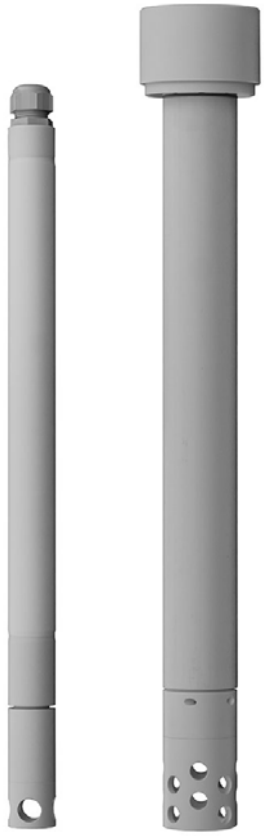
Immersion Fittings

Type 202820/40...
Type 202820/63...



Operating Manual

20282000T90Z001K000

V3.00/EN/00428760/2019-08-15

Contents

1 Safety information

1.1 Warning symbols

DANGER!
This symbol indicates that **personal injury caused by electrical shock** may occur if the respective precautionary measures are not carried out.

WARNING!
This symbol in connection with the signal word indicates that **personal injury** may occur if the respective precautionary measures are not carried out.

CAUTION!
This symbol in connection with the signal word indicates that **damage to assets or data loss** will occur if the respective precautionary measures are not taken.

1.2 Note symbols

NOTE!
This symbol refers to **important information** about the product, its handling, or additional use.

2.1 Application notes

Immersion fittings are used for holding electrochemical sensors (e.g. pH and redox electrodes, glass conductivity cells, compensation thermometers etc.) with a Pg 13.5 screw-in thread and a fitting length of 120 mm.
Fitting types for up to 3 sensors are available.
The fittings are mounted in open sluices or containers. They protect the installed sensor from breaking and enable measurement in different immersion depths. Thanks to various options and accessories, the fittings can be optimally adjusted to the conditions on site. Two pipe clips for wall mounting are provided for the standard versions, but sliding flanges, which are available as an option, also permit installation in container lids, for example.

The following points have to be taken into account

The fittings must be readily accessible, to ensure that the sensor can be cleaned and serviced at regular intervals.
pH and redox electrodes must not be allowed to remain dry for a prolonged period - this can be prevented by using a wetting cup.
The suitability of the materials (e.g. chemical compatibility) has to be tested by the system designer.

CAUTION!
The fitting must not be pressurized via the measured medium.

3 Identifying the device version

3.1 Type 202820/40...

For installing <u>one</u> sensor with a Pg13.5 thread.

An impedance converter, type 202995/00... (data sheet 202995), or a two-wire transmitter, type 202701 (data sheet 202701) can additionally be incorporated.

The fitting is also suitable for installing an electrode with screwed-on reusable digiLine electronics, type 202705/... (data sheet 202705).

3.2 Type 202820/63...

For installing <u>up to 3</u> sensors with a Pg13.5 thread.

Impedance converters, type 202995/00... (data sheet 202995), or two-wire transmitters, type 202701 (data sheet 202701) can additionally be incorporated.

The fitting is also suitable for installing electrodes with screwed-on reusable digiLine electronics, type 202705/... (data sheet 202705). In this case, the connection head for digiLine (part no. 00666612) has to be ordered.

3.3 Order details

	(1)	**Basic type**
202820		Immersion fitting
	(2)	**Tube diameter**
40		40 mm
63		63 mm
	(3)	**Fitting length**
0500		Length EL = 500 mm
0800		Length EL = 800 mm
1000		Length EL = 1000 mm
1300		Length EL = 1300 mm
1500		Length EL = 1500 mm
2000		Length EL = 2000 mm
	(4)	**Material of wetted components**
87		Polypropylene (PP)
	(5)	**Extra codes**
000		None
055		Grounding rod[a]
078		Spray cleaning head[b]
082		KCl reservoir for fittings with diameter 40 mm[b]
092		Flange DN 50 for sprayer[b]

[a] Only for tube diameter 63 mm.
[b] Only for tube diameter 40 mm.

	(1)		(2)		(3)		(4)		(5)	
Order code		-		-		-		-		, ...[a]
Order example	202820	-	40	-	1500	-	87	-	082	

[a] List extra codes in sequence, separated by commas.

3.4 Accessories

Description	**Part no.**
Flange DN 32, complete for type 202820/40...[a]	00083375
Flange DN 50, complete for type 202820/40...[a]	00083376
Flange DN 50, complete for type 202820/63...	00056544
Flange DN 65, complete for type 202820/63...	00056545
Wetting cup, complete for type 202820/40...	00083372
Wetting cup, complete for type 202820/63...	00057581
KCl reservoir, pressure-tight	00060254
Shackle for suspended fitting with diameter 40 mm	00453191
Connection head for type 202820/63 - digiLine	00666612

[a] Not in conjunction with extra codes 78 or 82.

4 Technical data

4.1 Type 202820/40...

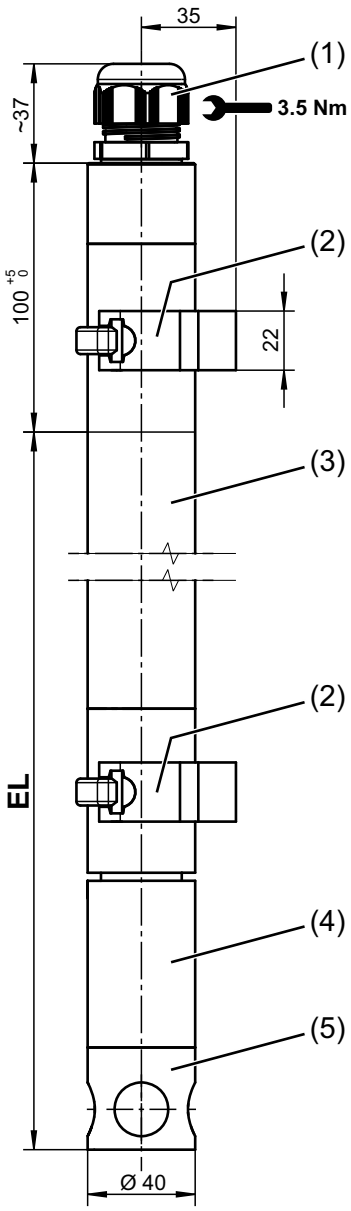
Material	Polypropylene (PP), seals FPM (others on request)
Permissible temperature	0 to 95 °C
Safe pressure	1 bar, up to 90 °C
Electrode holder	Pg 13.5 thread
Immersion tube length	Normally 500 mm and 1000 mm, up to 2000 mm can be implemented, standard lengths 500, 800, 1000, 1300, 1500, 2000 mm
Mounting	Normally with pipe clips, other mounting forms (flange, etc.) are optionally available
Protection	IP65, EN 60529
Weight	Depending on length

