

INVASION II R

OWNER'S MANUAL

PACKING AND MAINTENANCE



RESERVE CONTAINER

CHEST CONTAINER
28' CANOPY (INV-300)
2024

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STATEMENT OF CONFORMANCE

This letter is to inform that all components of the **Invasion II Harness/Container System** by **TPDS, Inc.** are manufactured under Federal Aviation Administration (FAA) Technical Standard Order (TSO) requirements of the Federal Aviation Regulation 14, Code of Federal Regulations Part 21, Subpart O.

Furthermore: the Invasion II meets all Military Standards and Specifications.

Sincerely,

Henri Pohjolainen
President
Tactical Parachute Delivery Systems, Inc.



WARNING!

PARACHUTING IS A HIGH RISK ACTIVITY WHICH CAN CAUSE OR RESULT IN SERIOUS INJURY OR DEATH.

The following information must be read and understood before any use of this equipment:

USER KNOWS THE RISKS OF PARACHUTING AND ACCEPTS THAT:

Parachuting can cause **death** and/or **serious injuries**. Many of these deaths and injuries can be attributed to equipment problems or malfunctions.

Parachuting equipment can fail, even if all possible precautions are taken by the user, the equipment manufacturers and everyone else involved with the jump.

Failure to activate the main or reserve parachute (or follow emergency procedures) at a safe altitude, and/or equipment failure can result in **severe injury or death**.

IT IS THE USER'S RESPONSIBILITY TO:

Receive proper training before any use of all parachuting equipment.
Be extremely careful and cautious.

Read and Understand all owner's and operating manuals for all parachuting equipment.

Thoroughly check all parachuting equipment and replace any defective or worn component prior to use.

Review emergency procedures before each use of this and all parachuting equipment.

Check equipment warnings –

WARNING!

DO NOT EXCEED EQUIPMENT LIMITATIONS!

Never violate the training and experience requirements for the specific equipment use.

DISCLAIMER – STATEMENT OF WARRANTY

Because of the unavoidable dangers involved in the use of this and all parachute equipment – **Tactical Parachute Delivery Systems, Inc.**, (including but not limited to all owners, officers, staff, and employees), hereafter referred to as “**TPDS**” makes no warranties of any kind, expressed or implied. The liability of the seller is limited to replacing defective parts found upon examination by the manufacturer to be defective in material or workmanship within 7 days after purchase and found not to have been caused by an accident, improper use, alteration, tampering, abuse or lack of care on the part of the purchaser.

By using this equipment or allowing it to be used by others, owner/buyer waives any liability of **TPDS** for personal injuries or any other damages arising from such use. Any promise or representations inconsistent with or in addition to the **Statement of Warranty** are not authorized by **TPDS** and shall not be binding.

!WARNING!

Parachuting is a hazardous activity that can result in serious injury or death. Failure to follow all warnings, instructions, and required procedures may result in serious injury or **DEATH!** Parachutes sometimes malfunction even when they are properly designed, built, assembled, packed, maintained and used.

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Chapter 1

Product Information

1.1 Tactical Parachute Delivery Systems, Inc. (TPDS)

TPDS, Inc. is committed to providing you with the latest, most versatile and dependable parachuting system available on the market today.

TPDS can provide you with a Harness / Container System designed to suit or exceed the expectations of your demanding and changing environment with each assembly built.

If your operation requires a custom solution, please feel free to contact us.

This manual should provide you with the necessary information to assemble, pack and maintain the *INVASION II RESERVE* Parachute Assembly.

1.2 Reserve Container Specifications

Materials:

Reserve Container : 420 Denier Para Pak Nylon

Webbing:

Reserve Risers-

1 23/32" (4.3 cm.) wide Type 8 Mil-W-4088

Tensile Strength **4000 lbs. / 1814 kg.**

Lower Attachment Straps-

1" (2.54 cm.) wide Type 17 Mil-W-4088

Tensile Strength **2500 lbs. / 1134 kg.**

Tension Device-

650 lbs. (295 kg.) Flat Dacron Line

Tensile Strength **650 lbs. / 295 kg.**

Hardware:

Butterfly Snaps- PS 22042-1

Tensile Strength **5000 lbs. / 2270 kg.**



Size:

Reserve Container-

8" high x 16" wide x 8" deep
20 cm. x 40.5 cm. x 20 cm.

Weight:

Reserve Container-

3.7 lbs. (1.68 kg.)

with INV-300 Reserve Parachute and Pilot-Chute

13.6 lbs. (6.17 kg.)

Fabric Colors:

Black, Smoke, Desert Camouflage, Woodland Camouflage, Multi-Camouflage, Olive Drab Green and others upon request.

Harness Colors:

Black, Smoke, Silver, Olive Drab Green, and others upon request.

1.3 Capabilities and Features

The **Invasion II Reserve Parachute** is a 28 foot diameter conical shaped parachute. It is tested to Aerospace Standard 8015B, the drop test standard for approval under **FAA TSO C-23**.

Performance Data

Maximum Suspended Weight:	360 lbs. (163 kg.)
Rate of Descent:	9.5-15 fps @ 130 lbs. - 275 lbs.
Forward Speed:	0 mph
Stability Range:	< 9° angle of oscillation
360° Turn:	7-8 seconds
Opening Time:	1.2 - 2 seconds



INVASION II Reserve Parachute (INV-300)

Physical Specifications

Shape:	Conical
Diameter:	28 feet (8.5 m)
Canopy Weight:.....	9.9 lbs. (4.5 kg.)
Number of Gores:	24
Panels per Gore:	4
Canopy Cloth:	PIA-C-44378 Type IV
Suspension Line:525 lbs. Braided Polyester
Suspension Line Length:	555 cm. @ 2 kg./5 lbs. Tension
Suspension Line Connectors:	MS22002-1
Connector Tensile Strength:	3000 lbs. (1360 kg.)
Maximum Suspended Weight:	360 lbs. (163 kg.)

Colors:

Standard - White

Optional - OD Green

Ripcord

The Ripcord consists of a stainless steel grip and a flexible steel cable to which steel ripcord pins are swaged. The ripcord used with the **INVASION II Reserve** has two ripcord pins 1 1/4-inch in length **OR** one pin for the single pin option.

Grip material5/16" Stainless Steel Tubing
Grip shape	Cloverleaf
Cable material	Flexible Steel
Number of pins	1 or 2



Invasion II



**Main Container and Reserve Container
with Inv-400 Main Parachute
and Inv-300 Reserve Parachute.**

Total Weight: 44 lbs. (19.96 kg.)



Chapter 2

Tools

Use this page to record the tools used during the packing of your **TPDS, Inc. *Invasion II***.

Mark which tools, and how many were used for packing and document all tools after work is complete.

2.1 Tool Check List

<u>Tool used:</u>	<u>Pre-packing</u>	<u>Post-packing</u>
Shot Bags	___ used	___ used
Line Separator	___ used	___ used
Packing Paddle	___ used	___ used
Temporary Pins	___ used	___ used
Packing Hook	___ used	___ used
Tension Plate	___ used	___ used
Tension Hook	___ used	___ used
Link Separator Tool	___ used	___ used
Scissors	___ used	___ used
Screw Driver	___ used	___ used
Additional Tools:		
_____	___ used	___ used
_____	___ used	___ used
_____	___ used	___ used
_____	___ used	___ used
_____	___ used	___ used
_____	___ used	___ used
_____	___ used	___ used





2.2 Recommended Packing Tools

- Shot Bags
- Line Separator
- Packing Paddle
- Temporary Pins
- Packing Hook
- Tension Plate
- Tension Hook
- Link Separator Tool
- Screw Driver
- Scissors





Chapter 3

Inspection Processes

3.1 Inspection Procedures Table

Item to Inspect	Procedure
Complete Assembly	Verify that assembly is complete. Verify proper assembly and that system is clean and free from foreign materials.
Canopy	Inspect for rips, burns, holes, tears, dampness, foreign materials, completeness of stitching and complete legible marking.
Bridle Loop	Inspect for airworthiness, completeness of stitching, no holes, tears or burns.
Apex Lines	Inspect for burns, cuts, breaks, and completeness of stitching on radial seam, and lateral band.
Upper Lateral Band	Inspect for holes, tears, burns, and completeness of stitching.
Information Block	Legible.
Gore Sections	Inspect for rips, burns, holes, tears, dampness, foreign materials, completeness of stitching, and complete legible marking.
Radial Seams	Inspect for completeness of stitching, holes, and tears.

