

LINDSTRAND BALLOONS LTD

FLIGHT MANUAL SUPPLEMENT NO. 9

SERIES 2 CLOUDHOPPER BOTTOM END

INTRODUCTION

This Supplement details the operational limitations, assembly instructions and flight requirements for the Series 2 Cloudhopper Bottom End, types BA-310-A-001 and BA-310-A-002.

SECTION 1 - OPERATIONAL LIMITATIONS

Add the following:

1.1.4 Number of Occupants

No more than one person may occupy the Series 2 Cloudhopper seat at any one time.

1.1.6 Wind Speed

The maximum surface wind speed for take off and landing of the Lindstrand Balloons' Series 2 Cloudhopper is 10 knots.

1.1.13 Fuel Pressure

The Series 2 Cloudhopper Bottom End burner is designed for use with liquid propane fuel. In order to prevent heat damage to the envelope, the fuel pressure must not exceed 8.2 bar (120 psi).

1.1.14 Fuel Cylinder

The Series 2 Cloudhopper Bottom End may be flown with any LBL V20, V30 or V40 stainless steel fuel cylinder. All cylinders must be fitted with a padded jacket of minimum thickness 15 mm.

1.1.15 Rotation Vents

When the Series 2 Cloudhopper is flown with the load ring (item 18) in a locked condition, ie prevented from independent rotation (equipment type BA-310-A-002), the envelope must be provided with rotation vents.

1.5.2.1 Baskets

BASKET NO.	BASKET SIZE	BASKET STYLE	ENVELOPE SIZE RANGE x 1000 cu.ft.	EMPTY WEIGHT	
				KG	LBS
310	Cloudhopper	N/A	21 - 31	18	40

