

CLAIMS

1. A directional adjustment unit for a headgear for a respiratory mask, comprising,
a movable frictional engagement member comprising an aperture forming a cavity extending through the at least one frictional engagement member, wherein the aperture is arranged to receive a filament of a strap of the headgear therethrough, wherein the frictional engagement member in a first configuration provides a disengaged configuration with respect to the filament, and in a second configuration provides an engaged configuration with respect to the filament;
the directional adjustment unit further comprising a filament guide configured to guide the filament as it passes through the directional adjustment unit, the filament guide being configured to engage the filament to restrain the filament against bending of the filament in the directional adjustment unit.
2. The directional adjustment unit of claim 1 wherein the filament guide is provided at a filament inlet of the directional adjustment unit.
3. The directional adjustment unit of claim 1 wherein the filament guide is provided at a filament outlet of the directional adjustment unit.
4. The directional adjustment unit of claim 1 comprising a filament guide adjacent the aperture of the frictional engagement member.
5. The directional adjustment unit of any one of the preceding claims comprising a plurality of filament guides.
6. The directional adjustment unit of claim 5 wherein the frictional engagement member is located between a pair of the filament guides.
7. The directional adjustment unit of any one of the preceding claims comprising at least two frictional engagement members.

8. The directional adjustment unit of claim 7 wherein the or at least one filament guide is provided at a position intermediate the two frictional engagement members.
9. The directional adjustment unit of any one of the preceding claims, wherein the aperture of the or each frictional engagement member comprises a cavity which forms an engagement surface that is linear or substantially linear in transverse cross-section, the engagement surface for engaging a flat or substantially flat portion of the filament when the at least one frictional engagement member is in the engaged configuration.
10. The directional adjustment unit of any one of the preceding claims, wherein the or each frictional engagement member is movable around a respective pivot axis and wherein the first configuration comprises a first pivoted configuration, and the second configuration comprises a second pivoted configuration.
11. The directional adjustment unit of claim 10 wherein each pivot axis is movable with respect to the directional adjustment unit.
12. The directional adjustment unit of claim 11 wherein each pivot axis is movable independently of the other pivot axis.
13. The directional adjustment unit of claim 11 or claim 12 wherein the directional adjustment unit comprises a base, wherein each pivot axis is movable toward and away from the base of the directional adjustment unit.
14. The directional adjustment unit of any one of the preceding claims wherein the filament guide comprises at least one guide surface against which the filament engages in use.
15. The directional adjustment unit of claim 14, wherein the guide surface is positioned to engage at least an upper surface of the filament.
16. The directional adjustment unit of claim 14 or 15, wherein the guide surface is positioned to engage at least a lower surface of the filament.

17. The directional adjustment unit of claim 14, wherein the guide surface of the filament guide is linear or substantially linear in transverse cross-section, for slidably engaging a flat or substantially flat portion of the filament, in use.
18. The directional adjustment unit of any one of claims 14 to 17 comprising a plurality of filament guides, each filament guide comprising a guide surface configured to guide and engage the filament, the guide surfaces being aligned along a longitudinal axis of the directional adjustment unit when the unit is viewed from the side.
19. The directional adjustment unit of any one of claims 14 to 18 comprising a plurality of filament guides, each filament guide comprising a guide surface configured to guide and engage the filament, the guide surfaces being aligned along a longitudinal axis of the directional adjustment unit when the unit is viewed from above.
20. The directional adjustment unit of any one of the preceding claims wherein the filament guide comprises an opening through which the filament passes.
21. The directional adjustment unit of any one of the preceding claims comprising at least one housing, the or each frictional engagement member being contained in and movable with respect to the housing.
22. The directional adjustment unit of claim 21 comprising at least two frictional engagement members, the frictional engagement members being contained in and movable with respect to the housing.
23. The directional adjustment unit of claim 22 comprising at least two frictional engagement members and a plurality of housings, each frictional engagement member being contained in and movable with respect to a respective housing.
24. The directional adjustment unit of any one of claim 21 to 23, wherein the or each housing comprises a base and a top, and opposed ends between the base and top, the aperture of each frictional engagement member being movable in a direction generally toward and away from the opposed ends between the disengaged and engaged configurations.

