RBR*fermata*

UNDERWATER BATTERY CANISTER GUIDE

rbr-global.com

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1 Overview

RBR offers optional battery canisters which can extend deployment of any underwater instrument, including these options:

- 14V or 28V variants
- quick-release or low-profile handles
- 750m, 4000m, or 8000m depth rating

The RBR*fermata* automatically configures the internal arrangement of batteries regardless of cell voltage or chemistry, to provide the nominal output. It extends deployments by supplying up to 2.8kWh of energy to any underwater instrument. This is about forty times greater than our standard battery carriage capacity. A built-in resettable fuse ensures overcurrent protection, resetting automatically after a fault. The end-cap features three mounted MCBH connectors.

Fig. 1. RBRfermata | deep with quick-release handles

A variant with low-profile handles is available for flexible integration with the Wirewalker (DMO).

Fig. 2. RBRfermata with low-profile handles

The battery pack design accommodates 48 individual D-cells. An innovative battery carrousel facilitates simple, tool-free battery replacement.

Fig. 3. RBRfermata with quick-release handles, battery carousel pulled out

2 Specifications

Physical specifications

	Model with quick-release handles	Model with low-profile handles
Power	48 D-cells	48 D-cells
Connectors	Three MCBH-6-FS	Three MCBH-6-FS
Housing	Plastic or Ti	Plastic or Ti
Length	663mm	686mm
Diameter	Ø140mm	Ø140mm
Handles	250mm x 142mm	Ø140mm
Weight (plastic) With lithium batteries With Ni-MH batteries With alkaline batteries	 ~14kg in air, ~3kg in water ~17kg in air, ~6kg in water ~16kg in air, ~5kg in water	 ~13kg in air, ~3kg in water ~16kg in air, ~6kg in water ~15kg in air, ~5kg in water
Weight (Ti) With lithium batteries With Ni-MH batteries With alkaline batteries	 ~27kg in air, ~16kg in water ~30kg in air, ~19kg in water ~29kg in air, ~18kg in water	 ~29kg in air, ~19kg in water ~32kg in air, ~22kg in water ~31kg in air, ~21kg in water
Depth rating	750m, 4000m, 8000m	750m, 4000m, 8000m
Operating temperature	-5°C to 35°C	-5°C to 35°C

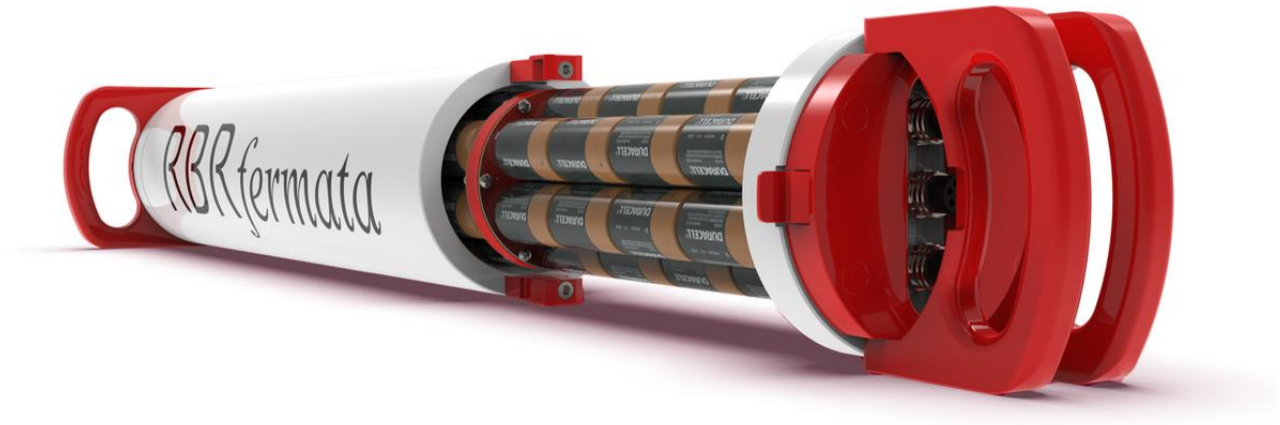
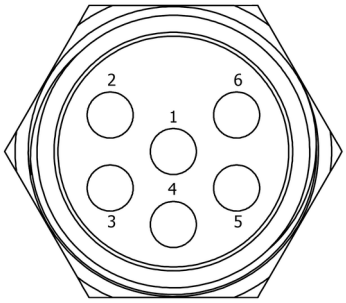


