

(19) **DANMARK**

(10) **DK/EP 3308067 T3**



Patent- og
Varemærkestyrelsen

(12) Oversættelse af
europæisk patentskrift

-
- (51) Int.Cl.: **F 16 L 19/00 (2006.01)** **F 16 L 29/04 (2006.01)** **F 16 L 15/08 (2006.01)**
- (45) Oversættelsen bekendtgjort den: **2019-10-21**
- (80) Dato for Den Europæiske Patentmyndigheds bekendtgørelse om meddelelse af patentet: **2019-07-31**
- (86) Europæisk ansøgning nr.: **16741138.8**
- (86) Europæisk indleveringsdag: **2016-06-08**
- (87) Den europæiske ansøgnings publiceringsdag: **2018-04-18**
- (86) International ansøgning nr.: **IB2016053361**
- (87) Internationalt publikationsnr.: **WO2016199035**
- (30) Prioritet: **2015-06-10 IT UB20151330**
- (84) Designerede stater: **AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR**
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- (74) Fuldmægtig i Danmark: **Patrade A/S, Ceresbyen 75, 8000 Århus C, Danmark**
- (54) Benævnelse: **Lynkoblings-fitting med anti-løsgøring**
- (56) Fremdragne publikationer:
EP-A1- 2 369 214
WO-A1-2007/042417
FR-A- 917 287
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DESCRIPTION

[0001] The present invention relates to an unscrewing quick coupling fitting.

[0002] Quick coupling fittings from the prior art comprise a female connector which can be slidably engaged coaxially with a male connector. Each connector comprises a fitting engaged with a flexible hose. The flexible hose vibrates and twists during the operation of a hydraulic machine where quick couplings are used. The vibrations of the flexible hose coupled to the fitting of the connector are so strong that, after a given period of use, they cause the detachment of the female connector from the male connector of the quick coupling fitting, thus causing a disadvantageous reduction in the hydraulic liquid flow.

[0003] Quick couplings exist which avoid the disconnection of the quick coupling fitting due to vibrations of the flexible hoses and implement either a plurality of balls mounted in a plurality of housings obtained in an external casing of the female connector or there are those who use a plurality of gaskets in place of the balls, such as in EP-2369214-A1, which describes a quick coupling fitting which comprises a female connector comprising an external casing which comprises a plurality of housings adapted to house a plurality of stopping gaskets comprising a plurality of toroidal sectors.

[0004] Disadvantageously, when the vibrations become too strong and twistings of the flexible hoses also come into play, the quick coupling fittings of the prior art are disconnected. The twistings of the flexible hoses connected to the connectors of the quick couplings are the most responsible for the uncoupling of the quick coupling fittings. A single twist with an increased angle is sufficient to disconnect the quick coupling fitting, even after short use of the machine. Particularly high twisting forces of the flexible hoses or forces with particularly large angles break the connection of the quick coupling fittings.

[0005] Other quick couplings comprise return springs for keeping stopping elements under pressure in order to lock the fitting between the male and female connectors. If said return springs have large dimensions, they are disadvantageous when used on large quick coupling fittings, since the spring cannot be moved manually to lock the movement of the stopping elements.

[0006] GB-1152093 discloses a quick coupling fitting comprising a first connector and a second connector. The first connector comprises a screwing ring.

[0007] It is the object of the present invention to provide an unscrewing quick coupling fitting which is safe, resistant to uncoupling caused both by increased twistings and vibrations of flexible hoses connected to fittings of respective connectors of the quick coupling fitting, resists pulsation and jerking forces, resists very strong flows of liquid without being disengaged, does not break, is maneuverable and easy to be locked by hand.

[0008] In accordance with the invention, such an object is achieved by a quick coupling fitting according to claim 1.