25. The directional adjustment unit of any one of claims 21 to 24, wherein the or at least one filament guide comprises or is provided on, an intermediate wall of the housing, between and spaced from the opposed ends of the housing.
26. The directional adjustment unit of any one of claims 21 to 25, wherein the or at least one filament guide comprises or is provided on at least one of the opposed ends of the housing.
27. The directional adjustment unit of claim 24, wherein opposed ends of the housing comprise end walls of the housing.
28. The directional adjustment unit of any one of the preceding claims, wherein the directional adjustment unit comprises a mounting slot, the mounting slot comprising a retaining space for movably retaining a follower to movably retain the frictional engagement member on or in the directional adjustment unit.
29. The directional adjustment unit of claim 28, wherein the or each frictional engagement member has a base member, the aperture being spaced from the base member.
30. The directional adjustment unit of claim 29 wherein the base member comprises the follower.
31. The directional adjustment unit of any one of claims claim 28 to 30, wherein the directional adjustment unit comprises at least two mounting slots, each mounting slot having a retaining space for movably retaining a respective part of the base member of a frictional engagement member.
32. The directional adjustment unit of any one of claims 28 to 31, wherein each mounting slot is sized so as to allow translational movement of follower within the mounting slot along a predetermined path, whilst being retained.
33. The directional adjustment unit of any one of the claims 28 to 32, wherein the mounting slot is elongate when the directional adjustment unit is viewed from the side.

34. The directional adjustment unit of claim 33, wherein the mounting slot extends in a substantially vertical direction, when the directional adjustment unit is viewed from the side.
35. The directional adjustment unit of any one of claims 28 to 34, wherein the mounting slot has at least one narrower section to resist the base member from moving past said narrowing section.
36. The directional adjustment unit of any one of claims 28 to 35, wherein each mounting slot is sized so as to allow the follower to pivot around its pivot axis within the slot.
37. The directional adjustment unit of any one of the preceding claims wherein the or each frictional engagement member are mounted in the directional adjustment unit for both:
- a. pivotal movement relative to the directional adjustment unit about a pivot axis; and
 - b. translational movement relative to the directional adjustment unit in a direction orthogonal to the pivot axis, along a predetermined elongate path extending away from the pivot axis, when the unit is viewed along the pivot axis.
38. The directional adjustment unit of claim 37 wherein the predetermined elongate path is defined by an elongate mounting slot in one of the frictional engagement member and a housing of the directional adjustment unit, and a follower on the other of the frictional engagement member and a housing of the directional adjustment unit, the follower being received in the mounting slot.
39. The directional adjustment unit of claim 14 wherein the guide surface is linear or substantially linear, when viewed in a direction substantially parallel to the pivot axis of the frictional engagement member.
40. The directional adjustment unit of any preceding claim, wherein the aperture, is or comprises any of:
- a. non-circular;

- b. non-elliptic;
- c. quadrilateral;
- d. rectangular;
- e. at least one straight portion;
- f. at least one arcuate portion;
- g. at least one portion that is substantially parallel to a pivot axis of the frictional engagement member;
- h. triangular.

- 41. The directional adjustment unit of claim 10, wherein the aperture is offset from the pivot axis when the directional adjustment unit is viewed from the side.
- 42. The directional adjustment unit of claim 9, wherein the cavity extends through the at least one frictional engagement member in a direction substantially perpendicular to the pivot axis.
- 43. The directional adjustment unit of claim 9, wherein the engagement surface forms part of at least one interior cavity wall surface of the at least one frictional engagement member.
- 44. The directional adjustment unit of claim 42 or 43, wherein the cavity has the shape of a rectangular elongated body or prism or cuboid.
- 45. The directional adjustment unit of claim 42 or 43, wherein the cavity has the shape of a triangular elongated body or prism or cuboid.
- 46. The directional adjustment unit of any one of claims 42 to 45, wherein at least a portion of an interior cavity sidewall surface has a flat or substantially flat profile when the directional adjustment unit is viewed from the side.
- 47. The directional adjustment unit of claim 9, wherein the cavity is substantially straight, when the frictional engagement member is viewed from the side.

