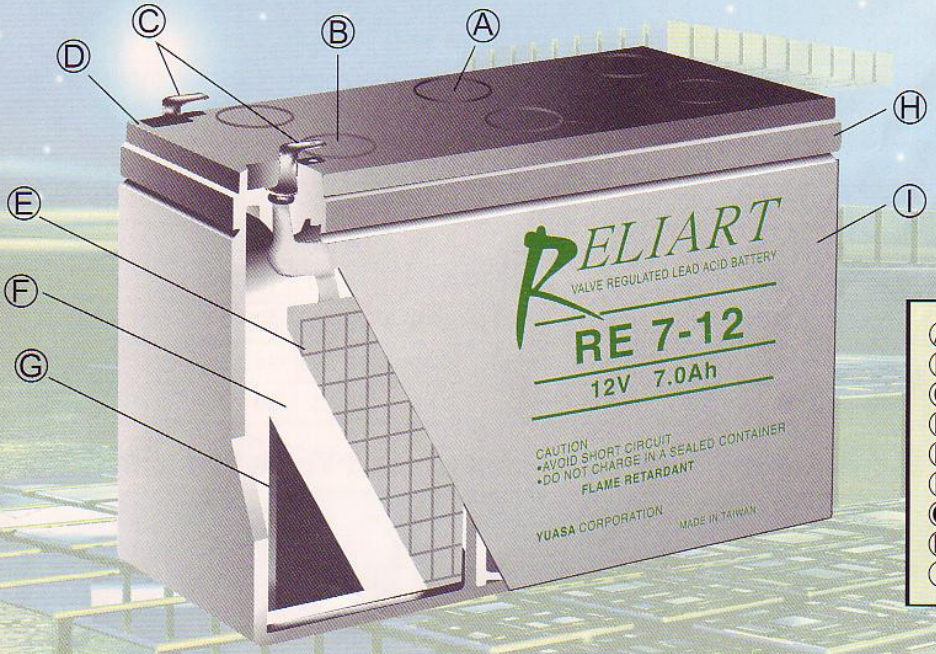
YUASA

# NP / REW / REC SERIES

valve regulated sealed lead-acid type rechargeable battery

# WHEN THE POWER'S OFF YUASA'S ON

## CONSTRUCTION OF YUASA NP BATTERY




Ⓐ Top Cover
Ⓑ Relief Valve
Ⓒ Terminal
Ⓓ Sealant
Ⓔ Negative Plate
Ⓕ Electrolyte Retentive Separator
Ⓖ Positive Plate
Ⓗ Cover
Ⓘ Container

### INTRODUCTION

Yuasa began development of the NP Series of maintenance free sealed lead acid batteries in 1958. Today's NP battery is the culmination of over 65 years of battery manufacturing experience. The high energy density, advanced plate technology, fully sealed construction, efficient performance in float or cyclic services, and long service life combine to make Yuasa NP batteries the most reliable and versatile maintenance free rechargeable sealed lead acid batteries available.

### TECHNICAL FEATURES

- Sealed Construction
- Electrolyte Suspension System
- Gas Recombination
- Maintenance-Free Operation
- Operation In Any Position
- Low Pressure Venting System
- Heavy Duty Grids
- Low Self Discharge-Long Shelf Life
- Broad Operating Temperature Range
- High Recovery Capability

### APPLICATIONS

Yuasa NP series batteries are designed for use in both cyclic and float applications. The high energy density to weight ratio coupled with a wide selection of sizes and configurations make NP batteries the logical choice for numerous applications.
A partial list of common applications includes, but is not limited to, standby or primary power for:

- Alarm Systems
- Cable Television
- Communications Equipment
- Control Equipment
- Computers
- Electronic Cash Registers
- Electronic Test Equipment
- Electric Powered Wheelchairs
- Emergency Lighting Systems
- Fire & Security Systems
- Geophysical Equipment
- Marine Equipment
- Medical Equipment
- Micro Processor Based Office Machines
- Portable Cine & Video Lights
- Power Tools
- Solar Powered Systems
- Telecommunications Systems
- Television & Video Recorders
- Toys
- Uninterruptible Power Supplies
- Vending Machine