[0009] These and other features of the present invention will become more apparent from the following detailed description of a practical embodiment thereof, shown by way of non-limiting example in the accompanying drawings, in which:

Figure 1 shows a view along a coupling axis, of a female connector of a quick coupling fitting;

Figure 2 shows a view along the coupling axis, of a male connector of the quick coupling fitting;

Figure 3 shows a sectional view of the female connector according to line III-III in Figure 1, in an uncoupled position;

Figure 4 shows a sectional view of the male connector according to line VI-VI in Figure 2, in an uncoupled position of the quick coupling fitting;

Figure 5 shows a sectional view of the female connector according to line V-V in Figure 1, in the uncoupled position of the quick coupling fitting;

Figure 6 shows a sectional view of the male connector according to line VI-VI in Figure 2, in the uncoupled position of the quick coupling fitting;

Figure 7 shows a sectional view of the female connector according to line VII-VII in Figure 3;

Figures 8 and 9 show the female connector in Figure 3 axially aligned with the male connector in Figure 4, where the female connector comprises a screwing ring in fully loosened position;

Figures 10 and 11 show the female connector in Figure 3 axially aligned with the male connector in Figure 4, where the female connector comprises a sliding ring in disengagement position;

Figure 12 shows the quick coupling fitting in a first engagement position between the female connector and the male connector, corresponding to a start screwing position;

Figure 13 shows a sectional view of the quick coupling fitting according to line XIII-XIII in Figure 12;

Figure 14 shows the quick coupling fitting in a second engagement position between the female connector and the male connector, corresponding to a half screwing position;

Figure 15 shows a sectional view of the quick coupling fitting according to line XV-XV in Figure 14; Figure 16 shows the quick coupling fitting in a fully engaged position between the female connector and the male connector, corresponding to a fully screwed position;

Figure 17 shows a sectional view of the quick coupling fitting according to line XVII-XVII in Figure 16;

Figure 18 shows the quick coupling fitting in an engagement position with the sliding ring of the

female connector in an engagement position with a locking ring of the male connector and with the screwing ring in a fully screwed position in locking position for locking the sliding ring in an engagement position with the locking ring;

Figure 19 shows a perspective view of the sliding ring of the female connector of the quick coupling fitting;

Figure 20 shows a perspective view of the locking ring of the male connector of the quick coupling fitting.

[0010] With reference to the figures listed above, and in particular to Figures 3 and 4, a quick coupling fitting 1 is noted comprising a female connector 2 and a male connector 3, which are mutually switched from a disengagement position (Figures 3-6) to an engagement position (Figures 12-18).

[0011] The female connector 2 is of the flat face type. It is also possible to use other female connectors 2, such as for example of the mushroom-shaped type or of other types present in the prior art.

[0012] The female connector 2 and the male connector 3 coaxially penetrate each other along a longitudinal axis L and screw to each other to keep the quick coupling fitting 1 stable and long-lasting. The female connector 2 comprises a first thread 233 and the male connector 3 comprises a complementary second thread 382 which is screwed with the first thread 233. Said male connector 3 coaxially penetrates said female connector 2 along the longitudinal axis L and frontally, thus allowing the liquid to pass in the quick coupling fitting 1 from a hose to another hose when said quick coupling fitting 1 is in a fully screwed position.

[0013] The female connector 2 comprises a hollow cylindrical-shaped main body 21 which is connected at one end 212 to a flexible hose (not shown in the drawings). The main body 21 mounts a hollow cylindrical-shaped internal casing 22 for sealing the female connector 2 and a hollow cylindrical external casing 23 of the female connector 2.

[0014] The external casing 23 comprises said first thread 233 of the female connector 2. Said first thread 233 is provided on an external surface of the external casing 23 and is arranged on a portion of the external surface of the external casing 23 which is in the direction of the male connector 3 so as to be screwed with said male connector 3.

[0015] The internal sealing casing 22 comprises a cavity 220 which is connected to a cavity 210 of the main body 21 of the female connector 2. The internal sealing casing 22 comprises a female rod 24 radially fixed integrally with the internal sealing casing 22. The internal sealing casing 22 is in one piece with the female rod 24. The female rod 24 of the female connector 2 comprises a portion 242 facing in contrast with a flow of liquid originating from cavity 220, and a mushroom-shaped portion 243 with flat face 2430 facing towards the male connector 3.

Locking radial ends 245 of the mushroom-shaped portion 243 of the female rod 24 are adapted to serve as a first stop 245 for a cleaning casing 25.

