Assembly and repair instructions for KLINGER SCHÖNEBERG ball valves, Type INTEC K210-FS

Contents

1 Validity 2
2 General information 2
3 Construction and component designation INTEC K210-FS 3
4 Assembly INTEC K210-FS 4
4.1 Assembly preparation 4
4.2 Assembly of valves 4
4.3 Assembly of hand lever 5
4.4 Function/strength and leak test 5
4.5 Unauthorised modification and spare parts manufacture 5
4.6 Unpermitted operating modes 5
5 Deinstallation 6
5.1 Precautionary measures 6
5.2 Deinstallation preparation 6
5.3 Deinstallation 6
5.4 Final cleaning and damage assessment 7

1 Validity

These Assembly and Repair Instructions are valid for the valve series

INTEC K210-FS

2 General information

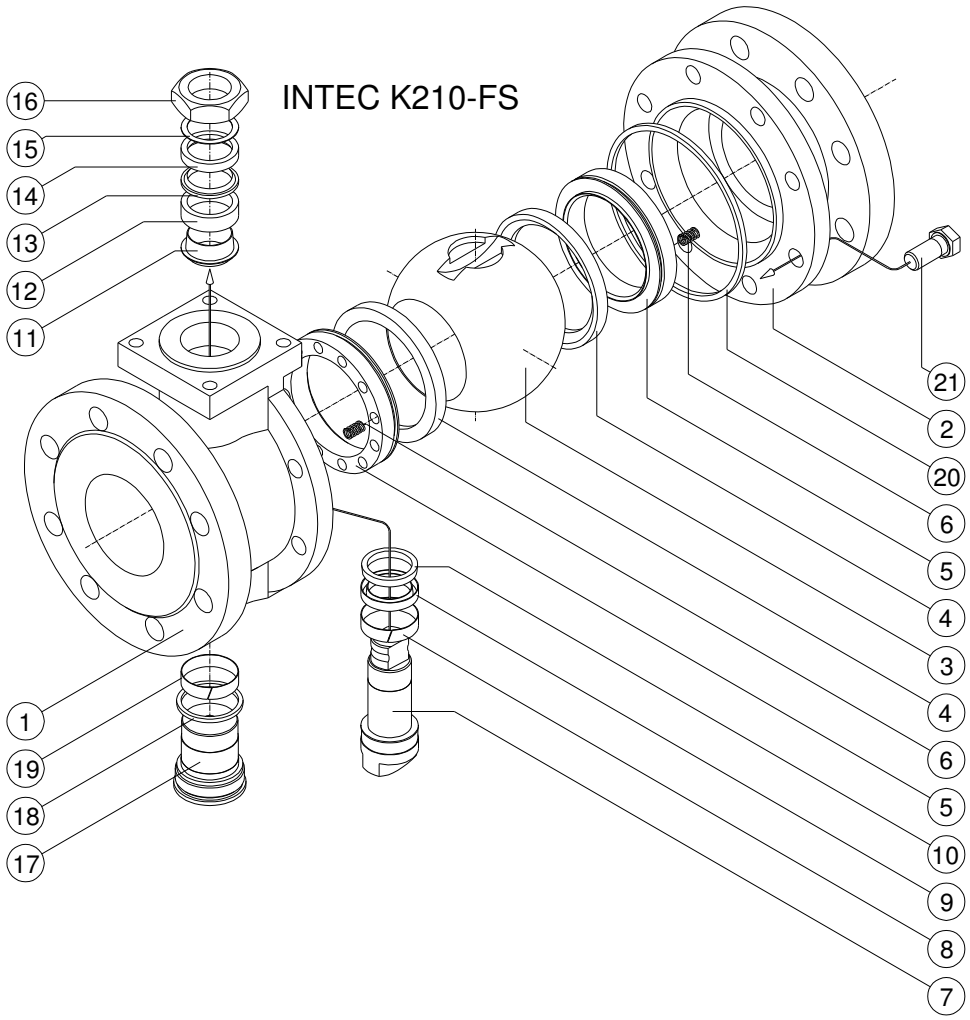
These Assembly and Repair Instructions provide support during the assembly, maintenance and repair of INTEC K210-FS ball valves.

The valves may only be deinstalled and dismantled by specialist personnel who are familiar with the assembly, the commissioning and the operation of this product.

Specialist personnel in terms of these Assembly and Repair Instructions are people able to assess the work delegated to them and to detect possible hazards based on their specialist training, their knowledge and their experience as well as their familiarity with the pertinent standards.

