# Ni·Cd Baterías Batteries

***Elementos con recipientes de plástico (polipropileno)***
***Baterías con placas de bolsas***

***Polypropylene cell ranges***
***Pocket plate batteries***


Emisa

# Baterías de Níquel Cadmio con placas de bolsas
# *Pocket plate Nickel-Cadmium batteries*

## CARACTERISTICAS GENERALES
## *GENERAL CHARACTERISTICS*

### Elementos de baja intensidad de descarga series LP

Los elementos de esta gama están especialmente diseñados para uso general y aplicaciones estacionarias, donde la descarga no es muy frecuente pero se produce durante periodos largos de tiempo.
La condición de funcionamiento típica es en carga de flotación, por lo tanto es idealmente apropiada para aplicaciones tales como alarmas contra incendios, sistemas fotovoltáicos, telecomunicaciones y señalización ferroviaria.

### *Low discharge rate cells LP range*

*Cells within this range are specially designed for general purpose and stand-by applications, where discharge is not frequent and made during long periods.*
*The typical operation condition is on floating charge, thus ideally suited for applications such as fire alarms, photovoltaic systems, telecommunications and railroad signalling.*

### Elementos de media intensidad de descarga series MP

Los elementos de media intensidad de descarga de EMISA son apropiados para periodos de descarga media entre 30 minutos y 5 horas, siendo ideales tanto para las aplicaciones estacionarias como para U.P.S.
El suministro de energía para plataformas petrolíferas y marinas, así como para el control de turbinas de gas y ferrocarril (iluminación y aire acondicionado) son aplicaciones típicas para esta gama de elementos.

### *Medium discharge rate cells MP range*

*EMISA's medium discharge rate cells are suitable for medium discharge periods between 30 minutes and 5 hours, being ideal for both stand-by and UPS applications.*
*Offshore and marine power supply, as well as gas turbine control and railway duties (lighting and air conditioning) are also typical applications for this cell range.*

### Elementos de alta intensidad de descarga series HP

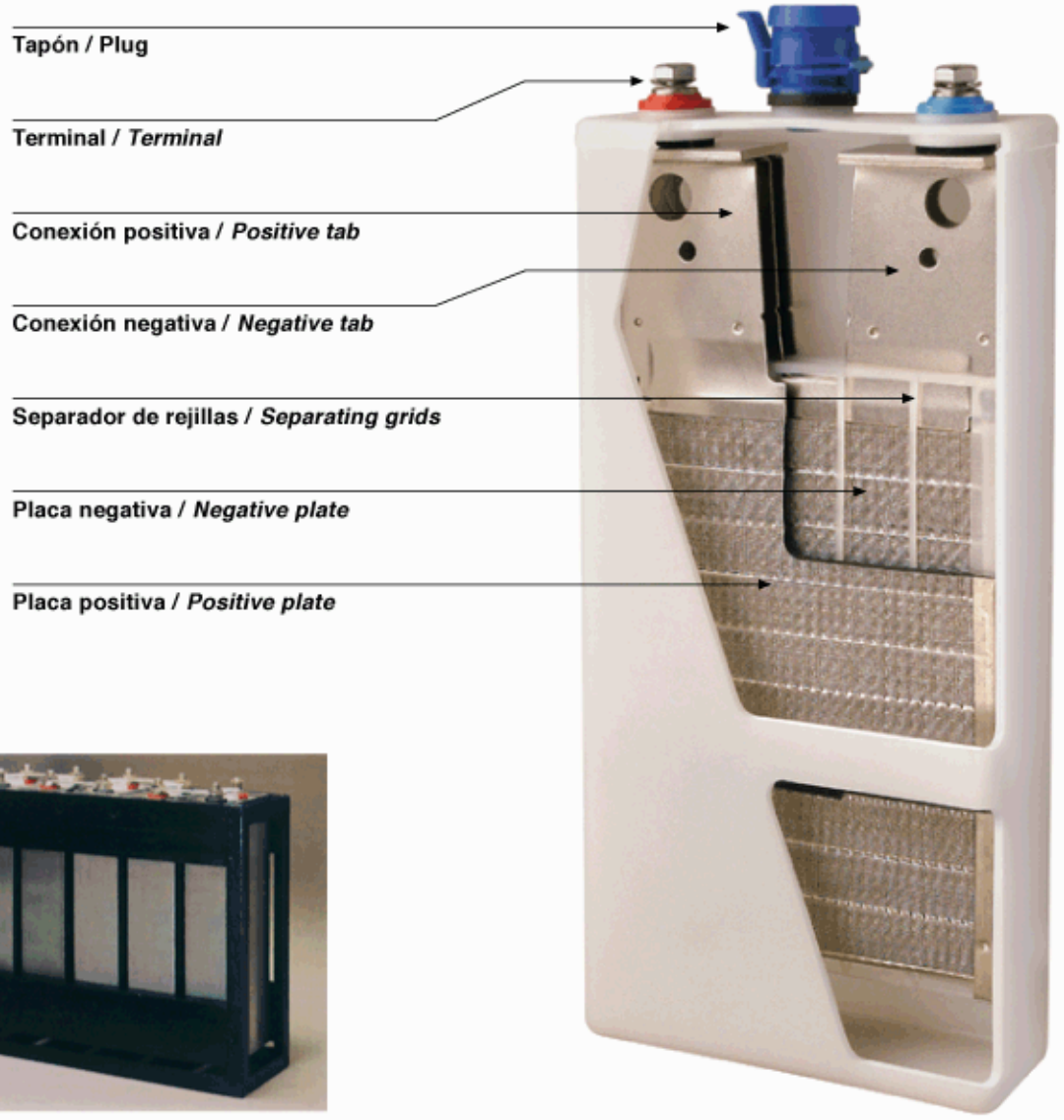
Elementos con un diseño de placa especial para alcanzar un mejor comportamiento y altas prestaciones gracias al incremento de la superficie de la materia activa. El disparo y cierre de interruptores, UPS y arranque de motores son aplicaciones ideales de esta serie. Es la gama más apropiada para cortos períodos de descarga (de 1 a 60 minutos) con corrientes de descarga muy altas.

### *High discharge rate cells HP range*

*Cells with a special plate design to achieve a higher performance through increased active material active surface. Switchgear tripping and closing, UPS, as well as engine starting are ideal applications for this high performance cell range. Best suitable for very short discharge periods (1 to 60 minutes) at very high discharge currents.*


Las baterías de Níquel-Cadmio de EMISA pueden ser colocadas tanto en bancadas de acero como de madera y están diseñadas para reducir el mantenimiento y espacio necesarios, así como para proporcionar una mayor resistencia mecánica contra golpes y vibraciones.
Bajo petición, los elementos pueden ser suministrados con válvulas retardantes de la llama y/o recipientes ignífugos para proporcionar más seguridad en aquellas instalaciones donde las condiciones ambientales de funcionamiento sean críticas.
Nuestros ingenieros de diseño aconsejan la disposición más adecuada para cada aplicación en particular.
Para elementos con recipiente de acero inoxidable, contacte con nosotros.

