



**PowerSafe**<sup>®</sup>  
Planté

## Battery Range Summary

Prolonged Life High Performance Cells  
YAP / YCP / YHP / U-YHP



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**EnerSys**<sup>®</sup>

Power/Full Solutions

RESERVE  
POWER

The EnerSys® range of PowerSafe® Planté YAP, YCP, YHP and U-YHP cells has been designed for standby power applications wherever high performance and long life are absolute requirements.

Using the traditional Planté positive plate design, refined by more than 125 years of EnerSys' battery manufacturing experience, Planté's specifications make it the ideal choice for a wide range of applications such as telecommunications, power generation and distribution, UPS, emergency lighting and security systems.

The Planté cell is unique in that it delivers 100% of its rated capacity throughout its entire life, a claim unmatched by any other lead acid battery technology. This eliminates the need to oversize the battery to allow for reduced performance towards the end of service life.

The capacity range covered by EnerSys high performance PowerSafe Planté products is 16 to 2400 ampere-hours (10h to 1.80Vpc at 20°C). YAP types cover 16 to 80Ah; YCP types 107 to 455Ah; YHP types 535 to 2139Ah and U-YHP types 600 to 2400Ah.

### Features

- Vent plugs - designed to allow free exit of gasses, yet eliminate acid spray. Explosion minimising vent plugs are available as an option
- Cell pillars - lead alloy (YAP) with copper insert (YCP / YHP / U-YHP) designed to give minimum resistance and maximum current flow
- Cell containers - moulded from durable, transparent styrene acrylonitrile (SAN) to allow electrolyte level and cell condition to be monitored visually
- Cell lids - moulded from durable, opaque SAN sealed to container to ensure no electrolyte leakage
- Negative plates - pasted grids provide perfect balance with the positive plates to give maximum performance and service life
- Positive plates - unique, pure lead construction ensures 100% capacity throughout long service life
- Separators - made from natural ribbed microporous rubber for minimum resistance
- Bar guards - safeguard against short circuits

- End buffers - provide additional lateral support at each end of the element, ensuring a compact assembly to prevent plate movement during transit

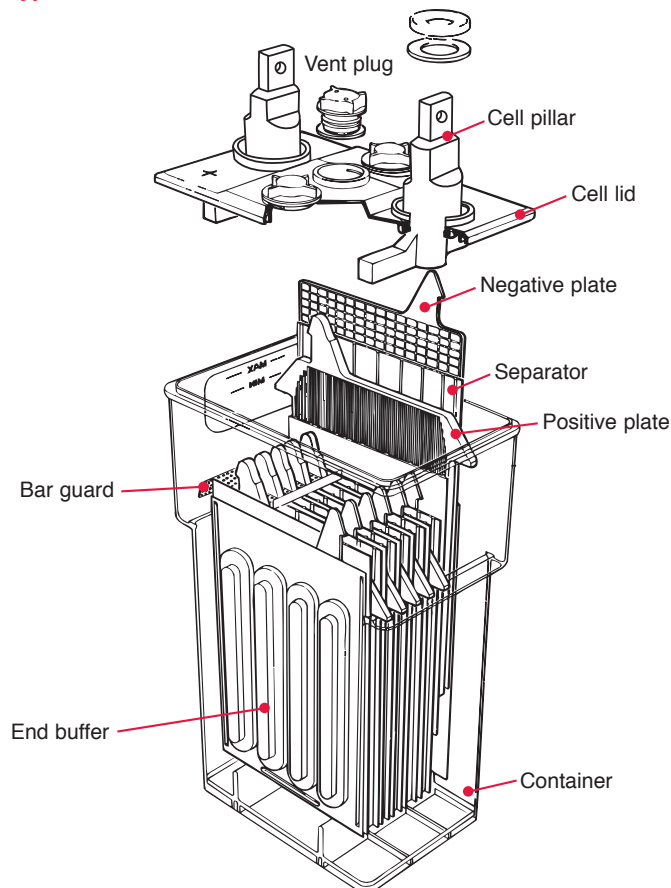
### Benefits

- High performance cells
- First choice for long life and reliability
- Excellent performance at both high and low rates of discharge
- Low internal resistance
- Retain 100% capacity throughout life
- Proven service life in excess of 20 years on float or trickle charge
- Low maintenance (periods between water addition up to 3 years) due to large electrolyte reserve

### Standards

- Compliant with IEC 60896-11 and BS6290 Part 2
- Manufactured to ISO™ 9001:2008 and ISO 14001:2004 standards

