

Sales and Service

Handling of AC Servo Amplifier Batteries for the United Nations Recommendations on the Transport of Dangerous Goods

Thank you for your continued patronage of the Mitsubishi Electric AC servo system. To reflect the United Nations Recommendations on the Transport of Dangerous Goods (hereinafter Recommendations of the United Nations), we have modified the description on the package for AC servo amplifier batteries since January 2009. The description complies with transport regulations for lithium metal batteries in the Technical Instruction (ICAO-TI) by the International Civil Aviation Organization (ICAO) and the International Maritime Dangerous Goods Code (IMDG Code) by the International Maritime Organization (IMO).

The handling of lithium metal batteries in air transportation has been changed, in response to the IATA (International Air Transport Association) Dangerous Goods Regulations 63rd Edition issued on January 1, 2022. The changes are indicated by the bold underlined letters. In addition, the handling of lithium metal batteries in maritime transportation has also been changed as follows.

1. Target Models

Model	Type	Lithium content	Battery weight	Remarks
MR-BAT	Cell	0.48 g	13 g	
MR-J3BAT	Cell	0.65 g	16 g	Cells or assembled batteries with more than 0.3 g of lithium content must be handled according to Class 9 Dangerous Goods Regulations, depending on packaging requirements.
MR-J3W03BATSET	Cell	0.65 g	16 g	
MR-BAT6V1SET(-□) (Note 1)	Assembled battery (Two)	1.20 g	34 g	
MR-BAT6V1	Assembled battery (Two)	1.20 g	34 g	
MR-BAT6V1BJ	Assembled battery (Two)	1.20 g	34 g	
MR-J2M-BT(-□) (Note 2)	Assembled battery (Seven)	4.55 g	112 g	Assembled batteries with more than 2 g of lithium content must be handled complying with Class 9 Dangerous Goods Regulations regardless of packaging requirements.
MR-JBAT4	Assembled battery (Four)	2.60 g	64 g	
MR-JBAT8	Assembled battery (Eight)	5.20 g	128 g	

Note 1. The symbol "□" indicates a blank or an alphanumeric character. (Example: A)

Note 2. The symbol "□" indicates a blank or two alphanumeric characters. (Example: EB)

2. Purpose

Safer transportation of lithium metal batteries.

Date of issue	December 2014 (Revision: February 2022)	Title	Handling of AC Servo Amplifier Batteries for the United Nations Recommendations on the Transport of Dangerous Goods	Mitsubishi Electric Corp., Nagoya Works 1-14, Yada-minami 5-chome, Higashi-ku, Nagoya 461-8670 Tel.: +81 (52) 721-2111 Main line
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3. Handling during Transportation

The following shows how to handle lithium metal batteries in transportation. The batteries alone transported by air are classified as UN3090, and the batteries packed with or contained in equipment transported by air are classified as UN3091. Lithium metal batteries are classified as SP188 when transported by sea as non-dangerous goods.

(1) Air transportation of lithium metal batteries alone

Packaging requirement	Classification	Main requirement
Lithium content per cell ≤ 1 g Number of cells per package ≤ 8	UN3090 PI968 Section II To be transitioned to Section IB on or after April 1, 2022	<ul style="list-style-type: none"> The package must pass a 1.2 m drop test, and the lithium battery mark (size: 100 × 100 mm) must be attached on the package. Refer to the requirements of Section IB on or after April 1, 2022.
Lithium content per battery ≤ 2 g Number of batteries per package ≤ 2		
Lithium content per cell ≤ 1 g Number of cells per package > 8	UN3090 PI968 Section IB	<ul style="list-style-type: none"> The total battery weight per package must be 10 kg or less. The package must pass a 1.2 m drop test, and the lithium battery mark (size: 100 × 100 mm) must be attached on the package. The batteries must be handled conforming to Class 9 Dangerous Goods Regulations (e.g.: displaying the lithium battery hazard label).
Lithium content per battery ≤ 2 g Number of batteries per package > 2		
Lithium content per cell > 1 g	UN3090 PI968 Section IA	<ul style="list-style-type: none"> The total battery weight per package must be 35 kg or less. The package must comply with UN specification packing requirements and be handled complying with Class 9 Dangerous Goods Regulations (e.g.: displaying the lithium battery hazard label).
Lithium content per battery > 2 g		

Transportation of lithium metal batteries alone classified as UN3090 PI968 Section II must comply with Section IB after three months of the transition period which terminates on March 31, 2022.