Fig. 4. Battery carrousel pulled out

Electrical specifications

	14V variant			28V variant
Battery type	Lithium thionyl chloride (Li-SOCl2)	Nickel metal hydride (Ni-MH)	Alkaline (Zn-MnO2)	Lithium thionyl chloride (Li-SOCl2)
Nominal voltage	14.4V	14.4V	18.0V	28.8V
Maximum voltage	14.7V	17.4V	18.0V	29.2V
Maximum current	15A	15A	4A	15A
Capacity	2.8kWh	0.5kWh	0.9kWh	2.8kWh

External MCBH-6-FS connector pinout



Pin No.	USB
1	Ground
2	Power
3	N/C
4	N/C
5	N/C
6	N/C

Fig. 5. Three MCBH-6-FS connectors

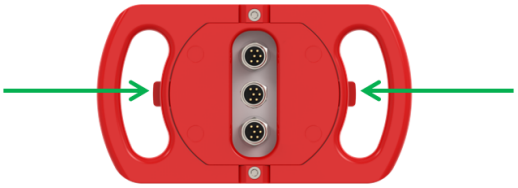
RBR offers an option to retrofit legacy RBR*fermata* battery canisters with the new battery carrousel, quick-release handles, and new electronic hardware. To return your RBR*fermata* for retrofitting, please contact RBR support team.

3 Opening and closing the RBRfermata

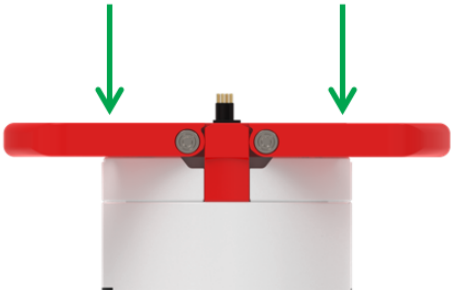
Opening the RBR*fermata*

1. If you are using the model with **quick-release** handles:

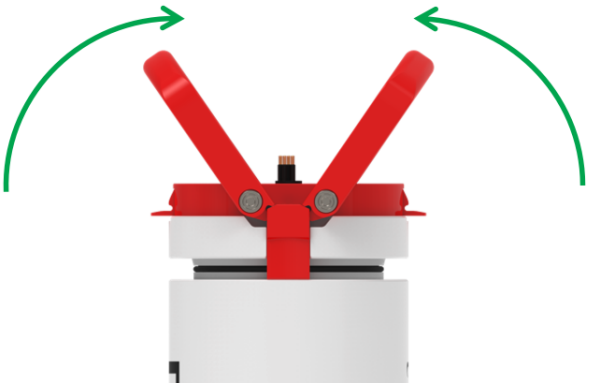
   A. Locate two release tabs on the opposite sides of the battery end-cap.



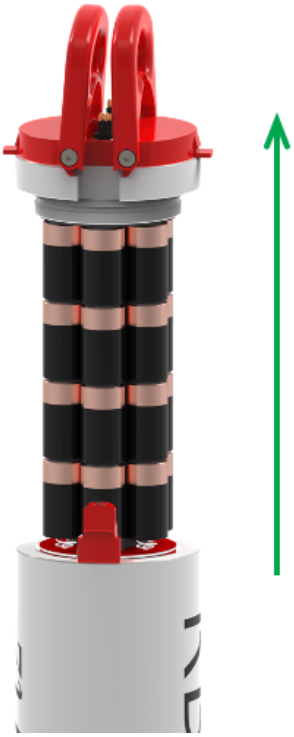
   B. Push at the tabs from the top to release the end-cap handles.



   C. Move the handles up from both sides.



   D. Firmly grip both battery end-cap handles and pull them up to remove the battery carrousel.



2. If you are using the model with **low-profile** handles:

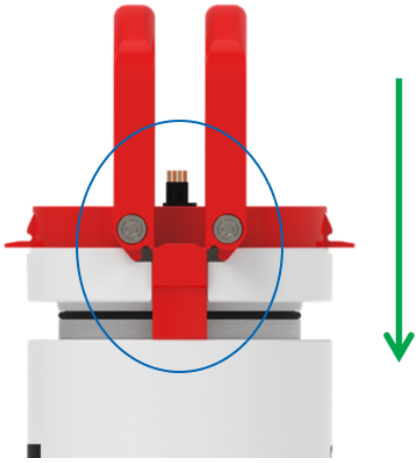
   Firmly grip both battery end-cap handles and pull them up to remove the battery carrousel.

