

Slipstick III is a 10 foot long, 5 inch diameter high powered rocket built, by Mike Konshak (NAR896/TAR11583 L2) to qualify for NAR and TAP Level 3 Certification. The rocket airframe is based on a Performance Rocketry Intimidator 5 kit, which is 100% G10 Fiberglass Reinforced Plastic. Additional parts were obtained from Performance Rocketry, to modify the standard kit to a zipper-less design and to increase strength around the motor mount. The fins were modified to differentiate the look from other similar kits and for personal preference. All modifications were modeled and simulated using Rocksim 8.0.

The rocket was predominately constructed using the West Systems Epoxy system except for the motor mount centering rings which were attached using JB Weld epoxy adhesive. The three 3/16 inch thick fins were reinforced tip-to-tip with a layer of 5.8 ounce carbon fiber cloth, topped off with a layer of 2 ounce fiberglass cloth. Fillets were applied to all joints between the fins and the airframe and interior motor mounts and centering rings. An Aeropack RA98 motor retainer was attached to the aft centering ring using 12 each 8-32 Stainless steel screws.

The avionics bay contains two models of barometric altimeter/rocket controllers manufactured by Missileworks and mounted on an aluminum sled supported by two 5/16 all-thread shafts that run from end-to end within the avbay. The primary altimeter is model RRC2X and the backup is model RRC2-min. Both are powered by Duracell 9V batteries and switched independently with DPST key-lock switches. The bulkheads on each end of the avbay supports a U-bolt which is threaded for 5/16 nuts, a 4-position terminal block and two charge canisters made from 3/4" CPVC pipe. The lines to the charge terminals are broken by DPST key-lock switches, one for each altimeter. All wires within the avbay are stranded 18 AWG. The interior of the avbay, coupler and bulkhead, are covered with conductive aluminum adhesive backed tape for RF shielding.

The nose cone contains a Garmin DC20 dog tracking GPS MURS Transmitter (GPS/TX) which is used for locating and recovery of the rocket after deployment. The GPS/TX mounted directly to the bulkhead with the antenna positioned along the longitudinal axis of the rocket. The bulkhead is layered with conductive aluminum tape to create an RF shadow. Early tests found that the TX induced false launch signals into the A-to-D converter of the RRC2-mini, so changes were made to the rocket to prevent this anomaly. The GPS/TX is enabled with a key-lock switch located on the nose cone.

Slipstick III uses a dual deployment system which deploys a 24" diameter PML drogue parachute at apogee, the rocket being separated between the fin can and the middle airframe components containing the avbay. The main parachute, a Rocket Rage RRQS70, is programmed to deploy at 1000 feet AGL and egresses from the rocket by separation of the nose cone and upper airframe. The backup charges are set to deploy 1 second after the programmed events. The three sections of the rocket are tethered together using two 40 foot long shock cords made of 1/2" diameter Kevlar tubing connected to the avbay and nose cone with 1/4" threaded connectors (quick-links), and the forward motor closure with a 5/16" connector. The parachutes are also connected with 1/4" Quick-links.

Although the rocket's airframe can support a 98mm motor, the motor selected for the L3 Certification flight is a 75mm Aerotech M1315W, mounted with an Aeropack A9875 Adapter. The motor is rated for a total Impulse of 6645.3 Ns, having an average thrust of 1117.1N (770.5 pound-F) for a 5.95 second burn. The rocket weighs 38.7 pounds prior to launch and simulations estimate a maximum velocity of 702 MPH to an altitude of 12377 feet AGL 27 seconds after ignition. The entire flight is expected to take 2-3/4 minutes from takeoff to touchdown.