4.2 Type 202820/63...

Material	Polypropylene (PP), seals FPM
Permissible temp.	0 to 95 °C
Safe pressure	1 bar, up to 90 °C
Electrode holder	Pg 13.5 threads for 1 to 3 electrodes (blind grommets are included)
Immersion tube length	Ex-stock 500 mm up to 2000 mm can be implemented standard lengths 500, 800, 1000, 1300, 1500, 2000 mm
Mounting	Normally with pipe clips, other mounting forms (flange, etc.) are optionally available
Protection	IP65, EN 60529
Weight	Depending on length

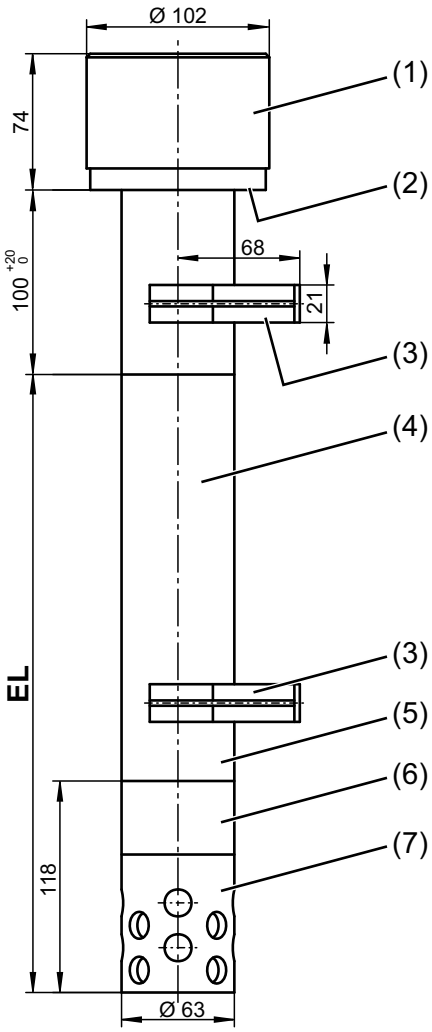
NOTE!
An external KCl reservoir can be used with all immersion fittings.

4.3 Dimensions



Type 202820/40...

(1) Cable fitting M25 × 1.5 with a clamping range from 3 to 8 mm
(2) Pipe clip
(3) Immersion tube
(4) Electrode holder
(5) Protection basket
EL Immersion length



Type 202820/63...

(1) Connection head
(2) Three Pg 7 glands for cable diameter from 5 to 6 mm
(3) Pipe clip with spacer
(4) Immersion tube
(5) Electrode holder
(6) Spacer ring
(7) Protection basket
EL Immersion length

5 Mounting

CAUTION!
Please make sure that the threads and O-rings are clean, otherwise liquid may leak into the fitting.

CAUTION!
When installing a glass electrode, please be aware that the glass membrane is very fragile.

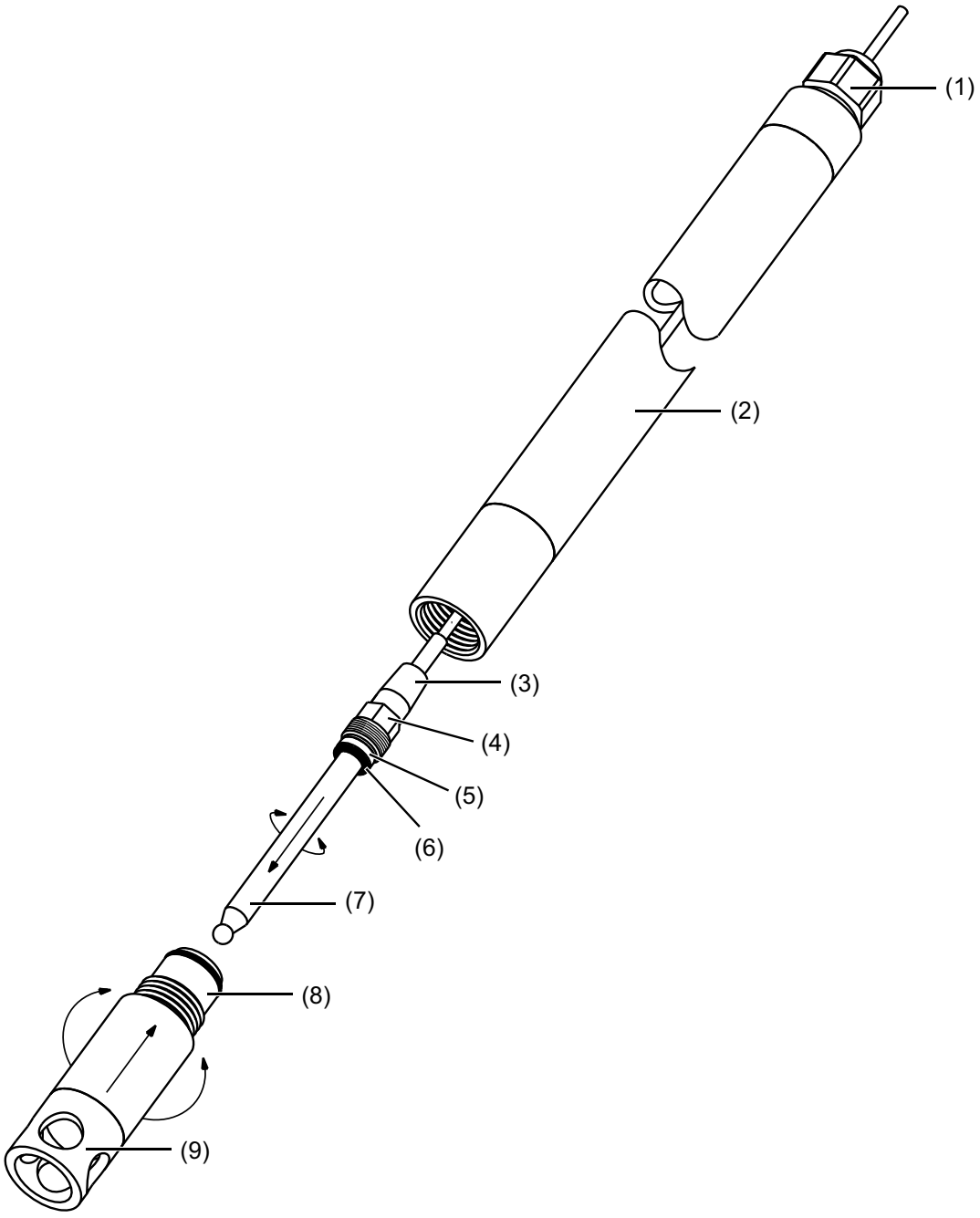
CAUTION!
When screwing in the electrodes, only tighten them up to the point where they fit tight. Don’t exceed the max. tightening torque (e.g. max. 3 Nm for pH electrodes).

