THE TECHNICAL CONTENT OF THIS DOCUMENT IS APPROVED UNDER THE AUTHORITY OF DOA NR. EASA.21J.140 (C608)

8.42 LINDSTRAND SERIES 2 CLOUDHOPPER

8.42.1 INTRODUCTION

This supplement shall be inserted in the Flight Manual, in Section 8: 'Supplements' with the revisions record sheet amended accordingly.

Information contained herein supplements, or in the case of conflict, supersedes that contained in the basic Flight Manual. For Limitations, Procedures, and Performance Data not contained in this supplement, consult the basic Hot Air Balloon Flight Manual.

Throughout this supplement the term "Cameron" refers to envelopes, burners and cylinders manufactured by Cameron, Lindstrand Hot Air Balloons Limited, Sky and Thunder & Colt.

Issue 2 of this supplement consists of ten pages.

There are no additional continued airworthiness requirements associated with this supplement.

8.42.2 LIMITATIONS

8.42.2.2 WEATHER

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

2. The atmosphere must be stable.

8.42.2.3 FUEL

8.42.2.3.1 Fuel Pressures

1. In order to prevent heat damage to the envelope, the fuel pressure must not exceed 8.2 bar (120 psi).

8.42.2.7 CREW

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

8.42.2.10 RATES OF CLIMB AND DESCENT

1. The rate of descent should not exceed 800 ft/min (4.0 m/s)

8.42.2.16 CYLINDERS

1. The Series 2 Cloudhopper Bottom End may be flown with any approved standard type of fuel cylinder. All cylinders must be fitted with a padded jacket of minimum thickness 15 mm.

8.42.2.18 ROTATION VENTS

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

8.42.3 EMERGENCY PROCEDURES

8.42.3.2.1 Emergency Climb

1. Emergency climbs should be made by operating the main burner and whisper burner simultaneously.

8.42.3.8 PREPARATION FOR A HARD LANDING

1. To reduce the serverity of the impact avoid any use of the parachute vent and jettson any surplus weight. Absorb the landing impact parachute style with legs together and knees bent

8.42.3.10 BURNER FAILURE

1. Shut off fuel to the burner at the intermediate fuel valve and/or cylinder valve.

2. Prepare for hard landing (Section 3.8).

8.42.3.11 PILOT LIGHT FAILURE

If the pilot light fails the following procedure should be adopted-

1. Shut off the pilot light.

2. Partially open the liquid fire burner valve.

3. Light the burner with a match or other igniter.

WARNING: Do not use the igniter built into the burner, as this will not ignite the fuel