*EMISA,s Nickel-Cadmium batteries can be arranged on either steel or wooden stands which are designed to minimize maintenance requirements and space and to withstand supplementary mechanical strength or additional shock or vibration resistance.*
*On request, the cells can be fitted with flame arresting vent plugs, and/or flame retardant cases, to provide special safety conditions in environmentally critical installations.*
*Our design engineers will advise the most suitable layout for each particular application.*
*For cells with stainless steel containers, please contact us.*



# CARACTERÍSTICAS TÉCNICAS
# *TECHNICAL FUNDAMENTALS*

## 1. Tensiones típicas de funcionamiento de elementos de Niquel-Cadmio de placas de bolsa.
## *Operating voltages for pocket-plate Nickel-Cadmium cell*

| TENSIONES POR ELEMENTO / *CELL VOLTAGES* | TENSIONES DE FUNCIONAMIENTO / *OPERATING VOLTAGES* |
|---|---|
| 1.80 a 1.55 / *1.80 to 1.55* | Tensión de carga rápida / *Boost voltage* |
| 1.55 a 1.47 / *1.55 to 1.47* | Auto carga / *Auto boost* |
| 1.47 a 1.40 / *1.47 to 1.40* | Tensión de flotación / *Float voltage rate* |
| 1.28 | Tensión de circuito abierto / *Open circuit voltage* |
| 1.20 | Tensión nominal / *Nominal voltage* |
| 0.85 | Tensión de arranque / *Cranking voltage* |
| 0.65 | Tensión de embalamiento / *Breakaway voltage* |

## 2. Procedimientos usuales de carga
## *Usual charging procedures*

### A) Carga a intensidad constante / *constant current charging*

| Tipo de elementos<br>*Cells range* | Carga total<br>*Full charge* | Carga eficaz<br>*Efficient charge* | Carga rápida<br>*Boost charge* |
|---|---|---|---|
| **LP - MP** | C/5 durante 10 horas<br>*C/5 for 10 hours* | C/5 durante 7 horas<br>*C/5 for 7 hours* | C/3 durante 4 horas<br>*C/3 for 4 hours* |
| **HP** | C/5 durante 8 horas<br>*C/5 for 8 hours* | C/4 durante 5 horas<br>*C/4 for 5 hours* | C/2 durante 2.5 horas<br>*C/2 for 2.5 hours* |

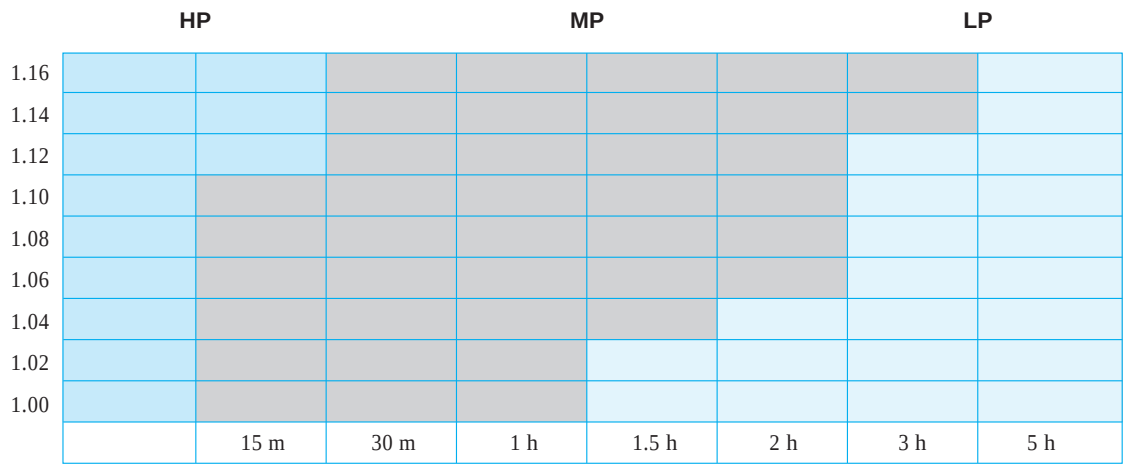
### B) Carga a tensión constante / *constant voltage charging*

| Tipo de elementos<br>*Cells range* | Tensión de flotación mínima<br>*Floating voltage* | Tensión de flotación automática<br>*Normal voltage* |
|---|---|---|
| **LP - MP** | 1.41 - 1.47 V./elemento / *Volts/cell* | 1.47 - 1.55 V./elemento / *Volts/cell* |
| **HP** | 1.40 - 1.45 V./elemento / *Volts/cell* | 1.45 - 1.52 V./elemento / Volts/cell |

## 3. Máxima intensidad de cortocircuito / *Maximun short circuit current*

| LP | MP | HP |
|---|---|---|
| **10 x C** | **15 x C** | **25 x C** |

## 4. Selección general de los tipos de elementos
## *General selection of the cells range*



# DIMENSIONES Y CAPACIDADES
## Elementos de placas embolsadas en recipiente de plástico
# *CAPACITIES AND DIMENSIONS*
## *Pocket plate cells in plastic containers*

| Tipo de elementos *Type of cells* | Capacidad nominal *Nominal capacity* (Ah) | Dimensiones de elemento (mm) *Cell dimensions* | | | Peso de elemento (lleno) *Cell weight (filled)* (Kg) | Reserva de electrolito *Electrolyte reserve* ($cm^3$) | Número y tamaño de terminales *Number and size of Terminals* |
|---|---|---|---|---|---|---|---|
| | | L | W | H | | | |
| **LP11** | 11 | 41 | 115 | 189 | 1,1 | 120 | 2xM10 |
| **LP17** | 19 | 55 | 115 | 240 | 1,9 | 145 | 2xM10 |
| **LP28** | 29 | 55 | 115 | 240 | 2,1 | 145 | 2xM10 |
| **LP37** | 39 | 64 | 115 | 240 | 2,4 | 170 | 2xM10 |
| **LP46** | 49 | 75 | 115 | 240 | 2,9 | 205 | 2xM10 |
| **LP56** | 60 | 75 | 115 | 240 | 3,0 | 205 | 2xM10 |
| **LP65** | 69 | 75 | 115 | 240 | 3,2 | 205 | 2xM10 |
| **LP80** | 76 | 58 | 139 | 402 | 5,5 | 390 | 2xM20 |
| **LP95** | 89 | 58 | 139 | 402 | 5,7 | 380 | 2xM20 |
| **LP105** | 102 | 58 | 139 | 402 | 6,1 | 380 | 2xM20 |
| **LP135** | 128 | 75 | 139 | 402 | 7,3 | 530 | 2xM20 |
| **LP165** | 157 | 103 | 165 | 402 | 10,3 | 960 | 2xM20 |
| **LP200** | 189 | 103 | 165 | 402 | 10,7 | 940 | 2xM20 |
| **LP230** | 221 | 103 | 165 | 402 | 11,2 | 935 | 2xM20 |
| **LP265** | 252 | 103 | 165 | 402 | 11,7 | 920 | 2xM20 |
| **LP300** | 284 | 128 | 165 | 402 | 14,8 | 1150 | 4xM20 |
| **LP330** | 316 | 128 | 165 | 402 | 15,3 | 1135 | 4xM20 |
| **LP365** | 347 | 156 | 165 | 402 | 17,6 | 1430 | 4xM20 |
| **LP400** | 379 | 156 | 165 | 402 | 18,1 | 1415 | 4xM20 |
| **LP430** | 411 | 156 | 165 | 402 | 18,7 | 1405 | 4xM20 |
| **MP12** | 11 | 46 | 87 | 287 | 1,7 | 115 | 2xM10 |
| **MP18** | 18 | 46 | 87 | 287 | 1,9 | 110 | 2xM10 |
| **MP25** | 25 | 46 | 87 | 287 | 2,0 | 105 | 2xM10 |
| **MP30** | 32 | 86 | 87 | 287 | 3,0 | 230 | 2xM10 |
| **MP37** | 38 | 86 | 87 | 287 | 3,2 | 225 | 2xM10 |
| **MP50** | 53 | 86 | 87 | 287 | 3,6 | 210 | 2xM10 |
| **MP55** | 59 | 86 | 87 | 287 | 3,7 | 205 | 2xM10 |
| **MP64** | 65 | 58 | 139 | 402 | 5,3 | 390 | 2xM20 |
| **MP80** | 83 | 58 | 139 | 402 | 5,7 | 380 | 2xM20 |
| **MP95** | 101 | 75 | 139 | 402 | 6,9 | 525 | 2xM20 |
| **MP115** | 118 | 75 | 139 | 402 | 7,3 | 510 | 2xM20 |
| **MP140** | 145 | 103 | 165 | 402 | 10,3 | 925 | 2xM20 |
| **MP160** | 167 | 103 | 165 | 402 | 10,8 | 910 | 2xM20 |
| **MP180** | 189 | 103 | 165 | 402 | 11,3 | 890 | 2xM20 |
| **MP200** | 211 | 103 | 165 | 402 | 11,7 | 875 | 2xM20 |
| **MP220** | 232 | 128 | 165 | 402 | 14,6 | 1125 | 4xM20 |
| **MP240** | 254 | 128 | 165 | 402 | 15,0 | 1105 | 4xM20 |
| **MP260** | 276 | 128 | 165 | 402 | 15,4 | 1090 | 4xM20 |
| **MP280** | 298 | 156 | 165 | 402 | 17,4 | 1375 | 4xM20 |
| **MP300** | 298 | 156 | 165 | 402 | 17,4 | 1375 | 4xM20 |
| **MP320** | 319 | 156 | 165 | 402 | 17,8 | 1360 | 4xM20 |
| **MP360** | 341 | 156 | 165 | 402 | 18,2 | 1345 | 4xM20 |
| **HP10** | 11 | 46 | 87 | 257 | 1,7 | 105 | 2xM10 |
| **HP14** | 14 | 46 | 87 | 287 | 1,9 | 100 | 2xM10 |
| **HP20** | 22 | 46 | 87 | 287 | 2,2 | 95 | 2xM10 |
| **HP30** | 34 | 86 | 87 | 287 | 3,5 | 205 | 2xM10 |
| **HP40** | 38 | 86 | 87 | 287 | 3,7 | 195 | 2xM10 |
| **HP50** | 50 | 86 | 87 | 287 | 4,1 | 185 | 2xM10 |
| **HP65** | 67 | 58 | 139 | 362 | 6,0 | 350 | 2xM20 |
| **HP80** | 85 | 75 | 139 | 362 | 7,3 | 485 | 2xM20 |
| **HP100** | 102 | 105 | 139 | 362 | 8,8 | 730 | 2xM20 |
| **HP125** | 128 | 105 | 139 | 362 | 9,5 | 700 | 2xM20 |
| **HP150** | 147 | 128 | 165 | 362 | 14,0 | 1095 | 4xM20 |
| **HP185** | 190 | 128 | 165 | 362 | 14,9 | 1055 | 4xM20 |
| **HP215** | 211 | 128 | 165 | 362 | 15,4 | 1030 | 4xM20 |
| **HP235** | 244 | 156 | 165 | 362 | 18,0 | 1295 | 4xM20 |
| **HP250** | 254 | 156 | 165 | 362 | 18,2 | 1285 | 4xM20 |
| **HP275** | 265 | 156 | 165 | 362 | 18,5 | 1270 | 4xM20 |

