CLAIMS

1. A nasal seal for a nasal mask or interface, ~~assembly comprising:~~the seal formed of

~~a seal housing;~~

~~a~~ a flexible material ~~nasal seal connected or connectable to the seal housing to define a mask cavity, the nasal seal~~and extending between a face-contacting side and an outer side, ~~and~~ comprising:

a contacting surface comprising an edge that defines a ~~nose-receiving~~nasal seal opening ~~into the mask cavity~~ and the contacting surface being~~which is~~ configured to seal ~~about~~ against ~~the~~ a user's nose; and

a~~n under-nose support fixedly connected into the~~ nasal sling fixedly connected within the seal, ~~and which is configured to extend within~~ the nasal sling being located between the face-contacting side and the outer side, the nasal sling comprising a central extension portion that is connected to the edge of the~~mask cavity and having a~~ contacting surface ~~that is oriented to contact at least a portion of the under-nose surface of the user~~in an upper lip region.

2. A nasal ~~mask~~ seal~~interface assembly~~ according to claim 1, wherein the nasal sling has a contact~~ing~~ surface that is oriented to contact at least a portion of the under-nose surface of the user~~seals about the user's nose including across a portion of the nasal bridge in an area extending between the tip of the user's nose and the center of their nasal bridge~~.

3. A nasal ~~mask~~ seal~~interface assembly~~ according to claim 1 or claim 2, wherein the central extension portion of the nasal sling is configured to contact at least a portion of the columella of the nasal septum of the under-nose surface of the nose of the user~~under-nose support at least extends laterally across the nasal seal within the mask cavity between connecting locations at opposing sides or upper lateral regions within the nasal seal~~.

4. A nasal ~~mask~~ seal~~interface assembly~~ according to any one of the preceding claims, ~~3~~ wherein the contacting surface seals against the user's nose including across a portion of the nasal bridge in an area between the tip of the user's nose and the center of their nasal

bridge~~connecting locations at the opposing sides or upper lateral regions within nasal seal are isolated or displaced from the edge of the contacting surface of the nasal seal~~.

5. A nasal ~~mask~~ seal~~interface assembly~~ according to any one of the preceding claims,~~claim 3 or claim 4~~ wherein the central extension portion of the nasal sling is configured to contact at least a portion of the columella region of the under-nose surface of the user's nose between the tip and base of the nose~~connecting locations at the opposing sides or the upper lateral regions within the nasal seal are displaced from the contacting surface of the nasal seal~~.

6. A nasal ~~mask~~ seal~~interface assembly~~ according to ~~any one of~~ claim~~s 3~~ 5, wherein the central extension portion of the nasal sling is configured to contact the majority of the columella region of the under-nose surface of the user's nose extending from the base of the nose~~under-nose support comprises one or more extension or connecting portions that extend from within the mask cavity and connect to the edge of the contacting surface of the nasal seal in an upper lip region of the nasal seal~~.

7. A nasal ~~mask~~ seal~~interface assembly~~ according to any one of the preceding claims, wherein the nasal sling is configured to contact a portion or portions of the under-nose surface of the user's nose without substantially obstructing the user's nostrils that are aligned with open spaces of the nasal seal opening on either side of the central extension portion~~under-nose support comprises at least a main lateral portion with two ends that extends laterally across at least a portion of the mask cavity between connecting locations at opposing sides or upper lateral regions within the nasal seal~~.

8. A nasal ~~mask~~ seal~~interface assembly~~ according to any one of the preceding claim~~s, 7~~ wherein the thickness of the nasal sling, in a direction transverse to a contact surface of the nasal sling, is significantly smaller than the corresponding width of the contact surface at any location on the nasal sling~~under-nose support further comprises one or more extension or connecting portions that extend from the main lateral portion toward and connect to the nasal seal at an upper lip region of the nasal seal~~.

9. A nasal ~~mask~~ seal~~interface assembly~~ according to any one of the preceding claims, ~~7~~ wherein the thickness of the nasal sling, in a direction transverse to a contact surface of the nasal sling, is substantially similar to the thickness in the region of the contacting surface~~under-nose support further comprises a central connecting portion that extends between the main lateral portion and a portion of the edge of the contacting surface in an upper lip region~~ of the nasal seal.

