

# ***Balloon Builders Journal***

**Warning: The reader must assume all risk for the use of this material. Balloon flying involves risk. The editor is not an engineer and makes no guarantees about this information.**

**Any communications with the author should be addressed as follows. Please put “BBJ” in the subject line of e-mails so I don’t simply trash them.**

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## ***Balloon Builders Journal Conditions of Use***

A warning to readers: You must assume all risk associated for the application of information.

First, this information is published for your education and recreation.

Second, the editor and contributors are amateurs and hobbyists, not engineers.

Third, we make no guaranty or warranty as to the information contained herein.

Fourth, building a real balloon literally means taking your life into your hands.

Fifth, if you get hurt, or worse, don’t blame us.

Sixth, balloons are aircraft so pilot and aircraft certifications may be required.

Seventh, you and no one else are responsible, period.

## **Sections in this PDF file:**

***Balloon Builders Journal* CD Conditions of Use**

**Introduction and Content of *Newsletters* folder**

**Content of *Extra* files**

**Corrections to Published Material:**

**Index of *Balloon Builders Journal* Articles**

## **Introduction**

Welcome to the **Balloon Builders Journal** (BBJ). This product represents a non-profit effort to convey a great deal of balloon building information to interested readers. These files contain almost 400 pages of information

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The files are organized into two basic areas:

The *Newsletters* contain PDF copies of the original **Balloon Builders Journals**. These newsletters were published between 1993 and 1998. Contained here are all 28 published issues. The feature article from the unpublished 29<sup>th</sup> issue is also included.

The second area is *Extras*. These contain a variety of additional material including various Excel spreadsheets, technical data and other unpublished articles and viewpoints.

All reading material is accessible using the Adobe PDF reader. Excel spreadsheets are provided for calculation tools. Building the high tech temperature sensor requires the programming assembler found in MPLAB by Microchip Technologies

.

### **Looking at the Newsletters.**

The newsletters have been reproduced here exactly as originally published. The gray-tone photos now appear in color. The back cover, which included advertisements and mailing label space, was not reproduced. However, the pdf's allowed space to include additional photos for a number of published articles. At the end of the following newsletters new material has been attached:

**Issue 9.** Page 12 displays the interior of the Sewhappy balloon seen on page 2. Page 13 displays another view of the builder's table seen on page 3.

**Issue 10:** Page 12 displays the Bassett basket with the burner described in the article beginning on page 2. Page 13 displays details of the Boland takedown propane tank shown on page 11.

**Issue 12.** Page 12 shows the Sewlight balloon inflating in our backyard. Construction of Sewlight was discussed, starting on page 2 of this issue.

**Issue 14:** Page 12 shows details of the theolodite described in the article beginning on page 11. The Excel file for using the theolodite is: WZALOFT.xls

**Issue 16:** Pages 12 and 13 show photos of Ron Parigoris' *Screwball*. This 'basket' is a custom built all-terrain vehicle capable of 50 miles per hour on land.

**Issue 25:** Pages 12 and 13 display photos of the *Tweetie* special shape balloon. An article about building this balloon begins on page 2 of this issue. I regret the loss of the original masters so color photos do not appear on pages 2 and 3.

**Issue 29.** This is a new issue that was not previously published. Included here is the feature article that explains theory and maintenance of sewing machines.

### **Looking at the Extras**

**Gorepat.xls** is the gore pattern spreadsheet in Microsoft Excel format presented in Issues 1 and 22.

**Liftforce.xls** is the Excel envelope lifting force spreadsheet presented in Issue 8.

**WNZALOFT.xls** is Joe Seawright's Excel spreadsheet for use with the theolodite presented in issue 14.

**112W140.PDF** is the Users and Adjusters Manual for the Singer 112W140 sewing machine. It is

relevant to sewing machine articles in issues 15, 27, 28 and 29.

**Small Basket Sensations.pdf** describes the editor's opinions on flying in very lightweight baskets.

**LeDoux Balloons.pdf** describes two of the editor's envelope projects.

Folder **Temp Sensor** presents a microprocessor-based envelope mounted temperature system that reports using an audio form of Morse code. Cost of components is about \$15.

Brian Mehosky's Excel spreadsheet calculates basket to envelope cable lengths. The process was described in Issue 5.

## **Corrections to Published Material:**

### **Issue 5, page 2 "Calculating Envelope to Basket Cable Lengths."**

The theoretical angle of 50 degrees for the envelope mouth is not correct. Envelopes based on the Gore Pattern Spreadsheet actually achieve a measured angle closer to 40 degrees. Refer to the corrections on page 11 of issue 24. Use the factors on that page instead of the factors found on page 5 of issue 5.

### **Issue 9, "Balloon Design and a Builder's Table, page 5.**

Mount legs to longerons with ¼ inch bolts as well as deck screws. Using only deck screws may result in more wobble than desired. Diagonals, from the top of one leg to the bottom of an adjacent leg will dramatically stiffen the structure. The diagonals can be thin boards like "one by two's." Only two diagonals may be needed, one mounted across the table width and one mounted along the table length.

## **Index of Articles by Issue Number**

**#1:** Gore Pattern Spreadsheet for design of envelopes. List of possible article content. Story about 'in air' inflating balloon.

**#2:** Plan for first time builder using homebuilt envelope over factory basket. Sizing the mouth and deflation ports. Comment on information access and liability. Aeroquip hose problem. Bibliography.

**#3:** Paul Brockman's first time building experience. Tip on closing up envelopes. Layout of multi-panel envelopes. Letters to the editor on projects.

**#4:** Flying ammonia gas balloons. Layout of vertical gore envelopes. Report on Sherwood valve failure. Comparison of vertical and horizontal gore patterns. Letter on STC process.

**#5:** Calculating envelope to basket cable lengths. Is [ammonia] gas for me? Sources mentioned are ParaGear, Westmark Fabrics, Tennessee Attachments. Comment on Australian certification requirements.

**#6:** Building envelopes from second grade lightweight parachute fabric. Flame testing of silicone coated fabric. Report from Vermont Amateur Built Balloon Meet. Letters on modifying Aerostar burners; fabric suppliers and folders other tidbits.

**#7:** The Barnes style of construction. Review of the Boland basket. Letters on external tanks; the half sphere and cone envelope, a source of fabric.

**#8:** Estimating envelope lift force with a computer spreadsheet/graph. The Bassett homebuilt burner. Letters on Peregrine Project; Kennedy balloon project; using lightweight balloons in competition.

**#9:** An envelope building table. Tidbits on time frames for FAA aircraft registration, a source for load tape, light and fabric, and sewing machine bobbins. Letters include photos from Vermont meet, stress testing balloons.

**#10:** Building the Bassett burner. Basics of ammonia flying. Letters on the Balloon Maintenance and Repair Association (BMRA), shuttle versus needle woven load tape, the Boland take down propane tank.

**#11:** Doing the FAA paperwork. Letters on the Bassett burner; Trademark infringement; Ken Kennedy's new balloon.

**#12:** The stages and costs of envelope construction. The regulations on Part 103 ultralight balloons. Letters on Bill Arras' test designs, Joe Seawright's project, thoughts on low cost temperature gauges.

**#13:** The Arras lightweight basket. The ultralight challenge. Letters on Australian building, buying a decimal tape measure.

**#14:** Homebuilt theodolite. Simplified lift force tables. Letters on cable fittings, uncoated parachute fabric, bicycle balloon retrieval.

**#15:** Common sewing machine attachments. Homebuilt load tape feeder. Letters on envelope resizing, Bill Arras in Antarctica, Part 103 calculations.

**#16:** Design and safety for the builder. Developing the builders checklist. Letters on interpreting the '51%' rule, a tie-dyed envelope.

**#17:** Designing a simple basket. Letters on the 'majority built portion,' balloon projects by Paul Clinton, Peter Asp; Documenting your project.

**#18:** Part II: Designing a simple basket. Letters on balloon computer programs, basket airbag, aircraft registrations are down for the year.

**#19:** Basic testing for the builder. Letters on blast valve problem, new FAA burner standards, 3-phase motors running on single-phase power.

**#20:** Arras component testing. Nicopress fittings. Letters on low cost temperature gauge, envelope basket attachments, buying tape and ribbon.

**#21:** A low cost temperature gauge. Thoughts from Albuquerque. Letters on Cathy Luenenborg's new balloon, parachute lines, listing of suppliers.

**#22:** Revisit the Gore Pattern Spreadsheet from Issue #1. Letters on, adhesive for silicone coated fabric, sewing machine setup, thread and needles.

**#23:** Revisit the Gore Pattern Spreadsheet from Issue #1, Part II. Letters on, *Tweetie Bird*, Kennedy report on envelope project, Phil MacNutt reports on receiving his new airworthiness certificate.

**#24:** Report on Experimental Balloon Meet in Vermont. Kennedy built basket using polyethylene tubing.

**#25:** Building *Tweetie Bird*. Low cost temperature gauge. Throttling sewing machines, comment on new gore pattern computer tool.

**#26:** John Burk's aluminum basket. Bob Nungester's new computer design program. Joe Seawright and Larry Lankenau provide views of new balloon projects.

**#27:** Locating and buying a sewing machine. Third generation instruments. Basket repairing techniques.

**#28:** Setting up a sewing machine and your sewing room. EAA amateur-built agreement with FAA. Buying imported fabric.

**#29:** Maintaining and adjusting the sewing machine.