NOTE!
An impedance converter (Data sheet 202995) can be mounted between the pH electrode and the N cable connector.

5.1 Type 202820/40...

5.1.1 Electrode

Example: electrode with N screw head



(1) Cable fitting
(2) Immersion tube
(3) N cable connector
(4) Electrode head
(5) Washer
(6) O-ring
(7) Electrode
(8) Electrode holder
(9) Protection tube

Step	Activity
1	Unscrew electrode holder (8) from immersion tube (2).
2	Screw electrode (7) into electrode holder (8). Max. tightening torque 3 Nm.

NOTE!
Washer (5) and O-ring (6) must be on the electrode (7).

Step	Activity
3	Unscrew lid of cable fitting (1) and slide it over connecting cable.
4	Take out slotted sealing insert and place it around connecting cable.
5	Insert cable with sealing into cable fitting and slide it through immersion tube (2)[a].
6	Screw N cable connector (3) onto electrode head (4).
7	Screw electrode holder (8) into immersion tube (2), screw on lid of the cable fitting (1) and tighten it with a maximum torque of 3.5 Nm).

[a] Procedure for electrodes with N connection or M12 connection (digiLine).
In case of using electrodes with VarioPin connetction, the connecting cable with the ferrules must be slided through the immersion tube, starting at the electrode end (VarioPin connector doesn't fit through cable fitting).

5.1.2 Pipe clips (standard)

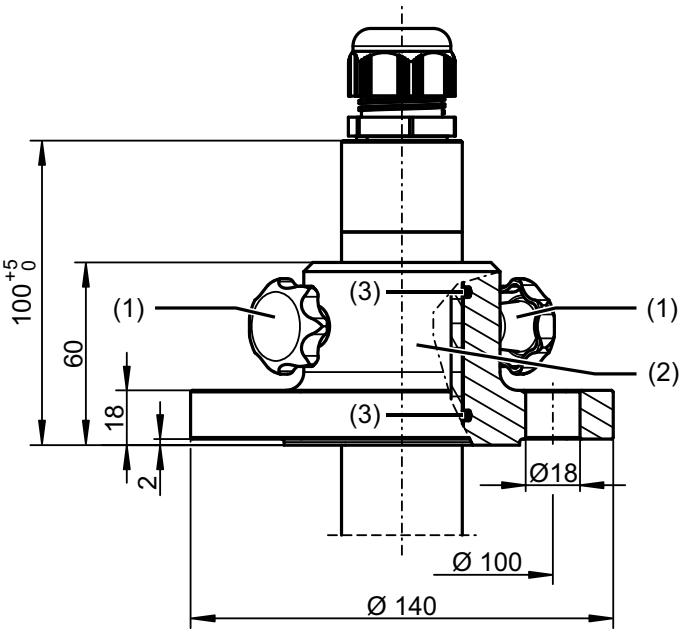
Step	Activity
1	Mount pipe clips on tank, spacing them out as appropriate.
2	Snap fitting into pipe clips.

Immersion depth of fitting

CAUTION!
In order to prevent the ingress of liquid into the fitting, the first 120 mm of the immersion tube (measured from the cable gland) must not be immersed in the liquid to be measured.

5.1.3 Flange DN 32

(Part no. 00083375)

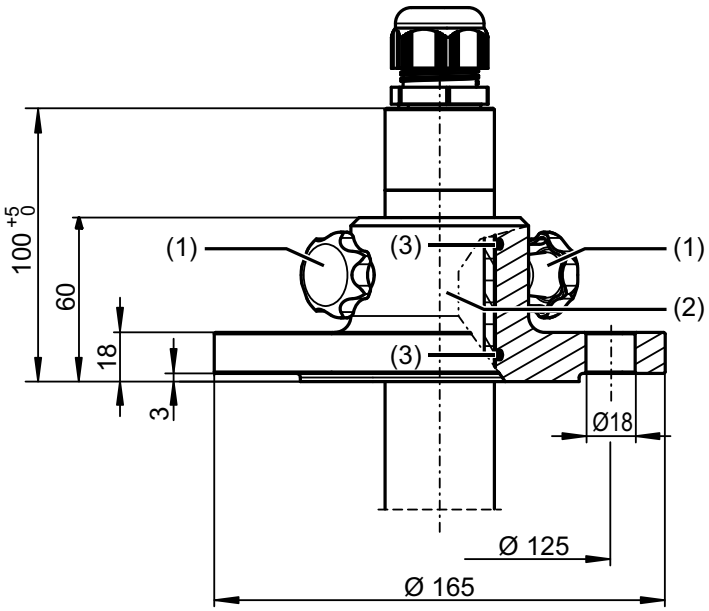


(1) Fixing screws
(2) Flange (slidable)
(3) 2 O-rings (inside)

Step	Activity
1	Screw flange onto tank. If tank cannot be accessed from inside, it is advisable to use fixed studs.