48. The directional adjustment unit of claim 9, wherein the cavity is substantially arcuate, when the frictional engagement member is viewed from the side.
49. The directional adjustment unit of claim 10, wherein the at least one frictional engagement member has a base member through which the pivot axis extends, and at least one arm member extending from the base member, the aperture being provided in the arm member.
50. The directional adjustment unit of claim 49 wherein the arm member extends away from the base member and the pivot axis.
51. The directional adjustment unit of claim 49 or 50, wherein the arm member comprises a plurality of arm member portions, at least one arm member portion being inclined relative to another arm member portion.
52. The directional adjustment unit of any one of claims 49 to 51, wherein the arm member is tapered along at least part of its length.
53. The directional adjustment unit of any one of claims 49 to 52, wherein the arm member is of rectangular cross section along at least part of its length.
54. The directional adjustment unit of any preceding claim, wherein at least in the engaged configuration the frictional engagement member frictionally engages the filament, in use.
55. The directional adjustment unit of any one of the preceding claims wherein when the or each frictional engagement member is in the disengaged configuration with respect to the filament, the filament can move through the directional adjustment unit with a first resistance to that movement between the filament and the frictional engagement members, and wherein when each frictional engagement member is in the engaged configuration with respect to the filament, the filament can move through the directional adjustment unit with a second resistance to that movement between the filament and the frictional engagement members, the second resistance being greater than the first resistance.

56. The directional adjustment unit of any one of the preceding claims, wherein the filament guide comprises an opening through which the filament passes, the opening being smaller than at least one portion of the filament, such that the at least one portion of the filament cannot pass through the opening.
57. The directional adjustment unit of any preceding claim, wherein at least part of at least one edge of the aperture of at least one frictional engagement member is chamfered.
58. The directional adjustment unit of any preceding claim, wherein the aperture comprises three or more sides when viewed along the longitudinal axis of the filament.
59. A directional adjustment unit for a headgear for a respiratory mask, comprising:
a movable frictional engagement member, the frictional engagement member having an aperture forming a cavity extending through the frictional engagement member, wherein the aperture is arranged to receive a filament of a strap of the headgear therethrough such that the filament follows a filament path through the directional adjustment unit, wherein the frictional engagement member in a first configuration provides a disengaged configuration with respect to the filament, and in a second configuration provides an engaged configuration with respect to the filament;
the directional adjustment unit further comprising a filament guide configured to guide the filament as it passes through the directional adjustment unit, the filament guide being configured to engage the filament to restrain the filament against bending of the filament in the directional adjustment unit at a location in which it engages the filament;
wherein the frictional engagement member is mounted on the directional adjustment unit such that the frictional engagement member can move relative to the directional adjustment unit along a predetermined elongate path which extends in a direction orthogonal to the filament path, when the at least one frictional engagement member moves from the disengaged configuration to the engaged configuration.
60. A directional adjustment unit for a headgear for a respiratory mask, comprising:

at least one movable frictional engagement member, the frictional engagement member having an aperture forming a cavity extending through the at least one frictional engagement member, wherein the aperture is arranged to receive a filament of a strap of the headgear therethrough such that the filament follows a filament path through the directional adjustment unit, wherein the frictional engagement member in a first configuration provides a disengaged configuration with respect to the filament, and in a second configuration provides an engaged configuration with respect to the filament; and

the directional adjustment unit further comprising a filament guide configured to guide the filament as it passes through the directional adjustment unit, the filament guide being configured to engage the filament to restrain the filament against bending of the filament in the directional adjustment unit at a location in which it engages the filament; wherein the frictional engagement member is movable relative to the directional adjustment unit about at least two degrees of freedom, when the at least one frictional engagement member moves from the disengaged configuration to the engaged configuration.

61. The directional adjustment unit of claim 60 wherein one of the two degrees of freedom comprises a pivotal movement of the frictional engagement member such that the frictional engagement member pivots along the filament path.
62. The directional adjustment unit of claim 60 or 61 wherein one of the two degrees of freedom comprises a translational movement of the frictional engagement member along a predetermined elongate path which extends in a direction orthogonal to the filament path.
63. A directional adjustment unit for a headgear for a respiratory mask, comprising,
a movable frictional engagement member comprising an aperture forming a cavity extending through the at least one frictional engagement member, wherein the aperture is arranged to receive a filament of a strap of the headgear therethrough, wherein the frictional engagement member is movable

between a first configuration and a second configuration with respect to the filament,

wherein the first configuration provides a pre-activation configuration in which the frictional engagement member engages the filament with a first friction force between the frictional engagement member and the filament;

and wherein the second configuration provides an engaged configuration in which the frictional engagement member engages the filament with a second friction force between the frictional engagement member and the filament;

the second friction force being greater than the first friction force.

