CLAIMS

1. An adjustable flow nozzle system comprising:

an adjustable flow manifold comprising a manifold body defining an axial channel that extends between a distal end portion defining a distal opening and a proximal end portion defining a proximal opening, a plurality of access openings formed along one side of the manifold body and a plurality of apertures formed on the opposite side of the manifold body, wherein the plurality of access openings and apertures communicate with the axial channel, and

a plurality adjustable flow nozzles coupled to a respective one of the plurality of apertures, each of the plurality of adjustable flow nozzles comprising:

a nozzle component configured for providing a fluid pathway for a fluid exiting the nozzle component;

a retainer orifice insert engaged to the nozzle component, the retainer orifice insert defining at least one opening; and

a manifold orifice insert engaged to the retainer orifice insert, the manifold orifice insert defining at least one opening in a co-axial relation with the at least one opening of the retainer orifice insert in an overlapping arrangement such that a collective opening between the at least one opening of the manifold orifice insert and the at least one opening of the retainer orifice insert, wherein the manifold orifice insert is operable to rotate relative to the retainer orifice insert such that a cross-sectional area of the collective opening is adjusted, wherein adjusting the cross-sectional area of the collective opening gradually adjusts a flow rate through each of the plurality of adjustable flow

nozzles, and wherein each of the plurality of adjustable flow nozzles is operable for individual adjustment independent of other adjustable flow nozzles of the plurality of adjustable flow nozzles.

2. The adjustable flow nozzle system of claim 1, wherein the manifold orifice insert defines first and second key receptacles for providing respective engagement points to rotate the manifold orifice insert relative to the retainer orifice insert.

3. The adjustable flow nozzle system of claim 1, wherein the retainer orifice insert is fixed in position relative to the manifold orifice insert.

4. The adjustable flow nozzle system of claim 1, wherein the flow rate exiting each of the plurality of adjustable flow nozzles is in a range between a minimum flow rate and a maximum flow rate.

5. The adjustable flow nozzle system of claim 1, wherein the flow rate of each of the plurality of adjustable flow nozzles is incrementally adjusted through the overlapping arrangement of the at least one opening of the manifold orifice insert with the at least one opening of the retainer orifice insert such that each of the plurality of adjustable flow nozzles is incrementally adjustable between a minimum flow rate when minimum overlap between the first and second apertures occurs and a maximum flow rate when maximum overlap between the at least one opening of the manifold retainer insert and the at least one opening of the retainer orifice insert occurs.

6. The adjustable flow nozzle system of claim 1, wherein each of the plurality of adjustable flow nozzles further comprises a nozzle retainer engaged to the nozzle component for coupling each of the plurality of adjustable flow nozzles to the adjustable flow manifold.

7. The adjustable flow nozzle system of claim 1, further comprising:

a plurality of plugs configured to seal a respective one of the plurality of access openings.

8. The adjustable flow nozzle system of claim 1, wherein the retainer orifice insert defines an outwardly extending key portion for aligning the retainer orifice insert relative to the manifold orifice insert.

9. The adjustable flow nozzle system of claim 1, further comprising:

an adjustment key having an elongated key body defining a proximal portion and a distal portion, at least one key element extending from the proximal portion of the elongated key body, the at least one key element being configured to engage a respective key receptacle formed along the manifold orifice insert for rotating the manifold orifice insert relative to the retainer orifice insert.

10. The adjustable flow nozzle system of claim 1, wherein the manifold orifice insert further defines a first central opening and the retainer orifice insert further defines a second central opening; and wherein the first central opening is in a co-axial alignment with the second central opening in a maximum overlap arrangement to establish a minimum flow rate through each of the plurality of adjustable nozzles.