5.1.4 Flange DN 50

(Part no. 00083376)



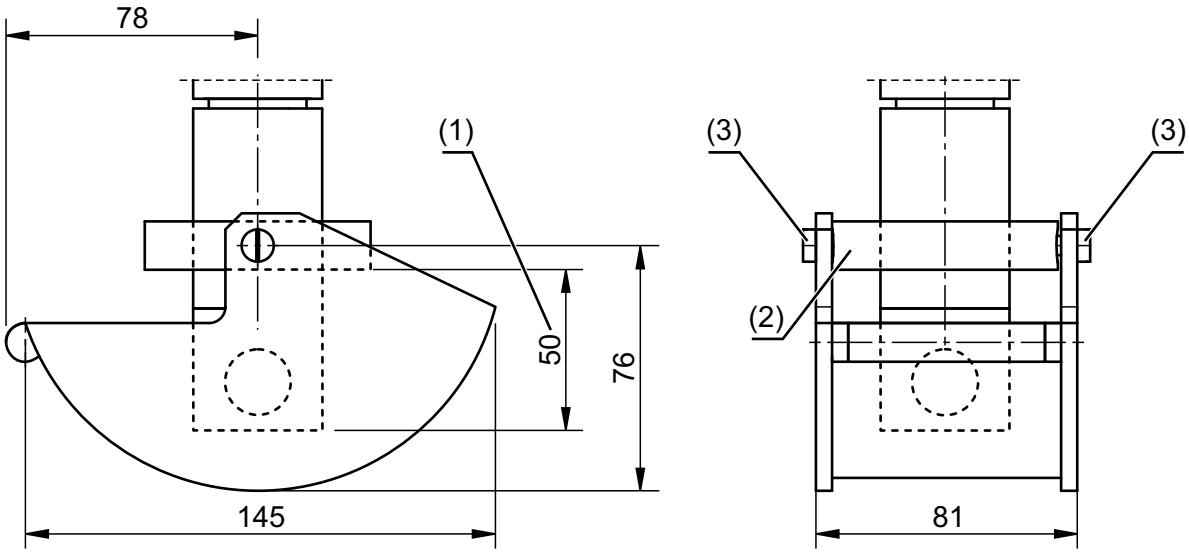
(1) Fixing screws
(2) Flange (slidable)
(3) 2 O-rings (inside)

Step	Activity
1	Screw flange onto tank. If tank cannot be accessed from inside, it is advisable to use fixed studs.

5.1.5 Wetting cup

(Part no. 00083372)

Mounting for version without spray cleaning head



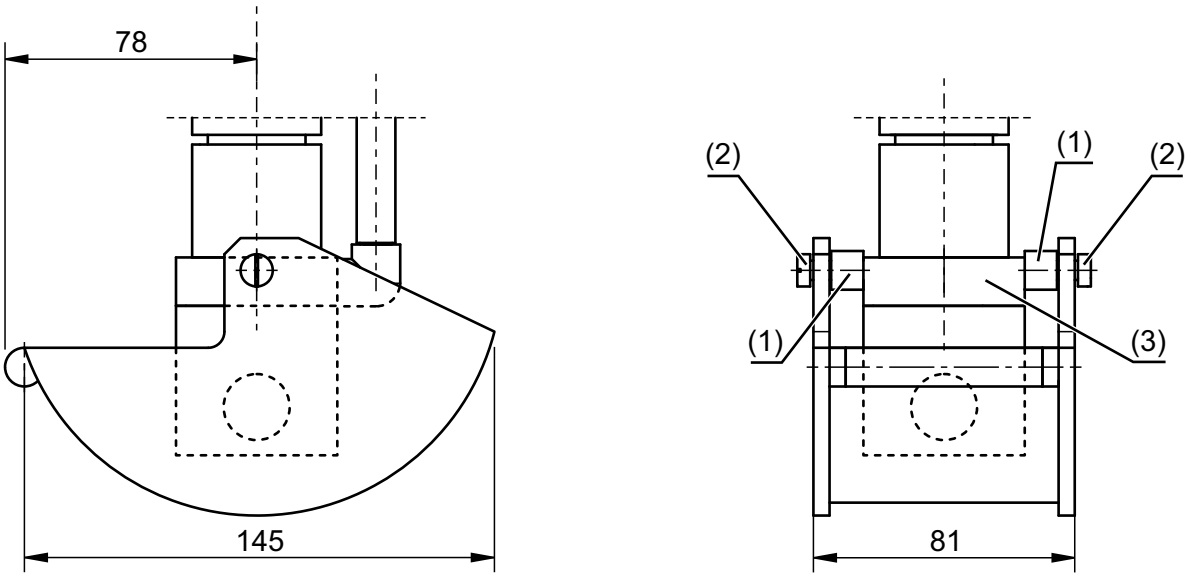
(1) Fitting dimension
(2) Holder
(3) Screws

Step	Activity
1	Release screws (3).
2	Slide holder (2) of wetting cup over bottom of immersion fitting.
3	Place holder (2) to fitting dimension 50 mm (1).
4	Fix holder (2) with screws (3).

CAUTION!
To ensure the proper functioning of the wetting cup, spacers have to be fitted between the pipe clips and the tank (included in installation kit).