### Typical Construction



# Battery Range Summary

## General Specification

| Cell Type  | Nominal Capacity (Ah) |                       |                                      | Nominal Dimensions (mm) |                      |                 |                        | Typical Weight (kg) |       | Electrolyte Volume S.G. = 1.207 (litres) | Pillars per Pole <sup>(4)</sup> | Internal Resistance ( $\mu\Omega$ ) |
|------------|-----------------------|-----------------------|--------------------------------------|-------------------------|----------------------|-----------------|------------------------|---------------------|-------|--|---------------------------------|-------------------------------------|
|            | 3h to 1.80Vpc @ 20°C  | 10h to 1.85Vpc @ 15°C | 10h to 1.80Vpc @ 20°C <sup>(1)</sup> | Length <sup>(2)</sup>   | Width <sup>(3)</sup> | Height over Lid | Overall Height of Cell | Filled              | Dry   |  |                                 |                                     |
| YAP 5      | 12.5                  | 15                    | 16                                   | 76                      | 133                  | 220             | 260                    | 3.0                 | 2.0   | 1.0                                      | 1                               | 5195                                |
| YAP 9      | 25                    | 30                    | 32                                   | 114                     | 133                  | 220             | 260                    | 5.5                 | 4.0   | 1.6                                      | 1                               | 2597                                |
| YAP 13     | 37.5                  | 45                    | 48                                   | 190                     | 133                  | 220             | 260                    | 9.0                 | 5.5   | 2.8                                      | 1                               | 1732                                |
| YAP 17     | 50                    | 60                    | 64                                   | 190                     | 133                  | 220             | 260                    | 10.5                | 7.5   | 2.7                                      | 1                               | 1299                                |
| YAP 21     | 62.5                  | 75                    | 80                                   | 228                     | 133                  | 220             | 260                    | 11.0                | 9.0   | 3.2                                      | 1                               | 1039                                |
| YCP 9      | 83                    | 100                   | 107                                  | 134                     | 203                  | 354             | 423                    | 17.5                | 12.0  | 4.6                                      | 1                               | 923                                 |
| YCP 11     | 103.5                 | 125                   | 134                                  | 172                     | 203                  | 354             | 423                    | 21.0                | 14.0  | 5.8                                      | 1                               | 754                                 |
| YCP 13     | 124                   | 150                   | 160                                  | 172                     | 203                  | 354             | 423                    | 23.5                | 17.0  | 5.4                                      | 1                               | 640                                 |
| YCP 17     | 165.5                 | 200                   | 214                                  | 210                     | 203                  | 354             | 423                    | 28.0                | 21.5  | 5.4                                      | 1                               | 500                                 |
| YCP 21     | 207                   | 250                   | 267                                  | 248                     | 203                  | 354             | 423                    | 36.0                | 27.0  | 10.8                                     | 1                               | 417                                 |
| YCP 25     | 248                   | 300                   | 321                                  | 286                     | 203                  | 354             | 423                    | 42.5                | 31.5  | 9.2                                      | 1                               | 364                                 |
| YCP 27     | 269                   | 325                   | 348                                  | 362                     | 203                  | 354             | 423                    | 46.5                | 34.5  | 9.9                                      | 1                               | 344                                 |
| YCP 29     | 290                   | 350                   | 374                                  | 362                     | 203                  | 354             | 423                    | 48.0                | 36.0  | 14.5                                     | 1                               | 327                                 |
| YCP 33     | 331                   | 400                   | 428                                  | 362                     | 203                  | 354             | 423                    | 53.5                | 41.5  | 10.0                                     | 1                               | 300                                 |
| YCP 35     | 352                   | 425                   | 455                                  | 362                     | 203                  | 354             | 423                    | 58.0                | 43.0  | 12.5                                     | 1                               | 290                                 |
| YHP 11     | 422                   | 500                   | 535                                  | 230                     | 368                  | 596             | 682                    | 88.0                | 57.0  | 25.7                                     | 1                               | 351                                 |
| YHP 13     | 506                   | 600                   | 642                                  | 230                     | 368                  | 596             | 682                    | 98.0                | 67.0  | 25.7                                     | 1                               | 293                                 |
| YHP 15     | 591                   | 700                   | 749                                  | 306                     | 368                  | 596             | 682                    | 109.0               | 79.5  | 24.5                                     | 2                               | 251                                 |
| YHP 17     | 675                   | 800                   | 856                                  | 306                     | 368                  | 596             | 682                    | 137.0               | 93.5  | 36.0                                     | 2                               | 220                                 |
| YHP 19     | 760                   | 900                   | 962                                  | 306                     | 368                  | 596             | 682                    | 148.0               | 103.5 | 37.0                                     | 2                               | 195                                 |
| YHP 21     | 844                   | 1000                  | 1069                                 | 357                     | 368                  | 596             | 682                    | 162.5               | 113.5 | 41.6                                     | 2                               | 176                                 |
| YHP 23     | 928                   | 1100                  | 1176                                 | 357                     | 368                  | 596             | 682                    | 171.5               | 123.9 | 39.5                                     | 2                               | 160                                 |
