

### 5.3.5 Replacing the backup battery

An absolute encoder is used for the position detector, so while power of controller is turned off the position must be saved by the backup battery. The controller also uses a backup battery to save the program, etc. The battery is the lithium battery. These batteries are installed when the robot is shipped from the factory, but as these are consumable parts, they must be replaced periodically by the customer.

The guideline for replacing the battery is one year, but this will differ according to the robot's usage state. There exists the kinds of the errors about the battery shown in Table 5-5. If error 7500 occurs, please exchange the battery of the robot arm and the controller simultaneously.

Table 5-5 : The error about the battery

Item	Error number	Description	Measure
Controller	7520	The battery consumption time was exceeded	Replace the battery
	7510	Battery voltage low	
	7500	No battery voltage	The backup data cannot be guaranteed if this error occurs.
Robot arm	7520	The battery consumption time was exceeded	Replace the battery
	133n <sup>Note1)</sup>	Encoder battery voltage low.	
	112n	Encoder ABS position data lost	The backup data cannot be guaranteed if this error occurs.

Note1) "n" indicates the axis number

The method of replacing the battery of robot arm is shown below.

refer to the separate "Instruction manual/Controller setup, basic operation, and maintenance" about controller's battery.

About the purchase of the battery, refers to Page 96, "5.5 Maintenance parts".



## CAUTION

If error 7500 or 112n occurs, the program data and other data in the controller is lost and it becomes necessary to load the data such as program and origin data again.

# (1) Replacing the battery (robot arm)

## **CAUTION**

The power supply for the encoder is supplied by cable connected with battery board. The cable must be connected while replacing the battery or operating usually. Thus, if the cable connection is incomplete, the encoder position data will be lost, and resetting the origin is necessary.

## **CAUTION**

Replace the battery one by one . If all batteries are removed the encoder data will be lost, and resetting the origin is necessary.

The battery installation position is shown in Fig. 5-17. Refers to the figure and replaces the batteries in the following procedures.

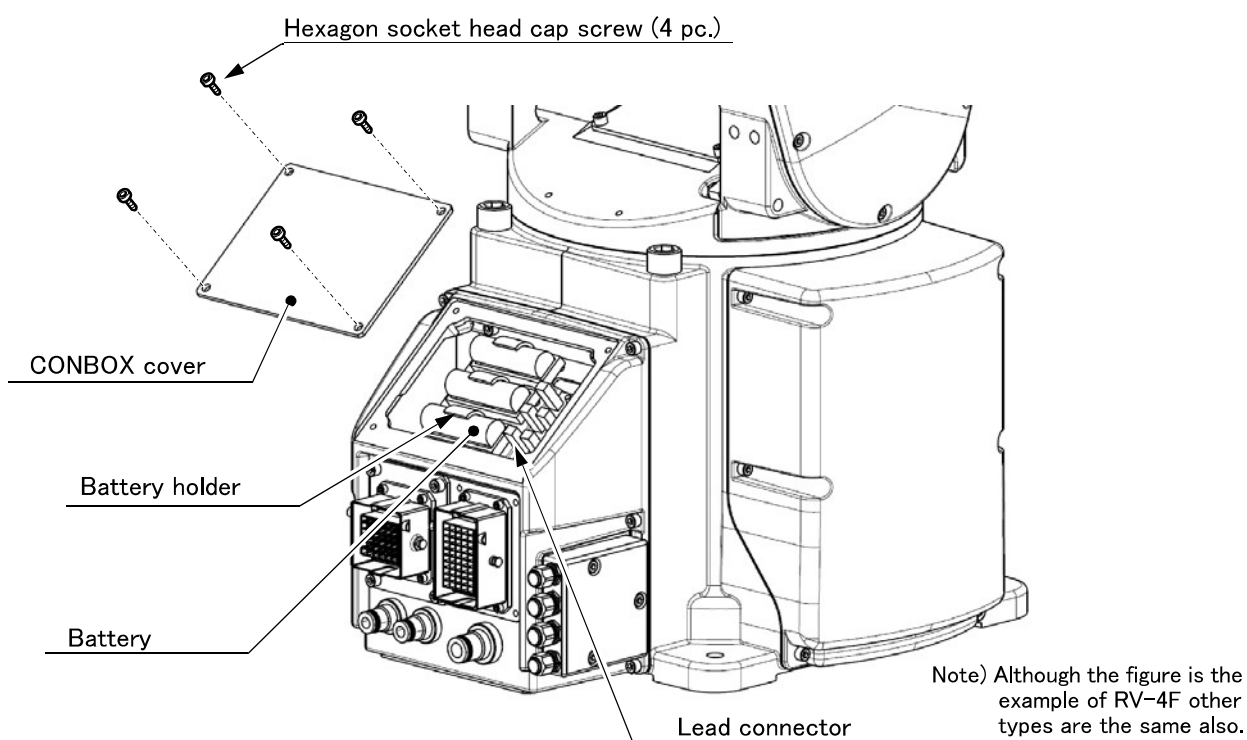


Fig.5-17 : Replacing the battery

- 1) Confirm that the robot arm and controller are connected with a cable.
- 2) Turn the controller control power ON.  
The position data is retained by the power supplied from the controller while replacing the battery. Thus, if the cable is not connected correctly, or if the controller power is OFF, the position data will be lost.
- 3) Press the emergency stop button to set the robot in the emergency stop state. This is a measure for safety, and must always be carried out.
- 4) Remove CONBOX cover <1>, referring to Page 76, "5.3.2 Installing/removing the cover".
- 5) The battery holder is located in the CONBOX cover <1>. Remove the old battery from the holder, and disconnect the lead connector.
- 6) Insert the new battery into the holder, and connect the lead connector. Replace all batteries with new ones at the same time.
- 7) Replaces the backup battery one by one in the above-mentioned procedure.
- 8) All the batteries should check that it has been exchanged newly. If the old battery is contained, generating heat and damaging may occur.
- 9) Install CONBOX cover <1>.
- 10) Initialize the battery consumption time.  
Always carry out this step after replacing the battery, and initialize the battery usage time. Refer to the

separate "Instruction Manual/Detailed Explanation of Functions and Operations" for details on the operation methods.

[Caution] If the old battery is replaced because it has been used up, it is necessary to set the origin again. Refer to Page 98, "5.6 Resetting the origin" and reset the origin using the jig method or ABS origin method.