M210766EN-E

User Guide

Vaisala Balloon Launcher

FB16A

VAISALA

PUBLISHED BY

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1. About This Document

1.1 Version Information

This manual provides information on installing and operating Vaisala Balloon Launcher FB16A.

Table 1 Document Versions

Document Code	Date	Description
M210766EN-E	October 2018	New template.
M210766EN-D	April 2013	Information on the launcher handles updated.
M210766EN-C	March 2012	Updated for MW41. New template.

1.2 Related Manuals

Table 2 Related Manuals

Manual Code	Manual Name
M210295EN	*Vaisala Radiosonde RS92-SGP User Guide*
M210696EN	*Vaisala Radiosonde RS92-AM User Guide*
M210299EN	*Vaisala Radiosonde RS92-K/KL User Guide*
M210987EN	*Vaisala Radiosonde RS92-D User Guide*

1.3 Documentation Conventions

WARNING! Warning alerts you to a serious hazard. If you do not read and follow instructions carefully at this point, there is a risk of injury or even death.

CAUTION! Caution warns you of a potential hazard. If you do not read and follow instructions carefully at this point, the product could be damaged or important data could be lost.

Note highlights important information on using the product.

Tip gives information for using the product more efficiently.

Lists tools needed to perform the task.

Indicates that you need to take some notes during the task.

2. Product Overview

2.1 Introduction to Vaisala Balloon Launcher

Vaisala Balloon Launcher FB16A is a manually operated set for launching radiosondes. Designed for one-man operations, the lightweight balloon launcher is made of glass-fiber reinforced plastic. The balloon launcher is used at meteorological stations and on board ships.

The balloon launcher is equipped with an octagon-shaped stitched bag closed with a canvas belt. The balloon is launched by releasing the canvas that holds it down.

In normal use, the balloon launcher is secured with pegs driven into the ground and with three straps. In shipboard use, the balloon launcher is fastened with the straps to the ship's superstructure.

The balloon launcher is completely mechanical.

CAUTION! When you operate the balloon launcher, observe the standard safety rules for inflammable gases.

2.2 Safety

Balloon Launcher delivered to you has been tested for safety and approved as shipped from the factory. Note the safety precautions.

WARNING! Ground the product and verify outdoor installation grounding periodically. Failure to provide proper grounding can result in injury or death from electrical shock and can severely damage the equipment.

WARNING! Do not substitute parts or modify the system, or install unsuitable parts in the system. Improper modification can damage the product or lead to malfunction.

3. Installation

3.1 Launching Site Requirements

When selecting the launching site, consider the following:

- No power lines, trees, or other obstructions must be close by.
- The minimum distance to any obstruction depends on the wind speed and direction.
- In marine operation, you must install the balloon launcher so that the balloon is launched on the lee side.

3.2 Assembling the Balloon Launcher

To assemble the balloon launcher, do the following steps. The letters in the steps refer to the items in the following figure.

