



# Carbon Battery

## Why Do You Need C&D Carbon Battery ?

- Frequent AC breakout **Vs.** Power Stability and Reliability
- Uncontrolled Site Environment **Vs.** Endurable Power System with longer service life
- Low Recharging Capability on-site **Vs.** Fast Capacity Recovery for Next Cycle
- Smaller Initial Investment but Heavier Service expense **Vs.** Minimized Total Ownership Cost



Energy Storage



Renewable Energy



Hybrid Systems



Unstable Grid



Deep Cycle Mobility

## How C&D Carbon Battery Benefits You?



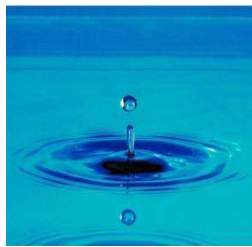
*Maximized Deep Cycles*



*Leading Charge Acceptance*



*Minimized sulfating Rate*



*Extreme Temperature Tolerance*



## C&D Carbon Battery Features

### Long life cycle service design:

- Proven C&D DCS technology
- Excellent **PSoC** and cyclic performance
  - 50% DOD 2250
  - 80% DOD 1000
  - 100% DOD 650

### Leading Charging Acceptance

- Maximum charge current 0.6C, 300% than normal VRLA
- 0.2C to full charging lower than 7 Hrs

### Compliant to major global specifications

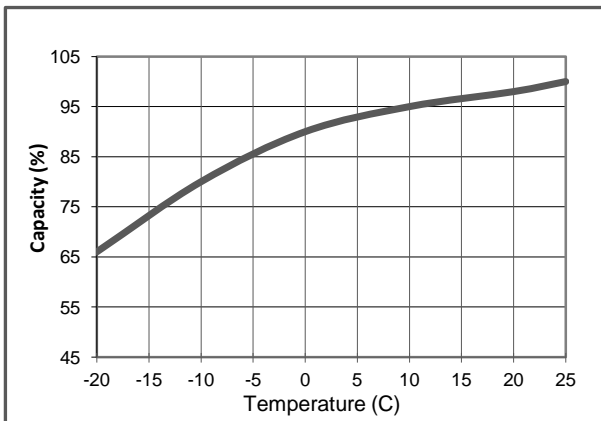
- BS 6290: Part 4:1997
- IEC 60896-21/22
- Telcordia SR-4228
- Bellcore GR-63-CORE & GR-1089-CORE
- UL 94 V-2/V-0 Flame Retardant Polypropylene

### Extreme Temperature Tolerance

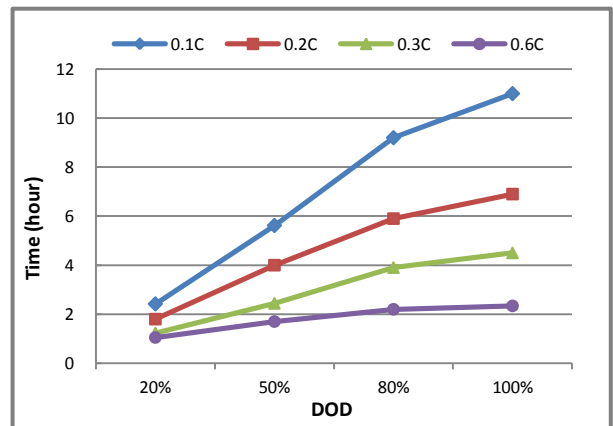
- -20 ° C : 16% increase capacity
- +35 ° C : 60% increase cyclic life