10. A nasal ~~mask~~ seal~~interface assembly~~ according to any one of claims 1-8, ~~9~~ wherein the central ~~connecting~~ extension portion of the nasal sling comprises a varying thickness profile in a direction transverse to a contact ~~under-nose support has a contacting surface that is primarily configured to contact with at least a portion of the columella of the nasal septum of the under-nose~~ surface of the ~~nose of a user~~nasal sling.

11. A nasal ~~mask~~ seal~~interface assembly~~ according to any one of claims 1-8, ~~9 or claim 10~~ wherein the central ~~connecting~~ extension portion of the ~~under-nose support varies in~~nasal sling comprises a thickness, in a direction transverse to a contact surface of the nasal sling, that varies from a thicker region to a thinner region at or toward the edge of the contacting surface of the nasal seal ~~across its length from a thicker region at the end connecting to the main lateral portion and a thinner region at or toward the end connecting to the edge of the contacting surface~~.

12. A nasal ~~mask~~ seal~~interface assembly~~ according to ~~any one of~~ claims ~~9-~~11, wherein the thinner region of the central ~~connecting~~ extension portion of the ~~under-nose support~~nasal sling is uniform in thickness to the edge of the contacting surface of the nasal seal~~comprises a central region of reduced width relative to the width at its ends~~.

13. A nasal ~~mask~~ seal~~interface assembly~~ according to any one of the preceding claims, ~~12~~ wherein the width of a contact surface of the central ~~connecting~~ extension portion of the nasal sling progressively increases toward the edge of the contacting surface of the nasal seal~~varies along its length such that it is substantially hour-glass in shape or profile~~.

14. A nasal ~~mask~~ seal~~interface assembly~~ according to any one of the preceding claims, ~~7-13~~ wherein the width of a contact surface of the central extension portion of the nasal sling varies along its length such that it is substantially hour-glass in shape or profile~~main lateral portion of the under-nose support is integrally or fixedly connected at each end indirectly to inner surfaces of the nasal seal via a respective rib that extends from the inner surfaces of the nasal seal~~.

15. A nasal ~~mask~~ seal~~interface assembly~~ according to any one of claims 1-12, ~~14~~ wherein the width of a contact surface of the central extension portion of the nasal sling is uniform along its length~~each rib comprises a panel of flexible material having a first connecting edge portion that is connected to a portion of the inner surface of the nasal seal and a second connecting edge portion that is connected to a respective end of the main lateral portion of the under-nose support at another portion of its peripheral edge~~.

16. A nasal ~~mask~~ seal~~interface assembly~~ according to any one of the preceding claims, wherein at least a portion the central extension portion of the nasal sling is oriented at an angle relative to a seal axis that extends tangentially between outermost upper and lower contact points in a central region of the contracting surface of the nasal seal~~the ratio of the overall height to overall depth of the seal housing and nasal seal when assembled together is in the range of approximately 1:0.8 to approximately 1:1.2~~.

17. A nasal ~~mask~~ seal~~interface assembly~~ according to ~~any one of the preceding~~ claim~~s~~ 16, wherein at least a portion of the central extension portion of the nasal sling is oriented at an angle in the range of approximately 40° to approximately 80° relative to the seal axis~~the ratio of the overall height to overall depth to overall lateral width of the seal housing and nasal seal when assembled together is in the range of approximately 1:0.8:1 to approximately 1:1.2:1.4~~.

18. A nasal seal according to any one of the preceding claims, wherein the nasal seal is defined by the contacting surface at the face-contacting side and a sidewall portion that extends rearwardly from the contacting surface to the outer side of the nasal seal and which terminates in an opening or connecting edge for coupling or connecting to a

complementary seal housing~~mask interface assembly according to any one of the preceding claims further comprising:~~

~~a yoke connected or connectable to the seal housing,~~

~~headgear connected or connectable to the yoke, and~~

~~an inlet opening in the seal housing for connecting to a gases supply conduit~~.

