

# CL289

## DRONE RECOVERY SYSTEMS

### Drone Recovery Systems

Airborne Systems Canada Ltd. has the capability to design, develop, and manufacture recovery systems for various drones. One of the systems that is currently in production is the CL289. Currently in service with the French and German militaries, it has flown over 1200 operational missions in various countries. Both French and German systems are being updated (starting in 2003) to the AOLOS-289 version which employs the latest flight software for the onboard UAV computer.



CL289 Launch



Parachute and Landing

The CL289 is the latest generation of unmanned, airborne surveillance systems. Capable of fast, deep penetration behind enemy lines, the CL289 acquires detailed, high-resolution intelligence and relays it in real time to core level commanders. Its onboard program commands the air vehicle to ascend, descend, and turn to accomplish the required mission profile. The drone carries both photographic and infrared line-scan sensors and can transmit real time imagery to a ground station.

When the intelligence-gathering portion of the mission is completed, the drone returns to the recovery area which is located near the interpretation and support facilities. The air vehicle hones to a twin lobe guidance signal from the ground beacon. Recovery is accomplished using a 2-stage PARACHUTE system, and LANDING BAGS filled with compressed air to cushion the impact. The easily transported air vehicle is quickly refurbished and recycled in preparation for its next flight. Meanwhile, the acquired intelligence is interpreted and transmitted to the requesting agency for action.

The Airborne Systems Family of Brands  
GO Parachutes / Irvin Aerospace / Para-Flite / Aircraft Materials (AML)

AIRBORNE SYSTEMS  
Dedicated To Preserving The Safety  
Of The Mission And Its People

# CL289

## Parachute System

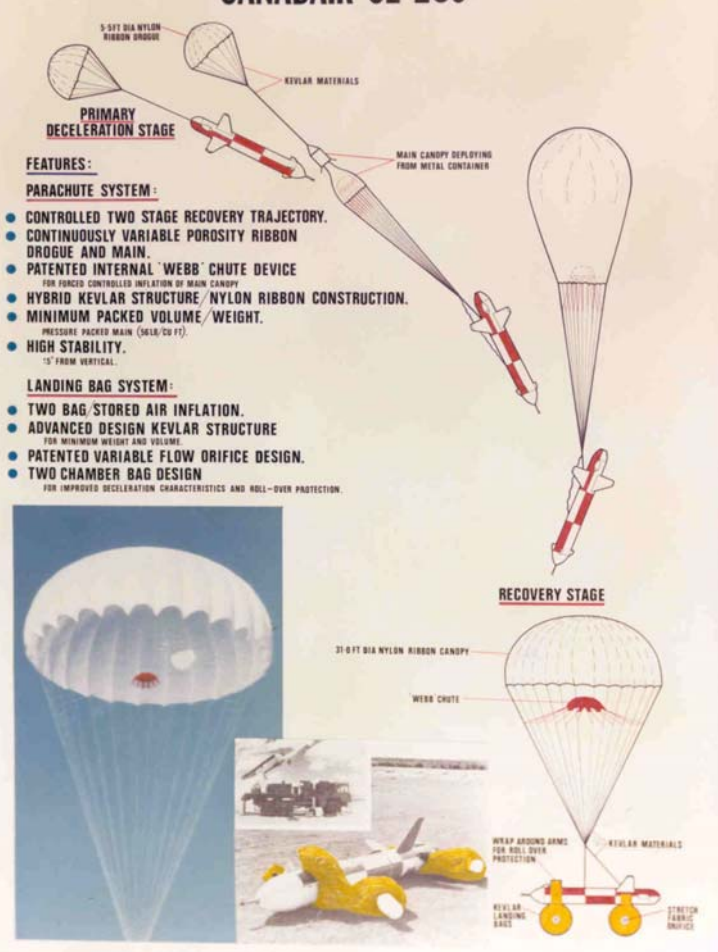
A two-stage parachute system is used together with two air-filled landing bags which absorb the landing shock and prevent damage to the drone on impact. The recovery sequence is initiated automatically by a homing beacon.

Coincident with engine cut-off, the parachute door is jettisoned and the drag of the door deploys the first stage (drogue) parachute. The drone commences a ballistic type descent, and after a programmed delay time, the drogue extracts the main parachute. The drone turns over to its inverted landing attitude, and the drone lands horizontally and inverted to protect the sensor payload and to permit quick removal of the film cassettes. The parachute may be packaged and reused by the user.

## Landing Bags

The dual bag, soft-landing system is inflated from a single air reservoir stored at 3000 psi. The bags are fully inflated within 8 seconds to an overall pressure of 1.1 psig and upon contact with the ground, dissipates the landing impact forces by the release of the air through two cloth sleeves (or socks) made from a stretch fabric which expands to control the out-flow of air thus optimizing the bag force attenuation performance. The bags themselves are manufactured from low bulk urethane coated Kevlar fabric incorporating two chambers. The upper chamber of each bag maintains its pressure to protect the drone from damage during roll over, whilst the lower chamber releases its pressure to "cushion" the drone. The bags may be reused and packed by the user.

### ADVANCED DRONE RECOVERY SYSTEMS NATO DRONE AN/USD-502 CANADAIR CL 289



**FEATURES:**

**PARACHUTE SYSTEM:**

- CONTROLLED TWO STAGE RECOVERY TRAJECTORY.
- CONTINUOUSLY VARIABLE POROSITY RIBBON DROGUE AND MAIN.
- PATENTED INTERNAL 'WEBB' CHUTE DEVICE FOR FORCED CONTROLLED INFLATION OF MAIN CANOPY.
- HYBRID KEVLAR STRUCTURE/ NYLON RIBBON CONSTRUCTION.
- MINIMUM PACKED VOLUME/WEIGHT.
- HIGH STABILITY. 15° FROM VERTICAL.

**LANDING BAG SYSTEM:**

- TWO BAG STORED AIR INFLATION.
- ADVANCED DESIGN KEVLAR STRUCTURE FOR MINIMUM WEIGHT AND VOLUME.
- PATENTED VARIABLE FLOW ORIFICE DESIGN.
- TWO CHAMBER BAG DESIGN FOR IMPROVED DECELERATION CHARACTERISTICS AND ROLL-OVER PROTECTION.

**Labels in Diagram:**

- 5-FT DIA NYLON RIBBON DROGUE
- KEVLAR MATERIALS
- PRIMARY DECELERATION STAGE
- MAIN CANOPY DEPLOYING FROM METAL CONTAINER
- RECOVERY STAGE
- 31-FT DIA NYLON RIBBON CANOPY
- WEBB CHUTE
- KEVLAR MATERIALS
- WRAP AROUND ARMS FOR ROLL-OVER PROTECTION
- KEVLAR LANDING BAGS
- STRETCH FABRIC ORIFICE

This data sheet is for information only and shall not form part of a contract