## BATTERY CHARACTERISTICS CURVE

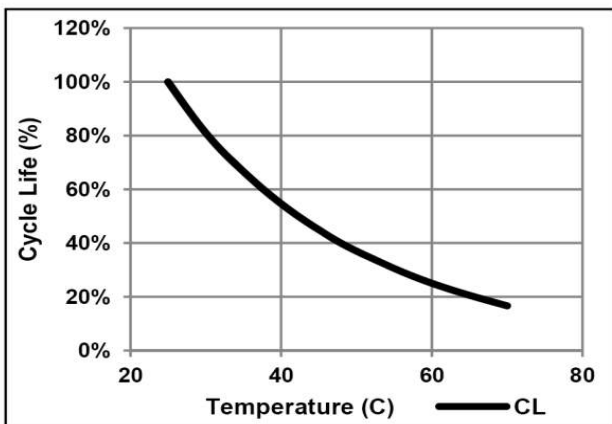
Capacity vs. Temperature



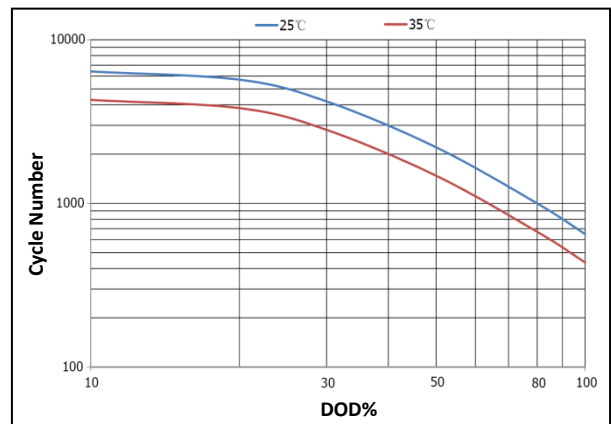
Charge Time vs. DOD



Cycle life vs. Temperature



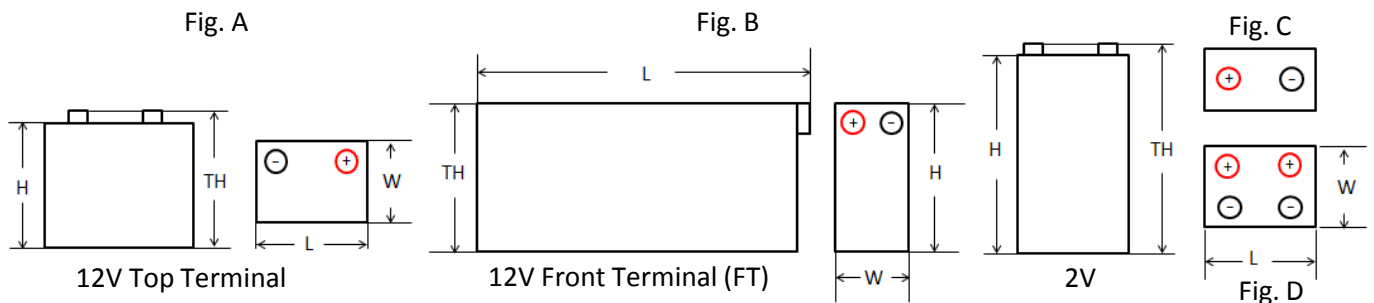
Industry Leading Cyclic Life



**Product Specifications:**

Model	V	Capacity/Ah (C10,1.8V@25°C)	Capacity/Ah (C20,1.75V@25°C)	Dimensions/mm (L*W*H*TH/ mm)				Weight/ Kg	Terminal Type (Bolt)	Fig.
SHC12-40	12	36	43	229	139	200	205	16	Inserted (#10-32 UNF)	A
SHC12-65	12	59	67	273	174	201	204	24	Inserted (1/4-20UNC)	A
SHC12-100	12	91	100	341	173	213	216	34	Inserted (1/4-20UNC)	A
SHC12-110	12	103	114	345	173	275	278	43	Inserted (1/4-20UNC)	A
SHC 12-100FT	12	91	100	511	110	237	237	34	Inserted (M6)	B
SHC12-150FT	12	150	154	559	126	285	285	50	Inserted (M8)	B
SHC 12-200FT	12	172	192	559	126	328	328	60	Inserted (M8)	B
SHC 2-300	2	300	334	166	114	360	378	18	Inserted (M6)	C
SHC 2-400	2	400	446	166	146	360	378	23	Inserted (M6)	C
SHC 2-600	2	600	668	166	210	360	378	33	Inserted (M6)	D

