

# TEAR DROP 1 PIN OWNERS MANUAL

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# TEAR DROP 1 PIN OWNERS MANUAL

## INTRODUCTION

First of all we would like to thank you for choosing a Thomas Sports Equipment Tear Drop 1 Pin , you have shown impeccable taste.

Please read this manual thoroughly before assembling or using your Tear Drop 1 Pin. If after reading this manual you still have questions concerning the Tear Drop 1 Pin please contact us, we will be more than willing to help. If you have any suggestions or see a need for some changes in the Tear Drop 1 Pin please let us know by calling or writing to:

**Thomas Sports Equipment**

**Pinfold Lane**

**Bridlington**

**East Yorkshire**

**YO16 5XS**

**Tel: + 44 (0) 1262 678299 Fax: + 44 (0) 1262 602063**

### FACTS: about Thomas Sports Equipment

Thomas Sports has been manufacturing parachute equipment since 1968 and has provided services from students to British team members. Twenty six years in our sport has provided TSE with a wealth of experience in developing and manufacturing parachute equipment with an enthusiasm and commitment in the complete sense. A service second to none. This in turn means you can be confident in the knowledge that with TSE you are using the very best available, from the initial PLF through to the highest levels of competing. Staff qualifications are more than impressive: 2 FAA master riggers, 2 BPA advanced, rigger examiners, with a collective total of over 10,000 jumps, oversee all aspects of the production, maintenance and repairs operations at the loft. Every care is taken to ensure that each rig from TSE meets the highest possible standards.

The Tear Drop 1 Pin is a piggy-back harness and container system designed for free fall sport parachuting. It is available in a wide variety of container sizes to fit practically any main or reserve canopies on the market today. This harness/container system is the most innovated on the market today. TSE have developed the single pin pop top reserve container, giving both safety and ease of packing. The TEAR DROP 1 PIN version also lends itself to the CYPRES A.A.D.

**PATENT NUMBERS: U.S.A #4898346. GERMANY #3805085.  
EUROPEAN # P58903422. 7-08.**

# TEAR DROP 1 PIN OWNERS MANUAL

## THE MAIN CONTAINER FUNCTION:

The main canopy may be deployed by either throw away or pull-out pilot chute.

## THE THROW AWAY MAIN PILOT CHUTE:

The throw away is an external pilot chute located in a spandex pocket on the rear of the leg strap or on the bottom of the container. The pilot chute is attached to a bridle line. Sewn to the bridle line is a curved locking pin. This locking pin keeps the main container closed until the pilot chute inflates thus removing the locking pin, opening the main container and extracting the main parachute.

## THE PULL-OUT MAIN PILOT CHUTE:

The pull-out base mounted pilot chute is a soft handle located on the bottom right hand corner of the main container, (the pilot chute is stowed inside the main container), this connects to a straight pin at the base of the pilot chute. Hence 'base-mounted'. As the handle is pushed straight down the straight pin releases the nylon loop allowing the main container to open. The pull action extracts the pilot chute from inside the main container. The pilot chute must be thrown manually into the clean air-flow, the wearer must throw to their side and release the pilot chute. The pilot chute then pulls out of the main container. For the apex pull-out pilot chute the system of deployment activation is as is for the base mounted pilot chute, however the pad is located on top of the pilot chute.

## THE RESERVE CONTAINER:

The reserve parachute container is held closed by a single pin. The reserve ripcord is protected by a cover on the inside back of the jumper, so that once checked on the ground it does not need to be checked again in the aircraft. The reserve ripcord handle is made of metal and fit into a pocket on the left hand main lift web. The reserve pilot chute is a domed shaped externally mounted pilot chute, that is held closed by the use of a single loop through the center of the reserve pilot chute. The external mounting ensures that the reserve pilot chute escapes to the clean air-flow in deployment as fast as possible, as there is no need for the flaps to be knocked out of its way. You may have a Stevenson Lanyard attached to the reserve ripcord handle end, so that when you cutaway the main parachute the lanyard acts like a static line and pulls the reserve ripcord.

## THE HARNESS:

The harness is constructed from either type 7 or type 8 Mil-spec webbing and incorporates the famous 3-ring circus. It also features the unique TSE shaped harness design.

# TEAR DROP 1 PIN OWNERS MANUAL

## PARTS LIST

THE TEAR DROP 1 PIN IS SHIPPED TO THE CUSTOMER WITH THE FOLLOWING COMPONENTS:-

**\*HARNES/CONTAINER.**

**MAIN RISERS WITH CONTROL TOGGLES.**

**MAIN DEPLOYMENT BAG.**

**CUTAWAY HANDLE.**

**MAIN PILOT CHUTE AND BRIDLE.**

**^RESERVE PILOT CHUTE WITH SPECIAL CLOSING LOOP.**

**#RESERVE RAM-AIR FREE BAG FOR SQUARE RESERVES.**

**RESERVE RIPCORDER.**

**RESERVE CONTROL TOGGLES.**

**MAIN LOCKING LOOP.**

**TEAR DROP 1 PIN OWNER'S MANUAL.**

**\*All TEAR DROP 1 PIN harness/containers are manufactured to accept the Cypress A.A.D.**

**^Only the TEAR DROP 1 PIN reserve pilot chute may be used with the TEAR DROP 1 PIN harness/container system. Do not substitute with any other pilot chute.**

**#Only the TEAR DROP 1 PIN reserve free bag may be used when packing a ram-air reserve into the TEAR DROP 1 PIN harness/container system.**

**All components listed above are also available individually from:**

**Your TEAR DROP 1 PIN dealer**

**OR**

**Thomas Sports Equipment Limited**

**Pinfold Lane**

**Bridlington**

**East Yorkshire**

**YO16 5XS**

**England**

**Tel: + 44 (0) 1262 678299**

**Fax: + 44 (0) 1262 602063**

**TRAINING REQUIRED BEFORE JUMPING THE**

# **TEAR DROP 1 PIN OWNERS MANUAL**

## **TEAR DROP 1 PIN**

The T.S.E. Tear Drop 1 Pin may be jumped only by persons who have received thorough instruction on its use from a qualified instructor. It is the responsibility of the owner and those whom he allows to use the system to ensure it is properly assembled, maintained, packed, worn and used, also that the user has the training and skill to use it properly. The manual is NOT a course of instruction on how to make a parachute jump. Nor does it contain the various regulations that govern sport parachuting and related activities. This information is best obtained from government bodies. The person who inspects and packs both the main and reserve parachutes must be qualified to do so. Finally, nothing in this manual is meant to discourage the reader from using the T.S.E. Tear Drop 1 Pin in a reasonable and prudent way. The information and specifications in this manual were in effect at the time of printing. Thomas Sports Equipment Limited, however, reserve the right to change specifications or design at any time without prior notice and without incurring any obligation.

## **ABOUT MODIFICATIONS**

It is common for jumpers to "improve" their rigs by altering them. A high percentage of these alterations cause malfunctions or make it difficult to use the rig correctly. Typical alterations include conversion to "pull out" pilot chute, changing the configuration of the harness and changing the length of the bridles. Check with Thomas Sports Equipment before you make any changes to your Tear Drop 1 Pin. It was designed and built the way it is as a result of years of testing and development. There are reasons for having things the way they are, reasons that might not be apparent at first. Check with the Manufacturer before you make any changes; even "insignificant" alterations may have very negative or unforeseen effects.

## **THE MAIN**

# TEAR DROP 1 PIN OWNERS MANUAL

## PACKING THE MAIN

First refer to the manufacturers instructions for laying out the main parachute, setting the brakes and otherwise preparing the main parachute to put into the deployment bag. If you are unable to obtain suitable instructions for the main the conventional pack job will generally suffice. If you require further instruction seek the advice of a suitable instructor.

1. Fold the parachute slightly wider than the deployment bag.
2. Place the parachute on top of the deployment bag, then push the parachute out into the corners of the deployment bag. Then close the bag, making sure that you have filled out the corners of the bag.
3. Thread the locking bungies through the grommets of the bag and stow all the lines on the deployment bag.
4. Pull the pilot chute bridle out of the top of the deployment bag until the load bearing ring on top of the parachute seats against the grommet on the top of the main deployment bag.
5. Set the deployment bag in the tray of the main container with the lines facing the bottom the container and the pilot chute bridle coming out of the top of the container. ( SEE FIGURE #1 )

FIGURE #1

## WARNING

**YOUR LINES MUST BE STOWED AT  
THE BOTTOM OF YOUR CONTAINER**

6. When using a throw away pilot chute the bridle line comes out of the bottom left hand side of the main container.
  - A. Close the bottom flap #1, then the top flap #2, left side flap #3, then the right side flap #4. Insert the curved pin through the closing loop from right to left. Next, dress the container making sure that the risers are correctly positioned. Remove the pull up cord. Note that the container will not open if the pull-up cord is left in.
  - B. Mate the velcro on the pilot chute bridle, starting from the top of the pouch on the leg strap and follow along the side of the container putting the extra bridle length under the right hand side flap of the container.

