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TT-600 Tethered Tandem Bundle Delivery System





View of Complete Assembly
This side is worn against the user in order to prevent accidental deployment.



View of Complete Assembly
Overall view of outside of system.



Two layer top flap system provides security and protection for the Static Line (black tape to straight pin), Safety Cable (yellow), and CYPRES Closing Pin.



Harness cover with secure Static Line Carabiner stowage pocket, in-flight accessible Hook Knife, and easily viewed CYPRES Control Pendant.

The Tethered Tandem Bundle Delivery System

Background

The Tethered Tandem Bundle Delivery concept is not new; in fact, it originated with a US Government Agency shortly after tandem skydiving became popular in the 1980's. However, heretofore, the systems commonly in use have been cobbled together from skydiving equipment and have proven to be only marginally acceptable. In particular, there was a very large occurrence of canopy failures (>90% for some operators), which caused operators of these systems to search for an alternate canopy. The new canopy selected was the Butler Parachute Systems *HX-500*. To date, Butler has supplied this canopy to over a dozen operating units worldwide. There have been no reported failures of this canopy when operated within its (very generous) operating limits of 500 lb gross weight at 190 KTAS.

However, after listening closely to the wants and needs of Special Forces Operators from around the world, our designers realized that this mission requires a system that is **designed and built from scratch specifically for this application** (not some wimpy warmed-over skydiving stuff).

Therefore, our new **TT-600 SYSTEM** (note the emphasis on *system*) is carefully designed to solve the numerous problems of previously available systems. It provides a superior solution to the needs of the Special Operations community for fast, accurate, and reliable aerial delivery using the tethered tandem methodology.

With the Butler Parachute Systems **HX-600 canopy**, the system can deliver net payloads up to **600 Lbs (272 Kg) @ 190 KTAS**; 200 Lbs (91 Kg) more than other systems on the market.

To ensure reliability in a wide variety of operating scenarios, the TT-600 utilizes the Military or Tandem CYPRES AAD. The CYPRES unit is well protected from rough handling (inside the container) and exposure to hostile weather. The CYPRES control pendant is easily accessible (on the harness cover), and offers the Jumpmaster an un-obstructed view for pre-drop checks. All hardware utilized on the bundle harness is stainless steel or cadmium plated. The system is compatible with virtually all tandem parachute systems in use worldwide. Total weight of system (including harness/container, d-bag, HX-600 canopy, pilot chute, and CYPRES) is approximately 20 Lbs (9 Kg).

The operator has **a choice of at least four methods** for delivering equipment using a three-way deployment sequence. The operator may choose from the following options:

1. Under any circumstances (including while in drogue fall or a main parachute malfunction), he may pull the release handle and allow the bundle to fall to a preset altitude, at which time the main canopy will open (CYPRES AAD Compatible).
2. The bundle may be delivered by arming the CYPRES and pushing the payload out of the aircraft by itself (not attached to jumper).
3. While under his main or reserve parachute, he also has the option of quickly attaching the static line, pulling the release handle, and having the bundle parachute deployment sequence begin immediately. Using the static line deployment option, the bundle may be released from the operator as low as 300 feet AGL while under the main or reserve canopy.
4. Finally, should he choose, he may land under his main parachute with the bundle still attached. Once on the ground, the bundle itself can be quickly released using the optional quick release box or it may be cut free of its harness with the hook knife conveniently located on the parachute container.

Note: This system (as with any device) must be operated within the approved range of ballistic coefficients (basically payload weight divided by payload drag area—see additional proprietary data sheets).

Please see the cover photograph for an overall system view. See the photographs within for more detail.

The Tethered Tandem Harness System—Details



The Tethered Tandem Barrel Harness kit includes all the components necessary to rig and drop barrels up to 6 feet tall and 36 inches in diameter.

This barrel is 30" x 72" tall.

4-Leg Suspension Sling with Swivel

TT-600—Details



Upper Corner Webbing attached to Longitudinal (vertical) Cross Webbing and standard Top Center Cross Piece



Standard Top Center Cross Piece

TT-600—Details



TT-600 Tethered Tandem Barrel Harness Kit Components:

1. Longitudinal (vertical) Cross Webbing (shown installed at right)
2. Top Center Cross Piece
3. 4-Leg Suspension Sling (Swivel not shown)
4. Lateral Straps
5. Upper Corner Webbing (with # 9 SS Delta Rapide Links)
6. Operator Handholds
7. Tie down loops
8. Optional 4-point Quick Release (see at upper right)
9. Custom machined ring on 4-leg tether (below)



BTPS Custom machined V-ring for tether/swivel interface



Longitudinal (Vertical) cross strap installed on barrel.

