PATENT CLAIMS

1. Vacuum pump for generating an underpressure, wherein the vacuum pump has a pump chamber (14, 15) with an inlet (143) and an outlet (150), wherein the outlet (150) is equipped with a valve (3), characterized in that the pump chamber (14, 15) is provided with a pressure sensor (23, 23', 24).

2. Vacuum pump according to Claim 1, wherein the pressure sensor comprises a sensor diaphragm (23, 23').

3. Vacuum pump according to Claim 2, wherein a vane (24) is arranged on the sensor diaphragm (23, 23'), and the position of the vane (24) relative to the pump chamber (14, 15) is detectable.

4. Vacuum pump according to Claim 3, wherein an optical detection means (6) is present in order to detect the position of the vane (24).

5. Vacuum pump according to Claim 4, wherein the optical detection means (6) comprises a light emitter (60) and a light detector (62), and wherein the vane (24) is movable, by deflection of the sensor diaphragm (23, 23'), into a light path between light emitter (60) and light detector (62).

6. Vacuum pump according to one of Claims 1 to 5, wherein the vacuum pump has a vacuum diaphragm (20, 21) for generating the underpressure in the pump chamber (14, 15).

7. Vacuum pump according to Claims 2 and 6, wherein the vacuum diaphragm (20, 21) and the sensor diaphragm (23, 23') are formed together in one piece.

8. Vacuum pump according to Claim 7, wherein the sensor diaphragm (23) is an extension of one side of the vacuum diaphragm (20, 21).

9. Vacuum pump according to Claims 2 and 6, wherein the vacuum diaphragm (20, 21) and the sensor diaphragm (23') are two parts formed separately from each other.

10. Vacuum pump according to one of Claims 1 to 9, wherein the pump chamber has a first chamber area (14) and a second chamber area (15), which is connected to this first chamber area (14) via a through-opening (18), wherein the inlet (143) is arranged in the first chamber area (14), and the outlet (150) is arranged in the second chamber area (15).

11. Vacuum pump according to Claims 2, 6 and 10, wherein the vacuum diaphragm (20, 21) covers the first chamber area (14), and the sensor diaphragm (23, 23') covers the second chamber area (15).

12. Vacuum pump according to Claim 6, wherein the vacuum diaphragm (20, 21) has substantially a round cross section.

13. Vacuum pump according to Claim 12, wherein the vacuum diaphragm (20, 21) has a central point, and wherein this central point is connectable to a drive element (10, 11) for the actuation of the vacuum diaphragm (20, 21).

14. Vacuum pump according to Claim 13, wherein a connection head (22) for connection to the drive element (10, 11) is arranged at the central point.

PATENT CLAIMS

1. Vacuum pump for generating an underpressure, wherein the vacuum pump has a pump chamber with an inlet and an outlet, wherein the outlet is equipped with a valve,
and wherein the pump chamber is provided with a pressure sensor , wherein the pressure sensor comprises a sensor diaphragm,
and wherein the vacuum pump has a vacuum diaphragm for generating the underpressure in the pump chamber,
wherein the pump chamber has a first chamber area and a second chamber area, which is connected to this first chamber area via a through-opening,
wherein the inlet is arranged in the first chamber area, and the outlet is arranged in the second chamber area,
and wherein the vacuum diaphragm covers the first chamber area and the sensor diaphragm covers the second chamber area.

2. Vacuum pump according to Claim 1, wherein a vane is arranged on the sensor diaphragm, and the position of the vane relative to the pump chamber is detectable.

3. Vacuum pump according to Claim 2, wherein an optical detection means is present in order to detect the position of the vane.

4. Vacuum pump according to Claim 3, wherein the optical detection means comprises a light emitter and a light detector, and wherein the vane is movable, by deflection of the sensor diaphragm, into a light path between light emitter and light detector.

5. Vacuum pump according to Claim 1, wherein the vacuum diaphragm and the sensor diaphragm are formed together in one piece.

6. Vacuum pump according to Claim 5, wherein the sensor diaphragm is an extension of one side of the vacuum diaphragm.

7. Vacuum pump according to Claim 1, wherein the vacuum diaphragm and the sensor diaphragm are two parts formed separately from each other.

8. Vacuum pump according to Claim 1, wherein the vacuum diaphragm has substantially a round cross section.

9. Vacuum pump according to Claim 8, wherein the vacuum diaphragm has a central point, and wherein this central point is connectable to a drive element for the actuation of the vacuum diaphragm.

10. Vacuum pump according to Claim 9, wherein a connection head for connection to the drive element is arranged at the central point.

11. Vacuum pump for generating an underpressure, wherein the vacuum pump has a pump chamber with an inlet and an outlet, wherein the outlet is equipped with a valve,
and wherein the pump chamber is provided with a pressure sensor, wherein the pressure sensor comprises a sensor diaphragm,
and wherein the vacuum pump has a vacuum diaphragm for generating the underpressure in the pump chamber,
wherein the vacuum diaphragm and the sensor diaphragm are formed together in one piece and
wherein the sensor diaphragm is an extension of one side of the vacuum diaphragm.