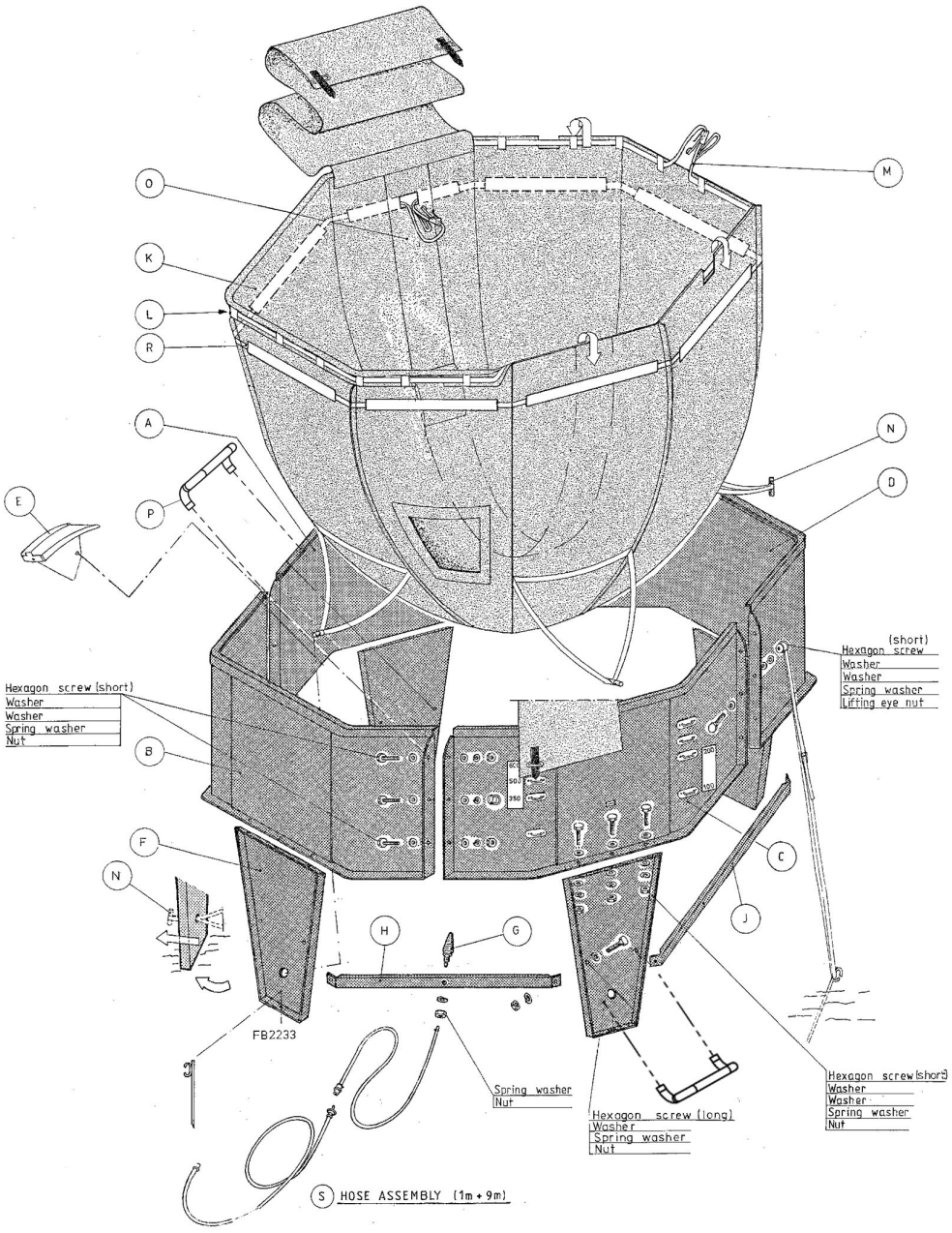

Figure 1 Balloon Launcher FB16A Assembly

A, B, D Frame modules
C Launching module with eyelets
E Radiosonde holder
F Launcher feet
G Nozzle
H Nozzle bracket
J Brackets (3 pcs)
K Canvas bag

L Folded edge of the canvas bag
M Band
N Nylon pin
O Auxiliary launching strap
P Handle (2 pcs)
R Band for tightening the launching bag aperture
S Hose assembly (1 m + 9 m with connectors)

1. Assemble the frame modules (A, B, C and D). Insert the fixing screws (the shorter ones) and lifting eye nuts in the correct holes.
2. Install the radiosonde holder (E) between the two frame modules so that the module C (the one with eyelets) is always to the right of the radiosonde holder.
3. Attach the feet using the shorter screws (F).
4. Fasten the nozzle (G), to the nozzle bracket (H). Attach the nozzle bracket to feet of the body modules B and C.
5. Attach the three other brackets to the feet of the other frame modules (J).
6. Install the two handles (P) onto the opposite sides of the balloon launcher as shown in the following figure. Tighten all fixing screws.