5 Mounting

Mounting for version with spray cleaning head



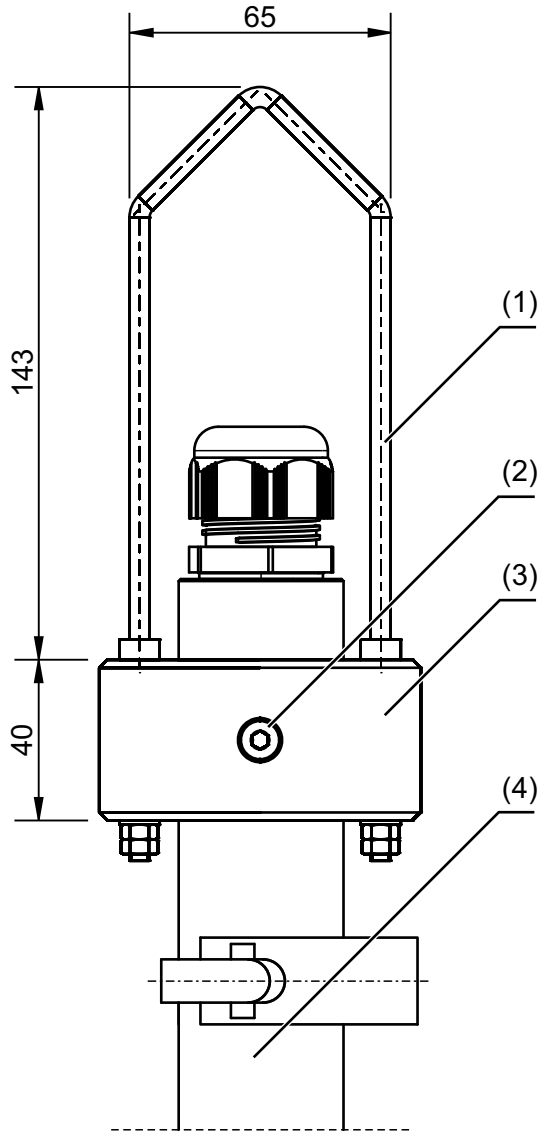
(1) Spacer
(2) Screws
(3) Nozzle top

Step	Activity
1	Place wetting cup over bottom end of immersion fitting.
2	Put spacers (1) between upper part of spray cleaning head (3) and screw holes of wetting cup.
3	Pass screws (2) through screw holes of wetting cup and spacers and screw them into threaded holes of spray cleaning head.
4	Tighten screws.

CAUTION!
To ensure the proper functioning of the wetting cup, spacers have to be fitted between the pipe clips and the tank (included in installation kit).

5.1.6 Holder

(Part no. 00453191)



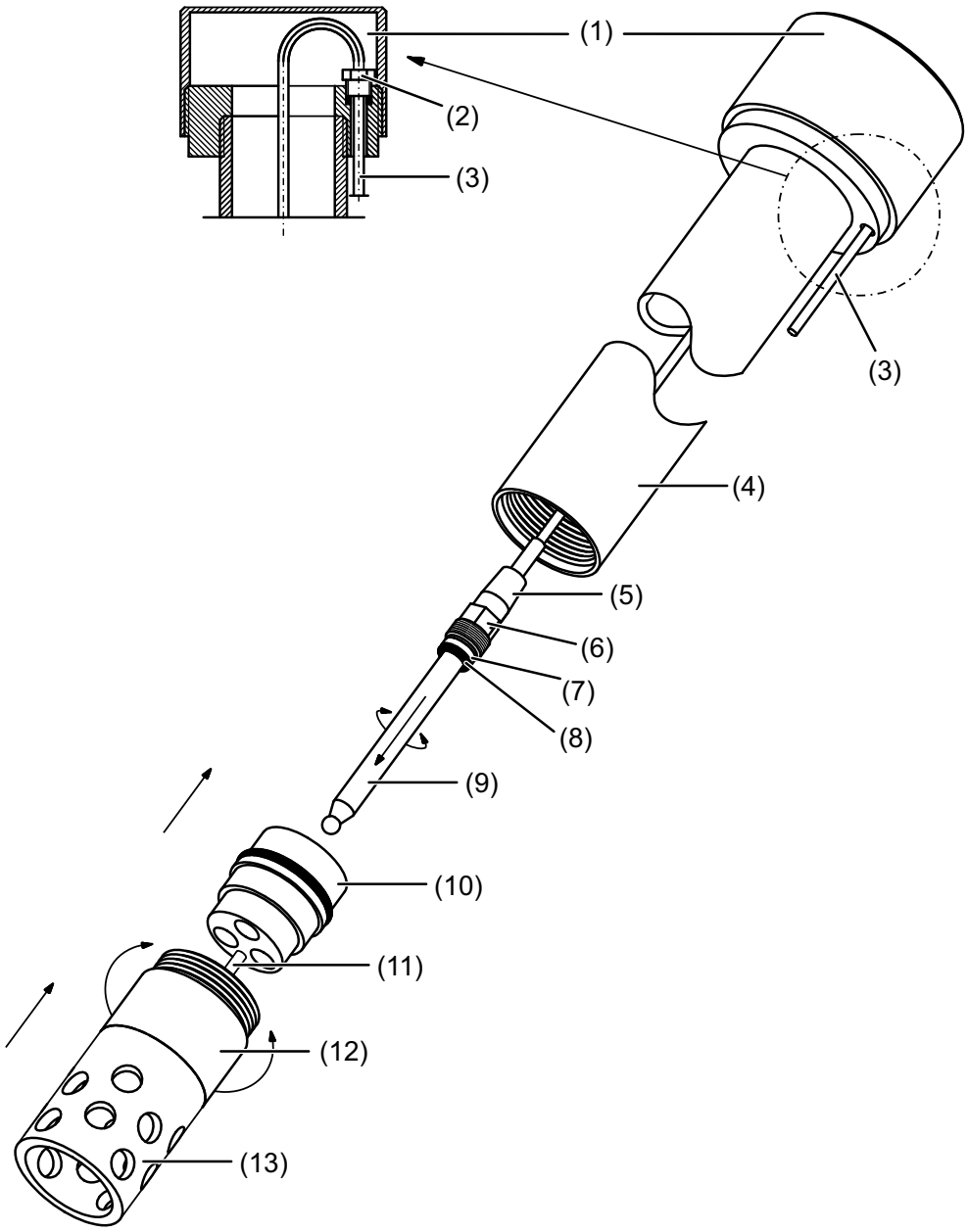
(1) Holder
(2) Cylinder head screw
(3) Seating
(4) Fitting

Step	Activity
1	Slide holder (1) with seating (3) over top of fitting (4).
2	Fix seating (3) to fitting (4) by using three cylinder head screws (2).