ISO 9001 QUALITY ASSURANCE

RECOGNIZED BY UL, File NO. MH 12970

## (NP) 一般型－設計壽命 3 年〔Standard Type - Designed Life is 3 Years for Floating Use〕

| TYPE | Volts | Nominal Capacity (20 hr rate-AH) | Approx. Dimensions | | | | | | Approx Weight | | Layout | Terminals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Length | | Width | | Overall height Incl.terminals | | | | | |
| | | | mm | in | mm | in | mm | in | kg | lbs | | |
| NP1.2-6 | 6 | 1.2 | 97 | 3.82 | 25 | 0.98 | 54.5 | 2.15 | 0.29 | 0.64 | 1 | A |
| NP3-6 | | 3.0 | 134 | 5.28 | 34 | 1.34 | 64.0 | 2.52 | 0.63 | 1.93 | 1 | A |
| NP4-6 | | 4.0 | 70 | 2.76 | 47 | 1.85 | 105.5 | 4.15 | 0.85 | 1.87 | 5 | A |
| NP7-6 | | 7.0 | 151 | 5.94 | 34 | 1.34 | 97.5 | 3.84 | 1.26 | 2.78 | 1 | A |
| NP8-6 | | 8.0 | 151 | 5.94 | 50 | 1.97 | 97.5 | 3.84 | 1.70 | 3.75 | 1 | A |
| NP10-6 | | 10.0 | 151 | 5.94 | 50 | 1.97 | 97.5 | 3.84 | 1.90 | 4.19 | 1 | A |
| NP12-6 | | 12.0 | 151 | 5.94 | 50 | 1.97 | 97.5 | 3.84 | 2.08 | 4.58 | 1 | A |
| NP1.2-12 | 12 | 1.2 | 97 | 3.82 | 48 | 1.89 | 54.5 | 2.15 | 0.57 | 1.26 | 3 | A |
| NP2.3-12 | | 2.3 | 178 | 7.01 | 34 | 1.34 | 64.0 | 2.52 | 0.94 | 2.07 | 1 | A |
| NP4-12 | | 4.0 | 90 | 3.54 | 70 | 2.76 | 105.5 | 4.15 | 1.67 | 3.68 | 1 | A、B |
| NP5-12 | | 5.0 | 90 | 3.54 | 70 | 2.76 | 106.0 | 4.17 | 2.00 | 4.41 | 1 | A、B |
| NP7-12 | | 7.0 | 151 | 5.94 | 65 | 2.56 | 97.5 | 3.84 | 2.50 | 5.51 | 4 | A、B |
| NP12-12 | | 12.0 | 151 | 5.94 | 98 | 3.86 | 97.5 | 3.84 | 4.00 | 8.82 | 4 | B |
| NP17-12I | | 17.2 | 181 | 7.13 | 76 | 2.99 | 167.0 | 6.57 | 6.20 | 13.66 | 2 | F |
| NP18-12B | | 17.2 | 181 | 7.13 | 76 | 2.99 | 167.0 | 6.57 | 6.20 | 13.66 | 2 | C |
| NP24-12 | | 24.0 | 175 | 6.89 | 166 | 6.54 | 125.0 | 4.92 | 8.65 | 19.05 | 2 | C、F |
| NP26-12B | | 26.0 | 175 | 6.89 | 166 | 6.54 | 125.0 | 4.92 | 8.65 | 19.05 | 2 | C |
| NP38-12 | | 38.0 | 197 | 7.76 | 165 | 6.50 | 170.0 | 6.69 | 13.80 | 30.40 | 2 | D、H |
| NP40-12 | | 40.0 | 197 | 7.76 | 165 | 6.50 | 175.0 | 6.89 | 15.50 | 34.20 | 2 | D、H |
| NP65-12 | | 65.0 | 350 | 13.78 | 166 | 6.54 | 174.0 | 6.85 | 22.80 | 50.22 | 2 | E、G |