[0016] Said cleaning casing 25 of the female connector 2 is mounted slidably aligned along axis L external to the internal sealing casing 22. Said cleaning casing 25 is adapted to slide from the first stop 245 to a second stop 225 of the internal sealing casing 22.

[0017] The internal sealing casing 22 comprises an external radial wall 223 which mounts a first compression spring 75 and a second compression spring 76. The internal sealing casing 22 slidably mounts the cleaning casing 25 axially aligned, along the longitudinal axis L, the cleaning casing 25 being in contrast with said first compression spring 75 which opposes the sliding motion of the cleaning casing 25 along the longitudinal axis L on the internal sealing casing 22.

[0018] The cleaning casing 25 slidably mounts a slide 26 axially aligned, which is in contrast with said second compression spring 76. Said slide 26 slides axially aligned along the longitudinal axis L, even on an internal surface of the external casing 23.

[0019] Said second compression spring 76 is adapted to be switched from a resting position, which keeps said slide 26 in position, to a compression position in which said slide 26 slides along the longitudinal axis L on the cleaning casing 25 up to a stop 256 of the cleaning casing 25.

[0020] The external casing 23 of the female connector 2 comprises an axial groove 230 which mounts a guide track 27. Said guide track 27 has a parallelepiped shape arranged along the longitudinal axis L. Said guide track 27 is integrally mounted with said external casing 23. Said guide track 27 is mounted externally to said external casing 23.

[0021] A sliding ring 28 of the female connector 2 is slidably mounted axially aligned along the longitudinal axis L outside the external casing 23, and may slide on the guide track 27 up to one end of the guide track 27 abutting with a stop 287 which is a radial wall 287 of the sliding ring 28. As shown in particular in Figure 19, said sliding ring 28 comprises a groove 283 facing inwardly, which is adapted to act as a guide 283 for said guide track 27.

[0022] A screwing ring 29 of the female connector 2 is screwed to an external thread 239 of the external casing 23. The screwing ring 29 screws onto the external thread 239 of the external casing 23. The external thread 239 is positioned on an external surface of the external casing 23.

[0023] The sliding ring 28 slides axially on the guide track 27 up to one end 278 of the guide track 27 abutting with the radial wall 287 of the sliding ring 28. Said end 278 of the guide track 27 act as a stop for the sliding ring 28.

[0024] The screwing ring 29 of the female connector 2 screws along the longitudinal axis L up

to a position in contrast with the radial wall 287 of the sliding ring 28, so as to fix a locking position of the sliding ring 28 in contact with end 278 of the guide track 27 on one side, and in contact with the sliding ring 28 on the other side. Said the screwing ring 29 advantageously allows the sliding ring 28 to be locked in the locking position.

[0025] Said screwing ring 29 comprises a housing 290 obtained between an internal surface of the screwing ring 29 and an external surface of the external casing 23 of the female connector 2. Said housing 290 of the screwing ring 29 is arranged at one end of the screwing ring 29 facing towards the male connector 3 and is therefore positioned close to the radial wall 287 of the sliding ring 28. Said housing 290 mounts an anti-vibration gasket 42 of the "O-ring" type, which advantageously allows to prevent the screwing ring 29 from being loosened due to the vibrations caused by the twisting of the hoses and by the flowing of liquid during the operation of the quick coupling fittings 1.

[0026] The male connector 3 of the quick coupling fitting 1 comprises a hollow cylindrical-shaped main body 31 which is connected at one end 312 to a flexible hose (not shown in the drawings).

[0027] The main body 31 mounts a hollow cylindrical-shaped external body 33 of the male connector 3. The external body 33 comprises an extension 336 adapted to penetrate the female connector 2 and to come into contact abutting in contrast with slide 26 up to pushing it into compression in contrast with the cleaning casing 25, and to compress an assembly consisting of the cleaning casing 25 and slide 26, while the first compression spring 75 and the second compression spring 76 oppose the motion. Said extension 336 is arranged along the longitudinal axis L.

[0028] The male connector 3 mounts an internal casing 32 of the male connector 3.