Todas las cifras y datos contenidos en este catálogo están sujetas a las tolerancias de fabricación normales. Las cifras y datos que aparecen en este folleto no pueden ser tomadas como un compromiso contractual.

Las capacidades nominales están indicadas para un tiempo de descarga de 5 horas hasta una tensión final de 1.00 voltio por elemento, para elementos totalmente cargados a 20°C. Los elementos de Níquel Cadmio de placas embolsadas de EMISA están fabricados bajo la norma IEC-623.

*All figures and data contained in this catalogue are subject to normal manufacturing tolerances. None of the figures shown in this brochure can be taken as a contractual commitment.*

*The nominal capacities are indicated at the 5 hour discharge rate up to an end voltage of 1.00 Volts per cell, for full charged cells at 20°C. EMISA's Pocket Plate Nickel-Cadmium cells are made under IEC-623 standard.*

# SERIE LP / *LP RANGE*

## Tablas de descarga en amperios (20°C)
## *Amperes tabular discharge data (20°C)*

Los datos de descarga indicados son para elementos plenamente cargados, después de permanecer en circuito abierto durante 1 hora, permitiendose caídas de tensión en las conexiones.
*Discharge data for full charged cells after 1 hour open circuit, allowing voltage losses on connections.*

### Hasta 1.00 V. por elemento / *To 1.00 Volts per cell*

| Type | 10h | 8h | 5h | 3h | 2h | 90min | 60min | 30min | 10min | 5min | 1min | 10s | 1s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LP11 | 1,1 | 1,4 | 2,2 | 3,5 | 5,0 | 6,2 | 7,7 | 10,0 | 12,9 | 14,5 | 17,7 | 21,4 | 25,9 |
| LP17 | 1,9 | 2,4 | 3,8 | 6,1 | 8,6 | 10,6 | 13,3 | 17,0 | 22,3 | 25,0 | 30,5 | 37 | 44,7 |
| LP28 | 2,9 | 3,7 | 5,8 | 9,3 | 13,1 | 16,2 | 20,3 | 26,7 | 34,0 | 38,1 | 46,6 | 56,5 | 68,3 |
| LP37 | 3,9 | 4,9 | 7,8 | 12,5 | 17,6 | 21,8 | 27,3 | 35,9 | 45,5 | 51,3 | 62,9 | 76,8 | 93,6 |
| LP46 | 4,9 | 6,2 | 9,8 | 15,7 | 22,1 | 27,4 | 34,3 | 45,1 | 59,8 | 67,7 | 80,0 | 96,6 | 120,0 |
| LP56 | 6,1 | 7,6 | 12,0 | 19,2 | 27,0 | 33,6 | 42,0 | 55,2 | 72,5 | 81,8 | 96,5 | 115,0 | 138,0 |
| LP65 | 7,0 | 8,7 | 13,8 | 22,1 | 31,1 | 38,6 | 48,3 | 63,5 | 83,8 | 94,6 | 111,0 | 131,0 | 157,0 |
| LP80 | 7,8 | 9,6 | 15,2 | 24,6 | 35,3 | 44,5 | 57,0 | 73,7 | 94,2 | 105,0 | 135,0 | 156,0 | 177,0 |
| LP95 | 9,1 | 11,3 | 17,8 | 28,8 | 41,3 | 52,1 | 66,8 | 86,3 | 110,0 | 123,0 | 158,0 | 183,0 | 204,0 |
| LP105 | 10,4 | 12,9 | 20,4 | 33,0 | 47,4 | 59,7 | 76,5 | 98,9 | 126,0 | 141,0 | 181,0 | 209,0 | 231,0 |
| LP135 | 13,1 | 16,2 | 25,6 | 41,4 | 59,4 | 75,0 | 96,0 | 124,0 | 159,0 | 177,0 | 227,0 | 263,0 | 285,0 |
| LP165 | 16,0 | 19,9 | 31,4 | 50,8 | 72,9 | 91,9 | 118,0 | 152,0 | 195,0 | 217,0 | 278,0 | 322,0 | 350,0 |
| LP200 | 19,3 | 23,9 | 37,8 | 61,1 | 87,8 | 111,0 | 142,0 | 183,0 | 234,0 | 261,0 | 335,0 | 388,0 | 421,0 |
| LP230 | 22,5 | 28,0 | 44,2 | 71,5 | 103,0 | 129,0 | 166,0 | 214,0 | 274,0 | 305,0 | 391,0 | 454,0 | 493,0 |
| LP265 | 25,7 | 31,9 | 50,4 | 81,5 | 117,0 | 148,0 | 189,0 | 244,0 | 312,0 | 348,0 | 446,0 | 517,0 | 562,0 |
| LP300 | 29,0 | 36,0 | 56,8 | 91,8 | 132,0 | 166,0 | 213,0 | 275,0 | 352,0 | 392,0 | 503,0 | 583,0 | 633,0 |
| LP330 | 32,2 | 40,0 | 63,2 | 102,0 | 147,0 | 185,0 | 237,0 | 307,0 | 392,0 | 436,0 | 559,0 | 649,0 | 705,0 |
| LP365 | 35,4 | 44,0 | 69,4 | 112,0 | 161,0 | 203,0 | 260,0 | 337,0 | 430,0 | 479,0 | 614,0 | 713,0 | 774,0 |
| LP400 | 38,7 | 48,0 | 75,8 | 123,0 | 176,0 | 222,0 | 284,0 | 368,0 | 470,0 | 523,0 | 671,0 | 778,0 | 845,0 |
| LP430 | 41,9 | 52,1 | 82,2 | 133,0 | 191,0 | 241,0 | 308,0 | 399,0 | 510,0 | 567,0 | 727,0 | 844,0 | 917,0 |

