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Assembly and Repair Instructions for KLINGER SCHÖNEBERG Ball Valves, Type INTEC K220 / K224

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1 Validity

These Assembly and Repair Instructions are applicable to the type series listed below:

INTEC K220

INTEC K224

2 General Remarks

These Assembly and Repair Instructions are designed to provide assistance in assembling, servicing and repairing the ball valve INTEC K220 / K 224.



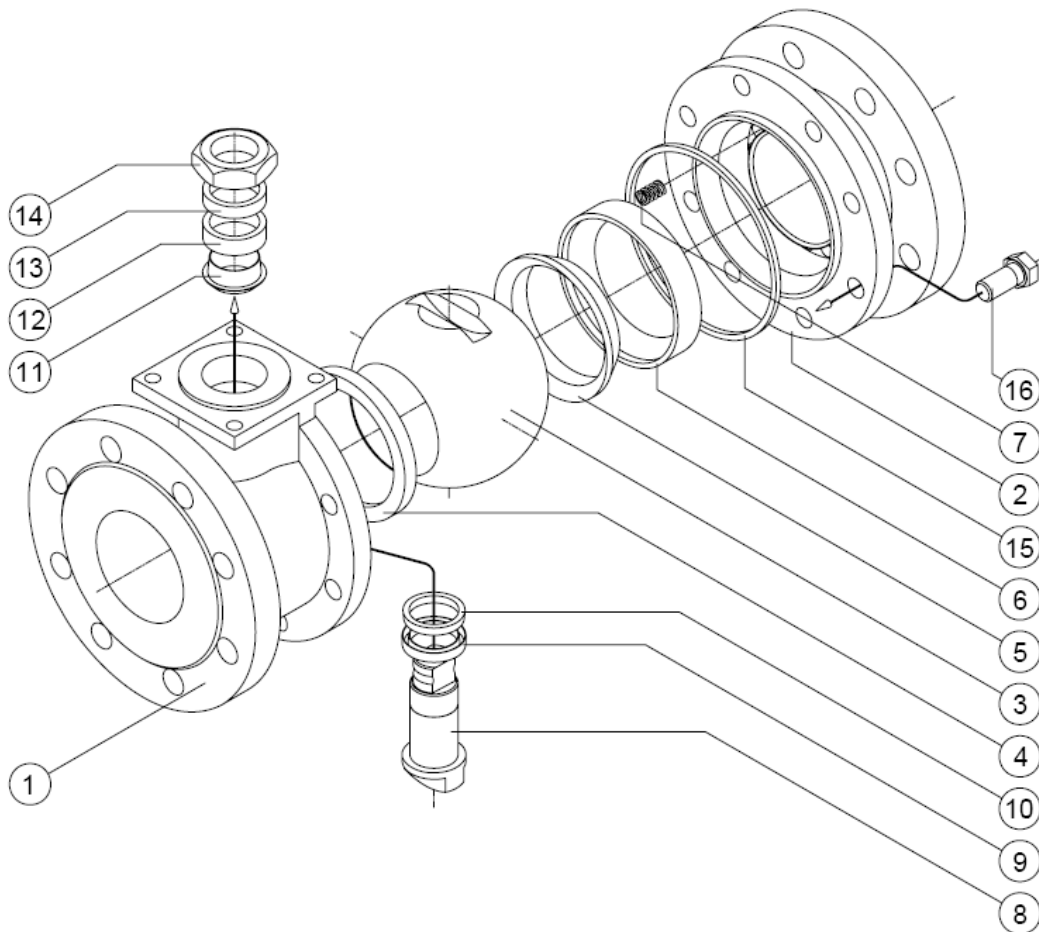
The valves may only be dismantled and taken apart by skilled personnel acquainted with the assembly, commissioning and operation of this product.

Trained personnel within the meaning of these Assembly and Repair Instructions are individuals who are able to assess the work which they have been entrusted and to recognise possible risks in view of their special training, their know-how and experience and their knowledge of the pertinent standards.

These instructions as well as the **Operating Instructions for KLINGER SCHÖNEBERG Ball Valves** must be observed. KLINGER SCHÖNEBERG GmbH shall no assume no liability for damage or interruptions to operation arising from incorrect handling or failure to observe these Repair Instructions.