These instructions and the **Operating Instructions for KLINGER SCHÖNEBERG ball valves** are to be observed.
KLINGER SCHÖNEBERG GmbH shall bear no liability ofr damage or operating malfunctions caused through incorrect handling or non-observance of these Repair Instructions.

3 Construction and component designation INTEC K210-FS



Pos	Designation
1	Body
2	Cap
3	Ball
4	Seat
5	Seat thrust collar with seal
6	Ball seat spring
7	Bearing-supported stem
8	Below stem sealing
9	Below seal
10	Below cone ring
11	Upper seal

Pos	Designation
12	Upper cone ring
13	Fire-safe seal
14	Fire-safe thrust collar
15	Fire-safe friction washer
16	Nut
17	Trunnion
18	Trunnion seal
19	Trunnion bearing
20	Body seal
21	Hex. screw

4 Assembly INTEC K210-FS

4.1 Assembly preparation

In order to assemble the ball valve, all parts must be prepared, i.e. the parts are carefully cleaned and placed on a soft underlay (rubber mat or similar).
It must be taken into account that plastic parts are almost always soft and sensitive, and the sealing surfaces in particular must not be damaged.

4.2 Assembly of valves

The body (1) of the valves must be clamped firmly and securely; free access to the interior and the stem must be guaranteed.
The body (1) and cap (2) in the area of the ball seats are to be lightly greased with FDA-approved high temperature grease (e.g. Q1). Grease the groove of the ball seat thrust collar in the same way. Insert the divided graphite seal ring into the ball seat thrust collar groove (5). Then insert the ball seat springs (6) into the ball seat thrust collars. Observe the installation quantity of the ball seat springs in accordance with the specification or resulting torque.
Insert the ball seat thrust collars into the body or cap; if applicable with the aid of a tool.

Grease the stem (7) lightly in the area of the primary stem seal using FDA-approved high temperature grease. Only add a light film of grease, which does not overflow during assembly of the sealing elements. This can for example be applied with the aid of a brush.

On valves specified as “oil and grease-free”, the assembly takes place without grease and other auxiliary substances.

Roll the bearing (8) over a cylinder prior to assembly to adapt the shape to the stem (7). Thread the bearing (8) and primary sealing parts (9)(10) onto the stem (7) and insert the stem from inside through the body (1). The sealing and bearing parts may not be sheared or damaged. Thread the secondary sealing parts, (11)(12)(13) the fire-safe support ring (14) and the friction washer (15) from the top onto the stem (7). Screw the nut (16) onto the switching disk (7).
Tighten the nut with a fork wrench and counter the stem on the dihedron using the hand lever. Tighten the nut firmly on the block so that the sealing package can settle. Then turn the nut back again by half a turn and check the stem torque. Secure the nut in end position using a grub screw.
The following table serves as a reference value:

DN	80	100	150	200	250	300
Torque	12 Nm	17 Nm	25 Nm	35 Nm	35 Nm	50 Nm

Bring the stem (7) into open position (dihedron longitudinal to valve passage). Apply the ball (3) with driver slot onto the stem and swivel it into the body.
Roll the bearing (19) over a cylinder in order to adapt the shape to the trunnions (17). Brush the trunnions (17) on the thread with high temperature grease (OKS) to avoid cold welding.
Push the trunnion bearing (18) and the bearing (19) onto the trunnion (17). Press the ball with a suitable device into the body until the bearing borehole of the ball (3) aligns with the trunnion borehole in the body (1).Insert the trunnion (17) and screw it tight. Sealing and bearing parts may not be sheared or damaged. Remove the device again and check that the ball runs smoothly.

Insert the body seal (20, in case of combination body seal, the PTFE ring in the direction of the stem) into the body (1). Insert the cap (2) carefully into the body (1) without damaging the body seal (20). Brush the body screws (21) on the thread with high temperature grease (OKS) in order to avoid cold welding.

On valves specified as “oil and grease-free”, the assembly takes place without grease and other auxiliary substances.

Tighten the body screws (21) crosswise in steps all the way round until the seal is evenly pressed down and the cap (2) with the body (1) lies with full metal contact.

4.3 Assembly of hand lever

Attach the lever, insert the clamping screw of the hand lever and tighten. Loosely screw on the stopper plate using the fixing screws. Bring the ball into perfectly-aligned open position. In this position, press the stopper plate against the hand lever stop and tighten the fixing screws of the stopper plate. In this way, the stopper is perfectly aligned.
From dome flange F12, the adjustment of the hand lever stop is conducted using eccentric screws. The eccentric screws are turned until they contact with precisely-aligned hand lever stop. Fix the screws in position with the counter nuts.