64. A directional adjustment unit for a headgear for a respiratory mask, comprising,
a movable frictional engagement member comprising an aperture forming a cavity extending through the at least one frictional engagement member, wherein the aperture is arranged to receive a filament of a strap of the headgear therethrough, wherein the frictional engagement member is movable between a first configuration and a second configuration with respect to the filament,
wherein the frictional engagement member frictionally engages the filament to resist movement of the filament through the aperture, when in both configurations, the resistance to movement being different for each configuration.
65. The directional adjustment unit of claim 63 or 64 wherein when in the first configuration a central axis through the aperture is inclined at a first inclination angle relative to the housing.
66. The directional adjustment of claim 65 wherein when in the second configuration, the central axis of the aperture is inclined at a second inclination angle relative to the housing, the second inclination angle being greater than the first inclination angle.
67. The directional adjustment unit of any one of claims 63 to 66, wherein the directional adjustment unit comprises a housing, the frictional engagement member being movably mounted in the housing.

68. The directional adjustment unit of claim 67 wherein the housing comprises a vertical housing axis substantially perpendicular to the filament, the central axis through the aperture being inclined at an inclination angle relative to the vertical housing axis.
69. The directional adjustment unit of claim 67 wherein the housing comprises an entry opening through which the filament extends into the housing, the entry opening comprising a central entry opening axis which is non-parallel with the aperture central axis.
70. The directional adjustment unit of claim 69 wherein the central entry opening axis is inclined at an inclination angle with respect to the aperture central axis, when the frictional engagement member is in the first configuration.
71. The directional adjustment unit of claim 69 wherein the aperture central axis is inclined with respect to the central entry opening axis, when the frictional engagement member is in the first configuration.
72. The directional adjustment of claim 67 wherein the frictional engagement member is elongate and comprises a longitudinal axis, the longitudinal axis being non-parallel with a vertical axis of the housing, when in both first and second configurations.
73. The directional adjustment unit of any one of claims 65 to 72 wherein the first inclination angle is between 0 and 10°, or between 0.5 and 8°, or between 1 and 6°, or is approximately 3°.
74. The directional adjustment unit of any one of claims 65 of 73, wherein the second inclination angle is less than 25°.
75. The directional adjustment unit of claim 72 wherein the inclination angle increases between the first and second configurations.
76. The directional adjustment unit wherein the maximum inclination angle when in the second configuration increases by between 1 and 30°, or between 2 and 25°, or is approximately 6°.
77. The directional adjustment unit of claim 67 wherein the housing comprises a filament pathway through the entry opening and the aperture in the frictional engagement member, the filament pathway being non-straight, or at least comprising a non-straight portion, when the frictional engagement member is in the first configuration.
78. The directional adjustment unit of claim 67 wherein the entry opening has a vertical dimension, and the filament has a vertical dimension, the vertical dimension of the entry opening being between 10 and 50% greater than the vertical dimension of the filament, or between 15 and 40% greater, or approximately 25% greater.

79. A directional adjustment unit for a headgear for a respiratory mask, comprising,
- a housing;
 - a movable frictional engagement member comprising an aperture forming a cavity extending through the at least one frictional engagement member, wherein the aperture is arranged to receive a filament of a strap of the headgear therethrough, the frictional engagement member being movably mounted in the housing;
 - wherein the frictional engagement member in a second configuration provides an engaged configuration with respect to the filament;
 - wherein, the housing comprises a housing wall against which the frictional engagement member abuts when in the first configuration; the housing wall limiting movement of the frictional engagement member;
 - wherein at least one of the frictional engagement member and the housing wall is configured to provide a discrete contact region between the frictional engagement member and the housing wall, the discrete contact region being less than the area of the housing wall.
80. The directional adjustment unit of claim 79 wherein the discrete contact region is defined by a surface formation on the housing wall and/or the frictional engagement member.
81. The directional adjustment unit of claim 80 wherein the surface formation comprises a protruding portion configured to provide the discrete area of contact between the frictional engagement member and the housing wall.
82. The directional adjustment unit of claim 81 wherein the protruding portion comprises an edge of the housing wall.
83. The directional adjustment unit of claim 82 wherein the housing wall is inclined such that the edge that protrudes into the housing.
84. The directional adjustment unit of claim 82 or 83 wherein the edge is a lower edge of the housing wall that protrudes into the housing.
85. The directional adjustment unit of claim 82 or 83 wherein the edge is an upper edge of the housing wall that protrudes into the housing.
86. The directional adjustment unit of claim 81 wherein the protruding portion comprises any one or more of:

- a. an elongate rib
 - b. a straight formation;
 - c. an arcuate formation;
 - d. a triangular formation;
 - e. a domed formation.
87. The directional adjustment unit of claim 80 wherein the surface formation comprises a recessed portion configured to provide a discrete area of non-contact, the discrete contact region between the frictional engagement member and the housing wall being defined by one or more regions adjacent the recessed portion.
88. The directional adjustment unit of any one of claims 79 to 87 comprising a plurality of discrete contact regions.
89. The directional adjustment unit of any one of claims 79 to 88 wherein the housing comprises the discrete contact region.
90. The directional adjustment unit of any one of claims 79 to 89 wherein the frictional engagement member comprises the discrete contact region.
91. The directional adjustment unit of any one of claims 79 to 90 wherein the frictional engagement member when in a first configuration provides a disengaged configuration with respect to the filament.
92. The directional adjustment unit of any one of claims 79 to 90 wherein the frictional engagement member when in a first configuration provides a pre-activation configuration in which the frictional engagement member engages the filament with a first friction force between the frictional engagement member and the filament;
and wherein the second configuration provides an engaged configuration in which the frictional engagement member engages the filament with a second friction force between the frictional engagement member and the filament;
the second friction force being greater than the first friction force.
93. The directional adjustment unit of any one of claims 79 to 90 wherein the frictional engagement member frictionally engages the filament to resist movement of the filament through the aperture when in both configurations, the resistance to movement being different for each configuration.
94. A headgear for a respiratory mask, comprising,
- a. the directional adjustment unit of any preceding claim, and
 - b. at least one filament.

95. The headgear of claim 94 wherein:
- a. the aperture of the frictional engagement member comprises a cavity which forms an engagement surface that is linear or substantially linear in transverse cross-section; and
 - b. the filament comprises a filament body having at least one flat or substantially flat exterior surface extending along a longitudinal axis thereof which is brought into contact with the engagement surface of the directional adjustment unit, when in the engaged configuration.
96. The headgear of claim 95, wherein the filament further comprises
- i. a body portion having a first shape and/or size,
 - ii. an end portion having a second shape and/or size, and
 - iii. a transitional portion provided longitudinally between the body portion and the end portion, wherein the transitional portion has a shape and/or size which transitions from the shape and/or size of the core portion to the shape and/or size of the end portion .
97. The headgear of any one of claims 94 to 97, further comprising a yoke assembly configured to connect the headgear to the respiratory mask.
98. The headgear of claim 97, wherein the directional adjustment unit is at least partially arranged in the yoke assembly.
99. The headgear of claim 97 or 98, wherein the yoke assembly comprises a central portion and at least one laterally extending portion extending from the central portion, wherein the at least one laterally extending portion is configured to connect to the directional adjustment unit.
100. The headgear of any one of claims 94 to 99, further comprising a frame configured to connect the headgear to the respiratory mask.
101. The headgear of claim 100, wherein the directional adjustment unit is at least partially arranged in the frame.