Radial Seams	Inspect for cuts, holes, tears, and completeness of stitching.
Line Attachment Tapes	Inspect for cuts, holes, tears, burns, and completeness of stitching.
Lines	Inspect for continuity, cuts, snags, broken lines, burns, and completeness of stitching.
Connector Links	Inspect for corrosion, burrs, rough spots, cracks, loose or missing screws or stripped threads.
Risers	Inspect for cuts, holes, tears, burns, and completeness of stitching. Inspect 5 cord "box X" on end of riser for completeness of stitching.



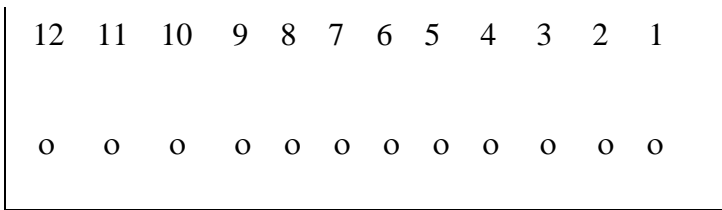
Chapter 4
Assembly

4.1 Line Continuity- Reserve Parachute.

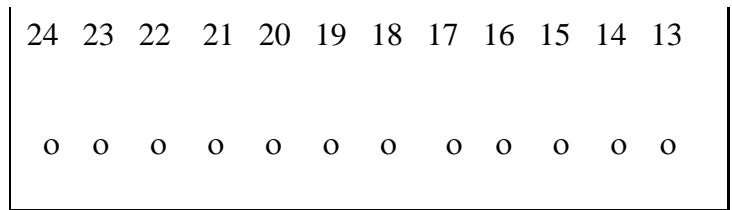
****BEFORE ASSEMBLY****

Inspect the canopy, be sure it is free of debris and the continuity of the lines is correct.

Line Continuity for the Invasion II Reserve Parachutes



Left Riser



Right Riser

4.2 Assemble the Reserve Parachute to the Reserve Risers.



Fig. 1

Begin by laying out the Reserve Parachute on the packing table. (fig. # 1)

Be certain that the rear center of the Reserve Parachute with the Data Placard is facing up.

Separate the lines into two (2) groups.



Fig. 2

With the Apex of the Canopy hooked to the table ring or hook, be sure that the line group 1-12 is on the left side and that the line group 24-13 is on the right side. (fig. # 2)



Fig. 3

Remove the two (2) screws from the sides of the Separable Connector Link. (TPDS-INV-102) (fig. # 3)



Fig. 4

Use a link separator tool to open the connector link. (fig. # 4)

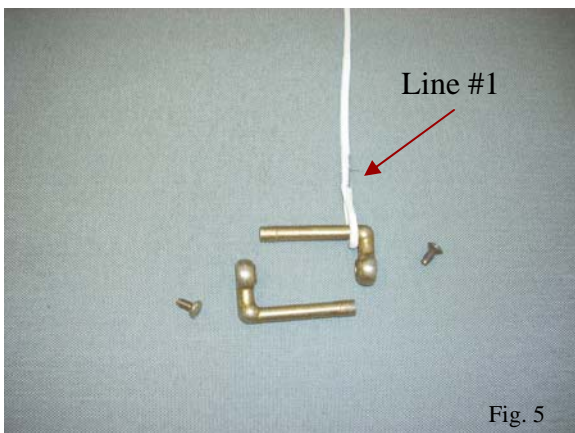


Fig. 5

Pick up line #1 at the skirt and follow it down to the end loop. Place it onto the separated connector link. (fig. # 5)

It is very important not to twist the line as you follow it to the loop. Every effort should be made to keep the lines straight from the skirt to the link.

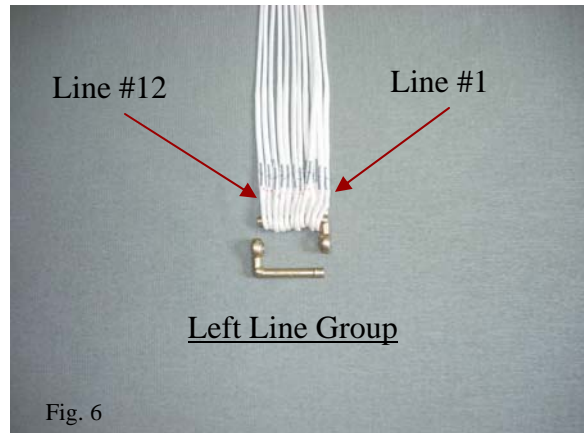


Fig. 6

Continue to place lines #2 - #12 onto the link. (fig. # 6)

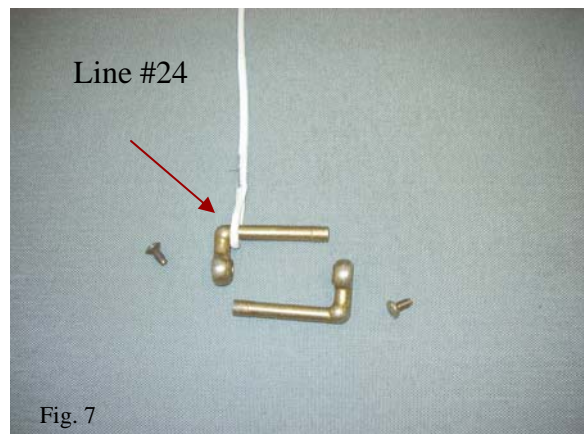
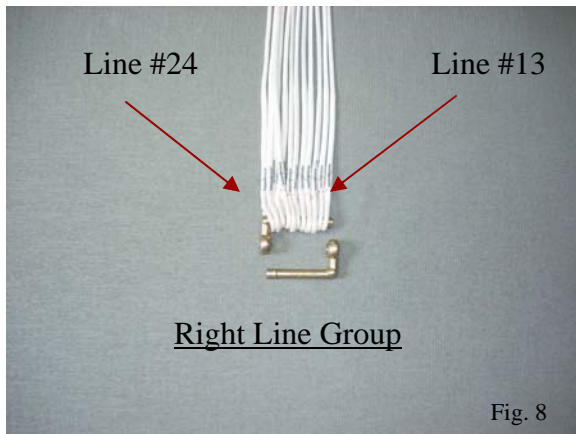


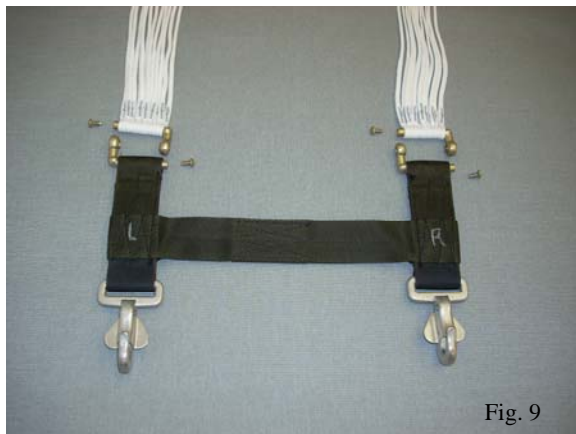
Fig. 7

Open another connector link and begin by placing line #24 onto the link.

Keep the lines straight to the link.



Continue to place lines #23 - #13 onto the link. (fig. # 8)



The Reserve Risers (TPDS-INV-101) as shown in Fig. 9

The Butterfly Snaps should be facing up.

