



Schreiber Spherical Bearing

INSTALLATION AND MANTAINANCE MANUAL

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1 Delivery and temporary storage

All the bearings are dispatched assembled and ready for installation, with the individual components connected by red painted clamps and main characteristics marked on an aluminum label.

If the bearings are not installed immediately after their arrival on site, the final user has to make sure that they are properly stored, i.e. protected against dirt, humidity and any other damage whatever.

2 Inspection before installation

First bolted-on red painted clamps need to be checked if they are still firmly fixed. In order to preclude any mix-up of the bearings all the data, written on the aluminium label, shall be checked and compared with the ones showed in the shop drawings. Furthermore, before installation, parallelism of bearings plates has also to be checked.

3 Installation

3.1 Casting of substructure

It is not recommended to place the bearings before casting of piers and abutments. Substructures shall reach the exact level to suit the thickness of the bearing so that the superstructure will be at the specified level after completion. An advisable procedure is to cast substructures leaving void spaces in substructure concrete in the positions foreseen for the anchors. These void spaces should allow suitable tolerance for positioning of the bearing. Advised to create these void spaces, are for instance, some pieces of corrugated steel sheathing, the same used for post-tensioning tendons with a 10 to 15 cm diameter.

3.2 Fixing of the bearing

Exact level will be reached by means of three or more steel (or wood, or concrete) wedge-shaped spacers. Care shall be taken so that the max. deviation from the horizontal plan does not exceed 0.001 radians. A wood formwork, surrounding the bearings base plate and with top level higher than plate bottom by 10 mm at least, shall be made. .

At this point, the bearing may be grouted on the substructure; to this end, advised material is a non-shrink, quick setting cement (i.e. TIGIGROUT type). If the wedges used to hold the bearing in its correct position are made of different material from concrete, they shall be removed after sufficient hardening of the mortar and then voids shall be filled by the same mortar pad.

If the thickness of the quick setting cement mortar exceeds 50 mm a suitable reinforcement shall be provided. Note that top level of cement mortar shall not exceed bottom level of the bearing, in order to avoid bearings embedding, with consequent problems for future removal and for corrosion due to eventual water stagnation.

4 Superstructure

4.1 Cast in situ superstructure

Superstructure formwork shall be tightly arranged around the top plate perimeter and sealed with adhesive tape to prevent leakage of concrete during casting. Formwork will also be arranged in such a way that the bearing will not protrude into superstructure (taking into account also the estimated settlement of scaffolding during pouring), as this would make the bearing replacement very difficult or even impossible. Be sure that the total height of the bearing is kept equal to that shown on the shop drawing during the superstructure casting.

Any welding work, as well as mounting and cutting-off of auxiliary structures for bearings, are not admissible, except when carried out by our erectors or by any other specialist working on our instructions. Upon completion of such works, the bearings must be cleaned of dirt and the coat of paint is to be repaired, where necessary.

4.2 Prefabricated superstructure

All the bearings must be connected to the superstructure by a pin and the upper masonry plate already inserted in the deck. During the installation the beam is suspended by jack and once it is in the exact position it is lowered to fit the bearing pin.

5 Tests after laying operations

At the end of laying operations, make sure that:

- Temporary red painted clamps have been completely removed
- Horizontal position of the sliding plates has been respected
- Identification of the bearings are complete and readable
- Anti-corrosion protection is intact in each part. In case make some additional touches of paint in order to assure the corrosion protection.

During the casting the red painted clamps shall be removed before eventual post-tensioning.

6 Maintenance

The bearings have been designed and manufactured in order to reduce maintenance interventions to a minimum level. If nothing special happens on the structure (i.e. fire, earthquakes, violent impacts, etc.) the bearings need only a visual inspection every five years at least, to verify cleanness of the area round them and integrity of the corrosion protection.



7 Replacement

In case of serious damages that require the bearing replacement in order to substitute the bearing proceed as follows:

- Unscrew the connection bolts of the lower and upper anchor bars
- Block the base and upper bearing plate together by using the red clamps or similar plates
- Superstructure lifting of approximately 25 mm is sufficient to disconnect the upper pin from the upper masonry plate and the lower anchorages from the bearing basement
- Other 5 -10 mm lifting are necessary to have sufficient gap to remove the bearing.
- Bearing removal
- Insert a new bearing, fit the lower anchor bars, fit the upper pin and repositioning of the superstructure at the original level and screw the connection bolts