CLAIMS

1. A protective device (1) for a needle tube (2) of a syringe, the protective device comprising:

- a base (3); and
- a cover (4) connected to the base (3),

wherein the base (3) is configured to cooperate with a needle carrier (25) by positive form locking wherein the needle carrier (25) supports the needle tube,

wherein the cover (4) is configured elongated along a longitudinal axis (5) and defines an interior space (6) in which the needle tube (2) is storable so that a person is protected against an unintentional contact with the needle tube (2),

wherein the cover (4) is pivotably supported at the base (3) so that the cover (4) is transferable relative to the base (3) within a pivot plane (8) from a starting position where the needle tube (2) is stored in the interior (6) before being used for injection in a first pivot direction into an operating position where the needle tube (2) is available for injection, and eventually transferrable in a second pivot direction opposite to the first pivot direction into a protective position where the needle tube (2) is stored in the interior space (6) again after being used for injection,

wherein the cover (4) is open at one side in the pivot plane (8) so that the needle tube (2) is configured to initially exit from the interior space (6) for injection due to the pivot movement of the cover (4) and configured to enter the interior space (6) again after being used for the injection,

wherein the cover (4) includes a retaining device (9) in the interior space (6) wherein the retaining device is configured to interlock the needle tube (2) by positive form locking during transfer of the cover (4) into the protective position so that an unintentional exit of the needle tube (2) from the interior space (6) is prevented after a completed transfer of the cover (4) into the protective position,

characterized in that the retaining device (9) includes a deformable lobe (10), a stop (11) associated with the lobe (10) and at least one guide element (12, 13),

wherein the lobe (10) is configured to be deformed by the needle tube (2) during transfer of the cover (4) into its protective position and displaced in a first direction so that the needle tube (2) is able to enter into a safety area (7) arranged behind the lobe (10) in which the needle tube (2) is interlocked behind the lobe (10),

wherein the stop (11) is configured at the inner enveloping surface (14) of the cover (4) opposite from the lobe (10) so that the lobe (10) when deformed by the needle tube (2) contacts a contact surface (34) of the stop (11) in a second direction opposite to the first direction so that an unintentional exit of the needle tube (2) from the safety area (7) is prevented,

wherein the guide element (12, 13) is associated with the stop (11) and configured to guide the needle tube (2) so that a presence of the needle tube (2) below a stop surface (34) of the stop (11) is prevented after the needle tube (2) enters the safety area (7),

wherein the lobe (10) extends in undeformed condition from an inner enveloping surface (16) of the cover (4) into the interior space (6) and defines a lobe angle (15) of at least 35° with the pivot plane (8) viewed in a cross section orthogonal to the longitudinal axis (5) of the cover (4).

2. The protective device (1) according to claim 1, characterized in that the lobe angle (15) is at least 37.5°, advantageously at least 40° in the undeformed condition of the lobe (10).

3. The protective device (1) according to one of the preceding claims, characterized in that an offset (18) measured in a direction orthogonal to the pivot plane (8) is provided in a cross section of the cover (4) orthogonal to the longitudinal axis (5) of the cover (4) between an end (16) of the undeformed lobe (10) oriented away from the inner enveloping surface (14) of the cover (4) and an end (17) of the cover (11) oriented towards the lobe (10), wherein the offset (18) is advantageously in a range between 0.05 mm and 0.25 mm, advantageously between 0.10 mm and 0.20 mm.

4. The protective device (1) according to one of the preceding claims, characterized in that an offset (19) is provided in a cross section of the cover (4) orthogonal to the longitudinal axis (5) of the cover (4) between an end (16) of the undeformed lobe (10) oriented away from the inner enveloping surface (14) of the cover (4) and an end (17) of the stop (11) oriented towards the lobe (10) wherein the offset (19) is measured in a direction parallel to the pivot plane (8), wherein the offset (19) is advantageously in a range between 0.20 mm and 0.80 mm, advantageously between 0.25 mm and 0.70 mm, further advantageously between 0.30 mm and 0.60 mm.

5. The protective device (1) according to one of the preceding claims, characterized in that the at least one support element (12, 13) extends from the inner enveloping surface (14) of the cover (4) into the interior space (6).

6. The protective device (1) according to one of the preceding claims, characterized by a plurality of guide elements (12, 13), wherein advantageously at least one guide element (12) is arranged in front of the stop (10) and at least one guide element (13) is arranged behind the stop (10) viewed in the longitudinal direction of the cover (4).

7. The protective device (1) according to one of the preceding claims, characterized in that the cover (4) is configured U-shaped in a cross section orthogonal to its longitudinal axis (5) wherein a vertical axis (20) of the cross section is advantageously oriented parallel to the pivot plane (8) of the cover (4)

8. The protective device (1) according to one of the preceding claims, characterized in that the base (3) and the cover (4) are connected with one another by a rated fracture joint (21) when the cover (4) is in its starting position, wherein the rated fracture joint (21) is breakable by a hand force so that the cover (4) is pivotable into its operating position after breaking the rated fracture joint (21).

9. The protective device (1) according to one of the preceding claims, characterized in that the cover (4) and the base (3) are connected with one another by a film hinge (22).

10. The protective device (1) according to one of the preceding claims, characterized in that the cover (4) and the base (3) are arranged coaxial in their starting position, wherein the cover (4) is advantageously pivoted beyond the starting position in the second pivot direction when the cover (4) is in its protective position.

11. The protective device (1) according to one of the preceding claims, characterized by an interlocking device (23) configured at the base (3), wherein the interlocking device is configured

to engage an interlocking partner (24) of the cover (4) by positive form locking so that the cover (4) is interlockable in the protective position.

12. A set including the protective device (1) according to one of the preceding claims, and a needle carrier (25) with a needle tube (2) supported therein, wherein the base (3) of the protective device (1) is connected with the needle carrier (25) by positive form locking, so that the needle tube (2) is oriented parallel to the longitudinal axis (5) of the needle tube (2) when the cover (4) is in its starting position.

13. The set according to claim 12, characterized in that a lobe base (26) of the lobe (10) that connects the lobe (10) at the inner enveloping surface (14) of the cover (4) is arranged in a common plane with the needle tube (2) that is perpendicular to the pivot plane (8) when the cover (4) is in its starting position viewed in a cross section of the cover (4) orthogonal to the longitudinal axis (5) of the cover (4).