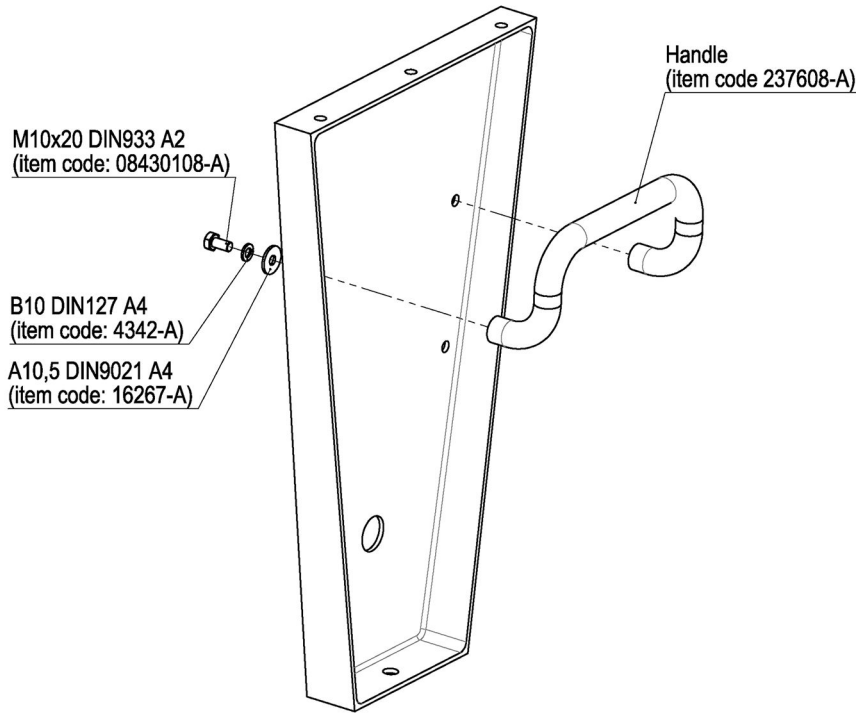

Figure 2 Installing FB16A Handles

7. Fit the canvas bag inside the frame (K). Make sure that the bag opening aligns with the nozzle.
8. Fold the edge of the canvas bag over the rim of the launcher frame as shown in item (L) and fasten the band (M).
9. Drive the nylon pins through the holes in the launcher frame feet (N). Make sure that the canvas bag fits snugly.
10. Connect the gas hose onto the nozzle using the hose clamp.

3.3 Packing the Balloon Launcher for Transportation

After use, the balloon launcher can be compactly packed for transportation.

1. Remove the straps with buckle, pegs and gas hoses.
2. Open the straps of the canvas bag, remove it from the launcher, and roll it up.
3. Remove the radiosonde holder, the nozzle bracket, the frame modules and the feet, if necessary.
4. Clean and stack the launcher frame modules. Clean and pack all parts, including the canvas bag.
5. Fasten the coiled hose and bag containing loose parts inside the frame using two straps with buckle.

The balloon launcher is now ready for transportation.

CAUTION! It is not recommended to store the balloon launcher assembled outdoors for longer periods of time. UV radiation, salt spray, and high winds may damage the launch bag. Keep the balloon launcher inside or disassembled when not in use.

4. Operation

4.1 Operation Overview

After you have installed the balloon launcher, operating the balloon launcher consists of the following procedures:

1. Aligning and securing the balloon launcher.
2. Preparing the radiosonde and the balloon launcher.
3. Filling the balloon.
4. Launching the balloon.

CAUTION! When you operate the balloon launcher, observe the standard safety rules for inflammable gases.

4.2 Aligning and Securing the Balloon Launcher

1. Turn the balloon launcher so that the radiosonde holder is on the lee side.
2. Insert pegs through the holes in the legs to secure the balloon launcher, item A in the figure below. Attach the straps (B) with pegs (C). (The pegs are identical.)

