixing tool. At this time, the ends of the three busbars **224***a* to **224***c* on one side may be connected to the coil wire **23***d*, and the ends of the three busbars **224***a* to **224***c* on the other side may pass through the second through-hole **210***b* and may be connected to the circuit substrate **40**. With such a configuration, it is not necessary for the busbar holder **224***d* to have an annular shape when seen from the axial direction, and by elongating the annular shape of the busbar cover **225** made of a resin when seen from the axial direction into the axial direction and shaping it into a tubular shape as well, the busbar cover **225** is also able have the annular shape of the busbar holder **224***d* and separate the housing **210** from the busbars **224***a* to **224***c*.

(45) Ends of the joint busbars **251***a* to **251***c* on one side extend from the joint busbar holder **252** toward the motor **220**. Ends of the joint busbars **251***a* to **251***c* on the other side extend from the joint busbar holder **252** toward the circuit substrate **40**.

(46) The ends of the three joint busbars **251***a* to **251***c* on the other side penetrate through the circuit substrate **40** in the thickness direction. The ends of the three joint busbars **251***a* to **251***c* on the other side are soldered and joined to a wiring pattern on the circuit substrate **40**. Even in the case in which the motor **220** and the circuit substrate **40** are connected directly to each other with the three busbars **224***a* to **224***c* without using the three joint busbars **251***a* to **251***c*, the ends of the three busbars **224***a* to **224***c* on the other side may penetrate through the circuit substrate **40** in the thickness direction and may be soldered and joined to the wiring pattern on the circuit substrate **40** in a similar manner.

(47) The housing **210** further includes a plate-shaped attachment plate part **70** for attaching the electric oil pump **200** to an attachment target body to which the electric oil pump **200** is attached, such as an oil pan for a vehicle, for example. The attachment plate part **70** includes an attachment surface **71** spreading in the axial direction, and the electric oil pump **200** is fixed to the attachment target body with a fixing member in a state in which the attachment surface **71** is in contact with the attachment target body. In other words, the housing **210** includes the attachment surface **71** that spreads in the axial direction and comes into contact with the attachment target body. Also, the housing **210** includes an attachment plate part **70** extending in the axial direction and including the attachment surface **71**. It is not necessary for the attachment surface **71** to continue over the entire attachment plate part **70** in the axial direction, and the attachment surface **71** may be configured in a split manner at a plurality locations. As a fixing member, a bolt, a pressure-fitting pin, or a rivet, for example, may be used. In the present embodiment, a bolt is employed as the fixing member in consideration of easiness in disassembly and the like.

(48) The attachment plate part **70** is located on side surfaces of the motor housing **211** (motor accommodation part) and the pump housing **212** that are aligned in the axial direction. The attachment plate part **70** is located on the outer side of the motor housing **211** and the pump housing **212**, which are aligned in the axial direction, in the radial direction. The attachment plate part **70** has a thickness in a direction away from the motor housing **211** and the pump housing **212**. The attachment surface **71** of the attachment plate part **70** is the furthest in the +Y-axis direction through the thickness of the attachment plate part **70** from the side of the motor **220** and the pump mechanism **30** (the side of the center axis J). The attachment surface **71** is not limited to the +Y-axis direction through the thickness of the attachment plate part **70** from the side of the motor **220**

and the pump mechanism **30** (the side of the center axis J). For example, the attachment surface **71** may be provided in the −Y-axis direction (see FIG. **2**) of the attachment plate part **70** that is the side of the motor **220** and the pump mechanism **30** (the side of the center axis J). By placing the attachment surface **71** that comes into contact with the attachment target body on the side of the center axis J, it is possible to attach the electric oil pump **200** to the attachment target body in a state in which the attachment plate part **70** is disposed outside the electric oil pump **200**, and the attachment plate part **70** is able to play a role of protecting the motor and the pump mechanism from adverse influences from the outside. By providing a columnar boss or the like at the attachment target body, it is possible to achieve the attachment to the attachment target body even if the attachment surface **71** is located in the −Y-axis direction of the attachment plate part **70** that is the side of the center axis J.

(49) The attachment plate part **70** is located in a relationship in which the attachment surface **71** and the plate surfaces **411** and **412** of the circuit substrate **40** intersect each other. In other words, the attachment plate part **70** and the attachment surface **71**, and the substrate housing **213** that is the circuit substrate accommodation part and the plate surface (**411** or **412**) of the circuit substrate **40** are located on the side surfaces of the motor housing **211** and the pump housing **212** that are aligned in the axial direction, and the attachment plate part **70** and the attachment surface **71**, and the substrate housing **213** and the plate surface of the circuit substrate **40** are in a positional relationship of a direction in which they intersect each other. Therefore, an extended plane of the attachment surface **71** intersects an extended plane of the plate surface of the circuit substrate **40**. In the present embodiment, the attachment plate part **70** extends in the +Z direction, and the circuit substrate **40** extends in the −Y direction as illustrated in FIGS. **10** and **2**. If both or one of the attachment surface **71** and the plate surface (**411** or **412**) of the circuit substrate **40** virtually extends, then it comes into contact with the Z direction in the Y direction, and a corner part is defined between the Z direction and the Y direction. The motor **220** (motor housing **211**) and the pump mechanism **30** (pump housing **212**) are located on the side of an inner angle β that is able to be defined by both or one of the attachment surface **71** and the plate surface (**411** or **412**) of the circuit substrate **40** being virtually extended. In other words, the motor **220** (motor housing **211**) and the pump mechanism **30** (pump housing **212**) are located on the inner angle side of the angle at which a third surface obtained by virtually extending the attachment surface **71** intersects a fourth surface obtained by virtually extending the plate surface of the circuit substrate **40**. Alternatively, the motor **220** (motor housing **211**) and the pump mechanism **30** (pump housing **212**) are located on an inner angle side of an angle at which the third surface obtained by virtually extending the attachment surface **71** intersects the plate surface of the circuit substrate **40** or on an inner angle side of an angle at which the attachment surface **71** intersects the fourth surface obtained by virtually extending the plate surface of the circuit substrate **40**.

(50) With this configuration, it is possible to achieve size reduction in the radial direction as compared with a case in which the attachment plate part **70**, the motor **220** and the pump mechanism **30**, and the circuit substrate **40** are disposed in this order in a direction away from the attachment surface **71** along the attachment surface **71**. Also, it is possible to achieve size reduction as compared with a case in which the plate surfaces of the circuit substrate **40** are disposed in a direction that intersects the axial direction. With a configuration in which the plate surfaces of the circuit substrate **40** that is the control substrate are disposed in a direction that intersects the axial direction, there is a concern that the long side of the circuit substrate **40** becomes longer than the motor **220** or the pump mechanism **30** in the radial direction, and it is thus not possible to achieve size reduction in the radial direction. In the case in which it is not possible to achieve size reduction in the radial direction, there is a concern that the electric oil pump **200** to be attached to an oil pan or the like of a vehicle may interfere with a transmission or a body-related member in the vicinity thereof in the vehicle.

