



Valve Regulated Lead Acid (VRLA) RECHARGEABLE BATTERY

1. Model: **NPH5-12 / NPH5-12FR**

2. Nominal Voltage / Capacity: 12V / 5AH/ 20 HR

3. Mechanical Spec.

(1) Measurements:	Length:	90 ± 1 mm
	Width:	70 ± 1 mm
	Case height:	102 ± 1 mm
	Overall height:	105 ± 2 mm
(2) Terminal:	Faston	250
(3) Container material:	NPH5-12:	ABS / UL94HB
	NPH5-12FR:	ABS / UL94V0

(4) Weight: Approx. 1.85 kg

4. Construction:

This battery is composed of positive plates, negative plates, separators, container, lid, electrolyte etc., and is equipped with positive and negative polarity terminals. Any emitted gas from the battery is minimized with the negative plate gas recombinant method, thus requiring no topping up of electrolyte.

5. External appearance:

Battery shall be without acid leakage, conspicuous stain, scar or deformation.

6. Performance:

6-1 Temperature of tested battery shall be 25±2°C, if not specified.

6-2 Discharge capacity: (This is the minimum value):

PERFORMANCE DATA AT 25°C - Amperes and Watts									
TIME F.V.		3M	5M	6M	8M	10M	15M	30M	1H
1,80 VPC	W	338	272	249	210	184	133	78	44
	A	30.4	24.1	21.9	18.4	16.1	11.4	6.7	3.7
1,70 VPC	W	401	305	272	229	195	139	81	45
	A	36.3	27.1	24.0	20.2	17.1	11.9	6.9	3.8
1,67 VPC	W	405	308	275	231	197	140	82	45
	A	37.1	27.6	24.3	20.5	17.3	12.0	6.9	3.8
1,60 VPC	W	414	313	278	234	200	141	82	45
	A	38.3	28.2	24.7	20.8	17.4	12.1	7.0	3.8

The battery at time of delivery capacity shall have more than 100% within 1 day after being charged at 14.4V / Max. 0.25 C20 [A] during 16hrs.



6-3 Open circuit voltage:
 The battery at time of delivery shall read 12.6V (OV) or more, provided it is measured within 7 days after delivery.

6-4 Internal resistance:
 Give a full charge to the battery, and measure with AC bridge (1kHz), when readings shall be less than 24mΩ.

6-5 Maximum continuous discharge current:
 No deterioration shall be found with 15C₂₀ [A] discharge for 5 seconds.

6-6 Charging:

Method	Given Voltage	Maximum charging Current	Special condition(s)
Float Charging	13.65V±0.15V	0.25C ₂₀ [A]	As the average ambient temperature rises, charging voltage should be reduced to prevent overcharge. Accordingly, the recommended compensation factor is -3mV/°C/cell at 25°C of standard centre point.
Cyclic Charging	14.4V~15.0V	0.25C ₂₀ [A]	As the average ambient temperature rises, charging voltage should be reduced to prevent overcharge. Accordingly, the recommended compensation factor is -4mV/°C/cell at 25°C of standard centre point.

6-7 Permissible temperature range:

Conditions	Temperature range
Discharging	-15°C ~ 50°C
Charging	0°C ~ 40°C
Storage	-15°C ~ 40°C

6-8 Storage period without use:

Storage temperature	Max. storage period
25°C or less	6 months
30°C or less	4 months
35°C or less	3 months
40°C or less	2 months

6-9 Expected float use life:
 Test condition:



Charge at $13.65 \pm 0.15V$ continuously and discharge at $0.25C_{20}$ [A] to FV 10.2V every 3 months. Battery shall last minimum 3 years until the capacity falls to 2hrs.

6-10 Mechanical strength:

6-10-1 Anti-vibration performance:

Vibrate the battery in any directions for 60 consecutive minutes with 4 mm amplitude and 16.7 Hz per minute. Read the voltage and make visual inspection. Battery shall show no extreme damage or no electrolyte leakage and should read nominal 12V or more.

6-10-2 Anti-impact performance:

Drop it from a 20cm height onto a 10mm thick solid wooden block in any direction except on the terminals. Read the voltage and make visual inspection. Battery shall show no extreme damage or no electrolyte leakage and should read nominal 12V or more.

7. Installation Conditions:

Do not charge and store rechargeable batteries in an air tight container; the container must be equipped with ventilation holes leading to the outside. The following applies to using a rechargeable battery inside a metallic storage box: To prevent the rechargeable battery from leaking fluid due to a breakage in the electrolytic cell, thus forming a leak circuit between the battery and the storage box (or fixed frame), install a heat- and acid- resistant insulating sheet (or tray) between them that will not be damaged by periodic stress. Alternatively, place the rechargeable battery inside an insulating bag. For the above described insulation material, do not use any material that can be stained with grease, or that can have organic substance oozing out of itself. Do not allow the rechargeable battery to come into contact with vinyl tape containing plasticizer, insulation sheet, solvent, or grease.

8. If you install different capacities in serial connection or more than 3 parallel strings, or if you want to use NPH5-12 in cyclic application, please contact Yuasa for technical support.

9. Design life: 3-5 years acc. to EuroBat