4. Use the liquid fire burner valve to control the flight of the balloon.

5. Partially close the liquid fire valve to a fractional setting, to maintain a pilot setting.

6. Land as soon as possible.

8.42.4 NORMAL PROCEDURES

8.42.4.2 PREPARATION AND RIGGING

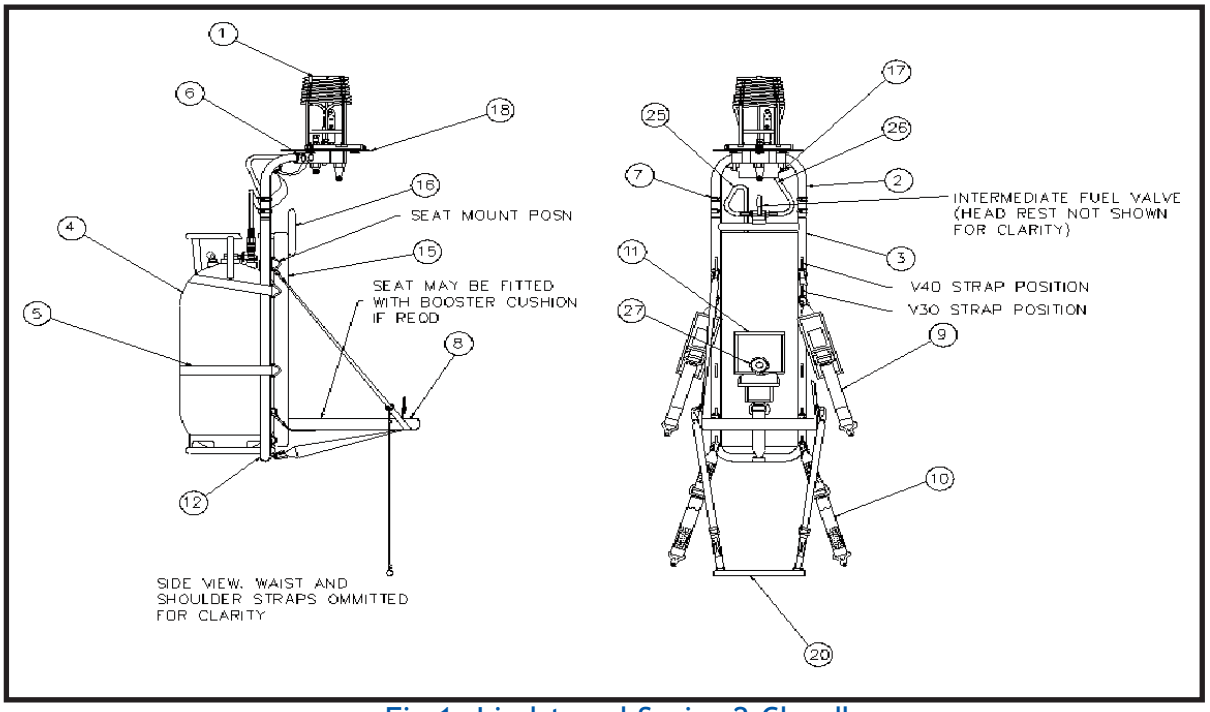


Fig 1: Lindstrand Series 2 Cloudhopper

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

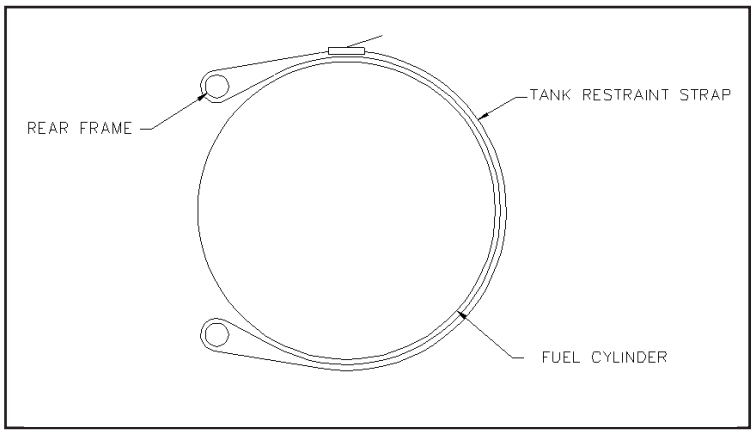
i) Hook the fuel cylinder (item 4) foot ring over the keep plate (item 12) situated at the lower end of the rear frame (item 3).

ii) Loop the cylinder 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 cylinder restraint strap must be positioned such that it passes over the cylinder upper hemisphere, thus preventing vertical cylinder movement.
b) When fitting a standard height cylinder, pass the upper cylinder restraint strap through the lower triangular loop. When fitting a tall cylinder, pass the upper cylinder 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.



▲ Fig 2: Cylinder Strap Routing

Note: Care must be taken at this stage to prevent the equipment overbalancing due to the overturning weight of the burner. To pre vent 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 rear frame cross bar to the Tema connector on the burner. Secure in position using the Tema coupling locking ring. 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) Remove the ground handling wheels (if fitted) and secure the stub axles in the stowed position using the shaft locking pins

xiv) 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.

8.42.4.3 INFLATION

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 fuelled 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 4.2.4 of the Cameron Flight Manual.

v) Cold inflate the envelope, as described in Section 4.3.1 of the Cameron 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.