5.2 Type 202820/63...

5.2.1 Electrodes

Example: 1 electrode with N screw head



(1) Connection head
(2) Pg7 cable fitting
(3) Cable
(4) Immersion tube
(5) N cable connector
(6) Electrode head
(7) Washer
(8) O-ring
(9) Electrode
(10) Electrode holder
(11) Grounding rod (optional, extra code 055)
(12) Intermediate ring
(13) Protection tube

Step	Activity
1	Screw off connection head(1).
2	Screw off intermediate ring (12) with protection tube (13).
3	Pull electrode holder (10) out of immersion tube (4).
4	Screw electrode (9) and, if necessary, blind grommets into electrode holder (10)[a]. Max. tightening torque 3 Nm.

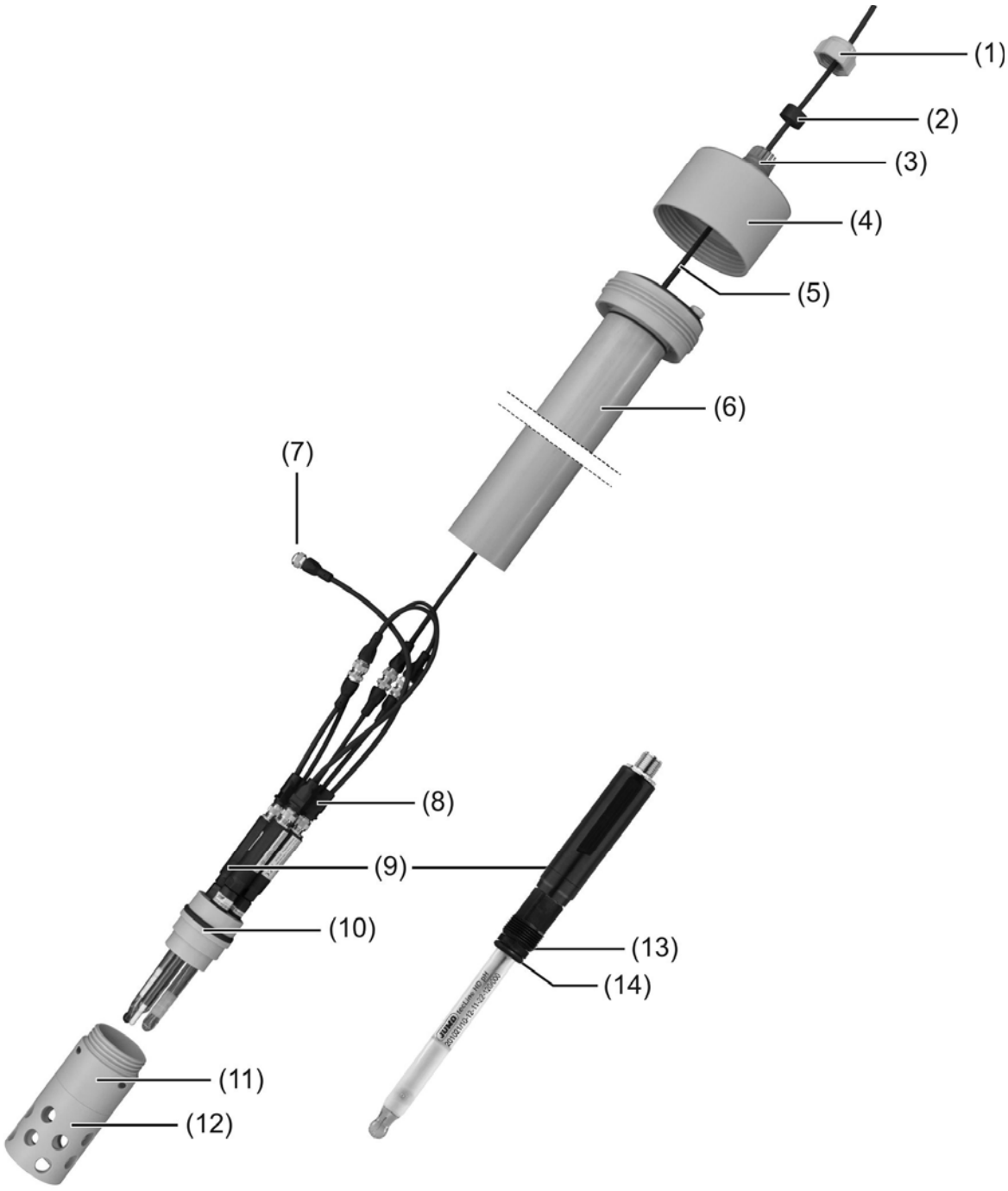
[a] If less than 3 electrodes are used, open electrode slots must be closed by using the supplied blanking plugs.

NOTE!
Washer (7) and O-ring (8) must be fitted on the electrode (9).

Step	Activity
5	Screw N cable connector (5) onto electrode head (6).
6	Pass cable (3) through immersion tube (4) and cable fitting (2).
7	Insert electrode holder (10) into immersion tube (4); tighten cable gland (2).
8	Screw intermediate ring (12) into immersion tube (4). Max. tightening torque 3.5 Nm.

NOTE!
Potential equalization is possible by the optional grounding rod (extra code 055).
Mounting of the grounding rod only factory set!

Example: 3 electrodes (pH, ORP, temperature) with reusable digiLine electronics and M12 connection



(1) Lid of the cable fitting
(2) Split sealing insert
(3) cable fitting body
(4) Connection head
(5) M12 connecting cable
(6) Immersion tube
(7) Connection for M12 termination plug
(8) Y-splitter
(9) pH electrode with digiLine electronics
(10) Electrode holder
(11) Intermediate ring
(12) Protection tube
(13) Washer
(14) O-ring

NOTE!
When using electrodes with reusable diglLine electronics, the original connection head must be replaced by the connection head for digiLine (part No. 00666612).

Step	Activity
1	Unscrew original connection head (without cable fitting) from immersion tube (6) and replace it by connection head for digiLine (4).
2	Unscrew lid of the cable fitting (1) and slide it over the M12 connecting cable (5) for the electrodes (9).
3	Take out slotted sealing insert (2) and place it around the connecting cable
4	Insert M12 connecting cable (5) with sealing insert (2) into cable fitting body (3) and slide it through immersion tube (6).
5	Unscrew intermediate ring (11) together with protection tube (12).
6	Pull electrode holder (10) out of immersion tube (6).
7	Screw electrodes (9) into electrode holder(10)[a]. Max. tightening torque 3 Nm.