102. A headgear for a respiratory mask, comprising:
- a filament of a strap of the headgear; and
 - a directional adjustment unit comprising at least one movable frictional engagement member having an aperture forming a cavity extending through the frictional engagement member, wherein the aperture is arranged to receive the filament therethrough, wherein the frictional engagement member in a first configuration provides a disengaged configuration with respect to the filament, and in a second configuration provides an engaged configuration with respect to the filament, the frictional engagement member being movable between engaged and disengaged configurations;
 - the directional adjustment unit further comprising a filament guide configured to guide the filament as it passes through the directional adjustment unit, the filament guide being configured to engage the filament to restrain the filament against bending of the filament in the directional adjustment unit at a location in which it engages the filament.
103. A headgear for a respiratory mask, comprising:
- a filament of a strap of the headgear; and
 - a directional adjustment unit comprising:
 - a movable frictional engagement member, the frictional engagement member having an aperture forming a cavity extending through the at least one frictional engagement member, wherein the aperture is arranged to receive a filament of a strap of the headgear therethrough, wherein the frictional engagement member in a first configuration provides a disengaged configuration with respect to the filament, and in a second configuration provides an engaged configuration with respect to the filament,
 - the directional adjustment unit further comprising a filament guide configured to guide the filament as it passes through the directional adjustment unit, the filament guide being configured to engage the filament to restrain the filament against bending of the filament in the directional adjustment unit at a location in which it engages the filament;
 - and,

wherein at least one frictional engagement member is mounted on the directional adjustment unit such that the frictional engagement member can move relative to the directional adjustment unit along a predetermined elongate path which extends in a direction orthogonal to the filament path, when the at least one frictional engagement member moves from the disengaged configuration to the engaged configuration.

104. A headgear for a respiratory mask, comprising:
- a filament of a strap of the headgear; and
 - a directional adjustment unit comprising
 - at least one movable frictional engagement member, the frictional engagement member having an aperture forming a cavity extending through the at least one frictional engagement member, wherein the aperture is arranged to receive a filament of a strap of the headgear therethrough, wherein the frictional engagement member in a first configuration provides a disengaged configuration with respect to the filament, and in a second configuration provides an engaged configuration with respect to the filament;
 - the directional adjustment unit further comprising a filament guide configured to guide the filament as it passes through the directional adjustment unit, the filament guide being configured to engage the filament to restrain the filament against bending of the filament in the directional adjustment unit at a location in which it engages the filament;

wherein the frictional engagement member is movable about at least two degrees of freedom when the at least one frictional engagement member moves from the disengaged configuration to the engaged configuration.

105. A headgear for a respiratory mask, comprising:
- a filament of a strap of the headgear; and
 - a directional adjustment unit comprising:
 - a movable frictional engagement member comprising an aperture forming a cavity extending through the at least one frictional engagement member, wherein the aperture is arranged to receive a filament of a strap of the headgear therethrough, wherein the frictional

engagement member is movable between a first configuration and a second configuration with respect to the filament,
wherein the first configuration provides a pre-activation configuration in which the frictional engagement member engages the filament with a first friction force between the frictional engagement member and the filament;
and wherein the second configuration provides an engaged configuration in which the frictional engagement member engages the filament with a second friction force between the frictional engagement member and the filament;
the second friction force being greater than the first friction force.

106. A headgear for a respiratory mask, comprising:
a filament of a strap of the headgear; and
a directional adjustment unit comprising:
a movable frictional engagement member comprising an aperture forming a cavity extending through the at least one frictional engagement member, wherein the aperture is arranged to receive a filament of a strap of the headgear therethrough, wherein the frictional engagement member is movable between a first configuration and a second configuration with respect to the filament,
wherein the frictional engagement member frictionally engages the filament to resist movement of the filament through the aperture, when in both configurations, the resistance to movement being different for each configuration.
107. A headgear for a respiratory mask, comprising:
a filament of a strap of the headgear; and
a directional adjustment unit comprising:
a housing;
a movable frictional engagement member comprising an aperture forming a cavity extending through the at least one frictional engagement member, wherein the aperture is arranged to receive a filament of a strap of the headgear therethrough, the frictional engagement member being movably mounted in the housing;

wherein the frictional engagement member in a second configuration provides an engaged configuration with respect to the filament;

wherein, the housing comprises a housing wall against which the frictional engagement member abuts when in a first configuration; the housing wall limiting movement of the frictional engagement member;

wherein at least one of the frictional engagement member and the housing wall is configured to provide a discrete contact region between the frictional engagement member and the housing wall, the discrete contact region being less than the area of the housing wall.

108. A respiratory mask, comprising a directional adjustment unit of any one of claims 1 to 93 and a headgear of any one of claims 94 to 107.
109. A respiratory therapy system, comprising the respiratory mask of claim 108.