Closing the RBR*fermata*

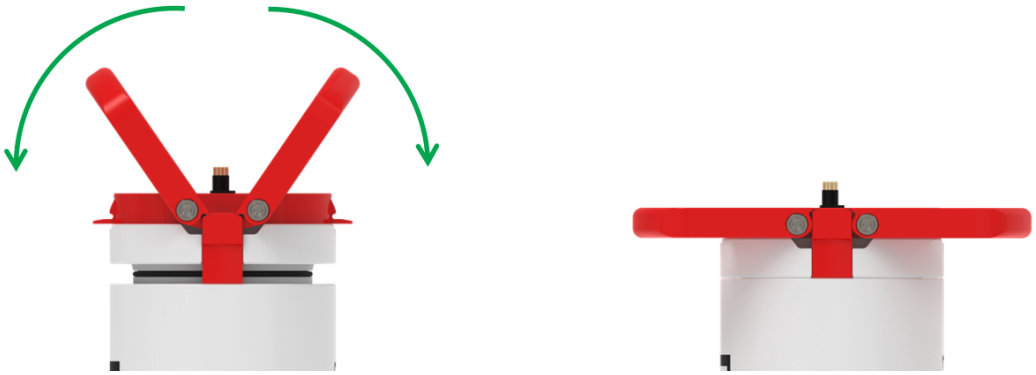
1. If you are using the model with **quick-release** handles:

   A. Align the battery end-cap with the slots on the housing and gently push down to ensure it fits in place.

   > There is only one way to insert the battery end-cap. If it does not latch, rotate the battery carrousel 180 degrees and try again.



   B. Place both hands on the top of the end-cap handles and gently push them out, towards the opposite sides, until they click.



2. If you are using the model with **low-profile** handles:

   Place the battery end-cap on the housing and gently push down to ensure it fits in place.

4 General maintenance

The RBR*fermata* underwater battery canisters are shipped with the O-rings replacement kit (O-rings, silicone compound, and O-ring removal tool) and lithium battery retention bands.

4.1 Installing the batteries

The RBR*fermata* battery canisters ship with no batteries, unless requested otherwise at the time of order.

> Always remove the batteries from the RBR*fermata* during long-term storage!
>
> Doing so will prevent internal damage due to battery leakage and/or corrosion.

To install new batteries before deployment, open your RBR*fermata*.

Alkaline and nickel metal hydride batteries

When using alkaline or nickel metal hydride batteries, simply put them in the carrousel, ensuring correct polarity. These batteries are magnetic and hold in place with no additional steps required.

Fig. 6. RBRfermata with alkaline batteries installed

Lithium batteries

Lithium batteries do not have enough magnetic material to hold them together in assembly. Use the red retention bands provided with your RBR*fermata*, as shown.

> Verify polarity before installing the batteries.

Fig. 7. Lithium batteries retained in assembly

After installing the batteries, close your RBR*fermata*.

4.2 Replacing the O-rings

Care for the O-ring is the single most important item of maintenance. A water leak can damage the RBR*fermata* beyond repair. The battery canister seal depends upon its O-ring, and proper O-ring maintenance is crucial.

> The O-ring may lose elasticity over time, even when the RBR*fermata* is not deployed. RBR strongly recommends replacing the O-ring regularly.

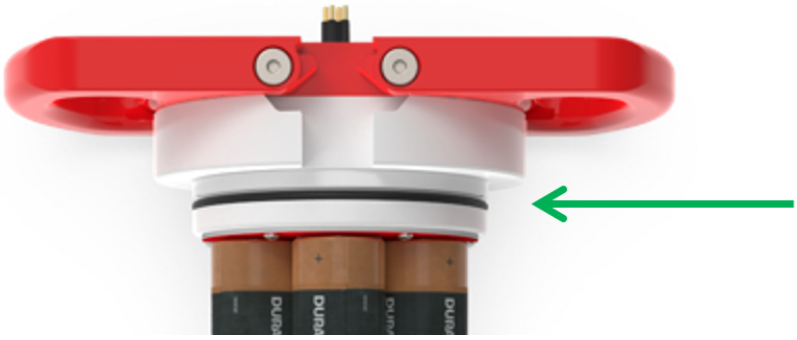


Fig. 8. Location of the O-ring

To access the O-ring, open your RBR*fermata*.

Inspecting the O-ring

Visually inspect the new O-ring for nicks and scratches before installing it. Pay attention to the following areas:

- The surface of the O-ring itself
- The mating surface on the inside of the case between the threads and the open end
- The groove in the end-cap where the O-ring sits

Avoid using any object that could scratch the O-ring or any of its mating surfaces.