### Hasta 1.05 V. por elemento / *To 1.05 Volts per cell*

| Type | 10h | 8h | 5h | 3h | 2h | 90min | 60min | 30min | 10min | 5min | 1min | 10s | 1s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LP11 | 1,1 | 1,4 | 2,2 | 3,4 | 4,8 | 5,8 | 7,3 | 9,2 | 11,0 | 12,2 | 15,0 | 18,4 | 22,2 |
| LP17 | 1,9 | 2,4 | 3,7 | 5,9 | 8,3 | 10,1 | 12,5 | 15,9 | 18,9 | 21,0 | 25,9 | 31,7 | 38,3 |
| LP28 | 2,9 | 3,6 | 5,7 | 9,0 | 12,6 | 15,4 | 19,1 | 24,3 | 28,9 | 32,1 | 39,5 | 48,4 | 58,4 |
| LP37 | 3,9 | 4,8 | 7,6 | 12,2 | 17,0 | 20,7 | 25,7 | 33,1 | 40,2 | 44,0 | 52,8 | 65,4 | 79,6 |
| LP46 | 4,9 | 6,1 | 9,6 | 15,3 | 21,3 | 26,0 | 32,3 | 42,2 | 51,5 | 57,3 | 67,9 | 82,7 | 102,0 |
| LP56 | 6,0 | 7,4 | 11,8 | 18,7 | 26,1 | 31,8 | 39,6 | 51,0 | 61,5 | 69,0 | 81,5 | 97,9 | 118,,0 |
| LP65 | 6,9 | 8,6 | 13,5 | 21,5 | 30,0 | 36,6 | 45,5 | 58,0 | 72,0 | 78,9 | 94,0 | 113,0 | 133,0 |
| LP80 | 7,7 | 9,5 | 15,0 | 24,2 | 34,2 | 42,4 | 51,7 | 65,4 | 82,5 | 92,7 | 118,0 | 135,0 | 151,0 |
| LP95 | 9,0 | 11,2 | 17,6 | 28,3 | 40,1 | 49,6 | 60,5 | 76,5 | 96,6 | 109,0 | 138,0 | 159,0 | 177,0 |
| LP105 | 10,3 | 12,8 | 20,2 | 32,4 | 45,9 | 56,9 | 69,4 | 87,7 | 111,0 | 124,0 | 158,0 | 182,0 | 203,0 |
| LP135 | 12,9 | 16,1 | 25,3 | 40,7 | 57,6 | 71,4 | 87,0 | 110,0 | 139,0 | 156,0 | 198,0 | 228,0 | 255,0 |
| LP165 | 15,9 | 19,7 | 31,1 | 49,9 | 70,7 | 87,6 | 107,0 | 135,0 | 170,0 | 192,0 | 243,0 | 280,0 | 312,0 |
| LP200 | 19,1 | 23,7 | 37,4 | 60,1 | 85,1 | 105,0 | 129,0 | 163,0 | 205,0 | 231,0 | 293,0 | 337,0 | 376,0 |
| LP230 | 22,3 | 27,7 | 43,7 | 70,2 | 99,5 | 123,0 | 150,0 | 190,0 | 240,0 | 270,0 | 343,0 | 394,0 | 440,0 |
| LP265 | 25,5 | 31,6 | 49,8 | 80,1 | 113,0 | 141,0 | 171,0 | 217,0 | 273,0 | 307,0 | 391,0 | 449,0 | 501,0 |
| LP300 | 28,7 | 35,7 | 56,2 | 90,2 | 128,0 | 158,0 | 193,0 | 244,0 | 308,0 | 346,0 | 440,0 | 506,0 | 565,0 |
| LP330 | 31,9 | 39,7 | 62,5 | 100,0 | 142,0 | 176,0 | 215,0 | 272,0 | 343,0 | 386,0 | 490,0 | 563,0 | 629,0 |
| LP365 | 35,0 | 43,6 | 68,6 | 110,0 | 156,0 | 194,0 | 236,0 | 298,0 | 376,0 | 423,0 | 538,0 | 618,0 | 691,0 |
| LP400 | 38,3 | 47,6 | 75,0 | 120,0 | 171,0 | 211,0 | 258,0 | 326,0 | 411,0 | 462,0 | 588,0 | 675,0 | 754,0 |
| LP430 | 41,5 | 51,6 | 81,3 | 131,0 | 185,0 | 229,0 | 279,0 | 353,0 | 446,0 | 501,0 | 637,0 | 732,0 | 818,0 |

### Hasta 1.10 V. por elemento / *To 1.10 Volts per cell*

| Type | 10h | 8h | 5h | 3h | 2h | 90min | 60min | 30min | 10min | 5min | 1min | 10s | 1s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LP11 | 1,1 | 1,3 | 2,1 | 3,4 | 4,6 | 5,6 | 6,9 | 8,4 | 9,6 | 10,1 | 12,3 | 15,2 | 18,4 |
| LP17 | 1,9 | 2,3 | 3,7 | 5,8 | 8,0 | 9,5 | 11,5 | 13,5 | 16,1 | 17,5 | 21,3 | 26,3 | 31,7 |
| LP28 | 2,8 | 3,5 | 5,6 | 8,9 | 12,2 | 14,8 | 18,3 | 22,2 | 25,3 | 26,7 | 32,5 | 40,2 | 48,4 |
| LP37 | 3,8 | 4,8 | 7,5 | 12,0 | 16,4 | 19,9 | 24,5 | 30,4 | 35,0 | 36,3 | 43,6 | 53,8 | 65,1 |
| LP46 | 4,8 | 6,0 | 9,5 | 15,0 | 20,6 | 25,0 | 31,0 | 39,0 | 45,0 | 47,3 | 55,1 | 68,1 | 82,6 |
| LP56 | 5,9 | 7,3 | 11,6 | 18,4 | 25,2 | 30,6 | 37,5 | 46,5 | 54,0 | 57,3 | 66,6 | 81,0 | 97,4 |
| LP65 | 6,8 | 8,4 | 13,3 | 21,2 | 29,0 | 35,2 | 43,0 | 52,0 | 60,0 | 65,0 | 76,6 | 93,3 | 111,0 |
| LP80 | 7,6 | 9,5 | 14,8 | 23,4 | 32,3 | 38,2 | 44,8 | 56,2 | 69,3 | 79,0 | 101,0 | 114,0 | 128,0 |
| LP95 | 8,9 | 11,1 | 17,3 | 27,4 | 37,8 | 44,7 | 52,5 | 65,9 | 81,1 | 92,6 | 118,0 | 133,0 | 147,0 |
| LP105 | 10,2 | 12,7 | 19,8 | 31,4 | 43,3 | 51,2 | 60,2 | 75,5 | 93,0 | 106,0 | 136,0 | 153,0 | 166,0 |
| LP135 | 12,8 | 15,9 | 24,9 | 39,4 | 54,3 | 64,3 | 75,5 | 94,7 | 117,0 | 133,0 | 170,0 | 192,0 | 202,0 |
| LP165 | 15,7 | 19,5 | 30,5 | 48,3 | 66,6 | 78,8 | 92,6 | 116,0 | 143,0 | 163,0 | 209,0 | 235,0 | 247,0 |
| LP200 | 18,9 | 23,5 | 36,8 | 58,2 | 80,2 | 94,9 | 112,0 | 140,0 | 172,0 | 197,0 | 251,0 | 283,0 | 297,0 |
| LP230 | 22,1 | 27,5 | 43,0 | 68,0 | 93,8 | 111,0 | 130,0 | 164,0 | 201,0 | 230,0 | 294,0 | 331,0 | 347,0 |
| LP265 | 25,2 | 31,4 | 49,0 | 77,6 | 107,0 | 127,0 | 149,0 | 186,0 | 230,0 | 262,0 | 335,0 | 377,0 | 396,0 |
| LP300 | 28,4 | 35,3 | 55,2 | 87,4 | 121,0 | 143,0 | 168,0 | 210,0 | 259,0 | 295,0 | 378,0 | 425,0 | 446,0 |
| LP330 | 31,6 | 39,3 | 61,4 | 97,3 | 134,0 | 159,0 | 186,0 | 234,0 | 288,0 | 329,0 | 420,0 | 473,0 | 496,0 |
| LP365 | 34,7 | 43,2 | 67,5 | 107,0 | 147,0 | 174,0 | 205,0 | 257,0 | 316,0 | 361,0 | 462,0 | 519,0 | 545,0 |
| LP400 | 37,9 | 47,2 | 73,7 | 117,0 | 161,0 | 190,0 | 224,0 | 280,0 | 345,0 | 394,0 | 504,0 | 567,0 | 595,0 |
| LP430 | 41,1 | 51,1 | 79,9 | 126,0 | 174,0 | 206,0 | 242,0 | 304,0 | 375,0 | 427,0 | 547,0 | 615,0 | 645,0 |