You can launch the balloon with a difference of approximately 45 degrees between wind directions. If the difference exceeds 45 degrees, you must reposition the balloon launcher.

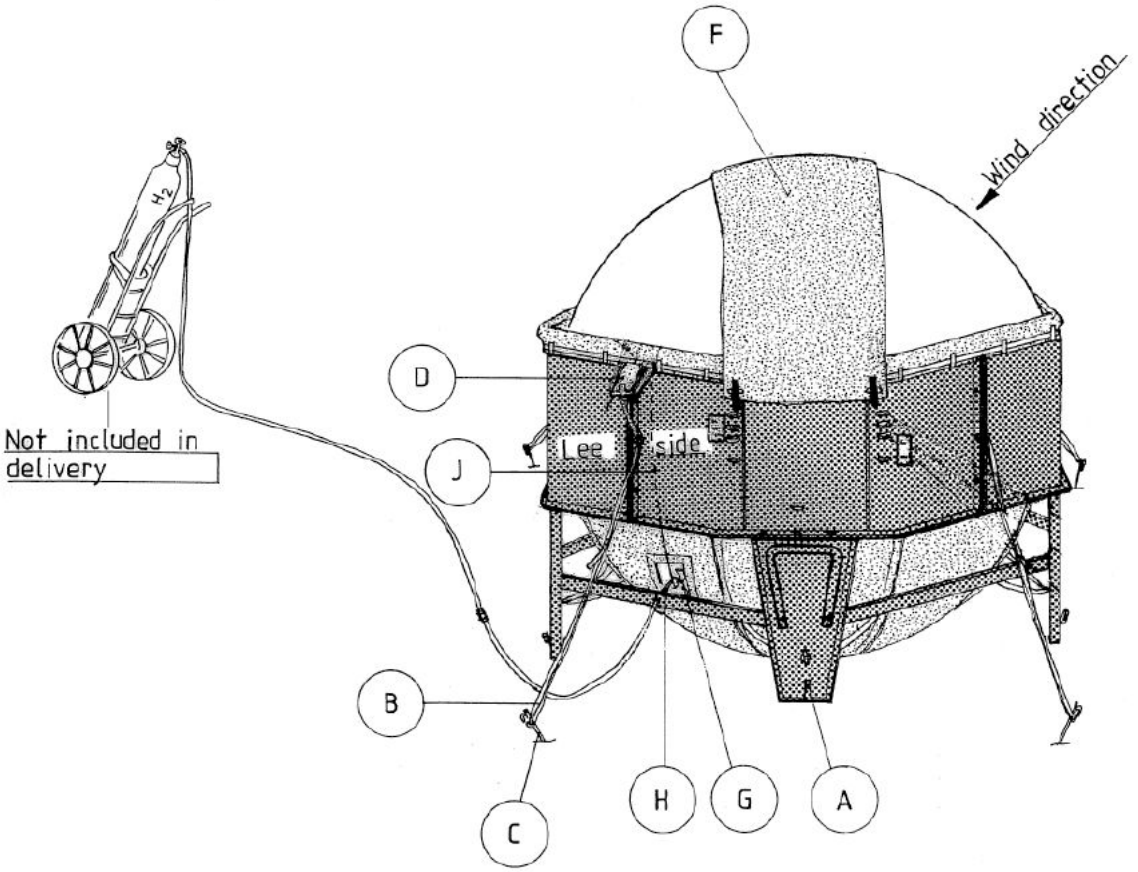

Figure 3 Balloon Launcher Setup

A Frame module pegs
B Straps
C Pegs
D Radiosonde holder
F Canvas
G Unwinder
H Nozzle
J Unwinder string

