



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

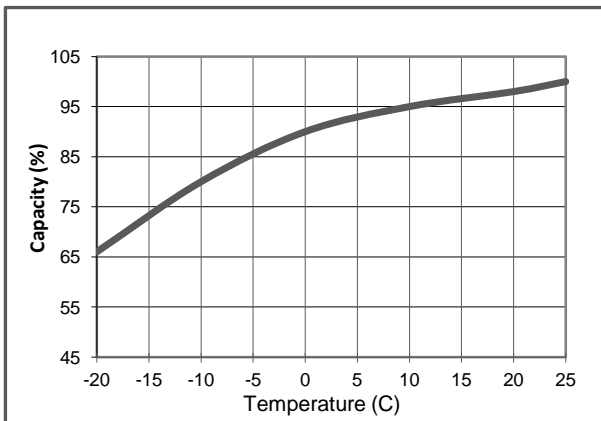
- BS 6290: Part 4:1997
- IEC 60896-21/22
- Telcordia SR-4228
- Bellcore GR-63-CORE & GR-1089-CORE
- UL 94 V-2/V-0 Flame Retardant Polypropylene

Extreme Temperature Tolerance

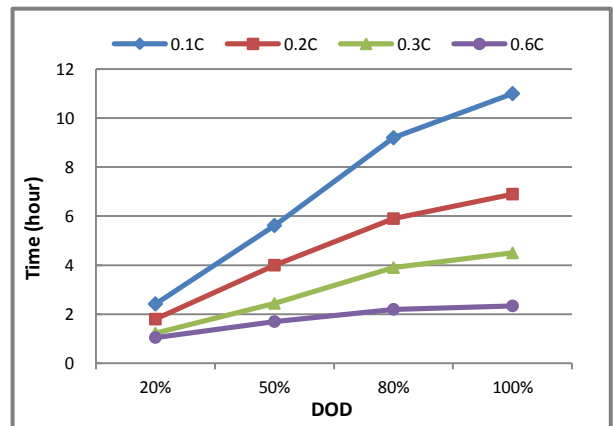
- -20 ° C : 16% increase capacity
- +35 ° C : 60% increase cyclic life

BATTERY CHARACTERISTICS CURVE

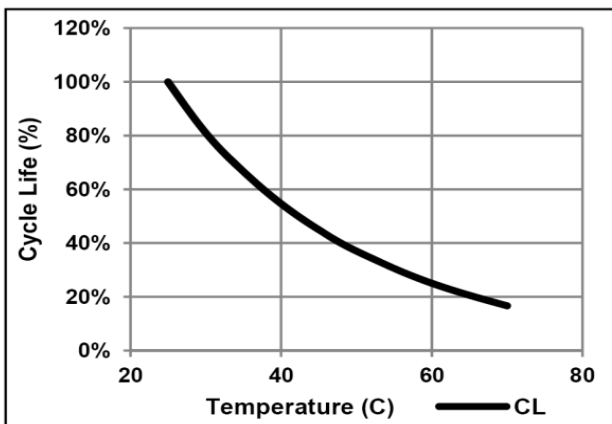
Capacity vs. Temperature



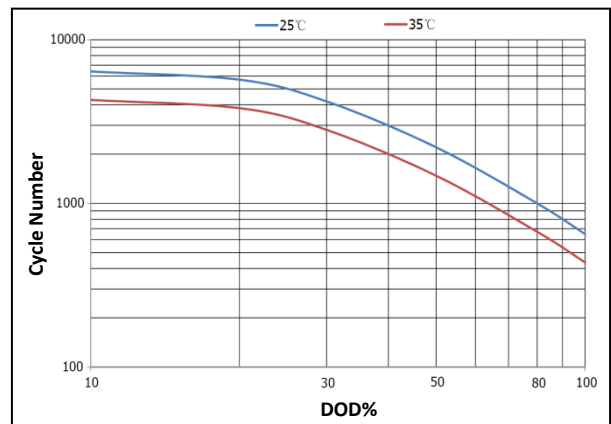
Charge Time vs. DOD



Cycle life vs. Temperature



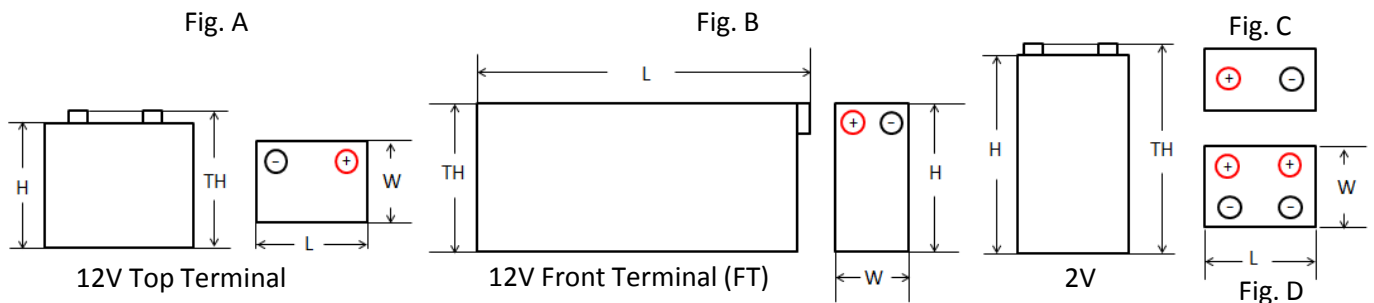
Industry Leading Cyclic Life



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:

| | |
|--|---|
| Operating Temperature Range with temperature compensation | Discharge: -40°C (-40°F) to + 71°C (160°F) Charge: -23°C (-10°F) to + 60°C (140°F) |
| Maximum Charging Current Limit | 0.6 C ₁₀ |
| Float Charging Voltage | 2.25 to 2.27 V for 2V cell, and 13.5 to 13.62V for 12V block @ 25°C (77°F) |
| Self Discharge | 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. |
| Equalize charge & cycle service voltage | 2.35 V for 2V cell, and 14.1V for 12V block @ 25°C (77°F) |
| Terminal | 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) |
| Terminal Hardware Initial Torque | 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 |

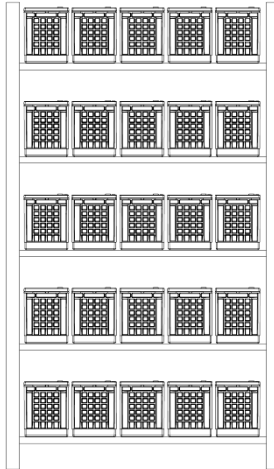
SHC 2-400

| 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 |

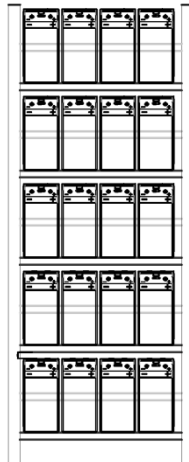
SHC 2-600

| 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 |

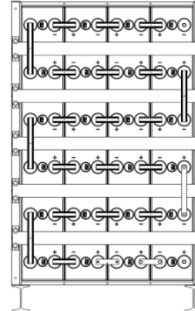
BATTERY SYSTEM CONFIGURATION *



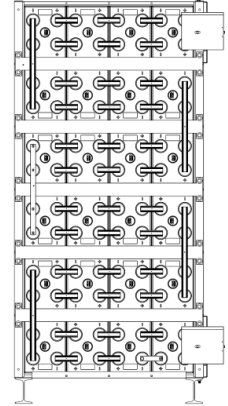
Systems
SHC12-40/65/100/110



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.



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