

SUMMARY

[0004] The present disclosure provides improved infusion pump housings with anti-occlusion intravenous (“IV”) tube ports. The anti-occlusion IV tube ports prevent full elastomeric IV tube occlusion where the tube exits the pump, and is particularly useful in instances when the tube exits the pump at a sharp exit angle. The tube port may include one or more gradually increasing rib(s) to ensure that when the IV tube is bent leaving the pump, it is divided into two or more regions that do not fully collapse, thereby allowing the liquid (e.g., medication) to continue flowing through the tube to the patient. The gradual increase in the rib(s) profile ensures that the IV tube does not occlude fully, even if the tube is bent or twisted in multiple directions relative to the pump housing. The anti-occlusion IV tube port may include multiple ribs. For example, multiple ribs strategically spaced on the exterior of the pump housing may advantageously prevent IV tube collapse and occlusion when the tube is bent at varying exit angles.

[0005] Aspects of the subject matter described herein may be useful alone or in combination with any one or more of the other aspect described herein. Without limiting the foregoing description, in a first aspect of the present disclosure, which may be combined with any other aspect listed herein unless specified otherwise, an infusion pump includes a housing, which includes a tube port adapted to receive an IV tube. The tube port includes a tube channel and a rib. The channel has an inlet end located within the housing and an outlet end located at an edge of the housing. The rib is positioned along the tube channel adjacent the outlet end. Additionally, the rib is formed to extend outwardly from a surface of the channel and is configured to split the tube channel into at least two parallel channels. Furthermore, the rib can, for example, be formed to extend outwardly from a surface of the tube channel towards the tube when the tube is passed through the tube port thereby indenting the tube to form at least two parallel tube regions in the tube and tending to prevent full occlusion of the tube.

[0006] In a second aspect of the present disclosure, which may be combined with any other aspect listed herein unless specified otherwise, the rib is configured to split the tube channel into a first channel and a second channel.

[0007] In a third aspect of the present disclosure, which may be combined with any other aspect listed herein unless specified otherwise, the tube channel is positioned along an interior wall of the housing and is at least substantially perpendicular to the tube port.

[0008] In a fourth aspect of the present disclosure, which may be combined with any other aspect listed herein unless specified otherwise, the tube channel is positioned along an interior wall of the housing and is at least substantially parallel to the tube port.

CLAIMS

The invention is claimed as follows:

1. An infusion pump comprising:
a housing including a tube port configured to receive an intravenous (“IV”) tube,
wherein the tube port includes
a tube channel having an inlet end located within the housing and an outlet end located at an edge of the housing, and
a rib positioned along the tube channel adjacent the outlet end, wherein the rib is formed to extend outwardly from a surface of the channel and is configured to split the tube channel into at least two parallel channels.
2. The infusion pump of Claim 1, wherein the at least two parallel channels are configured to accept respective parallel tube regions to prevent fluid occlusion within the IV tube when the IV tube is pressed against the rib.
3. The infusion pump of any of Claims 1 to 2, wherein the tube channel is positioned along an interior wall of the housing.
4. The infusion pump of any of Claims 1 to 2, wherein the tube channel is configured to cradle a portion of the IV tube.
5. The infusion pump of any of Claims 1 to 4, which is configured such that the tube extends along the tube channel when the tube is pressed through the tube port.
6. A housing for an infusion pump comprising:
a tube port configured to receive an intravenous (“IV”) tube, wherein the tube port includes
a tube channel having an inlet end and an outlet end, and
a rib positioned along the tube channel adjacent to the outlet end, wherein the rib is formed to extend outwardly from a surface of the tube channel towards the IV tube as the IV tube is passed through the tube port, thereby indenting the IV tube to

form at least two parallel tube regions in the IV tube and tending to prevent full occlusion of the IV tube.

7. The housing of Claim 6, wherein the rib is configured to split the tube channel into a first channel and a second channel.

8. The housing of Claim 7, wherein the two parallel channels are configured to respectively accept the at least two parallel tube regions.

9. The housing of any of Claims 6 to 7, wherein the tube channel is positioned along an interior wall of the housing.

10. The housing of any of Claims 6 to 9, wherein the rib includes a first end and a second end, the first end having a first diameter and the second end having a second, different diameter.

11. The housing of Claim 10, wherein the second diameter is larger than the first diameter.

12. The housing of any of Claims 6 to 9, wherein the rib includes a gradually increasing extension from the surface of the tube channel from a first end to a second end, the first end closer to an outside opening of the tube port than the second end.

13. The housing of any of Claims 6 to 12, wherein the formation of the at least two parallel tube regions prevents fluid occlusion within the IV tube when the IV tube is pressed against the rib.

14. The housing of any of Claims 6 to 13, wherein the rib is positioned on an interior side of the housing.

15. The housing of any of Claims 6 to 13, wherein the rib is positioned on an exterior side of the housing.

16. An infusion pump comprising:
a housing including a tube port configured to receive an intravenous (“IV”) tube; and
a plurality of ribs positioned around a perimeter of the tube port on an exterior side of the housing, the plurality of ribs configured to prevent an occlusion in the tube when the tube is bent on the exterior side of the housing.

17. The infusion pump of Claim 16, wherein the plurality of ribs are circumferentially positioned around the perimeter and are each pointed towards a center of the tube port.

18. The infusion pump of any of Claims 16 to 17, wherein each of the plurality of ribs has at least approximately the same size and shape.

19. The infusion pump of any of Claims 16 to 17, wherein the plurality of ribs includes a first rib and a second rib, the first rib having a different shape, size and/or orientation than the second rib.

20. The infusion pump of any of Claims 16 to 19, wherein each of the plurality of ribs extends radially towards a center of the tube port.