

# SPECIFICATION

Customer

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Type

Ni-MH Cylindrical Cell

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Model No.

MGH9018

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Spec. No.

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Prepared by

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Approved by

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Date

20181206

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Client Confirm

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1. Unless special stated, tests should be carried out within one month of delivery Ambient conditions:

Ambient Temperature:  $20\pm 5^{\circ}\text{C}$

Relative Humidity:  $65\pm 20\%$  (RH)

Notes: 1) Standard charge/discharge condition

Charge:  $80\text{ mA}(0.1\text{C})\times 16\text{h}$

Discharge:  $160\text{ mA}(0.2\text{C})$  to  $1.0\text{V}$

- 2) Except special explaining, the battery shall not leakage and PVC shall not breakage during the test.

Test Items	Test Conditions	Requirements	Notes
Nominal Capacity	Standard Charge and Discharge	Capacity $\geq 800\text{ mAh}$	Up to 5 cycles are allowed
Internal Impedance(Ri)	Measure the impedance of battery by applying AC with frequency of 1000HZ for not less than 1 hour and not more than 4 hours after standard charge	$\leq 55\text{ m}\Omega$	
Open-circuit Voltage (OCV)	Voltage between the battery terminals shall be measured within 1 hour after standard charge	$\geq 1.25\text{ V}$	
High-rate discharge	After standard charge, rest for 1 hour before discharge to $1.0\text{V}$ at $1\text{ C}$ current.	$\geq 48\text{ Minutes}$	Up to 5 cycles are allowed
Cycle life	IEC61951-2:2017 7.5.1.2. See Remark 1	$\geq 500\text{ Cycles}$	
Charge retention	Standard charged , stored for 28 days at standard ambient temperature or 7 days at $45^{\circ}\text{C}$ ,then standard discharge to $1.0\text{V}$	$\geq 60\%$ Nominal Capacity	
Over-charge	Charge at $0.1\text{ C}$ for $1\text{ year}$	No leakage, nor disrupt, nor burst.	
Over-discharge	After standard discharge , be conducted with constant load resistor of $8\text{ }\Omega$ for 3 days, then standard charge and discharge	$\geq 80\%$ Nominal Capacity	

Test Items	Test Conditions	Requirements	Notes
Vibration test	Standard charge. Then leave for 24 hours, check cell before/after vibration.  Amplitude: 1.5mm Vibration : 3000CPM	Change of voltage $\Delta V < 0.02V/ \text{ cell}$  Change of internal impedance $\Delta R < 5m\Omega/ \text{ cell}$	Any direction for 60 minutes
Drop test	After standard charge, rest for 24 hours, check battery before/after dropped:  Height: 100 cm  Thickness of the wooden board: 30mm	Change of voltage $\Delta V < 0.02V/ \text{ cell}$  Change of internal impedance $\Delta R < 5m\Omega/ \text{ cell}$  No breakage except impact point for PVC sleeves	Direction is not specified, Test for 3 times
Forced discharge	The Reverse-charge is conducted for 60 minutes at current of 1C after pre-discharge at 0.2C current to 0V	The battery shall not explode, but leakage & deformation are acceptable	
External Short Circuit	After standard charge, short circuit the cell at $20 \pm 5^\circ\text{C}$ until the cell temperature returns to ambient temperature. (The resistance of the inter-connecting circuitry shall be $80 \pm 20m\Omega$ ).	The battery shall not fire and explode, but leakage & deformation are acceptable	

**\*REMARK****1. Cycle life:** IEC61951-2:2017 7.5.1.2

Cycle number	Charge	Stand in charged condition	Discharge
1	0.1C for 16h	None	0.25C for 2h20min
2 to 48	0.25C for 3h10min	None	0.25 C for 2h20min
49	0.25 C for 3h10min	None	0.25C to 1.0V/cell
50	0.1 C for 16h	1 h to 4 h	0.20C to 1.0V/cell

Repeat 1 to 50 cycles ,until the discharge time of any 50th cycle is less than 3hours

**2. APPEARANCE**

Batteries should be without any flaw, stain, discoloration or leakage and deformation.

### 3. WARRANTY

The warranty period of a Cell is one (1) year after the delivery to the Customer. However, even though the problem occurs within this period, won't replace a new cell for free as long as the problem is not due to the failure of manufacturing process or the problem is due to Customer's abuse or misuse.

3.2. Will not be responsible for trouble occurred by matching charger.

3.3. Will be exempt from warrantee any defect cells during assembling after acceptance by the Customer.

### 4. WARNING

4.1. Do not dispose of cell into fire or dismantled under any condition.

4.2. Do not mix different cell types and capacities in the same battery assembly.

4.3. Charge and discharge under specified ambient temperature and current recommend to specification.

4.4. Short circuit leading to cell permanent damage must be avoided.

4.5. Never solder onto cell directly.

4.6. Cell reversal should be avoided.

### 5. NOTICE

5.1. Use batteries in extreme condition may affect the service life, such as: extreme temperature 、 deep cycle、 extreme overcharge and over discharge.