(51) In the present embodiment, the circuit substrate **40** includes a power source input part **454** at

an end on the front side in the axial direction and a motor power source output part **455** at an end on the rear side in the axial direction. The power input to the power source input part **454** disposed at the end of the circuit substrate **40** on the front side in the axial direction is output from the motor power source output part **455** disposed at the end of the circuit substrate **40** on the rear side in the axial direction via the substrate wiring pattern provided on the circuit substrate **40**. In other words, the power source is input to the substrate wiring pattern at the end of the circuit substrate **40** on the front side in the axial direction and is then output from the end of the circuit substrate **40** on the rear side in the axial direction to the busbars of the motor **220**. With such a configuration, it is possible to employ the following substrate wiring pattern for the circuit substrate **40**. In other words, this is a substrate wiring pattern in which a route for reverse flow from the rear side to the front side in the axial direction is not provided or minimized in the process in which the flow of the power input to the power source input part **454** inside the circuit substrate **40** reaches the motor power source output part **455**. Therefore, according to the electric oil pump **200**, the motor power source output part **455** is able to shorten the entire extension of the substrate wiring pattern and achieve size reduction (area reduction) of the circuit substrate **40** as compared with a configuration in which the motor power source output part **455** is disposed at a location that is different from the end of the circuit substrate **40** on the rear side in the axial direction. Since the route for reverse flow from the rear side to the front side in the axial direction is not provided, the substrate wiring pattern is not needed in the short-side direction (Y-axis direction) of the circuit substrate **40**, and it is thus possible to reduce the size of the circuit substrate **40** in the short-side direction (second short-side direction) and to reduce the entire size of the electric oil pump **200** in the radial direction. It is possible to reduce the size of the electric oil pump **200** in the radial direction by disposing the long side of the circuit substrate **40** in the axial direction and disposing it on the side surfaces of the motor **220** and the pump mechanism **30** that are aligned in the axial direction.

(52) The attachment plate part **70** is smaller than the motor housing **211** and the pump housing **212** in the direction (Z direction) that intersects the axial direction when the axial direction is horizontally seen from the side of the attachment surface **71** of the attachment plate part **70**. With this configuration, the attachment plate part **70** does not project further outward than the outer shapes of the motor housing **211** and the pump housing **212**, and it is thus possible to reduce the size of the electric oil pump **200** in the radial direction.

(53) The attachment plate part **70** includes at least two attachment holes **721** and **722**, and the attachment holes **721** and **722** are located further outward than the pump housing **212** in the axial direction and further outward than the motor housing **211** in the axial direction. Also, the attachment holes **721** and **722** are present between the motor housing **211** and the pump housing **212** in the Z direction from the substrate housing **213**. With this configuration, the attachment holes **721** and **722** do not project outward in the radial direction, and it is thus possible to achieve size reduction in the radial direction.

(54) The attachment plate part **70** includes an inlet port **731** through which a fluid suctioned and ejected by the pump mechanism **30** is suctioned, an outlet port **734** through which the fluid is ejected, and a flow path **73** through which the fluid flows within a range from the front-side attachment hole **721** (first attachment hole **721**) to the rear-side attachment hole **722** (second attachment hole **722**) in the axial direction. With this configuration, the attachment plate part **70** includes the inlet port **731**, the outlet port **734**, and the flow path **73**, and it is thus possible to achieve size reduction as compared with a case in which there is a structure including the inlet port **731**, the outlet port **734**, the flow path **73**, and the like in the surroundings of the attachment plate part **70**.

(55) The inlet port **731** and the outlet port **734** are included within a range from the first attachment hole **721** to the second attachment hole **722** of the attachment plate part **70** in the axial direction. With this configuration, the inlet port **731** and the outlet port **734** are included within a range between the first attachment hole **721** and the second attachment hole **722**, which are located

further outward than the motor housing **211** in the axial direction and further outward than the pump housing **212** in the axial direction, in the axial direction, the inlet port **731** and the outlet port **734** are thus not located further outward than the attachment holes **721** and **722** in the axial direction, the size is thus reduced in the axial direction.

(56) The attachment plate part **70** further includes a front-side attachment hole **723** (third attachment hole **723**). The third attachment hole **723** deviates in the radial direction (Z direction) of the center axis J relative to the first attachment hole **721** when the attachment surface **71** is seen from the front. The fixing to the attachment target body is improved, and fixing of the electric oil pump **200** is stabilized, by the attachment plate part **70** further including the third attachment hole **723**. The fixing at the three locations, namely the first to third attachment holes improves and stabilizes fixing of the electric oil pump **200**, the fixing of the inlet port **731** and the outlet port **734** to the attachment target body is thus improved and stabilized. The inlet port **731** and the outlet port **734** are included within a range from the first attachment hole **721** to the third attachment hole **723** in the attachment plate part **70** in the radial direction (Z direction). With this configuration, the attachment plate part **70** is present at a part from the substrate housing **213** to the motor housing **211** and the pump housing **212** in the Z direction, and the inlet port **731** and the outlet port **734** are included within the range from the first attachment hole **721** to the third attachment hole **723** of the attachment plate part **70** in the radial direction (Z direction), and it is thus possible to achieve size reduction in the radial direction as compared with a case in which the inlet port **731** and the outlet port **734** are present further outward than the attachment holes **721** and **723** in the radial direction. The inlet port **731** and the outlet port **734** do not project in the Z direction beyond the outer shape of the attachment plate part **70**, and a small size is thus achieved.

(57) The inlet port **731** and the outlet port **734** deviate from each other in the axial direction when seen from the side of the attachment surface **71** (when seen from the + side to the − side in the Y direction). In the present embodiment, the inlet port **731** is located further rearward than the outlet port **734** in the axial direction. Moreover, the inlet port **731** is located further downward than the outlet port **734** in the Z direction when seen with the + side in the Z direction directed upward. With this configuration, it is possible to achieve size reduction in the radial direction as compared with a case in which the inlet port **731** and the outlet port **734** are located at the same locations in the axial direction and the inlet port **731** and the outlet port **734** are disposed in this order from the lower side in the Z direction.

(58) In the present embodiment, it is not necessary for the attachment surface **71** to be continuously defined over the entire attachment plate part **70**, and the attachment surface **71** may be partially configured. The attachment surface **71** may be provided at locations which come into contact with the attachment target body. The attachment surface **71** may be configured only in the surroundings of the first attachment hole **721** to the third attachment hole **723**, the inlet port **731**, and the outlet port **724**, for example. The attachment surface **71** may be present in the surroundings of a positioning location.

(59) The attachment surface **71** may include an inlet port surface part **715** in the surroundings of the inlet port **731** and the outlet port surface part **716** in the surroundings of the outlet port **734**. It is possible to achieve further size reduction in the radial direction by disposing the inlet port **731** and the inlet port surface part **715**, and the outlet port **734** and the outlet port surface part **716** with deviation in the axial direction as compared with a case in which the inlet port **731** and the inlet port surface part **715**, and the outlet port **734** and the outlet port surface part **716** are disposed to be aligned in the Z direction at the same locations in the axial direction.