## (NPH) 高率型－設計壽命 3 年〔High Rate Type - Designed Life is 3 Years for Floating Use〕

| TYPE | Volts | Nominal Capacity (10 hr rate-AH) | Approx. Dimensions | | | | | | Approx Weight | | Layout | Terminals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Length | | Width | | Overall height Incl.terminals | | | | | |
| | | | mm | in | mm | in | mm | in | kg | lbs | | |
| NPH2.3-12 | 12 | 2.3 | 178 | 7.01 | 34 | 1.34 | 64.0 | 2.52 | 0.94 | 2.07 | 1 | A、B |
| NPH5-12 | | 5.0 | 90 | 3.54 | 70 | 2.76 | 106.0 | 4.17 | 2.00 | 4.41 | 1 | B |
| NPH12-12 | | 12.0 | 151 | 5.94 | 98 | 3.86 | 97.5 | 3.84 | 4.00 | 8.82 | 4 | B |
| NPH16-12T | | 16.0 | 181 | 7.13 | 76 | 2.99 | 167.0 | 6.57 | 6.20 | 13.66 | 2 | C |
| NPH18-12 | | 18.0 | 181 | 7.13 | 76 | 2.99 | 167.0 | 6.57 | 6.60 | 14.50 | 2 | C、F |

## (NPW) 高率型（瓦特）－設計壽命 3 年〔High Rate Type(Watts) - Designed Life is 3 Years for Floating Use〕

| TYPE | Volts | W/Cell 10min (F.V.1.67V/Cell) | Approx. Dimensions | | | | | | Approx Weight | | Layout | Terminals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Length | | Width | | Overall height Incl.terminals | | | | | |
| | | | mm | in | mm | in | mm | in | kg | lbs | | |
| NPW45-6 | 6 | 45 | 151 | 5.94 | 34 | 1.34 | 97.5 | 3.84 | 1.26 | 2.78 | 1 | A、B |
| NPW45-12 | 12 | 45 | 151 | 5.94 | 65 | 2.56 | 97.5 | 3.84 | 2.50 | 5.51 | 4 | A、B |

## (RE) 長壽命－設計壽命 5 年〔Long Life Type - Designed Life is 5 Years for Floating Use〕

| TYPE | Volts | Nominal Capacity (20 hr rate-AH) | Approx. Dimensions | | | | | | Approx Weight | | Layout | Terminals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Length | | Width | | Overall height Incl.terminals | | | | | |
| | | | mm | in | mm | in | mm | in | kg | lbs | | |
| RE7-6 | 6 | 7.0 | 151 | 5.94 | 34 | 1.34 | 97.5 | 3.84 | 1.26 | 2.78 | 1 | A |
| RE5-12 | 12 | 5.0 | 90 | 3.54 | 70 | 2.76 | 106.0 | 4.17 | 2.00 | 4.41 | 1 | A、B |
| RE7-12 | | 7.0 | 151 | 5.94 | 65 | 2.56 | 97.5 | 3.84 | 2.50 | 5.51 | 4 | B |
| RE12-12 | | 12.0 | 151 | 5.94 | 98 | 3.86 | 97.5 | 3.84 | 4.00 | 8.82 | 4 | B |

