



1. Scope

This specification is suitable for the performance of following Jeff Power nickel metal-hydride cylindrical cell and its stack-up battery packs:

Model: JP45H3A400

Size: 4/5AAA

The data involving nominal voltage and approximate weight of a battery pack shall be equal to the value of the single cell multiplied by the number of single cell in the battery pack. for example, a battery pack which consisting of 3 cells:

Nominal voltage of single cell = 1.2V

Nominal voltage of the battery pack = $1.2V \times 3 = 3.6V$

2. Ratings

Nominal Voltage		1.2V
Nominal Capacity		400mAh
Standard Charge		40mA×15h
Rapid Charge(with - ΔV control system)		400mA×1.25h
Trickle Charge current		13~20mA
Discharge cut-off Voltage		1.0V
Maximum continuous discharge current		800mA
Temperature Range for operation	Standard charge	0 ~ 45°C
	Rapid charge	10 ~ 40°C
	Trickle Charge	0 ~ 45°C
	Discharge	-20 ~ 60°C
Temperature range for storage	Within 2 years	-20 ~ 30°C
	Within 6 months	-20 ~ 40°C
	Within 1 month	-20 ~ 50°C
Humidity for operation and storage		Max 85%
Dimension	Diameter	10±0.5mm
	Height	36±0.5mm
Approx weight		10g

3. Performance and Test Methods

Unless specially stated, tests should be carried out within one month of delivery under the following conditions:

Ambient Temperature: 20±5°C.

Ambient Humidity: 65±20%.



Test Item	Test Conditions				Requirements
1. Standard Charge	Charge is conducted continuously for 15 hours at the constant current of 40mA after pre-discharge at the constant current of 80mA up to an cut-off voltage of 1.0V.				
2. Open-circuit Voltage	Voltage between terminals of the charged battery specified in item (1) is measured after rest for 1 hour.				$\geq 1.25V$
3. Capacity	Discharge time of the charged battery specified in item (1) is measured at 80mA up to an cut-off voltage of 1.0V after rest for 30 minutes. If the discharge time doesn't reach the specified value, the test may be carried out further twice, up to three times in total.				≥ 300 minutes
4. Capacity (high-rate Discharge)	Discharge time of the charged battery specified in item (1) is measured at 400mA up to an cut-off voltage of 1.0V after rest for 30 minutes. If the discharge time doesn't reach the specified value, the test may be carried out further twice, up to three times in total.				≥ 54 minutes
5. Cycle Life	Cycle No.	Charge	Rest	Discharge	≥ 500 cycles
	1	40mA×15h	none	100mA×140min	
	2-49	100mA×190min	none	100mA×140min	
	49	100mA×190min	none	100mA×1.0V	
	50	40mA×15h	1 h	80mA×1.0V	
Cycles 1 to 50 shall be repeated until the discharge duration on any 50 th cycle becomes less than 3h. Note :refer to IEC 61436 (1998)					
6. Potential	Discharge time of the charged battery specified in item (1) is measured at 80mA up to an cut-off voltage of 1.0V				≥ 240 minutes
7. Internal Resistance	The battery is measured at 1000Hz with charge state.				$\leq 35m\Omega$
8. Over-charge	Charge is conducted continuously for 48 hours at 180mA after the capacity test specified in item (4).				No deformation and leakage



9.Over-discharge	Discharge is conducted with a 1.0Ω/cell load for 24 hours.	No external deformation
10. Self-discharge	The charged battery specified in item (1) is stored for 28 days at 20°C, and the discharge time is measured at 80mA.	≥210 minutes
11. Storage	The capacity test conducted as specified in item (3) after the battery discharged with 80mA and stored for 18 months under standard condition.	≥300 minutes
12. Humidity	The charged battery is stored for 10 days at 33±3 °C and 80±5% of relative humidity.	No electrolyte leakage
13. Safety Valve Operation	Forced discharge is conducted for 30 minutes at a constant current of 400mA after pre-discharge at a constant current of 80mA up to 0V.	Not explode or disrupt.*
14. External Short-circuit	The charged battery specified in item (1) is short-circuited for 1 hour.	Not explode.*
15. Drop Test	The battery is subjected to a drop, which has a height of 45cm(17.7 inches) to an oak board of 10mm or more thick in a voluntary axis respectively 3 times.	Mechanically and electrically normal

Note: Electrolyte leakage and deformation of battery by abuse tests are acceptable.

4. Suggestions & Cautions:

- 4.1 Charge batteries prior to use**
- 4.2 Do not disassemble batteries**
- 4.3 Do not Short circuit terminals**
- 4.4 Do not Throw of into fire or immerse in water**
- 4.5 Do not direct soldering**
- 4.6 Do not use with inverse polarities**
- 4.7 Slow charge and discharge a few cycles before use after long term storage**
- 4.8 Avoid mix use old and new batteries together**
- 4.9 Charge with approved chargers**
- 4.10 Consult specialist before assembling batteries**