4.4 Function/strength and leak test

After assembly of the ball valve, check whether it can easily be switched and whether the ball can turn unhindered. Then the ball valve is subjected to a strength and leak test acc. EN12266 -1 No. P10 / P11 / P12.

4.5 Unauthorised modification and spare parts manufacture

Conversion or changes to the valves are only permitted in agreement with and written consent from the manufacturer. Original spare parts and accessories authorised by the manufacturer are specified for reasons of safety.
In case other spare parts are used, KLINGER SCHÖNEBERG GmbH shall bear no liability for the consequences resulting from their use.

4.6 Unpermitted operating modes

The operating safety of the valve is only guaranteed in case of use in accordance with the Operating Instructions for KLINGER SCHÖNEBERG ball valves. The limit value stated in the technical documentation may not under any circumstances be exceeded.

5 Deinstallation

5.1 Precautionary measures

In order to ensure that any product residues which may have remained in the interior of the valve cannot endanger the deinstallation personnel, they must wear appropriate fully-body protective clothing made of chemical and solvent-resistant material and equally resistant facial protection.
As a precautionary measure, the deinstallation should take place via a collecting vessel. Appropriate drainage must be ensured so that hazardous gases or vapours cannot reach the deinstallation personnel. This also applies for the final cleaning after deinstallation has taken place.
The ball valves must be put in depressurised condition for repair purposes. To do this, they should be brought into “semi-open” position. Cleaning inside and out is also necessary prior to deinstallation. During interior cleaning, it is expedient to switch the ball several times.

5.2 Deinstallation preparation

Prior to deinstallation, the body (1), the cap (2) and the ball valve parts must be labelled so that their assembly positions can be comprehended over the course of the process.

5.3 Deinstallation

Prior to deinstallation, the valve should be clamped tightly and securely in a suitable device. An expedient solution would be onto the flange of the body (1) in order to guarantee free access to the intermediate flange, the interior and the stem. By loosening the middle flange screws (21), the cap (2) can now be removed. Bring the ball (3) into open position (dihedron longitudinal to valve passage). Press the ball (3) back into the body (1) using a suitable device in order to release the prestress on the ball seat (4). In this way, the trunnion can be removed. Remove the device and the ball.
Next, if available, the hand lever is removed. To do this, the screw with a hexagon socket must be loosened and removed completely, as the screw interlocks into the stem recess and thus makes it impossible to remove the hand lever. In case it proves hard to move, the hand lever can be spread at the slot using a screwdriver or cone and thus more easily removed.

Using a fork wrench, the nut(16) can be unscrewed from the stem (7) by turning it to the left. Prior to this, loosen the threaded pin. In order to ease this process, it is possible to counter it using the hand lever which has just been dismantled or a suitable fork wrench on the dihedron. Now the stem can be carefully pressed into the ball space. Secure the stem against falling and being damaged. The friction washer (15) and the fire-safe support ring (14) can be removed and the secondary sealing parts (11)(12)(13) removed from the dome.
The primary sealing parts (9)(10) may remain in the body, making the removal of the stem (7) more difficult at small nominal widths. These seals can be carefully pressed out using a small screwdriver in the body in the direction of the body or stem collar, and then the stem can be removed more easily. All damage in the sealing area of the body (1) must be avoided.
Then the ball seat parts (4)(5)(6) can be removed.
Last of all, the body seal (20) is to be removed. No auxiliary equipment is generally required for this step.

5.4 Final cleaning and damage assessment

Once the product has been deinstalled, all parts are subjected to final cleaning. During this final cleaning process, the dismantled sealing parts must also be cleaned so that they can be disposed of without problems.
Then the damage assessment is conducted.
Here interior and exterior damage to the caps must be observed in particular. The quality of the sealing surfaces on the ball seal, stem passage, body seal and the flange seals must be inspected.
The caps are now peened inside and outside with glass beads, and, if necessary, subjected to mechanical re-work. However, for this the sealing surfaces must be covered.
Then the valves must be cleaned once more and are then ready for reinstallation after another visual inspection.
The stem is inspected after the visual inspection for parallelism and pressure marks in the two driver surfaces. Please focus in particular on the proper conditions of the sealing surfaces. Slight scratches can be removed using emery cloth. Damaged or twisted stems are to be replaced.
The cleaned balls are first inspected visually. Deep scratches as well as other mechanical damage and chemical attacks on the sealing surface and the running surface of the seal ring lead to ball faults. In the same way, deformations in the area of the ball slot are not permitted.
Replace all screws and sealing parts during every repair process.