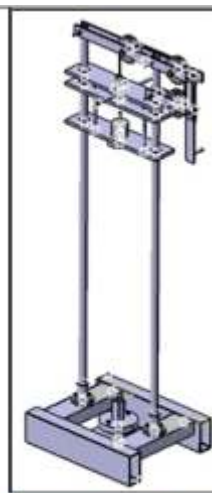
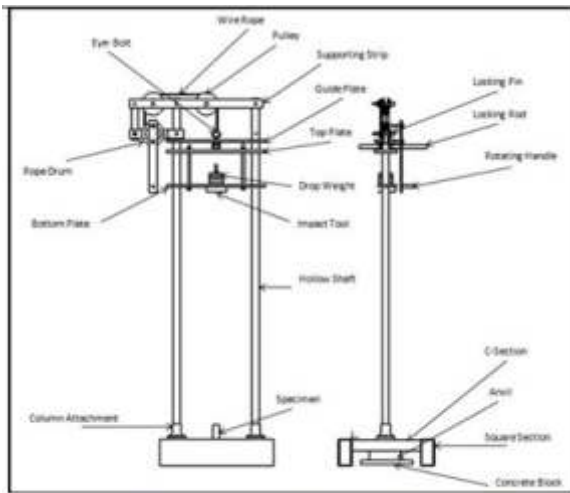


<b>GP1025</b>	<b>Design and Development of Drop Weight Impact Testing Equipment</b>		
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Structural crashworthiness is an area of extensive study on the behavior of various crashworthy components made of different materials and various geometrical shapes subjected to compression quasi-static or dynamic loading. During these loading, thin walled tubes are effective in absorbing the kinetic energy through plastic deformation. In order to understand energy absorption of these structures, a laboratory scale drop weight impact testing machine is designed and developed. This equipment helps to understand the behaviour of structure under impact loading.

Conceptual design is carried out from machine design concepts. The equipment is designed to measure impact energy ranging from 10 J - 146 J with provision provided for varying weight and height of the impactor. The design is modeled in CATIA software and structural analysis is carried out in ANSYS software. The main advantage of the developed equipment is that it can be modified to different testing methods like Charpy impact test, Penetration test and Impact bending test with minimal adjustments in tools and fixtures. Experimental trails are carried out on materials like aluminium and steel with square and circular cross section to assess their impact energy absorption criteria. This will help the designer to understand the behavior of material and its cross section under impact loading conditions.



EQUIPMENT SPECIFICATIONS	
<b>Dimensions</b>	500mm×420mm×1630 mm
<b>Weight</b>	53 kg
<b>Kinetic Energy</b>	10 J - 146 J
<b>Sensor Type</b>	Infrared sensor
<b>Micro-controller</b>	Arduino id Atmega 8 controller
<b>Power Supply</b>	6 V DC

**Developed model of drop weight impact testing machine and tested specimens**