

Risk Control Engineering's regular ongoing bulleting on construction, fire protection, equipment hazards and all things risk management.

WHAT IS A SEISMIC GAS SHUTOFF VALVE?

Seismic gas shutoff valves (SGSV's) are specialized devices designed to automatically stop the flow of low pressure regulated gas (natural gas) into a building structure, whenever a certain magnitude of seismic activity is detected. Most devices are designed to operate within a magnitude of 5.1 to 5.4 on the Richter scale, and must be manually reset when it is safe to do so. Seismic shutoff valves are popular in areas that are prone to earthquake activities, but are they generally encouraged for all geographical areas. Their designs and mechanism vary slightly by different manufacturer, but they all accomplish the same fundamental outcome.

The devices are simple in nature and are usually connected to gas lines between the meter and the building. They are equipped with a metal ball that sits on a mechanism in normal condition. If a seismic event is detected above a threshold magnitude, the metal ball gets dislodged to stop the flow of gas into the building. In some devices, the ball will physically block the orifice of the pipe, while in other devices (such as the one shown in figure 2), the ball will activate a flapper mechanism which blocks the flow of gas into the building.

Why are seismic shutoff valves important?

- ✓ Fires or explosions due to gas line breaks can be more damaging than an actual earthquake itself. Earthquakes can instantly break gas pipes, leading to extremely dangerous gas leaks. Gas leaks are particularly dangerous inside structures, where the gas gets trapped and builds up. Trapped gas is highly flammable and dangerous, and any form of ignition could lead to a dangerous fire or explosion.
- ✓ In addition, many insurance companies deem the risk significant, and are requiring clients to get seismic shutoff valves installed.



Figure 1. Typical installation of seismic shutoff valves.

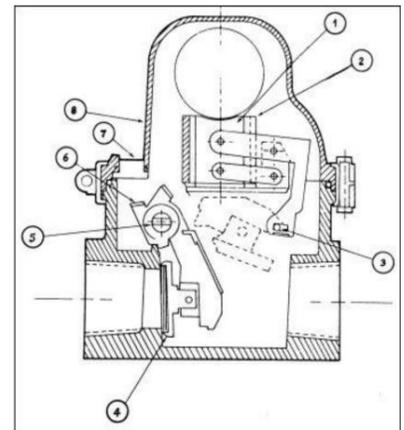


Figure 2. Closing mechanism of a seismic shutoff valve

Seismic shutoff valves are specialized devices designed to automatically stop the flow of low pressure regulated gas (natural gas) into a building structure, whenever a certain magnitude of seismic activity is detected. Earthquakes can instantly break gas pipes, leading to extremely dangerous gas leaks inside a structure, which could lead to fires or explosions.
