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# Emergency Parachute Manual

NATIONAL 360 / NATIONAL 425 / NATIONAL 490 / NATIONAL FLAT
(TSO-C23B)

**( Applies to Equipment Manufactured After June 30, 2009 )**
(Includes 2nd generation National FLAT)

***NATIONAL*** – "Your One Last Chance"

**www.nationalparachute.com**

# ⚠ WARNING ⚠

**Parachuting is a high risk activity which may cause or result in serious injury or death.**

**Parachutes sometimes malfunction, even when they are properly designed, manufactured, assembled, packed, maintained and used. The results of such malfunctions may be serious injury or death.**

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**Do not purchase or use any parachute equipment manufactured of or sold by National Parachute Industries, Inc. unless you agree to read, understand and follow all manufacturers' instructions, recommendations, requirements and limitations.**

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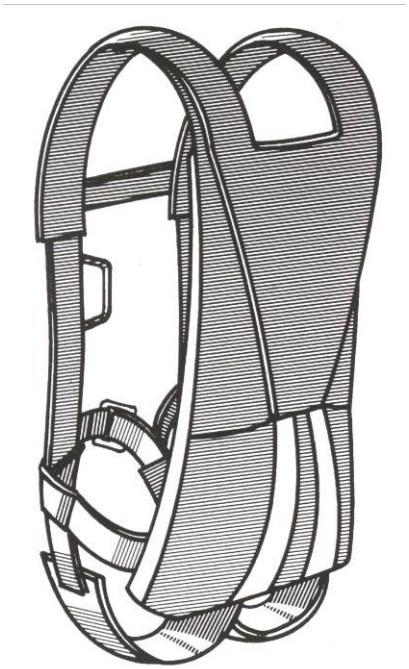
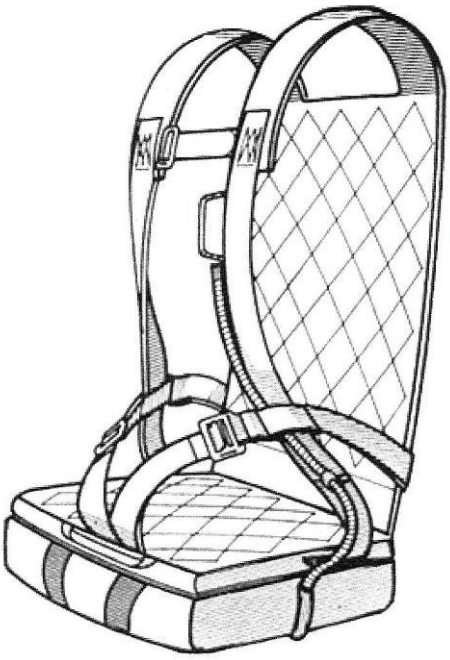
NOTE 2: PDF file of seat packing supplement (color pictures) is also on “LINKS” page.

# PARACHUTE ILLUSTRATIONS



NATIONAL BACK PARACHUTE
(N-360 / N-425 / N-490)



NATIONAL SEAT PARACHUTE
(N-360-S / N-425-S / N-490-S)


NATIONAL FLAT

# PARCHUTE GENERAL INFORMATION

National Parachute is proud of its line of Pilot Emergency Parachutes. When you receive your new parachute system, please check the following:

► Weight and airspeed limitations are listed on the orange warning label attached to the front bottom of the container as it is worn. Removal of this label voids all warrantees and the TSO.

► For ease of access, the packing data card is located above the right main lift web under the riser cover.

►You may have received extra comfort pads with your parachute. They are provided for possible future use (i.e. convert from Thread-Thru hardware to snaps).

► If parachute is purchased with the GRF (seat pad) option, the *"standard*" long pads are provided. Pads can be installed by the user if GRF is removed.

►Laundering instructions for sheepskin option:

1. Rinse with cool water.
2. Wash in warm, soapy water for 3 minutes.
3. Rinse in warm water.
4. Squeeze out excess water (do not twist), air dry, and then brush.

►Seat models require supplemental packing instructions.

# CUSTOMER'S CHECK LIST

☐ Parachute Packing Data Card Present (above right main lift web under the riser cover)

☐ Size / Model As Required

☐ WARNING LABLE (attached to the front bottom of the container as it is worn).

☐ Owner's Manual Included

☐ Seat Packing Supplement Included (above explanation)

☐ Comfort Pads Attached or Enclosed (above explanation)

☐ Accessories or Options as included

☐ Save Box For Return Shipment (Repacks, Maintenance etc.)

# PARACHUTE NEWS

**NEWS BULLETIN: July, 2009**
The "National Flat" is now only available to be packed totally flat. The "Tapered" packing option is no longer authorized as an option due to closing flap reconfiguration. The "National Flat" parachute systems manufactured prior to July 2009 still have the "Fully Flat or Tapered" packing options.

**NEWS BULLITIN: December, 2008**
The parachute "Inspection and Repack" schedule has been increased from 120 days to **180 days**.

