



# Balloon Flight Manual Supplement

## *UltraMagic 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

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## SECTION 1 - GENERAL

### 1.1 Introduction

This Balloon Flight Manual Supplement describes installation of UltraMagic baskets and burners defined under FAA Type Certificate #B02CE and #B05CE 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

- UM – UltraMagic, S.A.
- 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 UltraMagic 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 needs to be made only before the first flight with such combination, and each subsequent change from Kubicek to UltraMagic 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 apply when Vista basket is used:

The maximum wind speed for take-off for any balloon (when vista basket is used) is 5.0 m/s (10 kts).

### 2.3 Fuel

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

A maximum of 4 fuel tanks can be carried on board of the CV-08 ('Vista') basket and a maximum of 4 fuel tanks (in total) can be carried on board of the CT-02 ('Tekno') basket.

Maximum pressure accepted for use with the burner: **12 bar (174 psi)**.

Maximum authorized pressure allowed for the burner: **10 bar (145 psi)**.

**Minimum admissible fuel pressure: 3 bar (43.5 psi)**.

<b>CAUTION</b>	<i>Care should be taken if the fuel pressure is below <b>5 bar (75 psi)</b> 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>
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<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>
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## 2.9 Weight Range

### RMTOW

For the certain combinations of KB envelope and UM 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]	
C-0	0.56	6.0	399	880	1
C-1	1.20	12.9	1173	2586	3
C-2	1.00	10.8	756	1667	2
C-3	1.43	15.4	1465	3230	4
C-4	1.92	20.7	1569	3460	5
C-5	3.08	33.2	2010	4432	11
C-6	2.34	25.2	1611	3552	7*
C-7	2.8	30.1	2070	4565	8*
C-8	3.9	42.0	2250	4961	12°
C-9	4.8	51.7	2814	6205	14
C-10	1.67	17.9	1256	2769	4
C-11	5.95	64.0	3332	7347	19
C-12	7.65	82.3	3712	8185	23
C-14	8.84	95.2	5000	11025	27
CT-02 tekno	1.20	12.9	807	1779	3
CV-08 vista	3.90	42.0	1690	3726	6

\* baskets with removable partition. If the partition is out (=open basket layout), the maximum number of passengers is 6.

° basket with removable partition (T/TT layout). If it is used in TT configuration, maximum number of passengers is 10.

### Occupancy of Compartmentalized Baskets:

Basket	Max.Occupancy of Each Passenger Compartment	Max. Occupancy of Pilot Compartment (including pilot)	Pilot Compartment Floor Area	
			[m2]	[sq.ft]
C-5	4	3	1.2	12.8
C-6* (with partition)	6	1	0.7	7.0
C-7* (with 1 part.)	6	2	0.7	7.5
C-7* (with 2 part.)	3	2	0.7	7.5
C-8* (T)	5	2	1.3	13.7
C-8* (TT)	2	2	1.3	13.7
C-9	3	2	1.4	14.6

Basket	Max.Occupancy of Each Passenger Compartment	Max. Occupancy of Pilot Compartment (including pilot)	Pilot Compartment Floor Area	
			[m2]	[sq.ft]
C-11	4	3	1.4	15.6
C-12	5	3	1.4	15.6
C-14	6	3	1.4	15.6

\*baskets with removable partition

#### Occupancy of vista baskets with fixed seats:

Basket	Max.Occupancy of Passenger Seats	Max. Number of Standing People	Total Basket Floor Area	
			[m2]	[sq.ft]
CV-08 vista	4 (=1 person per seat)	pilot+1	3.90	42.0

## 2.11 Fitment Interchangeability

UM equipment can be used in following configurations only.

<b>Envelope</b>	<b>BB17GP, BB17XR</b>
<b>Burner</b>	Double burner assembly: MK-2 double, MK-2 super double, MK-10 double, MK-21 double, MK-32 double
<b>Basket</b>	C-0*, C-1, C-2, CT-02 <b>* Maximum permitted MTOW is 880 lbs (399 kg).</b>
<b>Minimum number of fuel tanks</b>	2

<b>Envelope</b>	<b>BB18E</b>
<b>Burner</b>	Double burner assembly: MK-2 double, MK-2 super double, MK-10 double, MK-21 double, MK-32 double
<b>Basket</b>	C-0*, C-1, C-2, C-3, C-4, C-10, CT-02 <b>* Maximum permitted MTOW is 880 lbs (399 kg).</b>
<b>Minimum number of fuel tanks</b>	2

<b>Envelope</b>	<b>BB20, BB20ED, BB20E</b>
<b>Burner</b>	Double burner assembly: MK-2 double, MK-2 super double, MK-10 double, MK-21 double, MK-32 double
<b>Basket</b>	C-0*, C-1, C-2, C-3, C-4, C-10, CT-02 <b>* Maximum permitted MTOW is 880 lbs (399 kg).</b>
<b>Minimum number of fuel tanks</b>	2

<b>Envelope</b>	<b>BB20GP, BB20XR</b>
<b>Burner</b>	Double burner assembly: MK-2 double, MK-2 super double, MK-10 double, MK-21 double, MK-32 double
<b>Basket</b>	C-0*, C-1, C-2, C-3, C-4, C-10, CT-02 * <b>Maximum permitted MTOW is 880 lbs (399 kg).</b>
<b>Minimum number of fuel tanks</b>	2

<b>Envelope</b>	<b>BB22ED, BB22E</b>
<b>Burner</b>	Double burner assembly: MK-2 double, MK-2 super double, MK-10 double, MK-21 double, MK-32 double
<b>Basket</b>	C-1, C-2, C-3, C-4, C-10, CT-02
<b>Minimum number of fuel tanks</b>	2