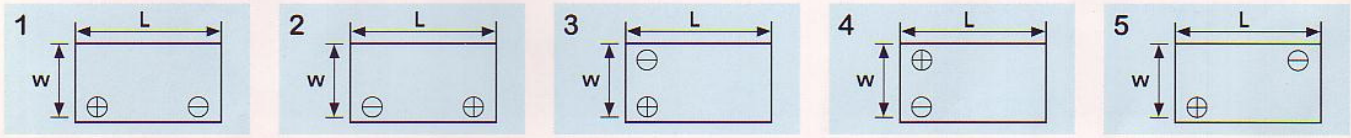
## (REW) 長壽命高率型（瓦特）－設計壽命 5 年
〔Long Life & High Rate Type(Watts) - Designed Life is 5 Years for Floating Use〕

| TYPE | Volts | W/Cell 10min (F.V.1.67V/Cell) | Approx. Dimensions | | | | | | Approx Weight | | Layout | Terminals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Length | | Width | | Overall height Incl.terminals | | | | | |
| | | | mm | in | mm | in | mm | in | kg | lbs | | |
| REW28-12 | 12 | 28 | 90 | 3.54 | 70 | 2.76 | 106.0 | 4.17 | 2.00 | 4.41 | 1 | B |
| REW45-12 | | 45 | 151 | 5.94 | 65 | 2.56 | 97.5 | 3.84 | 2.50 | 5.51 | 4 | B |

## (REC) 電動用車系〔Electric Car Application Type〕

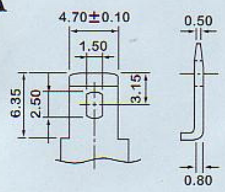
| TYPE | Volts | Nominal Capacity (20 hr rate-AH) | Approx. Dimensions | | | | | | Approx Weight | | Layout | Terminals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Length | | Width | | Overall height Incl.terminals | | | | | |
| | | | mm | in | mm | in | mm | in | kg | lbs | | |
| REC9-12 | 12 | 9.0 | 151 | 5.94 | 65 | 2.56 | 115.5 | 4.50 | 3.40 | 7.49 | 4 | B |
| REC10-12 | | 10.0 | 151 | 5.94 | 65 | 2.56 | 115.5 | 4.50 | 3.40 | 7.49 | 4 | B |
| REC12-12 | | 12.0 | 151 | 5.94 | 98 | 3.86 | 97.5 | 3.84 | 4.00 | 8.82 | 4 | B |
| REC22-12 | | 22.0 | 181 | 7.13 | 76 | 2.99 | 167.0 | 6.57 | 6.50 | 14.32 | 2 | C |
| REC50-12 | | 50.0 | 197 | 7.76 | 165 | 6.50 | 175.0 | 6.89 | 15.00 | 33.04 | 2 | G |
| REC80-12 | | 80.0 | 259 | 10.20 | 168 | 6.61 | 212.0 | 8.35 | 27.00 | 59.47 | 1 | G |
| U1-36E-12 | | 36.0 | 196 | 7.72 | 130 | 5.12 | 169.0 | 6.65 | 11.90 | 26.20 | 1 | E |

## Layout




## Terminals

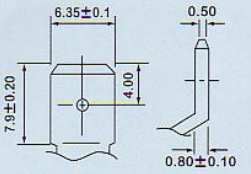
**A**




| mm | inch |
|---|---|
| 6.35 | 0.250 |
| 4.70 | 0.185 |
| 3.15 | 0.124 |
| 2.50 | 0.098 |
| 1.50 | 0.059 |
| 0.80 | 0.031 |
| 0.50 | 0.020 |
| 0.10 | 0.004 |

Fasten tab: 187

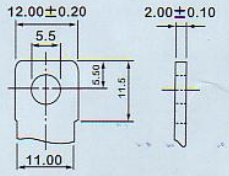
**B**




| mm | inch |
|---|---|
| 7.90 | 0.310 |
| 6.35 | 0.250 |
| 4.00 | 0.160 |
| 0.80 | 0.031 |
| 0.50 | 0.020 |
| 0.10 | 0.004 |

Fasten tab: 250

**C**

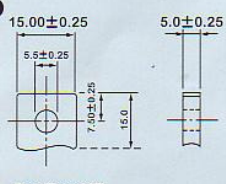



| mm | inch |
|---|---|
| 12.00 | 0.472 |
| 11.50 | 0.453 |
| 11.00 | 0.433 |
| 5.50 | 0.216 |
| 2.00 | 0.079 |