Slide the Separable Connector Links through the loops on the end of the Risers. Be sure to go through the buffers that are inside of the loop.



Carefully replace the screws into the connector links and tighten. (fig. # 10)



Lay out the Invasion II Reserve Container with the line pouch away from the Reserve Parachute as shown above. (fig. # 11)



Pass the Butterfly Snaps through the slots in the Reserve Container as shown. (fig. # 12)

4.3 Setting the Butterfly Snap Retainer. (TPDS-INV-114)

The **Butterfly Snap Retainer (TPDS-INV-114)** is a unique apparatus that allows the Butterfly Snaps of the Reserve Risers to be tightened to the Reserve Container without hand-tacking.



With the Pile Velcro facing up and on the Left Side, Pre-set the **Butterfly Snap Retainer** by opening to full extension. (fig. #13)



Pass the loops through the grommets. (fig. #14)



Hook the loops to the Butterfly Snaps. (fig. #15)



Tighten the strap. (fig. #16)



Mate the Velcro. (fig. #17)

4.4 Assembly of the Reserve Container Closing Loop. (TPDS-INV-116)



Fig. 19

Pictured above is the Bottom Flap of the Reserve Container. (fig. #19)



Fig. 20

Slide the **Reserve Container Loop** under the retaining tape found on the Bottom Closing Flap. (fig. #20)



Fig. 21

Pass the loops through the #0 grommets. (fig. #21)

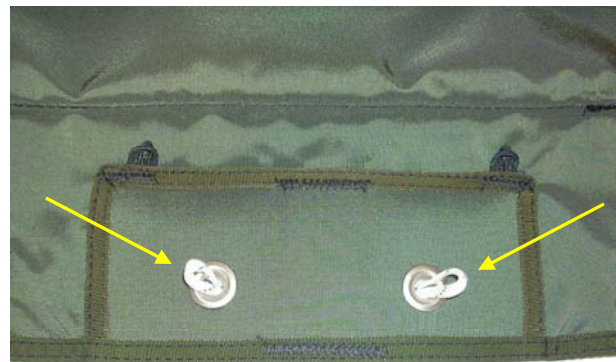


Fig. 22

The Reserve Closing Loop installed. (fig. #22)



The *Invasion II* Reserve Parachute is ready to be packed.

4.5 Attaching the Reserve Pilot-Chute. (TPDS-INV-103)

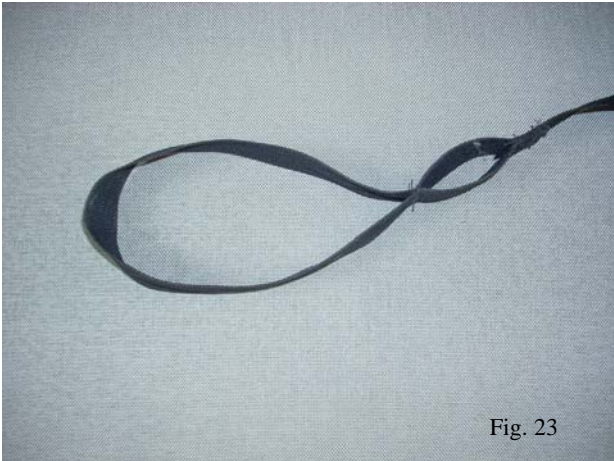


Fig. 23

The Pilot Chute bridle has one end with two loops (fig. # 23) and the other end with just one loop.



Fig. 24

Bow-tie the bridle; first, to the apex of the canopy, use the end with **two** loops. Pass the bridle through the apex lines. (fig. # 24)



Fig. 25

Route the end through the small loop (fig. # 25) and bring the other end of the bridle (the one with **one** loop) through the small loop. (fig. # 26)



Fig. 26

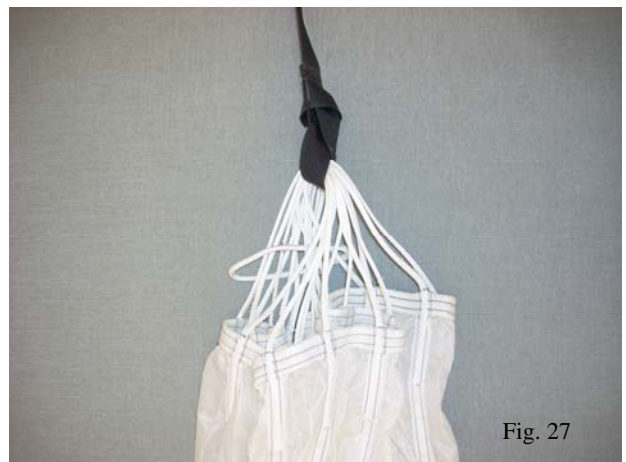


Fig. 27

Tighten the knot formed. (fig. # 27)

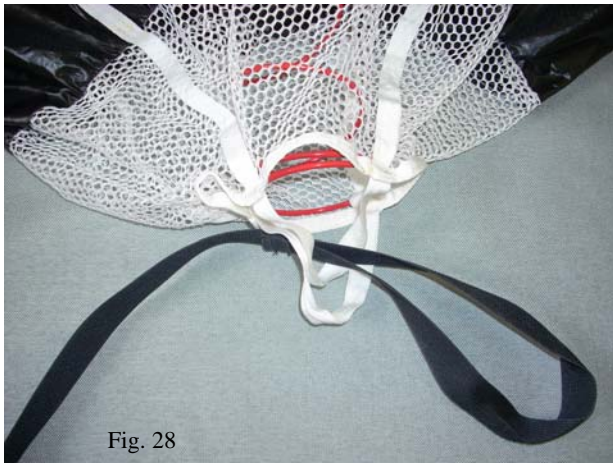


Fig. 28

To attach the Pilot Chute, route the other end of the bridle through the two tapes of the Pilot Chute. (fig. # 28)



Fig. 29

Go all the way up to the top of the Pilot Chute and pass the Pilot Chute through the loop of the bridle. (fig. #29)



Fig. 30



Fig. 31

Tighten the knot formed. (fig. # 31)



Fig. 32

The Pilot Chute connected to the Reserve Parachute. (fig. # 32)



Chapter 5

Reserve Packing

Follow these Instructions for Packing the Reserve Parachute either with or without the Pilot Chute.

5.1 Attach the Reserve Canopy to the Packing Table.

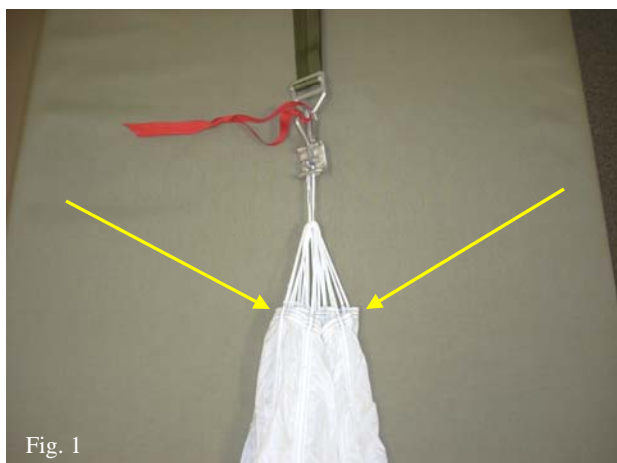


Fig. 1

Attach the apex of the canopy to the tension device at the top of the table.

Even the canopy material at the apex. (fig. #1)



Fig. 2

Set the riser connector links onto the tension plate. (fig. #2)

Stretch-out the canopy.

Check for canopy inversion by using the 4-line check method.

Suspension lines 1-12 are in the left group and 13-24 are in the right group.

Remove any turns, tangles or twists in the suspension lines.

Tighten the tension plate.

Re-Check the material at the apex.

See Chp. 4 pg. 1 for line continuity chart.