<b>Envelope</b>	<b>BB22, BB22D, BB22N, BB22Z</b>
<b>Burner</b>	Double burner assembly: MK-2 double, MK-2 super double, MK-10 double, MK-21 double, MK-32 double
<b>Basket</b>	C-1, C-2, C-3, C-4, C-10, CT-02
<b>Minimum number of fuel tanks</b>	2

<b>Envelope</b>	<b>BB22XR</b>
<b>Burner</b>	Double burner assembly: MK-2 double, MK-2 super double, MK-10 double, MK-21 double, MK-32 double
<b>Basket</b>	C-1, C-2, C-3, C-4, C-10, CT-02
<b>Minimum number of fuel tanks</b>	2

<b>Envelope</b>	<b>BB26E, BB26ED</b>
<b>Burner</b>	Double burner assembly: MK-2 double, MK-2 super double, MK-10 double, MK-21 double, MK-32 double
<b>Basket</b>	C-1, C-2, C-3, C-4, C-10, CT-02
<b>Minimum number of fuel tanks</b>	2

<b>Envelope</b>	<b>BB26, BB26D, BB26N, BB26Z, BB26XR</b>
<b>Burner</b>	Double burner assembly: MK-2 double, MK-2 super double, MK-10 double, MK-21 double, MK-32 double
<b>Basket</b>	C-1, C-2*, C-3, C-4, C-10, CT-02~ * <b>Maximum permitted MTOW is 1667 lbs (756 kg).</b> ~ <b>Maximum permitted MTOW is 1799 lbs (807 kg).</b>
<b>Minimum number of fuel tanks</b>	2



<b>Envelope</b>	<b>BB30E, BB30ED</b>
<b>Burner</b>	Double burner assembly: MK-2 double, MK-2 super double, MK-10 double, MK-21 double, MK-32 double, BMK-008 double Triple burner assembly: MK-2 triple, MK-2 super triple, MK-10 triple, MK-21 triple
<b>Basket</b>	C-1, C-3, C-4, C-10, CT-02* <b>* Maximum permitted MTOW is 1799 lbs (807 kg).</b>
<b>Minimum number of fuel tanks</b>	2 burner units = 2 fuel tanks 3 burner units = 3 fuel tanks

<b>Envelope</b>	<b>BB30D, BB30N, BB30Z, BB30XR</b>
<b>Burner</b>	Double burner assembly: MK-2 double, MK-2 super double, MK-10 double, MK-21 double, MK-32 double, BMK-008 double Triple burner assembly: MK-2 triple, MK-2 super triple, MK-10 triple, MK-21 triple
<b>Basket</b>	C-1, C-3, C-4, C-10, CT-02* <b>* Maximum permitted MTOW is 1799 lbs (807 kg).</b>
<b>Minimum number of fuel tanks</b>	2 burner units = 2 fuel tanks 3 burner units = 3 fuel tanks

<b>Envelope</b>	<b>BB34D, BB34ED, BB34E, BB34Z</b>
<b>Burner</b>	Double burner assembly: MK-2 double, MK-2 super double, MK-10 double, MK-21 double, MK-32 double, BMK-008 double Triple burner assembly: MK-2 triple, MK-2 super triple, MK-10 triple, MK-21 triple, MK-32 triple
<b>Basket</b>	C-1, C-3, C-4, C-6, C-7, C-10, CT-02* <b>* Maximum permitted MTOW is 1799 lbs (807 kg).</b>
<b>Minimum number of fuel tanks</b>	2 burner units = 2 fuel tanks 3 burner units = 3 fuel tanks

<b>Envelope</b>	<b>BB37D, BB37N, BB37Z</b>
<b>Burner</b>	Double burner assembly: MK-2 double, MK-2 super double, MK-10 double, MK-21 double, MK-32 double, BMK-008 double Triple burner assembly: MK-2 triple, MK-2 super triple, MK-10 triple, MK-21 triple, MK-32 triple
<b>Basket</b>	C-1, C-3, C-4, C-5, C-6, C-7, C-10, CT-02* <b>* Maximum permitted MTOW is 1799 lbs (807 kg).</b>
<b>Minimum number of fuel tanks</b>	2 burner units = 2 fuel tanks 3 burner units = 3 fuel tanks

<b>Envelope</b>	<b>BB40D, BB40Z</b>
<b>Burner</b>	Double burner assembly: MK-2 double, MK-2 super double, MK-10 double, MK-21 double, MK-32 double, BMK-008 double Triple burner assembly: MK-2 triple, MK-2 super triple, MK-10 triple, MK-21 triple, MK-32 triple
<b>Basket</b>	C-3, C-4, C-5, C-6, C-7, C-10* <b>* Maximum permitted MTOW is 2769 lbs (1256 kg).</b>
<b>Minimum number of fuel tanks</b>	2 burner units = 2 fuel tanks 3 burner units = 3 fuel tanks

<b>Envelope</b>	<b>BB42D, BB42Z</b>
<b>Burner</b>	Double burner assembly: MK-2 double, MK-2 super double, MK-10 double, MK-21 double, MK-32 double, BMK-008 double Triple burner assembly: MK-2 triple, MK-2 super triple, MK-10 triple, MK-21 triple, MK-32 triple
<b>Basket</b>	C-3, C-4, C-5, C-6, C-7, C-10*, CV-08 <b>* Maximum permitted MTOW is 2769 lbs (1256 kg).</b>
<b>Minimum number of fuel tanks</b>	2 burner units = 2 fuel tanks 3 burner units = 3 fuel tanks