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3 Construction and Components INTEC K220 / K224



Pos.	Part
1	body
2	cap
3	ball
4	seat ring
5	spring loaded seat ring
6	seat bearing ring
7	spiral spring
8	stem

Pos.	Part
9	below seal ring
10	below cone ring
11	upper seal ring
12	upper cone ring
13	bearing
14	selflocking nut
15	body seal
16	hex. screw

4 Assembly of the INTEC K220 / K224

4.1 Preparing for Assembly

All parts must be prepared to assemble the ball valve, i.e. the parts are carefully cleaned and laid on a soft base (rubber mat or similar).

It must be considered that the plastic parts are almost always soft and very sensitive and that in particular the sealing surfaces may not be damaged.

4.2 Assembling the Valve

The body (1) of the valve must be tensioned securely and safely in a suitable device; free access to the cavity and stem must be guaranteed.

Lightly grease the body (1) in the area of the seat ring with high temperature grease (e.g. Q1) licensed by the FDA. Insert seat ring (4) into bore. It should be able to insert it with slight manual pressure. If it fits too tightly or too loosely the dimensions must be checked.

Similarly grease the cap (2) in the area of the seat bearing ring. Grease the seat bearing ring (6) in the area of the spring loaded seat ring (5). Insert spiral spring (7), and insert seat ring (5) with seat bearing ring (6). Installation set of spiral springs acc. to specification resp. note resultant torque.



With DN15 the stem is assembled before the seat ring.

Slightly grease the stem (8) in the area of the primary stem seal with high temperature grease licensed by the FDA. Similarly slightly grease the body (1) in the area of the seat of the primary and secondary seal. Only a light grease film should arise which does not spill out during assembly of the sealing elements. The grease may be applied with the assistance of a brush for example.




In the case of valves stated as being oil- and grease-free the assembly should be made without grease and without other auxiliary substances.

Push the slit of the self-locking nut (14) in suitable device (e.g. vice) in order to achieve pre-tensioning and therefore a self-securing of the thread. To assemble the nut (14) a suitable wedge must be driven into the slit to bring it to its starting width again. The own tension in the slit of the nuts is therefore cancelled for the period of assembly. The wedge is removed again after successful assembly.

Thread on primary sealing parts (9) (10) to stem (8) and push on stem from the inside through the body (1). Sealing parts may not be damaged. Thread on secondary sealing parts (11) (12) and bearing (13) from the top on to the stem (8). Screw on the nut (14) opened with the wedge onto the stem (8).

Tighten nut with wrench and hold stem on double-D using a hand lever. Tighten nut until it is in contact with the seal package; turn for it for half a rotation so that the sealing pack can settle. Turn nut back again one quarter of a rotation. Check stem moment after tightening. The following table will provide a guide:

DN	15	20	25	32	40	50	65	80	100	125	150	200
Moment	4 Nm	4 Nm	5 Nm	5 Nm	7 Nm	7 Nm	7 Nm	12 Nm	12 Nm	18 Nm	18 Nm	25 Nm

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Remove wedge from nut and check torque once again.

Bring stem (8) to closed position (double-D crosswise to valve conduit). Fit ball (3) with groove to stem and swivel it into the body.

Insert body seal (15) into body (1). Fit cap (2) carefully into body (1) without damaging the body seal (15). Coat hexagon screw (16) on the thread with high temperature fat (OKS) in order to avoid cold welding.



In the case of valves stated as being oil- and grease-free assembly is performed without grease and without other auxiliary substances.

Tighten hexagon screws (16) crosswise gradually until the seal is evenly pressed out and cap (2) is metallically on block with body (1).

4.3 Assembling the Hand Lever

Push on hand lever, push on screw of the hand lever and tighten. Loosely tighten limit stop by means of the screws. Bring ball into an exactly aligned open position. In this position press the limit stop against the manual lever limit stop and tighten the screws of the limit stop. The limit stop is now perfectly aligned.

Starting from ISO flange F12 the adjustments of the manual lever limit stop are made using eccentric screws. The eccentric screw is turned until it hits against the exactly aligned manual lever limit stop. Fix position of the screws using the nut.

4.4 Function, Strength and Tightness Test

After assembling the ball valve it must be checked whether it can move freely and whether the ball can turn unhampered. Finally the ball valve must be subjected to a strength and tightness test in accordance with EN12266 - 1 Nr. P10 / P11 / P12.

4.5 Independent Conversion and Manufacture of Spare Parts


Conversion while changing the valve is only permissible after agreement and written declaration by the manufacturer. Original spare parts and accessories authorised by the manufacturer serve the purposes of safety.

