

CLAIMS

1. A set of seals for sealing between the stator components of a pump, said stator components comprising two half shells defining at least one pumping chamber and two head plates to be mounted at either end of said two half shells, said set of seals comprising:
- at least one annular seal for sealing between at least one of said head plates and said two half shells;
- two longitudinal seals for sealing between longitudinal contact faces of said two half shell stators on either side of said at least one pumping chamber, said longitudinal seals being configured to have end portions that abut against said at least one annular seal when mounted in said pump; wherein
- each of said seals within said set of seals are made of a material having at least one of:
- a hardness between 73 – 83, preferably 75 - 81 on the Shore A hardness scale; and
- a stiffness of between 2.4 and 4.2 N/mm per mm length, wherein said stiffness is measured by axially compressing at room temperature an O-ring of said material, said O-ring having a cross section diameter of 3.4mm and an internal diameter of at least 40mm.
2. A set of seals according to claim 1, wherein said seals of said set of seals is made of a material having both of:
- a hardness between 74 – 80 on the Shore A hardness scale; and
- a stiffness of between 2.4 and 4.2 N/mm per mm length, wherein said stiffness is measured by compressing an O-ring of said material, said O-ring having a cross section diameter of 3.4mm and a diameter of at least 40mm.
3. A set of seals according to claim 1 or 2, wherein said stiffness of said material is between 2.6 and 3.8 N/mm per mm length.

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4. A set of seals according to any one of claims 1 to 3, wherein said stiffness of said material is between 2.8 and 3.4 N/mm per mm length.
5. A set of seals according to any preceding claim, wherein said material is a nitride or a fluorinated elastomer.
6. A set of seals according to any preceding claim wherein said material is a material resistant to temperatures in excess of 200 °C.
- 10 7. A set of seals according to claim 5 and 6, wherein said material comprises a perfluoroelastomer
8. A set of seals according to any preceding claim, wherein said annular seal and said longitudinal seals are formed from a same material.
- 15 9. A set of seals according to any preceding claim, wherein said longitudinal seal has a thickness of more than 1.5 mm.
10. A set of seals according to any preceding claim, wherein said longitudinal seal has a thickness of more than 1.8 mm, preferably more than 2.2 mm.
- 20 11. A set of seals according to any preceding claim, wherein at least one end of said longitudinal seal configured to abut against said annular seal comprises a flat end surface prior to said seal being compressed.
- 25 12. A set of seals according to any preceding claim, wherein said materials comprises: FFKM: Trelleborg Isolast® J9577
13. A pump assembly comprising a rotor rotatably mounted within a stator, said stator comprising:
30 two half shells defining at least one pumping chamber; and
two head plates mounted at either end of said two half shells; and

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a set of seals according to any preceding claim; wherein
said longitudinal seals are mounted to seal between longitudinal contact
faces of said two half shells and said at least one annular seal is mounted to seal
between one of said head plates and an end of said two half shells, said
5 longitudinal seals having end portions that abut against said at least one annular
seal.

14. A pump assembly according to claim 13, wherein said pump assembly
comprises a vacuum pump.