CLAIMS

1. A multi-stage vacuum pump comprising:

first and second half-shell stator components (102, 104) defining a plurality of pumping chambers (106 – 116) for assembly together along respective longitudinal faces (118, 120);

first and second end stator components (122, 124) for assembly at respective end faces (126, 128) of the first and second half-shell stator components;

gaskets (138) for location in a longitudinal recess (140) of respective longitudinal faces (118, 120) for sealing between the first and second half-shell stator components (102, 104) when assembled together; and

O-rings (146) for location in annular channels (148) counter-sunk in respective end faces (132) for sealing between the first and second end stator components and the first and second half-shell stator components when assembled;

Characterised in that the annular channels intersect the longitudinal recesses and each longitudinal recess comprises a stop (24) fixed relative to the intersection, and the gasket and the longitudinal recess are configured that when the gasket is located in the recess during assembly the gasket is biased against the stop (24) for locating an end portion of the gasket relative to the intersection.

2. A multi-stage vacuum pump as claimed in claim 1, wherein and an end portion of each gasket is shaped to correspond with the intersection for sealing between the gasket and the O-ring when the O-ring is received in the channel.

3. A multi-stage vacuum pump as claimed in claim 1 or 2, wherein the longitudinal recess comprises an upstanding wall (18) and each gasket comprises a biasing member (36) which when inserted into the longitudinal recess acts against the upstanding wall to bias the gasket against the stop.

4. A multi-stage vacuum pump as claimed in claim 2, wherein the biasing member comprises a laterally extending cross-member having a protrusion for bearing against the upstanding wall and which causes elastic deformation of the cross-member when the gasket is inserted in the longitudinal recess.

5. A multi-stage vacuum pump as claimed in any of the preceding claims, wherein the stop is arranged to constrain movement of the gasket in a longitudinal dimension.

6. A multi-stage vacuum pump as claimed in claim 4, wherein the stop comprises an upstanding end portion of the longitudinal recess proximate the intersection against which a shoulder of the gasket is biased for locating the end portion of the gasket relative to the intersection.

7. A multi-stage vacuum pump as claimed in claim 4, wherein the stop comprises a second upstanding wall (16) of the longitudinal recess against which a second cross-member (44) of the gasket is biased for locating the end portion of the gasket relative to the intersection.

8. A multi-stage vacuum pump as claimed in any of the preceding claims, wherein the longitudinal recess comprises a longitudinally extending upstanding wall for constraining lateral movement of the end portion of the gasket relative to the intersection when the gasket is fitted in the longitudinal recess.

9. Apparatus for assembling a multi-stage vacuum pump comprising a tool (48) and a multi-stage vacuum pump as claimed in any of the preceding claims, wherein the tool is arranged for aligning the shaped end portions of the gaskets with the correspondingly shaped intersections between the annular channels and the longitudinal recesses when the gaskets have been fitted in the longitudinal recesses and prior to compression of the gasket between the half-shell stator portions.

10. Apparatus as claimed in claim 9, wherein the tool (48) comprises a biasing member (50) configured to be received in the intersection for biasing the shaped end portion of the gasket into alignment with the intersection.

11. Apparatus as claimed in claim 10, wherein the biasing member (50) has a rounded end shaped to complement the corresponding shape of the intersection and end portion of the gasket.

12. A method of assembling a multi-stage vacuum pump, the vacuum pump comprising:

first and second half-shell stator components (102, 104) defining a plurality of pumping chambers (106 – 116) for assembly together along respective longitudinal faces (118, 120),

first and second end stator components (122, 124) for assembly at respective end faces (126, 128) of the first and second half-shell stator components;

gaskets (138) for location in a longitudinal recess (140) of respective longitudinal faces (118, 120) for sealing between the first and second half-shell stator components when assembled together; and

O-rings (146) for location in annular channels (148) counter-sunk in respective end faces (132) for sealing between the first and second end stator components and the first and second half-shell stator components when assembled, the annular channels intersecting the longitudinal recesses at respective intersections,

Characterised in that the method comprises:

fitting each gasket in a said longitudinal recess;

biasing the gasket against a stop fixed relative to the intersection for locating an end portion of the gasket relative to the intersection such that the end portion sits proud of the intersection;

pressing the end portion of the gasket with a tool generally to align the end portion with the intersection during compression of the gasket as the half-shell components are assembled together along the longitudinal faces;

fitting the O-rings in the annular channels;

assembling the end stator components to the half-shell stator components.