Claims

1. A device for sampling an initial volume of a liquid flow, comprising:
   - an inlet conduit for receiving the liquid flow,
   - an outlet conduit for draining a subsequent volume of the liquid flow,
   - a valve casing arranged between the inlet conduit and the outlet conduit and having a passageway formed therethrough to fluidly connect the inlet conduit to the outlet conduit, a sample outlet for draining the initial volume of the liquid flow extending through the valve casing and into said passageway,
   - a valve structure arranged for axial movement in the valve casing traverse to a direction of liquid flow through the passageway, the valve structure comprising a gate for obstructing the passageway and preventing the initial volume of the liquid flow from being transferred to the outlet conduit when the valve structure is in a sampling position, and the valve structure further comprising a stem connected to the gate and adapted for obstructing the sample outlet without obstructing the passageway when the valve structure is in a diverting position, at least one elongated groove being formed in a surface of the gate facing the inlet conduit and the at least one groove extending from the gate to the stem, said at least one groove being adapted for receiving the initial volume of the liquid flow and for guiding said initial volume along the gate, the stem, and through the sample outlet towards a receptacle, connectable to the valve casing, when the valve structure is in the sampling position,
   - a lifting member connected to the stem for moving the valve structure from the sampling position to the diverting position while the initial volume of the liquid flow is being sampled through the sample outlet.
2. The device according to claim 1, wherein the lifting member comprises an air cavity formed in a lower portion of the stem
3. The device according to any of the previous claims, wherein the gate comprises a slanted wall with edges lying flush with inner surfaces of the valve casing when the valve structure is in the sampling position.
4. The device according to any of the previous claims, wherein the stem is comprising a thinned upper portion, a wider lower portion, and a transition segment connected between the upper portion and the lower portion for tapering the thinner upper portion to the wider lower portion, the at least one groove extending into the upper portion of the stem and an outer surface of the lower portion of the stem lying flush with a bore of the sample outlet when the valve structure is in the diverting position.

5. The device according to claim 4, wherein ribbed edges are protruding from an outer surface of the upper portion of the stem, the ribbed edges being in a telescoping relationship with the bore of the sample outlet.

6. The device according to any of the previous claims, wherein the valve casing further comprises a sampling connector connected to a base of said valve casing and at least partially circumferentially enclosing the sample outlet formed through said base.

7. The device according to claim 6, wherein the sampling connector comprises an angled or baffle-forming opening at a lower end portion thereof, opposite to the base.

8. The device according to any of the previous claims, wherein the valve structure further comprises a cap connected to the gate, a rim of the cap lying flush and being in a telescoping relationship with an inner surface of the valve casing.

9. The device according to claim 8, wherein the rim of the cap and the inner surface of the valve casing have a mating asymmetrical shape for preventing a rotational movement of the valve structure relative to the valve casing.

10. The device according to any of the previous claims, wherein the valve casing comprises a resilient stopper protruding from an inner surface of said valve casing and positioned to cooperate with an upper edge of the valve structure such that a farther axial movement of the valve structure is limited when the upper edge of the valve structure is pushing against the stopper in the diverting position.

11. The device according to any of the previous claims, wherein the at least one groove is separated into two grooves by a stabilizing wall.

12. The device according to any of the previous claims, wherein the inlet conduit, outlet conduit, and the valve casing are monolithically formed as a single part, proximate openings of the inlet conduit and the outlet conduit being respectively aligned with an inlet and an outlet of the passageway through the valve casing.

13. The device according to any of the previous claims, further comprising a bonnet connected between the inlet conduit and the outlet conduit and forming a lid to the valve casing, the bonnet having proximate openings of the inlet conduit and outlet conduit formed therethrough, and the bonnet being secured to a base of the valve casing such that proximate openings of the inlet conduit and the outlet conduit are respectively aligned with an inlet and an outlet of the passageway through the valve casing.

14. A kit of parts, comprising:

- a bonnet having at least three openings,
- an inlet conduit connectable to a first opening of the bonnet,

- an outlet conduit connectable to a second opening of the bonnet,
- a valve casing removably insertable into the bonnet via a third opening therein, a base of the valve casing being connectable to the third opening, the valve casing having an inlet and an outlet formed therethrough defining a liquid passageway though the valve casing, a sample outlet extending through the base of the valve casing and into the passageway, the valve casing having an opening provided at a top side thereof, opposite to the base,
- a valve structure removably insertable into the valve casing, the valve structure being arranged for axial movement in the valve casing, traverse to a direction of liquid flow through the passageway, the valve structure comprising a gate for obstructing the passageway when the valve structure is in a sampling position, and the valve structure further comprising a stem connected to the gate and adapted for obstructing the sample outlet without obstructing the passageway when the valve structure is in a diverting position, at least one elongated groove being formed in a surface of the gate and the at least one groove extending from the gate into the stem,
- a lifting member connectable to the stem.

15. A kit according to claim 14, wherein the inlet conduit, outlet conduit, and the bonnet are provided as a monolithic part.

16. A kit of parts, comprising:

- a valve casing having an inlet and an outlet formed therethrough defining a liquid passageway though the valve casing, a sample outlet extending through a base of the valve casing and into the passageway, the valve casing having an opening provided at a top side thereof, opposite to the base,
- an inlet conduit connectable to the inlet of the valve casing,
- an outlet conduit connectable to the outlet of the valve casing,
- a valve structure removably insertable into the valve casing, the valve structure being arranged for axial movement in the valve casing, traverse to a direction of liquid flow through the passageway, the valve structure comprising a gate for obstructing the passageway when the valve structure is in a sampling position, and the valve structure further comprising a stem connected to the gate and adapted for obstructing the sample outlet without obstructing the passageway when the valve structure is in a diverting position, at least one elongated groove being formed in a surface of the gate and the at least one groove extending from the gate into the stem,
- a lifting member connectable to the stem.

17. A kit according to claim 16, wherein the inlet conduit, outlet conduit, and the valve casing are provided as a monolithic part.

18. A kit according to any of the claims 14 to 17, wherein the lifting member and the stem of the valve structure are provided as a monolithic part and the lifting member comprises an air cavity.

19. A kit according to any of the claims 14 to 18, wherein the gate comprises a slanted wall with edges fitted to inner surfaces of the valve casing.

20. A kit according to any of the claims 14 or 19, wherein the valve structure further comprises a cap connected to the gate, a rim of the cap being fitted to an inner surface of the valve casing to establish a telescoping relationship therewith.

21. A kit according to any of the claims 14 to 20, wherein the valve casing comprises a resilient stopper protruding from an inner surface of said valve casing and positioned to cooperate with an upper edge of the valve structure such that a farther axial movement of the valve structure is limited when the upper edge of the valve structure is pushing against the stopper in the diverting position.

22. A kit according to any of the claims 14 to 21, further comprising a receptacle with a volume ranging between 1 ml and 50 ml, the receptacle being connectable to a sampling connector provided at a lower side of the valve casing base.

23. A kit according to any of the claims 14 to 22, further comprising a funnel connectable to the inlet conduit, the inlet conduit being adapted for receiving and securing the funnel.

24. A kit according to any of the claims 14 to 23, wherein the inlet conduit has a flexible shape.

25. A kit according to any of the claims 14 to 24, wherein one or more parts of the kit are made from biodegradable polymers.