[a] If less than 3 electrodes are used, open electrode slots must be closed by using the supplied blanking plugs.

NOTE!
Washer (13) and O-ring (14) must be fitted on each electrode (9)

Step	Activity
8	Screw 3 Y-splitters[a] (8), (part no. 00638327) onto electrodes with digiLine electronics (9), connect them as shown in picture on previous page.
9	Attach M12 connecting cable (5) to a free end of Y-splitters (8).
10	Connect M12 termination plug for digiLine (part no. 00461591, no figure) with other free end (7) of Y-splitters[b].
11	Insert electrode holder (10) into immersion tube (6)
12	Screw intermediate ring (11) together with protection tube (12) into immersion tube (6). Max. tightening torque 1.5 Nm.
13	Screw lid of cable fitting (1) onto cable fitting body (3). Max. tightening torque 3.5 Nm.

[a] When using 3 electrodes with digiLine electronics. Lower number of electrodes with digiLine electronics reduces the required number of Y-distributors accordingly (see also digiLine-system data sheet 203500)

[b] Required only when no other electrodes with digiLine electronics are operated at the system bus

NOTE!
Potential equalization is possible by the optional grounding rod (extra code 055).
Mounting of the grounding rod only factory set!

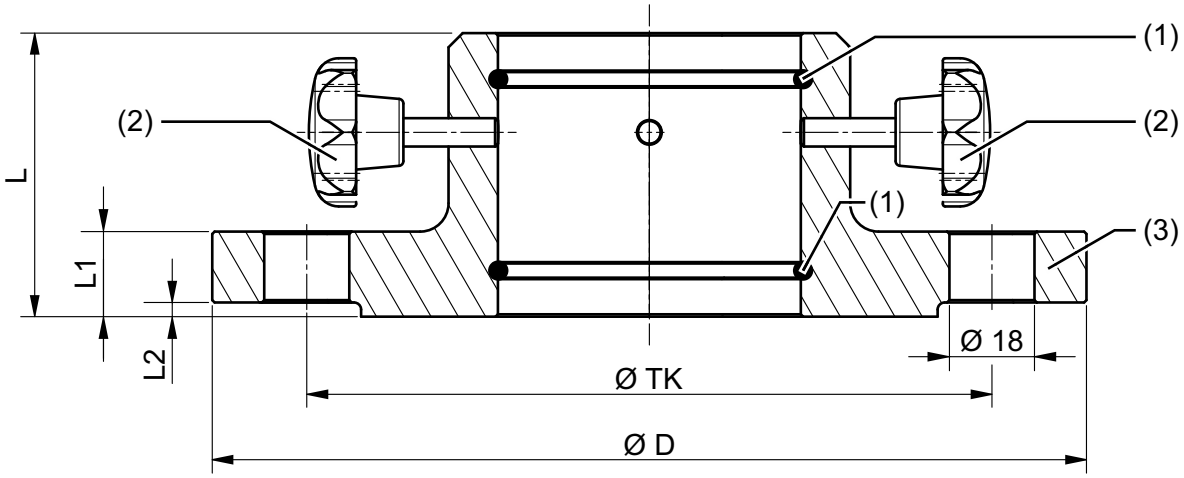
5.2.2 Pipe clips with spacer (standard)

Step	Activity
1	Mount the pipe clips on the tank, spacing them out as appropriate.
2	Snap the fitting into the pipe clips.

Immersion depth of the fitting

CAUTION!
In order to prevent the ingress of liquid into the fitting, the first 120 mm of the immersion tube (measured from the cable gland) must not be immersed in the liquid to be measured.

5.2.3 Flange DN 50/DN 65



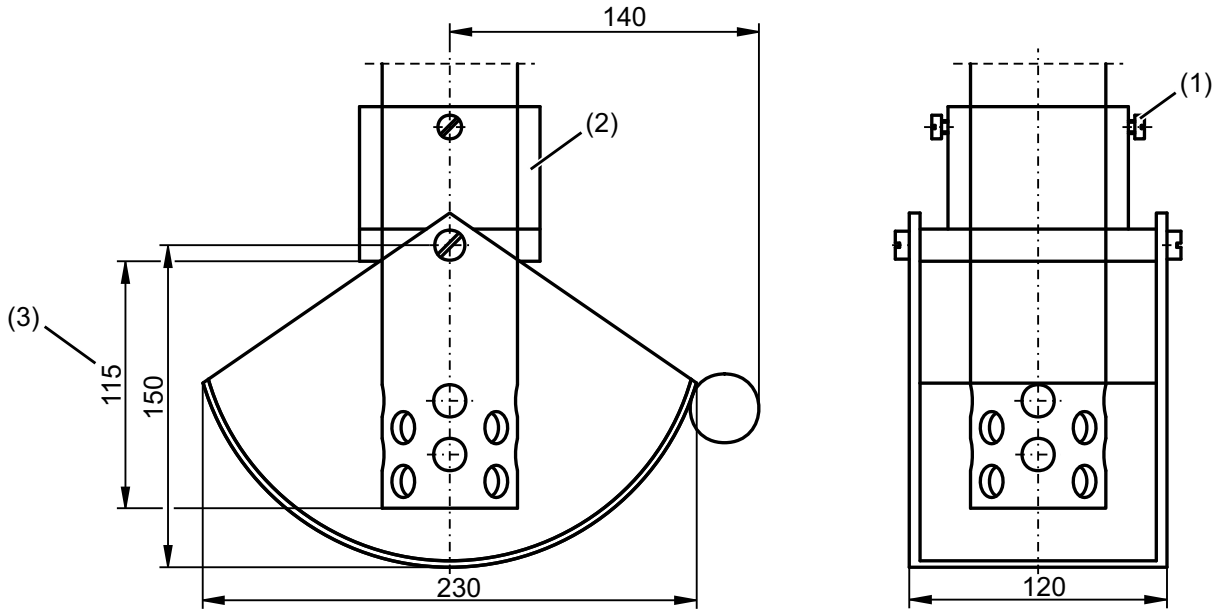
(1) 2 O-rings (inside)
(2) Fixing screw
(3) Flange (slidable)

Step	Activity
1	Screw the flange onto the tank. If the tank is not accessible from the inside, then it is advisable to use fixed studs.

