

# LINDSTRAND BALLOONS

## FLIGHT MANUAL SUPPLEMENT NO. 12

### FIRE BALLOONS OPERATING INSTRUCTIONS

#### SECTION 1 OPERATIONAL LIMITATIONS

##### 1.6.4 Fire Balloons GmbH Equipment

Add the following:

The following instructions have been translated from the original German language Schroeder Fire Balloons Flight Manual at Amendment 4. These instructions are supplementary to the information contained in the Lindstrand Balloons Flight Manual, ref. LB HABFM at current issue and consist of any operational limitations, normal procedures and emergency procedures which must be complied with when operating a Lindstrand Balloons envelope with a Fire Balloons basket and burner assembly.

The Fire Balloons Flight Manual provides a series of tables which give instructions on the use of their baskets and burners with differing envelope sizes. The tables are arranged in columns which are headed by an envelope size range expressed in cubic metres. The conversion factor to obtain envelope volume in cubic feet from cubic metres is to multiply the metric volume by 35.31. Under this heading there is a section defining which burner sizes may be used with the envelope. Then follows the types of basket which may be used with the envelope size and the limitations upon the numbers of basket occupants and fuel cylinders that may be carried within each basket type. Lastly, there is a maximum payload mass identified for each basket size. This limitation must also be complied with.

See also Tables 14, 15 and 16 for permitted combinations of equipment which may be used with Lindstrand envelopes.

**Data matrix** (Ref: fire balloons flight manual Page 10)

Minimum crew for all basket sizes: 1 person

Volume [m³]	1200 up to 1299		1300 up to 1699				1700 up to 1899				1900 up to 1999												
Burner	Single or double burner		Single or double burner				Single or double burner				Single or double burner												
Basket size	I/2		I/2	II/3		III/4		II/3		III/4		IV/5		II/3		III/4		IV/5					
Approx. empty mass [kg]	115		130	135		140		150		155		160		155		160		165					
Fuel cylinders (number)	5	3	5	3	7	5	4	8	6	5	3	7	5	4	8	6	5	3	11	8	6	5	2
Occupants (number)	1	2	1	2	1	2	3	1	2	3	4	1	2	3	1	2	3	4	1	2	3	4	5
Max. payload for baskets [kg] (occupants & fuel cylinders)	316		316	406		474		406		474		530		406		474		530					

The basket payload can only be used up until the maximum weight has been reached.

Volume [m <sup>3</sup> ]	2000 up to 2199					2200 up to 2399					2400 up to 2599																											
Burner	Double burner					Double burner					Double burner																											
Deflation system	Parachute or Paraquick					Parachute or Paraquick					Parachute or Paraquick																											
Basket size	II/3		III/4			IV/5			II/3		III/4			IV/5			III/4		IV/5			V/5 V-A																
Approx. empty mass [kg]	160		165			170			165		170			175			175		180			185																
Fuel cylinders (number)	7	5	4	8	6	5	3	11	8	6	5	2	7	5	4	8	6	5	3	11	8	6	5	2	8	6	5	3	11	8	6	5	2	11	8	6	5	2
Occupants (number)	1	2	3	1	2	3	4	1	2	3	4	5	1	2	3	1	2	3	4	1	2	3	4	5	1	2	3	4	1	2	3	4	5	1	2	3	4	5
Max. payload for baskets [kg] (occupants & fuel cylinders)	406		474			530			406		474			530			474		530			598																

The basket payload can only be used up until the maximum weight has been reached.

**Data matrix** (Ref: fire balloons flight manual Page 11)

Minimum crew for all basket sizes: 1 person

Volume [m <sup>3</sup> ]	2600 up to 2899										2900 up to 3099																						
Burner	Double burner										Double burner																						
Basket size	III/4				IV/5				V/5 V-A		III/4				IV/5				V/5 V-A		VI/6												
Approx. empty mass [kg]	185				190				195		195				200				205		210												
Fuel cylinders (number)	8	6	5	3	11	8	6	5	2	11	8	6	5	2	8	6	5	3	11	8	6	5	2	11	8	6	5	2	11	9	8	7	4
Occupants (number)	1	2	3	4	1	2	3	4	5	1	2	3	4	5	1	2	3	4	1	2	3	4	5	1	2	3	4	5	2	3	4	5	6
Max. payload for baskets [kg] (occupants & fuel cylinders)	474				530				589		474				530				589		700												

The basket payload can only be used up until the maximum weight has been reached.

Volume [m <sup>3</sup> ]	3100 up to 3299										3300 up to 3600																			
Burner	Double burner										Double burner																			
Basket size	IV/5				V/5 V-A				VI/6		IV/5				V/5 V-A				VI/6											
Approx. empty mass [kg]	215				220				225		230				235				240											
Fuel cylinders (number)	11	8	6	5	2	11	8	6	5	2	11	9	8	7	4	11	8	6	5	2	11	8	6	5	2	11	9	8	7	4
Occupants (number)	1	2	3	4	5	1	2	3	4	5	2	3	4	5	6	1	2	3	4	5	1	2	3	4	5	2	3	4	5	6
Max. payload for baskets [kg] (occupants & fuel cylinders)	530				598				700		530				598				700											

The basket payload can only be used up until the maximum weight has been reached.