(60) The flow path **73** includes an inlet-side flow path **732** and an outlet-side flow path **733**. The inlet-side flow path **732** includes a first inlet flow path **7321** that is directed from the inlet port **731** to the side of the pump mechanism **30** and extends in a direction that intersects the axial direction, a third inlet flow path **7323** that extends from the side of the pump mechanism **30** and the pump housing **212** to the side of the attachment plate part **70**, and a second inlet flow path **7322**

connected to the first inlet flow path **7321** and the third inlet flow path **7323**. Also, the outlet-side flow path **733** includes a first outlet flow path **7331** extending from the side of the pump mechanism **30** and the pump housing **212** to the side of the attachment plate part **70**, for example. Only one outlet-side flow path **733** may be provided, or two or more, namely a plurality of outlet-side flow paths **733** may be provided. In the case of the present embodiment, the flow path **73** includes a relief flow path **735** that is branching from the first outlet flow path **7331** and is connected to the position of the first inlet flow path **7321** away from the side of the second inlet flow path **7322**. The relief flow path **735** is a flow path for a fluid ejected by the pump mechanism **30** to reversely flow to the side of the inlet-side flow path **732**. In the present embodiment, the relief flow path **735** includes a flow path that follows the axial direction and a flow path directed in a direction that intersects the axial direction. In the present embodiment, the third inlet flow path **7323** is a final inlet flow path connected to the pump mechanism **30** and the pump housing **212** in the flow path (route) up to the pump mechanism **30** with reference to the inlet port **731**. The final inlet flow path is not limited to the third inlet flow path **7323**.
(61) The third inlet flow path **7323** (final inlet flow path **7323**) and the first outlet flow path **7331** communicate with the attachment plate part **70** and the pump housing **212** along the mutual flow paths. In the present embodiment, the final inlet flow path **7323** and the first outlet flow path **7331** are linearly connected from the attachment plate part **70** to the pump housing **212**. The final inlet flow path **7323** and the first outlet flow path **7331** are defined through die molding or cutting, for example, from the side of the attachment surface **71**. Since the final inlet flow path **7323** connected to the pump housing **212** and the first outlet flow path **7331** are linear, a resistance caused when the pump mechanism **30** suctions and ejects the fluid is reduced, and it is thus possible to curb degradation of performance of the pump. Also, since the final inlet flow path **7323** connected to the pump housing **212** and the first outlet flow path **7331** are linear, the housing **210** is easily produced.
(62) The third inlet flow path **7323** is worked and produced using a drill or the like from the side of the attachment surface **71** of the attachment plate part **70**. At this time, a lid member, a cap member, or the like is attached to the open location opening in the attachment plate part **70** through pressure-fitting, screw fitting, or the like in order to block connection between the third inlet flow path **7323** and the outside.
(63) The third inlet flow path **7323** is located further frontward than the inlet port **731** and the attachment surface (inlet port surface part) **715** in the surroundings of the inlet port in the axial direction and further downward than the outlet port **734** in the Z direction. With this configuration, the third inlet flow path **7323** (final inlet flow path **7323**) that does not require an attachment surface is able to be disposed in a region in the attachment plate part **70** on the front side of the inlet port **731** and the attachment surface (inlet port surface part) **715** in the surroundings of the inlet port in the axial direction and on the lower side of the outlet port **734** in the Z direction, and it is thus possible to reduce the size of the attachment plate part **70** in the Z direction even if the outlet port **734** and the third inlet flow path **7323** (final inlet flow path **7323**) are disposed at close locations in the axial direction. In other words, it is possible to achieve size reduction in the radial direction. Since the third inlet flow path **7323** (final inlet flow path **7323**) and the first outlet flow path **7331** are connected linearly up to the pump housing **212** as described above, it is not necessary to form the pump housing **212** in a complicated shape, and it is possible to reduce the pump housing **212** and the housing **210** in the axial direction and the radial direction. It is not necessary for the third inlet flow path **7323** (final inlet flow path **7323**) to be located at completely the same location as the outlet port **734** in the axial direction, and the third inlet flow path **7323** may deviate from the center of the outlet port **734** in the axial direction. The location where the third inlet flow path **7323** (final inlet flow path **7323**) is disposed may be appropriately adjusted in consideration of the structure inside the housing **210** and performance of the pump mechanism **30**.
(64) In the present embodiment, the second inlet flow path **7322** and the relief flow path **735** extend along the axial direction, deviate on the side of the motor housing **211** and the pump housing **212**

(Z direction) from the side of the substrate housing **213**, and are disposed such that at least parts thereof overlap one another in the radial direction (Y direction). With such a configuration, the size is reduced in the radial direction. In other words, since the second inlet flow path **7322** and the relief flow path **735** provided in the attachment plate part **70** overlap one another in the Z direction, it is possible to reduce the thickness of the attachment plate part **70** in the Y direction and thereby to achieve size reduction in the radial direction. It is possible to reduce the size to obtain a thin thickness of the attachment plate part **70** and thereby to shorten the length from the attachment target body to the outer shape of the electric oil pump **200**, which contributes to size reduction of the entire attachment target body and enables suppression of interference with members that may be present in the surroundings of the electric oil pump **200**. Also, since it is possible to reduce the thickness of the attachment plate part **70**, the distance by which the electric oil pump **200** sticks out of the attachment target body in the direction perpendicular to the attachment surface **71** is shortened. Since the distance by which the electric oil pump **200** sticks out is short, a moment related to the sticking distance and the weight of the electric oil pump **200** is small, vibration and noise caused when the electric oil pump **200** operates are reduced, and it is possible to reduce influences of vibration from the attachment target body on the electric oil pump **200**.
(65) In the present embodiment, the electric oil pump **200** includes a connector part **2135** extending in the axial direction from the front side of the substrate housing **213**. The connector part **2135** is a location where connection is established between the outside and the electric oil pump **200**. The connector part **2135** includes a terminal for connection of the end of the circuit substrate **40** on the front side in the axial direction to the power source input part **454**, which is illustrated in FIG. **1**, as illustrated in FIGS. **4** and **6**. The location where external connection is accepted in the connector part **2135** is between the substrate housing **213** and the side of the motor housing **211** and the pump housing **212**. In other words, the connector part **2135** is located between the substrate **213** and the side of the motor housing **211** and the pump housing **212** in the Z direction. With this configuration, it is possible to achieve size reduction in the radial direction as compared with a case in which the connector part **2135** is disposed in a direction away from the substrate housing **213** relative to the motor housing **211** and the pump housing **212** in the Z direction.
(66) The housing **210** includes the partition wall part **330** between the motor housing **211** that is the motor accommodation part and the substrate housing **213** that is the circuit substrate accommodation part. The partition wall part **330** separates the motor housing **211** from the substrate housing **213** and is in contact with an outer circumference of the stator **23** of the motor **220**. The partition wall part **330** has a thickness in a direction away from the stator **23**, and the surface on the opposite side that comes into contact with the stator **23** is located inside the substrate housing. The partition wall part **330** extends from the stator **23** to the side of the pump housing **212**. A portion of the partition wall part **330** does not extend on the rear side, and a region of the second through-hole **210***b* for connecting the third accommodation recessed part **213***a* to the first accommodation recessed part **211***a* is defined. The partition wall part **330** has an arc sectional shape along the stator **23** when seen from the axial direction.
(67) The housing **210** includes the projecting part **300** that projects from the partition wall part **330** to the side of the circuit substrate **40**. The projecting part **300** is located between the stator **23** of the motor **220** and the heat generating component **43** of the circuit substrate **40** in an overlapping manner in the radial direction.
(68) When the circuit substrate **40** is assembled with the second surface **412** directed to the side of the projecting part **300**, it is in contact with the stator **23** of the motor **220**, the projecting part **300** (including the partition wall part **330**), the heat dissipating member **51**, the circuit substrate **40**, and the heat generating component **43** in this order when seen from the center axis J to the outer side in the radial direction.
(69) The projecting part **300** has, for example, a table shape and has substantially a rectangular shape when seen from the side of the opening (−Z direction) of the substrate housing **213**. An end

of the projecting part **300** on the side of the circuit substrate **40** has a plane shape along the second surface **412** of the circuit substrate **40**.

