



Rapid Rigging/Derigging Airdrop System (RRDAS)

What It Is:

Speed and Safety...The RRDAS speeds up the rigging and derigging of airborne cargo. Up to 20,000 pounds of vehicles and equipment can be driven onto an airdrop platform to be rigged. After landing, less time is required to get the cargo safely off the platform and operational.

Why It's Needed:

Current rigging methods can take up to eight hours and a crane is required to lift the cargo onto a platform prepped with a pre-made honeycomb kit. The honeycomb kits prevent damage to the cargo by absorbing the shock of ground impact when airdropped. However, if the honeycomb does not crush uniformly, it gets caught under the cargo, increases derigging time and delays the deployment of the vehicle and equipment.

How It Works:

Three key technologies are being investigated to eliminate the need for honeycomb:

- **Pneumatic Muscle Actuator (PMA)...**The PMA, a silicone tube reinforced with vectran, is inserted between the cargo and the parachutes (at the confluence point). The PMA inflates just prior to the platform impacting the ground. The PMA's diameter increases and its length shortens pulling the cargo up toward the parachutes, thus reducing the cargo's downward velocity. The reduction in velocity at ground impact eliminates the need for the impact-absorbing honeycomb.
- **Sling Retraction System (SRS)...**The SRS consists of cables that go through a pulley mechanism. As the parachutes open, 20 feet of cable is drawn from the retraction system. Just prior to landing, a piston pulls in the cable creating an upward force on the cargo, decelerating its downward velocity thus eliminating the need for a honeycomb kit. The sling retraction system successfully soft landed 10,000 lbs at 7 ft/s in 2001.
- **Airbags...**During rigging, the cargo is driven onto the airdrop platform over airbags, which are then inflated. Upon impact, the airbags absorb the shock and deflate. The vehicle and equipment can be driven over the deflated airbags to get off the platform.



PMA Ground Testing



HMMWV Driven On Platform With SRS

Benefits:

Reduced Rigging Time...By virtually eliminating the standard paper honeycomb, rigging time will be reduced by up to 60% and derigging time by up to 40%. Rapid derigging means soldiers can move off the drop zone and reduce exposure time to potential hostile fire.

Reduced Life-Cycle Costs...RRDAS can be used up to 50 times instead of the current one time use.

Point of Contact:

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