**NEWS BULLETIN: July, 2006**
Announcing the "NATIONAL FLAT" as a container option for Back Parachutes. The slightly wider and longer container allows for an overall flatter package and is available in Signature and premium trim / option levels. Plus, it can be "rigger packed" in your choice of two configurations: 1) Fully Flat pack, whereas the thickness is consistent top to bottom or 2) Taper packed, to be thicker on top and thinner on the bottom. See our web site for more "NATIONAL FLAT" details.

**NEWS BULLETIN: Nov. 11, 1999**
Announcing our new, "A" (Alternative) Harness Option for National Back, Seat and Chair Parachutes. The purpose is increased COMFORT by positioning leg strap hardware away from the lap belt. The snap and V-ring leg strap hardware is repositioned 5" rearwards to locate the hardware away from the lap belt. It serves the same purpose as the generic design "Aerobatic" harness (by relocating hardware)…but maintains the standard parachute leg strap configuration for simplicity. Another important benefit on the National "A" harness design is you maintain the upper harness security with a standard chest strap.

**NEWS BULLETIN: Jan. 1, 1990**

HIGH-THEC PHANTOM AEROSTAR CANOPY:
National Pilot Emergency Parachutes are designed for the innovative Phantom Aerostar canopy: High profile conical design, 1.1 oz. ripstop nylon, full stow diaper, crown support band, laminated Kevlar reinforcing, Ph Certified Mesh and Ram-Air type line attachment; clearly the state-of-the-art in parachute design and construction.

CALIBRATED STEERING VENTS:
In most reserves the vent size is determined by the size of the "A" panel. The vents in the Phantom Aerostar are uniquely sized for the best combination of steering, stability and rate of descent for each size/model.

FULLY ADJUSTABLE HARNESS:
It is standard to have adjustable chest and leg straps; in addition to this, our stock harness enables full adjustment of the main lift web. This provides greater comfort and proper fit for a wide range of body sizes.

GRAVITY RETAINER FLAP:
The "GRF" is designed to hold the parachute down and in place while doing aerobatics…just as gravity does normally. Features and Options:

- Prevents parachute from lifting or shifting
- Custom Options available
- Attached to base/bottom of parachute container
- Improves seating comfort
- Leg Straps are integrated
- Added to the "National Flat" delivers a flatter Chair Parachute shape

5 YEAR OWNER PROTECTION PLAN:

All National Pilot Emergency Parachutes are covered by our extraordinary "Five (5) Year Owner Protection Plan." If your parachute is damaged during actual emergency use, National pays for the repair or replacement.

# AIR SPEED & PARACHUTES

In recent years, aerobatic aircraft have seen a vast increase in performance and speed. During various maneuvers it is common to exceed 200 knots.

Parachutes, on the other hand, have *not* kept up with this increase. The typical "modern emergency parachute" (of various makes) manufactured in the 80's and 90's is rated up to a **maximum deployment speed of 140-150 knots.**

**BACKGROUND:**
In 1981, National set out to design and successfully market a parachute to meet customer demands & requirements in the following areas:

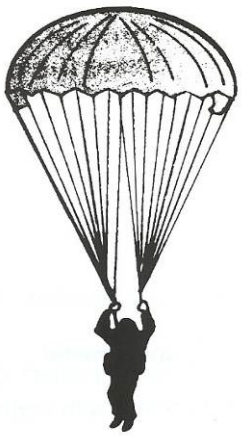
--Small volume

--Light weight

--Comfortable

--Competitive price

--Meet TSO requirements



With the Above parameters in mind, we developed the *National* line of emergency parachutes. In 40+ years of manufacturing we produced over 16,000 emergency parachutes, earning numerous letters of appreciation for saved lives.

The question some pilots now ask is "what will happen if I bail out and open the parachute at 200+ knots?" The answer is "we can not predict the results." Although testing requires a margin of safety, we have no way to determine the breaking point. Our parachutes are rated at and clearly display a placard indicating 140 knots is the maximum deployment speed.

Emergencies come in different varieties. In a "high air speed" situation (beyond 140-150 kts.) the aircraft may become "aerodynamically dirty" and slow down considerably on its own. If circumstances require an immediate high air speed bail out, we strongly advise the pilot to *delay pulling the ripcord* for 3-4 seconds after exit. In that short time the human body in free fall will decelerate rapidly to air speeds falling within design parameters.

From a deployment & manufacturing standpoint, time will determine if a broad demand exist for parachutes designed to withstand increased air speeds. Given current parachute materials and technology, this design would be heavier, bulkier and considerably more costly.