(70) The projecting part **300** includes a first projecting part **301** projecting on the rear side of the motor **220** and a second projecting part **302** projecting on the front side of the motor **220**. The first projecting part **301** and the second projecting part **302** extend in the axial direction and are disposed within the range of the motor in the axial direction. For example, the first projecting part **301** is located on the rear side of the motor **220** such that it overlaps the motor **220** and a transistor **431** that is a heat generating component. For example, the second projecting part **302** is located on the front side of the motor **220** such that it overlaps the motor **220** and a microcomputer **432** that is a heat generating component.

(71) The first projecting part **301** has an oblong shape with a long side in the axial direction, for example, and has a shape extending in the axial direction. The second projecting part **302** has substantially a square shape, for example.

(72) The substrate housing **213** that is the circuit substrate accommodation part of the housing **210** includes a wall part **320** that covers the surroundings of the circuit substrate **40**. The wall part **320** includes surfaces in a direction that intersects the pate surfaces of the circuit substrate **40** and in a direction along the plate surfaces. Wall parts **321** and **322** that intersect the plate surfaces of the circuit substrate **40** stand in the −Z direction to surround the periphery of the thickness of the circuit substrate **40**. A wall part **323** along the plate surfaces of the circuit substrate **40** extends on the front side in the axial direction such that it faces the plate surfaces, for example. The outer side of the wall part **320** is the outside of the electric oil pump **200**, and the wall part seen from the outside includes an outer surface. In other words, the wall part **320** faces the inside of the substrate housing **213** that is the circuit substrate accommodation part and the outside of the electric oil pump **200**.

(73) The wall part **320** of the substrate housing **213** includes wall parts **321**, which have surfaces along the axial direction, at two locations and wall parts **322**, which intersect the axial direction, at two locations.

(74) The wall part **320** of the substrate housing **213** includes the wall parts **322** connected to a corner (end portion) and a corner (end portion) of the wall parts **321** that have surfaces along the axial direction. The wall part **320** of the substrate housing **213** includes the wall parts **321** connected to a corner (end portion) and a corner (end portion) of the wall parts **322** that intersect the axial direction.

(75) The projecting part **300** includes third projecting parts **303** between the first projecting part **301** and the wall part **320**. The third projecting parts **303** are located in the direction (Y-axis direction) that intersects the axial direction from the first projecting part **301**, for example. The third projecting parts **303** are present between the first projecting part **301** and the wall part **320** and projects from the partition wall part **330**. The shape of the third projecting parts **303** is a table shape and is substantially a rectangular shape when seen from the side of the opening (−Z direction) of the substrate housing **213** similarly to the first projecting part **301**. In a case in which it is assumed that the projecting parts **300** have the height of the projecting part **300** in the direction from the partition wall part **330** to the side of the circuit substrate **40** (−Z direction), ends of the third projecting parts **303** on the side of the circuit substrate **40** are located at the same height of an end of the first projecting part **301** on the side of the circuit substrate **40**, for example.

(76) The partition wall part **330** has an arc shape around the center axis J in a section seen from the axial direction. The outer side (wall part side) of the partition wall part in the section seen from the axial direction is located at a lower position in the height direction of the projecting part **300** toward the partition wall part **330**. In the present embodiment, the first projecting part **301** projects from the center of the partition wall part **330** in the section seen from the axial direction, and the third projecting part **303** projects from a portion of the partition wall part **330** between the first projecting part **301** and the wall part **320** in the section seen from the axial direction. With this

configuration, the height of the third projecting parts **303** is higher than the height of the first projecting part **301**. Since the first projecting part **301** and the third projecting parts **303** have similar outer shapes, the third projecting parts **303** have a larger volume corresponding to the higher height than that of the first projecting part **301**.
(77) In the present embodiment, the first projecting part **301** is located at the center of the partition wall part **330** in a section seen from the axial direction. Also, the third projecting parts **303** are located on the left and right sides of the first projecting part **301** one by one in the section seen from the axial direction. Each of the first projecting part **301** and the third projecting parts **303** has a substantially rectangular shape when seen from the side of the opening (−Z direction) of the substrate housing **213** and also has the same length extending in the axial direction.
(78) The projecting part **300** further includes a fourth projecting part **304** projecting from the wall part **323** on the front side. The fourth projecting part **304** overlaps the pump mechanism **30** in the radial direction when seen from the side of the opening (−Z direction) of the substrate housing **213**. With this configuration, it is possible to transmit the heat transmitted to the fourth projecting part **304** to the fluid suctioned and ejected by the pump mechanism **30**. Therefore, it is possible to dissipate, to the fluid, the heat of the heat generating component **43** (the transistor **431** used in the circuit (not illustrated) for preventing a reverse connection) transmitted to the third coupling part **313**.
(79) The housing **210** includes a coupling part **310** that couples the projecting part **300** to the wall part **320**. The coupling part **310** connects the projecting part **300** to the wall part **320**. In the present embodiment, the coupling part **310** has a plate shape projecting from the partition wall part **330** to the side of the circuit substrate **40** and having a surface in a direction intersecting or following the axial direction. The coupling part **310** may not be connected to the partition wall part **330**.
(80) The coupling part **310** includes a first coupling part **311** extending in the axial direction and a second coupling part **312** extending in the direction intersecting the axial direction. In the present embodiment, the first coupling part **311** extends in the axial direction from the front side of the first projecting part **301** and couples the first projecting part **301** to the fourth projecting part **304**. Also, the second projecting part **302** is located between the first projecting part **301** and the fourth projecting part **304** in the first coupling part **311**. The second projecting part **302** is coupled and connected to the first projecting part **301** and the fourth projecting part **304** with the first coupling part **311**.
(81) In the present embodiment, the second coupling part **312** extends in the direction (Y-axis direction) that intersects the axial direction from the first projecting part **301** and couples the first projecting part **301** to the wall parts **321** including the surfaces along the axial direction. Also, the third projecting part **303** is located between the first projecting part **301** and the wall parts **321** including the surface along the axial direction in the second coupling part **312**. The third projecting part **303** is coupled and connected to the first projecting part **301** and the wall parts **321** including the surfaces along the axial direction with the second coupling part **312**. The second coupling part **312** couples the first projecting part **301** to the third projecting part **303** linearly from one of the wall parts **321** in the direction (Y-axis direction) that intersects the axial direction to the other wall part **321**.
(82) The coupling part **310** further includes a third coupling part **313** that extends in the direction that intersects the axial direction from the first coupling part **311** and is coupled to the wall part **320** and fourth coupling parts **314** that extend in the axial direction from the second coupling part **312** and are coupled to the wall part **320**.
(83) The third coupling part **313** extends in the direction that intersects the axial direction and couples the first coupling part **311** to the wall part **321** including the surface along the axial direction. The third coupling part **313** establishes linear coupling from one of the wall parts **321** including the surfaces along the axial direction to the other. In a case in which the length in the direction from the partition wall part **330** to the side of the circuit substrate **40** (−Z direction) seen

from the axial direction is assumed to be a height, the third coupling part **313** has a stepped shape with a changing height.