<b>Envelope</b>	<b>BB45D, BB45N, BB45Z</b>
<b>Burner</b>	Double burner assembly: MK-2 double, MK-2 super double, MK-10 double, MK-21 double, MK-32 double, BMK-008 double Triple burner assembly: MK-2 triple, MK-2 super triple, MK-10 triple, MK-21 triple, MK-32 triple
<b>Basket</b>	C-3, C-4, C-5, C-6, C-7, C-10*, CV-08 <b>* Maximum permitted MTOW is 2769 lbs (1256 kg).</b>
<b>Minimum number of fuel tanks</b>	2 burner units = 2 fuel tanks 3 burner units = 3 fuel tanks

<b>Envelope</b>	<b>BB51D, BB51Z</b>
<b>Burner</b>	Double burner assembly: MK-2 double, MK-2 super double, MK-10 double, MK-21 double, MK-32 double, BMK-008 double, BMK-050 double Triple burner assembly: MK-2 triple, MK-2 super triple, MK-10 triple, MK-21 triple, MK-32 triple Quad burner assembly: MK-2 quad, MK-2 super quad, MK-10 quad, MK-21 quad, MK-32 quad
<b>Basket</b>	C-5, C-6*, C-7, C-8, C-9, CV-08 <b>* Maximum permitted MTOW is 3552 lbs (1611 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: MK-10 double, MK-21 double, MK-32 double, BMK-008 double, BMK-050 double Triple burner assembly: MK-2 triple, MK-2 super triple, MK-10 triple, MK-21 triple, MK-32 triple Quad burner assembly: MK-2 quad, MK-2 super quad, MK-10 quad, MK-21 quad, MK-32 quad
<b>Basket</b>	C-5, C-7, C-8, C-9, C-11, CV-08* <b>* Maximum permitted MTOW is 3762 lbs (1690 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>	Double burner assembly: BMK-050 double Triple burner assembly: MK-21 triple, MK-32 triple Quad burner assembly: MK-2 quad, MK-2 super quad, MK-10 quad, MK-21 quad, MK-32 quad
<b>Basket</b>	C-5*, C-8, C-9, C-11 <b>* Maximum permitted MTOW is 4432 lbs (2010 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>BB70D, BB70Z</b>
<b>Burner</b>	Double burner assembly: BMK-050 double Triple burner assembly: MK-21 triple, MK-32 triple, BMK-050 triple Quad burner assembly: MK-2 quad, MK-2 super quad, MK-10 quad, MK-21 quad, MK-32 quad
<b>Basket</b>	C-5*, C-8~, C-9, C-11 <b>* Maximum permitted MTOW is 4432 lbs (2010 kg).</b> <b>~ Maximum permitted MTOW is 4961 lbs (2250 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>BB78Z</b>
<b>Burner</b>	Double burner assembly: BMK-050 double Triple burner assembly: MK-21 triple, MK-32 triple, BMK-050 triple Quad burner assembly: MK-2 quad, MK-2 super quad, MK-10 quad, MK-21 quad, MK-32 quad
<b>Basket</b>	C-5*, C-8~, C-9, C-11 <b>* Maximum permitted MTOW is 4432 lbs (2010 kg).</b> <b>~ Maximum permitted MTOW is 4961 lbs (2250 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>BB85D, BB85Z</b>
<b>Burner</b>	Double burner assembly: BMK-050 double Triple burner assembly: MK-21 triple, MK-32 triple, BMK-050 triple Quad burner assembly: MK-2 quad, MK-2 super quad, MK-10 quad, MK-21 quad, MK-32 quad
<b>Basket</b>	C-5*, C-8~, C-9°, C-11, C-12 * Maximum permitted MTOW is 4432 lbs (2010 kg). ~ Maximum permitted MTOW is 4961 lbs (2250 kg). ° Maximum permitted MTOW is 6205 lbs (2814 kg).
<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>BB92Z</b>
<b>Burner</b>	Triple burner assembly: BMK-050 triple Quad burner assembly: MK-2 quad, MK-2 super quad, MK-10 quad, MK-21 quad, MK-32 quad
<b>Basket</b>	C-5*, C-8~, C-9°, C-11, C-12 * Maximum permitted MTOW is 4432 lbs (2010 kg). ~ Maximum permitted MTOW is 4961 lbs (2250 kg). ° Maximum permitted MTOW is 6205 lbs (2814 kg).
<b>Minimum number of fuel tanks</b>	3 burner units = 3 fuel tanks 4 burner units = 4 fuel tanks

<b>Envelope</b>	<b>BB100D, BB100Z</b>
<b>Burner</b>	Triple burner assembly: BMK-050 triple Quad burner assembly: MK-2 quad, MK-2 super quad, MK-10 quad, MK-21 quad, MK-32 quad, BMK-050 quad
<b>Basket</b>	C-5*, C-8~, C-9°, C-11, C-12 * Maximum permitted MTOW is 4432 lbs (2010 kg). ~ Maximum permitted MTOW is 4961 lbs (2250 kg). ° Maximum permitted MTOW is 6205 lbs (2814 kg).
<b>Minimum number of fuel tanks</b>	3 burner units = 3 fuel tanks 4 burner units = 4 fuel tanks