[0029] The internal casing 32 comprises a male rod 34 radially fixed integrally with the main body 31 and with the external body 33 of the male connector 3. The male rod 34 is in one piece with the internal casing 32.

[0030] The male rod 34 of the male connector 3 comprises a cup-shaped portion 341 with a convex external surface in contact with the liquid in a cavity 310 of the main body 31, and an internal portion 340 which is hollow and which mounts a third return spring 74 which is adapted to be switched from a resting position to a compression position.

[0031] Said third return spring 74 mounts a piston 35 comprising a rod 354 which is adapted to penetrate the internal portion 340 of the male rod 34. Said rod 354 is in contrast with said third return spring 74.

[0032] Said piston 35 also comprises a head 352 comprising a flat face 3520 adapted to contrast with the flat face 2430 of the female rod 24 of the female connector 2.

[0033] Said head 352 is slidably mounted with said extension 336 of the external body 33 of the male connector 3.

[0034] When the flat face 3520 of head 352 of the male connector 3 comes into contact with the flat face 2430 of the female rod 24 of the female connector 2, the third return spring 74 compresses, thus causing head 352 to slide on extension 336 of the external body 33 and rod 354 of piston 35 to penetrate the male rod 34.

[0035] The external body 33 axially mounts a locking ring 38 rotatably associated with bearings 48. Said bearings 48 are mounted integrally with said external body 33. The locking ring 38 is rotatably mounted with said external body 33. The locking ring 38 comprises an annular housing 383 obtained internally and adapted to mount a dust seal gasket 43. The locking ring 38 rotates on the bearings 48.

[0036] The external body 33 also mounts a retaining ring 41 at stroke end, which advantageously allows to keep the locking ring 38 slidably in place on the bearings 48. Said retaining ring 41 is positioned between an end stroke wall 384 of the locking ring 38 (Figure 11), where said end stroke wall 384 is arranged in the direction of the main body 31 and of the flexible hose mounted with the male connector 3.

[0037] The locking ring 38 comprises said second thread 382 of the male connector 3. Said thread 382 is provided on an internal surface of the locking ring 38, where said internal surface is facing towards an external surface of the external body 33 of the male connector. Since said second thread 382 of the locking ring 38 is complementary to said first thread 233 of the female connector 2, said locking ring 38 may be screwed with said first thread 233 of the female connector 2 to cause the quick coupling fitting 1 to switch from a first engagement position between the female connector 2 and the male connector 3, corresponding to a start screwing position as shown in Figure 12, up to a fully engaged position between the female connector 2 and the male connector 3 corresponding to a fully screwed position of the quick coupling fitting 1, as shown in Figure 16. During the screwing, the quick coupling fitting 1 switches from a plurality of screwing positions, an example of which is seen in a half screwing position shown in Figures 14-15.

[0038] The locking ring 38 rotates about the longitudinal axis L sliding on the bearings 48 of the external body 33 of the male connector 3.

[0039] Said locking ring 38 is kept in place on the bearings 48 due to the retaining ring 41.

[0040] By rotating about the longitudinal axis L, the locking ring 38 of the male connector 3 screws onto the female connector 2.

[0041] As shown in particular in Figures 3-4, 13, 15, 17-20, the sliding ring 28 and the locking ring 38 comprise a plurality of teeth 288, respectively, which are adapted to interlock with respective complementary housings 388.

[0042] The sliding ring 28 of the female connector 2 comprises an annular end 280 facing towards the male connector 3. A plurality of teeth 288 extend from the annular end 280 of the sliding ring 28 in axial direction along the longitudinal axis L. The teeth 288 of the sliding ring 28 are arranged along the longitudinal axis L.

[0043] The locking ring 38 comprises an annular end 380 facing towards the female connector 2. A plurality of housings 388 for said teeth 288 are obtained on the annular end 380 of the locking ring 38, in axial direction along the longitudinal axis L. The housings 388 of the locking ring 28 are arranged along the longitudinal axis L. The dimensions and shape of the housings 388 are complementary to those of the teeth 288 so that the teeth 288 may abut in contrast with the housings 388. Tooth 288 is not expected to fully match with the shape of housing 388, so as to allow a clearance between the walls of tooth 288 and the walls of housing 388, said clearance being advantageous to allow the first thread 233 to be fully screwed onto the second thread 382.