5.2 Flaking the Reserve Parachute.



Take the first line on the inside of the left riser, (line # 1) and walk to the panel # 1. (fig. #3)



Pleat the 1st gore with the left hand.
 Pick up line #2 with the right hand.
 Place on top of line #1. (fig. #4)



Continue this method until the left riser has been flaked. (fig. #5)



Carefully lay the flaked canopy on to the table. (fig. #6)



Fig. 8

Place weights on the left side to hold in place while flaking the right side. (fig. #8)



Fig. 9

Pleat the 1st gore (#24) with the right hand.

Pick up line #23 with the left hand.

Place on top of line #24. (fig. #9)



Fig. 10

Pleat the last gore out to the right of the lines. (fig. #10)



Fig. 11

Carefully lay the right side down and straighten the lines. (fig. #11)



Fig. 12

Place the lines into a line holder. (fig. #12)

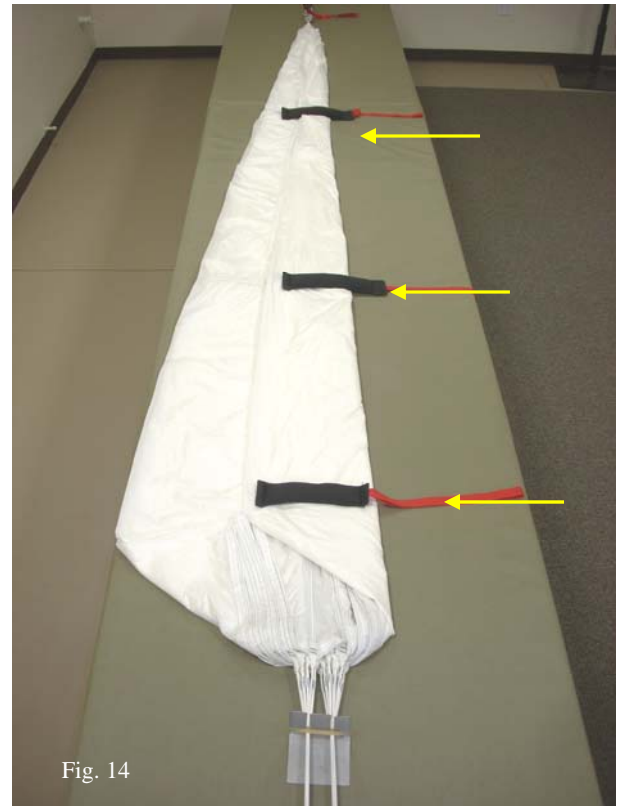


Fig. 14

Fold the right side of the flaked canopy into the center of the canopy. (fig. #14)



Fig. 13

Fold the corners of the skirt towards the center of the canopy. (fig. #13)

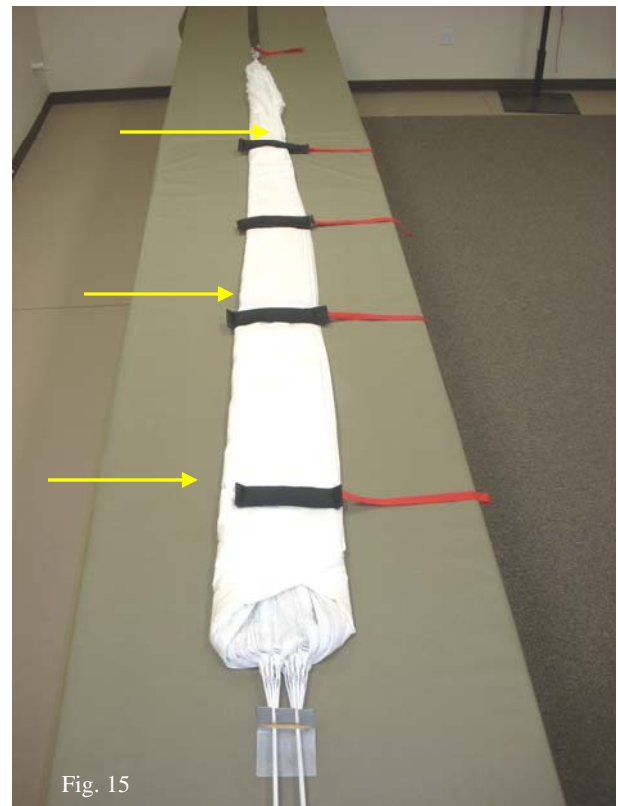


Fig. 15

Fold the left side to the center, same as the right side. (fig. #15)

5.3 Stowing the lines of the Reserve Parachute using the Stow-less Pouch.

Release the container from the tension device.

Flip the Reserve Container towards the canopy to have the open Reserve Container facing up.

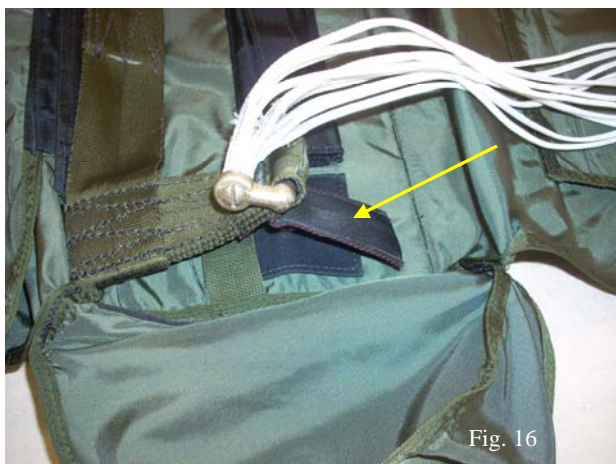


Fig. 16

Attached to the Reserve Risers are two stiffened tuck tabs. (fig. #16)



Fig. 17

Tuck these tabs under the Type 4 loops to hold the Risers in place. (fig. #17)

Retighten the Butterfly Snap Retainer.



Fig. 19

Flip the line pouch forward towards the reserve canopy. (fig. #19)



Fig. 20

Bring the lines up towards the bottom of the stow-less pouch as shown. (fig. #20)



Fig. 21

Place the lines into the pouch to the bottom of the pouch. (fig. #21)



Fig. 22

Figure "8" the lines into the pouch. (fig. #22)



Fig. 23

Leave approximately 12"-15" of line out of the pouch. (fig. #23)



Fig. 24

Mate the Velcro of the Pouch. (fig. #24)



Fig. 25



Fig. 26

Turn the Container 90° **Counter-Clockwise** and place the canopy on top of the line pouch. (fig. #26)



Fig. 27

Place the canopy on top of the pouch.
(fig. #27)



Fig. 28

“S”-fold the remainder of the canopy on
top of the Container. (fig. #28)

Follow the instructions in **Chp. 5.4** to
close the Container.

5.4 Closing the Container with a Pilot Chute & Right Hand Pull.

Follow these Instructions when using a Pilot Chute with the Reserve Parachute.



Fig. 44

Bring the Bottom Flap with the “built-in kicker plate” over the canopy fabric first, then the Top Flap with the “built-in kicker plate.” (fig. # 44)



Fig. 45

Close the container with one temporary pin. (fig. # 45)



Fig. 46

Compress the pilot chute keeping the pilot chute material folded into the spring. (fig. # 46)



Fig. 47

Slide the pilot chute under the closing flaps and on top of the kicker plates.



Fig. 48

“S”-fold the Bridle and place on top of the kicker plates. (fig. # 48)



Fig. 49

Secure the flap with a second temporary pin. (fig. # 49)



Fig. 51

Close the Left Side Flap and replace the other temporary pin with the Reserve Handle pin. (fig. # 51)



Fig. 50

Close the Right Side Flap and replace the temporary pin closest to the Reserve Handle with the first pin of the Reserve Handle. (fig. # 50)



Fig. 52

Hook up the lateral and diagonal pack opening bands.

On the longer side of the back flap pass one of the shorter bands under either of the T-4 loops shown. (fig. #52)

Continue to pass it under the back flap and out the other side.

Pass the other short band under the other T-4 loop and out the other side.