(84) The third coupling part **313** is located on the front side, for example. At least a portion of the third coupling part **313** overlaps the pump housing **212** in the radial direction when seen from the side of the opening (−Z direction) of the substrate housing **213**. The housing **210** includes a flow path **31** through which the fluid suctioned and ejected by the pump mechanism **30** is caused to flow, and the outer wall of the flow path **31** is inside the third accommodation recessed part **213***a* of the substrate housing **213**. At least a portion of the third coupling part **313** projects from the outer wall of the flow path **31**. With this configuration, it is possible to transmit, to the outer wall of the flow path **31**, the heat transmitted to the third coupling part **313**. Since the fluid flows inside the flow path **31**, it is possible to transmit the heat received by the external wall of the flow path **31** to the fluid flowing inside the flow path **31**. In other words, it is possible to dissipate the heat of the heat generating component **43** that has been transmitted to the third coupling part **313** and the heat of the motor **220** to the fluid.

(85) The fourth coupling parts **314** extend in the axial direction and couple the second coupling part **312** to the wall parts **322** including the surface that intersects the axial direction. The fourth coupling parts **314** establish linear coupling from one of the wall parts **322** including the surfaces that intersect the axial direction to the other (from the front side to the rear side). The fourth coupling parts **314** are located between the third projecting part **303** and the wall parts **321** including the surfaces along the axial direction and linearly extend on the front side and the rear side in the axial direction. Also, parts of the fourth coupling parts **314** are also coupled to the wall parts **321** (**323**) including the surfaces along the axial direction on the front side of the substrate housing **213**.

(86) The coupling part **310** further includes a fifth coupling part **315** that couples the second projecting part **302** to the wall parts **321** including the surfaces along the axial direction. The fifth coupling part **315** extends in the direction (Y-axis direction) that intersects the axial direction from the second projecting part **302** and couples one of the wall parts **321** including the surfaces along the axial direction to the other.

(87) In the present embodiment, the substrate housing **213** that is the circuit substrate accommodation part of the housing **210** has a substantially rectangular shape when seen from the side of the opening (−Z direction) of the substrate housing **213** with a long side (first long side) in the axial direction and a short side (first short side) in the direction (Y-axis direction) that intersects the axial direction. The circuit substrate **40** has a rectangular shape with a long side (second long side) in the axial direction and a short side (second short side) in the direction (Y-axis direction) that intersects the axial direction. The circuit substrate **40** enters the substrate housing **213** from the opening of the substrate housing **213** and is secured from the side of the opening of the substrate housing **213** to the side of the motor **220**, the pump mechanism **30**, and the partition wall part **330** with a screw **2134**. The substrate housing **213** includes a screw hole **2133** that fastens the screw **2134** for fixing the circuit substrate **40**. In the present embodiment, the screw hole **2133** of the substrate housing **213** is defined in a tubular part **2132** projecting from the partition wall part **330** to the side of the opening of the substrate housing **213**.

(88) In the present embodiment, the first coupling part **311** to the fifth coupling part **315** have grid shapes when seen in the +Z direction from the side of the opening of the substrate housing **213**. In a case in which the axial direction is defined as a longitudinal direction as illustrated in FIG. **7**, the first coupling part **311** extends in the axial direction near the center and is coupled to the first projecting part **301** and the second projecting part **302** overlapping the motor **220** and the fifth projecting part **305** overlapping the pump mechanism **30**, in the substrate housing **213** that is the circuit substrate accommodation part. The fourth coupling parts **314** extend in the axial direction between the third projecting part **303** and the wall part **320** and are coupled from one of the wall parts **322** including the surfaces that intersect the axial direction to the other. The second coupling

part **312**, the third coupling part **313**, and the fifth coupling part **315** are coupled from one of the wall parts **321** including the surfaces along the axial direction to the other such that they interest the one first coupling part **311** and the two fourth coupling parts **314** extending in the axial direction. In regard to the distances of the first coupling part **311** and the second coupling part **312** from the first projecting part **301** and the second projecting part **302** to the wall part **320**, the distance of the second coupling part **312** is shorter.

(89) The tubular part **2132** is provided at the wall part **320**, or at a midpoint of the first coupling part **311** to the fifth coupling part **315**, or at a location where any of the first coupling part **311** to the fifth coupling part **315** intersect one another.

(90) The projecting part **300** of the housing **210** overlaps the motor **220** and the heat generating component **43** of the circuit substrate **40** as described below. In other words, the second surface **412** of the circuit substrate **40** is in contact with the motor **220**, the projecting part **300**, the heat dissipating member **51**, the circuit substrate **40**, and the heat generating component **43** in this order from the center axis J to the outer side in the radial direction when the second surface **412** of the circuit substrate **40** is assembled with the substrate housing **213** with the second surface **412** directed to the motor **220** and the pump mechanism **30**. Also, the motor **220**, the projecting part **300**, and the heat generating component **43** overlap one another in the radial direction (from the center axis J to the outer side in the radial direction) when seen in the section along the axial direction. Moreover, the motor **220**, the projecting part **300**, and the heat generating component **43** overlap one another in the radial direction (from the center axis J to the outer side in the radial direction) when seen in the section orthogonal to the axial direction. It is not necessary for the center portions of the motor **220**, the projecting part **300**, and the heat generating component **43** to overlap one another both when seen in the section along the axial direction and when seen in the section orthogonal to the axial direction, and it is only necessary for at least parts thereof to overlap each other even if the center portions conform to each other. With such a configuration, the projecting part **300** is able to receive the heat of the heat generating component **43** and the heat of the motor **220**, and it is possible to dissipate the heat of the heat generating component **43** and the motor **220**. The projecting part **300** that has received heat is able to dissipate heat to the outside from the side surface that is not in contact with the heat generating component **43**. Since the projecting part **300** dissipates not only the heat of the heat generating component **43** but also the heat of the motor **220**, excellent heat dissipation is achieved. It is possible to extend a time during which the motor **220** operates in a high output state, for example, due to excellent heat dissipation. Also, it is possible to achieve a high-output operation without leading to an increase in size of the body of the motor **220**. In a case in which excellent heat dissipation is not achieved, there is a concern that the heat generating component **43** and the motor **220** may reach the specification upper limit temperatures and may be broken, for example.

(91) Also, the circuit substrate **40** may be assembled with the substrate housing **213** with the first surface **411** directed to the motor **220** and the pump mechanism **30**. In this case, the circuit substrate **40** overlaps and comes contact with the motor **220**, the projecting part **300**, and the heat generating component **43** in this order from the center axis J to the outer side in the radial direction in the section seen from the axial direction. The projecting part **300** comes into contact with the resin surface **435** of the heat generating component **43** facing the same direction as the first surface of the circuit substrate **40**. Moreover, the heat dissipating member **51** may be sandwiched between the projecting part **300** and the heat generating component **43**.

(92) The material of the housing **210** may be metal or a resin. In a case in which the housing **210** is made of metal, it is possible to establish insulation between the circuit substrate **40** and the housing **210** by using the heat dissipating member **51** with a base material made of silicone, for example and sandwiching the heat dissipating member **51** between the second surface **412** of the circuit substrate **40** and the projecting part **300** of the housing **210**. In a case in which the housing **210** is defined by resin, it is not necessary for the housing **210** to be defined as one member, and the

housing **210** may be appropriately molded integrally with a member made of metal. The motor housing **211** and the substrate housing **213** may be defined by resin, the pump housing **212** may be made of metal, and the housing **210** may be defined through integral molding. Also, only the projecting part **300** may be made of metal or a resin.