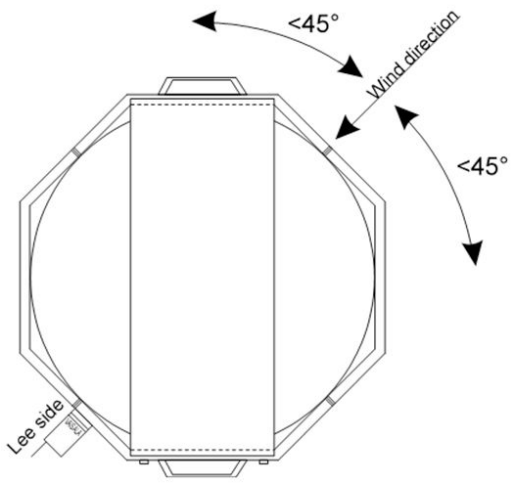

Figure 4 Balloon Launcher Setup - Top View

4.3 Preparing the Radiosonde and the Balloon Launcher

If you are using 100 g or 200 g balloons, tighten the launching bag aperture first using the band.

1. Set the ready-to-launch radiosonde in the radiosonde holder. Note that the radiosonde is fixed by a spring.
2. Remove any debris, snow or ice from inside the canvas bag.
3. Make sure that the auxiliary launching strap rests flat on the bottom of the canvas bag.
4. Release approximately 1 m of string from the unwinder.
5. Drop the unwinder down inside the canvas bag and pull it out through the nozzle opening.
6. Insert the straps of canvas into the eyelets according to the selected balloon weight.

4.4 Filling the Balloon

1. Pull the balloon neck over the nozzle.
2. Make sure that the balloon is not twisted and can be inflated unhindered.
3. Check that the auxiliary launching strap does not disturb the inflation of the balloon. When the required gross lift is reached, the canvas is taut and the balloon reaches the launcher walls.

The degree of inflation depends on the internal dimensions of the balloon launcher.

4. Observe the average rate of ascent to determine whether the balloon is correctly inflated.

4.5 Launching the Balloon

1. Attach the unwinder to the neck of the inflated balloon.
   For instructions, see the appropriate radiosonde User Guide.
2. Make sure that the radiosonde string unwinds properly and is inside the balloon launcher.
3. Insert the unwinder through the nozzle opening inside the canvas bag so that the string is taut and does not damage the balloon during the release.
4. Launch the balloon by releasing the straps of the canvas belt and lifting off the canvas. The balloon will come out by itself.
   If the canvas bag is wet, the balloon may cling to the walls of the bag. In that case, release the balloon with the launching strap inside the bag.

Once past the launcher trim, the balloon will pull the radiosonde from the holder and the sounding will start.

5. Writing Problem Report

When troubleshooting the product, write a problem report including:

- What failed (what worked / did not work)?
- Where did it fail (location and environment)?
- When did it fail (date, immediately / after a while / periodically / randomly)?
- How many failed (only one defect / other same or similar defects / several failures in one unit)?
- What was done when the failure was noticed?
- What was connected to the product and to which connectors?
- Input power source type, voltage, and list of other items (such as lighting, heaters, and motors) that were connected to the same power output.
- Are all parts connected and grounded properly? Take a photo to help the troubleshooting.

6. Technical Data

6.1 Specifications

Table 3 FB16A Mechanical Specifications

Property	Description/Value
Width (assembled)	1760 mm
Height (assembled)	1270 mm
Disassembled for transportation	1310 mm × 670 mm × 520 mm
Internal diameter (max.)	1600 mm
Weight (approx.)	53 kg
Color (frame and canvas)	Green
Gas hose	Glassfiber reinforced PVC hose Ø 16/10 Length 9 m and 1 m with connectors

The balloon launcher is dimensioned for the following balloon sizes.