# PARTS LIST

NOTE: This Parts List pertains to National 360 / 425 / 490 / FLAT Back, Seat & Chair Model pilot emergency parachute systems **manufactured after June 2009 only.**

| PART # | DESCRIPTION |
|---|---|
| 81001 | General Assembly-Auxiliary Parachute: 1) Canopy, 2) Harness/Container & 3) Pilot Chute |
| | 1) CANOPY |
| 81002-10 | Phantom 24 AeroStar on #5 Links* (assembled w/ 360 H/C only) |
| 81002-20 | Phantom 26 AeroStar on #5 Links* (assembled w/ 425 H/C only) |
| 81002-30 | Preserve 1 Model FFE 201-C on #5 Links* (assembled w/ Flat H/C only) |
| 81002-40 | Phantom 28 AeroStar on #5 Links* (assembled w/ 490 H/C only) |
| | 2) HARNESS/CONTAINER |
| 81101-2G | Back Model – (360, 425 or 490) |
| 81101-2H | Back Model – (Flat) |
| 81101-3G | Seat Model – (360, 425 or 490) |
| 81101-5G | Chair Model – (360, 425 or 490) |
| | 3) PILOT CHUTE |
| 81201-6D/PT | Pilot Chute, 357 Magnum with tabs, 36” dia., rapid inflation with “Protective Tabs” on Cap (with “padded” cap) |
| 81101-2P | Emergency Parachute Manual |
| 81101-3P | Emergency Parachute Manual – Seat Supplement |
| 81101-5P | Emergency Parachute Manual – Chair Supplement |
| 81101-24 | Pilot Chute Bridle, 1” SQ Weave Nylon Mil-T-5038, finished to length of 54.0” |
| 81101-27A | Ripcord Housing, 21.0” O/A length (360, 425, 490 Back and Seat H/C) |
| 81101-27B | Ripcord Housing, 24.0” O/A length (Flat Back H/C) |
| 81101-28A.1 | Locking Loop, Container, Type II line, Mil-C-5040 sewn to finished length of 10” for Back Parachutes (360/425/490/Flat) |
| 81101-28B.1 | Locking Loop, Container, Type II line, Mil-C-5040 sewn to finished length of 12” for Seat Parachutes (360) |
| 81101-28B.2 | Locking Loop, Container, Type II line, Mil-C-5040 sewn to finished length of 12 ½” for Seat Parachutes (425) |
| 81101-28B.3 | Locking Loop, Container, Type II line, Mil-C-5040 sewn to finished length of 13 ½” for Seat Parachutes (490) |
| 81101-29 | Elastic Staging Loop, 1/8” (.125) Shock Cord, for Seat Model only |
| 81301-2B | Ripcord 33 ¼” (33.25) O/A, 2 pins, spaced 6 3/8” (6.375) apart, with metal “D” handle (360, 425, 490 Back & Seats) |
| 81301-2C | Ripcord 36 3/8” (36.375) O/A, 2 pins, spaced 6 3/8” (6.375) apart, with metal “D” handle (Flats only) |
| 81401-2 | Connector Link: French “Maillon Rapide” #5 Links (AKA P/N 80561-35) |

*French “Maillon Rapide” #5 Links, P/N 81401-2 (AKA P/N 80561-35)

# OPERATING LIMITATIONS

Recommended minimum deployment height: 500 ft AGL
Pilot weight range: 100lb (45 kg) to 241 lbs (109 kg)
Stability: +/- 5 degrees from vertical at gross weight
Normal altitude loss during opening: 200 – 300 ft.
Ripcord pull force: 22 pounds maximum
Forward drive: 5 – 12 mph (depending upon weight)
Steerability: 360 degrees in 8 – 10 seconds at gross weight
Normal opening time: 2 – 3 seconds (varies with airspeed)

To maintain performance level, the following relationships are recommended:

Up to 177 lbs. pilot weight…….National 360 with 24' Aerostar Canopy
Up to 208 lbs. pilot weight…….National 425 with 26' Aerostar Canopy
Up to 220 lbs. pilot weight…….National FLAT with Preserve I Canopy
Up to 241 lbs. pilot weight…….National 490 with 28' Aerostar Canopy

# FITTING THE PARACHUTE

The National Parachute Harness has three primary hardware adjustments, one chest strap and two leg straps. There are three choices of hardware:

1. Thread-Through (TT) ⟶
2. Regular Snaps (B-12) / Adjustable V-Ring ⟶
3. Quick Ejector Snaps (QE) / Adjustable V-Ring ⟶

To don the harness with: 1) TT hardware is the simplest and lightest but typically requires the webbing be threaded / unthreaded from the hardware. This is mandatory for the chest strap, the leg straps may be operated the same way OR the webbing adjusting may be extended to the maximum (folded web ends hits TT) allowing to step in / out of the leg straps. Cons…it can be cumbersome to operate. 2) B-12 snaps simply hook to the mating V-ring. To release the B-12 the guard is squeezed open to unhook from the V-ring. (Cons…some slack is required to unhook. 3) QE snaps hook on as the B-12 and have a built in lever to eject the V-ring which can be accomplished under moderate tension. It is easier and quicker to get out of the harness with QE. (Cons…QE snaps cost more and may require added maintenance.)