<b>Envelope</b>	<b>BB105P, BB106P</b>
<b>Burner</b>	Triple burner assembly: BMK-050 triple Quad burner assembly: MK-2 quad, MK-2 super quad, MK-10 quad, MK-21 quad, MK-32 quad, BMK-050 quad
<b>Basket</b>	C-5*, C-8~, C-9°, C-11#, C-12 * <b>Maximum permitted MTOW is 4432 lbs (2010 kg).</b> ~ <b>Maximum permitted MTOW is 4961 lbs (2250 kg).</b> ° <b>Maximum permitted MTOW is 6205 lbs (2814 kg).</b> # <b>Maximum permitted MTOW is 7347 lbs (3332 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>BB113P</b>
<b>Burner</b>	Triple burner assembly: BMK-050 triple Quad burner assembly: MK-2 quad, MK-2 super quad, MK-10 quad, MK-21 quad, MK-32 quad, BMK-050 quad
<b>Basket</b>	C-5*, C-8~, C-9°, C-11#, C-12 * <b>Maximum permitted MTOW is 4432 lbs (2010 kg).</b> ~ <b>Maximum permitted MTOW is 4961 lbs (2250 kg).</b> ° <b>Maximum permitted MTOW is 6205 lbs (2814 kg).</b> # <b>Maximum permitted MTOW is 7347 lbs (3332 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>BB120P</b>
<b>Burner</b>	Triple burner assembly: BMK-050 triple Quad burner assembly: MK-2 quad, MK-2 super quad, MK-10 quad, MK-21 quad, MK-32 quad, BMK-050 quad
<b>Basket</b>	C-5*, C-8~, C-9°, C-11#, C-12, C-14 * <b>Maximum permitted MTOW is 4432 lbs (2010 kg).</b> ~ <b>Maximum permitted MTOW is 4961 lbs (2250 kg).</b> ° <b>Maximum permitted MTOW is 6205 lbs (2814 kg).</b> # <b>Maximum permitted MTOW is 7347 lbs (3332 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>BB130P</b>
<b>Burner</b>	Quad burner assembly: MK-32 quad, BMK-050 quad
<b>Basket</b>	C-14
<b>Minimum number of fuel tanks</b>	4 units = 4 fuel tanks

<b>Envelope</b>	<b>BB142P</b>
<b>Burner</b>	Quad burner assembly: MK-32 quad, BMK-050 quad
<b>Basket</b>	C-14
<b>Minimum number of fuel tanks</b>	4 units = 4 fuel tanks

### Additional Limitations

Rotation Vent must be fitted when:

- any UltraMagic partitioned basket, basket with door and/or seats is used
- fuel tanks are carried out of basket (applicable for 'tekno' baskets).

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\_USBEU). If in doubt, ask KB for further assistance and technical support.

Single burner assemblies:

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

Cruise Control Option:

- If burner is fitted with Cruise Control Option (double, triple or quad burner MK-21 with suffix /2400), do not operate the Cruise Control for prolonged periods to prevent the excessive formation of propane ice on liquid fire jet (whisper burner jet).

'Vista' (CV-08) basket:

- for each occupied passenger seat a functional (waist) restraint and seat harness must be available.

Accessible 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

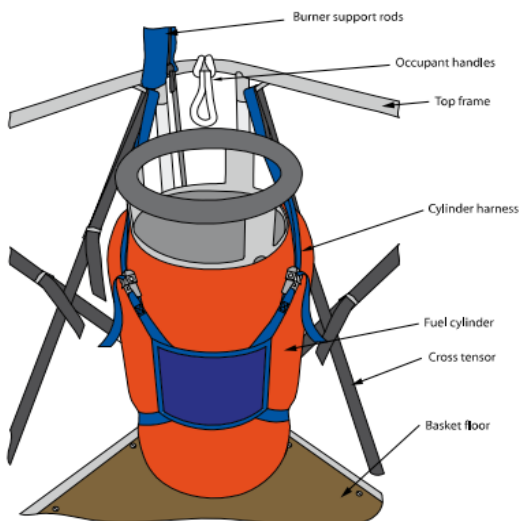
The maximum allowable flight altitude according to VFR in the U.S.A. is 18,000 ft AMSL.

### Fuel tanks

A minimum of one fuel tank per burner unit is to be carried for flight. These tanks must be full for take off. Gas for refueling must be completely clean and the use of fuel filters is strongly recommended. Aluminium fuel tanks (Worthington and mini Worthington) may be used only when propane fuel is free of caustic soda. In all other cases, stainless-steel fuel tanks must be used.

A vapor fuel must be provided for each pilot light, when burner is fitted with vapor pilot lights. Fuel tanks pre-pressurized with nitrogen or other inert gas must not be used to provide fuel to vapor pilot light.

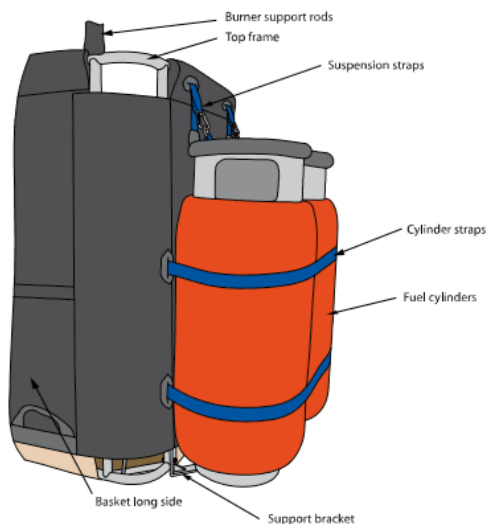
All fuel tanks must be fitted with a padded jacket. Each tank must be attached to the basket using a minimum of 2 approved fuel tank straps. These straps go through designated holes in the basket wall and around the fuel tank and must be fitted so as not to allow any up-and-down or side-to-side movement. For installation of fuel tanks inside the 'tekno' baskets supplied cross-harness must be fitted to each tank (see the picture below).