# TEAR DROP 1 PIN OWNERS MANUAL

## FOLDING THE PILOT CHUTE

- A. Lay the pilot chute out over the leg strap, net side up so the edge of the circle is at the mouth of the spandex pocket. S-Fold the bridle line on the half of the pilot chute over the pocket.
- B. Fold the pilot chute in half over the bridle line. (see FIGURE #2) then bring the corners up to form a wide triangle. (see FIGURE #3).
- C. Fold the triangle in half, forming a skinny triangle. (see FIGURE #4).
- D. Fold the triangle into thirds, forming a skinny triangle, then fold it once more. (see again FIGURE #4).
- E. Fold the pilot chute in half so that the handle is even with the skirt. (see FIGURE #5)
- F. Then stow the pilot chute into the spandex pocket with the toggle showing at the top.

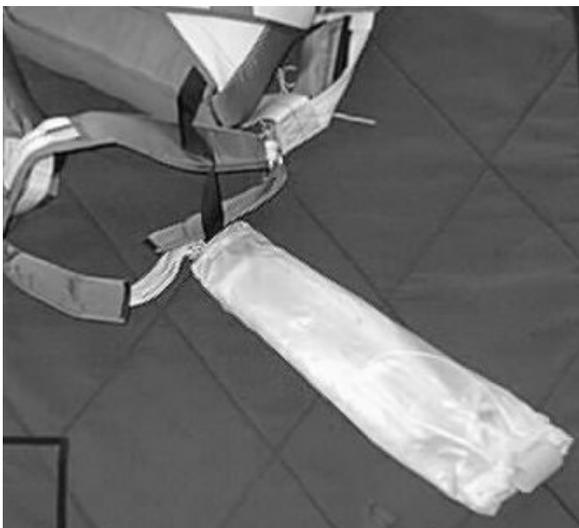
**FIGURE #2**

**FIGURE #3**



**FIGURE #4**

**FIGURE #5**



# **TEAR DROP 1 PIN OWNERS MANUAL**

## **INSTRUCTIONS FOR THE PULL-OUT**

- A. S-fold the pilot chute bridle across the top of the container and lay the folded pilot chute on the center of the deployment bag with the base coming out of the right hand bottom corner.**
- B. Place the pull-out pad onto the velcro on the bottom of the container.**
- C. Close the container with the closing loop, following the #'s on the main container flaps.**
- D. Ensure that where the pad and pin is attached to the pilot chute, it is free from snagging on the right side.**
- E. Remove the pull-up cord and tuck the excess bridle and base of the pilot chute up under the bottom right hand flap.**

## **COMPATIBILITY**

**Make sure that the main parachute you are packing is the right size for the Tear Drop 1 Pin it is connected to.**

## **CLOSING LOOP LENGTH**

**A too short closing loop results in a dangerously hard pull. One that is too long looks messy and can snag on protrusions on aircraft or on lines, whilst performing C.R.W. Clear a channel for the loop, visually inspect the complete pack job from both the front and back (back pad) of the Tear Drop 1 Pin. Ensure that no lines, parachute or pilot chute material can hinder the closing loop passage through the main container.**

**There are many types of main parachutes on the market today and the Tear Drop 1 Pin can be manufactured to accept most of them. Because of the size range available on the main parachutes this manual does not contain instructions on inspection and assembling each one, for these steps it is the responsibility of a qualified packer to use the appropriate method for any main he / she packs and to pack according to the harness/container manufacture's instructions. Deviating from these instructions results in a void pack job and no responsibility will be held by THOMAS SPORTS EQUIPMENT LIMITED.**

# TEAR DROP 1 PIN OWNERS MANUAL

## PACKING A SQUARE RESERVE

Because of the size range of square reserve canopies available today, this manual does not contain instructions on inspection, assembling and flaking. For these steps the rigger must follow the instructions provided by the canopy manufacturer.

### TYPICAL PRO PACKING EXAMPLE

#### TOOLS REQUIRED

- 1 X T Bar
- 1 X Pull up cord (cypres type)
- 1 X Packing paddle

1. Thoroughly inspect the pilot chute bridle, deployment bag, canopy, lines, links, locking loop, risers, container and harness.
2. Follow canopy manufactures instructions for
  - A. Attaching the canopy to risers.
  - B. Attaching toggles to steering lines.
  - C. Flaking canopy.
  - D. Folding the nose of the canopy.
  - E. Setting deployment brakes.
  - F. Splitting the tail.
  - G. Stowing the slider.
  - H. Dressing the canopy.
3. Prepare the free bag so that it is ready to be packed. To do this, insert one end of the pull up cord through the grommet in the top and bottom of the bag, and tie it to the other end so that it won't slip out during the packing procedure. NOTE; Some riggers prefer to use a T bar instead of a pull up cord. Insert the T bar through the bag from the bottom. The T bar or pull up cord will be used later to pull the locking loop through the bagged canopy.



# TEAR DROP 1 PIN OWNERS MANUAL

## PACKING A SQUARE RESERVE

FIGURE #1

4. **FIGURE #1**

Dress the canopy to the width of the reserve bag.

5. **FIGURES #2, #3, #4**

Kneel on the trailing edge and keeping the center seam in the middle of the bundle, push the middle of the top of the canopy down to your knees until the bundle resembles two ears, as shown in FIG #2.

Spread the center of the trailing edge out to the approximate width of the reserve bag and kneel on it again. Using a pushing and rolling motion, shape the ears so that the bundle resembles the 'V' shape in FIG #3. Then place the reserve bag as shown in FIG #4. The grommet of the reserve bag and the T bar should be right at the crutch of the 'V' formed by the bag.

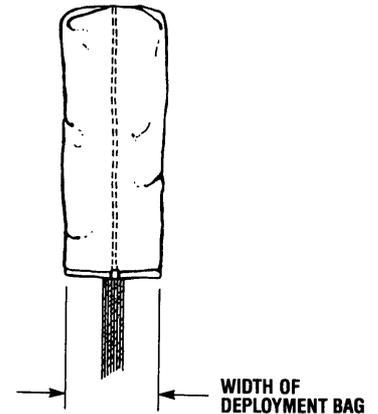


FIGURE #2

6. **FIGURE #5**

Kneel on the canopy so that your knee holds the locking flap of the reserve bag in place, then stuff each arm of the 'V' into its respective side of the reserve bag. The 'T' bar will be effectively surrounded by canopy and should be well filled as shown in FIG #5.



7. **FIGURE #6**

'S' Fold the rest of the canopy into the reserve bag as shown in FIG #6.

8. **FIGURE #7**

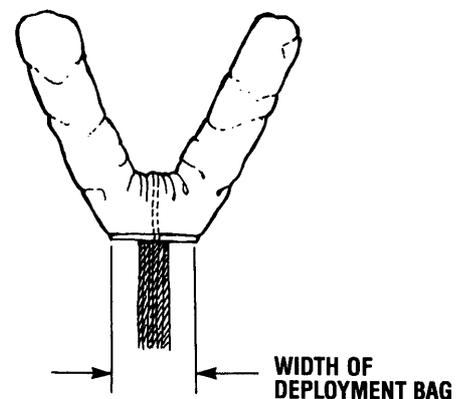
Lock the reserve bag closed with the suspension lines and safety stow ( only safety stow elastics must be used).

9. **FIGURE #8**

Stow the remainder of the suspension lines into the pouch on the under side of the bag. 'S' Fold half of the lines into the left side of the pouch and then the other half into the right side of the pouch. Be sure none of the lines are trapped between the Velcro at the mouth of the pouch.