Put the pack and harness on over the shoulders and fasten the chest strap. Pull the leg straps up between the legs and fasten both sides. Pull the free ends of the straps to remove excess slack and still maintain comfort. Skip ahead to the next page "Floating Harness Adjustment."

Your parachute harness also comes with adjustable leg pads. The pads can be easily moved back and forth over the leg strap webbing (below the junction of the hip side strap and main lift web (MLW). To position the pads for maximum comfort for an actual use, insert index finger between back of leg strap webbing and upper end of leg pad to un-mate the Velcro. Slide pad so the end is positioned near the leg strap hardware and re-mate Velcro. The pads will now be held in proper adjustment for the next wearing.

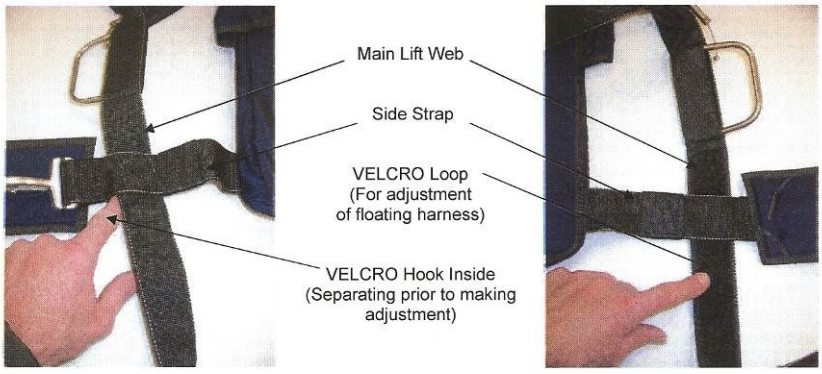

The final adjustments should be comfortable but snug and is determined by a compromise of sitting and standing positions. Tuck leg strap ends into leg pads and/or stow in keeper. Stow chest strap.

# FLOATING HARNESS – ADJUSTMENT

Parachutes DOM after January 1988 also have a "FLOATING HARNESS" feature which allows for an important fourth adjustment area to custom fit various torso lengths. With the parachute on and over the shoulders, the top of the parachute container is positioned on the back at or just below the shoulders (for Seat parachutes, the top of the back vest). The Main Lift Web (MLW) position is now established from the upper torso (chest area) downwards to the junction of the MLW and side strap at the upper leg / hip area. The leg strap should be at a 30-45 degree upward angle from the crotch. For view of a properly adjusted harness, see next page drawing headed "BACK PARACHUTES." Only National's harness design allows for the MLW adjustment which provides an added comfort and safety feature *without* additional hardware and extra weight.

The MLW passes between the two layers of side strap webbing. On the back of the MLW beneath your ripcord handle is a strip of Velcro Loop. On the other side of the strap is a strip of Velcro Hook. When these two pieces of Velcro are mated your MLW and side strap are held in place (so the adjustment position is maintained after removing the harness). To change adjustment, insert your index finger between the two layers of webbing and separate Velcro. Keep finger inserted to prevent Velcro from re-mating while sliding MLW strap to desired position. Remove finger and squeeze Velcro parts together to secure adjustment.

Show below is a close up of the floating harness adjustment area (junction of the Main Lift Web and Side Strap). Velcro inside the junction is used to hold your custom adjustment in place for the next wearing. Or if need be, it can be easily and quickly changed for taller or shorter person.




Front / Outside View

Back / Inside View

# OPERATING PROCEDURES

Prior to each flight you should check / inspect:

1. Ripcord handle secure in pocket, both pins properly seated in closing loops and last pin is sealed with red seal thread and lead seal.
2. Ripcord housing for damage and end tacking secure.
3. All harness webbing and hardware for proper function and / or damage.
4. Packing data card to be sure that the parachute is “in date.”

The National Emergency Parachute is manually activated by pulling the ripcord. We recommend having the ripcord handle in sight or in hand when exiting the aircraft.

The ripcord handle is to be firmly gripped, typically with the right hand (the left hand or both hands may be used if necessary). After the handle is removed from the pocket, there is approximately 2” of slack in the ripcord cable to be removed before the pins are pulled. The ripcord is pulled to full arms length with a downward stroke for back and an upward stroke for seat parachute. See drawing below.

BACK PARACHUTE

SEAT PARACHUTE

The parachute will normally open fully within 3 seconds of activation. If an emergency arises carry out the following steps:

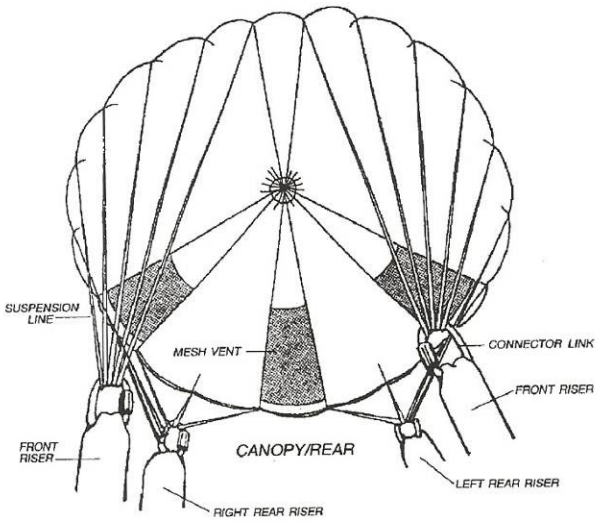
1. Check altitude above ground level.
   a. For bailout below 3,000 ft AGL, clear the aircraft and pull ripcord immediately.
   b. For bailout from 3,000 – 10,000 ft AGL, clear aircraft, delay ripcord pull for 5 seconds.
   c. For bailout above 10,000 ft AGL, delay to lower altitude before pulling ripcord.
2. Clear aircraft and pull ripcord.
3. Reach up and grasp the rear risers, pull one down to observe turn speed.
4. Steer the parachute.

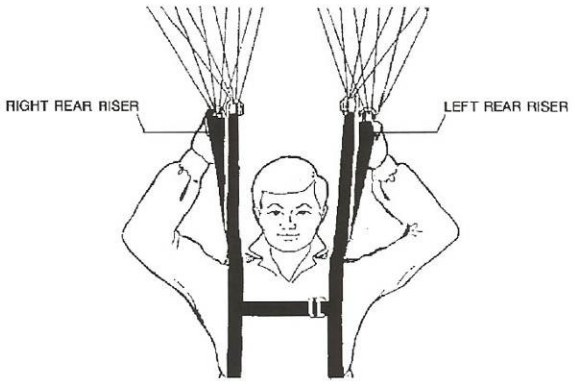
# PARACHUTE STEERING

Once suspended under the parachute canopy, your rate of descent will stabilize at approximately 19 ft. per second with a 190 lb. (86 kg) body weight based on the National Phantom Aerostar 26’ (P/N 81001-20) in a National 425 pack and harness assembly.

Your Parachute is circular in shape after it is fully open. There are three (3) mesh covered drive vents located at the rear of the canopy – see diagram below left. The drive vents make the canopy steerable and create an airspeed of 5 to 12 mph (depending upon body weight and altitude) in the direction you are facing.

The Phantom Aerostar canopy can be turned to the right by pulling down the right rear riser 6” to 12”; the same applies for a left turn. A rear riser can most effectively be pulled down by placing fingers between suspension lines as they attach to the connector link on the end of the riser. (See diagram above right). The Parachute will continue turning until the rear riser is released. It takes about 8 – 10 seconds to complete a full 360 degree turn.




The Preserve I canopy can be turned to the right by pulling down the right steering toggle located behind the right rear riser; the same applies for a left turn. The parachute will continue to turn until the steering toggle is let all the way up to the steering line guide ring.

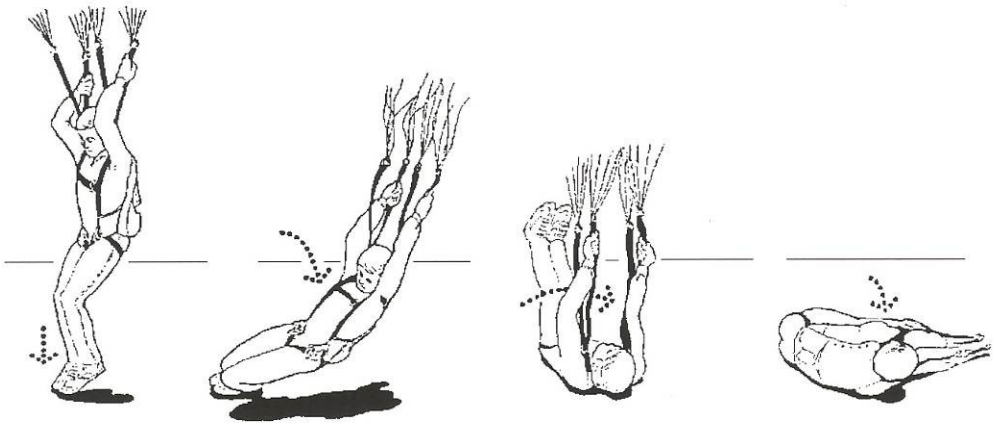
Observe wind speed and drift while looking for the best available landing area down wind of your present position. As a general rule, your glide angle is approximately 45 degrees to the horizontal in *light winds*. Choose a heading to achieve a track across the ground towards the landing area. At 100 feet above the ground, turn into the wind and prepare to land.

# LANDING PROCEDURES

To minimize your ground speed at the point of landing, steer the parachute with either rear riser, or steering toggle if equipped, so that you are facing into the wind at 100 feet above the ground.

The normal procedure for assessing wind direction should be used. Flags are excellent wind direction and speed indicators as well as smoke, shadows or ripples on water/grass.

