We Claim:

1. A method of forming a flowmeter, comprising the steps of:

bending a flow tube to create at least one thermal expansion bend thereon;

aligning the flow tube with at least one anchor block;

brazing the flow tube to the at least one anchor block;

allowing the flow tube and the at least one anchor block to cool and contract after brazing;

attaching the at least one anchor block to a support block after the flow tube has been brazed to the at least one anchor block;

attaching a first and second manifold to each end of the flow tube, respectively; and

attaching the support block and at least one of the first and second manifolds to a flowmeter case.

2. A method of forming a flowmeter, comprising the steps of:

bending a flow tube to create at least one thermal expansion bend thereon;

aligning the flow tube with at least one anchor block;

brazing the flow tube to the at least one anchor block;

attaching a first end of the flow tube to a first manifold and a second end of the flow tube to a second manifold, wherein the first and second manifolds each comprise a portion of a support block;

attaching the portion of the support block of the first manifold to the portion of the support block of the second manifold;

attaching the at least one anchor block to at least one of the portion of the support block of the first manifold and the portion of the support block of the second manifold; and

attaching the support block and at least one of the first and second manifolds to a flowmeter case.

3. The method of Claims 1 or 2, wherein the step of attaching the at least one anchor block to the support block comprises welding at least a portion of the at least

one anchor block to the support block after the step of allowing the flow tube and the at least one anchor block to cool and contract a predetermined degree after brazing.

4. The method of Claim 3, wherein the welding comprises plug welding a boss defined by one of the at least one anchor block and the support block with a mating aperture defined by one of the anchor block and the support block.

5. The method of Claim 4, wherein the boss is insertable into the mating aperture in only a single orientation.

6. The method of Claims 1 or 2, comprising the step of attaching a tube support that contacts at least a portion of the flow tube to at least one of the at least one anchor block and the support block.

7. The method of Claim 6, wherein:

the flow tube comprises a single-tube, dual loop flow tube; and wherein the method comprises the steps of:

forming a channel in the tube support that sweeps along a path in only a single plane; and

bending the flow tube so that a first inlet bend thereon is coplanar with a first flow tube loop; and

bending the flow tube so that a second inlet bend thereon is coplanar with a second flow tube loop.

8. The method of Claim 6, wherein:

the flow tube comprises a single-tube, dual loop flow tube; and wherein the method comprises the steps of:

forming a channel in the tube support that sweeps along a path in a single plane; and

bending the flow tube so that a crossover section of the flow tube comprises a first portion thereof proximate an outlet bend, the first portion being coplanar with a first flow tube loop; and

bending the flow tube so that the crossover section of the flow tube comprises a second portion thereof proximate an inlet bend, the second portion being coplanar with a second flow tube loop.

9. The method of Claims 1 or 2, wherein the step of bending the flow tube to create at least one thermal expansion bend thereon comprises the step of:

bending a portion of the flow tube located between the manifold and the at least one anchor block to define a first apex.

10. The method of Claim 9, wherein the height of the first apex is between 0.01 inches and 1 inch from a proximate non-bent portion of the flow tube.

11. The method of Claims 1 or 2, wherein the step of bending the flow tube to create at least one thermal expansion bend thereon comprises the step of:

bending a portion of the flow tube located between a first anchor block of the at least one anchor block and a second anchor block of the at least one anchor block to define a second apex.

12. The method of Claim 11, wherein the height of the second apex is between 0.01 inches and 1 inch from a proximate non-bent portion of the flow tube.

13. The method of Claims 1 or 2, wherein the step of attaching the manifold to each end of the flow tube comprises at least one of welding and brazing a manifold to each end of the flow tube.

14. The method of Claim 13, wherein the step of attaching the manifold to each end of the support block comprises welding a boss defined by one of the manifold and the support block with a mating aperture defined by one of the at least one anchor block and the support block.

15. The method of Claim 14, wherein the boss is fully insertable into the mating aperture in only a single orientation.

16. The method of Claim 2, wherein the step of attaching the portion of the support block of the first manifold with the portion of the support block of the second manifold comprises welding the portion of the support block of the first manifold to the portion of the support block of the second manifold.

17. The method of Claims 1 or 2 comprising the step of bending an offset bend in a crossover section of the flow tube.

18. The method of Claim 8, wherein the step of forming a channel in the tube support that sweeps along a path in a single plane comprises forming a channel wherein an intrados of the flow tube engages only at the outermost edges thereon to define a gap between the flow tube and the tube support that is between 0.0025 and 0.0035 inches and wherein an extrados of the flow tube contacts the tube support proximate the center of the channel to define a gap proximate each outermost edge of the tube support.

19. A sensor assembly (10) for a flowmeter, comprising:

a flow tube (20) configured to comprise a first loop (24) and a second loop (26) connected by a crossover section (22), wherein the flow tube (20) comprises at least one thermal expansion bend (300, 302);

a first anchor block (30a) and a second anchor block (30b) that are each attachable to the flowtube (20) proximate the crossover section (22);

at least one tube support (106) attachable to at least one of the first anchor block (30a) and the second anchor block (30b);

a first manifold (90) and a second manifold (92) that are attachable to an inlet (50) and an outlet (52) of the flow tube (20), respectively;

a support block (100) attachable to the first anchor block (30a), the second anchor block (30b), the first manifold (90), and the second manifold (92);

a case (40) attachable to the support block (100); and

wherein the flow tube (20), the first anchor block (30a), the second anchor block (30b), the first manifold (90), and the second manifold (92) are configured to

allow a predetermined degree of movement due to heating and cooling cycles when not attached to the support block (100).