10. You are now ready to put the reserve bag into the container.

FIGURE #3



# TEAR DROP 1 PIN OWNERS MANUAL

## PACKING A SQUARE RESERVE

FIGURE #4

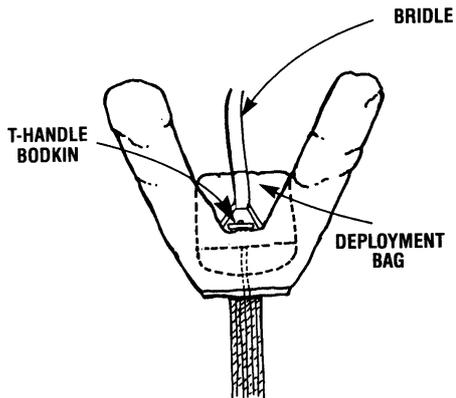


FIGURE #5

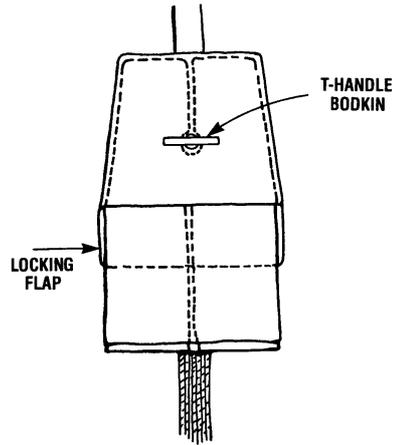


FIGURE #6

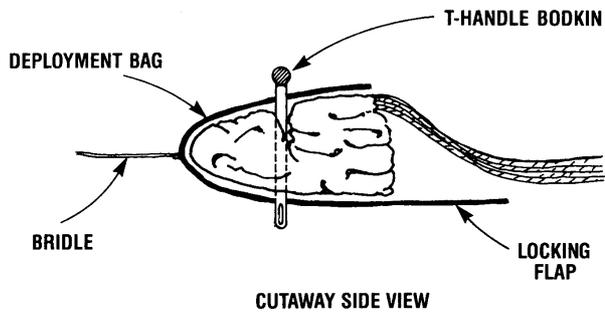


FIGURE #7

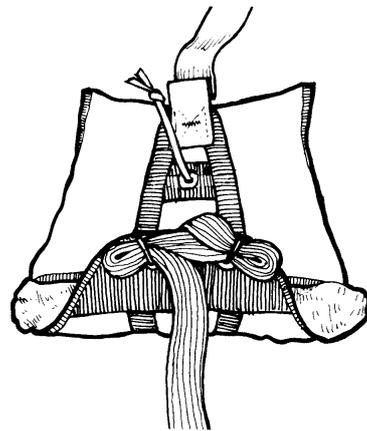
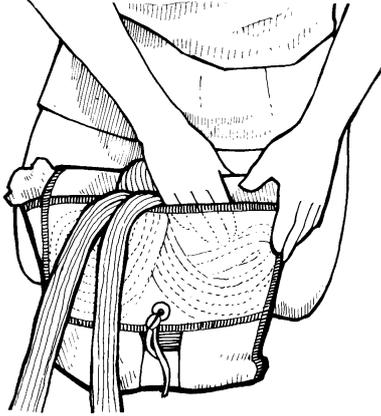


FIGURE #8

# TEAR DROP 1 PIN OWNERS MANUAL



## PACKING A SQUARE RESERVE

### Preparation of the reserve pilot chute and closing the reserve container

- A. The reserve pilot chute is supplied with an aluminum cap on the top with 2 grommets contained in it. The off-set grommet is where the 1 pin quick loop is started.
- B. Insert the 1 pin quick loop from the inside of the reserve pilot chute up to the off-set grommet and pass it through, ensuring that the locking washer prevents the 1 pin quick loop from passing through the grommet, SEE FIGURE #1. Make sure the adjustment of the 1 pin quick loop is on the outside of the pop top, SEE FIGURE #2.
- C. When you have the 1 pin quick loop through the top of the pilot chute cap you then insert the 1 pin quick loop end back down the center grommet of the pilot chute cap leaving the finger trapped end on the outside of the pilot chute. This will then be used for tightening the loop when the reserve is packed.

FIGURE #1

FIGURE #2

## TEAR DROP 1 PIN OWNERS MANUAL



### PACKING A SQUARE RESERVE

#### Preparation of the reserve pilot chute and closing the reserve container

D. FIGURES #3, #4, #5 AND #6 show how to close the side flaps and the routing of the square reserve bag bridle. As shown in FIGURE 4, 3-4 inches of reserve bridle line must be tucked back under the square reserve bag. FIGURE #5 shows closing the left hand side of the reserve container. FIGURE #6 shows the right hand side flap been closed.

# TEAR DROP 1 PIN OWNERS MANUAL

**FIGURE #3**



**FIGURE #4**



**FIGURE #5**



**FIGURE #6**



## **PACKING A SQUARE RESERVE**

### **Preparation of the reserve pilot chute and closing the reserve container**

- E. The next stage is stowing the reserve bridle line under the bottom closing flap .
- F. FIGURE #7 shows the reserve bridle line been folded in half.
- G. FIGURE #8 then shows the reserve bridle line been folded in a quarter to give you a dove tail effect.
- H. FIGURE #9 shows the pointed end of the dove tail been stowed into the stage deployment locking loop. Approximately 2cm should be stowed into the elastic (NO MORE THAN 3cm).
- I. FIGURE #10 shows the reserve bridle line then folded in half length ways and moved to the bottom of the reserve container.

# TEAR DROP 1 PIN OWNERS MANUAL

**FIGURE #7**



**FIGURE #8**



**FIGURE #9**



**FIGURE #10**



## **PACKING A SQUARE RESERVE**

### **Preparation of the reserve pilot chute and closing the reserve container**

- J.** FIGURE #11 shows the top flap now closed over the 'T' bar.
- K.** FIGURE #12 shows the reserve bridle line now stowed completely under the bottom flap of the reserve container.
- L.** FIGURE #13 shows the bottom flap of the reserve container now held in position over the 'T' bar.

# TEAR DROP 1 PIN OWNERS MANUAL

**FIGURE #11**



**FIGURE #12**



**FIGURE #13**



## **PACKING A SQUARE RESERVE**

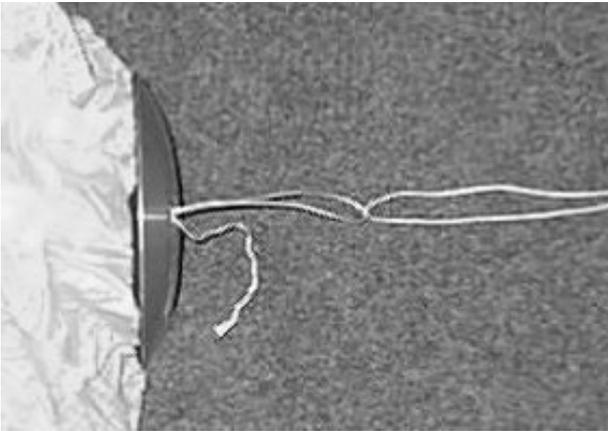
### **Preparation of the reserve pilot chute and closing the reserve container**

- M.** FIGURE #14 shows the 1 pin quick loop coming out of the top of the reserve pilot chute with the pull-up cord in place.
- N.** FIGURE #15 shows the pull-up cord coming back through the center of the reserve pilot chute and through the 'T' bar.
- O.** FIGURE #16 shows the reserve pilot chute now seated on top of the reserve container. **P.** FIGURE #17 shows the TEAR DROP 1 PIN in the upright position with one hand on the top of the domed reserve pilot chute cap, the

# TEAR DROP 1 PIN OWNERS MANUAL

other on the 'T' bar. Slowly pull the 'T' bar through the reserve container bringing the pull-up cord and quick loop with it.

**FIGURE #14**



**FIGURE #15**



**FIGURE #16**



**FIGURE #17**



## **PACKING A SQUARE RESERVE**

### **Preparation of the reserve pilot chute and closing the reserve container**

- Q. FIGURE #18 shows the locking off of the reserve pin with the quick loop. When the reserve ripcord pin is in position and locked off by the quick loop, REMOVE THE PULL-UP CORD.**
- R. FIGURES #19, #20 AND #21 show the stowing of the excess reserve pilot chute fabric underneath the domed 1 pin pop top cap.**

**FIGURE #18**

**FIGURE #19**

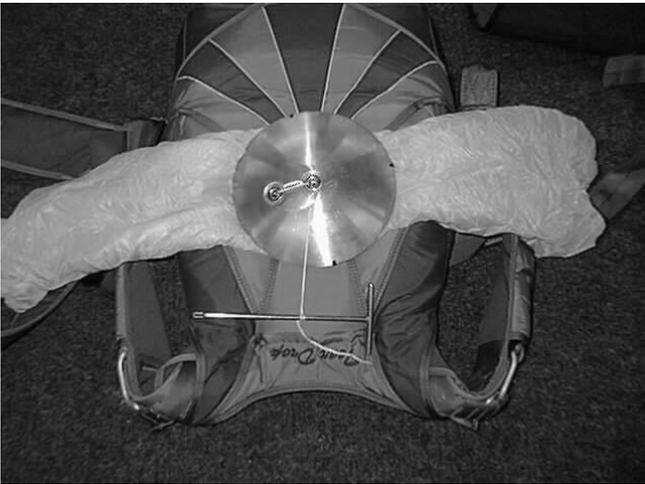
## TEAR DROP 1 PIN OWNERS MANUAL



**FIGURE #20**



**FIGURE #21**



### **PACKING A SQUARE RESERVE**

#### **Preparation of the reserve pilot chute and closing the reserve container**

- S. **FIGURES #22, #23 AND #24 show the stowing of the excess reserve pilot chute fabric underneath the domed 1 pin pop top cap.**