Bolt Type:M5
Tightening Torque:1.96-2.94(Nm)(20-30kgf.cm)

Bolt fastened terminal

**D**

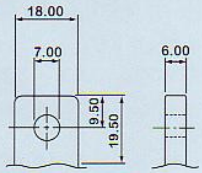



| mm | inch |
|---|---|
| 15.0 | 0.591 |
| 7.5 | 0.295 |
| 5.5 | 0.217 |
| 0.25 | 0.010 |

Bolt Type:M5
Tightening Torque:1.96-2.94(Nm)(20-30kgf.cm)

Bolt fastened terminal

**E**

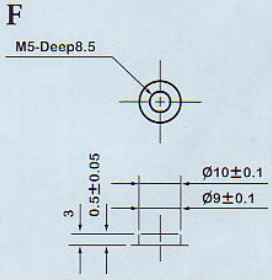



| mm | inch |
|---|---|
| 19.5 | 0.768 |
| 18.0 | 0.710 |
| 9.5 | 0.370 |
| 7.0 | 0.270 |
| 6.0 | 0.240 |

Bolt Type:M6
Tightening Torque:3.92-5.61(Nm)(40-55kgf.cm)

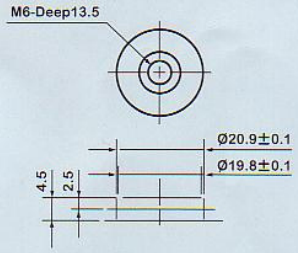
Bolt fastened terminal

**F**



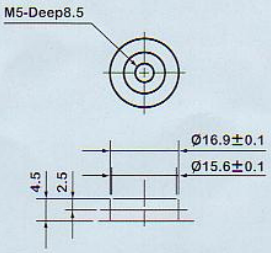

| mm | inch |
|---|---|
| 0.05 | 0.002 |
| 0.10 | 0.004 |
| 0.20 | 0.008 |
| 0.25 | 0.010 |
| 0.50 | 0.020 |
| 3.00 | 0.120 |
| 5.00 | 0.200 |
| 8.50 | 0.340 |
| 9.00 | 0.360 |
| 10.00 | 0.400 |

**G**




| mm | inch |
|---|---|
| 0.10 | 0.004 |
| 0.20 | 0.008 |
| 0.25 | 0.010 |
| 0.30 | 0.012 |
| 2.50 | 0.100 |
| 4.50 | 0.180 |
| 6.00 | 0.240 |
| 13.50 | 0.540 |
| 19.80 | 0.792 |
| 20.90 | 0.836 |

