

NUCLEAR QUALIFIED

Designed and manufactured using a quality management system qualified to the requirements of 10CFR50 Appendix B, and ASME NQA-1 1994.

Built in accordance to a quality management system that encompasses 10CFR50 Appendix B and NQA-1 1994, the EnerSys® PowerSafe® GN battery is the battery of choice for the resurgent nuclear market. As a leader in the production of industrial batteries, EnerSys stands poised to deliver a quality Class IE battery for your safety related application.

BATTERY RANGE SUMMARY

Nominal Capacity 1140Ah - 3600Ah

- Highest 1 minute rates
- Lowest maintenance - lowest water loss, lowest maintenance costs
- Slide-Lock™ terminal post seal, virtually eliminates terminal post corrosion, while allowing plate growth
- 20 year life expectancy
- Flat plate construction - calcium alloy grids
- For float applications where high ambient temperatures are not probable
- Optimum ratio of plate surface area to electrolyte volume for maximized performance
- Specifically suited for demanding complex load profiles requiring high initial and end currents



General Specifications

| PowerSafe® GN Battery Type* | NOM Ah CAP ¹ | Nominal Dimensions | | | | | | Weight - Volumes | | | | | | | |
|-----------------------------------|-------------------------------|--------------------|-----|-------|-----|--------|-----|------------------|-----|-----------------|-----|-------------------------------|----|------|-----|
| | | Length** | | Width | | Height | | Unpacked | | Domestic Packed | | Electrolyte only/ 1.215 SG | | | |
| | | in | mm | in | mm | in | mm | lbs | kg | lbs | kg | lbs | kg | gal | ltr |
| 2GN-13 | 1140 | 12.4 | 315 | 15.1 | 384 | 27.2 | 691 | 445 | 202 | 465 | 211 | 119 | 54 | 11.9 | 45 |
| 2GN-15 | 1260 | 12.4 | 315 | 15.1 | 384 | 27.2 | 691 | 485 | 220 | 505 | 229 | 111 | 50 | 11.1 | 42 |
| 2GN-17 | 1500 | 16.6 | 422 | 15.1 | 384 | 27.2 | 691 | 585 | 265 | 607 | 275 | 163 | 74 | 16.3 | 62 |
| 2GN-19 | 1600 | 16.6 | 422 | 15.1 | 384 | 27.2 | 691 | 620 | 281 | 642 | 291 | 155 | 70 | 15.5 | 59 |
| 2GN-21 | 1700 | 16.6 | 422 | 15.1 | 384 | 27.2 | 691 | 655 | 297 | 677 | 307 | 147 | 67 | 14.7 | 56 |
| 2GN-23 | 1800 | 16.6 | 422 | 15.1 | 384 | 27.2 | 691 | 695 | 315 | 717 | 325 | 139 | 63 | 13.9 | 53 |
| GN-25 | 2200 | 12.4 | 315 | 15.1 | 384 | 27.2 | 691 | 440 | 199 | 460 | 209 | 123 | 56 | 12.3 | 46 |
| GN-27 | 2320 | 12.4 | 315 | 15.1 | 384 | 27.2 | 691 | 460 | 209 | 480 | 218 | 119 | 54 | 11.9 | 45 |
| GN-29 | 2430 | 12.4 | 315 | 15.1 | 384 | 27.2 | 691 | 480 | 217 | 500 | 227 | 115 | 52 | 11.5 | 43 |
| GN-31 | 2520 | 12.4 | 315 | 15.1 | 384 | 27.2 | 691 | 495 | 224 | 515 | 233 | 111 | 50 | 11.1 | 42 |
| GN-33 | 2590 | 12.4 | 315 | 15.1 | 384 | 27.2 | 691 | 515 | 233 | 535 | 243 | 107 | 48 | 10.7 | 40 |
| GN-35 | 3080 | 16.6 | 422 | 15.1 | 384 | 27.2 | 691 | 610 | 277 | 632 | 287 | 160 | 72 | 16.0 | 60 |
| GN-37 | 3200 | 16.6 | 422 | 15.1 | 384 | 27.2 | 691 | 630 | 285 | 652 | 296 | 156 | 71 | 15.6 | 59 |
| GN-39 | 3320 | 16.6 | 422 | 15.1 | 384 | 27.2 | 691 | 650 | 295 | 672 | 305 | 152 | 69 | 15.2 | 57 |
| GN-41 | 3430 | 16.6 | 422 | 15.1 | 384 | 27.2 | 691 | 665 | 302 | 687 | 311 | 148 | 67 | 14.8 | 56 |
| GN-43 | 3520 | 16.6 | 422 | 15.1 | 384 | 27.2 | 691 | 685 | 311 | 707 | 321 | 144 | 65 | 14.4 | 54 |
| GN-45 | 3600 | 16.6 | 422 | 15.1 | 384 | 27.2 | 691 | 705 | 320 | 727 | 330 | 140 | 63 | 14.0 | 53 |

* Prefix number indicates cells per unit. Suffix number indicates total plates per cell.

