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Assembly and Repair Instructions for KLINGER SCHÖNEBERG Ball Valves, Type INTEC K211-HT

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1 Validity

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

INTEC K211-HT

2 General Remarks

These Assembly and Repair Instructions are designed to provide assistance in assembling, servicing and repairing the ball valve INTEC K211-HT.



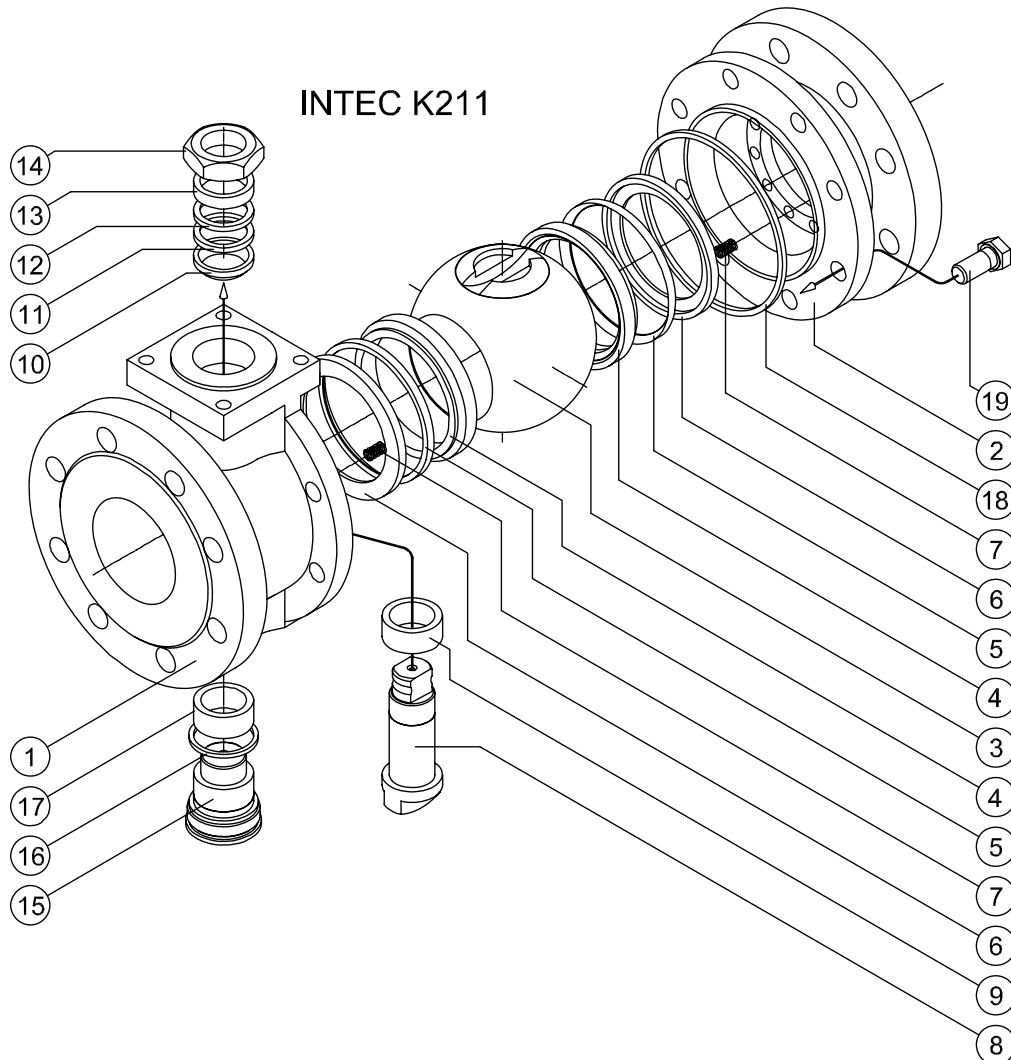
The valves may only be dismantled and taken apart by skilled personnel acquainted with the assembly, commissioning and operation of this product.

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 not 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 K211-HT



Pos.	Part
1	body
2	cap
3	ball hard facing metal coated
4	seat hard facing metal coated
5	seat seal
6	thrust collar
7	spiral spring
8	mounted stem
9	below stem bearing
10	cone ring

Pos.	Part
11	thrust washer
12	solid sealing
13	upper stem bearing
14	nut
15	trunnion
16	trunnion seal
17	trunnion bearing
18	body seal
19	hex. screw

4 Assembly of the INTEC K211-HT

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) and the cap (2) in the area of the seat ring with high temperature grease (e.g. Q1) licensed by the FDA. Insert spiral spring (7) into body (1) and cap (2). Attention: quantity of spiral springs according to the specification or resultant torque. Insert thrust collar (6), perched flange must show in ball direction. Insert seat seal (5). Handle graphite gaskets with more caution because the material breaks easily through strong distortion. Insert seat rings (4). It should be able to insert it with slight manual pressure. If it fits too tightly or too loosely the dimensions must be checked.

Slightly grease the stem (8) in the area of the below bearing with high temperature grease licensed by the FDA. Similarly slightly grease the body (1) in the area of the seat of the bearing and the stem sealing. 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 bearing (9) to stem (8) and push on stem from the inside through the body (1). Bearing parts may not be damaged.




Application of bearings from carbon, the bearing (9) must be shrunk. For this purpose the body must be heated 150°C up to 200°C in an oven.

Thread on stem sealing parts (10) (11) (12) and bearing (13) from the top 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 the nut up to seated on the sealing package, rotate a ½ turn more, so the sealing package can set. Then the nut must be rotated a ¼ turn back and after this the torque of the stem has to be tested.

The following table will provide a guide:

DN	80	100	150	200	250	300
torque	20 Nm	28 Nm	50 Nm	70 Nm	70 Nm	90 Nm

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Remove wedge from nut (14) and check torque once again.

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

Coat the trunnion (15) on the thread with high temperature fat (OKS) in order to avoid cold welding.

Slide trunnion seal (16) and bearing (17) on the trunnion (15).



Application of bearings from carbon, the bearing (17) must be shrunk. For this purpose the body must be heated 150°C up to 200°C in an oven.

The ball must be pressed into the body (1) with a suitable device, up to the bearing bore of the ball (3) aligns with the trunnion bearing bore in the body (1). Trunnion (15) plug and tighten. Don't shear or damage sealing- and bearing parts. Remove the device and make sure that the ball can be easily moved.

Insert body seal (18) into body (1). Fit cap (2) carefully into body (1) without damaging the body seal (15). Coat hex. screw (19) 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 (19) 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 loosely 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 dome 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.

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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.

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 (19) will permit the cap (2) to be removed. Move the ball (3) to the open position (two flat along the flow direction). Press ball (3) into the body (1) with suitable device, to lift the pre-load from the ball seat (4). Therefore the trunnion can be removed. Remove the device and retain the ball. 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 (7) 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.

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Application of bearings from carbon, the bearings (9) (17) must be unshrunk before replace.

The bearing (13) can be removed and stem sealing parts (10) (11) (12) removed from the cone.

Then seat ring parts (4) (5) (6) (7) can be dismantled. Finally the body seal (14) 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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