Introduction:

After 10 years of experience in VRLA with Shin Kobe, Exide has finally launched new Exide Powersafe NXT with the cycle life unmatched with competition nationally and internationally with its unique feature of 5 hours quick recharge option.

Features:

■ Deep cycle application ■ Fast recovery from deep discharge ■ Extended cycle life ■ Fast recharge capability ■ Excellent charge retention ■ International size ■ Free from orientation constraints ■ Eco-friendly

Specification Table

Battery Type	Nominal Voltage (V)	Rated Capacity (Ah) at 27°C							(Dimensions in mm)				Weight (Kg.) +/-5%	Internal Resistance (m-ohm)	Maximum Discharge Current (Amps)
		20hr. 1.75 V/cell	10hr. 1.75 V/cell	5hr. 1.75 V/cell	3hr. 1.75 V/cell	2hr. 1.75 V/cell	90 mins. 1.75 V/cell	60 mins 1.75 V/cell	Overall Height +/-3	Height up to lid +/-3	Length +/-2	Width +/-2			
NXT 17-12	12	17	15.5	14.0	13.0	12.0	11.0	9.5	167	167	181	76	5.90	15	255
NXT 26-12	12	26	23.5	21.0	19.5	18.0	17.0	14.5	175	175	166	125	9.60	10	390
NXT 42-12	12	42	38.0	34.0	31.5	29.5	27.5	23.0	170	170	197	165	15.70	8	420
NXT 65-12	12	65	58.5	52.5	49.0	45.5	43.0	36.0	174	174	350	166	22.30	8	500
NXT 100-12	12	100	90.0	81.0	75.0	70.0	66.0	55.0	235	235	407	173	35.50	6	600
NXT 150-12	12	150	135.0	121.5	112.5	105.0	99.0	82.5	240	240	557	172	50.20	6	900
NXT 200-12	12	200	180.0	162.0	150.0	140.0	132.0	110.0	240	240	533	250	68.40	5	1200

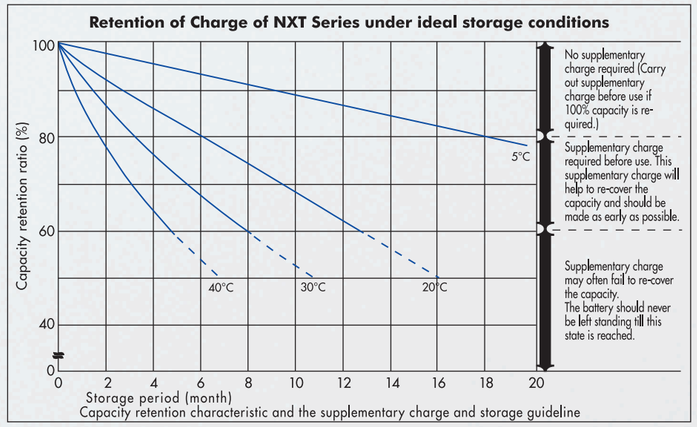
Note: Batteries are despatched from factory at minimum 90% state of charge. Full capacity is achieved after a minimum ten numbers of charge - discharge cycle at full depth or 3 months of continuous float operation.