| YHP 25     | 1013                  | 1200                  | 1283                                 | 433                     | 368                  | 596             | 682                    | 184.5               | 135.5 | 41.0                                     | 2                               | 146                                 |
| YHP 27     | 1097                  | 1300                  | 1390                                 | 433                     | 368                  | 596             | 682                    | 209.0               | 146.5 | 51.8                                     | 2                               | 135                                 |
| YHP 29     | 1182                  | 1400                  | 1497                                 | 433                     | 368                  | 596             | 682                    | 218.0               | 157.0 | 50.6                                     | 2                               | 126                                 |
| YHP 31     | 1266                  | 1500                  | 1604                                 | 509                     | 368                  | 596             | 682                    | 227.0               | 167.0 | 49.8                                     | 3                               | 117                                 |
| YHP 33     | 1351                  | 1600                  | 1711                                 | 509                     | 368                  | 596             | 682                    | 256.0               | 183.0 | 60.5                                     | 3                               | 110                                 |
| YHP 35     | 1435                  | 1700                  | 1818                                 | 509                     | 368                  | 596             | 682                    | 265.0               | 193.0 | 59.8                                     | 3                               | 104                                 |
| YHP 37     | 1519                  | 1800                  | 1925                                 | 585                     | 368                  | 596             | 682                    | 274.0               | 204.0 | 58.1                                     | 3                               | 98                                  |
| YHP 39     | 1604                  | 1900                  | 2032                                 | 585                     | 368                  | 596             | 682                    | 301.0               | 217.0 | 69.7                                     | 3                               | 93                                  |
| YHP 41     | 1689                  | 2000                  | 2139                                 | 585                     | 368                  | 596             | 682                    | 310.0               | 227.0 | 68.8                                     | 3                               | 88                                  |
| U-YHP 600  | 435                   | -                     | 600                                  | 230                     | 368                  | 596             | 682                    | 88.0                | 57.0  | 25.7                                     | 1                               | 351                                 |
| U-YHP 720  | 522                   | -                     | 720                                  | 230                     | 368                  | 596             | 682                    | 98.0                | 67.0  | 25.7                                     | 1                               | 293                                 |
| U-YHP 840  | 609                   | -                     | 840                                  | 306                     | 368                  | 596             | 682                    | 109.0               | 79.5  | 24.5                                     | 2                               | 251                                 |
| U-YHP 960  | 696                   | -                     | 960                                  | 306                     | 368                  | 596             | 682                    | 137.0               | 93.5  | 36.0                                     | 2                               | 220                                 |
| U-YHP 1080 | 783                   | -                     | 1080                                 | 306                     | 368                  | 596             | 682                    | 148.0               | 103.5 | 37.0                                     | 2                               | 195                                 |
| U-YHP 1200 | 870                   | -                     | 1200                                 | 357                     | 368                  | 596             | 682                    | 162.5               | 113.5 | 41.6                                     | 2                               | 176                                 |
| U-YHP 1320 | 957                   | -                     | 1320                                 | 357                     | 368                  | 596             | 682                    | 171.5               | 123.9 | 39.5                                     | 2                               | 160                                 |
| U-YHP 1440 | 1044                  | -                     | 1440                                 | 433                     | 368                  | 596             | 682                    | 184.5               | 135.5 | 41.0                                     | 2                               | 146                                 |
| U-YHP 1560 | 1131                  | -                     | 1560                                 | 433                     | 368                  | 596             | 682                    | 209.0               | 146.5 | 51.8                                     | 2                               | 135                                 |
| U-YHP 1680 | 1218                  | -                     | 1680                                 | 433                     | 368                  | 596             | 682                    | 218.0               | 157.0 | 50.6                                     | 2                               | 126                                 |
| U-YHP 1800 | 1305                  | -                     | 1800                                 | 509                     | 368                  | 596             | 682                    | 227.0               | 167.0 | 49.8                                     | 3                               | 117                                 |
| U-YHP 1920 | 1392                  | -                     | 1920                                 | 509                     | 368                  | 596             | 682                    | 256.0               | 183.0 | 60.5                                     | 3                               | 110                                 |
| U-YHP 2040 | 1479                  | -                     | 2040                                 | 509                     | 368                  | 596             | 682                    | 265.0               | 193.0 | 59.8                                     | 3                               | 104                                 |
| U-YHP 2160 | 1566                  | -                     | 2160                                 | 585                     | 368                  | 596             | 682                    | 274.0               | 204.0 | 58.1                                     | 3                               | 98                                  |
| U-YHP 2280 | 1653                  | -                     | 2280                                 | 585                     | 368                  | 596             | 682                    | 301.0               | 217.0 | 69.7                                     | 3                               | 93                                  |
| U-YHP 2400 | 1740                  | -                     | 2400                                 | 585                     | 368                  | 596             | 682                    | 310.0               | 227.0 | 68.8                                     | 3                               | 88                                  |

