CLAIMS

1. A medical device for use with a fluid storage device comprising: a hub comprising a sidewall having an inside surface defining a cavity, an open proximal end and a distal end having an opening therethrough in fluid communication with the cavity, the distal end further including a first indicating element extending proximally into the cavity from the opening; and means for indicating application of a force on the hub sufficient to result in fluid-tight engagement with a fluid storage device, the means comprising a hollow cylindrical body having a proximal end, a distal end and a tapered inside surface extending from the proximal end to the distal end that has a diameter that increases from the distal end to the proximal end forming at least two contact points with the first indicating element during application of the force on the hub.

2. The device of claim 1, wherein the first indicating element comprises a radially extending protrusion.

3. The device of claim 1, wherein the hollow cylindrical body comprises a circular cross-section that is maintained during application of the sufficient force on the hub.

4. The device of claim 3, wherein fluid-tight engagement of the hub and the fluid storage device produces tactile feedback.

5. The medical device of claim 1, further comprising a needle cannula attached to the distal end of the hub and extending in the distal direction, the needle cannula having a proximal end, a distal end and a lumen therethrough in fluid communication with the cavity.

6. The medical device of claim 5 further comprising a safety cap covering the needle cannula and wherein the hub comprises a coaxial wall extending from the distal end of the hub forming a channel between the coaxial wall and the sidewall for receiving the safety cap.

7. The medical device of claim 1, wherein the fluid storage device includes a male luer connector having a visual indicator that is fully visible prior to the fluid-tight engagement of the fluid storage device and the cavity of the hub and a predetermined portion of which is visible after fluid-tight engagement of the fluid storage device and the hub.

8. A medical device for use with a fluid storage device comprising: a hub including a sidewall having an inside surface defining a cavity, an open proximal end and a distal end having an opening therethrough in fluid communication with the cavity, the distal end further including a first indicating element surrounding the opening and extending proximally into the cavity, a second indicating element disposed in the cavity of the hub comprising a hollow cylindrical body including an open proximal end, an open distal end and an inside surface defining a cross-sectional width and including a tapered portion adjacent the open distal end, a ramped portion proximally adjacent to the tapered portion and an enlarged portion adjacent the open proximal end of the second indicating element, the ramped portion having an axial

length extending from the tapered portion toward the enlarged portion such that the cross-sectional width of the inside surface of the second indicating element increases along the axial length of the ramped portion from the tapered portion toward the enlarged portion, the second indicating element adapted to slide distally over the first indicating element.

9. The medical device of claim 8, wherein the ramped portion of the inside surface of the second indicating element forms a line contact interaction between the inside surface of the second indicating element and the first indicating element.

10. The medical device of claim 9, wherein the hub attaches to a fluid storage container including a male luer connector having a visual indicator that is fully visible prior to fluid-tight engagement of the fluid storage device and the cavity of the hub and a predetermined portion of which is visible upon fluid-tight engagement of the fluid storage device and the hub.

11. The medical device of claim 8, wherein the first indicating element comprises a radially outwardly extending protrusion adapted to advance proximally past the tapered portion of the second indicating element upon application of a pre-determined force on the second indicating element in a distal direction relative to the first indicating element.

12. The medical device of claim 8, wherein the first indicating element comprises a radially outwardly extending protrusion adapted to prevent the second indicating element from engaging the first indicating element until a pre-determined force is applied to the second indicating element in a proximal direction relative to the first indicating element.

13. The medical device of claim 8, wherein the axial length of the ramped portion is reduced to provide tactile feedback upon fluid-tight engagement of the fluid storage device and the hub.

14. The medical device of claim 8, further comprising a needle cannula attached to the distal end of the hub and extending in the distal direction, the needle cannula having a proximal end, a distal end and a lumen therethrough in fluid communication with the cavity.

15. A medical device for use with a fluid storage container comprising: a hub including a sidewall having an inside surface defining a cavity, an open proximal end, and a distal end having an opening therethrough in fluid communication with the cavity; a first indicating element having a distal end attached to the distal end of the hub and a free proximal end extending into the cavity, the first indicating element forming a peripheral recess with the sidewall of the hub; and a second indicating element disposed in the cavity of the hub including an open proximal end, an open distal end and a body extending from the open proximal end of the second indicating element to the open distal end, the body having an inside surface defining a hollow interior for enveloping the first indicating element to permit the body to enter the recess of the hub upon application of a distally directed force on the second indicating element, wherein the inside surface of the second indicating element is

tapered to form a line contact interaction with the first indicating element upon application of a force on the second indicating element in a distal direction and the inside surface of the second indicating element comprises a first diameter portion adjacent the open distal end of the second indicating element and a second diameter portion having an axial length extending from the first diameter portion to the open proximal end such that the diameter of the inside surface increases along the second diameter portion from the first diameter portion toward the open proximal end of the second indicating element.

16. The medical device of claim 15, wherein the open distal end of the second indicating element comprises a continuous perimeter that maintains a circular form upon application of a distally directed force on the second indicating element until the hub and the fluid container are in fluid-tight engagement.

17. The medical device of claim 15, wherein the first indicating element comprises an outwardly radially extending protrusion that prevents the body portion of the second indicating element from entering the recess until a pre-determined distally-directed force is applied to the second indicating element.

18. The medical device of claim 15, wherein one of the first indicating element or the second indicating element is flexible.

19. The medical device of claim 15, further comprising a needle cannula attached to the distal end of the hub and extending in the distal direction, the needle cannula having a proximal end, a distal end and a lumen therethrough in fluid communication with the cavity.

20. The medical device of claim 15, wherein the hub attaches to a fluid storage container including a tip having a visual indicator that is fully visible prior to fluid-tight engagement of the fluid storage container and the cavity of the hub and a predetermined portion of which is visible upon fluid-tight engagement of the fluid storage container and the hub.