Description	DN	D	TK	L	L_1	L_2
Flange DN 50, part no. 00056544	50	165	125	60	18	3
Flange DN 65, part no. 00056545	65	185	145	60	18	3

5.2.4 Wetting cup

(Part no. 00057581)



(1) Screws
(2) Wetting cup holder
(3) Fitting dimension 115 mm

Step	Activity
1	Release the screws (1).
2	Slide the holder (2) of the wetting cup over the bottom of the immersion fitting.
3	Place the holder (2) to the fitting dimension 115 mm (3).
4	Fix the holder (2) with the screws (1).

5.2.5 KCl reservoir, pressure-tight, with compressed-air connection

(Part no. 00060254)

The KCl reservoir is suitable for the installation of an electrolyte bridge[1] or its use, when measuring or reference electrodes can be disturbed or chemically attacked by substances contained in the measurement medium.

The reservoir is pressure-tight, has a compressed-air connection and can be equipped with an angle bracket made of stainless steel 1.4571 (part no. 00455706) for wall mounting.

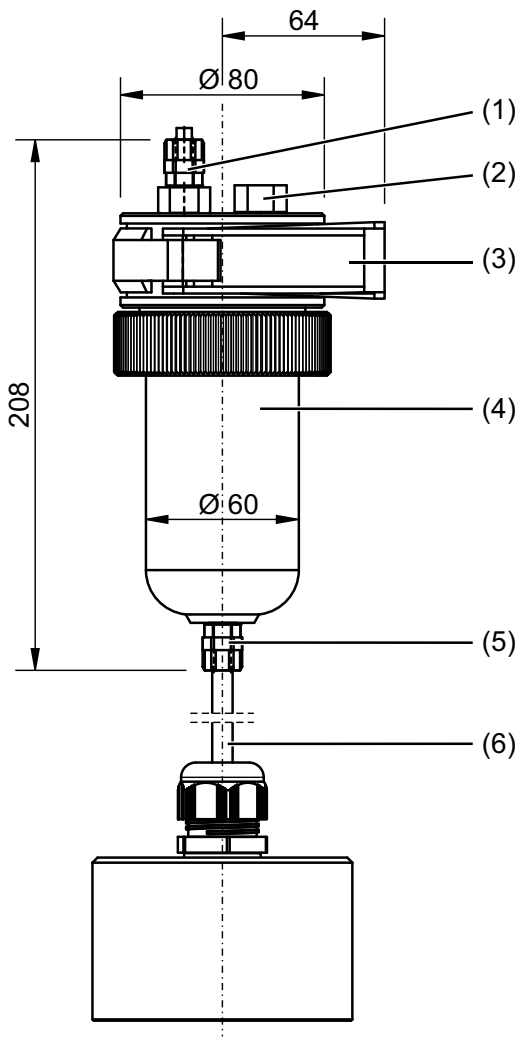
The KCl reservoir can be charged with up to 6 bar by the compressed-air connection.

Installation of an electrolyte bridge

For an electrolyte bridge two separated electrodes are required (glass electrode and reference electrode). The connection between reference electrode and measurement medium is made by a diaphragm tube.

The installation of the diaphragm tube takes place in the electrode holder of the immersion fitting [see drawing page 18 under (10)].

The reference electrode is mounted in the KCl reservoir under (2).



(1) Compressed-air connection
(2) Holder for reference electrode
(3) Pipe clip DN 65
(4) KCl reservoir, pressure-tight up to 6 bar, suitable for wall-mounting
(5) Plastic gland, connection for KCl tube
(6) KCl tube

[1] The installation of an electrolyte bridge is not possible when using electrodes with digiLine electronics.

Step	Activity
1	Mount pipe clip (3) onto wall.
2	Unscrew nut of plastic gland (5) and slide it onto KCl tube (6).
3	Plug tube (6) onto nipple of plastic gland (5) and secure with nut.

NOTE!
The KCl solution in the tube (6) has to be free from bubbles. Appeared bubbles in the diaphragm tube or in the KCl tube can be eliminated by knocking.

6 Maintenance – Malfunction

6.1 Maintenance

NOTE!
The fitting (including the electrode) must be cleaned at regular intervals. In order to do this, you have to unscrew the protection tube. The sensing part of the electrode is now freely accessible.

Cleaning interval and cleaning agent depend on the type and degree of the contamination.

After each disengagement of the threaded joints, the O-rings have to be lubricated with a suitable lubricant (depending on the solution) and the sealing faces have to be checked for damage.

6.2 Malfunction

NOTE!
Ingress of liquid into the fitting may be caused by damaged sealing faces or O-rings. Because of its design, the fitting is not pressure-tight.

If...	**Then...**
the fitting is leaking,	check if all moveable components are screwed in at least hand-tight and make sure that the sealings are inserted and undamaged.
the possibilities of wear and tear depend on chemical exposure,	check the sealings at regular intervals and replace them if necessary.
	pay attention to material changes (embrittlement of plastic etc.).

部件名称 Product group: 202820	有毒有害物质或元素 Hazardous substances					
	铅（Pb）	汞（Hg）	镉（Cd）	六价铬（Cr(VI)）	多溴联苯（PBB）	多溴二苯醚（PBDE）
外壳 Housing (Gehäuse)	X	○	○	○	○	○
过程连接 Process connection (Prozessanschluss)	X	○	○	○	○	○
-螺母 Nut (Mutter)	X	○	○	○	○	○
螺钉 Screw (Schraube)	○	○	○	○	○	○

本表格依据 SJ/T 11364-2014的规定编制。

(This table is prepared in accordance with the provisions of SJ/T 11364-2014.)

O：表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572 规定的限量要求以下。

(O: Indicates that said hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement of GB/T 26572.)

X：表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 规定的限量要求。

(X: Indicates that said hazardous substance contained in one of the homogeneous materials used for this part is above the limit requirement of GB/T 26572.)