Lithium metal batteries transported as cargo on passenger aircraft have been prohibited since January 1, 2015.

Lithium metal batteries can be transported by sea or cargo aircraft.

(2) Air transportation of lithium metal batteries packed with or contained in equipment

- (a) For batteries packed with equipment, follow the requirements of UN3091 PI969. Batteries are classified into either Section II/Section I depending on the lithium content/ packaging requirements.
- (b) For batteries contained in equipment, follow the requirements of UN3091 PI970. Batteries are classified into either Section II/Section I depending on the lithium content/ packaging requirements. The special handling may be unnecessary depending on the number of batteries and gross weight per package.

Lithium metal batteries packed with or contained in equipment can be transported as cargo on passenger aircraft.

(3) Maritime transportation of lithium metal batteries

Packaging requirement	Classification	Main requirement
Lithium content per cell ≤ 1 g	SP188	<ul style="list-style-type: none"> For transportation of batteries alone, the total weight of the package must be 30 kg or less. The package must pass a 1.2 m drop test, and the lithium battery mark (size: 100 × 100 mm) must be attached on the package. For transportation of batteries packed with or contained in equipment, the special handling may be unnecessary depending on the number of batteries per package.
Lithium content per battery ≤ 2 g		
Lithium content per cell > 1 g	-	<ul style="list-style-type: none"> The package must comply with UN specification packaging requirements and be handled complying with Class 9 Dangerous Goods Regulations (e.g.: displaying the lithium battery hazard label).
Lithium content per battery > 2 g		

4. Package at Our Shipment

When the packages containing the target batteries are shipped overseas directly from us, the lithium battery mark (Figure 1) is displayed on the packages.

If the packages are shipped domestically, the mark (Figure 1) is not displayed.

Thus, when customers transport the domestic-bound packages overseas, the lithium battery mark (Figure 1) must be displayed on the packages by customers. The responsibility for the cargo lies with the customers. Please contact a transportation company for the lithium battery mark (Figure 1).

For both domestic and overseas shipments, the target battery units which must be handled as Class 9 Dangerous Goods are packaged according to UN specification packaging requirements, and the packages bear the lithium battery hazard label (Figure 2).

The change does not affect the functions and performance of the product.



* Place for UN number(s)

** Place for telephone number for additional information

Figure 1. Lithium battery mark example



Figure 2. Lithium battery hazard label example

5. Transportation Precaution for Customers

For maritime or air transportation, the lithium battery mark (Figure 1) is required for the package of a Mitsubishi Electric cell or battery and the outer package containing several packages of Mitsubishi Electric cells or batteries. When the content of a package must be handled as dangerous goods (Class 9), the package must comply with UN specification packaging requirements. Please issue Shipper's Declaration for Dangerous Goods and an Air Waybill (AWB) and attach the lithium battery hazard label (Figure 2) to the packages for transportation.

This document outlines the IATA Dangerous Goods Regulations 63rd Edition and the conditions of SP188 for non-dangerous goods transported by sea. The IATA Dangerous Goods Regulations are revised, and the requirements are changed annually. When customers transport lithium batteries by themselves, the responsibility for the cargo lies with the customers. Thus, be sure to check the latest version of the IATA Dangerous Goods Regulations and International Maritime Dangerous Goods Code (IMDG Code).

Revision

Version	Date of issue	Revision
A	January 2017	This document is revised to include information on the IATA Dangerous Goods Regulations 58th Edition (effective January 1, 2017).
B	February 2022	This document is revised to include information on the IATA Dangerous Goods Regulations 63rd Edition (effective January 1, 2022). The section on maritime transportation of lithium metal batteries was added. Descriptions on the label valid until December 31, 2018 were deleted.