Table 4 Recommended Balloon Weight

Balloon Weight	Description/Value		
Position 1	100 g	200 g	
Position 2	350 g	500 g	600 g

6.2 Parts List

Table 5 FB16A Parts (DRWG FB2233)

Item	Quantity	Part No.
Module (A, B, D)	3	11250
Launching module (C)	1	11251
Foot (F)	4	11252
Strap with buckle (used for tying up the entire launching bag) (M)	2	12482
Handle (P)	2	237608
Bracket (J)	3	60201

Item	Quantity	Part No.
Nozzle Bracket (H)	1	60202
Nozzle (G)	1	60199
Accessory Kit		
Carrying Bag (holds the accessory kit)	1	12481
Packing list	1	FB4246
Strap with buckle	2	12482
Launching bag (K)	1	12480
Radiosonde holder (E)	1	DRW219498
Hose Assembly (S)		
Hose, Ø16/10, 20 bar	1 m + 9 m	1020
Hose clamp	4	1018
Hose nipple	1	1086
Hose coupling	1	1087
Anchoring peg	8	1019
Lifting eye nut M10	4	0951
Hexagon screw M10 x 30	24	10958
Hexagon screw M10 x 40	8	15435
Hexagon nut M10	28	3069
Spring washer B10	32	4342
Washer A10.5	56	4777

Appendix A. Safety Instructions for Balloon Operators

Photocopy these instructions and place the list in clear view in the balloon filling shed and in the sounding compartment.

WARNING! New operator! Carefully study the instructions for using the hydrogen generator and for the correct method of inflation.

1. No smoking or naked flame allowed.
2. If possible, avoid wearing clothing made of nylon or other synthetic fibers to prevent a build-up of static charges. Do not wear shoes with rubber soles.
3. Wear protective glasses.
4. Regularly check that the gas tube fits securely to the gas cylinder or generator nozzle and to the balloon inflation nozzle.
5. Take care to prevent a gas leak in the shed when interrupting inflation to replace a gas cylinder.
6. Never use a repaired balloon.
7. Should a leak develop in the balloon during inflation, do not let gas escape from the balloon inside the shed if possible. Instead, release the defective balloon without load. It is not advisable to deflate the balloon, even outside the shed.
8. Do not touch the balloon with bare hands except when holding it by the neck. Wear soft cotton gloves.
9. Ensure that there are no pointed objects in the shed. Nails, hooks, hinges, padlocks, etc., are dangerous as they might scratch the inflated balloon. The balloon film is only 0.05 ... 0.1 mm thick upon launch; the slightest scratch could cause the balloon to burst prematurely.
10. Keep the doors of the shed shut while inflating the balloon on a windy day. However, ensure that the shed is properly ventilated.
11. No unauthorized person shall be allowed admittance to the shed while the hydrogen generator is in operation or balloon inflation is going on.
12. Ensure that all tools and other implements not essential for balloon inflation have been removed from the shed.
13. Do not take any electrical devices (cell phone etc.) to the balloon filling shed or close to the balloon inflated with hydrogen. Safe distance when outdoors is typically 1.5 meters.

14. Always keep the radiosonde at least 50 cm below the level of the gas nozzle and the inflated balloon, and at least 1.5 meters away from the gas cylinder/hydrogen generator, connectors, and tubing. Avoid taking the radiosonde inside the balloon filling shed, if possible.
15. Follow all regulations concerning hydrogen safety.

Technical Support

Contact Vaisala technical support at helpdesk@vaisala.com. Provide at least the following supporting information:

- Product name, model, and serial number
- Name and location of the installation site
- Name and contact information of a technical person who can provide further information on the problem

For more information, see www.vaisala.com/support.

Warranty

For standard warranty terms and conditions, see www.vaisala.com/warranty.

Please observe that any such warranty may not be valid in case of damage due to normal wear and tear, exceptional operating conditions, negligent handling or installation, or unauthorized modifications. Please see the applicable supply contract or Conditions of Sale for details of the warranty for each product.

Recycling

Recycle all applicable material.

Follow the statutory regulations for disposing of the product and packaging.

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