19. A nasal ~~mask~~ seal~~interface assembly~~ according to any one of the preceding claims, ~~18~~ wherein the outer side of the nasal seal comprises a peripheral channel that is configured to receive a complementary peripheral ridge of a complementary seal housing to connect the nasal seal to the seal housing~~seal housing comprises a yoke channel extending lateral across the exterior surface of the seal housing that is configured to releasable receive and retain the yoke~~.

20. A nasal ~~mask~~ seal~~interface assembly~~ according to any one of the preceding claims, ~~19~~ wherein the nasal seal is formed of a material having varying thickness across regions of the nasal seal, the nasal seal defined by a front region extending toward the face-contacting side of the nasal seal from an intermediate boundary and which comprises the contacting surface, and a rear region extending toward the outer side of the nasal seal from the intermediate boundary, the rear region being thicker on average than the front region~~yoke is curved along its length between its ends, having a concave inner engagement surface with the yoke channel and a convex outer surface~~.

21. A nasal ~~mask~~ seal~~interface~~ according to ~~any one of~~ claim~~s~~ ~~18~~-20, wherein the front region comprises a thinned edge region that extends about the periphery of the edge of the contacting surface, the thinned edge region being thinner than the remaining portion of the front region~~further comprising a conduit frame that is releasably received and retained in the inlet opening of the seal housing, the conduit frame being connected or connectable to an end of the gases supply conduit~~.

~~22. A nasal mask interface according to claim 21 wherein the conduit frame is a hollow body that is ovular in shape, and wherein the conduit frame is symmetrical such that is can be releasably received and retained in the inlet opening of the seal housing in either of two orientations that are 180 degrees apart.~~

~~23. A nasal mask interface assembly according to any one of the preceding claims wherein at any location along the under-nose support, the under-nose support is substantially thinner in the transverse direction relative to its contact surface than the corresponding width of the contact surface at that location.~~

~~24. A nasal seal for a nasal mask or interface, the seal formed of a flexible material and extending between a face-contacting side and an outer side, comprising:~~

~~a contacting surface comprising an edge that defines a nose-receiving opening and which is configured to seal about the user's nose; and~~

~~an under-nose support fixedly connected within the seal and which is located rearward of the nose-receiving opening and having a contact surface that is oriented to contact at least a portion of the under-nose surface of the user.~~

225. A nasal mask interface assembly comprising:

a seal housing;

a ~~flexible~~ nasal seal according to any one of claims 1-21, that is connected or connectable to the seal housing to define a mask cavity~~,~~; ~~the nasal seal extending between a face-contacting side and an outer side,~~ and

~~comprising:~~

~~a contacting surface comprising an edge that defines a nose-receiving opening into the mask cavity and which is configured to seal about the user's nose; and~~

~~an under-nose support fixedly connected within the nasal seal and which is configured to extend within the mask cavity and having a contact surface that is oriented to contact at least a portion of the under-nose surface of the user; and~~

headgear comprising single left and right side straps configured to extend over the user's ears and which connect to the seal housing.

236. A nasal mask interface assembly according to claim 225~~,~~ wherein the left and right side straps of the headgear connect to respective attachment locations at or toward respective sides of the seal housing.

~~27. A nasal seal for a nasal mask or interface, the seal formed of a flexible material and extending between a face-contacting side and an outer side, comprising:~~

~~a contacting surface comprising an edge that defines a nose-receiving opening and which is configured to seal about the user's nose; and~~

~~an under-nose support fixedly connected to extend within the nasal seal.~~

~~28. A nasal seal according to claim 27 wherein the under-nose support at least extends laterally across the nasal seal within the mask cavity between connecting locations at opposing sides or upper lateral regions within the nasal seal.~~

~~29. A nasal seal according to claim 27 or claim 28 wherein the under-nose support comprises one or more extension or connecting portions that extend from within the mask cavity and connect to the edge of the contacting surface of the nasal seal in an upper lip region of the nasal seal.~~

~~30. A nasal seal according to any one of claims 27-29 wherein the contact surface of at least a central portion of the under-nose support is oriented at an angle relative to a seal axis that extends tangentially between outermost upper and lower contact points in a central region of the contacting surface of the nasal seal.~~