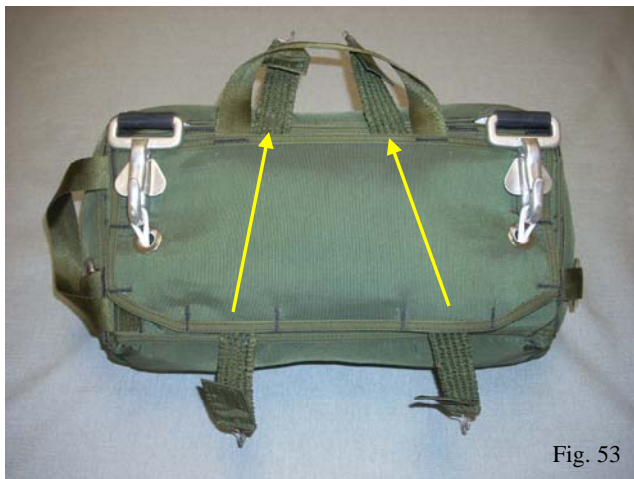


Fig. 53

Both short bands under the back flap. (fig. # 53)



Fig. 54

Pass the longer pack opening band through the T-4 loop on the side of the Container. (fig. #54 & fig. #55)



Fig. 55



Fig. 56

Attach either of the short bands to the T-IIA line loop. (fig. # 56)



Fig. 57

Attach the other short band. (fig. #57)



Fig. 58

Attach the long pack opening band to the T-IIA loop nearest the Ripcord Handle. (fig. # 58)



Fig. 59

Attach the other end of the long opening pack band to the other side T-IIA loop.

Make sure that the pack opening band is under the ripcord and the carrying handle. (fig. #59)



Fig. 60

Use the Packing Paddle to position the Bottom and Top Flaps under the Side Flaps.

Place the Packing Paddle into the T-III Tuck Flaps. (fig. # 60)



Fig. 61

Carefully push the Flaps under the Side Flaps. (fig. # 61)

COUNT YOUR TOOLS!

Follow all Applicable Rules for Documenting and Sealing the Reserve Container.



The *Invasion II* Reserve Container (INV-100-1) set up with right hand pull ripcord.

5.6 Closing for Center Pull Ripcord Set-Up.

Follow the instructions for closing the Reserve Container with or without the Pilot chute to this point.



Fig. 54

Bring the Bottom Flap with the “built-in kicker plate” over the canopy fabric first, then the Top Flap with the “built-in kicker plate.” (fig. # 54)



Fig. 55

Close the container with one temporary pin. (fig. # 55)



Fig. 56

Close the Right Side Flap with the temporary pin. (fig. # 56)

If using a Pilot chute, follow the instructions in Chp. 5.6 for stowing the pilot chute.

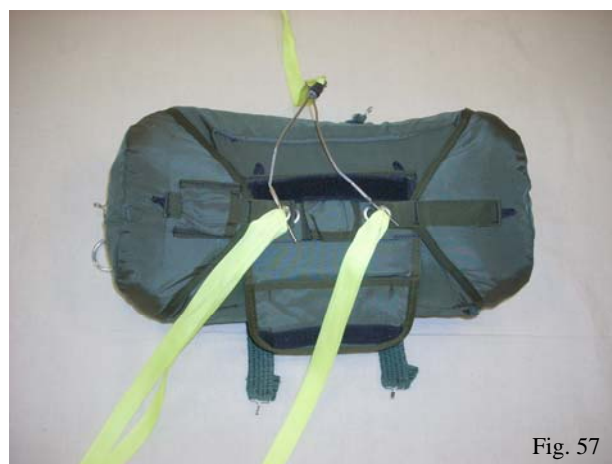


Fig. 57

Close the Left Side Flap with a temporary pin. (fig. # 57)

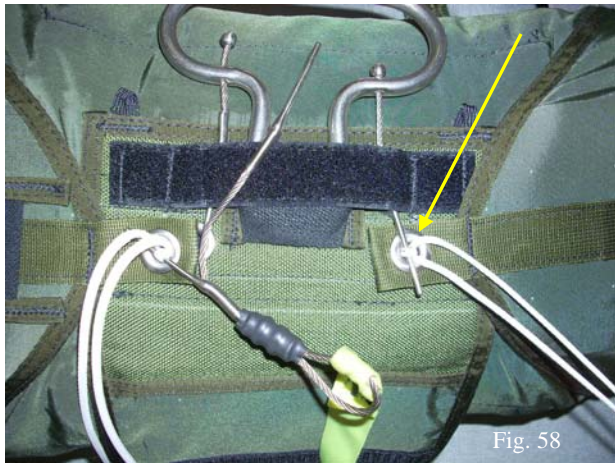


Fig. 58

Replace the Left Side temporary pin with the Reserve Handle Pin. (fig. # 58)



Fig. 59

Replace the Right Side temporary pin with the Reserve Handle Pin. (fig. # 59)

Hook up the lateral and diagonal pack opening bands.

COUNT YOUR TOOLS!

DOCUMENT and SEAL the RESERVE CONTAINER.



The *Invasion II* Reserve Container (INV-100-2) set up with center-pull ripcord.



Chapter 6
Gear-up

6.1 Main Container – INVASION II



Fig. 72

Loosen the Main Lift Webbing. (fig. # 72)



Fig. 73

Loosen the Lateral Straps. (fig. # 73)

Put the Main Container on with the Lateral Straps passing over the lower back.



Fig. 74

Close and Adjust the Leg Straps. (fig. # 74)



Fig. 75

Adjust the Lateral Straps snug. (fig. # 75)





Fig. 76

Adjust the Main Lift Webbing until the Container sets on the shoulders with light pressure. (fig. # 76)



Fig. 78



Fig. 77

Close and Adjust the Chest Strap. (fig. # 77)



Tuck all excess webbing into the elastic keepers and retainers. (fig. #78)

**6.2 Reserve Container -
INVASION II R**



Fig. 81

Hook up the Butterfly Snaps to the Main Lift "D" Rings and secure with the "safety pin". (fig. # 81)



Fig. 82

Hook up the Alligator Clips of the Reserve Side Connectors to the Reserve Container Rings and adjust snug. (fig. # 82)



Fig. 83

Tuck the excess into the stowing elastics. (fig. #83)



INVASION II ready for the mission.

6.3 Gear Bag - INVASION II



Use the **Gear Bag (INV-800)** (fig. #85) to transport both containers.

The Gear Bag tucks inside the pocket on the back of the Main Container. (fig. #86)



INVASION II, MAIN & RESERVE with GEAR BAG.



Chapter 7

Stowing the Gear

7.1 Main and Reserve Containers.

Follow these Instructions to stow the Main and Reserve Containers to be jump ready for the next mission.



Fig. 87

Place the Main Container into the Gear Bag. With the back pad facing up bring the Leg Pads up on top of the Back Pad. (fig. 87)



Fig. 89

Bring either 1" Reserve Connector Strap with Alligator Clip up and across to the opposite side Accessory Ring. Fasten the snap. (fig.89)



Fig. 88

Bring the Chest Straps up and fasten with the snap. (fig. 88)



Fig. 90

Bring the other 1" Reserve Connector Strap up and cross over to the other Accessory Ring. Fasten the snap. (fig.90)





Fig. 91

Place the Reserve Container on top of the Main Container. (fig. 91)



Fig. 92

Zip the Gear Bag closed. (fig. 92)



Fig. 93

The TPDS **Invasion II** Main and Reserve Containers stowed in the **INV-800 Gear Bag** and ready for the next mission. (fig.93)



Chapter 8

Care and Maintenance

8.1 General Storage Requirements

To ensure that serviceability standards of the **TPDS, Inc. INVASION II** are maintained, every effort will be exerted to adhere to the following general storage requirements:

1. When available, a climate controlled building should be used to store the TPDS **INVASION II**.
2. The TPDS **INVASION II** shall be stored in a dry, well ventilated location and protected from pilferage, dampness, fire, dirt, insects, rodents and direct sunlight.
3. The TPDS **INVASION II** will **NOT** be stored in a manner which would prevent ventilation or interfere with light fixtures, heating vents, fire fighting devices, cooling units, exits or fire doors.
4. The TPDS **INVASION II** will **NOT** be stored in a damaged, dirty or damp condition.
5. The TPDS **INVASION II** will **NOT** be stored in direct contact with any building, floor or wall. Storage will be accomplished using bins, shelves, pallets, racks or dunnage to provide airspace between the storage area floor and the equipment.
6. Proper housekeeping policies and strict adherence to all safety regulations will be practiced at all times.