### Hasta 1.14 V. por elemento / *To 1.14 Volts per cell*

| Type | 10h | 8h | 5h | 3h | 2h | 90min | 60min | 30min | 10min | 5min | 1min | 10s | 1s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LP11 | 1,0 | 1,3 | 2,0 | 2,9 | 3,7 | 4,3 | 5,1 | 6,2 | 7,2 | 8,2 | 10,2 | 12,8 | 15,2 |
| LP17 | 1,8 | 2,2 | 3,4 | 5,0 | 6,3 | 7,4 | 8,8 | 10,7 | 12,5 | 14,2 | 17,6 | 22,1 | 26,3 |
| LP28 | 2,7 | 3,4 | 5,1 | 7,6 | 9,7 | 11,3 | 13,4 | 16,3 | 19,1 | 21,7 | 26,9 | 33,7 | 40,2 |
| LP37 | 3,6 | 4,5 | 6,9 | 10,2 | 13,0 | 15,2 | 18,0 | 21,7 | 25,9 | 29,8 | 36,7 | 44,4 | 53,1 |
| LP46 | 4,6 | 5,7 | 8,7 | 12,8 | 16,3 | 19,2 | 22,7 | 27,8 | 33,7 | 38,6 | 46,4 | 56,5 | 67,2 |
| LP56 | 5,6 | 7,0 | 10,7 | 15,7 | 20,0 | 23,5 | 27,5 | 33,6 | 40,6 | 46,5 | 54,7 | 67,5 | 80,7 |
| LP65 | 6,5 | 8,0 | 12,3 | 18,0 | 23,0 | 27,0 | 32,0 | 39,2 | 46,5 | 53,4 | 63,8 | 78,2 | 92,6 |
| LP80 | 7,5 | 9,2 | 14,4 | 22,5 | 28,9 | 33,1 | 38,8 | 47,9 | 58,7 | 67,0 | 86,6 | 98,0 | 107,0 |
| LP95 | 8,7 | 10,8 | 16,8 | 26,4 | 33,8 | 38,8 | 45,4 | 56,1 | 68,8 | 78,5 | 101,0 | 115,0 | 123,0 |
| LP105 | 10,0 | 12,4 | 19,3 | 30,3 | 38,8 | 44,4 | 52,0 | 64,3 | 78,8 | 90,0 | 116,0 | 132,0 | 139,0 |
| LP135 | 12,5 | 15,5 | 24,2 | 38,0 | 48,6 | 55,8 | 65,3 | 80,6 | 98,9 | 113,0 | 146,0 | 165,0 | 173,0 |
| LP165 | 15,4 | 19,0 | 29,7 | 46,6 | 59,7 | 68,4 | 80,1 | 98,9 | 121,0 | 138,0 | 179,0 | 203,0 | 212,0 |
| LP200 | 18,5 | 22,9 | 35,7 | 56,1 | 71,8 | 82,3 | 96,4 | 119,0 | 146,0,0 | 167,0 | 215,0 | 244,0 | 255,0 |
| LP230 | 21,7 | 26,8 | 41,7 | 65,6 | 84,0 | 96,3 | 113,0 | 139,0 | 171,0 | 195,0 | 252,0 | 285,0 | 298,0 |
| LP265 | 24,7 | 30,5 | 47,6 | 74,8 | 95,8 | 110,0 | 129,0 | 159,0 | 195,0 | 222,0 | 287,0 | 325,0 | 340,0 |
| LP300 | 27,8 | 34,4 | 53,6 | 84,3 | 108,0 | 124,0 | 145,0 | 179,0 | 219,0 | 250,0 | 324,0 | 366,0 | 383,0 |
| LP330 | 31,0 | 38,3 | 59,7 | 93,7 | 120,0 | 138,0 | 161,0 | 199,0 | 244,0 | 279,0 | 360,0 | 408,0 | 427,0 |
| LP365 | 34,0 | 42,0 | 65,5 | 103 | 132,0 | 151,0 | 177,0 | 219,0 | 268,0 | 306,0 | 396,0 | 448,0 | 468,0 |
| LP400 | 37,1 | 45,9 | 71,6 | 112 | 144,0 | 165,0 | 193,0 | 239,0 | 293,0 | 334,0 | 432,0 | 489,0 | 512,0 |
| LP430 | 40,3 | 49,8 | 77,6 | 122 | 156,0 | 179,0 | 210,0 | 259,0 | 318,0 | 363,0 | 469,0 | 530,0 | 555,0 |

Todos los datos contenidos en este folleto están sujetos a las tolerancias de fabricación normales.
*All data contained in this brochure are subject to usual manufacturing tolerances.*

Las cifras y datos que aparecen en este folleto no pueden ser tomadas como un compromiso contractual.
*None of the figures herein contained can be considered as a contractual commitment.*

# SERIE MP / *MP RANGE*

## Tablas de descarga en amperios (20°C)
## *Amperes tabular discharge data (20°C)*

Los datos de descarga indicados son para elementos plenamente cargados, después de permanecer en circuito abierto durante 1 hora, permitiendose caídas de tensión en las conexiones.
*Discharge data for full charged cells after 1 hour open circuit, allowing voltage losses on connections.*