**Data matrix (Ref: fire balloons flight manual Page 12)**

Minimum crew for all basket sizes: 1 person

Volume [m <sup>3</sup> ]	4000															4250														
Burner	Double or triple burner															Double or triple burner														
Basket size	VI/6					VII/7					VIII/8					VI/6					VII/7					VIII/8				
Approx. empty mass [kg]	225 to 268 247 to 278					237 to 280 259 to 290					259 to 340 281 to 360					225 to 268 247 to 278					237 to 280 259 to 290					259 to 340 281 to 360				
Fuel cylinders (number)	11	9	8	7	4	12	11	9	7	4	14	12	10	9	6	11	9	8	7	4	12	11	9	7	4	14	12	10	9	6
Occupants (number)	2	3	4	5	6	3	4	5	6	7	4	5	6	7	8	2	3	4	5	6	3	4	5	6	7	4	5	6	7	8
Max. payload for baskets [kg] (occupants & fuel cylinders)	700					815					975					700					815					975				

The basket payload can only be used up until the maximum all-up weight has been reached.

Volume [m <sup>3</sup> ]	4500															5000																					
Burner	Double or triple burner															Triple burner																					
Basket size	VI/6					VII/7					VIII/8					VIII/9					VII/7					VIII/8					VIII/9						
Approx. empty mass [kg]	240 up to 280 260 up to 290					251 up to 290 273 up to 300					273 up to 350 295 up to 370					279 up to 370 301 up to 380					284 up to 360					306 up to 395					312 up to 415						
Fuel cylinders (number)	11	9	8	7	4	12	11	9	7	4	14	12	10	9	6	15	14	12	11	9	6	12	11	9	7	4	14	12	10	9	6	15	14	12	11	9	6
Occupants (number)	2	3	4	5	6	3	4	5	6	7	4	5	6	7	8	4	5	6	7	8	9	3	4	5	6	7	4	5	6	7	8	4	5	6	7	8	9
Max. payload for baskets [kg] (occupants & fuel cylinders)	700					815					975					1065					815					975					1065						

The basket payload can only be used up until the maximum all-up weight has been reached.

**Data matrix (Ref: fire balloons flight manual Page 13)**

Volume [m <sup>3</sup> ]	6000																						
Burner	Triple or quadruple burner																						
Basket size	VII/7					VIII/8					VIII/9					IX/11							
Approx. empty mass [kg]	292 to 370					298 to 410					320 to 420					369 to 440							
Fuel cylinders (number)	12	11	9	7	4	14	12	10	9	6	15	14	12	11	9	6	17	15	14	12	9	8	6
Occupants (number)	3	4	5	6	7	4	5	6	7	8	4	5	6	7	8	9	5	6	7	8	9	10	11
Max. payload for baskets [kg] (occupants & fuel cylinders)	815					975					1065					1200							

The basket payload can only be used up until the maximum all-up weight has been reached.

Volume [m <sup>3</sup> ]	7000												8500																							
Burner	Triple or quadruple burner												Triple or quadruple burner																							
Basket size	VIII/9						IX/11						X/13						IX/11						X/13											
Approx. empty mass [kg]	410 to 470						390 to 460						420 to 490						500 to 600						570 to 650											
Fuel cylinders (number)	15	14	12	11	9	6	17	15	14	12	9	8	6	18	17	16	15	13	12	10	6	17	15	14	12	9	8	6	18	17	16	15	13	12	10	6
Occupants (number)	4	5	6	7	8	9	5	6	7	8	9	10	11	6	7	8	9	10	11	12	13	5	6	7	8	9	10	11	6	7	8	9	10	11	12	13
Max. payload for baskets [kg] (occupants & fuel cylinders)	1065						1200						1430						1200						1430											

The basket payload can only be used up until the maximum all-up weight has been reached.

## SECTION 2 NORMAL PROCEDURES

### 2.1.2 Installing the Fuel Cylinders

Add the following:

When using Fire Balloons VA50 and VA70 fuel cylinders, the regulations, accident avoidance directives, rules and relevant guidelines applicable to the operation of the pressurised fuel cylinders are to be complied with, in addition to the instructions within this Flight Manual.

The Fire Balloons cylinders must be orientated with the vapour withdrawal valve uppermost when the basket is laid on its side for inflation. A cylinder jacket must be used with these Fire Balloons cylinders.

If using fuel manifolds with Fire Balloons cylinders and burners, then these manifolds must be manufactured by Fire Balloons and must carry a serial number. If less fuel cylinders are being used than the number of available connectors provided for in the manifold, then an original blanking fitting must be fastened into the unused connectors.

### 2.2.7 Hot Inflation

Add the following:

When using a Fire Balloons FB6 type of burner, the burner should be orientated such that the Piezo igniters are lowermost when the basket is laid over for inflation. The blue handled take off valve is now situated at the top right hand side of the burner. When ready to proceed with hot inflation, the take off valve should be opened along with the associated blast valve. In this way an element of coil pre-heating is achieved and this improves the flame pattern of the burner. After approximately 30 seconds the main blast valve may be used on its own as the coils will be warm.

If a "winter power" valve is being used with the FBV range of burners, then this valve must be shut after landing. In addition, during flight, this valve must be in the OFF or ON position and not used in an intermediate position.

### 2.4.2.1 Ground Based Pressurisation

Add the following:

Note that when using Fire Balloons cylinders the approved pressurisation level is 7 bar (101 psi).

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