CLAIMS

1. A connector for a component of a medical breathing circuit, the connector comprising:

an inner body and an outer body, the inner body and the outer body being separate components,

the inner body having a retention mechanism configured to engage a second connector, and

an outer body configured to at least partly surround the inner body, the outer body having a tube engagement mechanism,

wherein the connector further comprises at least one electrical contact.

2. The connector of claim 1, wherein the inner body further comprises a sealing mechanism configured to provide a seal between the inner body and the second connector.

3. The connector of claim 1 or claim 2, wherein at least part of the inner body comprises a first material and at least part of the outer body comprises a second material, and wherein the first material is stiffer than the second material.

4. The connector of claim 3, wherein the retention mechanism of the inner body comprises a flexing region comprising the first material, and wherein the entire retention mechanism comprises the first material.

5. The connector of claim 4, wherein the retention mechanism comprises a lever that is movable relative to the body about the flexing region, and wherein the retention mechanism comprises two levers.

6. The connector of claim 5, wherein the lever has a retention portion on one portion of the flexing region and an actuation portion on another portion of the flexing region, wherein:

the retention portion of the or each lever comprises the first material; and/or

the actuation portion of the or each lever comprises the first material.

7. The connector of claim 6, wherein the distance between the retention portions of the two levers in a disengaged configuration is equal to or less than the distance in an engaged configuration.

8. The connector of claim 6, wherein the distance between the retention portions of the two levers in an engaged configuration is the same as the distance in the disengaged configuration.

9. The connector of any one of claims 1 to 8, wherein the outer body has cut-outs to allow a portion of the inner body to sit within the outer body and a portion of the inner body to sit outside the outer body, and wherein the portion of the inner body to sit outside the outer body is the retention mechanism.

10. The connector of any one of claims 3 to 9, wherein the flexing region is provided by a bridge, wherein:

the bridge has features to align the bridge with the outer body and the features are alignment bosses; and/or

the bridge is arranged between the actuation portion and the retention portion.

11. The connector of claim 9, wherein the bridge comprises a strengthening feature, wherein:

the strengthening feature comprises a step at an intersection between the actuation portion and the bridge;

the strengthening feature comprises two steps extending towards each other from opposing sides of the lever towards a central plane of the bridge;

the strengthening feature comprises a thickened portion of the bridge and the thickened portion is provided at an intersection of the actuation portion and the bridge; and/or

the actuation portion comprises a rib that limits flexing of the actuation portion.

12. The connector of any one of claims 3 to 11, wherein:

the entire inner body comprises the first material;

the first material has a higher Young’s modulus than the second material;

the second material comprises polyolefins;

the second material comprises polypropylene; and/or

the first material comprises polyoxymethylene.

13. The connector of any one of claims 1 to 12, wherein the lumen of the inner body and the lumen of the outer body are substantially aligned and/or are coaxial.

14. The connector of any one of claims 1 to 13, further comprising an inner body and outer body sealing mechanism configured to seal the inner body and the outer body together; and an inner body and outer body retention mechanism configured to retain the inner body and the outer body together, the inner body and outer body sealing mechanism and the inner body and outer body retention mechanism being separate mechanisms, wherein:

the inner body and outer body sealing mechanism is additionally configured to retain the inner body and the outer body together;

the inner body and outer body sealing mechanism comprises a protrusion and the sealing mechanism is an annular sealing protrusion and the annular sealing protrusion comprises an angled cross-sectional profile and the annular sealing protrusion is provided on an external surface of the inner body and is configured to be in interference fit with an inner surface of the outer body; and/or

the inner body and outer body retention mechanism comprises a protrusion, and the protrusion is a barb or the inner body and outer body retention mechanism protrusion is an annular protrusion and the annular retention protrusion has a rounded cross-sectional profile.

15. The connector of claim 14, wherein the inner body and outer body retention mechanism protrusion comprises a complementary indentation or aperture, and wherein the complementary indentation or aperture is an annular indentation, aperture or recess;

the annular sealing protrusion and annular retention protrusion have different diameters; or

the annular sealing protrusion and annular retention protrusion have different cross-sectional profiles.

16. The connector of claim 14 or 15, wherein a terminal end of the inner body extends beyond an end of the outer body, and the terminal end has a greater diameter than the remainder of the inner body.

17. The connector of any one of claim 14 to 16, wherein the inner body comprises a wall tapering outwardly towards the terminal end, and a diameter of an inner wall of the inner body at the terminal end is greater than the diameter of a remainder of the inner

wall and the inner walls of the terminal end form a smooth and/or continuous profile with the inner walls of the inner body.

18. A combination of a connector as claimed in any one of claims 1 to 17 together with a second connector and a tube, the second connector having an internal passage, wherein, when the connector is connected with the second connector and the tube, the inner body is at least partly located in the internal passage of the second connector and the retention mechanism is engaged with the second connector, and the tube engagement mechanism is engaged with the tube.

19. The combination as claimed in claim 18, wherein the second connector has one or more recesses and the retention mechanism is engaged with the one or more recesses.

20. A combination of a connector as claimed in any one of claim 1 to 17 together with a second connector, the second connector having an internal passage, wherein, when the connector is connected with the second connector and the tube, the inner body is at least partly located in the internal passage of the second connector such that the sealing mechanism substantially seals with the internal passage and the retention mechanism engages with the exterior of the second connector.