In preparation for landing, lock your legs together from thighs and ankles. Bend knees slightly forward and brace yourself as if you were to jump off a 6.5 ft (2 meter) high platform. Roll your body along your side to absorb landing shock. See picture series below:



# HAZARD LANDINGS

WATER LANDING: Release the chest strap as you descend under the parachute, this allows for faster parachute egress after landing. Turn the parachute to face "into the wind" as normal, in case you are dragged by brisk winds it is better to be face up than face down. Immediately after landing unhook both leg strap snaps (or fully extend the leg straps with TT hardware) and swim out of the parachute harness to safety. Always swim up wind and up stream to avoid entanglement. After all the trapped air escapes from the parachute it becomes water logged and will sink.

POWER LINE LANDING: Make all attempts to steer clear of power lines, even if it forces a down wind landing. If unable to avoid power lines, place feet together, turn head to the side and try not to touch more than one line. If suspended above the ground, make sure power has been disconnected before a rescue is made.

TREE LANDING: Make all attempts to steer clear of trees. If a tree landing is unavoidable, place feet and knees together, tuck elbows into the stomach and protect your face with both hands while placing chin on chest.

HIGH WIND / DRAGGING: If winds are greater than 10 – 12 mph (10 kts), the parachute may remain inflated after landing and drag you across the ground. Reach up and grasp one or more of the lower suspension lines of the parachute and pull down hard, hand over hand, until the canopy is distorted enough to collapse. If you are being dragged uncontrollably across the ground by high winds, roll onto your back. The backpack will provide some protection from abrasion. When wind speed is reduced apply above procedure.

# CARE / LIFE OF THE PARACHUTE

Parachutes are simultaneously very rugged and quite delicate. They are life saving pieces of equipment and should be treated with care. Parachutes are made of nylon, a very strong and durable material, but even nylon has enemies. Most acids will destroy nylon and ultra-violet light from the sun weakens nylon over time. This is a surface effect so the thicker materials (webbing of pack fabric) are not as seriously affected, but canopy cloth is very vulnerable. If your National Parachute is opened, avoid continued exposure to direct sunlight. Grease and oil may not damage the nylon but can stick the canopy material together, preventing it from functioning properly. Excessive moisture should be avoided; if the canopy becomes wet or damp, it should be aired to dry before repacking. For extended storage we recommend an environment with controlled humidity and temperature; unpack the parachute and place pilot chute and canopy loosely in a suitable bag, place the harness/container in a separate bag to keep to keep Velcro hook away from canopy fabric and lines. To place parachute back in service, contact your rigger or return to NATIONAL for inspection and repack.

When your National Parachute is in the aircraft, care must be exercised to insure that it is not damaged. Be sure that it does not come in contact with any sharp metal surfaces or other objects which might cut or snag it. All metal edges, exposed nuts and bolts, etc. should be taped or covered to prevent wear on the parachute container. Be sure that the parachute does not come in contact with water, oils, acid, grease or dirt. When in doubt consult your nearest parachute rigger, parachute loft or manufacturer.

The formal determination of "Time /Life" or service life of a non-military personnel parachute is still open ended and non specific. Someone must take the initiative and make a judgment call to ground it. By comparison: "Personnel (military) parachutes have a determined service life (a maximum shelf life) without use of 16.5 years, and every personnel parachute is stamped with the manufacturing date that starts its life-cycle clock. A personnel parachute is also stamped with the date that it is first placed in service (PIS). From that point on, a parachute's service life cannot exceed 12 years. The longer the unit sits on the shelf the less service life is has once placed in service."

The Parachute Industry Association (PIA) has visited this issue without conclusion to date. Until the PIA specifies otherwise, it is the recomendation of National Parachute that the maximum service life is 20 years from date of manufacture (this includes the harness, container and pilot chute).

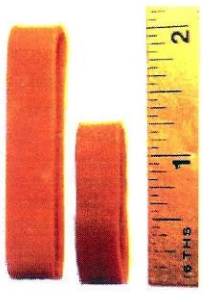
# PARACHUTE REPACK CYCLE

FAA Regulations require that: If you wear a parachute while operating an aircraft in US airspace or allow a passenger to wear a parachute while you are operating an aircraft in US airspace; which has not been certified as airworthy by an appropriately certificated FAA Senior of Master Rigger, you are in violation of the pertinent FAA Regulations. This provision also states a 120 day periodic inspection and repack schedule.
***NOTE #1:*** *As of December 2008 the inspection and repack schedule is extended to* ***180 days***. All necessary tools and equipment must be available in the packing facility. Record all pertinent data about the parachute, proceed to packing steps.
***NOTE #2:*** *If Outside USA, the inspection and repack cycle shall be in accordance with the existing local regulations OR up to 365 days.* ***(Adhere to shortest repack time table.)***

# INSPECTION OF THE PARACHUTE

Canopy Check: Inspect fabric for stains, cuts and tears. Check all stitching and accomplish all repairs as per Mil-P-6645 or use best practice. Contact the Manufacturer if in doubt.
Pilot Chute: Inspect fabric and mesh for stains, cuts and tears. Check the spring for damage. Inspect the pilot chute bridle for cuts or burns. Check stitching. Repair or replace as required.
Harness: Check the harness for cuts, abrasions, and excessive wear. Inspect all hardware for proper function. Check all stitching.
Container: Inspect for cuts, holes and stains. Tears less than one inch may be patched, use best practice. Damage to stiffeners or webbing shall be cause for replacement.