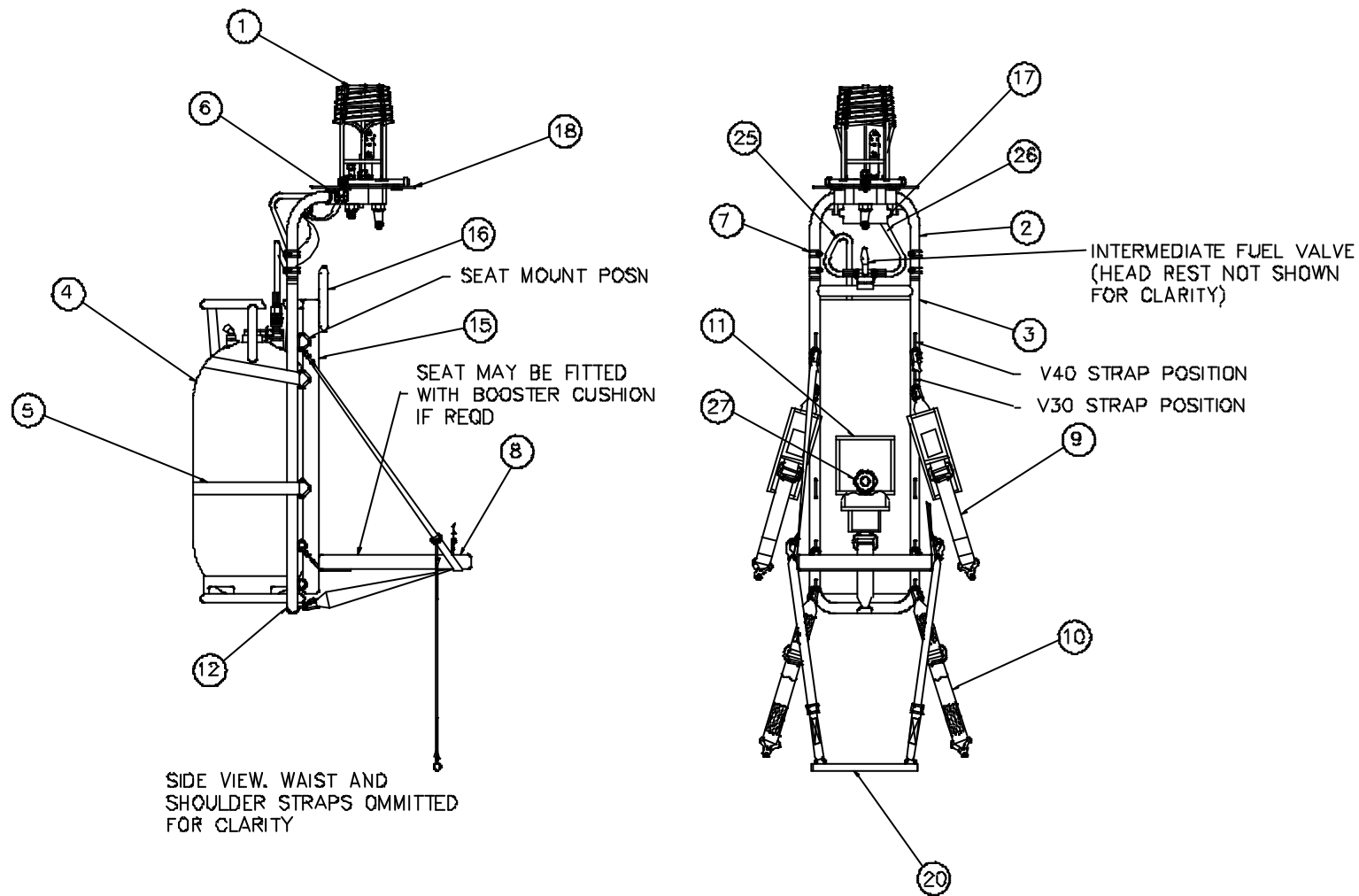


FIG 1. SERIES 2 CLOUDHOPPER BOTTOM END

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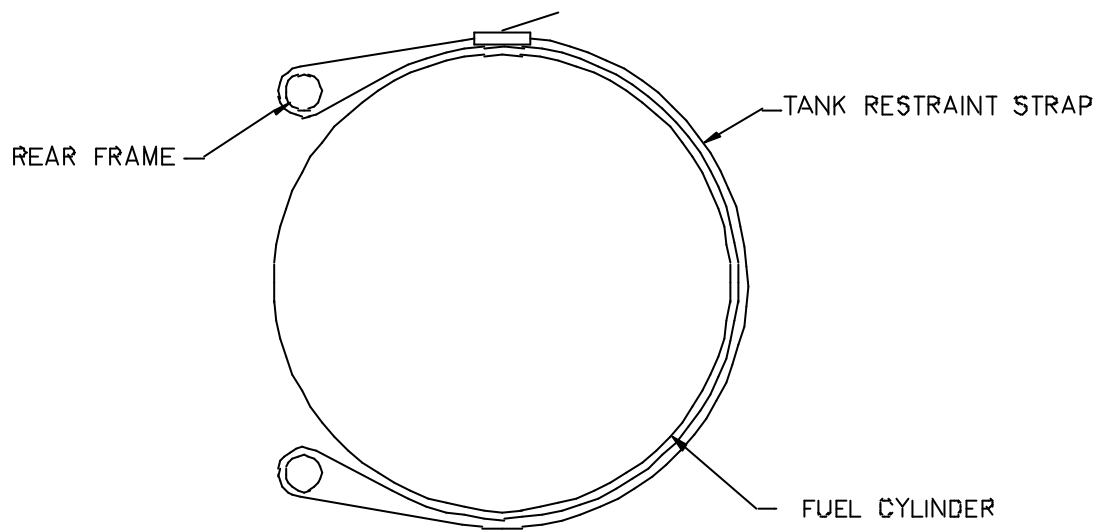


FIG 2 TANK RESTRAINT STRAP ROUTING

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SECTION 2 - NORMAL PROCEDURES

2.1.10 Clouthopper Procedures

2.1.10.1 Series 2 Clouthopper Bottom End Assembly

The Series 2 Clouthopper Bottom End is designed to enable rapid assembly from a convenient "flat pack" transportation bag. To assemble the Series 2 Clouthopper Bottom End, proceed as follows:

i) Hook the fuel cylinder (item 4) foot ring over the keep plate (item 12) situated at the lower end of the rear frame (item 3).

ii) Loop the tank restraint straps (item 5) through the triangular loops mounted on the rear frame and pass around the cylinder, as shown in Figure 2. Fully tighten the straps.

Note: a) The upper tank restraint strap must be positioned such that it passes over the cylinder upper hemisphere, thus preventing vertical cylinder movement.

b) When fitting a V20 or V30 cylinder, pass the upper tank restraint strap through the lower triangular loop. When fitting a V40 cylinder, pass the upper tank restraint strap through the upper triangular loop.

c) The fuel cylinder may be filled either before or after assembly to the equipment. Filling before assembly will provide greater equipment stability during assembly, but care must be taken to ensure that all burner, intermediate and cylinder valves are in the OFF position prior to connecting the burner hoses to the cylinder.

iii) Insert the two adapter tubes (item 2) into the machined sockets on the rear of the burner valve block (item 1). Secure in position using the four ¼" pip pins.

iv) Lift the burner and adapter tube assembly and carefully place the two free ends of the adapter tubes over the two machined tubes on the rear frame (item 3). Secure in position using the four 5/16" shaft locking pins. Ensure the spring retainers are positioned such as to prevent accidental pin removal.

Note: Care must be taken at this stage to prevent the equipment overbalancing due to the overturning weight of the burner. To prevent overbalancing, either lay the equipment on its side or request the use of an assistant.

v) Attach the seat assembly (item 8) to the rear frame (item 3) by securing the five rapid links to the triangular loops and "D" lugs, in the positions shown in Figure 1. Ensure all rapid links are fully tightened.

vi) Attach the two harness shoulder straps (item 9) to the rear frame (item 3) by securing the two rapid links to the lower triangular loops, as shown on Figure 1. Ensure both rapid links are fully tightened.

vii) Attach the two harness waist straps (item 10) to the rear frame (item 3) by securing the two rapid links to the "D" lugs, as shown on Figure 1. Ensure both rapid links are fully tightened.

viii) Insert the back rest (item 15) between the rear of the seat and the front of the rear frame, such that the shaped face of the back rest lies against the fuel cylinder and the velcro attachment straps are uppermost. Pass the straps around the rear frame and secure to the velcro.

ix) Attach the head rest (item 16) to the velcro strip, located near the top front face of the back rest (item 15).

