



# SAFETY INFORMATION

4/89

Ref: NATIONAL RESERVE PARACHUTES & PILOT CHUTES

National Parachute Industries, Inc. have issued a service bulletin dated March 24 1989 (attached) which outlines a rectification programme for their Phantom reserve canopies and Magnum pilot chutes which have 'failed' the Bromocresol test.

In order to accord with BPA policy, National Parachutes Industries Service bulletin has been submitted to the B.T.T.G. laboratories for evaluation.

In a test report (Ref: 11/1194) the B.T.T.G. have stated that they consider the procedures laid down in the service bulletin as satisfactory for the testing and treatment of canopies found to contain acid.

Accordingly the current grounding of canopies initiated in BPA Safety Notice 11/88 is now lifted for all National Parachute Industries, Phantom reserve canopies and Magnum pilot chutes which have been serviced according to their bulletin and which have been issued with appropriate release documentation signed by either a U.S. Master Rigger or BPA Advanced Rigger.

Tony Butler  
Joint National Coach and Safety Officer

24th April 1989

Distribution

All CCIs  
All Advanced Riggers



# National Parachute Industries, Inc.

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## SERVICE BULLETIN

### ACID MESH - FABRIC INTERACTION

#### ROUND RESERVES AND RESERVE PILOT CHUTES

#### 1.0 BACKGROUND

The interaction between mesh fabric with a low pH and nylon parachute fabrics has been studied by the U.S. Army, Parachute Industry Association and British Parachute Association. Results indicate that when the pH of the mesh fabric is below 5.0, the adjacent nylon fabric may be weakened. The purpose of this document is to outline procedures recommended by National Parachute Industries, Inc. for dealing with the above condition. It applies to the following National products:

##### Round Reserves:

- Phantom 22            P/N 81002-3
- Phantom 24            P/N 81002-1
- Phantom 26            P/N 81002-2
- Phantom 28            P/N 81002-4

##### Pilot Chutes:

- 357 Magnum S        P/N 81201-5
- 357 Magnum            P/N 81201-6
- 44 Magnum            P/N 81201-7

#### 2.0 PERSONNEL AND COMPLIANCE

FAA Master Parachute Rigger (Advanced Rigger in the U.K.), FAA Certified Parachute Loft or the Manufacturer. All tests, required treatment and documentation must be accomplished in a neat and professional manner using materials that meet the specifications stated below.

It is recommended that this Service Bulletin be implemented in conjunction with the next regular repack. Factory participation will expire on 12/31/89.

### 3.0 EQUIPMENT

- 3.1 2 ea. locking fabric clamps (Aerostar P/N 51406M)
- 3.2 1 ea. spring scale, 50 lb (25 kg) capacity
- 3.3 1 ea. 6" ruler
- 3.4 1 ea. marking pen, permanent ink, non-bleed
- 3.5 Bromocresol Green Indicator Solution, 0.04%, pH range 3.8 (yellow) to 5.4 (blue)
- 3.6 Eyedropper or equivalent type applicator for Bromocresol Green
- 3.7 Plastic wash tub large enough to submerge and agitate the entire canopy
- 3.8 Laundry detergent, powder form with pH value between 10.0 and 10.6 as sold by Proctor & Gamble under the trade names "All Temperature Cheer" (U.S.), "Biological Daz" (U.K.) or equivalent.

### 4.0 PROCEDURE

Record serial number, part number and date of manufacture of canopy or pilot chute.

The procedure is divided into five areas. They are:

- Tensile Testing
- pH Testing
- Treatment (if required)
- Documentation

### 5.0 TENSILE TESTING - CANOPIES

- 5.1 Locate the mesh vents in the canopy and determine the fabric areas which are in contact with the mesh when the canopy is packed. These areas are shown (diagonally shaded) in illustration #1 for a typical trivent canopy.
- 5.2 A total of 4 tests should be performed for each canopy. With a trivent canopy, one test should be performed in each panel adjacent to each mesh vent. Two tests should be performed in each direction (2 warp and 2 fill).

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- 5.3 Attach the locking fabric clamps to the ripstop fabric as shown in illustration #2. The distance between the clamps should be 3" and the clamps should be aligned so that the ripstop pattern is parallel to the edge of the jaw. Lock the clamps securely to avoid slippage.
- 5.4 Pass a short length of suspension line through the eye of one clamp and secure to the packing table or other object which will allow a 40 lb (18 kg) load without movement. Pass the hook from the spring scale through the other eye and slowly apply a 40 lb (18 kg) load for 3 seconds. While the tested area of "good" fabric may show some deformation, there will not be any significant reduction in strength.
- 5.5 Before removing the clamps, place a dot at each corner of the area of the fabric involved in the test. This will encompass an area of 1" x 5" (25mm x 125 mm). This will serve to mark the tested areas for future reference.