(93) The housing **210** includes the coupling part **310** that couples the projecting part **300** to the wall part **320**. It is possible to dissipate heat that the projecting part **300** receives from the heat generating component **43** and the motor **220** to the wall part **320** via the coupling part **310** by including the coupling part **310**. Since the wall part **320** includes an outer surface facing the outside of the housing **210**, it is possible to dissipate heat transmitted from the coupling part **310** to the outside of the outer surface. In other words, it is possible to dissipate heat of the heat generating component **43** and the motor **220** from the electric oil pump **200** to the outside. Note that various kinds such as a counterpart member such as an attachment target, external gas (air, gas, or the like), oil (cooling oil, lubricant oil, grease), or another fluid may be outside the housing **210** (electric oil pump **200**) depending on the attachment environment. The heat that has been transmitted to the wall part **320** is dissipated to the counterpart member, external gas, oil, another fluid, or the like, and it is possible to dissipate the heat of the heat generating component **43** and the motor **220** from the electric oil pump **200**.

(94) The housing **210** includes the partition wall part **330** that partitions the motor housing **211** that is the motor accommodation part and the substrate housing **213** that is the circuit substrate accommodation part. The partition wall part **330** is in contact with the outer circumference of the stator **23** of the motor **220**. The partition wall part **330** is in contact over the entire axial direction of the motor **220**. It is possible to receive heat of the motor **220** by the motor **220** over the entire axial direction and to achieve excellent heat dissipation by the projecting part **300** projecting from the partition wall part **330** and the coupling part **310** being coupled in the axial direction.

(95) The coupling part **310** includes the first coupling part **311** that extends in the axial direction from the projecting part **300** and the second coupling part **312** that extends in the direction that intersects the axial direction from the projecting part **300**. With this configuration, it is possible to transmit heat to a plurality of locations in the wall part **320**. Since it is possible to transmit the heat to the plurality of locations in the wall part **320**, excellent heat dissipation is achieved. Also, the heat of the motor **220** is dissipated not only to the projecting part **300** but also to the first coupling part **311**, and further heat dissipation is achieved, by the first coupling part **311** extending in the axial direction overlapping the motor **220**. Moreover, the heat of the motor **220** is also dissipated to the second coupling part **312**, and further heat dissipation is able to be achieved by the second coupling part **312** overlapping the motor **220**. The first coupling part **311** extending in the axial direction dissipates heat to the wall parts **322** including the surfaces that intersect the axial direction, and the second coupling part **312** extending in the direction that intersects the axial direction dissipates heat to the wall parts **321** including the surfaces along the axial direction. Therefore, it is possible to dissipate heat from the entire wall part **320** and to achieve excellent heat dissipation by the housing **210** including the first coupling part **311** and the second coupling part **312**.

(96) The projecting part **300** includes the first projecting part **301** projecting from the rear side of the partition wall part **330** and the second projecting part **302** projecting from the partition wall part **330** on the side further frontward than the first projecting part **301**. Also, the circuit substrate **40** includes the motor power source output part **455** at the end on the rear side in the axial direction and includes the motor drive circuit **451** and the control part **452** in this order from the motor power source output part **455** to the front side. In the case of the present embodiment, the first projecting part **301** receives heat of the transistor **431** constituting the motor drive circuit **451**, and the second projecting part **302** receives heat of the microcomputer **432** that controls power distribution to the motor drive circuit **451**. The heat generating component **43** attached to the circuit substrate **40** is able to dissipate heat to each of the first projecting part **301** and the second

projecting part **302**, and excellent heat dissipation is achieved, by including the plurality of projecting parts **300**.

(97) As illustrated in FIG. **5**, the first projecting part **301** and the second projecting part **302** are disposed side by side in the axial direction and overlap the motor **220**. Since not only the first projecting part **301** but also the second projecting part **302** overlap the motor **220**, the motor **220** is able to dissipate heat to the first projecting part **301** and the second projecting part **302**, and excellent heat dissipation is achieved.

(98) The projecting part **300** further includes the third projecting part **303** between the first projecting part **301** and the wall part **320**. As illustrated in FIG. **8**, the third projecting part **303** projects from the partition wall part **330**. The third projecting part **303** overlaps a portion of the transistor **431** constituting the motor drive circuit **451** and the motor **220**. It is possible to further dissipate the heat of the heat generating component **43** and the heat of the motor **220** by including the third projecting part **303**.

(99) Also, the first projecting part **301** projects from the center of the partition wall part **330** in the Y-axis direction to the side of the opening of the substrate housing **213** that is the circuit substrate accommodation part. The third projecting part **303** projects from the partition wall part **330** between the first projecting part **301** and the wall parts **321** including the surfaces along the axial direction. In other words, the third projecting part **303** deviates from the first projecting part **301** in the Y-axis direction and is located on the outer side of the substrate housing **213** beyond the first projecting part **301**. As illustrated in FIGS. **8** and **9**, the partition wall part **330** has an arc shape, and the outer side of the partition wall part **330** in the Y-axis direction is located at a lower position in the height direction of the projecting part **300** toward the wall part **320**. The third projecting part **303** projecting from the partition wall part **330** with deviation to the side further outward than the first projecting part **301** in the Y-axis direction projects from the lower position than the first projecting part **301** and has an end on the side of the circuit substrate **40** up to the same height position as that of the first projecting part **301**, and the third projecting part **303** thus has a larger volume than the first projecting part **301**. With this configuration, it is possible to increase the volume of the third projecting part **303** and to further dissipate the heat of the heat generating component **43** and the heat of the motor **220**.

(100) Also, the third projecting part **303** is present between the first projecting part **301** and the wall parts **321** including the surfaces along the axial direction and is coupled to the second coupling part **312**. Due to the coupling to the second coupling part **312**, it is possible to dissipate the heat that the third projecting part **303** has received from the heat generating component **43** and the motor **220** to the wall parts **321** including the surfaces along the axial direction.

(101) The third projecting part **303** is located between the first projecting part **301** and the wall parts **321** including the surfaces along the axial direction and is coupled to the first projecting part **301** and the wall parts **321** including the surfaces along the axial direction with the second coupling part **312**. The second coupling part **312** between the third projecting part **303** and the wall parts **321** including the surfaces along the axial direction projects from the partition wall part **330** toward the side of the circuit substrate **40**. The size of the projecting part **300** of the second coupling part in the height direction is larger between the third projecting part **303** and the wall parts **321** including the surfaces along the axial direction than between the first projecting part **301** and the third projecting part **303**. Also, the distance of the second coupling part **312** in the Y-axis direction is longer between the third projecting part **303** and the wall parts **321** including the surfaces along the axial direction than between the first projecting part **301** and the third projecting part **303**. The heat that the first projecting part **301** and the third projecting part **303** have received is transmitted through the second coupling part **312** and is then dissipated to the side of the wall parts **321** including the surfaces along the axial direction. The parts of the second coupling part **312** that is close to the wall parts **321** including the surfaces along the axial direction, that is, the second coupling part **312** between the third projecting part **303** and the wall parts **321** including the surfaces along the axial