** 0.25" must be added between units for spacing purposes when calculating total battery length.

¹ Nominal Amphour capacity at 8 hour rate to 1.75 volts per cell at 77° F

Specifications

| Plate Dimensions | Height | | Width | | Thickness | |
|------------------|--------|-----|-------|-----|-----------|-----|
| | in. | mm | in. | mm | in. | mm |
| Positive | 17.3 | 439 | 12.7 | 323 | 0.31 | 7.9 |
| Negative | 17.3 | 439 | 12.7 | 323 | 0.21 | 5.3 |

- **Sediment Space:**
1.32 in./33.5 mm
- **Electrolyte over plates:**
3.4 in./86 mm
- **Container & cover:** Polycarbonate
- **Separators:**
Microporous rubber
- **Retainers:**
"Vitrex" - glass fiber
- **Post type:**
GN-13 and 15, single post, lead-plated copper (2 cell jar)
GN-17 through 23, double posts, lead-plate copper (2 cell jar)
GN-25 through 45, double posts, lead-plate copper (single cell jar)
- **Post seal type:**
Slide-Lock™
- **Plate suspension type:**
Positive - bridge hung
Negative - bottom supported
- **Electrolyte withdrawal tube:**
One per cell
- **Vent type:**
Flame arrestor, fused alumina
- **Float voltage:**
Acceptable range: 2.17-2.26 Vpc
- **Specific gravity:** 1.215
- **Bolt connectors:**
Stainless steel, standard English measure, hex head
- **Intercell connectors:**
Lead-plated copper
- **Nuclear qualifications:**
10CFR50 Appendix B, ANSI N45.2 and ASME NQA-1 1994 Compliant
GN-13 thru GN-23
IEEE-323-1974, IEEE-344-1987
IEEE-450-1995, IEEE-535-1979
GN-25 thru GN-45
IEEE-323-1974, IEEE-344-1987
IEEE-450-2002, IEEE-535-2006

