ITW

BALL TYPE INERTIA CATCH MECHANISM

MOST INNOVATIVE PARTNER

ITW designed an innovative mechanism for Tata cars to block the door handle movement during side crash and thereby achieving highest degree of safety.

THE CONTEXT

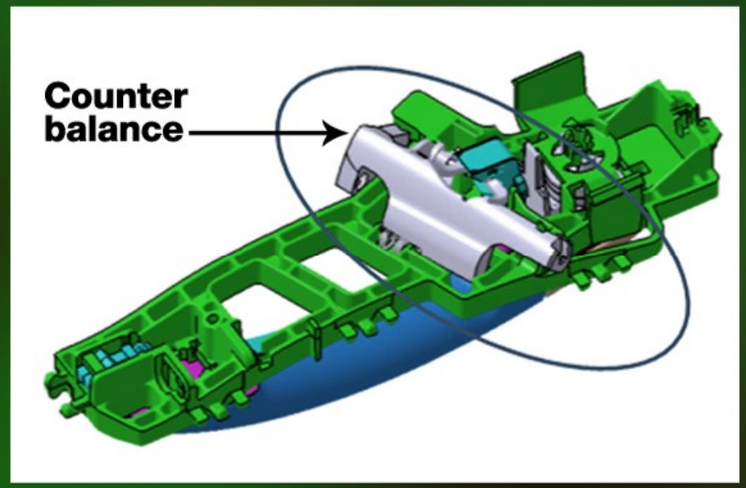
Due to handle weight, Size & Centre of Gravity point away from the pivot axis, there is a tendency of door handle opening during side crash. This can be managed with the spring & counter weight up to 30G force. For higher G requirements need to block the handle opening mechanically. Also, there are specifications for the side crash to be met (Specs: IS 14225 & ECE R95). ITW has provided the solution to meet this requirement of side crash through a modular inertia catch mechanism.

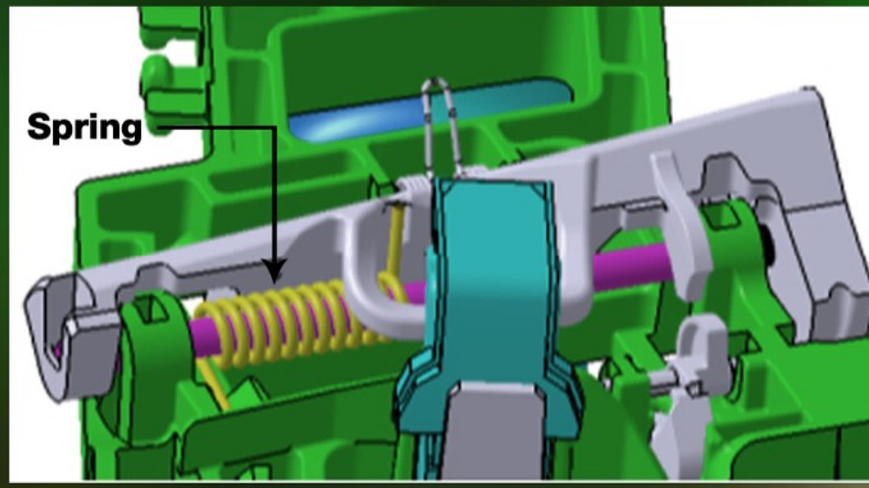
THE INNOVATION

ITW came up with an idea of blocking the handle movement with the help of Simple steel ball & leaf spring. It is a modular mechanism which will not hinder the operation in normal usage. During side crash the steel ball moves from home position to deploy position, thus leading to lifting of spring to stop the handle movement. This mechanism works up to 100G energy coming from the crash impact. The design is such that after the side crash passengers can be taken out by applying more force on the handle.

KEY CHALLENGE

There was a limitation to increase the spring stiffness & counterweight in the handle, as this will increase the handle operation effort & weight. The next challenge was to make the mechanism to act fast (within 10 Milli seconds) enough to block handle movement before de latching & re bounce. Other challenge was to make the handle operable after crash.





THE IMPACT

This will ensure to meet the TML Specification & Automotive regulation (Specs: IS 14225 & ECE R95) -- This will also help in improving the passenger's safety. Since it is a compact & modular mechanism, it can be

TATA INNOVISTA