# TEAR DROP 1 PIN OWNERS MANUAL

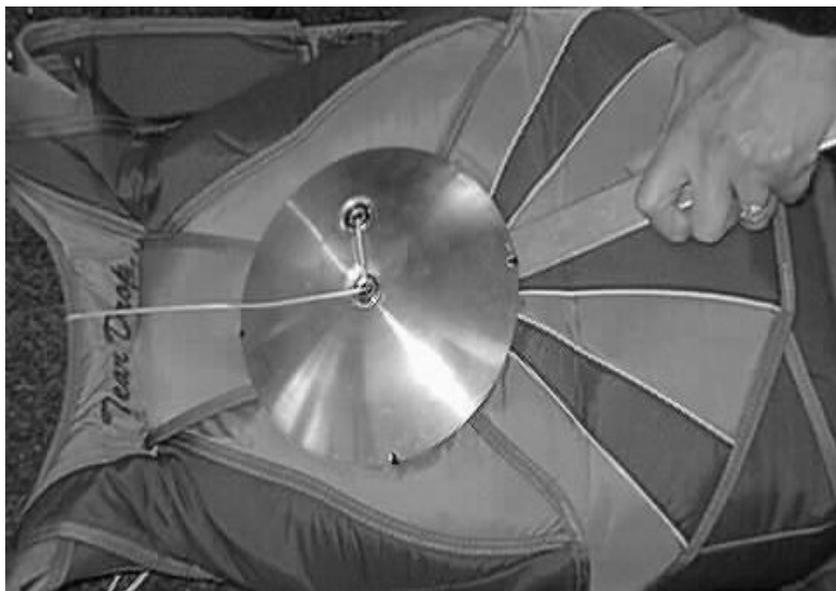
**FIGURE #22**



**FIGURE #23**



**FIGURE #24**



## **PACKING A SQUARE RESERVE**

### **Preparation of the reserve pilot chute and closing the reserve container**

- T. FIGURE #25 shows the preparation for pulling the quick loop.
- U. FIGURE #26 shows pulling up the quick loop through the center of the reserve pilot chute.
- V. FIGURE #27 and #28 show the stowing of the excess line on the quick loop.
- VI.

**FIGURE #25**

**FIGURE #26**

## TEAR DROP 1 PIN OWNERS MANUAL



**FIGURE #27**



**FIGURE #28**



**FIGURE #29**



**FIGURE #30**

### **PACKING A SQUARE RESERVE**

#### **Preparation of the reserve pilot chute and closing the reserve container**

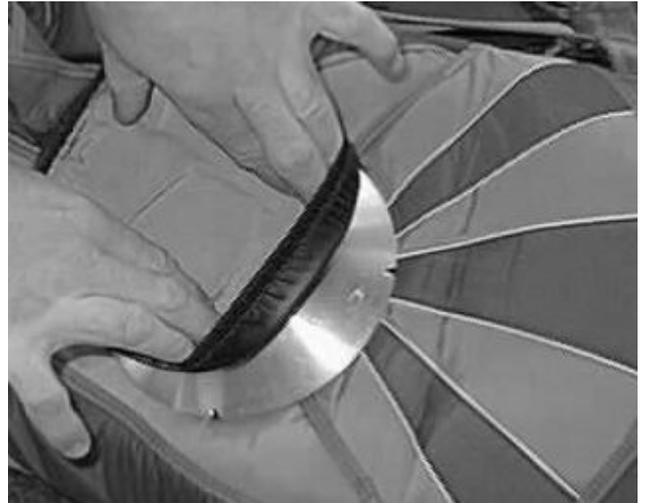
**W. FIGURE # 29 shows the 1 pin fabric pop top cap.**

**X. FIGURE # 30, #31 AND #32 show how to place the 1 pin fabric pop top cap onto the domed cap of the reserve pilot chute with the aid of a packing paddle.**

# TEAR DROP 1 PIN OWNERS MANUAL



**FIGURE #31**



**FIGURE #32**



**FIGURE #33**



**FIGURE #34**

## **PACKING A SQUARE RESERVE**

### **Preparation of the reserve pilot chute and closing the reserve container**

**Y. FIGURE #33, #34 AND #35 show how to place the 1 pin fabric pop top cap onto the domed cap of the reserve pilot chute.**

**Z. FIGURE # 36 shows the complete job.**

## **NOW COUNT ALL YOUR TOOLS**

## TEAR DROP 1 PIN OWNERS MANUAL



**FIGURE #35**



**FIGURE #36**



This procedure assures that every TEAR DROP 1 PIN has the right loop length for a good pack job and an easy ripcord pull. The CYPRES loop does not stretch and allows the ripcord to slide more easily than a nylon loop would, even when the reserve pilot chute is pulled firmly down on the container.

### **THE STEVENSONS LANYARD**

#### **ROUTING**

The stevensons lanyard should be connected to the 3-ring cover by the Velcro attachment as shown in FIGURE #1. This should be done when the reserve ripcord is past through the bottom of the lanyard, through the stainless steel 'O' grommet. The reserve ripcord is then past through the reserve ripcord housing which is velcroed down to the front lift web of the harness, by the chest strap.

# **TEAR DROP 1 PIN OWNERS MANUAL**

When the reserve has been packed, you then attach the main risers to the 3-ring release. At this point you need to attach the lanyard to the main risers. Make sure that the main risers are type 8 webbing, **YOU MUST NOT ATTACH THE LANYARD TO TYPE 17 RISERS UNLESS THEY ARE THE REVERSIBLE TYPE.** Ensure that the bronze fixed bail snap shackle is attached to the small ring on the risers and that it works smoothly and correctly.

## **WORKING**

When the cutaway procedure is activated the main risers separate from the harness which then invokes the lanyard, as the risers go away from the harness it puts pressure on the ripcord cable and this then pulls the reserve ripcord pin. The reserve ripcord handle stays in the reserve ripcord pocket at all times, this allows the jumper to continue the cutaway and reserve pull procedure. The ripcord will not hit you in the face.

## **MAINTENANCE**

1. **Make sure the Velcro in the reserve ripcord pocket is always in good working order.**
2. **Make sure the Velcro on the lanyard is always in good in good working order.**
3. **Make sure the bronze fixed bail shackle works correctly and is fastened properly to the main riser at all times.**
4. **Make sure the attachment ring on the main riser is in good order and that no fraying webbing has occurred around the ring.**
5. **AT ALL TIMES MAKE SURE THE LANYARD IS ATTACHED TO TYPE 8 WEBBING RISERS OR TYPE 17 REVERSIBLE RISERS.**

## **THE STEVENSONS LANYARD**

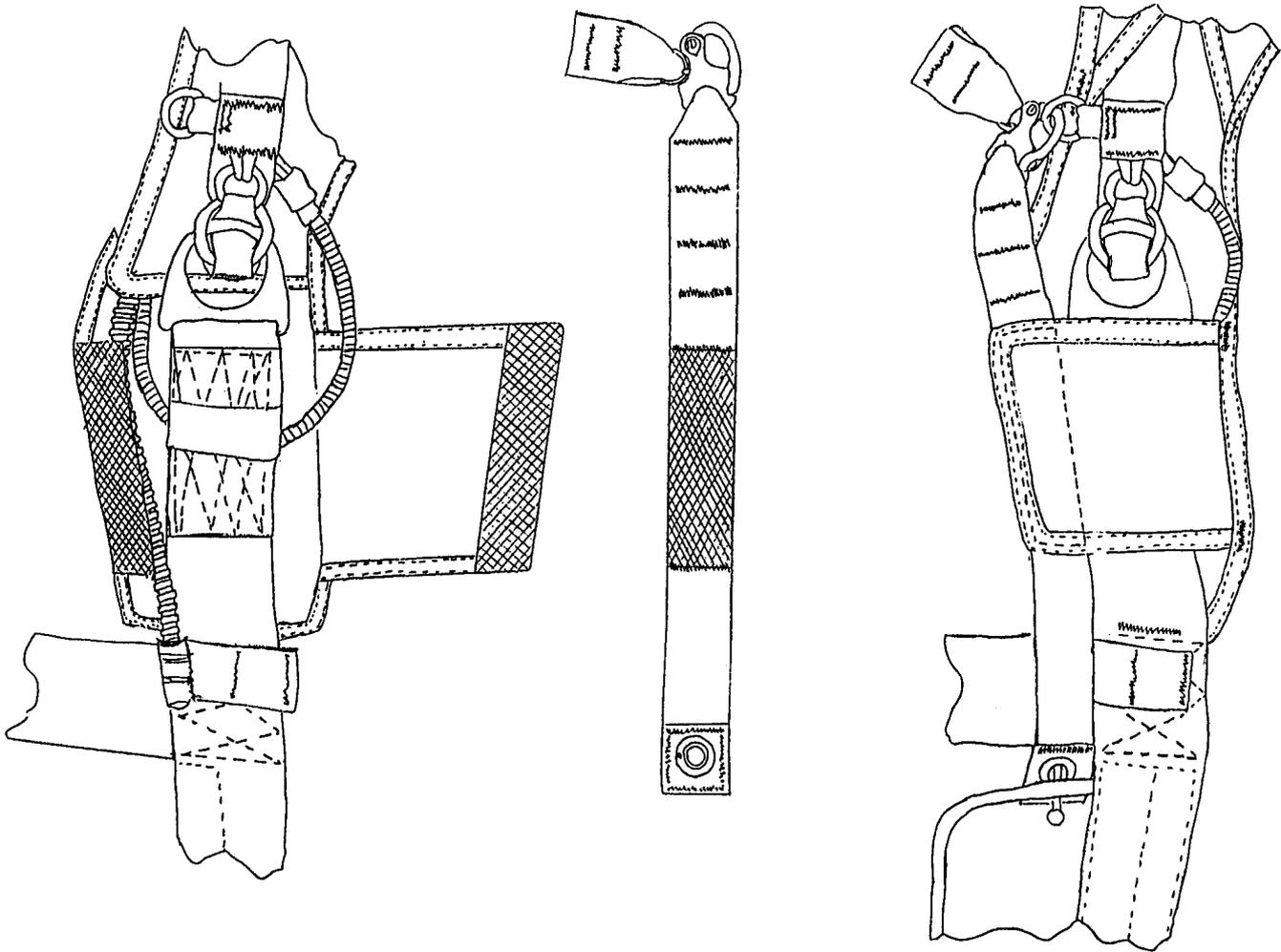
### **PARTS MADE UP AND INSTALLED**

**FIGURE #1**

**FIGURE #2**

**FIGURE #3**

# TEAR DROP 1 PIN OWNERS MANUAL



## MAINTENANCE & CARE OF TEAR DROP 1 PIN

### INTRODUCTION

**Your Tear Drop 1 Pin will last longer, look better and function correctly if it is maintained. A Tear Drop 1 Pin actually requires very little maintenance unless it is subjected to unusual conditions such as a jump into salt water or a muddy landing.**