TT-600—Details



Standard Main Harness Attachment Fitting: This configuration consists of a welded RW-10 / MS22042 Butterfly Snap. This item is made from the standard hardware in a laborious process that involves: stripping the original plating; annealing the parts; cutting and welding to the required configuration; heat-treating to regain strength; and finally replating with Cadmium or equivalent. This hardware has an approximate safe working load of 3,500 lb.



Wichard Snap Shackle

BTPS Custom Machined
Stainless Steel (17-4) Ring



Optional Main Harness Attachment Fitting: Stainless Steel Snap Shackle (Wichard p/n 2272) with a Butler custom, machined Stainless steel (17-4) ring. This hardware has an approximate safe working load of 7,000 lb. This hardware is significantly stronger and also literally corrosion proof. The Wichard snap shackle is proof loaded to over 8,400 lb and will release under load at over 3,400 lb. The shackle will close simply by flipping it into position and pressing down; the release bail can be equipped with a flag or tether if desired. This design will also lend itself to a 4-ring riser release if needed. This ring will be provided at an **option cost of only \$100 per set.**

Specifying and Ordering the TT-600 Tethered Tandem Delivery System Kit

One Complete TT-600 System Consists of both the recovery system and the barrel harness assembly

One TT-600 Recovery System consisting of:

- 1-ea. TT-600 container and harness with all required hardware, straps, risers, etc. for use. Note that customer selectable options include the main attachment hardware.
- 1-ea. HX-600 parachute canopy; US FAA TSO C23d rated for 500 lb at 170 KIAS; BTPS rating for this use is 600 lb. at 190 KTAS;
- 1-ea. System specific deployment bag, pilot chute with all stow bands, closing loops, 5 extra break tapes and zipstrips.
- 1-set Miscellaneous parts, two release handles (inc. 1 extra), hook knife, static line, and static line carabiner, etc. to complete the top part of the system.
- 1-ea. Large kit bag for the above system in the unpacked condition.
- 1-ea. Medium kit bag for system when packed for use.

One TT-600 Barrel Harness Sub-Assembly consisting of:

- 1-ea. 4-leg suspension sling, with custom machined attachment hardware.
- 1-ea. Mid-point tether (Type 13 webbing) with heavy duty connector link (52B6660-2) on one end
- 1-ea. Heavy duty carabineer to attach mid-point tether to 4-leg suspension sling
- 1-ea. Top center cross piece, - standard is adjustable with 4 MS22040; optional with quick release buckle
- 1-ea. Longitudinal (vertical) cross strap sufficient to fit up to 36" x 72" barrel.
- 4-ea. Thread-thru lateral straps to fit up to 36" barrel.
- 4-ea. Upper corner attachments with stainless delta ring
- 2-ea. Quick-attach handles,
- 6-ea. Quick-attach tie down loops.
- 1-ea. Small Kit Bag for the barrel harness assembly

Included in Complete System but Not w/Harness Sub-Assembly

- 1-ea. 1.5 ton swivel

NOTES:

- The Standard Barrel Harness Assembly described here is constructed of MIL-W-4088 Type 7R webbing, with stainless steel and cadmium plated hardware. It is compatible with barrel sizes ranging from 24 inches to 36 inches in diameter, up to six feet tall. The harness may be easily adapted to other shapes such as cruise boxes, etc.
- BTPS can easily construct custom hardware and harness assemblies as required.
- Note that the standard canopy is the usual TSO C23d canopy (no turn) in orange or as selected by BTPS from available inventory. The customer may choose silver, olive green, white or NATO 4-color, with/without turn for extra cost—must be specified with order.

Riggers Kit (optional—extra cost)

- 1-ea. Line stow fid
- 1-ea. static line stow fid
- 2-ea. large Phillips screw drivers for connector link
- 1-ea. Allen wrench to fit the swivel bolts
- 1-ea. Adjustable wrench for various links.
- 1-ea. CYPRES packers Kit
- 1-ea. Small Compartmentalized Kit Bag

Consumables Kit—5 drops—(optional—extra cost)

- 1-roll Ordnance (Duct) Tape
- 5-ea. Zip strips
- 4-ea. Tube stows
- 2-yd. Mil-T-5038, T3, 1/2" tape

Note that all of these items are easily manufactured (zip strips) or readily available from many sources and thus are not included in the basic kit.

Note that these may be used for multiple systems and are thus not included in the basic kit for each system.

Ordering Information and Quotations:

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