

## Aseismic Hydraulic Bearing

The proposed bearing consists of two parts.

The fixed part, connected to the building, is a steel sliding surface in the shape of a spherical bowl with a safety side spandrel.

The movable part, connected to the foundation-soil complex, consists of a movable steel ball (rolling friction) in direct contact with the overhanging spherical bowl; alternatively, the ball may be fixed and coated on the top with Teflon (sliding friction). The lower part of the ball is linked to a movable cylindrical piston housed in the central chamber of a hydraulic device, which also has two lateral symmetrical chambers with movable pistons, subjected to the elastic reactions of pre-stressed springs. Two holes connect the lateral chambers with the central one.

During an earthquake, the horizontal displacement of the foundation-soil complex slightly affects the rest state of the building and the corresponding seismic energy in the building is negligible. The vertical displacement of the foundation-soil complex does not notably alter the rest state of the building, where there is no danger of resonance occurring due to the damping action of the liquid contained in the hydraulic device.

The main advantages of the seismic insulation system, characterized by this type of bearing, are:

- self-centering of the building after an earthquake;
- potentially applicable to both modern and old buildings of any planimetric shape;
- negligible pendulous effect in the building;
- economically competitive with the existing aseismic systems, both with partial and total absorption of seismic energy;
- negligible psycho-physical effects for the inhabitants.