**Notes:**

<sup>(1)</sup> Capacities as per IEC 60896-11

<sup>(2)</sup> The length of a box or cell is measured at right angles to the plates

<sup>(3)</sup> The width of a cell is measured parallel to the plates

<sup>(4)</sup> YAP cells: M6 fasteners - YCP / YHP / U-YHP cells: M8 fasteners

## Battery Accommodation

By following the guidelines hereafter, the user can readily calculate the space required by the various standard range of steel stand options to make best use of the accommodation available.

| Stand Dimensions for YAP & YCP Ranges  |                                | Double Tier Single Row | Double Tier Double Row |
|--|--------------------------------|------------------------|------------------------|
| <b>YAP 5</b><br>(F)  | Cell centres                   | 83                     | 83                     |
|  | Width of stand                 | 320                    | 615                    |
|  | Height over cells              | 1200                   | 1300                   |
|  | Overall height required (min.) | 1360                   | 1460                   |
|  | Length of stand                | 12 cells               | 525                    |
| 24 cells   |                                | 1020                   | 525                    |
| 55 cells   |                                | -                      | 1190                   |
| <b>YAP 9</b><br>(F)  | Cell centres                   | 121                    | 121                    |
|  | Width of stand                 | 320                    | 615                    |
|  | Height over cells              | 1200                   | 1300                   |
|  | Overall height required (min.) | 1360                   | 1460                   |
|  | Length of stand                | 12 cells               | 750                    |
| 24 cells   |                                | 1480                   | 750                    |
| 55 cells   |                                | -                      | 1720                   |
| <b>YAP 13</b><br><b>YAP 17</b><br><b>YAP 21</b><br>(E)                                   | Cell centres                   | 140                    | 140                    |
|  | Width of stand                 | 320                    | 615                    |
|  | Height over cells              | 1200                   | 1300                   |
|  | Overall height required (min.) | 1360                   | 1460                   |
|  | Length of stand                | 12 cells               | 865                    |
| 24 cells   |                                | 1710                   | 865                    |
| 55 cells   |                                | -                      | 1990                   |
| <b>YCP 9</b><br>(F)  | Cell centres                   | 140                    | 140                    |
|  | Width of stand                 | 320                    | 615                    |
|  | Height over cells              | 1370                   | 1470                   |
|  | Overall height required (min.) | 1620                   | 1720                   |
|  | Length of stand                | 12 cells               | 865                    |
| 24 cells   |                                | 1710                   | 865                    |
| 55 cells   |                                | -                      | 1990                   |
| <b>YCP 11</b><br><b>YCP 13</b><br>(F)  | Cell centres                   | 178                    | 178                    |
|  | Width of stand                 | 320                    | 615                    |
|  | Height over cells              | 1370                   | 1470                   |
|  | Overall height required (min.) | 1620                   | 1720                   |
|  | Length of stand                | 12 cells               | 1095                   |
| 24 cells   |                                | 2165                   | 1095                   |
| 55 cells   |                                | -                      | 2510                   |
| <b>YCP 17</b><br><b>YCP 21</b><br>(E)  | Cell centres                   | 209                    | 209                    |
|  | Width of stand                 | 320                    | 615                    |
|  | Height over cells              | 1370                   | 1470                   |
|  | Overall height required (min.) | 1620                   | 1720                   |
|  | Length of stand                | 12 cells               | 1270                   |
| 24 cells   |                                | 2540                   | 1270                   |
| 55 cells   |                                | -                      | 2960                   |
| <b>YCP 25</b><br><b>YCP 27</b><br><b>YCP 29</b><br><b>YCP 33</b><br><b>YCP 35</b><br>(E) | Cell centres                   | 209                    | 209                    |
|  | Width of stand                 | 430                    | 835                    |
|  | Height over cells              | 1370                   | 1470                   |
|  | Overall height required (min.) | 1620                   | 1720                   |
|  | Length of stand                | 12 cells               | 1270                   |
| 24 cells   |                                | 2540                   | 1270                   |
| 55 cells   |                                | -                      | 2960                   |

### Calculating other lengths of stands:

- For Double tier single row length =  $C \times N/2 + 25\text{mm}$
- For Double tier double row length =  $C \times N/4 + 25\text{mm}$ , where C = cell centre and N = number of cells
- If N/2 or N/4 contains a fraction, increase to next whole number.