20. The sensor assembly (10) of Claim 19 wherein:

the first anchor block (30a) and the second anchor block (30b) are brazed to the flow tube (20); and

the first manifold (90) and the second manifold (92) are at least one of welded and brazed to the flow tube (20).

21. The sensor assembly (10) of Claim 19 comprising:

at least one boss (102) defined by each of the first anchor block (30a) and the second anchor block (30b); and

at least one aperture (104) defined by the support block (100) having a size and dimension to engage the at least one boss (102).

22. The sensor assembly (10) of Claim 19 comprising:

at least one aperture (104) defined by each of the first anchor block (30a) and the second anchor block (30b); and

at least one boss (102) defined by the support block (100) having a size and dimension to engage the at least one aperture (104).

23. The sensor assembly (10) of Claim 19 wherein the first manifold (90) comprises a first support block portion (100a) and the second manifold (92) comprises a second support block portion (100b), wherein the first and second support block portions (100a, 100b) are attachable to each other to form a support block (100).

24. The sensor assembly (10) of Claim 23 wherein the first and second support block portions (100a, 100b) are welded to each other.

25. The sensor assembly (10) of Claim 19 comprising:

at least one boss (102a, 102b) defined by each of the first anchor block (30a) and the second anchor block (30b); and

at least one mating aperture (104a, 104b) defined by the support block (100) having a size and dimension to engage the at least one boss (102a, 102b), wherein the size and dimension of the at least one boss (102a, 102b) is keyed to the at least one aperture (104a, 104b).

26. The sensor assembly (10) of Claim 25, wherein the at least one boss (102a, 102b) is fully insertable into the at least one aperture (104a, 104b) in only a single orientation.

27. The sensor assembly (10) of Claim 25, wherein the at least one boss (102a, 102b) comprises an elongated round shape.

28. The sensor assembly (10) of Claim 19 comprising:

at least one boss (102c) defined by each of the first manifold (90) and the second manifold (92); and

at least one mating aperture (104c) defined by the support block (100) having a size and dimension to engage the at least one boss (102c), wherein the size and dimension of the at least one boss (102c) is keyed to the at least one aperture (104c).

29. The sensor assembly (10) of Claim 28, wherein the at least one boss (102c) is fully insertable into the at least one aperture (104c) in only a single orientation.

30. The sensor assembly (10) of Claim 28, wherein the at least one boss (102c) comprises an elongated round shape.

31. The sensor assembly (10) of Claim 19, wherein:

the flow tube (20) comprises a single-tube, dual loop flow tube, wherein an inlet bend (27) thereon is coplanar with the first loop (26) and an outlet bend (29) thereon is coplanar with the second loop (24), and wherein:

the sensor assembly (10) comprises a channel (107) in the tube support (106) that sweeps along a path in only a single plane, and wherein the flow tube (20) is a size and dimension to engage the channel (107) in the tube support (106).

32. The sensor assembly (10) of Claim 19, wherein:

the flow tube (20) comprises a single-tube, dual loop flow tube, wherein the crossover section (22) comprises a first portion proximate an outlet bend (29), the first portion being coplanar with the first loop (26), and wherein the crossover section (22) comprises a second portion proximate an inlet bend (27), the second portion being coplanar with the second loop (24); and

the sensor assembly (10) comprises a channel (107) in the tube support (106) that sweeps along a path in only a single plane.

33. The sensor assembly (10) of Claim 19, wherein the thermal expansion bend (300) is located on a portion of the flow tube (20) located between one of the first manifold (90) and the second manifold (92) and a proximate anchor block (30a, 30b) to define a first apex.

34. The sensor assembly (10) of Claim 33, wherein the height of the first apex is between 0.01 inches and 1 inch from a proximate non-bent portion of the flow tube (20).

35. The sensor assembly (10) of Claim 19, wherein the thermal expansion bend (302) is located on a portion of the flow tube (20) located between the first anchor block (30a) and the second anchor block (30b) to define a second apex.

36. The sensor assembly (10) of Claim 35, wherein the height of the second apex is between 0.01 inches and 1 inch from a proximate non-bent portion of the flow tube (20).

37. The sensor assembly (10) of Claim 19, comprising an offset bend (402) in a crossover section (22) of the flow tube (20).

38. The sensor assembly (10) of Claims 31 or 32, wherein the channel (107) in the tube support (106) comprises a channel (107) wherein an intrados of the flow tube (20)

engages the tube support (106) only at the outermost edges (E1, E2) to define a gap (G1) between the flow tube (20) and the tube support (106) that is between 0.0025 and 0.0035 inches and an extrados of the flow tube (20) engages the tube support (106) between the outermost edges (E1, E2) to define a gap at the outermost edges (E1, E2).