**Dimension Figures:**



**Operational Specifications:**

<b>Operating Temperature Range with temperature compensation</b>	Discharge: -40°C (-40°F) to + 71°C (160°F) Charge: -23°C (-10°F) to + 60°C (140°F)
<b>Maximum Charging Current Limit</b>	0.6 C <sub>10</sub>
<b>Float Charging Voltage</b>	2.25 to 2.27 V for 2V cell, and 13.5 to 13.62V for 12V block @ 25°C (77°F)
<b>Self Discharge</b>	Battery can be stored up to 6 months at 25°C (77°F) before a freshening charge is required. Batteries stored at temperatures greater than 25°C (77°F) will require recharge sooner than batteries stored at lower temperatures. See C&D operational manual 41-7272, Self-Discharge and Inventory Control for details.
<b>Equalize charge &amp; cycle service voltage</b>	2.35 V for 2V cell, and 14.1V for 12V block @ 25°C (77°F)
<b>Terminal</b>	Threaded copper alloy insert terminal to accept: -#10-32 UNF bolt (SHC12-40) -1 /4-20UNC bolt (SHC12-65, SHC12-100, SHC12-110) -M8 bolt (SHC12-150 FT, SHC12-200FT ) -M6 bolt (SHC12-100 FT, SHC2-300, SHC2-400, SHC2-600)
<b>Terminal Hardware Initial Torque</b>	3.4N-m(30 in.-lbs) for: SHC12-40 12.4 N-m (110in.-lbs) for SHC12-65, 100, 110 18 N-m (160 in.-lbs) for: SHC12-150 FT, SHC12-200FT 12 N-m (107 in.-lbs) for: SHC12-100 FT, SHC2-300, SHC2-400, SHC2-600

\*All dimensions are for reference only. Contact a C&D Representative for complete dimensional information.

**Constant Power Discharge Table - Watts Per Cell @ 25°C (77°F)**
**SHC 12-40**

EPV	1hr	2hr	3hr	4hr	5hr	6hr	7hr	8hr
1.85	47.1	27.5	19.8	16.1	13.4	11.6	10.2	9.2
1.80	49.6	28.5	20.6	16.6	13.8	11.9	10.5	9.4
1.75	50.4	28.8	20.8	16.8	14.0	12.0	10.6	9.5

**SHC 12-65**

EPV	1hr	2hr	3hr	4hr	5hr	6hr	7hr	8hr
1.85	66.9	40.6	30.0	24.7	20.8	18.0	15.8	14.1
1.80	70.4	42.2	31.0	25.4	21.5	18.6	16.3	14.6
1.75	72.4	43.1	31.5	25.8	21.7	18.8	16.5	14.7

**SHC 12-100**

EPV	1hr	2hr	3hr	4hr	5hr	6hr	7hr	8hr
1.85	104.6	62.7	45.8	36.7	30.9	26.5	23.3	20.9
1.80	110.1	65.4	47.8	38.1	31.9	27.4	24.1	21.5
1.75	111.7	66.6	48.5	38.5	32.2	27.7	24.3	21.7

**SHC 12-110**

EPV	1hr	2hr	3hr	4hr	5hr	6hr	7hr	8hr
1.85	127.4	71.8	51.4	41.3	34.4	29.5	26.0	23.3
1.80	133.5	74.8	53.3	42.7	35.4	30.4	26.7	23.9
1.75	136.8	76.3	54.3	43.5	36.0	30.9	27.1	24.2

**SHC 12-100FT**

EPV	1hr	2hr	3hr	4hr	5hr	6hr	7hr	8hr
1.85	104.6	62.7	45.8	36.7	30.9	26.5	23.3	20.9
1.80	110.1	65.4	47.8	38.1	31.9	27.4	24.1	21.5
1.75	111.7	66.6	48.5	38.5	32.2	27.7	24.3	21.7

**SHC 12-150FT**

EPV	1hr	2hr	3hr	4hr	5hr	6hr	7hr	8hr
1.85	154.0	92.0	68.9	54.9	45.8	39.6	35.0	31.6
1.80	164.0	97.1	71.8	57.1	47.5	41.1	36.3	32.7
1.75	168.0	98.8	72.8	57.9	48.1	41.5	36.6	32.8

**SHC 12-200FT**

EPV	1hr	2hr	3hr	4hr	5hr	6hr	7hr	8hr
1.85	189.9	116.2	84.7	67.7	56.8	49.3	43.7	39.4
1.80	206.0	121.9	89.4	70.6	59.2	51.3	45.4	40.8
1.75	214.0	124.2	90.2	71.8	60.2	52.1	46.1	41.3

**SHC 2-300**

EPV	1hr	2hr	3hr	4hr	5hr	6hr	7hr	8hr
1.85	518	360	279	229	195	171	152	137
1.80	573	387	297	243	206	180	159	143
1.75	609	407	311	253	214	186	165	148

**SHC 2-400**

EPV	1hr	2hr	3hr	4hr	5hr	6hr	7hr	8hr
1.85	345.3	240.0	186.0	152.7	130.0	114.0	101.3	91.3
1.80	382.0	258.0	198.0	162.0	137.3	120.0	106.0	95.3
1.75	406.0	271.3	207.3	168.7	142.7	124.0	110.0	98.7