### Installation of fuel tank in the tekno basket

Source: Ultramagic Flight Manual Supplement 39 – Ultramagic 'Tekno' basket, Issue 10, page 2/8

An optional approved external fitting for fuel tanks are allowed for use with tekno baskets. When installed, 2 or 4 tanks may be carried in pairs on the short sides of the basket. Each pair of tanks must be secured using 2 horizontal straps, 2 support brackets and 2 suspension straps provided on the basket top frame (see the picture below). Only M-20, M-20D, M-30, M-30D or Worthington fuel tanks, or combinations of them, may be installed externally to tekno basket (for details of the fuel tanks see Section 8 – Equipment list) . Only the fuel tanks of the same type may be mounted together externally on the same side of the basket (i.e. two M-30 fuel tanks on the left side of the basket and two M-20 on the right side of the basket).



#### Installation of fuel tank outside the tekno basket (optional fitting – accessory)

Source: Ultramagic Flight Manual Supplement 39 – Ultramagic 'Tekno' basket, Issue 10, page 3/8

#### CAUTION

*Do NOT fly with external fuel tank fitting, when no tanks are being carried outside the basket. Rotation vent must be fitted when using external fuel tank fitting.*

## SECTION 3 - EMERGENCY PROCEDURES

No change

## SECTION 4 - NORMAL PROCEDURES

The following procedures are additional to those already contained in the main Balloon Flight Manual.

### 4.3.5.1 Mounting the 'tekno' basket

The 'Tekno' basket is supplied with a transportation bag specially designed to protect the components during handling and storage, as well as to allow a neat organization of its parts. When the basket must be mounted, proceed as follows:

1. Deploy the body of the basket over a flat surface. Make sure that the basket floor is underneath.
2. Take 8 white rods from the bag and fit each end in the sockets of the basket bottom structure.
3. Lift up the top frame and position the upper end of the rods in its sockets.
4. With the main structure up, unfold the wall panels out of the basket, and put the fuel tanks into the basket.
5. A set of 8 tapes fitted with buckles is provided.
6. Pass each tape in diagonal joining two opposite corner eyelets, leaving them a bit loose. Make sure that their buckles are not entangled. Repeat the operation with all the tapes. Finally tighten firmly the 8 tapes.
7. Using the harness arrangement provided, attach firmly the tanks to the corners as per 39.2.13(2), paying attention to the balance of the basket. Secure the two carbine hooks to the bottom corner brackets.
8. Lift the panels up and attach them around the top frame by means of the two Velcro tapes provided. Make sure the panel and the fixings are tight.

9. Unfold the corner covers of each straight panel and tighten them over the walls of the long side by using the Velcro bands.
10. Proceed with the rigging as per 4.3.5 of the Balloon Flight Manual.

**CAUTION**

*The whole structure must remain inside the boundary formed by the fabric walls, with the exception of the external fitting for fuel tanks.*

**CAUTION**

*Do not manipulate the Velcro tapes or bands while refueling the tanks of the basket as it could build-up electrostatic charge.*

#### 4.3.5.2 Installation of external fuel tanks (optional)

If the 'Tekno' basket is provided with external fittings for fuel tanks, pilot must install 2 or 4 tanks on them. To install the fuel tanks, refer to Figure XY and proceed as follows:

1. Make sure that the tank support brackets located at the basket bottom edge are not damaged and are firmly secured to the basket sockets.
2. Place each tank over a bracket checking that the bracket hook joins the tank bottom ring.
3. For CT-02 external fuel tanks fitment, place and secure the padded spacer provided.
4. Secure all tank suspension straps rigging their Carbine hook to the ring placed at the end of the strap. Make sure that the tank top ring is engaged.
5. Fasten the horizontal straps around the tanks installed on one side of the basket. Note that these straps must be passed through the holes of the basket corners, lacing the tanks to the adjacent wall and nylon rods.

Information regarding to the assembly or removal of the external support brackets may be found in the Maintenance Manual Supplement (B.3205-MMS\_USBEU).

#### 4.3.5.3 Folding the 'Tekno' Basket

To fold the basket after flight, proceed in reverse order to the steps of 4.3.5.1 of this BFMS.

After each overtipping landing, follow section 6.7.3 of the Maintenance Manual Supplement (B.3205-MMS\_USBEU) before next flight.

#### 4.3.5.4 Foldable tables in 'Vista' Basket

Waist harnesses must be adjusted and fastened to each passenger prior to sitting on the seat. For each takeoff and landing passengers are to be seated with their seat harnesses fastened (unless instructed otherwise by the pilot, the seat harness is to be worn at all times). For each take-off and landing the tables must be stowed (folded away). These instructions must be also included in the passenger briefing.

## SECTION 5 - WEIGHT

For the following combinations a reduced MTOW is applicable.

Envelopes	Baskets	RMTOW
BB17GP, BB17XR, BB18E, BB20, BB20ED, BB20E, BB20GP, BB20XR	C-0	880 lbs (399 kg)
BB20GP, BB20XR	C-3	1667 lbs (756 kg)
BB64Z, BB70D, BB70Z, BB78Z, BB85D, BB85Z, BB92Z, BB100D, BB100Z, BB105P, BB106P, BB113P, BB120P	C-5	4432 lbs (2010 kg)
BB51D, BB51Z	C-6	3552 lbs (1611 kg)
BB70D, BB70Z, BB78Z, BB85D, BB85Z, BB92Z, BB100D, BB100Z, BB105P, BB106P, BB113P, BB120P	C-8	4961 lbs (2250 kg)
BB85D, BB85Z, BB92Z, BB100D, BB100Z, BB105P, BB106P, BB113P, BB120P	C-9	6205 lbs (2814 kg)



Envelopes	Baskets	RMTOW
BB40D, BB40Z, BB42D, BB42Z, BB45D, BB45N, BB45Z	C-10	2769 lbs (1256 kg)
BB105P, BB106P, BB113P, BB120P	C-11	7347 lbs (3332 kg)
BB26, BB26D, BB26N, BB26Z, BB26XR, BB30E, BB30ED, BB30D, BB30N, BB30Z, BB30XR, BB34E, BB34ED, BB34D, BB34Z, BB37D, BB37N, BB37Z	CT-02*	1799 lbs (807 kg)
BB60D, BB60N, BB60Z	CV-08°	3726 lbs (1690 kg)

\* maximum basket load is 1433 lbs (650 kg)

° maximum basket load is 2646 lbs (1200 kg)

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

## 5.1 Introduction

As stated in the Section 2, chapter 2.9 Weight Range, 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

UM 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). It consists of two or more burner units and a burner frame. A minimum of two blast valves (main valves) and two fuel supplies must be installed. Double, triple and quad burners have blast valve and fuel supply for each coil.