~~31. A nasal seal according to claim 30 wherein the contact surface of the central portion of the under-nose support is oriented at an angle in the range of approximately 40° to approximately 80° relative to the seal axis.~~

~~32. A nasal seal according to any one of claims 27-31 wherein the nasal seal is defined by the contact surface at the face-contacting side and a sidewall portion that extends rearwardly from the contact surface to the outer side of the nasal seal and which terminates in an opening or connecting edge for coupling or connected to a complimentary seal housing.~~

~~33. A nasal mask interface assembly comprising:~~

~~a seal housing comprising;~~

~~a flexible nasal seal connected or connectable to the seal housing to define a mask cavity, the nasal seal extending between a face-contacting side and an outer side, and comprising:~~

~~a contacting surface comprising an edge that defines a nose-receiving opening into the mask cavity and which is configured to seal about the user's nose; and~~

~~an arrangement of bias vent holes in the seal housing, wherein the arrangement of bias vent holes comprises at least one upper array of bias vent holes extending laterally across an upper region of the seal housing, and at least one lateral array of bias vent holes extending down portions of the sides of the seal housing.~~

2~~3~~4. A nasal mask interface assembly according to claim 22~~33~~ or claim 23, wherein the seal housing comprises an arrangement ~~each array~~ of bias vent holes ~~is a line array of spaced-part apertures or holes extending into the housing~~.

2~~3~~5. A nasal mask interface assembly according to any one of claims 22-24, wherein the seal housing comprises ~~comprising:~~

~~a seal housing comprising~~ an inlet opening~~;~~, and the assembly further comprising

~~a flexible nasal seal connected or connectable to the seal housing to define a mask cavity, the nasal seal extending between a face-contacting side and an outer side, and comprising:~~

~~a contacting surface comprising an edge that defines a nose-receiving opening into the mask cavity and which is configured to seal about the user's nose; and~~

a conduit frame that is releasably received and retained in the inlet opening of the seal housing, the conduit frame being connected or connectable to an end of ~~the~~ a gases supply conduit~~, wherein the conduit frame is symmetrical such that is can be releasably received and retained in the inlet opening of the seal housing in either of two orientations that are 180 degrees apart~~.

2~~3~~6. A nasal mask interface assembly according to claim 2~~3~~5, wherein the conduit frame is a hollow body that is ovular in shape~~.~~, and wherein the conduit frame is symmetrical such that it can be releasably received and retained in the inlet opening of the seal housing in either of two orientations that are 180° apart.

237. A nasal mask interface assembly according to any one of claims 22-26, wherein the nasal seal is formed of silicone and the seal housing is rigid and formed from plasticseal for a nasal mask or interface, the seal formed of a flexible material and extending between a face-contacting side and an outer side, comprising:

a contacting surface comprising an edge that defines a nose-receiving opening and which is configured to seal about the user's nose; and wherein the ratio of overall height to overall lateral width of the nasal seal is in the range of approximately 1:1 to approximately 1:1.4.

238. A nasal mask interface assembly according to any one of claims 22-27, wherein the nasal seal is removably connectable to the seal housingseal according to claim 37 wherein the ratio of the overall height to overall lateral width of the nasal seal is approximately 1:1.2.

329. A nasal mask interface assembly according to any one of claims 22-27, wherein the nasal seal is permanently or semi-permanently coupled to the seal housingseal according to claim 37 or claim 38 wherein the ratio of the overall height to overall lateral width to overall depth of the nasal seal is in the range of approximately 1:1:0.6 to approximately 1:1.4:1.

340. A nasal mask interface assembly according to any one of claims 22-29, wherein a peripheral edge of the outer side of the nasal seal is secured to a complementary shaped connecting edge of the seal housingseal according to claim 39 wherein the ratio of the overall height to overall lateral width to overall depth of the nasal seal is approximately 1:1.2:0.8.

31. A nasal mask interface assembly according to claim 29, wherein a peripheral edge of the outer side of the nasal seal is overmolded to a complementary shaped opening edge of the seal housing.