If other spare parts are used and consequences result KLINGER SCHÖNEBERG GmbH shall not assume liability.

4.6 Incorrect Operation

The operational reliability of the valve is only guaranteed if it is used correctly in accordance with the operating instructions for KLINGER SCHÖNEBERG ball valves. The limit value specified in the technical documentation may under no circumstances be undercut.

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5 Dismantling

5.1 Precautionary Measures

In order to ensure that any product residue which has remained in the cavity of the valve cannot lead to risk to the staff performing the dismantling operation, appropriate protective clothing made of chemical and solvent resistant material is to be worn on the entire body and a resistant facial protection.

For reasons of caution dismantling should be performed via a catch tank. Any toxic gases or vapours must be extracted so that they may not reach personnel. This also applies to the final cleaning after dismantling has been completed.

The ball valves must be brought into a pressure-free state for the purposes of repair. For this purpose they should be brought into the semi-open position. It will similarly be necessary to perform cleaning on the inside and outside before dismantling. It is expedient to switch the ball several times during cleaning of the cavity.

5.2 Preparing for Dismantling

Before dismantling, the body (1), the cap (2) and the parts of the ball valve should be marked so that the assembly positions can be understood later on.

5.3 Dismantling

For the purposes of dismantling the valve is tensioned again securely and safely in a suitable device. This is done best on the flange of the body (1) in order to guarantee free access to the intermediate flange, cavity and stem. Loosening the hexagonal screws (16) will permit the cap (2) to be removed. In order to avoid the balls (3) falling out, the balls should first be brought to the open position (double-D crosswise to the valve conduit). After the ball (3) is brought to a close position, it can be taken from the body (1).

Next the hand lever is taken off if present. For this purpose the hexagonal screw must be unscrewed and removed completely because the screw positively screws into the stem and therefore would otherwise prevent a removal of the hand lever. In the case of slow movement the hand lever can be opened up with a screwdriver or wedge and pulled off more easily. If necessary the hand lever limit stop can also be dismantled.

After that the stem is dismantled. A suitable wedge must be driven into the tensioned slit of the nut to unscrew the nut (14) so as to bring it back to its starting width. This cancels the generated own tension or self-locking in the slit of the nut for the time of dismantling. Using a wrench, the nuts (14) can be screwed from the stem (8) in anti-clockwise direction. In order to facilitate this process the device can be held with the dismantled hand lever or suitable wrench on the double-D. The stem can now be carefully pressed into the ball area. Secure the stem against falling down and damage. The bearing (13) can be removed and secondary sealing parts (11) (12) removed from the cone.


Under circumstances it may happen that the primary sealing parts (9) (10) remain in the housing and make it difficult to remove the stem (8) with small nominal widths. Seals can be carefully pressed from their position in the body in the direction of the body or stem using a screwdriver and then the stem removed more easily. Any damage to the sealing area of the body (1) must be avoided.

The seat rings parts (4) (5) (6) can then be dismantled.



In the case of DN15 the seat rings are dismantled before dismantling the stem.

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The seat rings are surrounded by an inside and outside chamber. Special wrenches are used for dismantling which comply with the nominal widths. Special attention must be paid to ensuring that neither the side areas nor the surface areas of the seals are damaged. Finally the body seal (15) is removed. Auxiliary agents will not usually be required.

5.4 Final Cleaning and Recording of Damage

After dismantling all parts are finally cleaned. The dismantled sealing parts are also to be included in cleaning so that they may be disposed of with problem.

The damage is then recorded.

Special attention must be paid to inside and outside damage to the body parts. The nature of the sealing surfaces at the ball seal, stem conduit, body sealing and the flange seals must be checked. The body parts are then jet-cleaned inside and out with glass pearls and cleaned mechanically if necessary and possible. For this purpose sealing areas must be covered up.

The valves are then to be cleaned anew and are then available for a further visual check for new assembly.

The stem is checked after visual checking for parallel running and traces of pressure of the two other flanges. Special attention must be directed at the perfect state of the sealing areas. Slight scratches can be removed with emery cloth. Damaged or twisted stems are replaced.

The cleaned ball is firstly visually checked. Deep scratches as well as other mechanical damage and chemical attack on the sealing surface as well as the running surface of the seal ring mean that the ball must be discarded. Similarly deformation in the area of the ball slit is inadmissible. All screws and sealing parts must be replaced during every repair.

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