# TEAR DROP 1 PIN OWNERS MANUAL

## INSPECTION

The best approach in maintaining your rig is to periodically spend a few minutes examining every detail on it. This inspection should be done at least once a month. If any wear or damage is found, it should be rectified immediately, putting off repairs may result in a malfunction. In addition to inspecting the rig yourself, ask your rigger to inspect the entire assembly when the reserve is repacked. Particular attention should be given to these areas;

1. **Breakaway system.** Refer to the 3-ring section in this chapter for detailed information on inspecting the canopy releases.
2. **Reserve system.** This includes the reserve ripcord, locking loop, pins, handle, housings, container and associated sewing. You should not attempt any repairs or modifications to any of these items unless you are an appropriately rated rigger. You can, however, spot little problems before they become major.
3. **Harness.** The harness should be inspected periodically for broken stitching or frayed webbing.
4. **Main container.** Inspect the plastic stiffeners in the container flaps, any broken stiffeners should be replaced. Check grommets, replace any grommets that are badly deformed or pulling out of their setting. A rigger must replace grommets or plastic stiffeners.
5. **Main pilot chute.** Check the centerline (a length of nylon tape inside the pilot chute that extends from the handle to the base) of the main pilot chute. It must be firmly sewn at each end: there must be no broken stitches or torn fabric. Inspect the seam that joins the pilot chute mesh to the pilot chute fabric. If the mesh is torn or badly frayed, replace the pilot chute.
6. **Locking loop.** The main container is held shut with a locking loop made of nylon suspension line sheathing. This loop is subject to wear. If it wears out and breaks the main canopy may release prematurely and a malfunction may occur. Replace the loop with a duplicate if wear is noticed.
7. **Velcro.** Velcro tape has many applications in parachuting. However, it wears out and loses its adhesive ability after a while. It also gets 'clogged' with dirt and bits of grass and should be cleaned occasionally. Velcro on the main pilot chute bridle should be replaced after several hundred jumps.

## MAINTENANCE & CARE OF TEAR DROP 1 PIN

### CARE

Your Tear Drop 1 Pin is manufactured mostly from nylon. Nylon is very durable, but is susceptible to damage from several sources.

1. **Sunlight.** The ultraviolet rays in the sunlight quickly and permanently weaken nylon. Keep your Tear Drop 1 Pin out of direct sunlight as much as possible.

## **TEAR DROP 1 PIN OWNERS MANUAL**

**2. Acid.** Nylon is also damaged by acid. Keep your Tear Drop 1 Pin away from hangar floors, dirty car trunks and similar areas where acids may be found. If such contamination does occur, immediately and thoroughly wash the rig with plenty of warm soapy water. Until a rig can be washed, baking soda will neutralize most acids. If acid damage occurs or is suspected, a rigger should thoroughly inspect your Tear Drop 1 Pin.

**3. Oils and Grease.** Most petroleum compounds do not weaken nylon: they simply stain it. Such stains should be promptly removed by a rigger using the proper petroleum solvent.

**4. Water.** Water will not damage your rig, but may cause some fabric colours to run. Salt water will rust the hardware if not promptly and thoroughly washed off with plenty of fresh water. Your rig will maintain its new appearance longer if it is kept dry.

**5. Soil.** Soil will not damage your rig. Brush off the soil after it has dried and gently wash with warm soapy water. Be sure that the soil is not in the housings, leg snap, 3- ring release, reserve ripcord pin or loops. Consult a rigger if your rig is heavily soiled or extremely dirty.

**6. Abrasion.** Nylon quickly frays if dragged over concrete or other rough surfaces. Do not drag your rig on the concrete while packing, use a packing mat.

**7. Certification.** After 10 years your Tear Drop 1 Pin harness/container should be returned to Thomas Sports Equipment Ltd for overhaul and re certification.

## **THE 3-RING RELEASE SYSTEM**

### **INTRODUCTION**

The 3-Ring release system was invented by the Relative Workshop in 1976. It was the first practical release system that allowed parachutist to jettison their main parachute in one motion by simply pulling a single handle.

Not only is the 3-Ring easier to operate than previous parachute release systems, it is also more reliable.

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Once the main parachute is jettisoned, the only remaining items on the harness are two smooth rings that cannot snag a deploying reserve. Some other popular release systems can, and have interfered with the deploying reserve.

### **MODIFYING THE 3-RING RELEASE**

The great reliability of the 3-ring system results from the correct functioning of every one of its individual components. therefore, the owner should not modify the system in any way. These modifications, among others, will cause the system not to operate properly:

- \* Substituting risers that don't have type 2 sheathing for the locking loop. Do not use risers that have loops made of kevlar or solid cord.
- \* Not using a break away handle with cable manufactured with the special yellow coating (Teflon). This Teflon impregnated coating is important. Other plastic coatings may cause the cable to bind in the housings or loops, making it difficult or even impossible to jettison the risers.
- \* Using a break away handle with cables of the wrong length. The length of these cables are critical to ensure each riser releases in the proper sequence.

### **SOFT RELEASE HOUSINGS**

In April 1990, Mike Furry developed the soft housings for the 3-ring release system. The purpose of the soft housings is exactly the same as the metal housings: To protect the release cable, however, assembling the release cable into the soft housings requires a somewhat different technique and a small, easily made cable hook. This cable hook may be made from a coat hanger wire or similar wire. A suggested specification for the cable hook is shown in FIGURE #1. The soft housings are manufactured in two pieces, a right and a left section, as shown in FIGURE #2.

## **THE 3-RING RELEASE SYSTEM**

**FIGURE #1**

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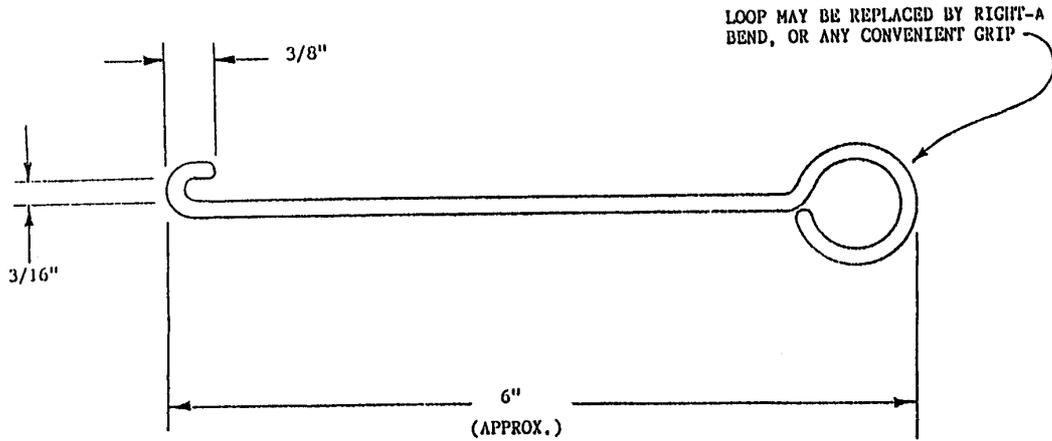
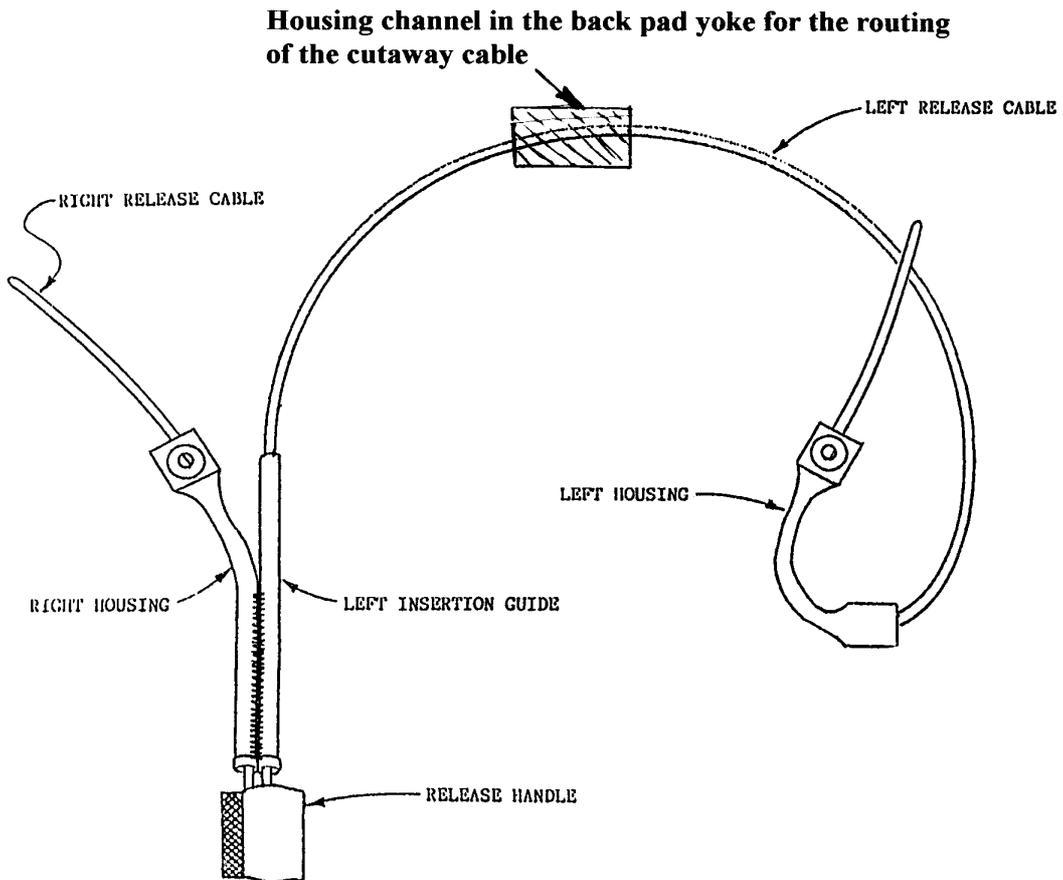