**SHC 2-600**

EPV	1hr	2hr	3hr	4hr	5hr	6hr	7hr	8hr
1.85	518	360	279	229	195	171	152	137
1.80	573	387	297	243	206	180	159	143
1.75	609	407	311	253	214	186	165	148

### Constant Current Discharge Table – Amps @ 25°C (77°F)

#### SHC 12-40

EPV	1hr	2 hr	3 hr	5 hr	8 hr	10 hr	12 hr	20 hr	24 hr	36 hr	48 hr	72 hr	100 hr	120 hr
1.85	23.72	13.42	9.62	6.44	4.38	3.50	3.14	2.06	1.77	1.20	0.92	0.62	0.45	0.38
1.80	25.21	14.15	10.09	6.73	4.55	3.60	3.24	2.12	1.82	1.23	0.94	0.64	0.46	0.39
1.75	25.69	14.42	10.21	6.81	4.62	3.84	3.30	2.15	1.85	1.25	0.95	0.65	0.47	0.39

#### SHC 12-65

EPV	1hr	2 hr	3 hr	5 hr	8 hr	10 hr	12 hr	20 hr	24 hr	36 hr	48 hr	72 hr	100 hr	120 hr
1.85	34.96	20.96	15.55	10.57	7.07	5.83	4.98	3.21	2.74	1.83	1.41	0.96	0.70	0.58
1.80	37.18	21.96	16.02	10.78	7.22	5.90	5.11	3.30	2.83	1.87	1.46	0.99	0.72	0.60
1.75	38.14	22.25	16.23	10.95	7.33	6.06	5.19	3.35	2.87	1.91	1.48	1.00	0.73	0.61

#### SHC 12-100

EPV	1hr	2 hr	3 hr	5 hr	8 hr	10 hr	12 hr	20 hr	24 hr	36 hr	48 hr	72 hr	100 hr	120 hr
1.85	56.23	32.66	23.76	15.92	10.70	8.77	7.45	4.72	4.01	2.72	2.07	1.40	1.02	0.85
1.80	59.77	34.34	24.83	16.55	11.15	9.14	7.76	4.91	4.17	2.83	2.15	1.46	1.06	0.89
1.75	61.10	34.92	25.27	16.78	11.34	9.28	7.89	4.99	4.24	2.87	2.19	1.48	1.08	0.90

#### SHC 12-110

EPV	1hr	2 hr	3 hr	5 hr	8 hr	10 hr	12 hr	20 hr	24 hr	36 hr	48 hr	72 hr	100 hr	120 hr
1.85	63.24	36.37	26.05	17.39	11.78	9.79	8.41	5.51	4.73	3.20	2.44	1.66	1.20	1.01
1.80	68.14	38.24	27.22	18.09	12.20	10.30	8.68	5.66	4.86	3.29	2.50	1.70	1.23	1.03
1.75	69.90	38.92	27.96	18.50	12.42	10.40	8.81	5.72	4.90	3.32	2.53	1.71	1.25	1.04

#### SHC 12-100FT

EPV	1hr	2 hr	3 hr	5 hr	8 hr	10 hr	12 hr	20 hr	24 hr	36 hr	48 hr	72 hr	100 hr	120 hr
1.85	56.23	32.66	23.76	15.92	10.70	8.77	7.45	4.72	4.01	2.72	2.07	1.40	1.02	0.85
1.80	59.77	34.34	24.83	16.55	11.15	9.14	7.76	4.91	4.17	2.83	2.15	1.46	1.06	0.89
1.75	61.10	34.92	25.27	16.78	11.34	9.28	7.89	4.99	4.24	2.87	2.19	1.48	1.08	0.90

#### SHC 12-150FT

EPV	1hr	2 hr	3 hr	5 hr	8 hr	10 hr	12 hr	20 hr	24 hr	36 hr	48 hr	72 hr	100 hr	120 hr
1.85	81.12	49.61	35.98	24.00	16.46	14.44	12.14	7.35	6.26	4.24	3.23	2.19	1.59	1.33
1.80	86.80	51.10	37.10	24.97	17.10	15.00	12.60	7.63	6.50	4.40	3.35	2.27	1.65	1.38
1.75	89.20	52.10	37.80	25.37	17.37	15.21	12.82	7.73	6.57	4.45	3.39	2.30	1.67	1.40