### Hasta 1.00 V. por elemento / *To 1.00 Volts per cell*

| Type | 8h | 5h | 3h | 2h | 90min | 60min | 30min | 15min | 10min | 5min | 1min | 30s | 1s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MP12 | 1,4 | 2,2 | 3,6 | 5,2 | 6,7 | 9,4 | 14,9 | 18,9 | 21,1 | 24,0 | 30,4 | 34,4 | 46,1 |
| MP18 | 2,3 | 3,6 | 5,9 | 8,6 | 11,0 | 15,3 | 24,3 | 31,0 | 34,6 | 39,2 | 49,7 | 56,4 | 75,4 |
| MP25 | 3,2 | 5,0 | 8,2 | 11,9 | 15,3 | 21,3 | 33,8 | 43,0 | 48,0 | 55,2 | 69,0 | 78,3 | 105,0 |
| MP30 | 4,1 | 6,4 | 10,5 | 15,2 | 19,6 | 27,2 | 43,2 | 55,0 | 61,4 | 69,8 | 88,4 | 100,0 | 134,0 |
| MP37 | 4,8 | 7,6 | 12,4 | 18,1 | 23,3 | 32,3 | 51,3 | 65,4 | 73,0 | 82,8 | 105,0 | 119,0 | 159,0 |
| MP50 | 6,7 | 10,6 | 17,3 | 25,2 | 32,5 | 45,1 | 71,6 | 91,2 | 102,0 | 116,0 | 146,0 | 166,0 | 222,0 |
| MP55 | 7,5 | 11,8 | 19,3 | 28,1 | 36,2 | 50,2 | 79,7 | 101,0 | 113,0 | 129,0 | 163,0 | 185,0 | 247,0 |
| MP64 | 8,2 | 13,0 | 21,2 | 31,1 | 40,3 | 55,4 | 87,7 | 110,0 | 121,0 | 130,0 | 173,0 | 192,0 | 253,0 |
| MP80 | 10,5 | 16,6 | 27,1 | 39,7 | 51,4 | 70,7 | 112,0 | 141,0 | 154,0 | 166,0 | 221,0 | 246,0 | 297,0 |
| MP95 | 12,8 | 20,2 | 33,0 | 48,3 | 62,6 | 86,1 | 136,0 | 172,0 | 187,0 | 202,0 | 269,0 | 299,0 | 362,0 |
| MP115 | 15,0 | 23,6 | 38,6 | 56,5 | 73,1 | 101,0 | 159,0 | 201,0 | 218,0 | 236,0 | 315,0 | 349,0 | 423,0 |
| MP140 | 18,4 | 29,0 | 47,4 | 69,4 | 89,8 | 124,0 | 189,0 | 239,0 | 254,0 | 291,0 | 387,0 | 429,0 | 520,0 |
| MP160 | 21,2 | 33,4 | 54,6 | 79,9 | 103,0 | 142,0 | 217,0 | 276,0 | 292,0 | 335,0 | 446,0 | 494,0 | 598,0 |
| MP180 | 24,0 | 37,8 | 61,8 | 90,5 | 117,0 | 161,0 | 246,0 | 312,0 | 331,0 | 379,0 | 504,0 | 559,0 | 677,0 |
| MP200 | 26,8 | 42,2 | 69,0 | 101,0 | 131,0 | 180,0 | 274,0 | 348,0 | 369,0 | 423,0 | 563,0 | 624,0 | 756,0 |
| MP220 | 29,4 | 46,4 | 75,8 | 111,0 | 144,0 | 198,0 | 302,0 | 383,0 | 406,0 | 465,0 | 619,0 | 686,0 | 831,0 |
| MP240 | 32,2 | 50,8 | 83,0 | 122,0 | 157,0 | 216,0 | 330,0 | 419,0 | 445,0 | 509,0 | 678,0 | 751,0 | 910,0 |
| MP260 | 35,0 | 55,2 | 90,2 | 132,0 | 171,0 | 235,0 | 359,0 | 455,0 | 483,0 | 553,0 | 736,0 | 816,0 | 989,0 |
| MP280 | 36,5 | 58,8 | 96,5 | 140,0 | 180,0 | 250,0 | 377,0 | 482,0 | 512,0 | 587,0 | 785,0 | 871,0 | 1060,0 |
| MP300 | 37,8 | 59,6 | 97,4 | 143,0 | 185,0 | 254,0 | 387,0 | 492,0 | 522,0 | 597,0 | 795,0 | 881,0 | 1070,0 |
| MP320 | 40,5 | 63,8 | 104,0 | 153,0 | 198,0 | 272,0 | 415,0 | 526,0 | 558,0 | 639,0 | 851,0 | 944,0 | 1140,0 |
| MP360 | 43,3 | 68,2 | 111,0 | 163,0 | 211,0 | 291,0 | 443,0 | 563,0 | 597,0 | 683,0 | 910,0 | 1010,0 | 1220,0 |

### Hasta 1.05 V. por elemento / *To 1.05 Volts per cell*

| Type | 8h | 5h | 3h | 2h | 90min | 60min | 30min | 15min | 10min | 5min | 1min | 30s | 1s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MP12 | 1,4 | 2,2 | 3,5 | 5,1 | 6,5 | 8,7 | 13,0 | 15,6 | 16,8 | 19,5 | 26,8 | 30,5 | 39,1 |
| MP18 | 2,3 | 3,6 | 5,8 | 8,4 | 10,6 | 14,2 | 21,2 | 25,6 | 27,5 | 31,9 | 43,9 | 49,9 | 64,0 |
| MP25 | 3,1 | 5,0 | 8,0 | 11,6 | 14,7 | 19,8 | 29,5 | 35,5 | 38,3 | 45,0 | 60,9 | 69,3 | 88,9 |
| MP30 | 4,0 | 6,3 | 10,3 | 14,8 | 18,8 | 25,3 | 37,8 | 45,4 | 49,0 | 56,6 | 78,0 | 88,7 | 114,0 |
| MP37 | 4,8 | 7,5 | 12,2 | 17,6 | 22,4 | 30,0 | 44,8 | 54,0 | 58,1 | 67,3 | 92,6 | 105,0 | 135,0 |
| MP50 | 6,7 | 10,5 | 17,1 | 24,6 | 31,2 | 41,9 | 62,5 | 75,3 | 81,1 | 93,8 | 129,0 | 147,0 | 188,0 |
| MP55 | 7,4 | 11,7 | 19,0 | 27,4 | 34,7 | 46,6 | 69,6 | 83,8 | 90,3 | 104,0 | 144,0 | 164,0 | 210,0 |
| MP64 | 8,2 | 12,9 | 21,0 | 30,4 | 39,0 | 52,7 | 76,7 | 92,4 | 99,5 | 114,0 | 151,0 | 168,0 | 215,0 |
| MP80 | 10,5 | 16,5 | 26,8 | 38,8 | 49,8 | 67,4 | 97,9 | 118,0 | 127,0 | 146,0 | 193,0 | 214,0 | 262,0 |
| MP95 | 12,7 | 20,0 | 32,6 | 47,3 | 60,6 | 82,0 | 119,0 | 143,0 | 155,0 | 177,0 | 235,0 | 260,0 | 319,0 |
| MP115 | 14,9 | 23,4 | 38,1 | 55,2 | 70,8 | 95,8 | 139,0 | 168,0 | 181,0 | 207,0 | 275,0 | 304,0 | 373,0 |
| MP140 | 18,3 | 28,7 | 46,9 | 67,8 | 87,0 | 118,0 | 168,0 | 202,0 | 219,0 | 255,0 | 337,0 | 374,0 | 458,0 |
| MP160 | 21,0 | 33,1 | 54,0 | 78,1 | 100,0 | 136,0 | 194,0 | 232,0 | 253,0 | 293,0 | 389,0 | 430,0 | 528,0 |
| MP180 | 23,8 | 37,5 | 61,1 | 88,4 | 113,0 | 153,0 | 219,0 | 263,0 | 286,0 | 332,0 | 440,0 | 487,0 | 597,0 |
| MP200 | 26,6 | 41,8 | 68,2 | 98,7 | 127,0 | 171,0 | 245,0 | 293,0 | 319,0 | 370,0 | 491,0 | 544,0 | 667,0 |
| MP220 | 29,2 | 46,0 | 75,0 | 109,0 | 139,0 | 188,0 | 269,0 | 322,0 | 351,0 | 407,0 | 540,0 | 598,0 | 733,0 |
| MP240 | 32,0 | 50,3 | 82,1 | 119,0 | 152,0 | 206,0 | 295,0 | 353,0 | 384,0 | 446,0 | 591,0 | 655,0 | 803,0 |
| MP260 | 34,8 | 54,7 | 89,2 | 129,0 | 166,0 | 224,0 | 320,0 | 384,0 | 417,0 | 485,0 | 642,0 | 711,0 | 872,0 |
| MP280 | 36,0 | 57,0 | 94,0 | 135,0 | 170,0 | 232,0 | 336,0 | 404,0 | 441,0 | 513,0 | 683,0 | 758,0 | 932,0 |
| MP300 | 37,5 | 59,1 | 96,3 | 139,0 | 179,0 | 242,0 | 346,0 | 414,0 | 451,0 | 523,0 | 693,0 | 768,0 | 942,0 |
| MP320 | 40,2 | 63,2 | 103,0 | 149,0 | 191,0 | 259,0 | 370,0 | 443,0 | 482,0 | 560,0 | 742,0 | 822,0 | 1010,0 |
| MP360 | 43,0 | 67,6 | 110,0 | 160,0 | 205,0 | 277,0 | 396,0 | 474,0 | 516,0 | 599,0 | 793,0 | 879,0 | 1080,0 |