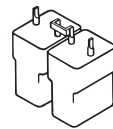
| Stand Dimensions for YHP & U-YHP Ranges   |                                | Single Tier Single Row | Double Tier Double Row |
|---|--------------------------------|------------------------|------------------------|
| <b>YHP 11</b><br><b>YHP 13</b><br><b>U-YHP 600</b><br><b>U-YHP 720</b><br>(F)   | Cell centres                   | 255                    | 255                    |
|   | Width of stand                 | 340                    | 760                    |
|   | Height over cells              | 880                    | 980                    |
|   | Overall height required (min.) | 1130                   | 1230                   |
|   | Length of stand                | 6 cells                | 1550                   |
| 12 cells  |                                | 3080                   | 1550                   |
| <b>YHP 15</b><br><b>YHP 17</b><br><b>YHP 19</b><br><b>U-YHP 840</b><br><b>U-YHP 960</b><br><b>U-YHP 1080</b><br>(F)   | Cell centres                   | 330                    | 330                    |
|   | Width of stand                 | 340                    | 760                    |
|   | Height over cells              | 880                    | 980                    |
|   | Overall height required (min.) | 1130                   | 1230                   |
|   | Length of stand                | 6 cells                | 2000                   |
| 12 cells  |                                | -                      | 2000                   |
| <b>YHP 21</b><br><b>YHP 23</b><br><b>U-YHP 1200</b><br><b>U-YHP 1320</b><br>(E)                                       | Cell centres                   | 394                    | 394                    |
|   | Width of stand                 | 360                    | 760                    |
|   | Height over cells              | 880                    | 980                    |
|   | Overall height required (min.) | 1130                   | 1230                   |
|   | Length of stand                | 6 cells                | 2375                   |
| 12 cells  |                                | -                      | 2375                   |
| <b>YHP 25</b><br><b>YHP 27</b><br><b>YHP 29</b><br><b>U-YHP 1440</b><br><b>U-YHP 1560</b><br><b>U-YHP 1680</b><br>(E) | Cell centres                   | 394                    | 394                    |
|   | Width of stand                 | 435                    | 920                    |
|   | Height over cells              | 880                    | 980                    |
|   | Overall height required (min.) | 1130                   | 1230                   |
|   | Length of stand                | 6 cells                | 2375                   |
| 12 cells  |                                | -                      | 2375                   |
| <b>YHP 31</b><br><b>YHP 33</b><br><b>YHP 35</b><br><b>U-YHP 1800</b><br><b>U-YHP 1920</b><br><b>U-YHP 2040</b><br>(E) | Cell centres                   | 394                    | 394                    |
|   | Width of stand                 | 510                    | 1070                   |
|   | Height over cells              | 880                    | 980                    |
|   | Overall height required (min.) | 1130                   | 1230                   |
|   | Length of stand                | 6 cells                | 2375                   |
| 12 cells  |                                | -                      | 2375                   |
| <b>YHP 37</b><br><b>YHP 39</b><br><b>YHP 41</b><br><b>U-YHP 2160</b><br><b>U-YHP 2280</b><br><b>U-YHP 2400</b><br>(E) | Cell centres                   | 394                    | 394                    |
|   | Width of stand                 | 585                    | 1220                   |
|   | Height over cells              | 880                    | 980                    |
|   | Overall height required (min.) | 1130                   | 1230                   |
|   | Length of stand                | 6 cells                | 2375                   |
| 12 cells  |                                | -                      | 2375                   |

### Notes:

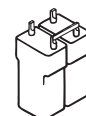
The suffixes 'E' and 'F' refer to the layout of the cells on the stand:

- 'E' signifies that the cells are arranged with the plates edge to edge
- 'F' signifies that they are arranged with the plates face to face

### Layout for YAP & YCP Ranges

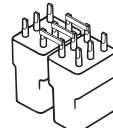


Typical edge to edge arrangement

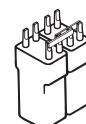


Typical face to face arrangement

### Layout for YHP & U-YHP Ranges



Typical edge to edge arrangement



Typical face to face arrangement