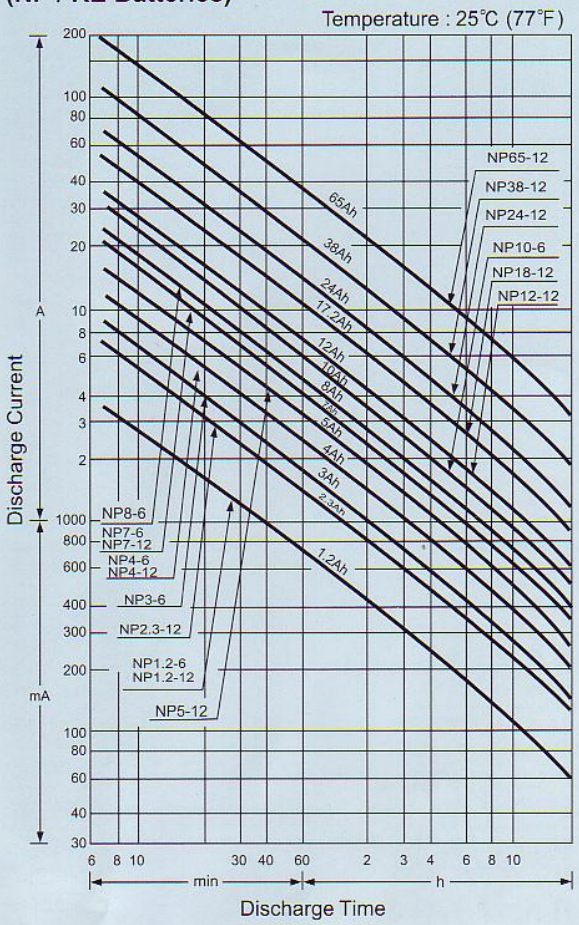
**H**



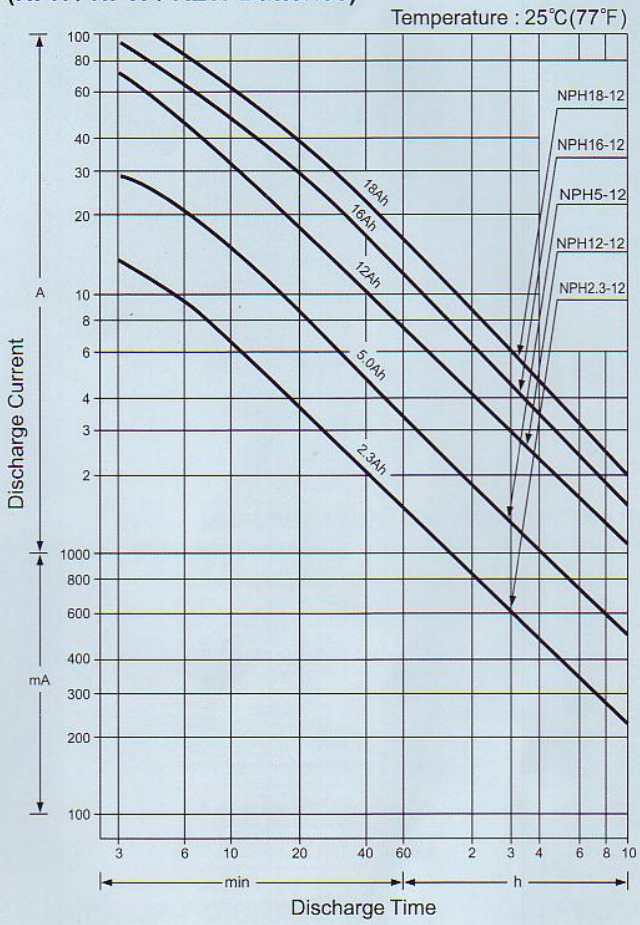

| mm | inch |
|---|---|
| 0.10 | 0.004 |
| 0.20 | 0.008 |
| 0.25 | 0.010 |
| 2.50 | 0.100 |
| 4.50 | 0.180 |
| 5.00 | 0.200 |
| 8.50 | 0.340 |
| 15.60 | 0.624 |
| 16.90 | 0.676 |

# Characteristics

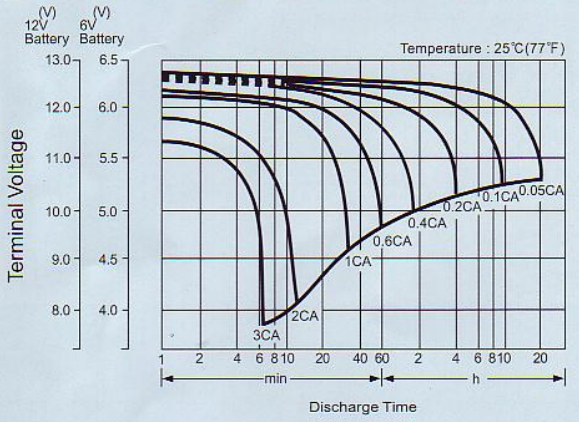
## Battery Selection Chart (NP / RE Batteries)