direction is larger than the parts between the first projecting part **301** and the third projecting part **303**, a large surface area is obtained, and excellent heat dissipation is thus achieved. Also, in the section of the second coupling part **312** along a plane along the axial direction, the size of the sectional area between the third projecting part **303** and the wall parts **321** including the surfaces along the axial direction is larger. Due to the large sectional area, it is possible to further dissipate the heat to the wall parts **321** including the surfaces along the axial direction.
(102) The coupling part **310** includes the third coupling part **313** that extends in the direction that intersects the axial direction from the first coupling part **311** and is connected to the wall parts **321** including the surfaces along the axial direction. The third coupling part **313** is able to receive heat that the first coupling part **311** has received and dissipate the heat to the wall parts **321** including the surfaces along the axial direction as well, and more excellent heat dissipation is achieved.
(103) The coupling part **310** includes the fourth coupling part **314** that extends in the axial direction from the second coupling part **312** and is connected to the wall part **320**. The fourth coupling part **314** is able to receive heat that the second coupling part **312** has received and dissipate the heat to the wall part **320** as well, and more excellent heat dissipation is achieved.
(104) The coupling part **310** further includes the fifth coupling part **315** that couples the second projecting part **302** to the wall parts **321** including the surfaces along the axial direction. The fifth coupling part **315** is able to dissipate heat that the second projecting part **302** has received to the wall parts **321** including the surfaces along the axial direction.
(105) The projecting part **300** may include the heat dissipating member **51** placed at the end on the side of the circuit substrate **40** and receive the heat of the heat generating component **43** via the heat dissipating member **51**. Even in a case of the heat generating component **43** that is small relative to the end of the projecting part **300**, it is possible to receive the heat by the entire end of the projecting part **300**, and satisfactory heat dissipation for the heat generating component **43** is able to be achieved, by using the heat dissipating member **51**. The heat dissipating member **51** may be provided at each projecting part **300**, or one large heat dissipating member **51** may be placed and shared by all the first projecting part **301** to the third projecting part **303** concentrating on the rear side. Note that in a case in which the circuit substrate **40** is assembled with the second surface **412** directed to the side of the motor **220**, it is possible to transmit heat from the heat generating component **43** to the heat dissipating member **51** via the substrate through-hole **413** (through-hole) in the circuit substrate **40**.
(106) The first coupling part **311** to the fifth coupling part **315** may be provided with stepped shapes. It is possible to dissipate the heat received from the projecting part **300** to the wall part **320** while avoiding interference with electronic components such as a capacitor mounted on the circuit substrate **40** by appropriately employing the stepped shape for each coupling part **310**.
(107) The third accommodation recessed part **213***a* of the substrate housing **213** may be filled with grease, a resin material, or a material containing silicone as a base material for connection from the projecting part **300** to the wall part **320**. It is possible to dissipate the heat of the heat generating component **43** and the motor **220** from the electric oil pump **200** to the outside via not only the coupling part **310** but also the grease, the resin material, or the like used for the filling, through the filling with grease, a resin material, or the like.
(108) In a case in which the circuit substrate **40** is assembled with the first surface **411** directed to the side of the projecting part **300**, the first surface **411** may come into contact with the stator **23** of the motor **220**, the partition wall part **330**, the projecting part **300**, and the heat generating component **43** in this order from the center axis J toward the outer side in the radial direction. The resin surface **435** of the heat generating component **43** directed to the same direction as that of the first surface **411** of the circuit substrate **40** may come into contact with the projecting part **300** and dissipate heat to the projecting part **300**.
(109) The housing **210** is in contact with the pump cover **212***b* that blocks the second accommodation recessed part **212***a* from the front side and the bearing holder **226** that blocks the

first accommodation recessed part **211***a* from the rear side. Since the pump cover **212***b* and the bearing holder **226** are in contact with the housing **210**, it is possible to transmit the heat of the heat generating component **43** and the motor **220** from the housing **210** (the projecting part **300** and the coupling part **310**) to the pump cover **212***b* and the bearing holder **226**, and further to dissipate the heat from the outer surfaces of the pump cover **212***b* and the bearing holder **226** to the outside. Excellent heat transmission is achieved, and more excellent heat dissipation is achieved by employing the pump cover **212***b* and the bearing holder **226** made of metal. Also, it is possible to further dissipate heat by employing the substrate cover **241** as a portion of the housing **210** made of metal. Also, the heat that the projecting part **300** and the coupling part **310** have received in the present embodiment is not dissipated only from the outer surface of the wall part **320** to the outside. In other words, since the substrate housing **213** including the wall part **320** is a portion of the housing **210**, the heat that the projecting part **300** and the coupling part **310** have received is transmitted from the wall part **320** to the entire housing **210**, and it is possible to dissipate the heat from the entire outer surface of the housing **210**. It is possible to dissipate the heat from the entire outer surface of the housing **210** and thereby to achieve excellent heat dissipation.
(110) Although the form in which the surfaces of the substrate follow the axial direction and the motor **220**, the projecting part **300**, and the heat generating component **43** overlap each other in the radial direction has been described in the present embodiment, the present disclosure is not limited thereto. The surfaces of the substrate may be disposed in a direction that intersects the axial direction, and a form in which the motor **220**, the projecting part **300**, and the heat generating component **43** overlap each other in the axial direction may be employed. In other words, a form in which the motor **220**, the projecting part **300**, and the heat generating component **43** overlap each other from one side in the axial direction to the other side in the axial direction when seen in the section along the axial direction and the motor **220**, the projecting part **300**, and the heat generating component **43** overlap each other in the axial direction when seen in a section orthogonal to the axial direction may be employed. In the form in which the motor **220**, the projecting part **300**, and the heat generating component **43** overlap each other in the axial direction, it is not necessary for the partition wall part **330** to have an arc shape, and the partition wall part **330** may have a recessed part or a hole.
(111) Although the circuit substrate **40** is accommodated in the substrate housing **213** and the substrate housing **213** is provided with the projecting part **300** and the coupling part **310** in the present embodiment, the substrate cover **241** of the housing **210** may be defined into a box shape opening toward the side of the substrate housing **213** (+Z side), and the projecting part **300** and the coupling part **310** may also be provided inside the substrate cover **241**. It is possible to further dissipate heat by providing the projecting part **300** and the coupling part **310** in the substrate cover **241** as well.
(112) Each configuration (component) described in the aforementioned embodiment, modification examples, notes, and the like may be combined, and also, addition, omission, replacement, and other modifications of the configurations can be made, without departing from the gist of the present disclosure. Although the present embodiment employs the configuration in which the busbar unit **250** includes the joint busbar holder **252**, a configuration in which the joint busbar holder **252** is not included may be employed. Although the present embodiment has illustrated the configuration in which the second long side (long side) of the circuit substrate **40** is disposed in the direction along the axial direction, the second short side (short side) of the circuit substrate **40** may be disposed in the direction along the axial direction. The circuit substrate **40** itself may be reduced in size by arranging the circuit configuration, and in the electric oil pump **200**, the second long side (long side) of the circuit substrate **40** may intersect the axial direction to such an extent that it does not adversely affect an adjacent attachment target side such as a transmission, a body-related member, or the like of a vehicle. Also, even in a case in which the second short side (short side) of the circuit substrate **40** is disposed along the axial direction, size reduction in the radial direction

may be achieved by providing a plurality of circuit substrates **40** and arranging the disposition of the plurality of circuit substrates **40**. For example, the plurality of circuit substrate **40** may be disposed in the state in which the second short side (short side) follows the axial direction within the range in the case in which the second long side (long side) of one circuit substrate **40** is disposed along the axial direction, or the plurality of circuit substrates **40** may be disposed such that the plate surfaces overlap each other in a state in which the second short side (short side) follows the axial direction. Although the present embodiment illustrates the configuration in which the attachment plate part **70** includes the inlet port **731**, the outlet port **734**, and the flow path **73**, a configuration in which the inlet port **731**, the outlet port **734**, and the flow path **73** are not included may be employed. For example, the circuit substrate **40** may be disposed on the side of the motor **220** such that the plate surfaces do not overlap the pump housing **212**, and the inlet port **731**, the outlet port **734**, and the flow path **73** may be provided in the surroundings of the pump housing **212**. Although the present embodiment illustrates the configuration in which the attachment plate part **70** includes an attachment hole, the attachment hole may be provided at another portion in the housing **210**. The housing **210** is not limited to being composed of a single member. The housing **210** can also be composed of a plurality of housing parts.
(113) Features of the above-described preferred embodiments and the modifications thereof may be combined appropriately as long as no conflict arises.
(114) While preferred embodiments of the present disclosure have been described above, it is to be understood that variations and modifications will be apparent to those skilled in the art without departing from the scope and spirit of the present disclosure. The scope of the present disclosure, therefore, is to be determined solely by the following claims.