FIGURE #2



## THE 3-RING RELEASE SYSTEM

### INSERTING THE RELEASE CABLE

FIGURE #3

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Insert both cables into the housings and push them until the release handle is seated on its velcro retainer just below the chest strap, behind the main lift web. The right cable will exit the right fabric housing as normally expected, but the left cable will coil or fold itself near the opening of the yoke at the upper right hand side of the reserve container. Reach into this with the hook and bring the left hand cable all the way out of the opening as far as it will come. SEE FIGURE #3.

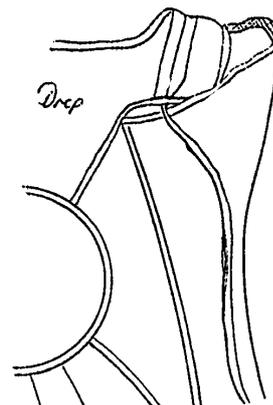


FIGURE #4

Reinsert the cable into the same opening, aiming it through the loop provided at the top of the yoke, aiming it across towards the opening on the left side of the reserve container, FIGURE #4. (Although it probably doesn't make much difference in the function of the release, we feel it is better to route the release cable over the reserve ripcord housing for the sake of consistency, all cables are installed in this way at the Thomas Sports Equipment factory).

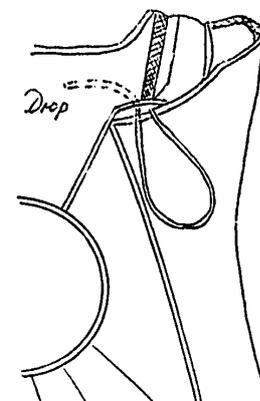
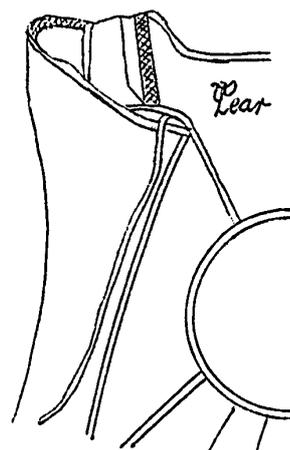


FIGURE #5

Using the cable hook, bring the cable out of the left opening as far as it will come, FIGURE #5. Then reinsert the cable into the same opening, aiming it down towards the left ring junction as shown in FIGURE #6. The cable should be routed so as to pass the left of the bar-tack in the shoulder pad, exiting to the left of the main lift web at the opening of the ring junction, FIGURE #7.



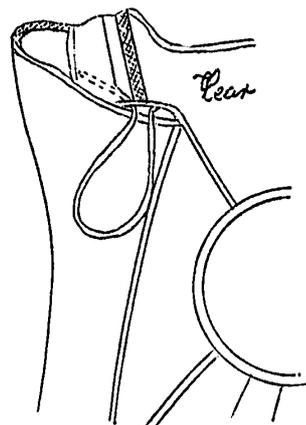
## THE 3-RING RELEASE SYSTEM

From this point it is fairly easy to insert the

FIGURE #6

## TEAR DROP 1 PIN OWNERS MANUAL

cable into the left fabric housing to complete the installation. The left housing is mounted so that it is aimed toward the inboard side of the shoulder pad, passing under the reserve risers and then upwards behind the main risers, as shown in FIGURE #8.



Periodic maintenance of the 3-ring release system is strongly recommended. Whether equipped with either fabric housings or metal housings. Although early tests have indicated that the soft housings will require less maintenance than metal housings. The 3-ring system should be inspected at least every month or 50 jumps for proper function, wear or damage.

FIGURE #7

### GETTING TO KNOW THE 3-RING

Knowing how the 3 ring works will help you assemble and inspect it properly. Begin by peeling the release handle from the velcro on the harness. Peeling, rather than pulling, makes it easier to separate the handle

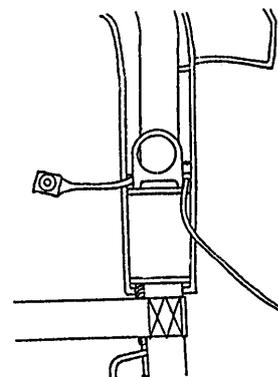
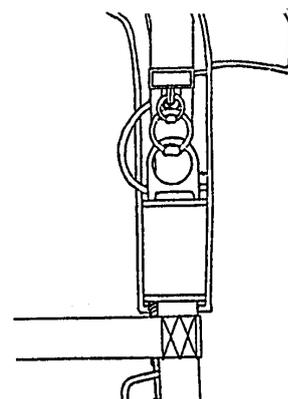


FIGURE #8

from the webbing.

Look behind the risers near the harness and observe the movement of the yellow cable as you pull the handle. When the cable clears the white loop, the release is disengaged.

Now slowly pull one of the risers off the harness. As you pull, you will notice that the white loop is pulled through the grommet by the action of the smallest ring.



## THE 3-RING RELEASE SYSTEM

Each ring forms a lever with a ten to one mechanical advantage as it passes through the other. A force of 1,000 lb (pounds) on the large harness ring exerts a force of only 10 lb

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(pounds) on the white loop (opening shock usually totals about 1,000 lb or 500 lb on each riser). Because of the mechanical advantage provided by the 3-ring design, only a force of approximately 1 lb (pound) on the top ring keeps the release together. This is the important reason for keeping foreign matter, for example bits of grass, small sticks, ect, out of the 3-ring assembly.

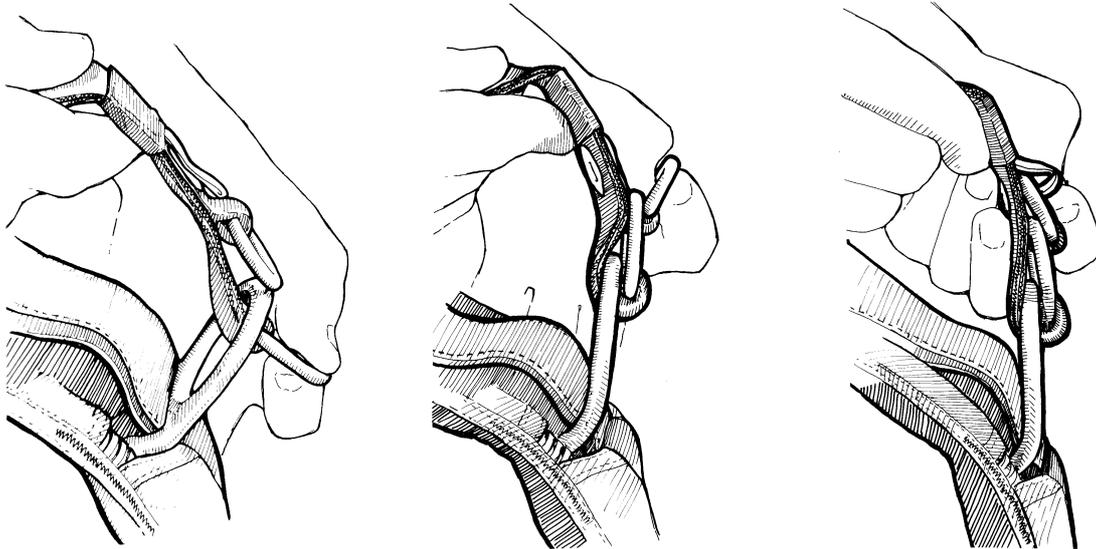
When nylon stays in the same position for a long period of time, it begins to conform to that position or takes a "set". If the 3-ring release system stays assembled for too long, the nylon can become so stiff that the low drag from a malfunction (such as a streamer) won't pull the riser off the ring.

