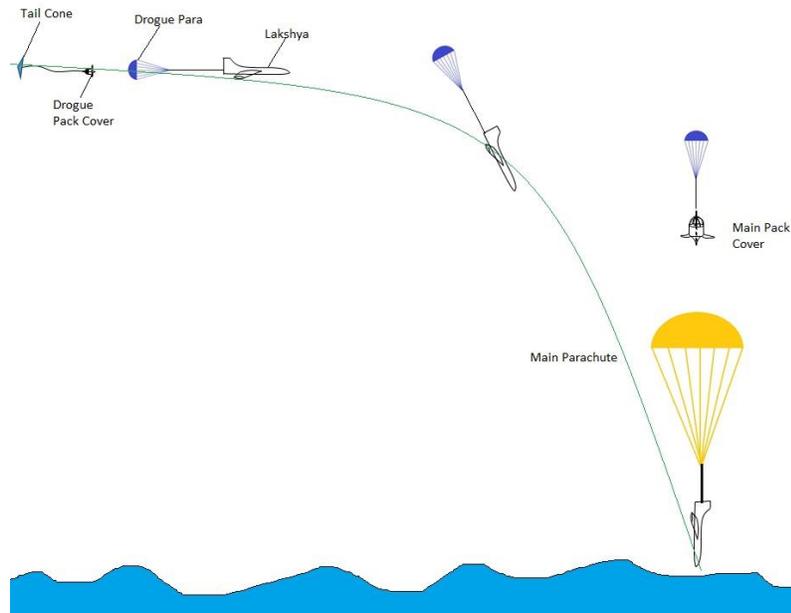


Recovery Parachute System MK-II for LAKSHYA PTA



LAKSHYA PTA (Pilotless Target Aircraft) is an unmanned aerial vehicle, which is launched from the ground or a ship in a weapon training range. It is commanded and piloted from the ground by maneuverability to simulate enemy threat. It tows a sub target to be cost effective. All weapon engagements take place with the tow target, which has Radar/IR signature augmentations, to make the system cost effective. During weapon engagement scoring information viz., miss distance of Supersonic shells or Missiles is given to assess weapon crew proficiency. At the end of the mission, or under specified system malfunctions, LAKSHYA is recovered through a parachute recovery system.

Two stage parachute recovery system is recommended for safe recovery of LAKSHYA. During recovery, the tail cone pulls out the 1st stage drogue parachute. The drogue parachute inflates and decelerates the LAKSHYA to a safe main parachute deployment speed. Till the LAKSHYA reaches the safe deployment speed of main parachute, its deployment is prevented by a bag line, which gets cut only at the predetermined delay/altitude by the dual redundant bag line cutters. A barometric altitude switch with timer in the recovery circuits inhibits the main parachute from opening above 1500 m altitude. When both conditions stated above are satisfied, the bag line cutter operates. The main parachute packed in the main bag which is housed in a metallic para container then gets pulled out by the drogue parachute. The main parachute inflates and decelerates the LAKSHYA further to a safe touchdown speed.

ADRDE has designed and developed the recovery parachute system MK-I for LAKSHYA PTA successfully. The MK-II version of recovery system for LAKSHYA PTA is designed with increased margin of safety capable of taking higher load than expected. The recovery system comprises

one drogue and one main parachute system. Compare to MK-I design, the size of the drogue parachute is increased from 1.83 m to 2.44 m in dia. to facilitate more favourable speed of deployment for main parachute. In order to achieve more uniform & lesser loading on main parachute, the number of rigging line has been increased from 40 to 48 keeping the size of the parachute same as that of the MK-I version. All the tapes and cords were replaced by Kevlar material to increase the strength to weight ratio of the system. The scheme of latest proven joints is used in the parachutes to enhance the joint efficiency. This improved MK-II recovery system also meeting all the packing and volume requirement provided in LAKSHYA PTA.