- x) Ensure all burner valves, the intermediate fuel ON/OFF valve and the cylinder fuel valve are in the OFF position. Connect one of the two hoses (item 26) mounted on the fear frame cross bar to the Tema connector on the burner. Connect the other hose (item 25) to the liquid take off valve on the fuel cylinder.
- xi) Attach the mirror (item 17) to the two nylon claws mounted on the adapter tubes (item 2) by pressing the two pins on the ends of the mirror into the machined recess, until they "click" home. The mirror should be captive, but free to rotate.
- xii) Attach the foot rest assembly (item 20) to the two "D" lugs on the seat support straps using the snap hooks on the ends of the foot rest tapes. For convenience, the foot rest assembly may be stowed in the pouch situated on the underside of the seat.
- xiii) The equipment is now ready to assemble to the envelope. Attach the four envelope flying wire end rapid links sequentially to the four outer holes positioned at 90° intervals on the circular load ring (item 18). Ensure that the rapid links are orientated such that the securing nuts are positioned outermost. Fully secure the rapid link nuts.

2.1.10.2 Inflation Procedure

The nature of the Series 2 Cloudhopper is such that pilots will in time develop their own best technique. However, for the purposes of safety, at least one assistant is recommended and the following procedure should be used:

- i) Lay the fully assembled and fueled Series 2 Cloudhopper Bottom End on its' side on the ground, such that the burner points downwind. Turn the fuel cylinder fuel valve and the intermediate fuel valve to the ON position. Check that the fuel pressure does not exceed 8.2 bar (120 psi).
- ii) Attach a suitable quick release restraint to one of the tether rings fitted at the ends of the envelope flying wires. The other end of the quick release tether should be attached to a suitable anchor point, such as a vehicle.
- iii) Attach the envelope flying wires to the load ring, as described above.
- iv) Lay out the envelope, as described in Section 2.2.1 of the Flight Manual.
- v) Cold inflate the envelope, as described in Section 2.2.2 of the Flight Manual.
- vi) The pilot should kneel to one side of the equipment, such that one hand is used to direct the burner and the other is used to operate the burner control valves.
- vii) Open the regulator valve and ignite the pilot light.
- viii) Hot inflate the envelope using the main burner. The main burner valve is identified by the longer valve bonnet and the smooth surface toggle handle.
- ix) When the equipment is just buoyant and is "standing up", the pilot should sit in the seat. The pilot should request the help of an assistant at this stage, to keep weight on the equipment.
- x) The pilot should fully secure himself to the equipment by attaching the harness shoulder and waist straps to the harness turn buckle (item 27). Check that each strap is secured to the turn buckle and then position the protective fabric flap over the turn buckle by aligning with the velcro patches. Adjust the shoulder and waist strap lengths so that the pilot is comfortable, but is firmly secured within the harness.

2.1.10.3 Pre Take-Off Checks

1. Adjust the mirror to provide an unobscured view of the fuel contents gauge fitted in the top of the fuel cylinder.
2. Fuel cylinder liquid take-off valve is ON.
3. Intermediate fuel valve is ON.
4. Rapid links securing the pilot restraint harness and seat to the rear frame are all fitted and fully secure.
5. Four pip pins securing the adapter tubes to the burner are fitted and secure.
6. Four shaft locking pins securing the adapter tubes to the rear frame are fitted and secure.
7. Fuel cylinder is firmly secured to the rear frame.
8. Four rapid links securing the envelope to the load ring are fitted and fully tightened.
9. Function of all burner controls.
10. Crown line is attached to the aluminium ring.
11. Parachute tabs have been pulled and parachute OK.
12. No fabric damage above the first 4 m.
13. Rip line attached to aluminium load ring.
14. Flying wires straight.
15. Pilot light flame strong and stable.
16. Fuel cylinder full.
17. Ignition - two sources present.
18. Instruments present and set.
19. Maps for flight path present.
20. Telephone number for retrieve.
21. Maximum weight conditions not exceeded.
22. Necessary paperwork present and correct.

2.1.10.4 Flight Procedures

In addition to the procedures given in Section 2.3, the following procedures should be noted for flying the Series 2 Cloudhopper Bottom End:

2.1.10.4.1 Pilot Orientation

The Series 2 Cloudhopper Bottom End can rotate independently of the envelope. This is achieved by the pilot reaching up and grasping either the edge of the load ring or the flying wires and rotating himself in the desired direction.

2.1.10.4.2 Fuel Remaining

The remaining fuel may be determined by looking upwards onto the reflective plate situated above the pilots' head. The contents gauge may be seen in the reflection.

2.1.10.4.3 Landing

Use the legs to absorb some of the downwards velocity if the wind conditions are light. If a fast landing is anticipated, do not attempt to use the legs. Let the bottom of the cylinder and the seat absorb the landing impact and prepare for the resulting drag to be on the side.

It is most important that in any landing, the pilot light has been extinguished and the parachute line is held in the hand.