[0044] Each tooth 288 of the sliding ring 28 can be mounted in a tooth housing 388 of the locking ring 38. Said frame is a snap frame between tooth 288 of the sliding ring 28 and the housing for said tooth 388 of the locking ring 38.

[0045] The first thread 233 of the female connector 2 is in phase with the complementary second thread 382 of the male connector 3 so that when the female connector 2 is screwed with the male connector 3, the teeth 288 are aligned and are at the housings 388 when the female connector 2 is completely screwed with the male connector 3 of the quick coupling fitting 1. The first thread 233 has a pitch which is in phase with a pitch of the second thread 382 so that the teeth 288 and the housings 388 are aligned in the fully screwed position of the quick coupling fitting 1, as shown in Figure 16. As shown in Figures 12-13, thread 233 can be engaged by the complementary thread 382 in a point such that a number of screwing revolutions is maintained between the male connector 3 and the female connector 2, which allows teeth 288 and housings 388 to be aligned with one another when screwing is complete, and so that the surfaces of the annular end 380 and of the housings 388 of the locking ring 38 abut in contrast with the surfaces of the annular end 280 and of the teeth 288 of the sliding ring 28, as shown in Figures 16-17.

[0046] With regard to the operation of the quick coupling fitting 1, the female connector 2 and the male connector 3 are uncoupled from each other, starting from Figures 3-6. The screwing ring 29 is fully screwed up to locking the sliding ring 28 in contrast with the guide track 27.

[0047] As shown in Figures 8-9, the screwing ring 29 is fully loosened up to freeing the sliding ring 28.

[0048] After loosening the screwing ring 29 (as shown in Figures 10-11), the sliding ring 28 may slide freely between end 278 of the guide track 27 and the screwing ring 29.

[0049] As shown in Figure 12, the female connector 2 is fully screwed with the male connector 3 by means of respective threads 233 and 382 which are advantageously in phase so as to allow the alignment between the teeth 288 and the housings 388, said quick coupling fitting 1 being in the first engagement position which corresponds to the first screwing position, as shown in Figure 12.

[0050] During a screwing step between the female connector 2 and the male connector 3, extension 336 of the external body 33 penetrates the female connector 2 and comes into compression contact with slide 26 and compresses it in contrast with the cleaning casing 25. Proceeding with the screwing step, extension 336 continues to compress slide 26 and the cleaning casing 25.

[0051] The flat face 3520 of head 352 of the male connector 3 comes into contact with the flat face 2430 of the female rod 24 of the female connector 2 and the third return spring 74 compresses, thus causing head 352 to slide on extension 336 of the external body 33 and rod 354 of piston 35 to penetrate the male rod 34. Thereby, the liquid may flow through the quick coupling fitting 1.

[0052] Once the screwing step is finished between the first thread 233 of the female connector and the second thread 382 of the locking ring 38 of the male connector 3, the quick coupling fitting 1 is in the fully screwed position (as shown in Figure 16) and allows the liquid to pass in the quick coupling fitting 1 from one hose to another hose.

[0053] An unscrewing locking step is provided which, as shown in Figure 18, comprises screwing the screwing ring 29 in contrast with the sliding ring 28, thus causing it to slide on the guide track 27 until the surfaces of the annular end 380 and of the housings 388 of the locking ring 38 abut in contrast with the surfaces of the annular end 280 and of the teeth 288 of the sliding ring 28. Said teeth 288 abut with said housings 388 in the fully screwed position of the quick coupling fitting 1.

[0054] Said screwing ring 29 screws in contrast with said sliding ring 28, said screwing ring 29 pushes said sliding ring 28 which slides on the guide track 27 and said sliding ring 28 pushes said teeth 288 of the sliding ring 28 into said housings 388 of the locking ring 38.

[0055] Once in fully screwed position, the end 278 of the guide track 27 is not expected to abut in contrast with the wall 287 of the sliding ring 28.