The 3-ring release system must be disassembled, flexed and inspected every month or 50 jumps.

### ASSEMBLY OF THE 3-RING RELEASE

Before assembling the 3-ring release system, ensure the risers are not twisted Lay the container, Tear drop 1 Pin, face down, as you would pack it.

1. Thread each cable into its housing and stick the handle to the harness. The handle should be positioned as close to the ends of the housings as possible so that no cable is exposed.
2. With the rings of the risers facing towards the floor, pass the ring on the end of of the riser through the large ring from above. Fold it back towards the parachute and risers.
3. Thread the smallest ring through the middle ring in the same way, but make sure it does not pass through the large ring.
4. Bring the white loop over the small ring only, then through the riser grommet so it pokes out the back of the riser.

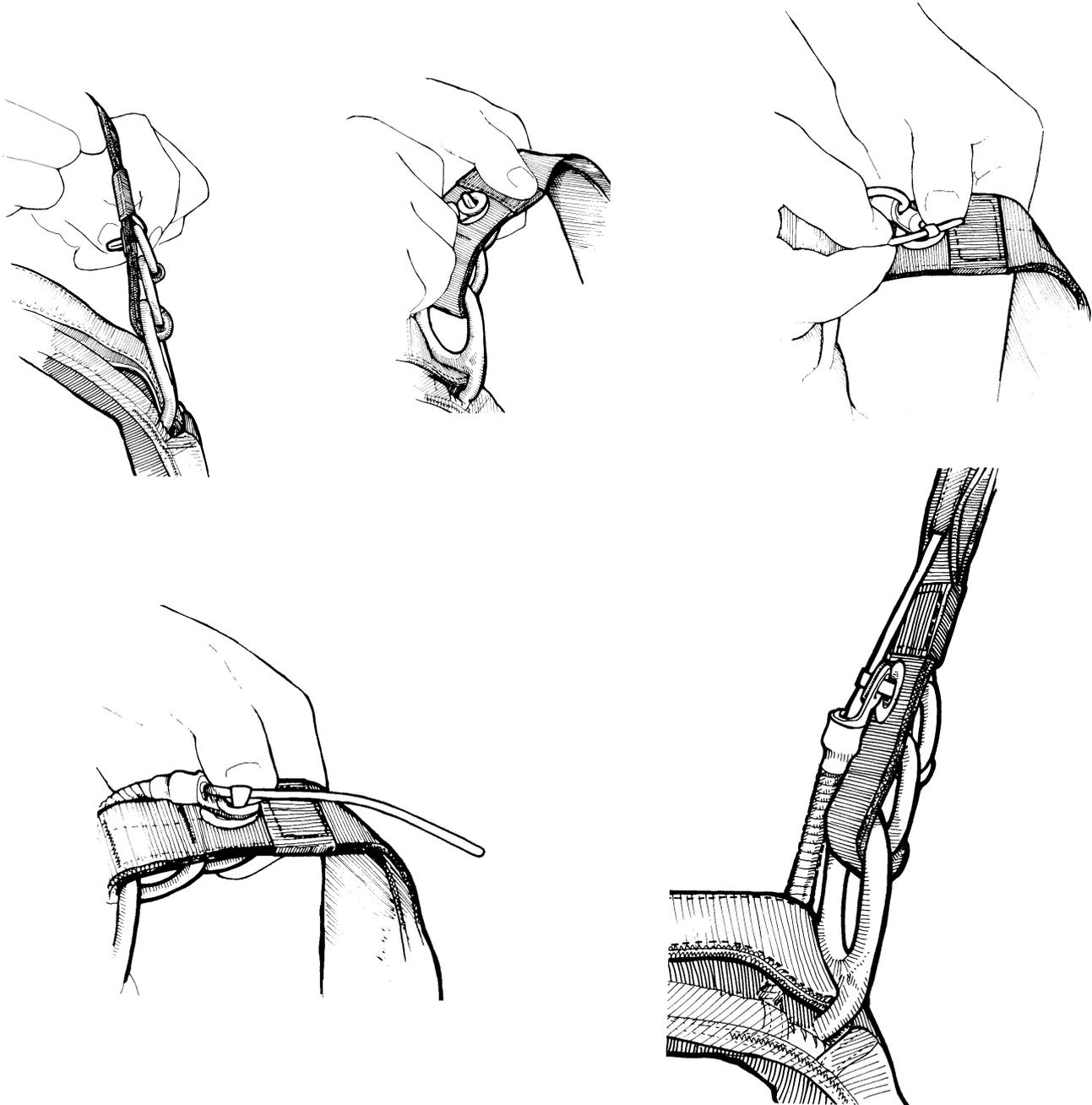


### ASSEMBLY OF THE 3-RING RELEASE

5. Continue treading the white loop through the grommet on the end of the cable housing. The flat side of the fabric housing grommet should be against the riser.

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6. Thread the yellow cable through the white loop, ensuring that the loop isn't twisted. take care with the cable so that you don't bend it too sharply or kink it. Insert the free end of the cable in the channel on the back of the riser.
7. Repeat the above steps with the other riser.



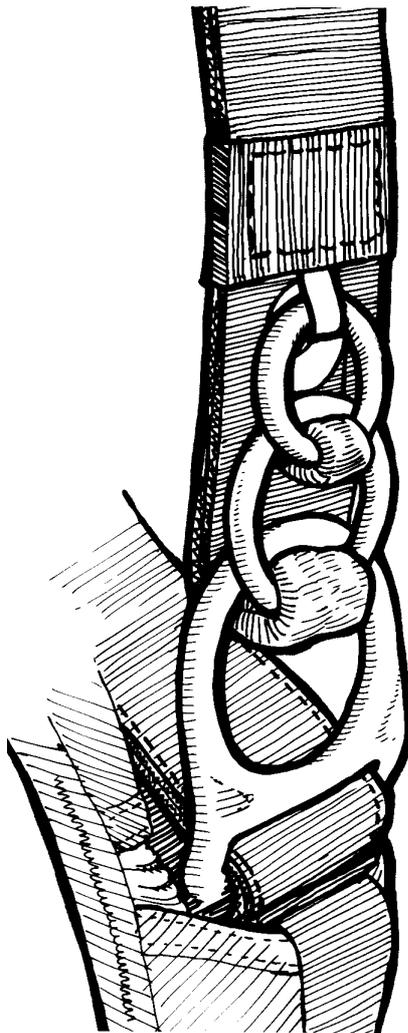
### PRE JUMP INSPECTION

Before jumping the Tear Drop 1 Pin check the 3-ring release system for the following:

1. Each ring passes through only one other ring.

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2. The white loop passes through only the small ring.
3. The white loop passes through the grommet on the end of the cable housing without twists.
4. Nothing passes through the white loop except the yellow (Teflon) cable.
5. The 3-ring release handle is securely fixed to the harness and that no cable is visible.



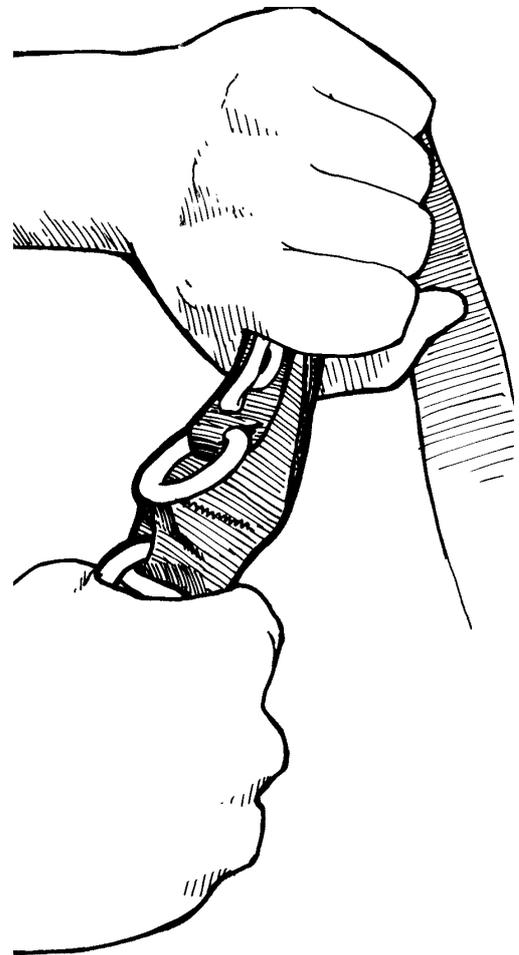
### REQUIRED PERIODIC MAINTENANCE FOR THE 3- RINGS

The Booth 3-ring release system has been in use for many years with excellent results. Although the system is as durable as the rest of the harness and container assembly, it requires periodic maintenance and inspection to ensure proper operation. Generally, it is **NOT** recommended that the risers be attached to the harness when new awaiting rigging ready to jump. Like all skydiving gear, the 3-ring release should be carefully

## TEAR DROP 1 PIN OWNERS MANUAL

inspected and operated on a regular basis. The procedures below should be done at least every month. This is especially important if the rig has not been used for a month or more, such as during the winter. Immediate inspection is required if it has been subjected to some abuse, as a drag across the runway, a water landing or exposure to a lot of dust or sand.

