CLAIMS

1. An aerosol mixing plenum for a filtration system, the aerosol mixing plenum comprising:

a housing having an airflow inlet aperture;

a collar extending from the housing and circumscribing the inlet aperture;

a damper disposed in the housing and positionable to selectively seal the inlet aperture; and

an aerosol injection ring disposed in the housing between the damper and the inlet aperture.

2. The apparatus of claim 1, wherein the damper moves axially relative to a center line of the collar.

3. The apparatus of claim 1, wherein the aerosol injection ring is disposed in the collar upstream of the bubble-tight damper.

4. The apparatus of claim 3, wherein the aerosol injection ring further comprises:

a plurality of aerosol injection holes having a radially inward orientation.

5. The apparatus of claim 1, wherein the aerosol injection ring is disposed in the housing outward of the collar.

6. The apparatus of claim 2, wherein the damper further comprises:

a sealing element that provides a bubble-tight seal when the damper is in a closed position.

7. The apparatus of claim 6, wherein the bubble-tight damper further comprises:

a substantially conical body.

8. The apparatus of claim 7, wherein the conical body is in conical, ellipsoidal, hemispherical or rounding form.

9. The apparatus of claim 6, wherein the collar further comprises:

a lip.

10. The apparatus of claim 9, wherein the sealing element of the damper engages the lip when in the closed position.

11. The apparatus of claim 10, wherein the damper is linearly movable without rotation.

12. The apparatus of claim 11, wherein the sealing element further comprises:

a gel-filled track.

13. An aerosol mixing plenum for a filtration system, the aerosol mixing plenum comprising:

a housing having an airflow inlet aperture and an airflow outlet aperture;

a collar extending from the housing and circumscribing the airflow inlet aperture;

a bubble-tight damper disposed in the housing and positionable to selectively seal the inlet aperture; and

a first aerosol injection ring disposed in the collar.

14. The apparatus of claim 13, further comprising:

a filter sealing portion disposed in the housing between the airflow inlet aperture and the airflow outlet aperture.

15. The apparatus of claim 13, wherein the bubble-type damper moves axially without rotating relating to a center line of the collar.

16. The apparatus of claim 13, wherein the first aerosol injection ring further comprises:

a plurality of aerosol injection holes having a radial orientation.

17. An aerosol mixing plenum for a filtration system, the aerosol mixing plenum comprising:

a housing having an airflow inlet aperture;

a collar extending from the housing and circumscribing the inlet aperture;

a lip formed in the collar;

a bubble-tight damper disposed in the housing and positionable, without rotating, to selectively seal the inlet aperture by engaging with the lip formed in the collar; and

an aerosol injection ring disposed in the housing between the bubble-tight damper and the inlet aperture.

18. The apparatus of claim 17, wherein the aerosol injection ring further comprises:

a plurality of aerosol injection holes having a radially inward orientation.

19. The apparatus of claim 17, wherein the bubble-tight tamper moves axially relative to a center line of the collar.

CLAIMS

1. An aerosol mixing plenum for a filtration system, the aerosol mixing plenum comprising:

a housing having an airflow inlet aperture;

a collar extending from the housing and circumscribing the inlet aperture;

a bubble-tight damper disposed in the housing or in the collar and positionable to selectively seal the inlet aperture; and

an aerosol injection ring disposed in the collar between the damper and an inlet aperture of the collar.

2. The apparatus of claim 1, wherein the damper moves axially relative to a center line of the collar.

3. The apparatus of claim 1, wherein the aerosol injection ring is disposed in the collar upstream of the bubble-tight damper.

4. The apparatus of claim 3, wherein the aerosol injection ring further comprises:

a plurality of aerosol injection holes having a radially inward orientation.

5. An aerosol mixing plenum for a filtration system, the aerosol mixing plenum comprising:

a housing having an airflow inlet aperture;

a collar extending from the housing and circumscribing the inlet aperture;

a bubble-tight damper disposed in the housing or in the collar and positionable to selectively seal the inlet aperture; and

an aerosol injection ring fs disposed in the housing outward of the collar.

6. The apparatus of claim 2, wherein the damper further comprises:

a sealing element that provides a bubble-tight seal when the damper is in a closed position.

7. The apparatus of claim 6, wherein the bubble-tight damper further comprises:

a substantially conical body.

8. The apparatus of claim 7, wherein the conical body is in conical, ellipsoidal, hemispherical or rounding form.

9. The apparatus of claim 6, wherein the collar further comprises:

a lip.

10. The apparatus of claim 9, wherein the sealing element of the damper engages the lip when in the closed position.

11. The apparatus of claim 10, wherein the damper is linearly movable without rotation.

12. The apparatus of claim 11, wherein the sealing element further comprises:

a gel-filled track.

13. An aerosol mixing plenum for a filtration system, the aerosol mixing plenum comprising:

a housing having an airflow inlet aperture and an airflow outlet aperture;

a collar extending from the housing and circumscribing the airflow inlet aperture;

a bubble-tight damper disposed in the housing or in the collar and positionable to selectively seal the inlet aperture; and

a first aerosol injection ring disposed in the collar.

14. The apparatus of claim 13, further comprising:

a filter sealing portion disposed in the housing between the airflow inlet aperture and the airflow outlet aperture.

15. The apparatus of claim 13, wherein the bubble-tight damper moves axially without rotating relating to a center line of the collar.

16. The apparatus of claim 13, wherein the first aerosol injection ring further comprises:

a plurality of aerosol injection holes having a radial orientation.

17. An aerosol mixing plenum for a filtration system, the aerosol mixing plenum comprising:

a housing having an airflow inlet aperture;

a collar extending from the housing and circumscribing the inlet aperture;

a lip formed in the collar;

a bubble-tight damper disposed in the housing or in the collar and positionable, without rotating, to selectively seal the inlet aperture by engaging with the lip formed in the collar; and

an aerosol injection ring disposed in the collar between the bubble-tight damper and an inlet of the collar.

18. The apparatus of claim 17, wherein the aerosol injection ring further comprises:

a plurality of aerosol injection holes having a radially inward orientation.

19. The apparatus of claim 17, wherein the bubble-tight damper moves axially relative to a center line of the collar.