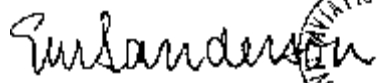



APPROVAL STATEMENT

The Civil Aviation Authority of the United Kingdom hereby signifies approval of the data listed in this document. This Flight Manual was first approved on 20 May 1993.

Signed & Sealed

Record of Amendments

No.	Date	Affected Pages	Approval
35	01/07	iii, iv, 3, 3a, 7a, 9a, 11a	EASA Approval EASA.BA.C.01063, dated 5 February 2007
36	05/07	iii, iv, v, vi, 1, 3b, 4, 12, 15a, 18, S13-1, S14-1	EASA Approval EASA.BA.C.01097, dated 18 June 2007
37	01/08	ii, iii, iv, v, vi, 1, 2, 3, 12, 13, 15b, 15c, 15d, 16, 17, 19, S1A-1.38-1, S15-1	EASA Approval EASA.BA.C.01149, dated 5 June 2008
38	04/09	iii, iv, 3, 3a, 3b, 7, 7a, 9, 9a, 11, 11a, 12, 14	EASA Approval EASA BA.C.01192, dated 29 April 2009
39	04/10	iii, iv, 2, 3, 3a, 15c, S1A-1, S1A-1.39-1, S1A-1.39-2, S6-1, s14-1	EASA Approval EASA No. 10029876 and 10029875, dated 28th, April 2010

Amendments

This manual is kept up to date by amendments consisting of looseleaf pages, required to add new information or amend existing information. Pages affected by an amendment and the effective date are shown above. The pages themselves are identified by a change of the issue number at the bottom of each page. The number after the point in the issue number represents the amendment level of that page, eg the page marked Issue 1.4 is at Issue 1, modified by Amendment 4. The checklist of pages indicates the issue level of all pages included in this Flight Manual.

Change of Ownership

If the ownership of this balloon changes, it is important for the new owner to contact Lindstrand Balloons to ensure that they receive Flight Manual Amendments and Supplements, as appropriate. This can be simply achieved by photocopying Page ii of this manual and writing your name and full correspondence address on the reverse side and sending to Lindstrand Balloons.

Checklist of Pages

Page No.	Issue
i	1.0
ii	1.37
iii	1.39
iv	1.39
v	1.37
vi	1.37
1	1.37
2	1.37
3	1.39
3a	1.39
3b	1.38
4	1.36
5	1.0
6	1.9
7	1.38
7a	1.38
8	1.0
9	1.38
9a	1.38
10	1.0
11	1.38
11a	1.38
12	1.38
13	1.37
14	1.38
15	1.34
15a	1.36
15b	1.37
15c	1.39
15d	1.37
16	1.37
17	1.37
18	1.36
19	1.37
20	1.0
21	1.9
22	1.0
23	1.0
24	1.0

Page No.	Issue
25	1.0
26	1.0
27	1.0
S1A-1	1.39
S1A-1.39-1	1.39
S1A-1.39-2	1.39
S2-1	1.2
S3-1	1.26
S3-2	1.4
S3-3	1.4
S3-4	1.5
S4-1	1.12
S4-2	1.12
S5-1	1.14
S6-1	1.39
S7-1	1.19
S7-2	1.19
S7-3	1.19
S7-4	1.19
S7-5	1.19
S8-1	1.19
S9-1	1.20
S9-2	1.20
S9-3	1.20
S9-4	1.20
S9-5	1.20
S9-6	1.20
S9-7	1.20
S10-1	1.22
S10-2	1.22
S10-3	1.22
S11-1	1.28
S11-2	1.28
S12-1	1.29
S12-2	1.29
S12-3	1.29
S12-4	1.29
S13-1	1.36
S14-1	1.39
S15-1	1.37

1.2 Limitations for UK Passenger Transport Category

The following limitations only apply to balloons which have a UK Certificate of Airworthiness in the Transport Category. However, adherence is strongly recommended for all balloons, provided that this does not create conflict with any particular national requirements.

- 1.2.1 The balloon must not be flown without the nylon rods to support the burner in place.
- 1.2.2 The maximum number of passengers permitted is nineteen. The maximum number of occupants that are permitted in one compartment of a basket is six.
- 1.2.3 Only free flights may be undertaken in this certification category.
- 1.2.4 The baskets must provide at least one handhold per occupant.
- 1.2.5 The burner system must be fully duplicated so that no single failure will lead to loss of control of the balloon.

1.3 Limitations to Equipment Interchangeability

1.3.1 Fuel Cylinders

The baskets and burners listed in Sections 1.5 or 1.6 must only be used with the fuel cylinders listed in Tables 4, 7, 10, 13, 16, and 19 which are identified as being suitable for use with all baskets.

- 1.3.2 If a basket, burner and load frame which have been manufactured by Thunder & Colt Ltd, Cameron Balloons, Sky Balloons Ltd, Fire Balloons GmbH, or Ultramagic SA is required for use with a Lindstrand Balloons manufactured envelope, then the following conditions must be met:
 - a) The basket, burner and load frame must be manufactured by the same company. If this is not the case the combination of equipment will be subject to a specific approval statement by the Chief Engineer.
 - b) The combination of basket, burner and load frame must have been previously approved.
 - c) The type of basket and burner must appear in relevant tables contained in Section 1.6.
- 1.3.3 The serial numbers of the basket, burners, fuel cylinders, and envelope, must be recorded in the envelope log book, irrespective of the manufacturer. If any of the constituent parts of the balloon system are changed, this change must be recorded and approved (in the envelope log book) by a qualified inspector.

1.4 Limitations for Tethered Flights

- 1.4.1 The maximum surface wind speed for a tethered flight is 10 knots.
- 1.4.2 The maximum balloon loading must not exceed 75% of the Maximum Weight of the balloon, shown in Section 1.5.1, or the weight permitted under the ambient conditions, as shown in Section 1.5.3 if this is less than 75% of the Maximum Weight.
- 1.4.3 The basket of the balloon must not exceed a height of 30 m above ground level when tethering.
- 1.4.4 Only bulbous shaped (natural shaped) envelopes may be tethered.

1.5 Load Calculations

1.5.1 Maximum Mass

The Maximum Mass (MM) is the figure used in the design and certification of the envelope and this weight must never be exceeded. The Maximum Mass for all Lindstrand Balloons envelope sizes are tabulated below:

TABLE 1 - LINDSTRAND ENVELOPES

Balloon Type		Volume		FAI Class	Maximum Mass		Envelope Weight	
		cu.m	cu.ft		kg	Lbs	kg	lbs
A-Type	42	1190	42000	AX5	420	924	46	101
A-Type	56	1590	56000	AX6	560	1232	62	136
A-Type	60	1700	60000	AX7	600	1320	65	143
A-Type	69	1950	69000	AX7	690	1518	76	167
A-Type	77	2180	77000	AX7	770	1694	84	185
A-Type	90	2550	90000	AX8	900	1980	99	218
A-Type	105	2970	105000	AX8	1050	2310	115	253
A-Type	120	3400	120000	AX9	1200	2640	132	290
A-Type	140	3964	140000	AX9	1400	3086	154	338
A-Type	150	4250	150000	AX10	1450	3190	161	363
A-Type	160	4530	160000	AX10	1600	3520	170	374
A-Type	180	5100	180000	AX10	1630	3586	176	387
A-Type	210	5950	210000	AX10	1890	4180	209	460
A-Type	240	6800	240000	AX11	1940	4268	242	532
A-Type	260	7362	260000	AX11	2270	4994	259	570
A-Type	310	8780	310000	AX11	2700	5940	291	640
A-Type	317	8976	317000	AX11	2760	6072	300	660
A-Type	330	9344	330000	AX12	2875	6325	305	671
A-Type	360	10194	360000	AX12	3132	6890	348	766
A-Type	400	11327	400000	AX12	3400	7480	350	770
A-Type	425	12034	425000	AX12	3610	7942	400	880

Balloon Type		Volume		FAI Class	Maximum Mass		Envelope Weight	
		cu.m	cu.ft		Kg	Lbs	kg	lbs
S-Type	210	5950	210000	AX10	1890	4180	263	579
S-Type	260	7362	260000	AX11	2270	4994	331	728
S-Type	317	8976	317000	AX11	2930	6446	382	840

Balloon Type		Volume		FAI Class	Maximum Mass		Envelope Weight	
		cu.m	cu.ft		Kg	lbs	kg	lbs
B-Type	56	1590	56000	AX6	560	1232	74	163
B-Type	69	1950	69000	AX7	690	1518	82	180
B-Type	77	2180	77000	AX7	770	1694	90	198
B-Type	90	2550	90000	AX8	900	1980	110	242
B-Type	105	2970	105000	AX8	1050	2310	121	266

Balloon Type		Volume		FAI Class	Maximum Mass		Envelope Weight	
		cu.m	cu.ft		kg	lbs	kg	lbs
C-Type	500	14158	500000	AX13	4250	9350	442	972
C-Type	600	16886	600000	AX14	5100	11220	530	1166

1.5.1.1 Minimum Landing Mass

The minimum landing mass is defined as the minimum mass of all of the balloon flight equipment, basket occupants and remaining fuel. For the larger sizes of balloons, the following minimum landing mass is recommended:

Envelope Size	Minimum Landing Mass		Envelope Size	Minimum Landing Mass	
	kg	lbs		kg	lbs
42	231	508	210	945	2079
56	252	554	240	970	2134
60	255	561	260	1135	2497
69	276	607	310	1350	2970
77	316	695	317	1465	3223
90	378	831	330	1437	3161
105	452	994	360	1566	3445
120	528	1161	400	1700	3740
140	586	1289	425	1800	3960
150	652	1434	500	2125	4675
160	720	1584	600	2550	5610
180	750	1650			

1.5.1.2 Reduced Mass Operations

If, for operational reasons the aircraft operator wishes to select a reduced Maximum Take Off Mass, MTOM, the following limits are advised by the company:

Envelope Size	Maximum Take-off Mass		Envelope Size	Maximum Take-off Mass	
	kg	lbs		kg	lbs
21	189	416	160	999	2200
25	225	495	180	999	2200
31	279	613	210	1701	3742
35	315	693	240	1746	3841
42	378	831	260	2043	4494
56	499	1100	310	2430	5346
60	499	1100	317	2484	5464
69	499	1100	330	2699	5951
77	499	1100	360	2699	5951
90	499	1100	400	2699	5951
105	999	2200	425	2699	5951
120	999	2200	500	3825	8415
140	999	2200	600	4590	10098
150	999	2200			

To achieve approval at these levels the operator must have a suitably qualified balloon inspector make a notation to that effect in the aircraft log book. It should be noted that operating to this Maximum Take Off Mass does not alter the operational limitations specified in section 1.5.3 and the continued airworthiness requirements remain in force, as published.

Restitution of the normal Maximum Weight Limitations as defined in section 1.5.1 are achieved by a qualified balloon inspector conducting an inspection in accordance with the Maintenance Schedule Ref. MS/BBAC/1-K and notifying the change in the aircraft log book

TABLE 18 - ULTRAMAGIC BURNERS

BURNER NO.	BURNER TYPE	ENVELOPE SIZE RANGE	EMPTY WEIGHT	
			KG	LBS
160	Mk 2 Simple	31 - 90	14	31
161	Mk 2 Double	56 - 180	19	42
162	Mk 2 Triple	105 - 260	25	55
163	Mk 2 Super Simple	31 - 90	15	33
164	Mk 2 Super Double	56 - 180	21	46
165	Mk 2 Super Triple	105 - 260	28	62
166	Mk 2 Super Quad	180 - 425	36	79
167	Mk 10 Simple	31 - 90	15	33
168	Mk 10 Double	56 - 180	21	46
169	Mk 10 Triple	105 - 260	28	62
170	Mk 10 Quad	180 - 425	35	77
171	Mk 21 Simple	31 - 105	17	37
172	Mk 21 Double and Electric	56 - 210	24	53
173	Mk 21 Triple	105 - 310	34	75
174	Mk 21 Quad	180 - 425	43	95
175	BMK-008 Single	31 - 105	11.9	26
176	BMK-008 Double	56 - 210	20.8	46
177	BMK-050 Double	180 - 300	19.9	44
178	BMK-050-Triple	250 - 425	30.1	66
179	BMK-050 Quad	355 - 425	40.8	90

TABLE 19 - ULTRAMAGIC CYLINDERS

CYLINDER TYPE	EMPTY WEIGHT		FUEL CAPACITY		FULL WEIGHT		APPLICABLE BASKET RANGE
	KG	LBS	KG	LBS	KG	LBS	
M20 & M20D	15	33	20	44	35	77	All
M30 & M30D	20	44	30	66	50	110	All
M40 & M40D	24	53	40	88	64	141	All

Notes

- a) Under the column “applicable basket range” the appearance of the word “all” denotes that the cylinder can be used with all sizes of baskets in all operational categories, regardless of the basket manufacturer, provided the basket size appears in Section 1.5 or 1.6.

1.7 Build Standards

The Build Standard number is a quick reference number which identifies the various components which make up a particular balloon system

eg, 77A.03.02.0

This reference is comprised of four number groups. The first number group identifies the envelope size and type. In the above example, 77A means a 77,000 cu.ft envelope of the A-type pattern.

LINDSTRAND BALLOONS LTD

FLIGHT MANUAL SUPPLEMENT NO. 1.1

SPECIAL SHAPED ENVELOPE - LBL CAKE

SECTION 1 - OPERATIONAL LIMITATIONS

1.1.6 Wind Speed

Add the following:

The maximum surface wind speed for take off and landing of the Lindstrand Balloons Ltd Cake special shaped hot air balloon is 5 knots.

1.1.8 Ascent/Descent Speed

Add the following:

The maximum rate of climb and descent for the LBL Cake special shaped balloon is 2.5 m/s (500 ft/min).

1.5.1 Maximum Mass

TABLE 1

Add the following:

Balloon Type	Nominal Volume		FAI Class	Maximum Mass		Envelope Mass	
	cu.m.	cu.ft.		kg	lbs	kg	lbs
LBL Cake	3400	120,000	AX10	999	2198	310	682

1.5.3 Payload Calculation

Add the following:

Calculation of the payload for the LBL Cake special shaped balloon is identical to the procedure described. The conversion of the lift per unit volume figure, found from the load charts, into a gross lift figure is achieved by multiplying by the nominal volume given above.

LINDSTRAND BALLOONS

FLIGHT MANUAL SUPPLEMENT NO. 1.39

SPECIAL SHAPED ENVELOPE - LBL MOTORBIKE

SECTION 1 - OPERATIONAL LIMITATIONS

1.1.6 Wind Speed

Add the following:

The maximum surface wind speed for take off and landing of the Lindstrand Balloons Motorbike special shaped hot air balloon is 10 knots.

1.1.8 Ascent/Descent Speed

Add the following:

The maximum recommended rate of climb and descent for the LBL Motorbike special shaped balloon is 2.5 m/s (500 ft/min).

1.5.1 Maximum Mass

TABLE 1

Add the following:

Balloon Type	Nominal Volume		FAI Class	Maximum Mass		Envelope Mass	
	cu.m.	cu.ft.		kg	lbs	kg	lbs
LBL Motorbike	4816	170,000	AX8	1700	3740	562	1236

1.5.3 Payload Calculation

Add the following:

Calculation of the payload for the LBL Motorbike special shaped balloon is identical to the procedure described. The conversion of the lift per unit volume figure, found from the load charts, into a gross lift figure is achieved by multiplying by the nominal volume given above.

SECTION 2 - NORMAL PROCEDURES

2.2.2 Cold Inflation

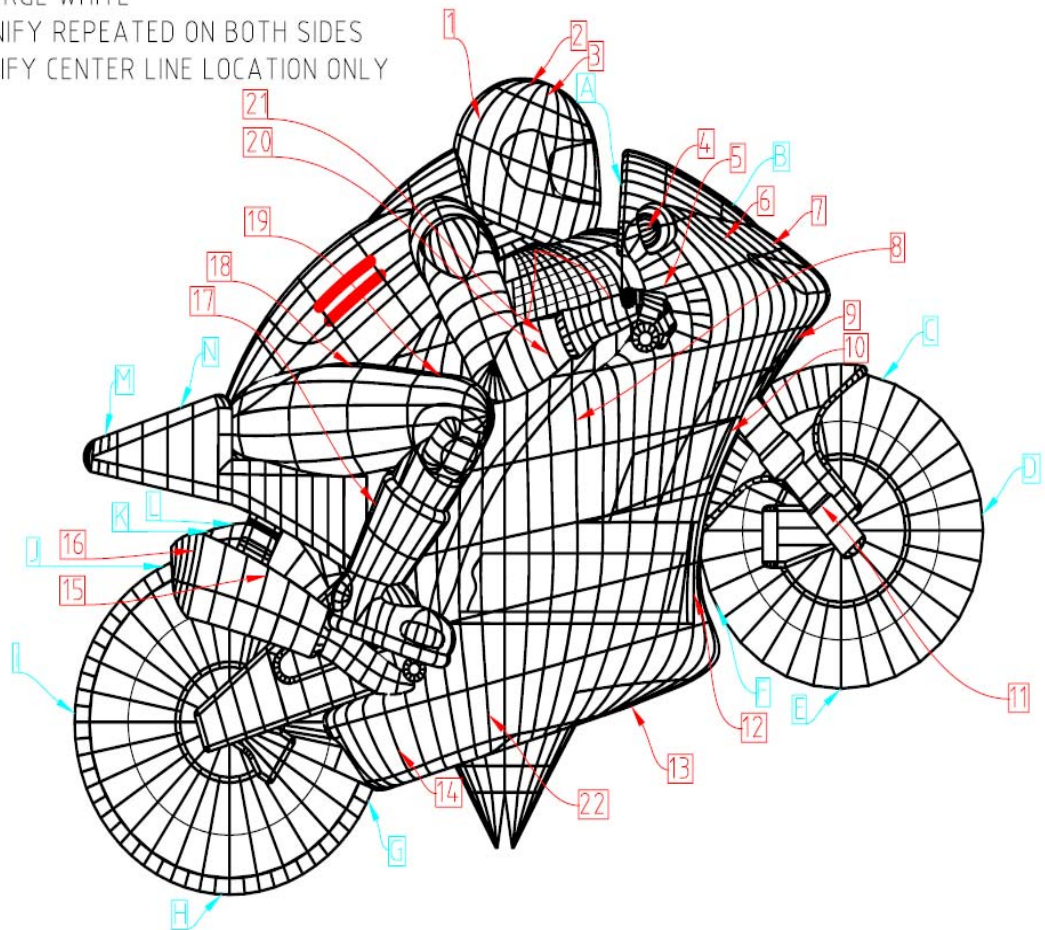
Add the following:

Ensure that all the 58 deflation vents are closed. These are situated as follows:

SS. MOTORBIKE

S/N 1300 'GEORGE WHITE'

NUMBERS SIGNIFY REPEATED ON BOTH SIDES
LETTERS SIGNIFY CENTER LINE LOCATION ONLY



2.3.2 In-Flight Control

Add the following:

A vent is provided for in-flight venting. This is operated by pulling on the candy stripe line to open.

2.3.4 Landing

Final deflation is achieved by pulling the red coloured lines, which will operate the two rip panels.

APPROVED BY EASA UNDER APPROVAL NR. 10029875 ON 28 APRIL 2010

FLIGHT MANUAL SUPPLEMENT NO. 6

Q-VENT DEFLATION SYSTEM

SECTION 1 - OPERATIONAL LIMITATIONS

Add the following:

- 1.12 The Q-Vent can be tested prior to take-off but the rapid deflation aspect of the system must not be operated at a height above ground level greater than 2m.

SECTION 2 - NORMAL PROCEDURES

2.2.3 Sealing the Parachute

Add the following:

- 2.2.3.1 Ensure that the red rapid deflation line and the parachute line are pulled back into the envelope during inflation to provide as much slack as possible.

2.2.7 Hot Inflation

Add the following:

If the Q-Vent system is fitted, it is recommended that the slack in the red rapid deflation line is stored under the velcro straps on the rod covers, to prevent inadvertent operation.

2.2.8 Pre Take Off Checks

Add the following:

- (q) Check the operation of the Q-Vent System by pulling the red rapid deflation line until the parachute is clear of the rim of the aperture. Release the red line, then pull on the red and white parachute line until the parachute is taut, and release the parachute line. Ensure that there is sufficient slack in the parachute line to allow it to feed into the envelope as the red rapid deflation line is pulled.

2.3.4 Landing

If the balloon is fitted with the Q-Vent, the rapid deflation system is operated after contact with the ground. Operation is achieved by pulling the red rapid deflation line until the parachute has been removed from the aperture.

LINDSTRAND BALLOONS

FLIGHT MANUAL SUPPLEMENT NO. 14

BASKET OCCUPANCY

SECTION 1 OPERATIONAL LIMITATIONS

1.5.2.1 Baskets

1.5.2.1.1 Basket Occupancy

In addition to the limitations described in Section 1.5.3 Payload Calculation, the following restrictions must be considered when determining how many occupants a particular basket can carry for a flight. The pilot must also take into account the relative mass and size of occupants when loading partitioned baskets in order to achieve an even distribution of payload.

1.5.2.1.2 Occupancy Calculation

- a. Using the basket dimensions identified within basket tables, 2, 5, 8, 11, and 14 determine the total floor area by multiplying the width of the basket by the length. This will produce an area in square cm.
- b. Establish the floor area that is required for the fuel cylinders by multiplying the total number of fuel cylinders for the flight by 1,000 cm².
- c. Subtract the area calculated in b. from the total floor area from a..
- d. Divide the remaining floor area by 2,500 cm² to obtain the maximum number of occupants that may be carried. Note that only whole numbers are relevant for determining the maximum number of occupants.

1.5.2.1.3 Example Calculation

Basket Size (No. 10) 125 cm x 125 cm

Cylinder Area (4 off) = 4 x 1,000 = 4,000 cm²

Floor Area Available for Occupants: 15625 - 4000 = 11625 cm²

Maximum No. of Occupants: 11625 ÷ 2500 = 4.65

Therefore, the maximum number of occupants for this flight is 4.

1.5.2.1.4 Open Basket Limitation

For all baskets that are defined as an Open basket (see basket tables) there is a further limitation of a maximum number of occupants of six, irrespective of how many can be accommodated based upon the basket floor area.