Fuel for the burner is supplied through flexible hoses to machined valve block via a fuel inlet post. The fuel flow is controlled by an on/off blast valve (main valve) with squeeze action. Fuel for the main valve passes through the coil first to be preheated and then burns at the jet or diffuser outlet. This is the part of the burner which provides the maximum power to heat the air inside the envelope. The heat of the burner is greatly influenced by the fuel pressure that is affected by the ambient temperature. In lower temperatures pressurization of the fuel tanks is recommended.

<b>CAUTION</b>	<i>Burner malfunction due to oxygen insufficiency in the ambient air may appear in altitudes above 6 000 m (20 000 ft) AMSL.</i>
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#### 6.5.2 Whisper Burner

Whisper burner (AKA liquid fire, quiet or cow burner) is an auxiliary burner and it is a standard feature on all UM burners. Each burner unit is fitted with whisper burner, which uses the fuel directly from the tank (without passing through the coil first). The whisper burner valve has either toggle-action (MK-21 burners) or twist-action (MK-10 burners). This burner provides quieter flame with less power. It is not meant for general use and should not be used to inflate the balloon when wind shear is present.

<b>CAUTION</b>	<i>Excessive use of whisper burner may cause inside of the envelope to become black.</i>
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<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>
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### 6.5.3 Pilot Light

No change.

### 6.5.4 Pressure gauge

No change.

### 6.5.6 Fuel Supplies

For double, triple or quad burners each burner unit has its own independent fuel supply. Single burner assemblies are not permitted for combinations of KB envelopes and UM bottom-ends.

Fuel should always be vented from fuel hoses when the burner is not in use. The remaining fuel can cause damage to the fuel hoses due to heat expansion.

The use of fuel T-manifolds (cross manifolds) is advisable because it eliminates reconnections of the fuel hoses. Only KB and other approved balloon manufacturers' supplied T-manifolds are allowed.

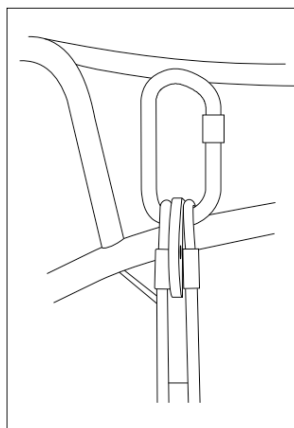
### 6.5.7 Burner Frame

The burner frame is made from stainless steel tubing. The burner units are swivel-mounted on a gimbal block on a horizontal bar that runs across the burner frame (this provides a two-axis gimballed system). At each corner the burner frame has lugs, where the basket carabiners hook up. The nylon rods that support the burner above the basket are fitted into sockets and covered by removable padded sleeves.

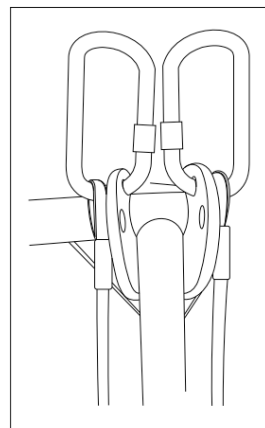
All burner frames with 4 rigging points must be attached with 4 carabiners up to size 180, and 8 or 12 carabiners on bigger envelopes.

The number of carabiners depends on number of attachment points on the burner frame:

- 4 carabiners for frames with 4 attachment points (4 single corner lugs)
- 8 carabiners for frames with 8 attachment points (8 single corner lugs) or 4 attachment points with double corner lugs.
- 12 carabiners for frames with 8 attachment points – 4 single corner lugs and 4 double corner lugs.



Ultramagic single corner lug



Ultramagic double corner lug

#### Different attachment lugs

Source: UltraMagic Flight Manual FM04 Rev. 24, page 4/6

### 6.5.13 Burner MK-10

MK-10 burner is standard burner with main burner consisting of jet ring with 6, 18 or 24 jets or a diffuser to project the vaporized fuel. It is also fitted with whisper burner and pilot light (liquid or vapor option) with piezoelectric igniter. MK-10 can be fitted with optional crossover valve (allows to operate two burners with one hand).

One burner unit of MK-10 burner has a maximum power of 2.5 million Kcal/h (9.92 million btu/h) using liquid propane gas at pressure of 6 bar (87 psi).

Applicable double burners:	2012-0050	liquid pilot light
	2012-0060	vapor pilot light
Applicable triple burners:	2013-0070	liquid pilot light
	2013-0080	vapor pilot light
Applicable quad burners:	2014-0090	liquid pilot light
	2014-0100	vapor pilot light

### 6.5.14 Burner MK-21

MK-21 burner is standard burner with main burner, whisper burner and liquid pilot light (or optional vapor pilot light which is indicated with suffix /2800) with piezoelectric igniter. It can be fitted with Cruise Control option (suffix /2400). MK-21 can also have optional hydraulically operated main valve (means it is fitted with a remote hydraulic handle with reservoir and an actuator block).