Constant Current**

1.215 Specific Gravity electrolyte at 77°F (25°C), including cell connectors

Discharge rates in Amperes to 1.75 Vpc final

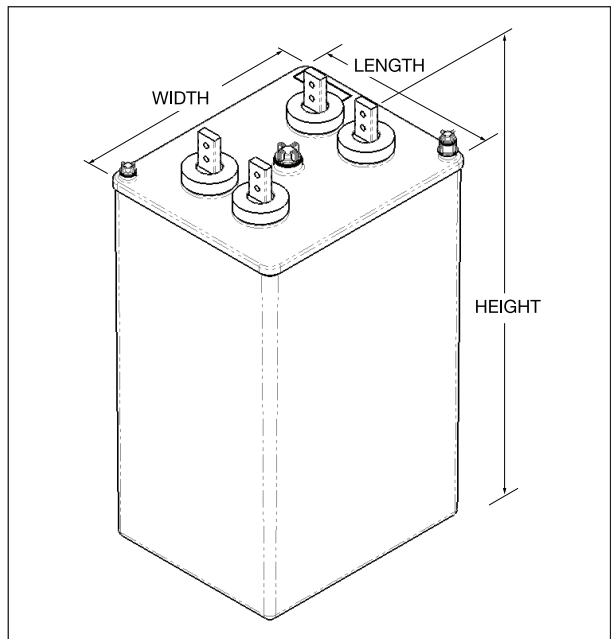
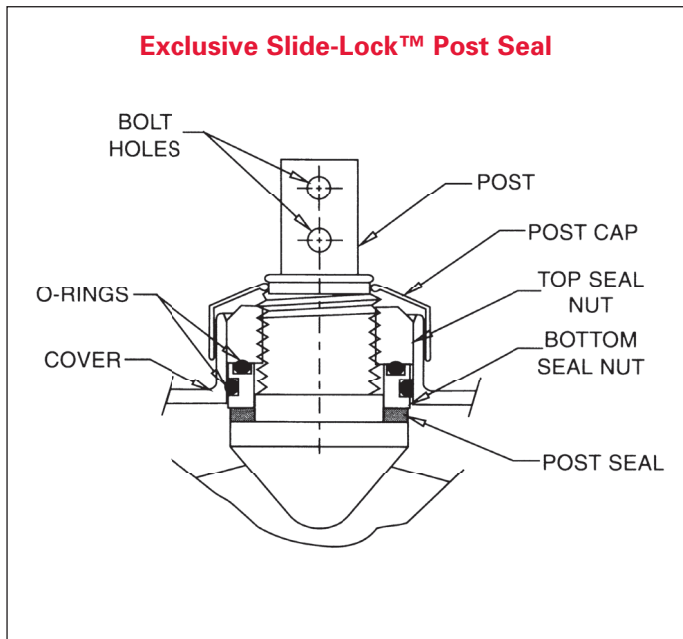
| PowerSafe® GN Battery Type | Nominal Capacity (Ah) | Minutes | | | Hours | | | | | | | | | |
|----------------------------------|--------------------------|---------|------|------|-------|------|------|-----|-----|-----|-----|-----|-------|------|
| | | 1 | 15 | 30 | 1 | 1.5 | 2 | 3 | 4 | 5 | 8 | 12 | 24 | 72 |
| 2GN-13 | 1140 | 1040 | 956 | 767 | 557 | 441 | 367 | 278 | 230 | 198 | 143 | 103 | 59.0 | 23.2 |
| 2GN-15 | 1260 | 1190 | 1075 | 869 | 625 | 491 | 406 | 307 | 252 | 215 | 157 | 113 | 62.8 | 23.6 |
| 2GN-17 | 1500 | 1522 | 1290 | 1039 | 747 | 590 | 492 | 374 | 305 | 264 | 187 | 134 | 77.8 | 31.6 |
| 2GN-19 | 1600 | 1683 | 1439 | 1150 | 818 | 641 | 532 | 404 | 333 | 284 | 199 | 142 | 80.8 | 31.6 |
| 2GN-21 | 1700 | 1841 | 1586 | 1261 | 889 | 693 | 572 | 433 | 360 | 305 | 213 | 151 | 83.6 | 31.5 |
| 2GN-23 | 1800 | 1993 | 1731 | 1370 | 958 | 743 | 611 | 461 | 385 | 325 | 225 | 159 | 85.8 | 31.0 |
| GN-25 | 2200 | 2051 | 1835 | 1496 | 1104 | 882 | 737 | 563 | 459 | 391 | 275 | 197 | 116.3 | 48.1 |
| GN-27 | 2320 | 2194 | 1973 | 1606 | 1181 | 940 | 784 | 596 | 487 | 414 | 290 | 206 | 119.5 | 48.2 |
| GN-29 | 2430 | 2319 | 2108 | 1715 | 1256 | 996 | 829 | 628 | 513 | 437 | 304 | 213 | 121.1 | 47.4 |
| GN-31 | 2520 | 2441 | 2242 | 1821 | 1329 | 1050 | 871 | 657 | 536 | 456 | 315 | 219 | 122.0 | 46.7 |
| GN-33 | 2590 | 2553 | 2373 | 1926 | 1399 | 1101 | 911 | 684 | 557 | 471 | 324 | 223 | 122.0 | 45.5 |
| GN-35 | 3080 | 2690 | 2524 | 2058 | 1529 | 1226 | 1028 | 789 | 644 | 548 | 385 | 275 | 161.4 | 66.1 |
| GN-37 | 3200 | 2810 | 2636 | 2157 | 1604 | 1285 | 1076 | 823 | 673 | 573 | 400 | 285 | 164.0 | 65.0 |
| GN-39 | 3320 | 2930 | 2752 | 2259 | 1681 | 1346 | 1126 | 859 | 702 | 598 | 415 | 293 | 166.2 | 64.7 |
| GN-41 | 3430 | 3033 | 2851 | 2351 | 1749 | 1399 | 1168 | 888 | 727 | 619 | 429 | 300 | 168.2 | 64.5 |
| GN-43 | 3520 | 3135 | 2954 | 2444 | 1820 | 1454 | 1212 | 918 | 751 | 638 | 440 | 306 | 169.1 | 63.9 |
| GN-45 | 3600 | 3230 | 3056 | 2536 | 1889 | 1507 | 1254 | 948 | 774 | 656 | 450 | 311 | 168.9 | 62.5 |