#### 5.6 ACTION

- A. PASS: Those canopies with fabric meeting the above requirement must be tested for pH according to paragraph 7.0.
- B. FAIL: ~~Those canopies that fail the tensile test~~ (fabric tears under 40 lb load) should be returned to the manufacturer. Return canopy and test results to National post paid via best method. If outside the United States, mark shipping documents as follows:

- 1) Country of origin - USA
- 2) American goods returned to manufacturer for repair.

National will not pay duty or other charges resulting from improper documentation. You may want to insure parcel. After inspecting the canopy, National will contact the owner.

#### 6.0 TENSILE TESTING - PILOT CHUTES

- 6.1 Attach the clamps to the fabric of the pilot chute as described in Paragraph 5.3.
- 6.2 Test as per Paragraph 5.4. Only one test per pilot chute is required.
- 6.3 Mark the fabric as per Paragraph 5.5

## 6.4 ACTION

- A. PASS: Those pilot chutes with fabric meeting the above tensile requirement must be tested for pH according to Paragraph 7.0.
- B. FAIL: Those pilot chutes that fail the tensile test (fabric tears under 40 lb load) should be returned to the manufacturer as per Paragraph 5.6-B.

## 7.0

### pH TESTING

- 7.1 Deposit a drop of the Bromocresol Green Solution on the center of each panel of the mesh fabric. NOTE: Do not touch the eyedropper on the mesh as it may contaminate the eyedropper or test solution.
- 7.2 Wait 2-3 minutes to examine the resulting color on each test spot. The color can be read easier with mesh spot folded to 4 thicknesses held over a white background. If color is blue or blue/green the pH is above 5.0-passing the test. If the test spot is yellow the pH is below 5.0 and fails the test.

NOTE: Bromocresol will turn yellow at some test locations after several days due to changes in its formulation as it evaporates and absorbs gases from the air. Thus the requirement to read the color 2-3 minutes after application.

### 7.3 ACTION

- A. PASS: Those canopies or pilot chutes with mesh meeting the above pH specifications and fabric meeting the above tensile requirement may be returned to service after being marked according to Paragraph 10.0.
- B. FAIL: Those canopies or pilot chute that have passed the required tensile test but have failed the above pH test must be treated according to Paragraph 8.0 or 9.0.

## 8.0

### TREATMENT - ROUND CANOPIES

- 8.1 Mix  $\frac{1}{2}$  cup of Cheer detergent (or equal ) in tub with 10 gallons of cold water.
- 8.2 Place the skirt into the water first. Work the soapy water thoroughly into mesh and all mesh seams.
- 8.3 Immerse the entire canopy in the solution. It is preferable to keep the majority of the lines dry. Agitate gently for 2 to 3 minutes working all the air from the canopy. Soak for at least 10 minutes and agitate again.

8.4 Drain water from canopy and rinse in 10 gallons of clean water - repeat rinse.

8.5 Hang canopy from apex until dry.

8.6 When dry, repeat the pH test as per Paragraph 7.0.

8.7 ACTION

A. PASS: Mark according to Paragraph 10.0 and return canopy to service.

B. FAIL: Repeat treatment as required to pass pH test as per Paragraph 8.0.

9.0

#### TREATMENT - PILOT CHUTES

9.1 Mix sufficient quantity of Cheer solution as per Paragraph 8.1 so that the pilot chute may be totally immersed in the solution.

9.2 Immerse the pilot chute in the solution and agitate gently. Soak for at least 10 minutes and agitate again.

9.3 Remove the pilot chute and shake the excess liquid from it.

~~9.4 Rinse the pilot chute in clean water - repeat rinse.~~  
Shake-out the excess water and hand to dry.

9.5 When dry, repeat the pH test as per Paragraph 7.0.

9.6 ACTION

A. PASS: Return the pilot chute to service and mark according to Paragraph 10.0.

B. FAIL: Repeat the treatment as required to pass the pH test as per Paragraph 8.0.

10.0

#### DOCUMENTATION

10.1 After testing and treatment of affected components, the following markings must be applied to the data panel of components:

10.1.1 "40 lb Tensile test/Passed."  
"pH test above 5.0/Passed."

10.1.2 Date test performed.

10.1.3 Name and certificate number of the Master Rigger, Advanced Rigger or Certified Loft performing the test.

10.2 Log on the packing data card the following information:

10.2.1 "40 lb Tensile test/Passed."

- 10.2.1 "pH test above 5.0/Passed."
- 10.2.2 Date test performed.
- 10.2.3 Name and certificate number of the Master Rigger, Advanced Rigger or Certified Loft performing the test.

10.3 Forward the test information to National Parachute Industries, Inc. quarterly.

#### 11.0 LONG TERM MONITORING

11.1 Because of the unknown long term effects of the low pH of the affected mesh and the recommended treatment, a monitoring program will be instituted by National Parachute Industries, Inc. At least 10 Phantom canopies will be under close observation. Accordingly, ONE pH test and ONE fabric tensile test should be repeated on the effected components every 120 days from the date of the original testing and treatment.

11.2 Any component that fails the REPEAT test should be returned to the manufacturer for inspection.

#### 12.0 CONCLUSION

12.1 This process has been formulated based on known information available as of this writing. This may be changed and updated as more information is made known.

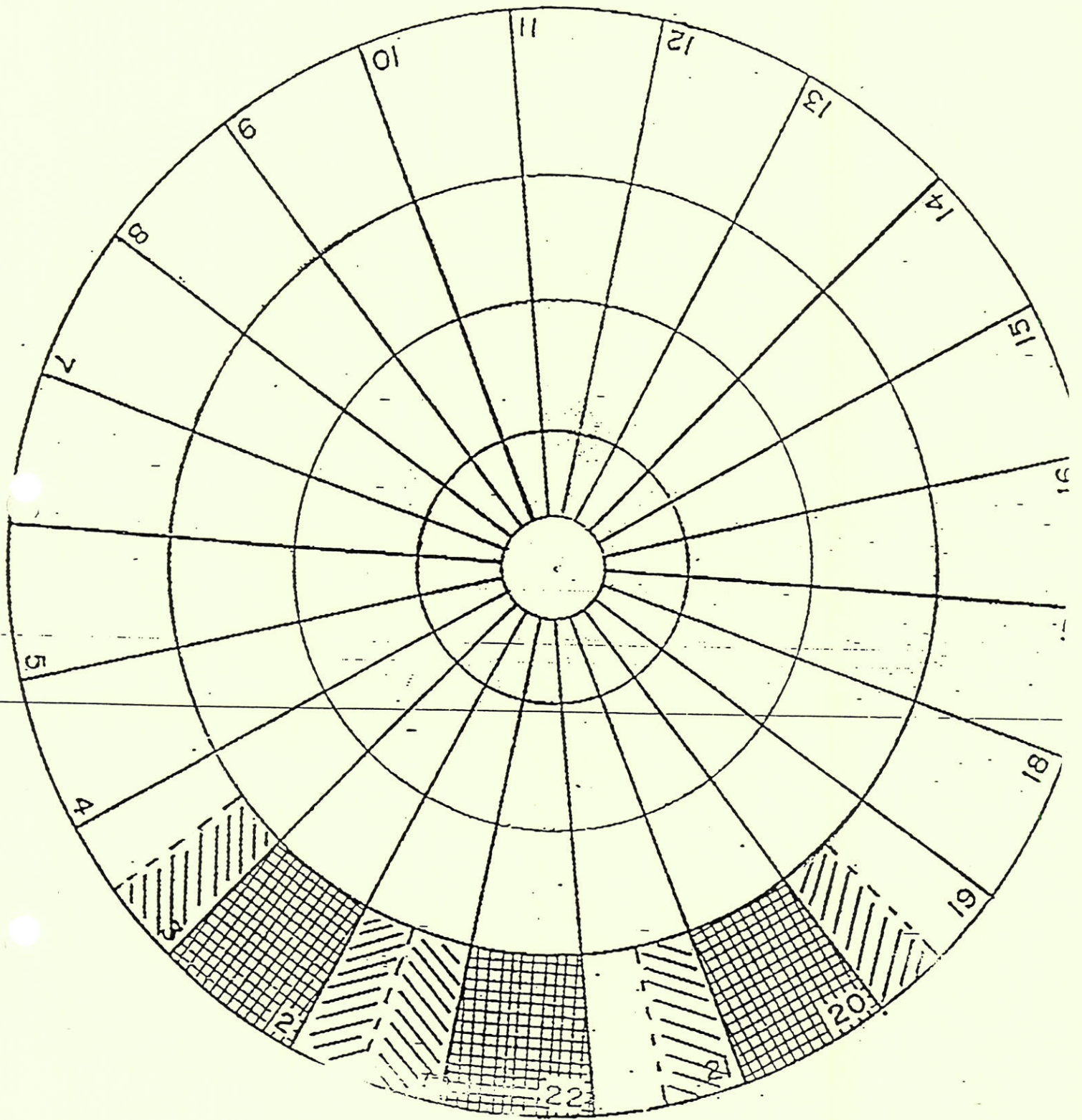


Illustration 1

Diagonally shaded areas are fabric in contact with mesh.