# RUBBER BANDS




A reduced length “short” rubber band of 1 ¼ inch (3.2 cm) was designed specifically for packing Phantom Aerostar canopies (N-360, N-425 and N-490). They are similar to the standard retainer band but are ¾ inch shorter so more tension is maintained on the low bulk Phantom lines. If variation in the rubber bands thickness or width makes it them too strong or “ornery” for proper stowing tension, it is permissible to scissor cut then in half lengthwise.

We recommend the standard 2” (5.1 cm) length “Parachute” type rubber bands be used for the first two diaper locking stows (the bands attach to the #0 grommets) for the N-360, N-425 and N-490.

The National FLAT diaper requires 3 locking stows using the 2” bands. The Preserve Canopy lines are somewhat bulkier, but normally the shorter 1 ¼” bands are also used for the balance of line stowes.

In any and all situations, the rubber bands must provide adequate holding power for the suspension lines without being too tight or too loose.

# PACKING INSTRUCTIONS
## 360 / 425 / 490 BACK PARACHUTE

THE FOLLOWING IS GROUPED IN FOUR STEP INCREMENTS WITH RELATED PICTURES IN SEQUENCE

Step 1 – Place canopy on packing table and apply tension. Verify that canopy is not inverted, check suspension line continuity and align the apex band. Verify that all inspections are complete to insure the airworthiness of the parachute. Flake the canopy in the normal manner and position the last panel with diaper on top. Set canopy back on table with diaper down.

Step 2 – With equal number of panels on both sides, clear wind channel and install line separator. Note: diaper must be down, facing the table. Straighten out each panel and stack skirt bands neatly one on top the other.

Step 3 – Take left group of stacked skirt bands and fold at 45 degrees – skirt band has to be parallel with radial seam tapes. Repeat for right side.

Step 4 – Long fold each side of canopy to center – NO NOT OVERLAP.


1.


2.


3.


4.

Step 5 – Take each side of folded canopy and fold again past center. OVERLAP this time. Use shot bags to hold the canopy in place.

Step 6 – Check all rubber bands. Replace if damaged or stretched. Note: We recommend the standard 2" Parachute type rubber bands be used for the first two locking stows where bands get attached to the #0 grommets at the top of the diaper. For balance of line stows use 1 ¼" Phantom rubber bands.

Step 7 – Release the harness from the tension board, grasp diaper, skirt and both line groups and fold towards apex. Bottom of diaper will be even with top of diaper. Be sure that both line groups come out between the 2 grommets.

Step 8 – Starting either side, make first two stows to lock diaper by passing rubber bands inserted in the #0 grommets through the #2 grommets. Bites should be no longer than 1".


5.


6.


7.


8.

Step 9 – Stow the remaining lines matching diaper shape. Keep stows neat and avoid twisting lines through rubber bands. Leave approximately 2 ft. on line un-stowed. (Top of container flap tucked under for clarity.)

Step 10 – Route risers to the inside of the pack tray. Using a standard rubber band, cut it in half length-wise and install on the two stow loop bands provided inside the container. Double wrap stow on each line group – leave enough un-stowed line to comfortably place diaper into tray as per next step.

Step 11 – Grasp diaper at diaper area, keeping the line stows up.

Step 12 – Place diapered portion of canopy deep into lower left corner of pocket.


Step 13 – Position the folded canopy up the left side of the container. Bring stiffener divider flap over canopy and use one shot bag to prevent canopy from moving out of pocket.

Step 14 – Fold canopy back (allowing for later routing across top) at the top edge of the pack tray and place it in the right hand side of the pocket.

Step 15 – Fold canopy back halfway between links and edge of pocket and place in the right hand side of pocket; spread the material between the right side of the pocket and the diaper.

Step 16 – Fold canopy back at the top edge of pocket to bottom on right side / center of pocket.

Step 17 – Repeat step #16 until you reach the apex, spread the material from side to side after each fold.

Step 18 – All folds should be distributed to evenly balance / distribute canopy in pocket. The rigger is allowed some latitude in steps 14 thru 18 in placement of canopy bulk to improve user comfort / or cosmetics.

Step 19 – The last short fold will also be slightly fanned out to reduce bulk and should be placed on top of all the previous folds towards the center of the pocket and with apex lines protruding from the pocket mouth. DO NOT STUFF APEX INTO THE CORNERS OF THE POCKET! Tuck apex lines under between folds with bridle emerging towards center of container tray. Position canopy across top and down right side to clear space for pilot chute.