CONSTANT CURRENT DISCHARGE TABLE FOR NXT RANGE AT 27 Deg. C

END VOLTAGE/CELL	BATTERY TYPE	DISCHARGE TIME						
		1 Min	5 Min	10 Min	15 Min	20 Min	30 Min	60 Min
1.75 V/Cell	NXT 17-12	4.00C	2.20C	1.50C	1.30C	1.00C	0.75C	0.55C
	NXT 26-12	4.00C	2.20C	1.50C	1.30C	1.00C	0.75C	0.55C
	NXT 42-12	4.00C	2.20C	1.50C	1.30C	1.00C	0.75C	0.55C
	NXT 65-12	4.00C	2.20C	1.50C	1.30C	1.00C	0.75C	0.55C
	NXT 100-12	4.00C	2.20C	1.50C	1.30C	1.00C	0.75C	0.55C
	NXT 150-12	3.00C	2.00C	1.35C	1.15C	0.9C	0.75C	0.55C
	NXT 200-12	3.00C	2.00C	1.35C	1.15C	0.9C	0.75C	0.55C
1.70 V/Cell	NXT 17-12	4.50C	2.30C	1.70C	1.40C	1.20C	0.76C	0.56C
	NXT 26-12	4.50C	2.30C	1.70C	1.40C	1.20C	0.76C	0.56C
	NXT 42-12	4.50C	2.30C	1.70C	1.40C	1.20C	0.76C	0.56C
	NXT 65-12	4.50C	2.30C	1.70C	1.40C	1.20C	0.76C	0.56C
	NXT 100-12	4.50C	2.30C	1.70C	1.40C	1.20C	0.76C	0.56C
	NXT 150-12	3.50C	2.05C	1.55C	1.25C	1.10C	0.76C	0.56C
	NXT 200-12	3.50C	2.05C	1.55C	1.25C	1.10C	0.76C	0.56C
1.60 V/Cell	NXT 17-12	5.00C	2.50C	1.80C	1.50C	1.25C	0.78C	0.58C
	NXT 26-12	5.00C	2.50C	1.80C	1.50C	1.25C	0.78C	0.58C
	NXT 42-12	5.00C	2.50C	1.80C	1.50C	1.25C	0.78C	0.58C
	NXT 65-12	5.00C	2.50C	1.80C	1.50C	1.25C	0.78C	0.58C
	NXT 100-12	5.00C	2.50C	1.80C	1.50C	1.25C	0.78C	0.58C
	NXT 150-12	4.00C	2.25C	1.60C	1.35C	1.10C	0.78C	0.58C
	NXT 200-12	4.00C	2.25C	1.60C	1.35C	1.10C	0.78C	0.58C

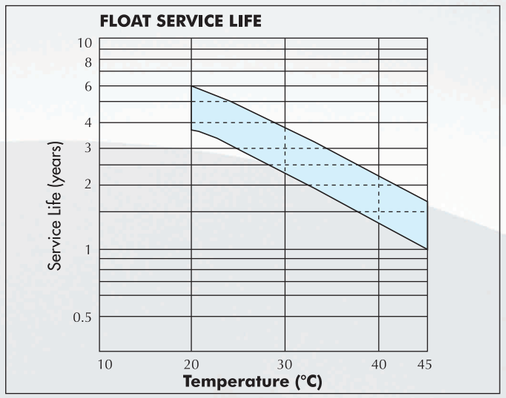
C : Rated C20 capacity of the battery

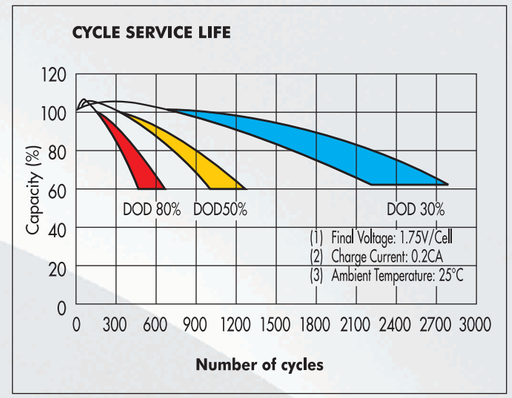
CAPACITY RETENTION



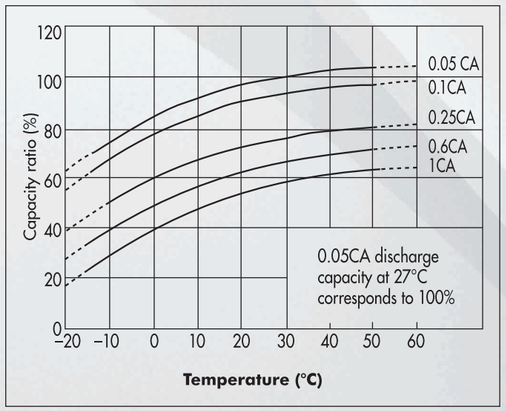
Capacity retention characteristic and the supplementary charge and storage guideline

NXT SERVICE LIFE

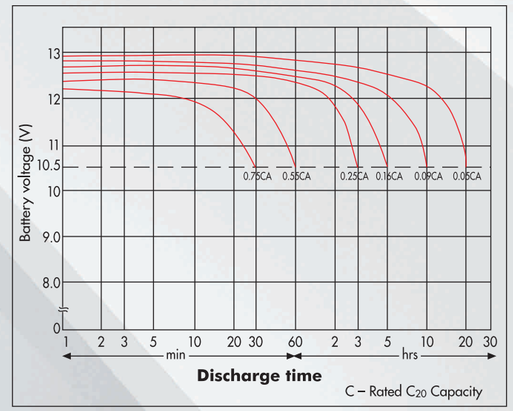




EFFECT OF TEMPERATURE ON CAPACITY



NXT DISCHARGE CHARACTERISTICS



NOTES ON OPERATIONS:

Charging Characteristics:

a) Normal Recharge:
Batteries to be recharged in cc-cv model only

Mode of operation	Voltage setting per 12V unit for ambient temperature 20 - 30 °C	Current setting
Float	13.7V +/- 0.1V	Maximum : 0.3 CA
Cyclic	14.7V +/- 0.1V	Minimum: 0.1 CA

Temperature Compensation : (Reference 25°C)
Float : -18mV / °C / 12V unit
Cyclic : -30mV / °C / 12V unit

b) Fast Recharge option:
During operation, if the battery bank is subjected to regular (daily) deep discharge in excess of 50% (cumulative basis), the fast recharge option may be exercised.

Fast recharge, following pattern to be followed:-

Step 1: 0.3C – 14.5V
Step 2: 0.1C – 14.5V
Step 3: 0.05C – 14.5V
Step 4: 0.02C – 14.5V

Total duration for the four steps shall be 5.0 hours for a recharge after a 70% DOD. However, this mode of recharge will require an equalization once a month at the recommended float voltage for a period of 12 hours uninterrupted.

Caution on Ripple: The maximum limits of the A.C. content of the D.C. shall be 5A A.C. (rms) per 100 Ah C20 capacity during float charge. The A.C. current induced battery temperature rise should be below 3°C. At all times the average D.C. float current must be kept positive.

Heat Dissipation : A VRLA battery under normal float condition shall dissipate heat into the atmosphere. For the overall heat load calculation,taking into account a worst case operation, the rate of heat dissipation may be taken as 0.45 Watts/100 Ah C_{20} capacity/Cell.

Hydrogen Evolution: Hydrogen gas evolved by a lead acid battery may be estimated from the following formula:

Hydrogen gas evolved per hour = $0.45 \times 10^{-3} \times n \times i \times C$ m^3 at N.T.P.

Where, n = number of 2V cells
i = 0.2 A/100 Ah for a VRLA cell
C = C20 capacity of Cell

To design for the ventilation (air flow) requirement so that the hydrogen percentage in the air is always below 4% (lower explosive Limit), the air flow rate may be estimated as:

$Q = d \times s \times 0.45 \times 10^{-3} \times n \times i \times C$ m^3 / hr

Where, d = dilution ratio (100 - 4) / 4 = 24
s = factor of safety, eg.5

For a VRLA, the above may be simplified as:

$Q = 0.0108 \times n \times C$

Paralleling of Battery Strings: (a) Paralleling of a maximum of three strings is allowed provided they are all of the same make and Ah capacity and of same age. (b) Adequate care shall be taken in ensuring that all inter-unit connecting cables have equal length and cross-section. All cables to the system, from each of the strings, shall also be of same length and cross-section. (c) Total charging current, in the case of parallel strings, to be taken care of so that each of the strings get the recommended level of Amperes – minimum 10% and maximum 30% of the rated C_{20} capacity of each of the 12V blocks.

For inter-block connection flexible copper cable with suitable lugs are recommended. Cable cross section may be estimated at 2.8Amps/mm2 at the maximum anticipated discharge load.

Even though the Exide Powersafe batteries are designed to perform anywhere between (–) 20 to (+) 50°C, for optimum battery life avoid prolonged operation in ambient in excess of 35°C.

Above 27°C, for every 8°C rise of weighted average operating temperature, battery life is reduced by 50%.

Test discharge on installation and commissioning, if necessary, should be conducted only after 48 hours of uninterrupted float charge with load disconnected.

Ensure that batteries are put to recharge immediately after any discharge, Under no circumstance the gap between the end of discharge and initiation of recharge should be more than 24 hours.

Standard Maintenance Recommendations: (a) Visual check every 3 months to note any physical abnormality like bulge, crack or leakage etc. (b) Measure float voltage of individual units once in 3 months and record thedata. (c) Test discharge the battery bank at least once in 12 months to check battery health. (d) Keep the battery top clean with the help of a dry cotton cloth periodically. Inspect the inter-unit connection points for any sulfation etc. The inter-unit connection are to be checked for tightness once a year. (e) If battery bank is placed on steel racks / cabinets ensure an insulation between the battery base and the steel tray. This could be a coat of durable (acid-resistant) paint or any other insulating medium. Steel racks should preferably be well grounded.

Statutory Notice:

All batteries contain lead, which is harmful for human beings and environment. As per statutory requirements, the used battery must be returned to the authorized dealer, manufacturer or at the designated collection centres.

EXIDE

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