### Hasta 1.10 V. por elemento / *To 1.10 Volts per cell*

| Type | 8h | 5h | 3h | 2h | 90min | 60min | 30min | 15min | 10min | 5min | 1min | 30s | 1s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MP12 | 1,4 | 2,2 | 3,4 | 4,9 | 6,1 | 8,0 | 11,0 | 12,8 | 14,0 | 16,4 | 23,1 | 26,1 | 32,6 |
| MP18 | 2,2 | 3,5 | 5,6 | 7,9 | 9,9 | 13,1 | 18,0 | 20,9 | 22,9 | 27,0 | 37,8 | 42,7 | 53,4 |
| MP25 | 3,1 | 4,9 | 7,8 | 11,0 | 13,8 | 18,3 | 25,0 | 29,0 | 32,3 | 38,0 | 52,4 | 59,3 | 74,2 |
| MP30 | 4,0 | 6,3 | 10,0 | 14,1 | 17,6 | 23,4 | 32,0 | 37,1 | 40,6 | 48,5 | 67,1 | 75,9 | 94,9 |
| MP37 | 4,7 | 7,4 | 11,8 | 16,8 | 20,9 | 27,7 | 38,0 | 44,1 | 48,3 | 58,5 | 79,7 | 90,1 | 113,0 |
| MP50 | 6,6 | 10,4 | 16,5 | 23,4 | 29,2 | 38,7 | 53,0 | 61,5 | 67,3 | 79,2 | 111,0 | 126,0 | 157,0 |
| MP55 | 7,4 | 11,5 | 18,4 | 26,0 | 32,5 | 43,1 | 59,0 | 68,4 | 75,5 | 88,2 | 124,0 | 140,0 | 175,0 |
| MP64 | 8,1 | 12,7 | 20,3 | 29,0 | 36,7 | 47,5 | 65,0 | 75,4 | 84,2 | 97,2 | 129,0 | 143,0 | 178,0 |
| MP80 | 10,3 | 16,2 | 25,9 | 37,1 | 46,8 | 60,6 | 83,0 | 96,3 | 108,0 | 124,0 | 165,0 | 182,0 | 220,0 |
| MP95 | 12,5 | 19,7 | 31,6 | 45,1 | 57,0 | 73,7 | 101,0 | 117,0 | 131,0 | 151,0 | 201,0 | 222,0 | 268,0 |
| MP115 | 14,6 | 23,0 | 36,9 | 52,7 | 66,6 | 86,1 | 118,0 | 137,0 | 153,0 | 177,0 | 234,0 | 259,0 | 313,0 |
| MP140 | 18,0 | 28,2 | 45,3 | 64,7 | 81,8 | 105,0 | 139,0 | 168,0 | 188,0 | 217,0 | 288,0 | 318,0 | 385,0 |
| MP160 | 20,7 | 32,5 | 52,2 | 74,6 | 94,2 | 121,0 | 160,0 | 194,0 | 216,0 | 250,0 | 332,0 | 367,0 | 443,0 |
| MP180 | 23,5 | 36,8 | 59,1 | 84,4 | 107,0 | 137,0 | 182,0 | 219,0 | 245,0 | 283,0 | 375,0 | 415,0 | 501,0 |
| MP200 | 26,2 | 41,1 | 65,9 | 94,2 | 119,0 | 153,0 | 203,0 | 245,0 | 273,0 | 316,0 | 419,0 | 463,0 | 560,0 |
| MP220 | 28,8 | 45,2 | 72,5 | 104,0 | 131,0 | 168,0 | 223,0 | 269,0 | 301,0 | 347,0 | 461,0 | 510,0 | 615,0 |
| MP240 | 31,5 | 49,4 | 79,4 | 113,0 | 143,0 | 184,0 | 244,0 | 295,0 | 329,0 | 380,0 | 504,0 | 558,0 | 674,0 |
| MP260 | 34,2 | 53,7 | 86,3 | 123,0 | 156,0 | 200,0 | 265,0 | 320,0 | 358,0 | 413,0 | 548,0 | 606,0 | 732,0 |
| MP280 | 36,0 | 56,0 | 90,0 | 130,0 | 165,0 | 210,0 | 283,0 | 340,0 | 380,0 | 439,0 | 582,0 | 651,0 | 780,0 |
| MP300 | 37,0 | 58,0 | 93,1 | 133,0 | 168,0 | 215,0 | 286,0 | 346,0 | 386,0 | 446,0 | 592,0 | 655,0 | 790,0 |
| MP320 | 39,6 | 62,1 | 99,7 | 142,0 | 180,0 | 231,0 | 306,0 | 370,0 | 413,0 | 477,0 | 634,0 | 701,0 | 846,0 |
| MP360 | 42,3 | 66,4 | 107 | 152,0 | 192,0 | 247,0 | 328,0 | 396,0 | 442,0 | 510,0 | 677,0 | 749,0 | 904,0 |

### Hasta 1.14 V. por elemento / *To 1.14 Volts per cell*

| Type | 8h | 5h | 3h | 2h | 90min | 60min | 30min | 15min | 10min | 5min | 1min | 30s | 1s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MP12 | 1,3 | 2,1 | 3,3 | 4,5 | 5,4 | 6,5 | 8,6 | 10,7 | 11,9 | 14,1 | 20,0 | 22,4 | 28,5 |
| MP18 | 2,2 | 3,4 | 5,4 | 7,4 | 8,9 | 10,7 | 14,1 | 17,5 | 19,4 | 23,1 | 32,7 | 36,6 | 46,7 |
| MP25 | 3,0 | 4,7 | 7,5 | 10,3 | 12,3 | 14,9 | 19,6 | 24,3 | 27,0 | 32,0 | 45,5 | 50,9 | 64,8 |
| MP30 | 3,9 | 6,0 | 9,5 | 13,1 | 15,7 | 19,0 | 25,1 | 31,0 | 34,6 | 41,0 | 58,2 | 65,1 | 83,0 |
| MP37 | 4,6 | 7,2 | 11,3 | 15,6 | 18,7 | 22,6 | 29,8 | 36,9 | 41,0 | 48,7 | 69,1 | 77,3 | 98,5 |
| MP50 | 6,4 | 10,0 | 15,8 | 21,8 | 26,1 | 31,5 | 41,6 | 51,4 | 57,2 | 67,9 | 96,4 | 108,0 | 137,0 |
| MP55 | 7,1 | 11,1 | 17,6 | 24,2 | 29,0 | 35,0 | 46,3 | 57,2 | 63,7 | 75,6 | 107,0 | 120,0 | 153,0 |
| MP64 | 7,8 | 12,2 | 19,5 | 27,3 | 33,4 | 40,6 | 53,5 | 64,6 | 72,0 | 83,1 | 111,0 | 122,0 | 160,0 |
| MP80 | 9,9 | 15,6 | 24,9 | 34,8 | 42,7 | 51,8 | 68,3 | 82,5 | 91,9 | 106,0 | 142,0 | 156,0 | 179,0 |
| MP95 | 12,1 | 18,9 | 30,3 | 42,4 | 51,9 | 63,0 | 83,1 | 100,0 | 112,0 | 129,0 | 172,0 | 189,0 | 218,0 |
| MP115 | 14,1 | 22,1 | 35,4 | 49,5 | 60,7 | 73,6 | 97,1 | 117,0 | 131,0 | 151,0 | 201,0 | 221,0 | 255,0 |
| MP140 | 17,4 | 27,2 | 43,5 | 60,8 | 74,6 | 90,5 | 119,0 | 144,0 | 161,0 | 185,0 | 247,0 | 272,0 | 313,0 |
| MP160 | 20,0 | 31,3 | 50,1 | 70,1 | 85,9 | 104,0 | 137,0 | 166,0 | 185,0 | 214,0 | 285,0 | 313,0 | 360,0 |
| MP180 | 22,6 | 35,4 | 56,7 | 79,3 | 97,2 | 118,0 | 155,0 | 188,0 | 209,0 | 242,0 | 322,0 | 354,0 | 408,0 |
| MP200 | 25,3 | 39,6 | 63,3 | 88,5 | 109,0 | 132,0 | 174,0 | 210,0 | 234,0 | 270,0 | 360,0 | 395,0 | 455,0 |
| MP220 | 27,8 | 43,5 | 69,6 | 97,4 | 119,0 | 145,0 | 191,0 | 231,0 | 257,0 | 297,0 | 395,0 | 435,0 | 501,0 |
| MP240 | 30,4 | 47,6 | 76,2 | 107,0 | 131,0 | 159,0 | 209,0 | 252,0 | 281,0 | 325,0 | 433,0 | 476,0 | 548,0 |
| MP260 | 33,1 | 51,8 | 82,8 | 116,0 | 142,0 | 172,0 | 227,0 | 274,0 | 306,0 | 353,0 | 470,0 | 517,0 | 596,0 |
| MP280 | 35,0 | 54,0 | 88,0 | 122,0 | 150,0 | 182,0 | 240,0 | 290,0 | 325,0 | 376,0 | 499,0 | 549,0 | 633,0 |
| MP300 | 35,7 | 55,9 | 89,4 | 125,0 | 153,0 | 186,0 | 245,0 | 296,0 | 330,0 | 381,0 | 508,0 | 559,0 | 643,0 |
| MP320 | 38,2 | 59,8 | 95,7 | 134,0 | 164,0 | 199,0 | 262,0 | 317,0 | 353,0 | 408,0 | 544,0 | 598,0 | 689,0 |
| MP360 | 40,8 | 63,9 | 102,0 | 143,0 | 175,0 | 213,0 | 280,0 | 339,0 | 378,0 | 436,0 | 581,0 | 639,0 | 736,0 |