[0056] The teeth 288 of the sliding ring 28, which are aligned with the respective housings 388 of the locking ring 38 of the male connector 3, are introduced into their own respective housing 388 as the screwing ring 29 is screwed, thus advantageously locking the female connector 2 and the male connector 3 in locked position, thus allowing the quick coupling fitting 1 to be of the unscrewing type, safe, resistant to loosening or to uncoupling caused both by twisting and by increased vibrations of the flexible hoses connected to the fittings of the respective connectors 2, 3 of the quick coupling fitting 1.

[0057] The quick coupling connector 1 according to the present invention advantageously allows pulsation and jerking forces to be resisted, as well as very strong flows of liquid, without being disengaged or loosened and without breaking.

[0058] The female connector 2 may be referred to as first connector 2 while the male connector 3 may be referred to as second connector.

[0059] Alternatively, said external casing 23 of the female connector 2 comprises said guide track 27, which is in one piece on the external surface thereof. Said guide track 27 is arranged axially aligned along the longitudinal axis L to cause the sliding ring 28 to axially slide. Another alternative includes an equivalent configuration which has the locking ring 38 rotatably mounted by means of bearings 48 with the external casing 23 of the female connector 2, while the sliding ring 28 is mounted slidably axially aligned with the external body 33 of the male connector 3. Therefore, said male connector 3 would comprise the guide track 27 and the screwing ring 29 which screws onto thread 239, which in this alternative is provided on the external body 33 of the male connector 3. In said alternative, the first thread 233 would be provided on the external body 33 of the male connector 3, and the second thread 382 would remain on the locking ring 38 of the female connector 2. In said another alternative, the female connector 2 and the male connector 3 exchange places, i.e. the male connector 3 becomes the first connector 2 while the female connector 2 becomes the second connector 3. That is, the first connector 2, which in said another alternative is the male connector 3, mounts the screwing ring 29, the guide track 27 and the sliding ring 28, while the second connector 3, which in said another alternative is the female connector 2, mounts the locking ring 38.

[0060] A further alternative includes a single tooth 288 and a single housing 388.

[0061] A still further alternative includes a single tooth 288 and the housings 388 which are a plurality of housings 388.

[0062] Alternatively again, said external casing 23 comprises a plurality of guide tracks 27 which are integral with said external casing 23 and are arranged along the longitudinal axis L.

[0063] A still further alternative does not include a retaining ring 41, but provides for the main body 31 to be more elongated in the direction of the female connector 2 so as to provide a step between a diameter of the main body 31 and a diameter of the external body 33, said step being adapted to keep the locking ring 38 in place on the bearings 48 of the external body 33 of the male connector 3. Said male connector 3 comprises the main body 31 elongated in the direction of the first connector 2. Said main body 31 has a diameter greater than the diameter of the external body 33, thus creating the step which is adapted to keep the locking ring 38 in place with the bearings 48 of the male connector 3.

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- EP2369214A1 [0003]
- GB1152093A [0006]