8.42.4.4 TAKE-OFF

8.42.4.4.1 PRE TAKE-OFF CHECKLIST

1. Adjust the mirror to provide an un-obscured 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 one of the rapid links at the circular load ring.
11. Parachute tabs have been pulled and parachute function is correct.
12. No fabric damage above the first 4 m.
13. Rip line attached to one of the rapid links at the circular 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.

8.42.4.5 CONTROL IN FLIGHT

The following procedures should be noted for flying the Series 2 Cloudhopper Bottom End:

8.42.4.5.1 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. The pilot should be facing the direction of travel during take off.

8.42.4.5.2 Fuel Management

The remaining fuel may be determined by looking upwards into the mirror situated above the pilots' head. The contents gauge may be seen in the reflection. During flight, the pilot should note the flight time and fuel remaining at regular intervals. If at any time there is doubt over the amount of fuel remaining a landing should be made at the first available opportunity.

8.42.4.5.3 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. On no account should legs be braced with knees straight as this may result in injury.

It is most important that in any landing, the pilot light has been extinguished and the parachute line is held in the hand. The harness is not to be released until the envelope is fully deflated.

8.42.5 WEIGHT CALCULATIONS

No change.

8.42.6 BALLOON AND SYSTEMS DESCRIPTION

8.42.6.3 Burner

The burner is a single burner unit, based on the Jetstream type manifold components. Both the main burner and the liquid fire burner are controlled by toggle type handles. These are identified by engraved markings by each valve. A pressure gauge, pilot light valve and piezo igniter are also provided.

8.42.6.5 Basket

The Lindstrand Series 2 Cloudhopper is constructed around a stainless steel tubular frame in three sections. These are pinned together before flight but can be separated for transportation.

The lower frame engages the fuel cylinder at the lower rim. The cylinder is then secured in position by two cylinder straps. The fuel cylinder can be any approved standard type, as the attachment does not require any modification to the cylinder.

Two curved tubes connect the lower frame to the burner unit. The burner unit incorporates the swivel system, envelope attachment and burner controls.

The fuel cylinder contents gauge is viewed in an adjustable mirror fitted on the overhead frame. The mirror can be adjusted by hand to suit any particular pilot/cylinder combination.

The pilot harness incorporating a four-point quick release box, seat, and footrest is attached to the lower frame by nine screw-gate Quicklinks. The harness can be adjusted for size at the waist and shoulder straps. The adjustable footrest is attached to the seat by two spring clips and may be stowed under the front edge of the seat when not required and during landing.

8.42.7 BALLOON MAINTENANCE, HANDLING AND CARE

To clean mud from the fuel cylinder jacket and Cloudhopper harness, let the unit dry completely and then brush the mud away with a stiff brush.

CAUTION: NEVER clean the harness with strong solvent cleaners or other chemicals

CAUTION: NEVER leave the harness wet or damp for prolonged periods.

8.42.7.4.3 Cylinders

Note: The use - including handling, transportation and filling - of transportable gas cylinders manufactured prior to 2004 could be prohibited by legislation (e.g. ADR, RID, ADN) in many countries unless the cylinder has been reassessed for conformity against accepted design/manufacturing standards (e.g. pi-marked).

The owner/operator of the cylinder is responsible for establishing if compliance is required and ensuring that compliance is maintained. Cameron Balloons Ltd. is unable to provide advice on this matter and local guidance should be sought in the country of operation.

8.42.9 EQUIPMENT LIST

8.42.9.2 Equipment List

Basket Category	Drawing Number	Basket Description*	Applicable Cylinders	Applicable Burner Frames
A	BA-310-A-001	Lindstrand Series 2 Cloudhopper	1, 2, 3	Integral
A	BA-310-A-002	Lindstrand Series 2 Cloudhopper (German and US Variant)	1, 2, 3	Integral

Note: German and US Variant (BA-310-A-002) assembled with anti-rotation blocks may only be flown with envelopes equipped with turning vents.

Intentionally Blank Page