Discharge rates in Amperes to 1.81 Vpc final

| PowerSafe® GN Battery Type | Nominal Capacity (Ah) | Minutes | | | Hours | | | | | | | | | |
|----------------------------------|--------------------------|---------|------|------|-------|------|------|-----|-----|-----|-----|-----|-------|------|
| | | 1 | 15 | 30 | 1 | 1.5 | 2 | 3 | 4 | 5 | 8 | 12 | 24 | 72 |
| 2GN-13 | 1140 | 768 | 767 | 645 | 492 | 400 | 338 | 263 | 220 | 191 | 139 | 101 | 58.6 | 23.2 |
| 2GN-15 | 1260 | 859 | 857 | 718 | 542 | 437 | 369 | 286 | 239 | 207 | 153 | 112 | 62.8 | 23.6 |
| 2GN-17 | 1500 | 1106 | 1041 | 863 | 651 | 529 | 449 | 347 | 289 | 252 | 181 | 131 | 77.2 | 31.6 |
| 2GN-19 | 1600 | 1216 | 1159 | 955 | 712 | 575 | 485 | 377 | 314 | 270 | 192 | 139 | 80.3 | 31.6 |
| 2GN-21 | 1700 | 1326 | 1277 | 1046 | 774 | 621 | 520 | 406 | 339 | 290 | 206 | 148 | 83.3 | 31.5 |
| 2GN-23 | 1800 | 1427 | 1394 | 1136 | 834 | 666 | 555 | 434 | 362 | 309 | 218 | 156 | 85.6 | 31.0 |
| GN-25 | 2200 | 1493 | 1485 | 1250 | 961 | 787 | 671 | 522 | 432 | 371 | 264 | 192 | 114.8 | 48.0 |
| GN-27 | 2320 | 1602 | 1593 | 1341 | 1027 | 838 | 711 | 552 | 456 | 391 | 277 | 200 | 117.5 | 47.9 |
| GN-29 | 2430 | 1696 | 1693 | 1431 | 1092 | 886 | 749 | 580 | 480 | 411 | 289 | 206 | 118.4 | 46.8 |
| GN-31 | 2520 | 1787 | 1785 | 1518 | 1154 | 932 | 784 | 606 | 500 | 427 | 298 | 211 | 118.8 | 45.9 |
| GN-33 | 2590 | 1866 | 1864 | 1604 | 1215 | 976 | 818 | 628 | 517 | 440 | 304 | 213 | 118.1 | 44.5 |
| GN-35 | 3080 | 1946 | 1944 | 1704 | 1320 | 1091 | 933 | 730 | 605 | 520 | 372 | 270 | 160.8 | 66.1 |
| GN-37 | 3200 | 2042 | 2040 | 1784 | 1383 | 1140 | 974 | 761 | 631 | 542 | 385 | 279 | 162.8 | 65.0 |
| GN-39 | 3320 | 2142 | 2140 | 1867 | 1447 | 1190 | 1016 | 793 | 657 | 564 | 398 | 286 | 164.5 | 64.7 |
| GN-41 | 3430 | 2218 | 2215 | 1938 | 1504 | 1233 | 1050 | 819 | 679 | 582 | 409 | 292 | 165.9 | 64.3 |
| GN-43 | 3520 | 2295 | 2293 | 2011 | 1562 | 1278 | 1086 | 845 | 700 | 599 | 418 | 296 | 166.3 | 63.5 |
| GN-45 | 3600 | 2365 | 2362 | 2082 | 1618 | 1320 | 1120 | 869 | 719 | 614 | 425 | 299 | 165.4 | 61.9 |

** Ampere values listed represent 100% of the cells capacity. Initial capacity shall be a minimum of 90% of these values per IEEE450.

Note: All inter-cell, inter-tier, inter-step, end-to-end inter-rack, back-to-back inter-rack connectors, and terminal plates are included with every battery. Cross-aisle inter-rack connectors are not included.



Rint and Isc

| PowerSafe® GN Battery Size | *Resistance | Isc |
|----------------------------------|-------------|-------|
| | Milliohms | Amps |
| 2GN-13 | 0.213 | 9390 |
| 2GN-15 | 0.171 | 11700 |
| 2GN-17 | 0.155 | 12900 |
| 2GN-19 | 0.136 | 14710 |
| 2GN-21 | 0.120 | 16670 |
| 2GN-23 | 0.107 | 18690 |
| GN-25 | 0.105 | 19050 |
| GN-27 | 0.100 | 20000 |
| GN-29 | 0.093 | 21510 |
| GN-31 | 0.089 | 22470 |
| GN-33 | 0.086 | 23260 |
| GN-35 | 0.076 | 26320 |
| GN-37 | 0.073 | 27400 |
| GN-39 | 0.071 | 28170 |
| GN-41 | 0.069 | 28990 |
| GN-43 | 0.066 | 30300 |
| GN-45 | 0.064 | 31250 |

* Resistance values are for reference only (not intended to represent an ohmic value or base line measurement)



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