8.2 Storage Specifics for Parachutes

In addition to the storage requirements stipulated in the **General Storage Requirements**, the following is a list of specifics that must be enforced when storing parachutes.

1. Except for those assemblies required for contingency operations, parachutes will **NOT** be stored in a packed configuration.
2. Stored parachute assemblies will be secured from access by unauthorized personnel.
3. A parachute that is in storage, and is administered a cyclic repack and inspection, will **NOT** be exposed to incandescent light or indirect sunlight for a period of more than 36 hours. In addition, exposure to direct sunlight will be avoided entirely.

8.3 In-Storage Inspection

General Information:

1. An in-storage inspection is a physical check conducted on a random sample of parachutes that are located in storage.
2. Parachutes in storage will be inspected at least once every **180** calendar days and at more frequent intervals if prescribed by the local parachute maintenance officer.
3. Inspect the parachute to ensure that it is ready for use.
4. Check to be sure the parachute has the proper identification.
5. Check that no damage or deterioration has incurred.
6. Check the adequacy of the storage facilities, efforts have been taken to control pests and rodents, and protection against unfavorable climatic conditions.



8.4 Water Contamination Guide

If the **TPDS INVASION II** or any of its components have been **immersed in salt-water for more than 24 hours the equipment will be condemned.**

If the Harness / Container or any of its components have been immersed in water, be it fresh or salt-water, the Harness / Container and any of the components immersed shall be rinsed immediately or placed in a double plastic bag with the top securely closed to keep the contents in a wet state until they can be rinsed. **If they cannot be rinsed within 24 hours, they will be condemned.**

! CAUTION !

REMOVE ALL INSTRUMENTS BEFORE RINSING THE HARNESS / CONTAINER AND THE COMPONENTS.

FOLLOW THESE INSTRUCTIONS FOR RINSING AFTER WATER IMMERSION.

1. Place the equipment in a large container filled with enough fresh water to completely cover it.
2. Agitate the contents of the container by hand for **5** minutes.
3. Remove the equipment from the container and suspend or elevate it in a shaded area for a period of 5-10 minutes to allow it to drain. **Do NOT Wring** the fabric or suspension lines of a parachute canopy.
4. Repeat the procedures in steps 1, 2 & 3 above, twice, using fresh, clean water for each rinse.
5. After the 3rd rinse, allow the equipment to drain thoroughly. Upon completion of draining, dry the equipment by elevating or suspending the item in a well ventilated room or a heated drying room with the temperature not to exceed 130° Fahrenheit or 55° Celsius. When heat is used it shall not exceed 105° F. or 40° C. The preferred temperature is 90° F. / 32° C. The use of electric circulating fans will reduce the drying time.
6. When dried, perform a technical / rigger type inspection of the equipment. Corroded metal components or corrosion stained fabrics or suspension lines will be either repaired or replaced.
7. Record the immersion and rinsing and any repairs made to the equipment in the parachute log record.

Chapter 9

Repairs



9.1 Repair Guidelines

Stitching and re-stitching on parachute items constructed from cloth, canvas, and webbing should be accomplished with thread, which matches the color of the original stitching, when possible.

All straight stitching should be 7-11 stitches per inch, and locked by over stitching the existing stitching by at least 2-inches. Zigzag stitching should extend at least 1/2-inch into undamaged stitching at each end. Re-stitching should be made directly over the original stitching, following the original stitch pattern as closely as possible.

All thread on the canopy should be VT-295E, Type II, Class A, Size E, VY, and sewn with a light or medium duty machine.

Canopy

<u>Type of Repair</u>	<u>Limitations</u>
Re-stitching:	No limit as to length or number.
Patch, single side:	Size Limit: Maximum 50% of panel area. Limit of 3 per panel, 15 per canopy.
Panel replacement:	Limit 9 per canopy
Radial Seams:	Size Limit: 12", no more than 4 per canopy.
Lateral bands:	Size Limit: 2", no more than 10 per canopy
Upper	Size Limit: 4", Limit 1 per canopy
Lower	Size Limit: 36", Limit 4 per canopy

Static Line

A Damaged Static Line should be replaced.

Container

Standard military single side patches or replacement of the damaged area is authorized.

RipCORDS

Damaged ripCORDS should be replaced.



9.2 Keeping Track of Repairs and Packing

Data Card

Data cards should not be discarded or replaced. When filled, they should be attached to the new card so that a complete log of packing, repairs, and alterations is recorded. This is the history of the parachute.

Note!

Darning and Ripstop Tape are **NOT** authorized for Certified Canopies as they may weaken the fabric. Single side patches are recommended for even small damaged areas.

Chapter 10

Repack Cycle Authorization



All of the materials, purchased items and parts used in the fabrication process for **Tactical Parachute Delivery Systems (TPDS) INVASION II** are acquired from suppliers on our Approved Supplier list as part of our FAA approved Quality Control System for parachutes produced under the FAA TSO.

There are no component parts utilized in these parachutes that necessarily require re-certification at a specific repack cycle. Our experience indicates that a repack cycle of one year should not adversely affect the performance of the parachute or compromise safety based on the element of time alone.

Factors that might affect a parachute's airworthiness could come into play during any repack cycle and include:

1. Storage temperature, humidity, and ultraviolet radiation
 - a. When not in use, the parachute should be stored in an environment wherein the temperature is controlled between 60°- 85° F. (15°-30° C.) and within the relative humidity limits of 30% and 60%. Ultraviolet radiation (daylight) in the storage facility should be zero.
2. Damage from normal handling and use
 - a. The entire system should be inspected prior to each use as well as after each use to determine if any damage has occurred during normal use. If the parachute ever becomes damp, a thorough drying, inspection, and repack are strongly recommended, and the wetting agent should be analyzed for elements that may cause deterioration of nylon and other synthetic components that make up the parachute system.
3. Other components that make up the system
 - a. Other components like the container, or the reserve deployment free bag and pilot chute, or any other component that contains material unsuitable for an extended repack cycle could disqualify the system from the extension.
4. Chain of custody
 - a. Our approval of extending the repack cycle to one year is authorized only if a log-book is maintained describing a chain of custody and documenting storage and use as outlined in each of the previous items.

When in compliance with these four detailed elements, we approve a repack cycle of both our main and our TSO'd reserve parachute canopies to **1 year** for certain military and civilian applications, in countries that do not impose a more restrictive repack cycle for parachute products.





Chapter 11
Limitations

11.1 Invasion II Limitations

15 year Maximum Life Limitations for TPDS Invasion II.

Without further limitations, each *INVASION II Canopy* has a maximum life limitation of **15 years** from the date of manufacture.

Further limitations include:

	<u>Reserve</u>	<u>Main</u>	<u>Harness/Container</u>
Shelf Life Limitation	15 years	15 years	15 years
Service Life Limitation	12 years	12 years	12 years
Useful Life Limitation	20 deployments	100 deployments	100 deployments

WATER JUMPED CANOPIES:

Reserve- Non-Deployed - if the Reserve Parachute is used in a water jump but **NOT** deployed- it shall have 5 years or 20 jumps (**which ever comes first**) remaining for its Useful Life Limitation.