Step 20 – S-fold the bridle between the grommets on the stiffener base. Thread the pull up cords through the container locking loops, then through the two grommets in the tabs at the base of the pilot chute.


Step 21 – Center the pilot chute on the stiffener base over the S-folded bridle.

Step 22 – Compress the pilot chute and thread pull up cords through the tabs at the cap of the pilot chute. Insert temporary closing pins.

Step 23 – Run pull up cord through bottom flap grommet and re-insert temporary closing pin.

Step 24 – Dress up the canopy at the top of the container. Run pull up cord through top internal staging flap and re-insert temporary closing pin. Note: Care must be taken not to draw canopy fabric (or pilot chute fabric) up through the internal staging flap grommet.

Step 25 – Close left side flap first (it holds the apex in place), insert pull up cords through respective grommets and secure with temporary closing pins. Repeat for the right side flap.

Step 26 – Run pull up cords through the top flap's respective grommets, insert ripcord pins. Carefully remove pull up cords as to avoid burn damage to closing loops. Slip bottom ripcord pin under pin protector webbing.

Step 27 – Apply safety tie to end pin and seal. Record the inspection and repack in Log and on parachute packing data card.

Step 28 – Close the top ripcord pin protector flap and tuck the end into the pin protector webbing.


25.


26.


27.


28.

Step 29 – Close the outer top flap by pulling end pocket over the end of stiffener on inner top flap.

Step 30 – Close the tuck flaps to the under sides of the inner top flap.

Step 31 – Insure riser tuck taps are secured. If not, re-tuck the riser tuck tabs.

Step 32 – Account for all your packing tools and equipment! Check ripcord for proper fit in the pocket. Adjust and mate Velcro on main lift web (floating harness adjustment) to a balanced position on both sides.


29.


30.


31.


32.

Step 33 – Place parachute packing data card is stow pocket under right riser cover.

Step 34 - Orange “flag” is to be exposed when tucked back under the riser cover.


# PACKING INSTRUCTIONS
## NATIONAL “FLAT” BACK PARACHUTE

BACKGROUND NOTE:

To offer the pilot more choices, in 2006 the “National FLAT” back parachute was added to the lineup as yet another great design. From 2006 through June 2009 the “National FLAT” was available as either “Tapered” or “Totally FLAT.”

Effective July 1, 2009 the “National FLAT” option for a tapered pack is discontinued. The tapered pack is authorized if manufactured prior to July 1, 2009.

This section of the Emergency Parachute Manual refers only to the “National FLAT” to be packed as “Totally FLAT” only.

National FLAT
(Premium or Signature Series)

## “FLAT” Packing Instructions

Step F1 – Follow Steps 1 – 4 on page 14 under 360 / 425 / 490 BACK PARACHUTE; then take each side of folded canopy and fold again past center. OVERLAP this time, place shot bags on folded canopy.

Step F2 – Pulling the container towards the canopy, form a loop of suspension lines above the top of the diaper. Leave enough slack to close the diaper. Check all rubber bands, replace if damaged or stretched. Use 2” parachute type bands for all diaper stows.

Step F3 – Form a bite of suspension lines, no more than 1 ½” long. Close the diaper, starting with the top grommet, and then close the center grommet.

Step F4 – Bring the rubber band from the bottom stow through the bottom side flap grommet, then close the end flap over both the side flaps using a stow no mote than 1 ½”.


F1.


F2.


F3.


F4.

Step F5 – Finish stowing the remainder of the suspension lines, stow ends extend no more than 1 1/2” from rubber band. Stow neatly and avoid twisting lines in rubber bands. Leave approximately 2 ft. of line free.

Step F6 – Route risers to inside of pack tray. Use standard rubber band(s) in both stow loop keepers as sewn on the container base. Verify left and right steering lines run through #5 links (or through keeper ring on riser), and that toggle is fastened to riser with one ply of rigger seal thread.

Step F7 – The “free line” must allow diaper to be placed across bottom of container. (Top flap tucked under for clarity.)

Step F8 – Place canopy sideways across the bottom of the pouch, diaper bottom in lower right corner, lines upward.


F5.


F6.


F7.


F8.

Step F9 – Fold canopy back across the pouch from container left side to right side.

Step F10 – Fold canopy up the container right side to the top, and back down to the top of the pouch.

Step F11 – Fold canopy across the top of the container.

Step F12 – Fold canopy down the container left side to top of pouch.


F9.


F10.


F11.


F12.

Step F13 – Fold canopy back on itself.

Step F14 – Fold apex under with bridle routing to center.

Step F15 – Finish up by returning to page 16 Step 20 through page 18 step 34.


F13.


F14.

**REFER TO:**

**Pages 16 – 18**
**Steps 20-34**

F15.

NOTE 1: The National 2006 – Jul 2009 “Totally Flat and Tapered” packing instructions can downloaded in PDF format on the “Links” page of our web site.

NOTE 2: The seat parachute requires a packing supplement. It is available for download in PFD format from the “Links” page on our web site.

**www.nationalparachute.com**

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