One burner unit of MK-10 burner has a maximum power of 2.8 million Kcal/h (11.11 million btu/h) using liquid propane gas at pressure of 6 bar (87 psi).

Applicable double burners:	2062-0000
Applicable triple burners:	2063-0000
Applicable quad burners:	2064-0000

### 6.5.15 Burner MK-2 and MK-2 super

MK-2 and MK-2 super burners are standard burner with main burner, whisper burner and pilot light (liquid or vapor pilot light option) with piezoelectric igniter.

Applicable double burners:	2002-0000
	2006-0000
Applicable triple burners:	2004-0000
	2007-0000
Applicable quad burners:	2005-0000
	2008-0000

### 6.5.16 Burner MK-32

MK-32 burner is standard burner with main burner, whisper burner and single-assembly pilot light (liquid or vapor pilot light option) with piezoelectric igniter. MK-32 burner has also optional oxygen assisted pilot light, which adds a second independent circuit for an auxiliary supply of oxygen to the pilot light flame. This enhances the performance and the stability of the flame when flying in atmospheres with a low content of oxygen (high altitude flights). MK-32 can also have optional hydraulically operated main valve (means it is fitted with a remote hydraulic handle with reservoir and an actuator block) and crossflow option (allows to operate two burners with one hand).

Applicable double burners:	2062-0000
Applicable triple burners:	2063-0000
Applicable quad burners:	2064-0000

### 6.5.17 Double burner BMK-008 Powerplus Sport ‘mini’

BMK-008 Powerplus mini is a standard double burner with main burner, whisper burner and pilot light with piezo-electric igniter. BMK-008 burner is fitted with two-stage main valve action (operating the valve to the mid position activates the main burner only, operating it to the fully open position activates both main burner and whisper burner providing almost double power). The burner is fitted with completely independent left and right fuel circuits what provides duality of all major functions.

Applicable double burners: 2032-0000

### 6.5.18 Burner BMK-050 Powerplus Maxi

BMK-050 Powerplus maxi is a standard burner with main burner, whisper burner and pilot light with piezoelectric igniter. BMK-050 burner is fitted with two-stage main valve action (operating the valve to the mid position activates the main burner only, operating it to the fully open position activates both main burner and whisper burner providing almost double power). The burner is fitted with completely independent left and right fuel circuits what provides duality of all major functions.

Applicable double burners: 2052-0000

Applicable triple burners: 2053-0000

Applicable quad burners: 2054-0000

## 6.7 Baskets

UltraMagic baskets are made from woven wicker walls and a marine plywood floor. There are openings in the wicker which serve as step holes and strap holes for fuel tanks. The basket is connected to the burner frame by a minimum of four stainless steel cables that go down on the sides of the basket and under the floor. These cables are continuous in pairs. The burner frame is supported by nylon rods, which are attached via sockets welded to the stainless-steel upper frame of the basket and the burner frame. These support rods, load cables and fuel hoses are kept inside padded zippered covers when the bottom-end is assembled. The floor is reinforced and protected on the outside with hardwood runners and the bottom rim of the basket, where the wicker joins with the floor, is protected with rawhide. Inside the basket, under the upper rim of the basket, there are rope handles for use by passengers during landing. On the outside of the basket, near the bottom edge, there are manipulation rope handles to be used for ground handling.

There are also special lightweight baskets (tekno baskets, type CT-02) with fold down composite sided construction. The burner frame is carried by support rods inserted into sockets on burner frame and upper frame of the basket. These baskets are also equipped with step holes and carry handles.

Equipment and instruments that are carried in the balloon may be strapped to the basket or put into special padded bags that are secured to the sides of the basket. Light weight flight instruments and radios may be attached to the rod covers by Velcro straps.

### 6.7.1 Basket types

#### 6.7.1.1 Partitioned Baskets

Larger baskets have internal partitions (T/TT/P type) woven into the walls and fixed to the floor and upper 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 tanks are contained in a separate compartment from the passengers. The sides of the baskets are higher than with the sports basket. The number of support rods and rigging points can also vary depending on the type and size of basket.

Because these baskets are considerably longer on one side than the other, the balloon should always be landed on the long side. Therefore, the envelope, when combined with a partitioned basket, must be fitted with a rotation vent.

#### Baskets with removable partitions

Some partitioned baskets (C-6, C-7 and C-8 types) are having the optional removable partition, which allows to change the layout of the basket.

Care needs to be taken when changing the layout, as this affects the usable floor area of the compartments. Basket must follow the limitations stated in chapter 2.9 *Basket limitations* of this BFMS and the *Appendix 2: Basket Occupancy* of the BFM.

### 6.7.1.2 Open baskets

#### Sports baskets

UltraMagic sports baskets are baskets with open layout, woven wicker walls and solid marine plywood floor. They are available in various sizes capable of carrying 1-6 passengers. They can have either straight (flat top) or curved upper frame (swept top).

#### Accessible baskets

This is a type of baskets specially designed for transportation of people with reduced mobility. It is fitted with easy entry door and, depending on the size of basket, one or more seats can be installed. There is also option of wheelchair fittings installation, however transporting 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). All seats or wheelchair systems can be easily removed to allow the basket to be used in a standard configuration. The easy entry door system can also be supplied without seat rail fitted.