PATENTKRAV

1. Lynkoblings-fitting (1), omfattende en første konnektor (2) og en anden konnektor (3), hvorved den første konnektor (2) omfatter et første gevind (233), der er sammenskruet med et andet gevind (382) på den anden konnektor (3),
- 5 den anden konnektor (3) koaksialt gennemtrænger den første konnektor (2) langs en længdeakse (L) og frontalt tillader et fluidum at passere gennem lynkoblings-fittingen (1) fra en slange til en anden slange, når lynkoblings-fittingen (1) er i helt sammenskruet position,
- 10 den første konnektor (2) omfatter et ydre hus (23), og den anden konnektor (3) omfatter et ydre legeme (33),
- den første konnektor (2) omfatter mindst en føringsskinne (27), som er integreret med det ydre hus (23) og er anbragt langs længdeaksen (L), en glidering (28), som glidbart er monteret aksialt med det ydre hus (23) og egnet til at glide langs den mindst ene
- 15 føringsskinne (27),
- en skruering (29), der er sammenskruet med det ydre hus (23) og egnet til at bevæge sig ud fra en løsnet position, som tillader glideringen (28) aksialt at glide langs den mindst ene ledeskinne (27),
- hvilken glidering (28) omfatter mindst en tand (288), der strækker sig fra en ringformet ende (280) af glideringen (28), og som vender mod den anden konnektor (3),
- 20 den anden konnektor (3) omfatter en låsering (38), der aksialt er monteret med det eksterne legeme (33),
- hvilken låsering (38) roterbart er monteret med det eksterne legeme (33), og låseringen (38) roterer omkring længdeaksen (L), hvilken låsering (38) omfatter mindst et
- 25 hus (388), der strækker sig fra en ringformet ende (380) af låseringen (38), og som vender mod den første konnektor (2), hvorved den mindst ene tand (288) støder op til det mindst ene hus (388) i den helt indskruede position for lynkoblings-fittingen (1),
- kendetegnet ved, at**
- den første konnektor (2) og den anden konnektor (3) er forbundet til slanger på deres
- 30 ender, og
- skrueringen (29) er skruet modsat glideringen (28), hvilken skruering (29) skubber glideringen (28), som glider langs føringsskinnen (27), og glideringen (28) skubber den mindst ene tand (288) på glideringen (28) ind i det mindst ene hus (388) for låseringen (38).

2. Lynkoblings-fitting (1) ifølge krav 1,

5 **kendetegnet ved, at** det første gevind (233) på den første konnektor (2) er skruet i fase med det andet gevind (382) på den anden konnektor (3), således at den mindst ene tand (288) er på linje med det mindst ene hus (388) i den helt sammenskruede position for lynkoblings-fittingen (1).

3. Lynkoblings-fitting (1) ifølge et hvilket som helst af kravene 1 eller 2, **kendetegnet ved, at** det første gevind (233) på den første konnektor (2) omfatter en stigning i fase med det andet gevind (382) på den anden konnektor (3), således at, i den helt sammenskruede position for lynkoblings-fittingen (1), den mindst ene tand (288) er på linje med det mindst ene hus (388).

15 4. Lynkoblings-fitting (1) ifølge et hvilket som helst af kravene 1 – 3, **kendetegnet ved, at** låseringen (38) omfatter det andet gevind (382) på den anden konnektor (3), hvilken låsering (38), der roterer omkring længdeaksen (L), sammenskruer den første konnektor (2) med den anden konnektor (3), hvorved det tillades lynkoblings-fittingen (1), at bevæge sig fra en første indgrebsposition for den første konnektor (2) med den anden konnektor (3), svarende til en indledningsvis skrueposition, til en fuld indgrebsposition mellem den første konnektor (2) og den anden konnektor (3), svarende til en fuldt sammenskruet position for lynkoblings-fittingen (1).

25 5. Lynkoblings-fitting (1) ifølge et hvilket som helst af kravene 1 – 4, **kendetegnet ved, at** låseringen (38) roterer omkring længdeaksen (L), glidende på lejer (48), som er monteret på den anden konnektors (3) eksterne legeme (33).

6. Lynkoblings-fitting (1) ifølge krav 5, **kendetegnet ved, at** det eksterne legeme (33) bærer en holdering (41) til at holde låseringen (38) glidbart på plads med lejerne (48).

30 7. Lynkoblings-fitting (1) ifølge krav 5, **kendetegnet ved, at** den anden konnektor (3) omfatter et hovedlegeme (31), som strækker sig henimod den første konnektor (2), at hovedlegemets (31) diameter er større end en diameter for det eksterne legeme (33), hvorved der opstår et trin, der er indrettet til at holde låseringen (38) på plads med lejerne (48) i den anden konnektor (3).

8. Lynkoblings-fitting (1) ifølge et hvilket som helst af kravene 1 – 7, kendetegnet **ved, at** den første konnektors (2) eksterne hus (23) omfatter mindst én aksial rille (230), som bærer den mindst ene ledeskinne (27).

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9. Lynkoblings-fitting (1) ifølge et hvilket som helst af kravene 1 – 8, **kendetegnet ved, at** den mindst ene føringsskinne (27) er integreret med den første konnektors (2) ydre hus (23).