Reserve- Deployed- if the Reserve Parachute is used in a water jump and has been deployed- **It Shall be Condemned.**

Main Parachute- if the Main Parachute is used in a water jump- it shall have 5 years or 50 jumps (**which ever comes first**) remaining for its Useful Life Limitation.

HARNESS/CONTAINER:

If the Harness/Container is jumped into water, it shall have 5 years or 50 jumps (**which ever comes first**) remaining for its Useful Life Limitation.

If at any time the unit is discovered to be B.E.R. (beyond economical repair) it will be removed from service and disposed of by the equipment activity officer.



Chapter 12
Parts List

Reserve Container

Part # Manufactured Part

TPDS-INV-100-1	RESERVE CONTAINER - <u>RIGHT SIDE RIPCORDER PULL</u> Includes: Reserve Risers, Reserve Ripcord Handle, Lateral Pack Opening Band 16.5", Diagonal Pack Opening Bands 12.5" x 2, Butterfly Snap Retainer, Closing Loop, Reserve Packing Data Card
TPDS-INV-100-2	RESERVE CONTAINER - <u>CENTER RIPCORDER PULL</u> Includes: Reserve Risers, Reserve Ripcord Handle, Lateral Pack Opening Band-16.5", Diagonal Pack Opening Bands 12.5" x 2, Butterfly Snap Retainer, Closing Loop, Reserve Packing Data Card
TPDS-INV- 101	RESERVE RISERS
TPDS-INV- 102	RESERVE RISER SEPARABLE CONNECTOR LINKS MS 22002-1 x2
TPDS-INV- 103	RESERVE PILOT CHUTE
TPDS-INV- 104	RESERVE RIPCORDER ASSEMBLY - SIDE PULL
TPDS-INV- 105	RESERVE RIPCORDER ASSEMBLY - CENTER PULL
TPDS-INV- 106	RESERVE PILOT CHUTE BRIDLE
TPDS-INV- 108	LATERAL OPENING BAND 16.5"
TPDS-INV- 109	DIAGONAL OPENING BAND 12.5" x 2
TPDS-INV- 110	RESERVE PACKING DATA CARD x 50
TPDS-INV- 111	RESERVE RIPCORDER ELASTIC POCKET
TPDS-INV- 113	SECURITY PIN for CHEST MOUNT RESERVE BUTTERFLY SNAPS
TPDS-INV- 114	BUTTERFLY SNAP RETAINER
TPDS-INV- 116	RESERVE CONTAINER CLOSING LOOP



Part #

Canopies

TPDS-INV- 300	28' INVASION II Round Reserve Canopy
---------------	--------------------------------------

Lines

TPDS-INV- 504	Reserve Parachute Suspension Line Set - INV- 300 - (1) Green
TPDS-INV- 515	Reserve Parachute Line - INV-300 - (1) Green

Materials

TPDS-INV- 600	Parachute Suspension Line Roll - Green - Tensile Strength - 525 lbs.
TPDS-INV- 6035	Type II-A Nylon Cord - Roll
TPDS-INV- 608	Reserve Container Material - 420 Denier Para-Pak Nylon
TPDS-INV- 610	Reserve Parachute Material - PIA-C-44378 Type IV
TPDS-INV- 613	Reserve Parachute Vent Panel Netting

Part #

Accessories

TPDS-INV- 701	Invasion II Reserve Container Owner's Manual
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Packing Equipment

TPDS-INV- 900	TPDS Tension Plate
TPDS-INV- 901	TPDS Tension Snap
TPDS-INV- 902	TPDS Connector Link Separator
TPDS-INV- 903	TPDS Packing Hook
TPDS-INV- 904	TPDS Packing Paddle
TPDS-INV- 905	TPDS Line Separator
TPDS-INV- 906	TPDS Temporary Pin
TPDS-INV- 907	TPDS Screwdriver
TPDS-INV- 908	TPDS Hammer
TPDS-INV- 909	TPDS Pull-up Cords
TPDS-INV- 910	TPDS Packing Weights
TPDS-INV-911	TPDS Scissors
TPDS-INV- 912	TPDS Drying Tower Rope, Double Braid Nylon- Roll
TPDS-INV- 913	TPDS Goggles
TPDS-INV- 917	TPDS Gloves





Chapter 13

Spare Parts



TPDS-INV-100
RESERVE CONTAINER



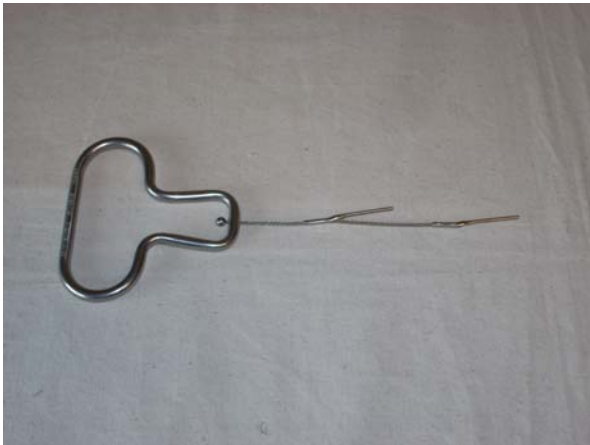
TPDS-INV-101
RESERVE RISERS



TPDS-INV-102
RESERVE RISER
CONNECTOR LINKS x 2



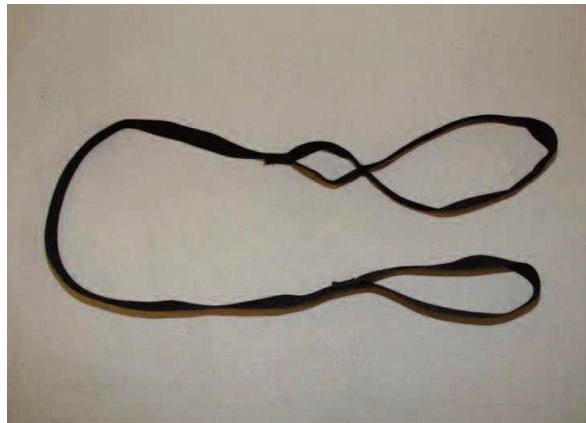
TPDS-INV-103
RESERVE PILOT CHUTE



TPDS-INV-104
RESERVE RIPCORD SIDE PULL



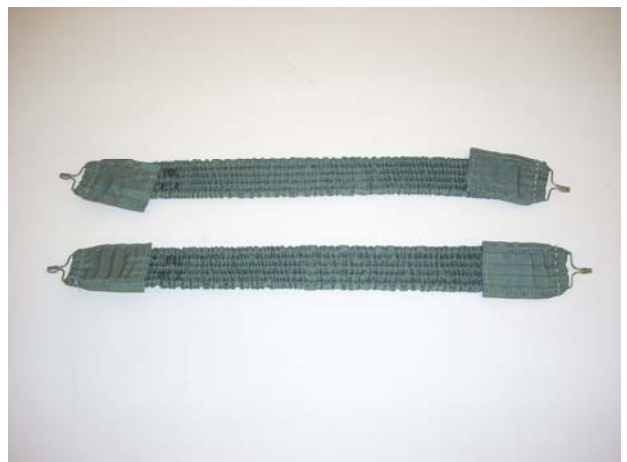
TPDS-INV-105
RESERVE RIPCORD CENTER PULL



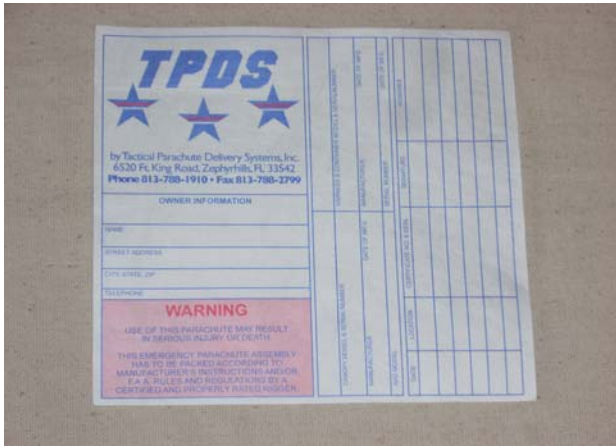
TPDS-INV-106
RESERVE PILOT-CHUTE BRIDLE



TPDS-INV-108 LATERAL
PACK OPENING BAND 16.5"



TPDS-INV-109 DIAGONAL
PACK OPENING BANDS 12.5" x2



TPDS-INV-110 RESERVE PACKING DATA CARD x 50 ea.