Claims

1. An electric pump comprising: a motor comprising a shaft that is rotatable about a center axis; a pump mechanism coupled to one side of the shaft in an axial direction; a circuit substrate located outward in a radial direction orthogonal to the axial direction of the shaft; and a housing capable of accommodating the motor and the circuit substrate, wherein the circuit substrate comprises plate surfaces that are a first surface that faces the shaft, follows the axial direction, and comprises an electronic component and a second surface on a side opposite to the first surface, the housing comprises a motor housing part accommodating the motor, a substrate housing part accommodating the circuit substrate, a pump housing part accommodating the pump mechanism, and an attachment plate part located outward in the radial direction orthogonal to the axial direction of the shaft, the attachment plate part comprises an attachment surface that faces the shaft and follows the axial direction, and the motor and the pump mechanism are located on an inner angle side of an angle at which a third surface comprising the plate surfaces and a fourth surface comprising the attachment surface intersect each other, wherein the attachment plate part comprises at least two attachment holes, the at least two attachment holes comprise a first attachment hole and a second attachment hole, and the first attachment hole is located to be closer to one side in the axial direction than the pump housing part, wherein the attachment plate part comprises a flow path through which the fluid to be suctioned and ejected by the pump mechanism flows, wherein the flow path comprises an outlet flow path extending in the radial direction from the attachment surface and connected to the pump mechanism, a first inlet flow path extending in the radial direction from the attachment surface to a side of the shaft, a second inlet flow path connected to the first inlet flow path and passing inside the attachment plate part along the axial direction, and a third inlet flow path connected to the second inlet flow path, extending in the radial direction, and connected to the pump mechanism, wherein the third inlet flow path is present between the outlet flow path and the first inlet flow path in the axial direction when seen from a direction orthogonal to the fourth surface.

2. The electric pump according to claim 1, wherein the substrate housing part comprises a first long side that follows the axial direction and a first short side that intersects the first long side and follows the third surface.
3. The electric pump according to claim 1, wherein the circuit substrate comprises a second long side that follows the axial direction and a second short side that intersects the second long side and follows the third surface.
4. The electric pump according to claim 1, wherein the attachment plate part has a thickness in the radial direction orthogonal to the axial direction of the shaft, and the motor, the pump mechanism, and the attachment surface are disposed through the thickness.
5. The electric pump according to claim 1, wherein the substrate housing part comprises a connector part for connection to outside, and the connector part extends in the axial direction from the substrate housing part.
6. The electric pump according to claim 5, further comprising: a plurality of busbars electrically connecting the motor to the circuit substrate, wherein the plurality of busbars are connected to an end of the circuit substrate on the other side in the axial direction that is a side of the motor, and the connector part extends from an end of the substrate housing part on the one side in the axial direction that is a side of the pump mechanism.
7. The electric pump according to claim 1, wherein the second attachment hole is located to be closer to the other side in the axial direction than the motor housing part.
8. The electric pump according to claim 1, wherein at least one of the at least two attachment holes is present between an upper end and a lower end of the housing when seen from a direction orthogonal to the fourth surface.
9. The electric pump according to claim 1, wherein the attachment plate part comprises an inlet port adapted to suction a fluid using the pump mechanism and an outlet port adapted to eject the fluid using the pump mechanism.
10. The electric pump according to claim 9, wherein the first attachment hole is located on the one side in the axial direction and the second attachment hole is located on the other side in the axial direction, and the inlet port and the outlet port are located between the first attachment hole and the second attachment hole.
11. The electric pump according to claim 10, wherein the attachment plate part comprises a third attachment hole, and the inlet port and the outlet port are located between the third attachment hole and the first attachment hole or the second attachment hole when seen from the axial direction.
12. The electric pump according to claim 9, wherein the attachment surface comprises an inlet port surface part surrounding a periphery of the inlet port, and an outlet port surface part surrounding a periphery of the outlet port.
13. The electric pump according to claim 9, wherein the inlet port is disposed with deviation in the axial direction from the outlet port when the attachment surface is seen from a direction orthogonal to the fourth surface.
14. The electric pump according to claim 1, wherein the flow path comprises an inlet flow path and an outlet flow path extending in the radial direction from the attachment surface and connected to a side of the pump mechanism, and the inlet flow path is present between the outlet flow path and the motor in the axial direction when seen from a direction orthogonal to the fourth surface.
15. The electric pump according to claim 1, wherein the flow path comprises an inlet flow path connected to a side of the pump mechanism from the inlet port, an outlet flow path connected from the outlet port to the side of the pump mechanism, and a relief flow path branching from the outlet flow path for returning the fluid to a side of the inlet flow path.
16. The electric pump according to claim 15, wherein at least a portion of the inlet flow path overlaps the relief flow path in a direction that intersects the axial direction when seen from a direction along the fourth surface.
17. The electric pump according to claim 1, wherein the attachment plate part is present between a

lower end of the substrate housing part and upper ends of the motor housing part and the housing part when seen from a direction orthogonal to the fourth surface.

18. An electric pump comprising: a motor comprising a shaft that is rotatable about a center axis; a pump mechanism coupled to one side of the shaft in an axial direction; a circuit substrate located outward in a radial direction orthogonal to the axial direction of the shaft; and a housing capable of accommodating the motor and the circuit substrate, wherein the circuit substrate comprises plate surfaces that are a first surface that faces the shaft, follows the axial direction, and comprises an electronic component and a second surface on a side opposite to the first surface, the housing comprises a motor housing part accommodating the motor, a substrate housing part accommodating the circuit substrate, a pump housing part accommodating the pump mechanism, and an attachment plate part located outward in the radial direction orthogonal to the axial direction of the shaft, the attachment plate part comprises an attachment surface that faces the shaft and follows the axial direction, and the motor and the pump mechanism are located on an inner angle side of an angle at which a third surface comprising the plate surfaces and a fourth surface comprising the attachment surface intersect each other, wherein the substrate housing part comprises a connector part for connection to outside, and the connector part extends in the axial direction from the substrate housing part along the third surface, wherein the attachment plate part comprises a flow path through which the fluid to be suctioned and ejected by the pump mechanism flows, wherein the flow path comprises an outlet flow path extending in the radial direction from the attachment surface and connected to the pump mechanism, a first inlet flow path extending in the radial direction from the attachment surface to a side of the shaft, a second inlet flow path connected to the first inlet flow path and passing inside the attachment plate part along the axial direction, and a third inlet flow path connected to the second inlet flow path, extending in the radial direction, and connected to the pump mechanism, wherein the third inlet flow path is present between the outlet flow path and the first inlet flow path in the axial direction when seen from a direction orthogonal to the fourth surface.