



Globos Balloons Globus Montgolfières Heissluftballone Montgolfiere Balónu Ballonger Kuumailmapallot Balões Balonlar 熱氣球

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SUBJECT

Cleaning and use of disinfectants on Hot Air Balloons

CATEGORY

Advisory

APPLICABILITY

Optional on Ultramagic Hot Air Balloons and its Equipment
Issue 2 of the document replaces the Initial Issue

COMPLIANCE

None (Informative only)

BACKGROUND

The COVID-19 crisis has introduced the need of intense and repetitive disinfection of environments, objects and means of transport. Ballooning activity is therefore also affected, and cleaning and disinfection methods are being temporarily required by some health authorities until new advice. ULTRAMAGIC, as Type Certificate holder, is not just obliged to investigate all possible aspects concerning to the continuing airworthiness of the aircraft but also to look after the durability of its products and the protection their users.

In line with that, ULTRAMAGIC issues this SI, which provides recommendations and warnings for pilots/operators and any staff involved in the continuing airworthiness of its balloons, whichever is responsible for any possible cleaning and disinfection works.

INSTRUCTIONS

CLEANING OF THE HOT AIR BALLOON

Below you can find an extract of the relevant sections of the manuals bearing on the cleaning of balloon equipment, with additional clarifications and observations that have been considered significant:

ENVELOPE

[AFM Section 7.5.1, 7.6; AMM Section 2.13]

Only if strictly necessary, envelope should be cleaned using clean water, although is better to dry-wash it whenever possible. A gentle non-detergent soap as long as it is rinsed clean with fresh water. Avoid the use of strong detergents as these could damage the fabric or its coating. Always ensure that the

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envelope is dry before packing. From a disinfection approach, note that most of the envelope is continuously subjected to temperatures above the 70°C while in flight, conditions under which this virus survival capacity is known to be very low.

BASKET / FUEL SYSTEM

[AFM Section 7.5, 7.6; AMM Section 3.1]

The basket, burner and cylinders may be cleaned using clean water, together with gentle soaps if necessary. For any chemical product used, read carefully first the instructions and verify its scope of use, and rinse clean fully with fresh water after the application. If in doubt about possible corrosive effects on metals or chemical attack on elastomers, rubbers and seals, product must not be used. Always endure that all systems are dry before storing. If the basket is fitted with a cushion floor it is recommended to remove it from the basket before cleaning it to avoid moisture problems. Reinstall the cushion floor again when the basket is completely dry. In order to minimize the exposure of sealing elements from the fuel circuit, it is recommended to apply products to a cloth or soft paper first rather than spraying or soaking the equipment directly.

WARNING

Compressed air or methods involving high pressure washing must never be used on equipment which might have been exposed to COVID-19. Doing so would generate risk of spreading. If fluids are to be pulverized, use only nebulisers or devices that don't cause splashing of droplets. Observe the alternative of soft cloths or papers impregnated, or dense and soft brushes soaked. In all cases, the person involved should wear the applicable protective equipment (e.g. face screens, respiration masks, gloves, etc.). If in doubt, check with the relevant health authorities.

CONSIDERATIONS ABOUT BALLOON DISINFECTION

The impact of the current pandemic is such that Health authorities worldwide, companies and research/investigation entities are issuing daily new information and/or products to face the situation and difficult the propagation of the virus. So, as initial measure, we **recommend all pilots and operators to stay attentive to new instructions and recommendations** from WHO and local health authorities. We also remind about the **obligation to meet at all times the health and safety regulations adopted by each applicable authority**, which will always prevail to the recommendations of this document.

Biological risk mitigation protocols highlight the importance of an accurate cleaning in order to achieve an effective disinfection. Therefore, it is **highly recommended to clean all affected equipment** as described before, prior **to applying a disinfection treatment**, focusing in the basket as main element exposed to the occupants. In line with that, all unnecessary contact with the envelope or fuel systems must be avoided, especially from the passengers or external people.