#### Tecno baskets

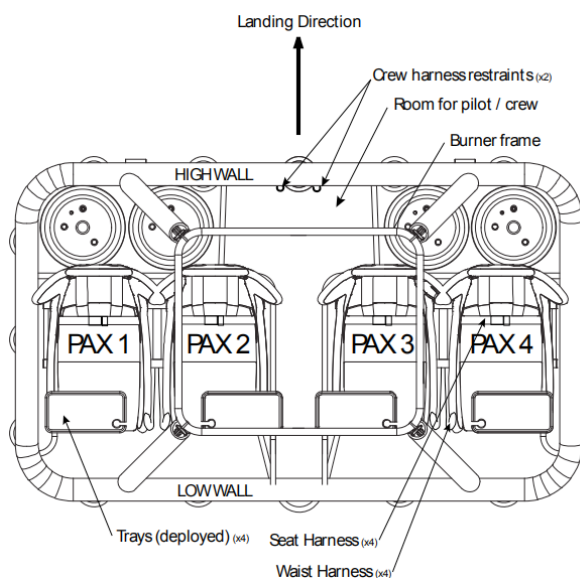
Tekno baskets (CT-02) consist of stainless-steel upper and lower frame, 12 mm thick marine plywood with wooden runners and side walls made of a combination of durable Cordura covers filled with light weight composite materials (with honeycomb structure) giving a firm feeling while being lightweight and easy to fold. The upper and lower basket frames are connected by nylon rods inserted through the textile walls. Eight polyester cross tensor tapes (4, short and 4 long ones) are used to ensure the correct shape of the basket.

Tekno baskets allows carrying the fuel tanks inside (up to 4 tanks) and/or outside (0/2/4 tanks) the basket. The maximum number of fuel tanks carried on board is 4 in total. For more information see chapters 2.11 Fitment interchangeability (Fuel Tanks), 4.3.5.2 Installation of external fuel tanks (optional) and SECTION 9 – APPENDICES/ Appendix 2: Basket Occupancy of this BFMS.

#### Vista baskets

The vista basket (CV-08) is an open basket with solid marine plywood floor and woven wicker walls. The front wall has been lowered to improve the view from the passengers' positions. All vista baskets are fitted with four passengers' seats with full seat harnesses and each seat is also equipped with a waist harness connected to the basket structure. In front of each seat, there is a foldable table.

In normal conditions pilot (and crew, if present) stands up in the centre of the basket behind the two middle seats (see the picture below).



**Top View of the CV-08 (vista) basket**

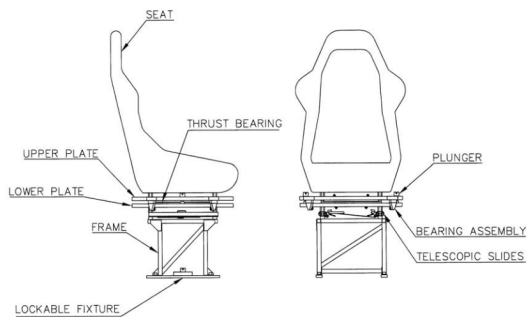
Source: UltraMagic Flight Manual Supplement 48, Issue 1, page 4/6

### 6.7.6 Basket Door

Accessible baskets are equipped with easy entry basket door. It consists of a steel frame and woven wicker and it is joined to the basket structure thanks to a hinge system. A set of two round bars is provided to allow a safe and full locking system between the door and the main structure of the basket.

### 6.7.7 Passenger seat

The removable seat (drawing number 5003-0000) consists of a car rally seat mounted on a welded stainless-steel frame. The seat is a proprietary unit designed for rally cars and as such is of a very robust construction. Four holes fitted in the underside are used to secure the seat to the remainder of the assembly (lower seat frame), which may be fitted to the basket floor mounted rails when required. The equipment is provided with a swivel mechanism allowing the seat to rotate to ease the loading and unloading of the passenger in to the seat. The removable seat assembly is shown on the picture below.



#### Removable Seat Assembly

Source: UltraMagic Maintenance Manual Supplement 5, Issue 3, page 6/23

## 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\_USBEU). 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\_USBEU).

#### 7.5.4 Burner

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

## SECTION 8 - EQUIPMENT LIST

UM fuel tanks

Manufacturer	Material	Type	Empty Weight		Full Weight	
			[kg]	[lb]	[kg]	[lb]
UltraMagic	Stainless steel	M-20 (M-20D)	14	31	34	75
		M-30 (M-30D)	20	44	50	110
		M-40 (M-40D)	24	53	64	141
	Titanium	T-25	11.5	25.4	36.5	80.5
Cameron Balloons	Aluminium	Worthington (CB250)	14	31	34	75

### Note :

Only M-20, M-20D, M-30, M-30D or Worthington cylinders, or a combination of them, may be installed externally to the 'Tekno' basket.

Maximum of 4 fuel tanks (in total) can be carried on board the 'Tekno' basket.

Maximum of 4 fuel tanks can be carried on board the 'Vista' basket.

## SECTION 9 - APPENDICES

### Appendix 2: Basket Occupancy

In addition to the limitations in section 2 (Operational Limitations) and section 5 (Weight) of this BFMS and the limitations in Appendix 2 of the Balloon Flight Manual (B.3105) the following limitations for 'tekno' baskets apply:

For 'Tekno' baskets:

Basket Specs.				Capacity			
Model	Width	Length	Max. load	Fuel Tanks Inside	Fuel Tanks Outside*	Maximum number of fuel tanks in total	Maximum Occupants (including pilot)
CT-02	1.0 m	1.2 m	650 kg	Up to 4	0, 2 or 4	4	2
				Up to 3	0, 2 or 4	4	3
				Up to 1	2 or 4	4	4

\* If optional fittings are installed

For 'Vista' baskets:

Basket Specs.				Capacity		
Model	Width	Length	Max. load	Fuel Tanks	Pilot / Crew	Passengers
CV-08	1.5 m	2.6 m	1200 kg	4	Pilot	Max. 4
				Up to 3	Pilot + 1	Max. 4

## SECTION 10 - SUPPLEMENTS

No change.

**LET US HELP YOU!**

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

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+420 545 422 638

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