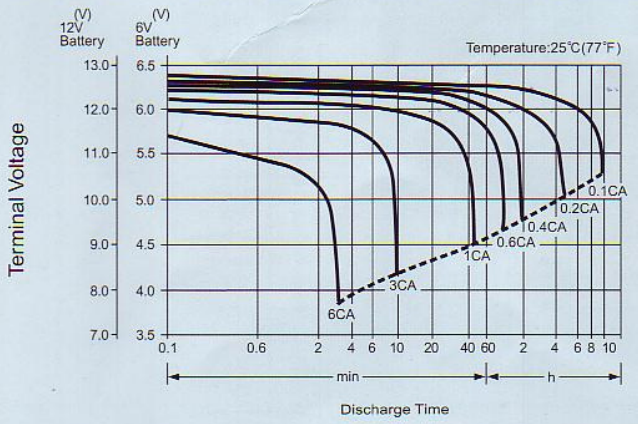

## Battery Selection Chart (NPH / NPW / REW Batteries)




## Discharge Characteristic Curves: NP / RE Batteries

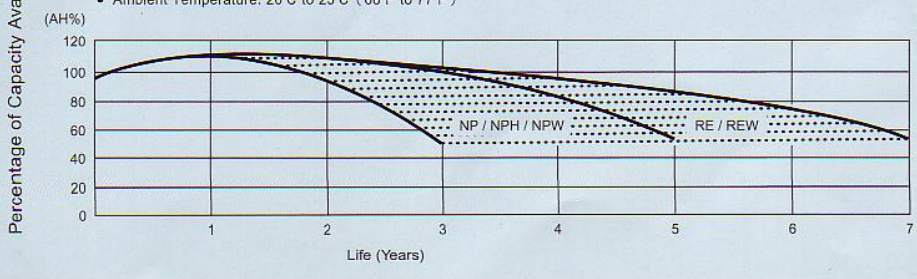



## Discharge Characteristic Curves : NPH / NPW / REW Batteries

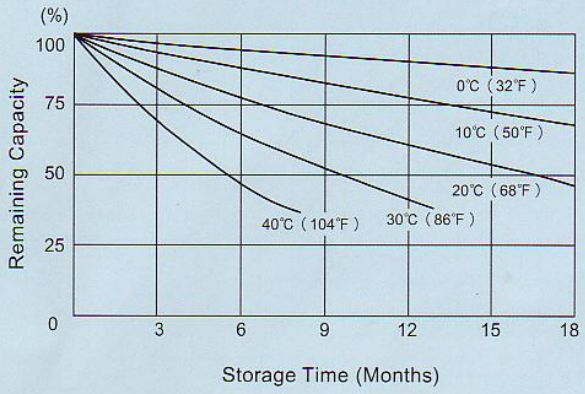



## Float Service Life: NP / NPH / NPW / RE / REW

Testing Conditions
- Floating Voltage: 2.275V/cell
- Capacity Test: 0.25CA discharge to F.V. 1.70V/Cell
- Ambient Temperature: 20℃ to 25℃ (68℉ to 77℉)



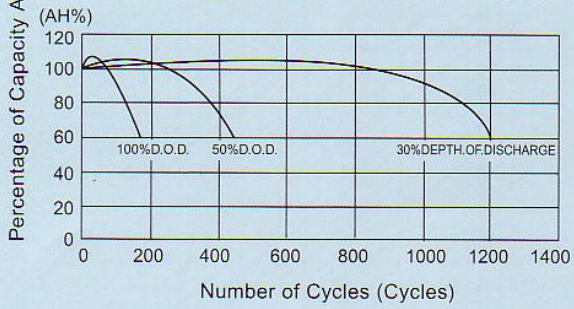
## Self Discharge Characteristics (NP / NPH / NPW / RE / REW Batteries)




## Cycle Service Life in Relation to Depth of Discharge (NP / NPH / NPW / RE / REW Batteries)

Testing Conditions

- Discharge Current: 0.17C Amp.(F.V.1.7V/Cell)
- Charging Current: 0.09C Amp
- Charging Volume: 125% of Discharged Capacity
- Ambient Temperature: 20℃ to 25℃ ( 68℉ to 77℉ )




## (NP / NPH / NPW / RE / REW Batteries)