WHO, supported by recognized investigations, identify a very limited survival capacity of the virus on surfaces after 72 hours. So that, as **alternative to the use of disinfecting substances** and whenever it is possible, it will be preferred to subject the aircraft to a **quarantine** by storing it away from external people for a **minimum of 72 hours**, ideally in a warm and ventilated location (avoiding, however, extended exposition to direct sunlight).

With regard to the CARS-CoV-2 (COVID-19) disinfection agents, at the present date, Authorities have already identified several effective products and methods, if applied in the right concentrations, dose and methodology.

The raising interest in applying these products/procedures to disinfect hot air balloon equipments leads ULTRAMAGIC to remind of the possible risks of its use on an aircraft. With regard to the continuing airworthiness, ULTRAMAGIC is obliged to warn against known and unknown risks, aiming to minimize the possibilities of **jeopardizing the safety of the aircraft and/or durability of its materials** after a repetitive use of such products.

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In line with that, below we highlight relevant aspects and warnings about agents and disinfection techniques mentioned by some authorities (non-exhaustive summary):

AGENT	RELEVANT ASPECTS
Ethanol (Ethyl alcohol)	Flammable product while being applied. Due to its volatility, it is not recommended for a repeated use on rubber items (hoses), as it could accelerate its drying and generate cracking. Generally speaking, it does not alter metals, woods, wicker nor plastics, so it constitutes a suitable disinfection agent for metal parts , in a 70 to 90% concentration. However, it may damage seriously the coating of some envelope fabrics. If applied over leather or porous materials from the basket, consider also applying periodically re-moisturizing products to keep their flexibility (e.g. leather care treatments, or Danish oil on the wicker).
Sodium Hypochlorite (Bleach)	As chlorinated product, it may easily cause corrosion on metals and damage fabric coatings. It may cause discoloration and weakening of textile fibres and leathers.
Isopropyl Alcohol	Similar to Ethanol, though not recommended on Polyamides (Nylon).
Hydrogen Peroxide	It may damage the coating of certain envelope fabrics. It may also affect seals, rubber/nitrile items, polyamides, and generate corrosion on non-stainless steels. It may cause discoloration of certain textile fibres. Nevertheless, diluted solutions of this product at 0.5% are considered a valid disinfection option for handle ropes, leathers, padding, wicker and wooden floors , if not exposed to direct sunlight and if allowed to neutralize the viruses for at least 1 minute before rinsing. Note that the hydrogen peroxide solutions may lose disinfecting capacity with time, so it is recommended to prepare the solution prior to each disinfection.
Lactic Acid	It may damage brass or non-stainless steel parts.
Acetic Acid	It may affect the coating of fabrics, as well as polyamides, non-stainless steels and certain fuel circuit seals (Viton, FKM).
UV Treatment	There are no specific investigations about the effects of UV radiation applied to balloon materials, and there is no clear consensus about its disinfection capacity. However, an intense exposure on fabrics, porous materials and elastomers or plastics may gradually decrease its flexibility and alter its colour in long term.

The list above is not exhaustive list: **the fact that a product is not listed does not mean that it is recommended for its use** on a balloon. A thorough lecture of the **composition, cautions and application method** is mandatory for any product to be used, mainly on important elements such as the **fuel circuit items, cables and load tapes, pulleys, ropes or the envelope fabric itself**.

At all times, any disinfection means applied must not enter in conflict with the **instructions from the latest approved Flight and Maintenance Manuals applicable** for each aircraft. If in doubt, contact your local CAA, ULTRAMAGIC or any of its agents.

The use of disinfectants is considered an **unusual occurrence** in the operation, so that the pilot/operator must keep a **register** listing the date(s) of disinfection, the products used and the equipments involved.

NOTE: Although there are no specific evidences nor studies at the present date, the recursive use of disinfectants might alter the visual appearance of the materials upon which these are used in long term.

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