5.2. Batteries should be stored in a cool, dry place.

5.3. Once problems be found, stop using, send batteries to local agent.

### 6. STORAGE

6.1. It is strongly recommended to stored Ni-MH batteries and cells in the temperature range from -20°C to 35°C, and in low humidity ( $\leq 65\%RH$ ) and no corrosive gas environment, to maintain a reasonably high capacity recovery level.

6.2. Avoid storage higher (e.g. 35°C), lower temperature than -20°C, or higher humidity which would result in deterioration or damage to the cells and batteries such as follows:

- . Permanent capacity loss.
- . Electrolyte leakage resulted from the expansion or shrinkage of organic material inside the cells.
- . Rust of metal parts.

6.3. Up to three full cycles of charge/discharge after long-term storage may need to obtain highest capacity.

6.4. Recommended every three months to do a battery release-charging.

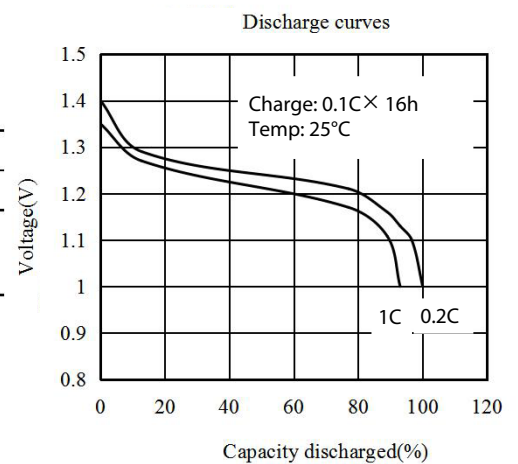
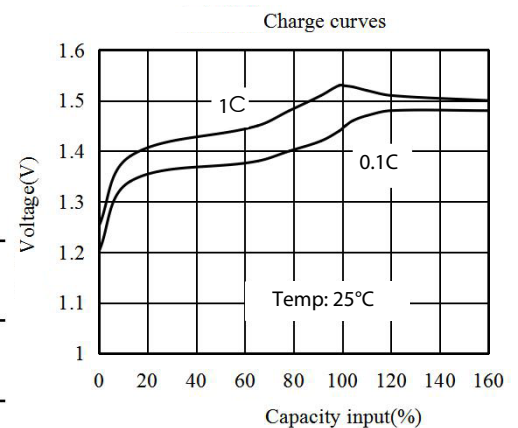
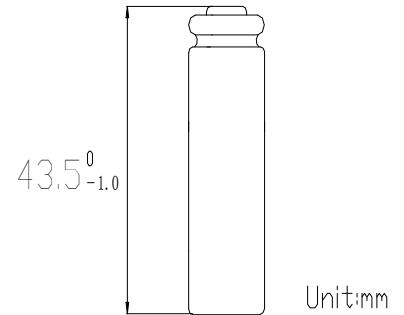
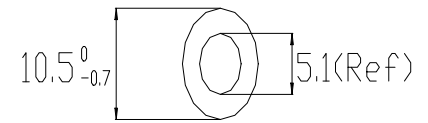
### 7. REFERENCE

Please contact us if there is any question on using the batteries.

# Data Sheet

## Type: Sealed Rechargeable Nickel Metal Hydride Cylindrical Cell

Model No.	MGH9018	
Nominal Dimension(cell) (with sleeve)	$\phi = 10.5$ ( $-0.7$ mm)	
	$H = 43.5$ ( $-1.0$ mm)	
Applications(Continuous)	80 ~ 2800 mA	
Nominal Voltage	: 1.2V	
Capacity	: Minimum: 800 mAh	
	: Typical : 840 mAh	
	(When discharged at 0.2C to 1.0V at 20°C)	
Charging Condition	: 80 mA charge 16h (at 20°C)	
	: 400 mA ~ 800 mA	
	Charge termination control recommended control parameters:	
Fast Charge	- $\Delta V$ : 0-5mV	
	DT/dt: 0.8-1°C/min	
	TCO: 45-50°C	
	Timer: 105% nominal input	
Permanent charge	: 24 mA to 40 mA	
Max. overcharge current	: 80 mA (up to 1 year)	
Service Life	: $\geq 500$ cycles ( IEC Standard )	
Continuous Overcharge	: 80 mA maximum current for 1 year	
	No conspicuous deformation and/or leakage.	
Weight	: 12 g	
Internal Resistance	: $\leq 55$ m $\Omega$ (upon fully charged)	
Max. Charging Voltage	: 1.5V ( 80 mA charging )	
	: Standard Charging 0°C to 40°C	
Ambient Temperature Range(ref.)	: Fast Charging 10°C to 40°C	
	: Discharging -20°C to 60°C	
	: Permanent charge 0°C to 40°C	
	: Storage(6 month) -20°C to 35°C	
	: Storage(1month) -20°C to 45°C	
	: Storage(1week) -20°C to 55°C	



Prepared by:

Approved by:

Date: 20181206

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