1. Every month operate the 3-ring release system on the ground. Extract the cable completely from the housings and disconnect the risers.
2. While the system is disassembled, closely inspect it for wear. Check the white locking loops (the ones that pass over the smallest ring and through the grommet) to be sure they are not frayed.
3. Check the velcro on the break away handle and main lift web to be sure it is clean and adequately holds the handle.
4. Check the cable ends for a smooth finish. The ends are finished at the factory to have a smooth, tapered surface. This prevents the cable from hanging up in the loop. Check the cable ends and consult a rigger or the manufacturer if a 'burr' or 'hook' is present.
5. Check the stitching, including that which holds the large 3-ring to the harness and the hand tacking that prevent the housings from sliding through their keeper. (This keeper is a loop of webbing located in the chest strap a few inches above the release handle.)
6. Take each riser and vigorously twist and flex the webbing near where it passes through each ring. The idea is to remove any set of deformation in the webbing. Do the same thing to the white loop.
7. Check the housings for dents or other obstructions. Use the cable to do this.
8. Clean and lubricate the release cable with a light silicon spray. Put a few drops on a paper towel and firmly wipe the cable a few times. A thin, invisible film should remain.



### REQUIRED PERIODIC MAINTENANCE FOR THE 3-RINGS

9. **Inspect the security of the fittings at the end of each housing. If one of these fittings were to come off the housing, a riser might release prematurely.**

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- 10. If any wear is found, consult the manufacturer or a rigger before using the Tear Drop 1 Pin.**
- 11. Reassemble the system. Double check it. Make sure the risers aren't twisted.**

**Thomas Sports Equipment appreciates any comments from users that relate to the safety, operation or maintenance of the 3-ring release.**

**It is important to maintain the system even more frequently in humid, muddy or freezing conditions. If the Tear Drop 1 Pin becomes immersed in mud or muddy water, clean the 3- ring release system with a mild solution of soap and water. Any rusted components must be replaced.**

### **REPLACEMENT PARTS.**

**Thomas Sports Equipment supplies replacement parts for its rig at reasonable cost. When ordering parts for your rig, include the serial number, type and date of manufacture of your Tear Drop 1 Pin so the proper items can be quickly supplied. This information is written on the manufacturing label on the front of the left hand rear reserve riser.**

### **REVERSIBLE MINI 3-ring release system**

#### **IMPORTANT:**

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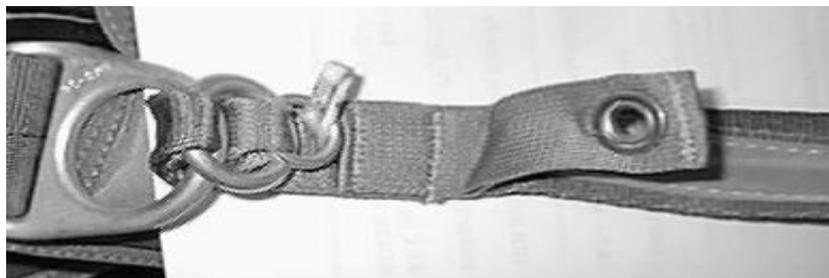
Like the classic 3-ring risers these mini risers must be removed from the large 3-ring every month or 50 jumps flexed and inspected. See **REQUIRED PERIODIC MAINTENANCE FOR THE 3-RING.**



Set up the rings as shown below.



Route the locking loop through the small ring.



Fold back the strap and route the loop through the grommet.



### **REVERSIBLE MINI 3-ring release system**

Route the loop through the grommet of the housing and lock with the locking release cable.

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**Finished installation, side view below.**



**Mini riser seated**

**Compared to page 32 the standard 3-ring, this setting is reversed.**



### INSTALLATION OF COLLAPSIBLE PILOT CHUTE

- 1. Remove old pilot chute and bridle line, if fitting to old system.**
- 2. Check bag for proper size grommet, number 4 or 5 only.**

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3. Thread the red retention line and kill line from the outside of the bag to the inside of the bag
4. Thread the two loops at the bottom of the bridle line into the grommet, number 4 or 5 only.
5. Insert rapid link into loops forming a circle with the white kill line in the center.
7. Attach red retention line using the rapid link to attachment point on canopy.



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### INSTALLATION OF COLLAPSIBLE PILOT CHUTE



#### ATTACHMENT:

**REMEMBER: YOU MUST COCK THE SYSTEM BEFORE YOU CLOSE YOUR CONTAINER. TO COCK THE PILOT CHUTE PULL THE APEX (HANDLE) OF THE PILOT CHUTE UNTIL THE CENTRE LINE OF THE PILOT CHUTE IS TAUT \*DO THIS BEFORE PACKING THE CANOPY INTO THE BAG\***



# **TEAR DROP 1 PIN OWNERS MANUAL**

## **BEFORE USING THE TEAR DROP 1 PIN**

- 1) **READ AND UNDERSTAND THIS MANUAL, AND BE QUALIFIED BY PROPER INSTRUCTION FOR SPORT PARACHUTING ACTIVITIES.**
- 2) **CHECK BOTH 3-RING RELEASES TO SEE THAT THEY ARE CORRECTLY ASSEMBLED, AND THE RELEASE HANDLE IS SECURELY VELCROED TO THE MAIN LIFT WEB.**
- 3) **CHECK THE MAIN CONTAINER CLOSURE FOR THE CORRECT PIN POSITION AND THE CORRECT ROUTING OF THE BRIDLE LINE.**
- 4) **CHECK THE RESERVE CONTAINER FOR CORRECT PIN CLOSURE AND ROUTING OF THE RIPCORD. BE SURE THE RESERVE RIPCORD HANDLE IS WELL SEATED IN ITS VELCRO POCKET.**
- 5) **THE MAIN PILOT CHUTE MUST BE PROTECTED BY ITS POUCH, BUT THE HANDLE MUST BE EASILY VISIBLE AND ACCESSIBLE.**

## **PUTTING ON YOUR TEAR DROP 1 PIN**

**When lifting the TEAR DROP 1 PIN, hold the main lift web between the large harness ring and the chest strap. Put the rig on as you would a jacket, setting the yoke across the shoulders. Step through the leg straps, being sure they are not twisted, then thread the chest strap through its friction adapter and tighten it to where it is most comfortable and snug. Be sure it has NOT been threaded through the reserve ripcord handle.**

**Tighten the leg straps until they are comfortably snug, and then put the free ends of the straps down the leg pads or in the elastic keepers. It is important to secure these free ends; a loose end can easily be mistaken for a deployment handle.**

**TEAR DROP 1 PIN OWNERS MANUAL**

**CUSTOMER INSPECTION SHEET**

**PURCHASE ORDER NUMBER:** \_\_\_\_\_

**SERIAL NUMBER:** \_\_\_\_\_

**CONTAINER TYPE:** TEAR DROP 1 PIN

**CONTAINER SIZE:** \_\_\_\_\_

**HARNESS SIZE:** \_\_\_\_\_

**PARTS LIST:**

- 1. MAIN RISERS & TOGGLES \_\_\_\_\_
- 2. MAIN DEPLOYMENT BAG \_\_\_\_\_
- 3. CUTAWAY HANDLE \_\_\_\_\_
- 4. MAIN PILOT CHUTE & BRIDLE \_\_\_\_\_
- 5. RESERVE PILOT CHUTE & LOOP \_\_\_\_\_
- 6. RAM-AIR RESERVE FREE BAG \_\_\_\_\_
- 7. RESERVE RIPCORD \_\_\_\_\_
- 8. RESERVE TOGGLES \_\_\_\_\_
- 9. MAIN LOCKING LOOP \_\_\_\_\_
- 10. TEAR DROP OWNERS MANUAL \_\_\_\_\_

**IF APPLICABLE:**

- 1. STEVENSONS LANYARD \_\_\_\_\_
- 2. HOOK KNIFE \_\_\_\_\_
- 3. RISER DIVE LOOPS \_\_\_\_\_
- 4. RETRACTABLE PILOT CHUTE \_\_\_\_\_
- 5. TRIPLE RISERS \_\_\_\_\_

**INSPECTED BY:** \_\_\_\_\_ **DATE:** \_\_\_\_\_