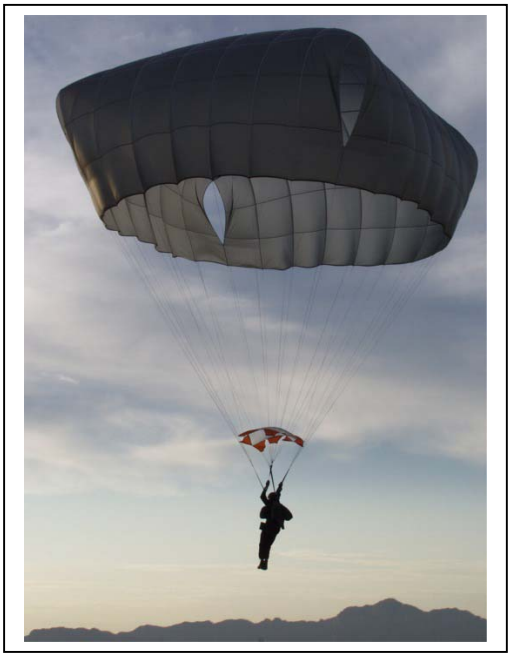
TECHNICAL INFORMATION

ADVANCED TACTICAL PARACHUTE SYSTEM

XT-11 MAIN PARACHUTE



INTRODUCTION

The ATPS will operate in a combat environment of 500 feet (+/-125 feet) AGL minimum planned altitude, deployed from aircraft traveling at speeds of 130-150 Knots Indicated Airspeed (KIAS) and at a maximum altitude of 7500 ft Above Mean Sea Level (AMSL). The Rate-of-Descent at impact has been reduced from the T-10 by 25% from 21 ft/sec to 16 ft/sec. The reduction in impact velocity will result in a 40% reduction in impact energy and a significant reduction in landing injuries. The ATPS also incorporates an advanced reserve parachute and harness. The new reserve parachute provides a significant decrease in the rate of descent at impact over the T-10 reserve. The ATPS harness includes main and reserve attachments, which align the parachute opening forces along the long axis of the jumper's body thereby reducing spinal injuries.
The harness incorporates the use of comfort pads, an integral equipment release, and adjustability for use by a 5th percentile female and 95th percentile male parachutist.

MAIN PARACHUTE SUB-SYSTEM

The XT-11 main parachute is a highly modified and refined version of the cross/cruciform p lanform parachute. The XT-11 exploits two of the most important characteristics of cross parachutes; namely, (1) inherent stability and (2) inherent gentle opening. However, it differs from the conventional cross as follows:

a. Significantly lower aspect ratio
b. Significantly shorter suspension lines
c. Materials

SPECIFIC SYSTEM RELATED DEFINITIONS:

Canopy Arm Aspect Ratio:
Ratio between the length of the arm and the dimension of the arm at the junction with the crown.
In the present case, the Arm Aspect Ratio is: 11 / 25 = 0.44

Drag Coefficient Based on Cloth Area:
Drag coefficient related to the total canopy surface area (1670 sqft in the case of the XT-11).
The drag coefficient quantifies the efficiency of the canopy design to produce drag, with a minimum of cloth and therefore minimum volume and weight.

Corner Vent:
Air jets formed at the connection of the arms, where their adjacent edges are attached.

MAIN PARACHUTE PHYSICAL CHARACTERISTICS

The main characteristics of the XT-11 Parachute are:

Crown	:	25 x 25 ft.
Arm Length	:	11 ft.
Hem Diameter	:	28.6 ft.
Suspension Line	:	21 ft.
Corner Vent Length	:	~ 8.5 ft.
Number of Panels per Arm	:	7
Number of Suspension Lines	:	28

DEPLOYMENT SYSTEM

The XT-11 main parachute deployment system is a unique, in-house developed drogue / sleeve deployment method associated with a specific slider, which has been the preferred deployment method used throughout the development of the XT-11 main parachute.

The main components of the deployment system are:

1. Static line
2. Deployment bag
3. Drogue parachute
4. Connection bridle
5. Deployment sleeve
6. Slider

XT-11R RESERVE PARACHUTE SUB-SYSTEM

RESERVE PARACHUTE SUBSYSTEM

The ATPS XT-11 Reserve is a derivative of the proven Aeroconical design, this being an extended skirt multiconic. The design is in service world wide on Martin Baker ejection seats, which are also in service with the US Navy (NACES).
The XT-11R has been adapted for use with the XT-11 Main Parachute.

Designed to open rapidly with a minimum post inflation collapse, the XT-11R features minimum altitude loss. The designed shape resists malfunctions, such as a line over and, in its event, tends to release the line.

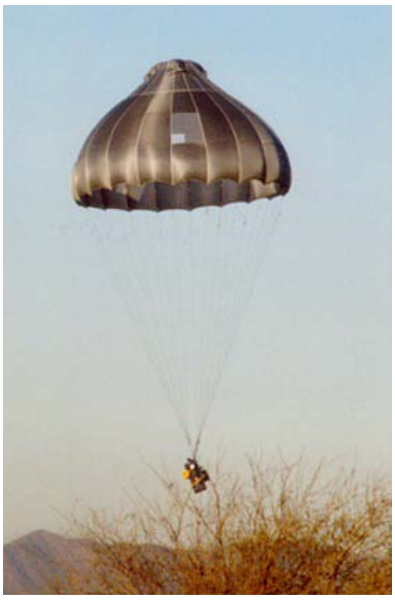
This system also features a novel and advanced deployment and inflation acceleration system. These have been designed to give the maximum permitted opening load at the maximum permitted speed, thus minimizing altitude loss to a safe total speed.

The reserve parachute is constructed to be as lightweight as possible. This not only reduces the inconvenience to the paratrooper but also enhances his/her payload to weight ratio. The lightweight construction is also necessary to allow the reserve to align with the airflow at lower speeds. In the case of a low speed malfunction, such as some main canopy damage, the reserve will rise and inflate faster.

RESERVE PARACHUTE PHYSICAL CHARACTERISTICS

The main characteristics of the XT-11R Parachute are:

Hem Diameter	:	20.3 ft.
Suspension Line	:	20.3 ft.
Fabric Area	:	~180 ft^2.
Apex Vent Area	:	3.5 ft^2.
Number of Gores	:	20
Number of Suspension Lines	:	20
Geometric porosity	:	~7%



XT-11R RESERVE PARACHUTE DEPLOYMENT SEQUENCE

Upon activation by means of the ripcord handle the closure pins are extracted. From this point on the parachutist has nothing to do in order to ensure or enhance the performance of the reserve system. Following pin extraction, the kicker spring parts the flaps of the container, launching from the solid flat base, a “virtual kicker plate”, and places the top portion of the parachute with its associated extraction and assistor system away from the parachutist and into clean air flow. Both the primary extractor parachute and the assistor pockets inflate almost immediately and carry first the ‘S’ folded canopy and then the lines from the tray up and alongside the malfunctioned main parachute (if present).

PROPERTY OF:
Para-Flite Inc.
5800 Magnolia Avenue, Pennsauken, NJ 08109-1399, U.S.A.
Tel: (1) (856) 663-1275 E-Mail: Marketing @paraflite.com