CLAIMS

1. A stator (102) for a vertically orientated vacuum pump (100), comprising:

a plurality of walls (152, 154) defining therebetween at least a part of a pumping chamber (171);

a channel (182) formed within one or more of the walls of the plurality of walls (152, 154), the channel (182) comprising a first pressure relief opening (184) at a first end of the channel (182) and a second pressure relief opening (186) at a second end of the channel (182), the first pressure relief opening (184) being an opening in an internal surface (130, 188) of the one or more of the walls (152, 154), the first pressure relief opening (184) being in fluid communication with the pumping chamber (171); and

a pressure relief valve (190) disposed within the channel (182)

wherein the plurality of walls (152, 154) comprises:

a top end wall (152); and

one or more sidewalls (154) extending downwards from the top end wall (152), wherein the top end wall (152) and the one or more sidewalls (154) define an internal cavity;

wherein:

the channel (182) is formed in the top end wall (152);

the first pressure relief opening (184) is formed in an internal surface (188) of the top end wall (152) and the second pressure relief opening (186) is formed in the internal surface (188) of the top end wall (152);

the first pressure relief opening (184) is located at an exhaust side (176) of the pumping chamber (171); the second pressure relief opening (186) is located at a suction side (172) of the pumping chamber (171);

the top end wall (152) comprises one or more through bores, each of the one or more through bores (156) being for receiving a respective rotor shaft (106, 110); and

the top end wall (152) and the one or more sidewalls (154) are a single, unitary item.

2. The stator (102) according to claim 1, wherein the pressure relief valve (190) is located in a housing that is removable from the stator (102) via an aperture in an external surface of the stator (102).

3. The stator (102) according to any preceding claim, further comprising an inlet channel (155) formed through a sidewall of the one or more sidewalls (154) for allowing a fluid to flow from an outside of the stator (102) into the internal cavity.

4. The stator (102) according to any preceding claim, wherein the top end wall (152) comprises an external surface (158), the external surface (158) of the top end wall comprising one or more recesses (160, 162).

5. The stator (102) according to claim 4, wherein the one or more recesses (160, 162) are selected from the group of recess consisting of a loop-shaped groove (160) for receiving an O-ring (164) and a recess (162) configured to receive a ceramic spacer (166).

6. A vertically orientated vacuum pump (100) comprising:

the stator (102) according to any preceding claim;

one or more rotor shafts (106, 110) extending vertically through the pumping chamber (171) of the stator (102); and

one or more rotors (104, 108), each rotor (104, 108) being mounted on a respective one of the rotor shafts (106, 110).