#### SHC 12-200FT

EPV	1hr	2 hr	3 hr	5 hr	8 hr	10 hr	12 hr	20 hr	24 hr	36 hr	48 hr	72 hr	100 hr	120 hr
1.85	101.00	61.70	44.80	30.00	20.05	16.53	14.12	9.08	7.76	5.25	4.00	2.71	1.97	1.65
1.80	111.00	65.66	47.35	31.34	20.90	17.24	14.71	9.45	8.08	5.47	4.17	2.83	2.05	1.72
1.75	115.59	67.20	48.20	31.72	21.18	17.45	14.91	9.59	8.21	5.56	4.23	2.87	2.09	1.75

#### SHC 2-300

EPV	1hr	2 hr	3 hr	5 hr	8 hr	10 hr	12 hr	20 hr	24 hr	36 hr	48 hr	72 hr	100 hr	120 hr
1.85	135.4	93.2	71.7	49.6	34.3	28.5	24.4	15.5	13.2	9.16	7.2	4.9	3.7	3.1
1.80	150.3	99.8	76.1	52.6	36.4	30.3	25.9	16.6	14.0	9.70	7.6	5.1	3.8	3.2
1.75	162.1	106.4	80.5	54.9	37.5	31.0	26.5	16.7	14.1	9.80	7.6	5.2	3.8	3.2

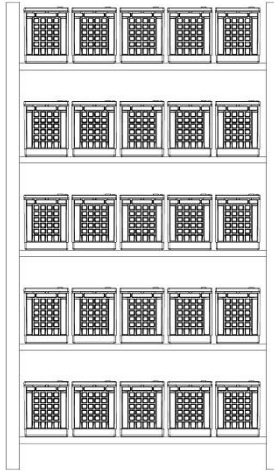
#### SHC 2-400

EPV	1hr	2 hr	3 hr	5 hr	8 hr	10 hr	12 hr	20 hr	24 hr	36 hr	48 hr	72 hr	100 hr	120 hr
1.85	180.5	124.3	95.5	66.1	45.7	38.0	32.5	20.7	17.5	12.22	9.6	6.5	4.9	4.1
1.80	200.3	133	101.5	70.1	48.5	40.3	34.5	22.1	18.7	12.94	10.1	6.8	5.0	4.2
1.75	216.1	141.8	107.3	73.1	50	41.3	35.3	22.3	18.8	13.06	10.2	6.9	5.1	4.2

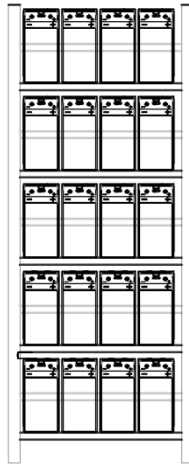
#### SHC 2-600

EPV	1hr	2 hr	3 hr	5 hr	8 hr	10 hr	12 hr	20 hr	24 hr	36 hr	48 hr	72 hr	100 hr	120 hr
1.85	270.7	186.4	143.3	99.2	68.5	57	48.8	31	26.3	18.32	14.3	9.7	7.3	6.1
1.80	300.5	199.5	152.2	105.1	72.7	60.5	51.8	33.1	28	19.41	15.1	10.3	7.5	6.3
1.75	324.1	212.7	160.9	109.7	75	62	52.9	33.4	28.2	19.60	15.3	10.4	7.6	6.4

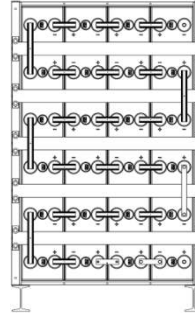
**BATTERY SYSTEM CONFIGURATION \***



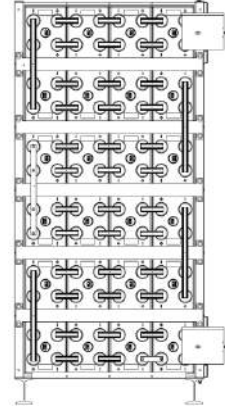
**Systems**  
SHC12-40/65/100/110



**Systems**  
SHC12-100/150/200FT



**48V Systems**  
SHC2-300/400



**48V Systems**  
SHC2-600

\* Note: Batteries to be mounted with 0.5 in. (1.25 cm) spacing minimum and free air ventilation. Drawings is not to scale, pls contact C&D representative for detail system configurations.



**C&D Carbon Battery**  
*VRLA Powered By*  
**Carbon & DCS Technology**

\*\* All data shall be change without prior notice, C&D reserve the right to explain and update the information contained hereinto.