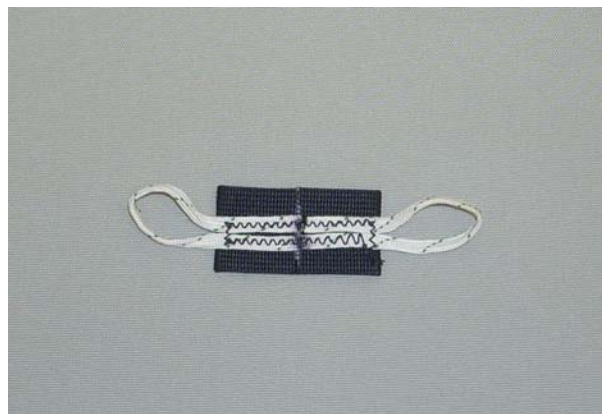
TPDS-INV-111 RESERVE RIPCORD ELASTIC POCKET



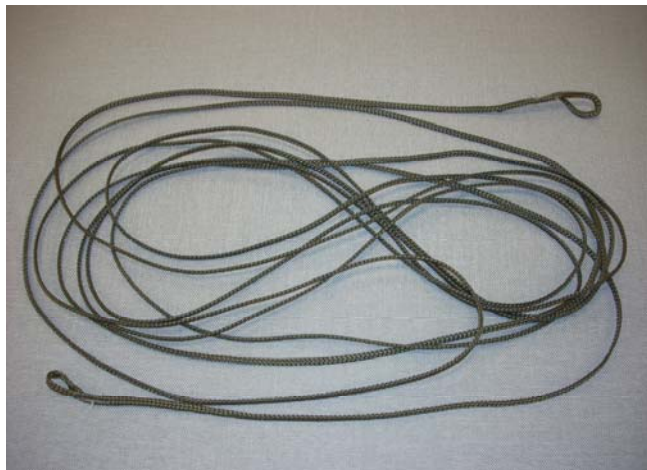
TPDS-INV-113 SECURITY PIN for CHEST MOUNT RESERVE



TPDS-INV-114 BUTTERFLY SNAP RETAINER



TPDS-INV-116 RESERVE CONTAINER CLOSING LOOP



TPDS-INV-515 SUSPENSION LINE -
GREEN



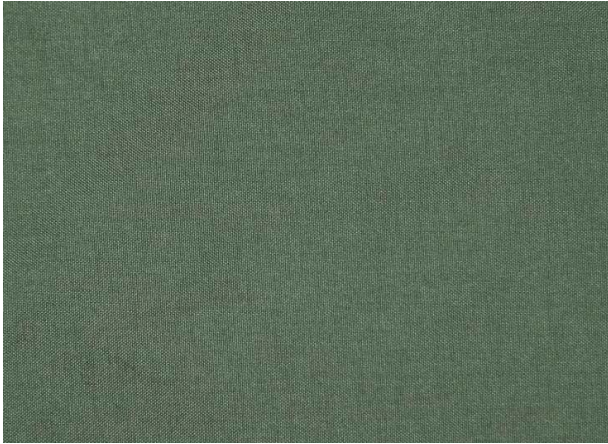
TPDS-INV-504 RESERVE LINE SET
GREEN



TPDS-INV-600 SUSPENSION LINE
ROLL - GREEN



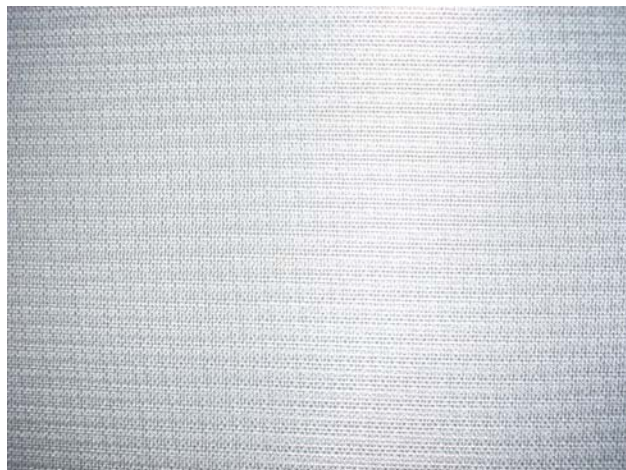
TPDS-INV-603 TYPE II-A LINE-
ROLL



TPDS-INV-608 RESERVE
CONTAINER MATERIAL



TPDS-INV-610 RESERVE CANOPY
MATERIAL



TPDS-INV-613
RESERVE CANOPY PANEL MESH

**INVASION II R
OWNER'S MANUAL
PACKING AND MAINTENANCE**



RESERVE CONTAINER

**CHEST CONTAINER
28' CANOPY (INV-300)
December 2020**

Tactical Parachute Delivery Systems, Inc.

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2020

**TPDS-INV-701
INVASION II RESERVE CONTAINER MANUAL**





TPDS-INV-900
Tension Plate



TPDS-INV-901
Tension Snap



TPDS-INV-902
Connector Link Separator



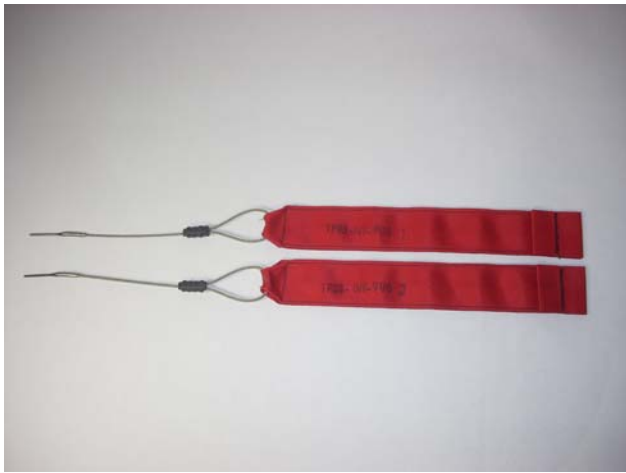
TPDS-INV-903
Packing Hooks



TPDS-INV-904
Packing Paddle



TPDS-INV-905
Line Separator



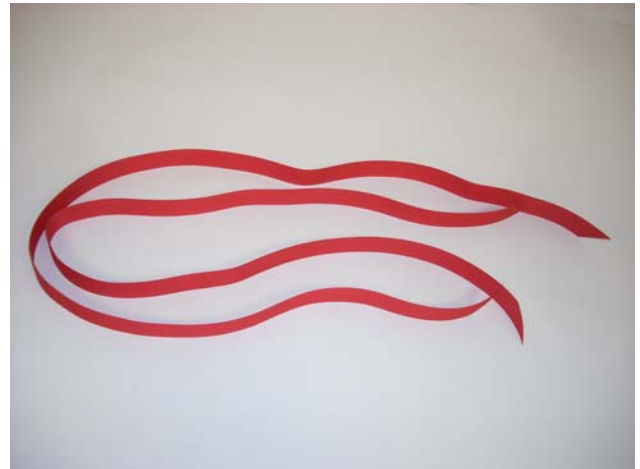
TPDS-INV-906
Temporary Pins



TPDS-INV-907
Screwdriver



TPDS-INV-908
Hammer



TPDS-INV-909
Pull-up Cords



TPDS-INV-910
Drying Tower Rope



TPDS-INV-913
Goggles



TPDS-INV-917
Packing Gloves

NOTES: