



# Balloon Flight Manual Supplement

## *Lindstrand Balloons USA Baskets and Burners*

This Balloon Flight Manual Supplement is initially approved by EASA under major change approval number 10070614, dated 26 July 2019.

Subsequent revisions are approved either by EASA or by authority of DOA, no. EASA.21J.277 as detailed on page 2.

This Balloon Flight Manual Supplement is approved in accordance with 14 CFR Section 21.29 for U.S. registered aircraft and is approved by the Federal Aviation Administration.

Initial date of approval: 31 July 2019

**This balloon is to be operated in compliance with information and limitations contained herein.  
The Balloon Flight Manual (and all applicable Balloon Flight Manual Supplements) has to be placed in the basket during flight.**

### 0.1 Record of Revisions

Any revision of this Balloon Flight Manual Supplement, must be recorded in the following table. The new or amended text in the revised page will be indicated by a black vertical line in the outer margin, and the Revision No. and the date will be shown on the bottom of the page.

All changes to this Balloon Flight Manual Supplement which were made before the date of the issue stated on the title page have been incorporated into this supplement.

Revision Number	Affected Section	Affected Pages	Date of Issue	Approval	Date of Approval

### 0.2 List of Effective Pages

Section	Page	Date of Issue	
Front page 0	USBEL-1	31 Jul 2019	
	USBEL-2	31 Jul 2019	
	USBEL-3	31 Jul 2019	
	USBEL-4	31 Jul 2019	
	1	USBEL-5	31 Jul 2019
		USBEL-5	31 Jul 2019
	2	USBEL-6	31 Jul 2019
		USBEL-7	31 Jul 2019
		USBEL-8	31 Jul 2019
		USBEL-9	31 Jul 2019
		USBEL-10	31 Jul 2019
		USBEL-11	31 Jul 2019
		USBEL-12	31 Jul 2019
USBEL-13		31 Jul 2019	
3		USBEL-13	31 Jul 2019
4		USBEL-14	31 Jul 2019
5	USBEL-14	31 Jul 2019	
6	USBEL-15	31 Jul 2019	
	USBEL-16	31 Jul 2019	
	USBEL-17	31 Jul 2019	
	USBEL-18	31 Jul 2019	
	USBEL-19	31 Jul 2019	
	7	USBEL-20	31 Jul 2019
	8	USBEL-20	31 Jul 2019
	9	USBEL-20	31 Jul 2019
	10	USBEL-20	31 Jul 2019
	Last page	USBEL-21	31 Jul 2019
USBEL-22		31 Jul 2019	

## Contents

0.1 Record of Revisions .....	USBEL-2
0.2 List of Effective Pages.....	USBEL-2
<b>SECTION 1 - GENERAL</b> .....	<b>USBEL-5</b>
1.1 Introduction .....	USBEL-5
1.4 Definitions and Abbreviations .....	USBEL-5
<b>SECTION 2 - OPERATIONAL LIMITATIONS</b> .....	<b>USBEL-5</b>
2.2 Weather Limitations.....	USBEL-5
2.3 Fuel .....	USBEL-5
2.9 Weight Range .....	USBEL-6
2.10. Basket Occupancy .....	USBEL-6
2.11 Fitment Interchangeability .....	USBEL-8
2.20 Additional Limitations for Baskets with Door .....	USBEL-13
<b>SECTION 3 - EMERGENCY PROCEDURES</b> .....	<b>USBEL-13</b>
<b>SECTION 4 - NORMAL PROCEDURES</b> .....	<b>USBEL-14</b>
<b>SECTION 5 - WEIGHT</b> .....	<b>USBEL-14</b>
5.1 Introduction .....	USBEL-14
<b>SECTION 6 - BALLOON AND SYSTEMS DESCRIPTION</b> .....	<b>USBEL-15</b>
6.5 Burners .....	USBEL-15
6.5.2 Whisper Burner.....	USBEL-15
6.5.3 Pilot Light .....	USBEL-15
6.5.12 JetStream Burners .....	USBEL-15
6.5.13 JetStream Series 2 Burners.....	USBEL-16
6.5.14 Vortech Double Burner .....	USBEL-17
6.7 Baskets .....	USBEL-18
6.7.1 Basket types.....	USBEL-18
6.7.1.1 Partitioned Baskets .....	USBEL-18
6.7.1.2 Open baskets .....	USBEL-18
6.7.1.3 Easy access basket.....	USBEL-18
6.7.1.4 Panoramic wheelchair baskets .....	USBEL-18
6.7.6 Basket Door .....	USBEL-19
<b>SECTION 7 - BALLOON HANDLING, CARE AND MAINTENANCE</b> .....	<b>USBEL-20</b>
7.3 Balloon Maintenance, Repairs and Alterations .....	USBEL-20
7.5 Cleaning and Care .....	USBEL-20
7.5.2 Basket .....	USBEL-20
7.5.4 Burner .....	USBEL-20
<b>SECTION 8 - EQUIPMENT LIST</b> .....	<b>USBEL-20</b>
<b>SECTION 9 - APPENDICES</b> .....	<b>USBEL-20</b>
<b>SECTION 10 - SUPPLEMENTS</b> .....	<b>USBEL-20</b>

INTENTIONALLY LEFT BLANK

## SECTION 1 - GENERAL

### 1.1 Introduction

This Balloon Flight Manual Supplement describes installation of Lindstrand Balloons USA baskets and burners defined under FAA Type Certificate #B00010CH to a Kubicek Balloons envelope. The arrangement and numbering of sections in this Balloon Flight Manual Supplement is the same as in the balloon Flight Manual. If any section is influenced, only the different or additional information is stated in this Balloon Flight Manual Supplement, all other remain without any change.

### 1.4 Definitions and Abbreviations

#### Abbreviations

- LBUS - Lindstrand Balloons USA
- BFM – balloon Flight Manual
- BFMS – Balloon Flight Manual Supplement
- MTOW –Maximum Takeoff Weight
- RMTOW – Reduced Maximum Takeoff Weight
- AMSL – Above Mean Sea Level
- VFR / IFR – Visual Flight Rules / Instrument Flight Rules

## SECTION 2 - OPERATIONAL LIMITATIONS

Before EACH flight in which the Lindstrand Balloons USA basket, burner and fuel tanks are flown, check that the balloon logbook shows the installation of the basket, burner and fuel tanks by part number and serial number. If the balloon is flown regularly with the same basket, burner and fuel tanks, the entry need to be made only before the first flight with such combination, and each subsequent change from Kubicek to Lindstrand Balloons USA equipment, using the same set of equipment need say only “equipped as per entry on (DATE)” referring back to date entered for the first installation.

### 2.2 Weather Limitations

Additional Limitations for Baskets with Door apply:

- The maximum surface wind speed for take-off and landing of balloons equipped with the easy access basket is 5.0 m/s (10 kts).

### 2.3 Fuel

Fuel cylinders are strapped into the basket. Four universal strap holes are provided for each cylinder in order to retain it in the correct position. The top tank strap must be positioned over the top shoulder of the tank to prevent it from moving up during landing. If a burner equipped with vapor pilot light is used, then the correct orientation of the cylinders must be achieved. During inflation, when the basket is on its side, the cylinder must be oriented so that on all stainless-steel vertical cylinders, the maxfill valve is lowermost. Worthington aluminium cylinders can be similarly oriented by ensuring that the two round holes in the top collar are facing downwards. If a burner equipped with liquid pilot light is used, the orientation of the fuel tanks is not important, provided the cylinders are full for inflation.

The minimum quantity of fuel required at take-off is 1 full fuel tank per each burner unit.

The approved fuel is either propane or a propane-butane mix (LPG).

Maximum admissible fuel pressure: 12 bar (225 psi).

Minimum admissible fuel pressure: 4 bar (60 psi).

When pressurising fuel cylinders with nitrogen, recommended delivery pressure is 10 bar (150 psi)

<b>CAUTION</b>	<i>Care should be taken if the fuel pressure is below 5 bar (75 psi) which reduces heat output of the burner. At low fuel pressure a balloon will be less responsive. The bigger the envelope the stronger this effect is. It is advisable to heat with both main and whisper burner to compensate for the decreased heat output..</i>
----------------	--

<b>CAUTION</b>	<i>Using of Whisper Burner is less efficient for fuel burn, so it will cause increase in fuel consumption (comparing to using of main burner).</i>
----------------	--

## 2.9 Weight Range

RMTOW

For certain combinations of KB envelope and LBUS bottom-end a reduced MTOW is applicable. For list of these combinations refer to Section 5-Weight of this Balloon Flight Manual Supplement.

## 2.10. Basket Occupancy

**Basket Limitations:**

Basket	Minimum floor area		MTOW for combination with the largest applicable envelope		Max. Number of Occupants (including pilot)
	[m2]	[sq.ft]	[kg]	[lbs]	
BA-001-A-001	1.27	14	840	1852	4
BA-002-A-001	1.43	15	945	2083	4
BA-002-A-002	1.43	15	945	2083	4
BA-003-A-001	1.71	18	1039	2291	5
BA-003-A-002	1.71	18	1039	2291	5
BA-005-A-001	1.11	12	840	1852	3
BA-006-A-001	1.25	13	945	2083	4
BA-007-A-001	1.37	15	945	2083	4
BA-008-A-001	1.77	19	1039	2291	6
BA-009-A-001	0.98	11	840	1852	3
BA-010-A-001	1.53	16	1039	2291	5
BA-011-A-001	2.01	22	1520	3351	7
BA-011-A-002	2.01	22	1520	3351	7
BA-012-A-001	2.26	24	1520	3351	6
BA-013-A-001	2.50	27	1626	3586	8
BA-014-A-001	2.68	29	1626	3586	8
BA-015-A-001	3.17	34	1896	4180	10
BA-020-A-001	3.12	34	1896	4180	8
BA-021-A-001	3.65	39	1936	4268	10
BA-022-A-001	4.10	44	2694	5940	12

Basket	Minimum floor area		MTOW for combination with the largest applicable envelope		Max. Number of Occupants (including pilot)
	[m2]	[sq.ft]	[kg]	[lbs]	
BA-023-A-001	3.95	43	1936	4268	10
BA-024-A-001	4.56	49	2993	6600	14
BA-025-A-001	5.32	57	2993	6600	18
BA-026-A-001	5.93	64	2993	6600	18
BA-027-A-001	6.54	70	2993	6600	22
BA-028-A-001	4.56	49	2993	6600	14
BA-029-A-001	4.94	53	2993	6600	14
BA-030-A-001	4.26	46	2694	5940	14
BA-031-A-001	3.78	41	2694	5940	10
BA-032-A-001	4.20	45	2993	6600	14
BA-033-A-001	5.46	59	2993	6600	18
BA-034-A-001	3.36	36	1936	4268	10
BA-035-A-001	3.36	36	1936	4268	10
BA-036-A-001	3.78	41	2694	5940	12
BA-037-A-001	4.76	51	2993	6600	14
BA-040-A-001	3.19	34	1896	4180	10
BA-244-A-001	2.56	28	1626	3586	8
BA-262-A-001	1.71	18	1039	2291	6
BA-263-A-001	2.06	22	1410	3109	8
BA-264-A-001	2.19	24	1520	3351	8
BA-265-A-001	2.75	30	1626	3586	8

#### Occupancy of Compartmentalized Baskets:

Basket	Max.Occupancy of Each Passenger Compartment	Max. Occupancy of Pilot Compartment	Pilot Compartment Floor Area	
			[m2]	[sq.ft]
BA-012-A-001	2	pilot+1 person	1.04	11.2
BA-013-A-001	3	pilot+1 person	1.04	11.2
BA-014-A-001	3	pilot+1 person	1.04	11.2
BA-015-A-001	2	pilot+1 person	1.04	11.2
BA-020-A-001	3	pilot+1 person	1.29	13.9
BA-021-A-001	4	pilot+1 person	1.29	13.9
BA-022-A-001	5	pilot+1 person	1.29	13.9
BA-023-A-001	2	pilot+1 person	1.29	13.9
BA-024-A-001	3	pilot+1 person	1.29	13.9
BA-025-A-001	4	pilot+1 person	1.29	13.9
BA-026-A-001	4	pilot+1 person	1.29	13.9
BA-027-A-001	5	pilot+1 person	1.29	13.9
BA-028-A-001	6	pilot+1 person	1.29	13.9

Basket	Max.Occupancy of Each Passenger Compartment	Max. Occupancy of Pilot Compartment	Pilot Compartment Floor Area	
			[m2]	[sq.ft]
BA-029-A-001	3	pilot+1 person	1.29	13.9
BA-030-A-001	3	pilot+1 person	1.29	13.9
BA-031-A-001	2	pilot+1 person	1.19	12.8
BA-032-A-001	3	pilot+1 person	1.19	12.8
BA-033-A-001	4	pilot+1 person	1.19	12.8
BA-034-A-001	2	pilot+1 person	1.19	12.8
BA-035-A-001	4	pilot+1 person	1.19	12.8
BA-036-A-001	5	pilot+1 person	1.19	12.8
BA-037-A-001	3	pilot+1 person	1.19	12.8
BA-040-A-001	4	pilot+1 person	1.10	11.8
BA-244-A-001	6	pilot+1 person	1.06	11.4
BA-265-A-001	6	pilot+1 person	1.06	11.4

## 2.11 Fitment Interchangeability

LBUS equipment can be used in following configurations only.

<b>Envelope</b>	<b>BB17GP, BB17XR</b>
<b>Burner</b>	Double burner assembly: BU-001-A-001, BU-002-A-001, BU-008-A-001, BU-008-A-002
<b>Basket</b>	BA-001-A-001, BA-002-A-001, BA-002-A-002, BA-003-A-001, BA-003-A-002, BA-005-A-001, BA-006-A-001, BA-007-A-001, BA-009-A-001
<b>Minimum number of fuel tanks</b>	2

<b>Envelope</b>	<b>BB18E</b>
<b>Burner</b>	Double burner assembly: BU-001-A-001, BU-002-A-001, BU-008-A-001, BU-008-A-002
<b>Basket</b>	BA-001-A-001, BA-002-A-001, BA-002-A-002, BA-003-A-001, BA-003-A-002, BA-005-A-001, BA-006-A-001, BA-007-A-001, BA-009-A-001
<b>Minimum number of fuel tanks</b>	2

<b>Envelope</b>	<b>BB20, BB20ED, BB20E, BB20GP, BB20XR</b>
<b>Burner</b>	Double burner assembly: BU-001-A-001, BU-002-A-001, BU-008-A-001, BU-008-A-002
<b>Basket</b>	BA-001-A-001, BA-002-A-001, BA-002-A-002, BA-003-A-001, BA-003-A-002, BA-005-A-001, BA-006-A-001, BA-007-A-001, BA-009-A-001, BA-262-A-001
<b>Minimum number of fuel tanks</b>	2



<b>Envelope</b>	<b>BB22ED, BB22E, BB22, BB22D, BB22N, BB22Z, BB22XR</b>
<b>Burner</b>	Double burner assembly: BU-001-A-001, BU-002-A-001, BU-008-A-001, BU-008-A-002
<b>Basket</b>	BA-001-A-001, BA-002-A-001, BA-002-A-002, BA-003-A-001, BA-003-A-002, BA-005-A-001, BA-006-A-001, BA-007-A-001, BA-008-A-001, BA-009-A-001, BA-262-A-001
<b>Minimum number of fuel tanks</b>	2

<b>Envelope</b>	<b>BB26E, BB26ED, BB26, BB26D, BB26N, BB26Z, BB26XR</b>
<b>Burner</b>	Double burner assembly: BU-001-A-001, BU-002-A-001, BU-008-A-001, BU-008-A-002
<b>Basket</b>	BA-001-A-001, BA-002-A-001, BA-002-A-002, BA-003-A-001, BA-003-A-002, BA-005-A-001, BA-006-A-001, BA-007-A-001, BA-008-A-001, BA-009-A-001, BA-011-A-001, BA-011-A-002, BA-012-A-001, BA-262-A-001, BA-263-A-001, BA-264-A-001, BA-270-A-001, BA-270-A-002
<b>Minimum number of fuel tanks</b>	2

<b>Envelope</b>	<b>BB30E, BB30ED, BB30D, BB30N, BB30Z, BB30XR</b>
<b>Burner</b>	Double burner assembly: BU-001-A-001, BU-002-A-001, BU-008-A-001, BU-008-A-002
<b>Basket</b>	BA-002-A-001, BA-002-A-002, BA-003-A-001, BA-003-A-002, BA-006-A-001, BA-007-A-001, BA-008-A-001, BA-010-A-001, BA-011-A-001, BA-011-A-002, BA-012-A-001, BA-262-A-001, BA-263-A-001, BA-264-A-001, BA-270-A-001, BA-270-A-002
<b>Minimum number of fuel tanks</b>	2

<b>Envelope</b>	<b>BB34D, BB34ED, BB34E, BB34Z</b>
<b>Burner</b>	Double burner assembly: BU-001-A-001, BU-002-A-001, BU-008-A-001, BU-008-A-002 Triple burner assembly: BU-004-A-001, BU-010-A-001, BU-010-A-002, BU-010-A-003 Quad burner assembly: BU-012-A-001, BU-012-A-002, BU-012-A-003
<b>Basket</b>	BA-003-A-001, BA-003-A-002, BA-008-A-001, BA-010-A-001, BA-011-A-001, BA-011-A-002, BA-012-A-001, BA-013-A-001, BA-014-A-001, BA-015-A-001, BA-034-A-001, BA-035-A-001, BA-040-A-001, BA-244-A-001, BA-262-A-001, BA-263-A-001, BA-264-A-001, BA-265-A-001, BA-270-A-001, BA-270-A-002
<b>Minimum number of fuel tanks</b>	2 burner units = 2 fuel tanks 3 burner units = 3 fuel tanks 4 burner units = 4 fuel tanks

<b>Envelope</b>	<b>BB37D, BB37N, BB37Z</b>
<b>Burner</b>	Double burner assembly: BU-001-A001, BU-002-A-001, BU-008-A-001, BU-008-A-002 Triple burner assembly: BU-004-A-001, BU-010-A-001, BU-010-A-002, BU-010-A-003 Quad burner assembly: BU-012-A-001, BU-012-A-002, BU-012-A-003
<b>Basket</b>	BA-011-A-001, BA-011-A-002, BA-012-A-001, BA-013-A-001, BA-014-A-001, BA-015-A-001, BA-034-A-001, BA-035-A-001, BA-040-A-001, BA-244-A-001, BA-263-A-001, BA-264-A-001, BA-265-A-001
<b>Minimum number of fuel tanks</b>	2 burner units = 2 fuel tanks 3 burner units = 3 fuel tanks 4 burner units = 4 fuel tanks

<b>Envelope</b>	<b>BB40D, BB40Z</b>
<b>Burner</b>	Double burner assembly: BU-001-A001, BU-002-A-001, BU-008-A-001, BU-008-A-002 Triple burner assembly: BU-004-A-001, BU-010-A-001, BU-010-A-002, BU-010-A-003 Quad burner assembly: BU-012-A-001, BU-012-A-002, BU-012-A-003
<b>Basket</b>	BA-011-A-001, BA-011-A-002, BA-012-A-001, BA-013-A-001, BA-014-A-001, BA-015-A-001, BA-034-A-001, BA-035-A-001, BA-040-A-001, BA-244-A-001, BA-263-A-001, BA-264-A-001, BA-265-A-001
<b>Minimum number of fuel tanks</b>	2 burner units = 2 fuel tanks 3 burner units = 3 fuel tanks 4 burner units = 4 fuel tanks

<b>Envelope</b>	<b>BB42D, BB42Z</b>
<b>Burner</b>	Double burner assembly: BU-001-A001, BU-002-A-001, BU-008-A-001, BU-008-A-002 Triple burner assembly: BU-004-A-001, BU-010-A-001, BU-010-A-002, BU-010-A-003 Quad burner assembly: BU-012-A-001, BU-012-A-002, BU-012-A-003
<b>Basket</b>	BA-011-A-001, BA-011-A-002, BA-012-A-001, BA-013-A-001, BA-014-A-001, BA-015-A-001, BA-020-A-001, BA-031-A-001, BA-034-A-001, BA-035-A-001, BA-040-A-001, BA-244-A-001, BA-263-A-001, BA-264-A-001, BA-265-A-001
<b>Minimum number of fuel tanks</b>	2 burner units = 2 fuel tanks 3 burner units = 3 fuel tanks 4 burner units = 4 fuel tanks

<b>Envelope</b>	<b>BB45D, BB45N, BB45Z</b>
<b>Burner</b>	Double burner assembly: BU-001-A001, BU-002-A-001, BU-008-A-001, BU-008-A-002 Triple burner assembly: BU-004-A-001, BU-010-A-001, BU-010-A-002, BU-010-A-003 Quad burner assembly: BU-012-A-001, BU-012-A-002, BU-012-A-003
<b>Basket</b>	BA-011-A-001, BA-011-A-002, BA-012-A-001, BA-013-A-001, BA-014-A-001, BA-015-A-001, BA-020-A-001, BA-031-A-001, BA-034-A-001, BA-035-A-001, BA-036-A-001, BA-040-A-001, BA-244-A-001, BA-264-A-001, BA-265-A-001
<b>Minimum number of fuel tanks</b>	2 burner units = 2 fuel tanks 3 burner units = 3 fuel tanks 4 burner units = 4 fuel tanks

<b>Envelope</b>	<b>BB51D, BB51Z</b>
<b>Burner</b>	Double burner assembly: BU-001-A001, BU-002-A-001, BU-008-A-001, BU-008-A-002 Triple burner assembly: BU-004-A-001, BU-010-A-001, BU-010-A-002, BU-010-A-003 Quad burner assembly: BU-012-A-001, BU-012-A-002, BU-012-A-003
<b>Basket</b>	BA-013-A-001*, BA-014-A-001*, BA-015-A-001, BA-020-A-001, BA-021-A-001, BA-022-A-001, BA-023-A-001, BA-024-A-001, BA-025-A-001, BA-028-A-001, BA-030-A-001, BA-031-A-001, BA-032-A-001, BA-033-A-001, BA-034-A-001, BA-035-A-001, BA-036-A-001, BA-037-A-001, BA-040-A-001, BA-244-A-001*, BA-265-A-001* <b>* Maximum permitted MTOW is 3586 lbs (1626 kg).</b>
<b>Minimum number of fuel tanks</b>	2 burner units = 2 fuel tanks 3 burner units = 3 fuel tanks 4 burner units = 4 fuel tanks

<b>Envelope</b>	<b>BB60D, BB60N, BB60Z</b>
<b>Burner</b>	Double burner assembly: BU-001-A001, BU-002-A-001, BU-008-A-001, BU-008-A-002 Triple burner assembly: BU-004-A-001, BU-010-A-001, BU-010-A-002, BU-010-A-003 Quad burner assembly: BU-012-A-001, BU-012-A-002, BU-012-A-003
<b>Basket</b>	BA-015-A-001*, BA-020-A-001*, BA-021-A-001, BA-022-A-001, BA-023-A-001, BA-024-A-001, BA-025-A-001, BA-026-A-001, BA-028-A-001, BA-030-A-001, BA-031-A-001, BA-032-A-001, BA-033-A-001, BA-034-A-001, BA-035-A-001, BA-036-A-001, BA-037-A-001, BA-040-A-001* <b>* Maximum permitted MTOW is 4180 lbs (1896 kg).</b>
<b>Minimum number of fuel tanks</b>	2 burner units = 2 fuel tanks 3 burner units = 3 fuel tanks 4 burner units = 4 fuel tanks

<b>Envelope</b>	<b>BB64Z</b>
<b>Burner</b>	Triple burner assembly: BU-004-A-001, BU-010-A-001, BU-010-A-002, BU-010-A-003 Quad burner assembly: BU-012-A-001, BU-012-A-002, BU-012-A-003
<b>Basket</b>	BA-021-A-001, BA-022-A-001, BA-023-A-001, BA-024-A-001, BA-025-A-001, BA-026-A-001, BA-028-A-001, BA-030-A-001, BA-031-A-001, BA-032-A-001, BA-033-A-001, BA-034-A-001, BA-035-A-001, BA-036-A-001, BA-037-A-001
<b>Minimum number of fuel tanks</b>	3 burner units = 3 fuel tanks 4 burner units = 4 fuel tanks

<b>Envelope</b>	<b>BB70D, BB70Z</b>
<b>Burner</b>	Triple burner assembly: BU-004-A-001, BU-010-A-001, BU-010-A-002, BU-010-A-003 Quad burner assembly: BU-012-A-001, BU-012-A-002, BU-012-A-003
<b>Basket</b>	BA-021-A-001*, BA-022-A-001, BA-023-A-001*, BA-024-A-001, BA-025-A-001, BA-026-A-001, BA-028-A-001, BA-030-A-001, BA-031-A-001, BA-032-A-001, BA-033-A-001, BA-034-A-001*, BA-035-A-001*, BA-036-A-001, BA-037-A-001 <b>* Maximum permitted MTOW is 4268 lbs (1936 kg).</b>
<b>Minimum number of fuel tanks</b>	3 burner units = 3 fuel tanks 4 burner units = 4 fuel tanks

<b>Envelope</b>	<b>BB78Z</b>
<b>Burner</b>	Triple burner assembly: BU-004-A-001, BU-010-A-001, BU-010-A-002, BU-010-A-003 Quad burner assembly: BU-012-A-001, BU-012-A-002, BU-012-A-003
<b>Basket</b>	BA-022-A-001, BA-024-A-001, BA-025-A-001, BA-026-A-001, BA-028-A-001, BA- -030-A-001, BA-031-A-001, BA-032-A-001, BA-033-A-001, BA-036-A-001, BA-037-A-001
<b>Minimum number of fuel tanks</b>	3 burner units = 3 fuel tanks 4 burner units = 4 fuel tanks

<b>Envelope</b>	<b>BB85D, BB85Z</b>
<b>Burner</b>	Triple burner assembly: BU-004-A-001, BU-010-A-001, BU-010-A-002, BU-010-A-003 Quad burner assembly: BU-012-A-001, BU-012-A-002, BU-012-A-003
<b>Basket</b>	BA-022-A-001*, BA-024-A-001, BA-025-A-001, BA-026-A-001, BA-027-A-001, BA- -028-A-001, BA-030-A-001*, BA-031-A-001*, BA-032-A-001, BA-033-A-001, BA-036-A-001*, BA-037-A-001 <b>* Maximum permitted MTOW is 5940 lbs (2694 kg).</b>
<b>Minimum number of fuel tanks</b>	3 burner units = 3 fuel tanks 4 burner units = 4 fuel tanks

<b>Envelope</b>	<b>BB92Z</b>
<b>Burner</b>	Quad burner assembly: BU-012-A-001, BU-012-A-002, BU-012-A-003
<b>Basket</b>	BA-024-A-001*, BA-025-A-001*, BA-026-A-001*, BA-027-A-001*, BA-028-A-001*, BA-029-A-001*, BA-032-A-001*, BA-033-A-001*, BA-037-A-001* <b>* Maximum permitted MTOW is 6600 lbs (2993 kg).</b>
<b>Minimum number of fuel tanks</b>	4 units = 4 fuel tanks

**Note:**

Baskets BA-262-A-001, BA-263-A-001 and BA-264-A-001 are easy access baskets.

**Additional Limitations**

Rotation Vent must be fitter when:

- any Lindstrand Balloons USA partitioned basket, basket with door and/or seats is used

Different frame dimensions:

- before changing a combination of envelope and basket to another approved combination, care needs to be taken of the suitability of the flying wires. If the new frame has different dimensions than the original one, the flying wires need to be replaced following the instructions provided in Maintenance Manual Supplement (B.3205-MMS\_USBEL). If in doubt, ask KB for further assistance and technical support.

Single burner assemblies:

- are NOT PERMITTED for combinations of KB envelopes and LBUS bottom-ends.

Burners with vapor pilot lights:

- when burner with vapor pilot light is used, appropriate fuel tank with vapor outlet must be installed – Master tank configuration (or separate fuel tank for supplying the vapor fuel for pilot light only – mini Worthington).

Panoramic wheelchair baskets:

- Transportation of wheelchairs on-board KB balloons is NOT ALLOWED! Transportation of passengers with reduced mobility can be facilitated by using of approved seats (see related parts of the main Balloon Flight Manual and Maintenance Manual).

**Maximum altitude**

The maximum allowable flight altitude according to VFR in the U.S.A. is 18,000 ft AMSL.

**Fuel tanks**

A minimum of one fuel cylinder for each burner coil of the burner assembly must be available on take off. The fuel cylinders must supply usable (uncontaminated) vapor to the burner, if the particular burner assembly is equipped with vapor pilot light.

**2.20 Additional Limitations for Baskets with Door**

The maximum surface wind speed for take-off and landing of balloons equipped with the easy access basket is 5.0 m/s (10 kts).

**WARNING**

*Easy access baskets must have the top bar release pin correctly inserted and the two drop latch fasteners closed and the safety hooks installed during the entire flight!*

**SECTION 3 - EMERGENCY PROCEDURES**

No change

## SECTION 4 - NORMAL PROCEDURES

### Additional information for assembling the balloon:

The envelope carabiners with appropriate number of flying wires must be attached to basket carabiners according to the following picture:

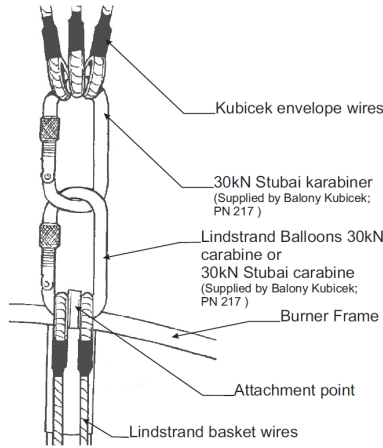


Fig. 1: Envelope attachment

## SECTION 5 - WEIGHT

For the following combinations a reduced MTOW is applicable.

Envelopes	Baskets	RMTOW
BB51D, BB51Z	BA-013-A-001, BA-014-A-001, BA-244-A-001, BA-265-A-001	3586 lbs (1626 kg)
BB60D, BB60N, BB60Z	BA-015-A-001, BA-020-A-001, BA-040-A-001	4180 lbs (1896 kg)
BB70D, BB70Z	BA-021-A-001, BA-023-A-001, BA-034-A-001, BA-035-A-001	4268 lbs (1936 kg)
BB85D, BB85Z	BA-022-A-001, BA-030-A-001, BA-031-A-001, BA-036-A-001	5940 lbs (2694 kg)
BB92Z	BA-024-A-001, BA-025-A-001, BA-026-A-001, BA-027-A-001, BA-028-A-001, BA-029-A-001, BA-032-A-001, BA-033-A-001, BA-037-A-001	6600 lbs (2993 kg)

For combinations other than those stated in this table, the standard MTOW stated in Envelope Weight Limits chart in KB BFM applies.

### 5.1 Introduction

As stated in the Section 2, chapter 2.9 Weight Range of the balloon Flight Manual (B.3105), the actual weight of the balloon must be kept between the upper limit weight (MTOW, lowered MTOW, RMTOW and Maximum Balloon Lifting Capacity – whichever is lesser) and lower limit weight (MLW) during the entire flight.

## SECTION 6 - BALLOON AND SYSTEMS DESCRIPTION

### 6.5 Burners

LBUS burners applicable for combining with KB envelopes are the double, triple and quad configurations (allowed combinations are described in chapter 2.11 of this BFMS). They consist of two or more burner units and a burner frame.

LBUS burners are dividable into 3 main groups based on the type series – JetStream burners, JetStream Series 2 and Vortech burners.

#### 6.5.2 Whisper Burner

Whisper burner (AKA liquid fire, quiet or cow burner) is and auxiliary burner and it is a standard feature on all applicable LBUS burners. There is one whisper burner at each burner unit, which uses the fuel directly from the tank (without is passing through the coil first).

#### CAUTION

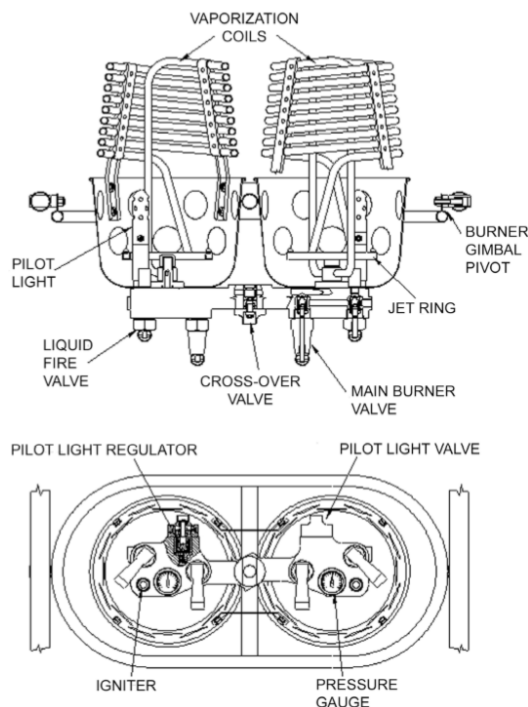
*Using of Whisper Burner is less efficient for fuel burn, so it will cause increase in fuel consumption (comparing to using of main burner).*

#### 6.5.3 Pilot Light

Burner ignition is provided by a pilot light (AKA pilot flame or pilot burner). A pilot light is fuelled either by liquid propane taken from the burner block and vaporized or by vapor phase taken by a separate hose from the top of the fuel cylinder (or separate fuel tank for supplying the vapor fuel for pilot light only – mini Worthington). Each pilot light has its own piezo igniter which is covered by the handle of the pilot light lever, when it is in the off position.

#### 6.5.12 JetStream Burners

Applicable burners from this group are the double, triple and quad burner assemblies. Each burner has Main Burner as well as Whisper Burner (AKA Liquid Fire or Cow Burner).

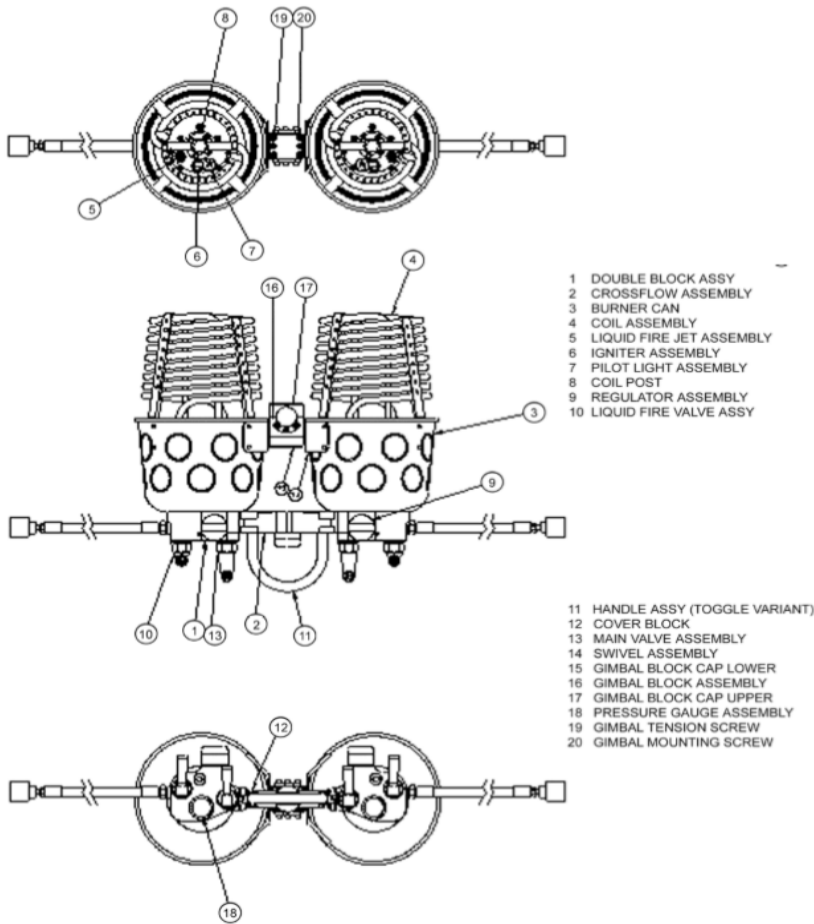


#### JetStream Double Burner overview (Series 1)

Source: Lindstrand Balloons USA Maintenance Manual, Appendix, C, Issued on December 1, 2011, page 12/39

**6.5.13 JetStream Series 2 Burners**

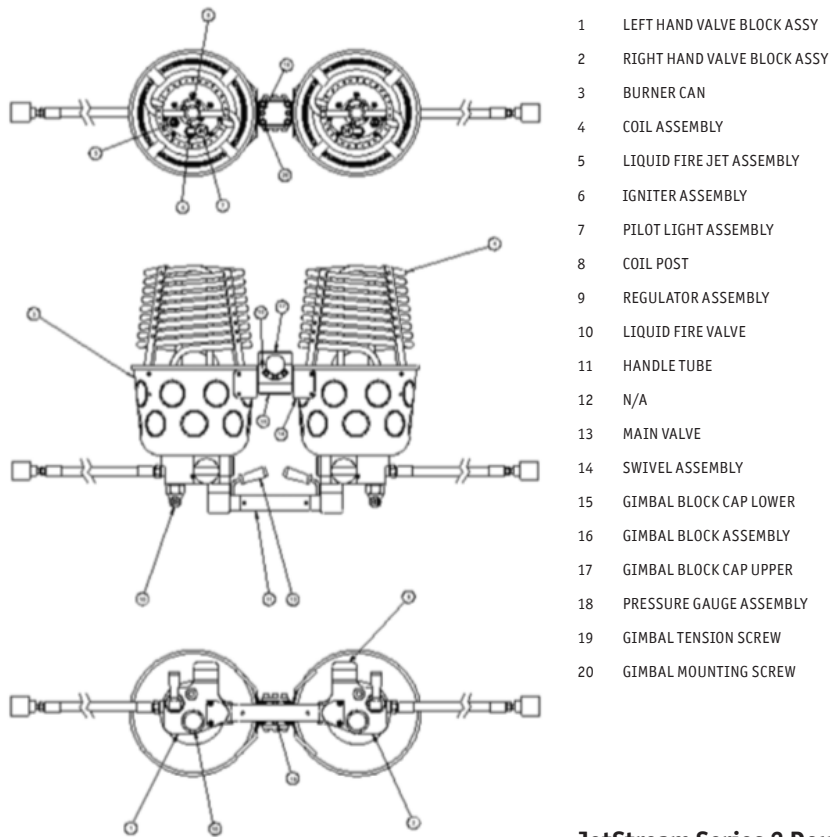
Applicable burners from this group are the double, triple and quad burner assemblies. Each burner has Main Burner as well as Whisper Burner (AKA Liquid Fire or Cow Burner). JetStream Series 2 burners exist with either toggle-action or squeeze-action valves. Toggle style burner includes a cross-over feature which allows one hand operation of both burners.



**JetStream Series 2 Double Burner (toggle variant)**

**Source:** Lindstrand Balloons USA Maintenance Manual, Appendix, C, Issued on December 1, 2011, page 13/39





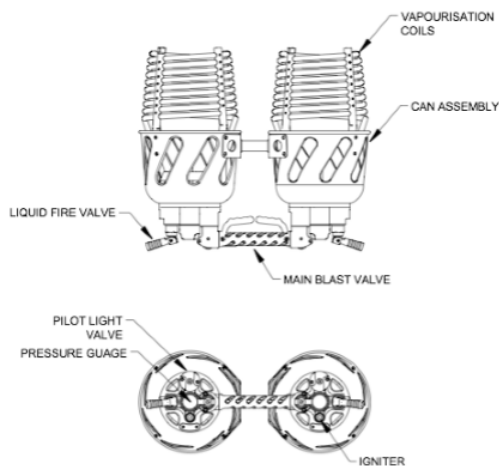
- 1 LEFT HAND VALVE BLOCK ASSY
- 2 RIGHT HAND VALVE BLOCK ASSY
- 3 BURNER CAN
- 4 COIL ASSEMBLY
- 5 LIQUID FIRE JET ASSEMBLY
- 6 IGNITER ASSEMBLY
- 7 PILOT LIGHT ASSEMBLY
- 8 COIL POST
- 9 REGULATOR ASSEMBLY
- 10 LIQUID FIRE VALVE
- 11 HANDLE TUBE
- 12 N/A
- 13 MAIN VALVE
- 14 SWIVEL ASSEMBLY
- 15 GIMBAL BLOCK CAP LOWER
- 16 GIMBAL BLOCK ASSEMBLY
- 17 GIMBAL BLOCK CAP UPPER
- 18 PRESSURE GAUGE ASSEMBLY
- 19 GIMBAL TENSION SCREW
- 20 GIMBAL MOUNTING SCREW

**JetStream Series 2 Double Burner (squeeze variant)**

Source: Lindstrand Balloons USA Maintenance Manual, Appendix, C, Issued on December 1, 2011, page 14/39

**6.5.14 Vortech Double Burner**

This burner has Main Burner with squeeze trigger valve as well as Whisper Burner (AKA Liquid Fire or Cow Burner) with toggle-action valve. It has liquid pilot lights. The jet ring is equipped with a combination of removable jets and machined holes and creates carefully controlled airflow providing a Toroidal flame pattern, which allows greater efficiency in burning, whilst reducing the amount of radiant heat. This double burner includes a cross-over feature which allows one hand operation of both burners.



**Vortech Double Burner Layout**

Source: Lindstrand Technologies Ltd. Maintenance Manual issue 1.1, Appendix, C, Issued on July 12, 2016, page C1-2

## 6.7 Baskets

### 6.7.1 Basket types

#### 6.7.1.1 Partitioned Baskets

Larger baskets have internal partitions woven into the walls and fixed to the floor and upper stainless steel frame of the basket. These partitions provide greater structural integrity to the basket and separation between groups of passengers. In these baskets the pilot and fuel cylinders are contained in a separate compartment from the passengers (for P and single T baskets is the pilot's compartment on the right side, for double T baskets is the pilot's compartment in the middle).

The partitioned (AKA ride) baskets can be fitted with stainless-steel step holes and/or sidewall padding.

#### 6.7.1.2 Open baskets

##### Ascot basket

Ascot is type of open (non-partitioned) basket, that can have curved (swept-top) or straight (flat-top) upper frame. Both options are available with solid marine plywood or all woven floor. Ascot baskets have cushioned floor. Some baskets can have optional stainless-steel step holes, Clearview floors or easy-access doors (see chapter 6.7.6 Basket Door of this BFMS).

##### Tour basket

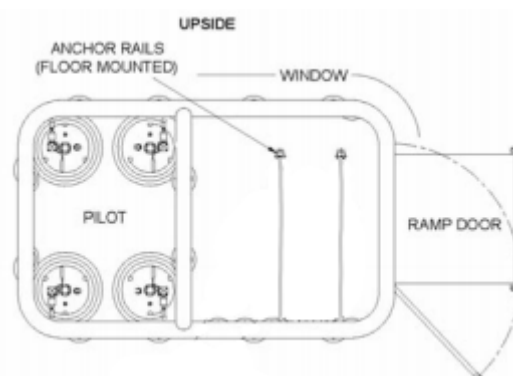
Tour is type of open (non-partitioned) basket with straight (flat-top) upper frame and solid marine plywood floor.

#### 6.7.1.3 Easy access basket

Easy access baskets are designed especially for easier embarking and disembarking of passengers with reduced mobility. They are equipped either with door, that can be opened rotating around vertical axis (normal door), or with door that can be opened rotating around horizontal axis and then used as a ramp for even easier access to/from the basket.

#### 6.7.1.4 Panoramic wheelchair baskets

Some baskets with door can be equipped also with panoramic viewing window (see the schema bellow) and floor mounted anchor rails for securing a wheelchair to the basket. Part of this securing equipment are also restraint straps (for securing the wheelchair to the basket) and passenger harnesses (as a safety feature for a passenger travelling on a wheelchair). Securing anchor rails, restraint straps and harnesses are NOT ALLOWED to be used when combining such basket with KB envelope, as transporting of wheelchairs on-board KB balloons is not allowed (wheelchairs are not certified for balloon transportation, so their strength parameters and therefore their level of safety during fast/hard landing is not known).



**6.7.6 Basket Door**

Basket door is optional equipment of Easy Access Baskets and Panoramic Wheelchair Baskets. It helps to easy embarking and disembarking of passengers, mainly elderly or disabled persons. The door is to be open/closed only upon pilot’s instruction prior to take-off and before the balloon has been released from the quick release and after landing.

The door and its frame structure are made of stainless-steel tubes and wickerwork done in the same manner as the standard basket wall. The door can be also made of transparent plastic sheet in stainless-steel frame. Securing the pins is provided by attaching the pin lugs to the door frame lugs with carabiners.



**Overview Easy Access Basket**

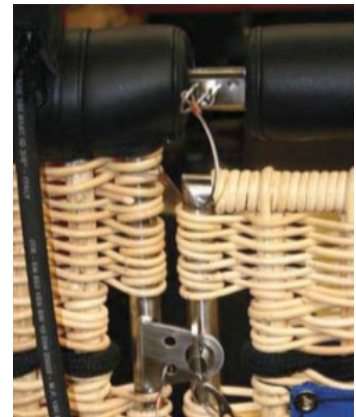
Source: Lindstrand Balloons USA Maintenance Manual, Appendix, C, Issued on December 1, 2011, page 7/39



**Top Bar raised with stopping pin installed**



**Top Bar in closed position with release pin installed**



**Top Bar release pin installed, upper door latch secured, and safety hook attached**

Source: Lindstrand Balloons USA Maintenance Manual, Appendix, C, Issued on December 1, 2011, page 8/39

**WARNING** *Door hinge pin(s) must be secured during the entire flight! The door must be closed during the entire flight!*

## SECTION 7 - BALLOON HANDLING, CARE AND MAINTENANCE

### 7.3 Balloon Maintenance, Repairs and Alterations

All balloon maintenance and repairs must be carried out in accordance with the Kubicek Balloons Maintenance Manual Supplement (B.3205-MMS\_USBEL). If in doubt, contact KB (see the last page of this Balloon Flight Manual Supplement).

The Maintenance Manual (and all its supplements) is available for downloading on the Kubicek Balloons website: [www.kubicekballoons.eu](http://www.kubicekballoons.eu).

### 7.5 Cleaning and Care

#### 7.5.2 Basket

Refer to the Kubicek Balloons Maintenance Manual Supplement (B.3205-MMS\_USBEL).

#### 7.5.4 Burner

Refer to the Kubicek Balloons Maintenance Manual Supplement (B.3205-MMS\_USBEL).

## SECTION 8 - EQUIPMENT LIST

Fuel tanks applicable for use with LBUS bottom-ends.

Manufacturer	Material	Type	Weight			
			Empty		Full	
			[kg]	[lb]	[kg]	[lb]
Lindstrand Balloons	Stainless steel	V20	14	31	34	75
		V30	18	40	48	106
		V40	20	44	60	132
	Titanium	T30	10	22	40	88
Cameron Balloons	Aluminium	Worthington (CB250)	14	31	34	75
		mini Worthington (CB901)	3.6	8	7	15.5

**Notes:** The Mini Worthington fuel tank is only for use as an independent vapor supply for burners with vapor lights. All fuel tanks included in this supplement exist in master as well as standard configuration. Master tank indicates that both liquid and vapor fuel supply are available from this fuel tank.

## SECTION 9 - APPENDICES

No change.

## SECTION 10 - SUPPLEMENTS

No change.

INTENTIONALLY LEFT BLANK

**LET US HELP YOU!**

In case that you have any suggestion, difficulty, problem or comment, please contact our technical department at:

technical@kubicekballoons.cz  
+420 545 422 638

**BALÓNY KUBÍČEK spol. s r. o.**

e-mail: sales@kubicekballoons.cz • www.kubicekballoons.eu  
Seat: Brno 614 00 • Jarní 2a • Czech Republic  
tel.: +420 545 422 620, • fax: +420 545 422 621

© Copyright BALÓNY KUBÍČEK spol. s r.o.  
2019