If dirt is present in the O-ring groove, remove the O-ring as described below and thoroughly clean the groove.

Do not return this old O-ring to the battery canister! If you remove the O-ring from the RBR*fermata* for any reason, always replace it with a new one.

If the surfaces of the O-ring groove are scratched, pitted, or damaged, contact RBR for advice.

Replacing the O-ring

Do not use metal screwdrivers or any other metal tool! They may scratch the O-ring groove and render the end-cap useless.

1. Use the plastic O-ring tool (included with the RBR*fermata*) to remove the O-ring from its groove. The O-ring may need to stretch quite a bit as it is pushed off. This requires some effort, but can be done by hand.
2. Clean the groove thoroughly with a soft, lint-free cloth and compressed air, if necessary.
3. Select the proper O-ring and inspect it for damage.
4. Lubricate the new O-ring with a very light film of silicone compound (included with the instrument).
5. Install the new O-ring by pushing it into place and popping it into its groove.
6. Once the new O-ring is in place, inspect it once more for scratches and debris, and wipe away any silicone compound deposited on the end-cap.
7. Once the inspection is complete, close your RBR*fermata*.

O-rings on | deep variants

The | deep variants of the battery canisters use two O-rings. One is the main O-ring, and the other is the backup. Both are required to protect the RBR*fermata* from flooding.

Orienting the O-rings on | deep variants

Correct placement and orientation of the two O-rings are critical to maintaining depth rating integrity.

The main O-ring has a round profile. It must be installed first.

The backup O-ring is flat on one side, and concave on the other. When installed, the concave side must face the main O-ring.

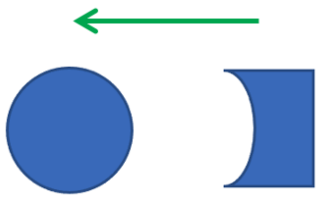


Fig. 9. Orientation of the O-rings (Main O-ring, Backup O-ring)

4.3 Connectors

Cable bend radius

The smallest bend radius for RBR supplied cables is 15cm.

Lubricating the connectors

Lubrication improves watertight sealing, prevents corrosion, and reduces the force required to de-mate the connector. Use the silicone compound provided with your instrument:

- Apply the silicone compound to all female connectors before every mating.
- Ensure each connector hole is filled with approximately 30% lubricant.

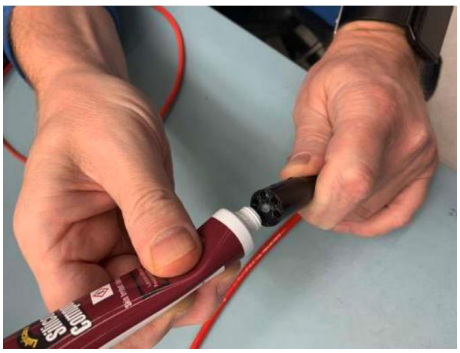


Fig. 10. Applying silicone compound to the female connectors.

Fig. 11. Cross-sectional view of a connector with 30% lubricant fill.

Reducing mechanical stress

- Do not pull on the cable.
- Hold onto the connector to pull out the cable.
- Disconnect by pulling straight out, not at an angle.
- Avoid sharp bends at the point where the cable enters the connector.
- Avoid angular loads on the connector.

4.4 Repairs

RBR supports all our products. Contact us immediately at support@rbr-global.com or via the RBR website if there are any issues with your battery canister. Please have the model and the serial number of the unit ready. Our support team will work to resolve the issue remotely. In some cases, you may have to return your RBR*fermata* to RBR for further servicing.

There are no user-repairable parts of the battery canister. Any attempt to repair without prior authorisation from RBR will void the warranty. Refer to the RBR warranty statement.

To return a product to RBR for an upgrade, repair, or calibration, please contact our support team to obtain a return merchandise authorisation code (RMA) and review the detailed shipping information on the RBR website.

5 Revision history

Revision No.	Release date	Notes
A	28 March 2022	Original
B	28 February 2023	Added information on the variant with low-profile handles. Corrected the image of MCBH-6-FS connector.
C	31 May 2023	Updated the Overview and Specifications sections.
D	31 July 2023	Added a warning to the Installing the batteries section.
E	16 July 2024	Updated the maximum depth rating to 8000m in the Overview and Specifications sections. Updated the image of batteries retained in assembly in the Installing the batteries section.
F	27 September 2026	Migrated. Reformatted and reviewed; no technical changes.