Todos los datos contenidos en este folleto están sujetos a las tolerancias de fabricación normales.
*All data contained in this brochure are subject to usual manufacturing tolerances.*

Las cifras y datos que aparecen en este folleto no pueden ser tomadas como un compromiso contractual.
*None of the figures herein contained can be considered as a contractual commitment.*

# SERIE HP / *HP RANGE*

## Tablas de descarga en amperios (20°C)
## *Amperes tabular discharge data (20°C)*

Los datos de descarga indicados son para elementos plenamente cargados, después de permanecer en circuito abierto durante 1 hora, permitiendose caídas de tensión en las conexiones.
*Discharge data for full charged cells after 1 hour open circuit, allowing voltage losses on connections.*

### Hasta 0.65 V. por elemento / *To 0.65 Volts per cell*

| Type | 90s | 60s | 30s | 10s | 5s | 1s |
|---|---|---|---|---|---|---|
| HP10 | 112 | 124 | 140 | 161 | 173 | 187 |
| HP14 | 153 | 169 | 190 | 218 | 235 | 254 |
| HP20 | 243 | 269 | 302 | 347 | 373 | 404 |
| HP30 | 363 | 401 | 450 | 516 | 554 | 601 |
| HP40 | 403 | 445 | 499 | 571 | 613 | 665 |
| HP50 | 540 | 596 | 668 | 763 | 819 | 889 |
| HP65 | 705 | 777 | 869 | 989 | 1060 | 1150 |
| HP80 | 886 | 975 | 1090 | 1230 | 1320 | 1440 |
| HP100 | 1050 | 1160 | 1290 | 1460 | 1560 | 1700 |
| HP125 | 1310 | 1430 | 1590 | 1790 | 1920 | 2100 |
| HP150 | 1490 | 1620 | 1800 | 2020 | 2160 | 2360 |
| HP185 | 1880 | 2040 | 2250 | 2510 | 2670 | 2930 |
| HP215 | 2070 | 2240 | 2470 | 2740 | 2910 | 3200 |
| HP235 | 2340 | 2530 | 2780 | 3050 | 3240 | 3580 |
| HP250 | 2440 | 2630 | 2880 | 3160 | 3350 | 3700 |
| HP275 | 2520 | 2720 | 2970 | 3250 | 3450 | 3820 |

### Hasta 0.85 V. por elemento / *To 0.85 Volts per cell*

| Type | 90s | 60s | 30s | 10s | 5s | 1s |
|---|---|---|---|---|---|---|
| HP10 | 84,7 | 91,3 | 101 | 116 | 124 | 135 |
| HP14 | 115 | 124 | 138 | 157 | 169 | 184 |
| HP20 | 183 | 197 | 219 | 250 | 268 | 292 |
| HP30 | 273 | 294 | 326 | 371 | 399 | 435 |
| HP40 | 302 | 326 | 361 | 411 | 442 | 482 |
| HP50 | 404 | 435 | 482 | 549 | 590 | 643 |
| HP65 | 525 | 566 | 626 | 712 | 764 | 835 |
| HP80 | 656 | 708 | 783 | 889 | 954 | 1040 |
| HP100 | 777 | 838 | 928 | 1050 | 1120 | 1230 |
| HP125 | 959 | 1030 | 1140 | 1290 | 1380 | 1520 |
| HP150 | 1080 | 1160 | 1290 | 1460 | 1560 | 1710 |
| HP185 | 1340 | 1450 | 1600 | 1810 | 1930 | 2130 |
| HP215 | 1470 | 1590 | 1760 | 1970 | 2100 | 2320 |
| HP235 | 1650 | 1780 | 1970 | 2210 | 2340 | 2600 |
| HP250 | 1710 | 1850 | 2040 | 2280 | 2420 | 2690 |
| HP275 | 1770 | 1910 | 2100 | 2350 | 2500 | 2770 |

### Hasta 1.00 V. por elemento / *To 1.00 Volts per cell*

| Type | 5h | 3h | 90min | 60min | 30min | 15min | 10min | 5min | 3min | 1min | 30s | 5s | 1s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HP10 | 2,2 | 3,5 | 6,6 | 9,5 | 16,8 | 27,0 | 34,0 | 46,0 | 53,2 | 65,5 | 71,5 | 88,0 | 99,9 |
| HP14 | 2,8 | 4,5 | 8,4 | 12,0 | 21,8 | 36,2 | 46,3 | 62,5 | 71,8 | 89,0 | 97,2 | 120,0 | 136,0 |
| HP20 | 4,4 | 7,0 | 13,2 | 18,9 | 34,8 | 57,8 | 73,7 | 99,5 | 114,0 | 141,0 | 154,0 | 190,0 | 215,0 |
| HP30 | 6,8 | 10,9 | 20,4 | 29,2 | 52,2 | 86,8 | 110,0 | 148,0 | 170,0 | 210,0 | 229,0 | 282,0 | 319,0 |
| HP40 | 7,6 | 12,2 | 22,8 | 32,7 | 58,0 | 96,4 | 122,0 | 164,0 | 188,0 | 232,0 | 254,0 | 312,0 | 353,0 |
| HP50 | 10,0 | 16,0 | 30,0 | 43,0 | 78,3 | 130,0 | 164,0 | 219,0 | 251,0 | 310,0 | 339,0 | 415,0 | 471,0 |
| HP65 | 13,4 | 21,4 | 40,2 | 57,6 | 102,0 | 165,0 | 210,0 | 283,0 | 327,0 | 401,0 | 439,0 | 537,0 | 609,0 |
| HP80 | 17,0 | 27,2 | 51,0 | 73,1 | 129,0 | 210,0 | 268,0 | 357,0 | 408,0 | 500,0 | 548,0 | 669,0 | 757,0 |
| HP100 | 20,4 | 32,6 | 61,2 | 87,7 | 154,0 | 252,0 | 319,0 | 423,0 | 483,0 | 591,0 | 648,0 | 788,0 | 892,0 |
| HP125 | 25,6 | 41,0 | 76,8 | 110,0 | 194,0 | 317,0 | 396,0 | 523,0 | 596,0 | 725,0 | 796,0 | 965,0 | 1090,0 |
| HP150 | 29,4 | 47,0 | 88,2 | 126,0 | 222,0 | 356,0 | 445,0 | 588,0 | 673,0 | 817,0 | 897,0 | 1080,0 | 1220,0 |
| HP185 | 38,0 | 60,8 | 114,0 | 163,0 | 285,0 | 453,0 | 566,0 | 737,0 | 838,0 | 1010,0 | 1110,0 | 1330,0 | 1500,0 |
| HP215 | 42,2 | 67,5 | 127,0 | 181,0 | 318,0 | 497,0 | 623,0 | 807,0 | 916,0 | 1100,0 | 1210,0 | 1440,0 | 1630,0 |
| HP235 | 48,8 | 78,1 | 146,0 | 210,0 | 366,0 | 573,0 | 705,0 | 906,0 | 1020,0 | 1220,0 | 1340,0 | 1600,0 | 1800,0 |
| HP250 | 50,8 | 81,3 | 152,0 | 218,0 | 383,0 | 599,0 | 733,0 | 940,0 | 1060,0 | 1260,0 | 1390,0 | 1650,0 | 1860,0 |
| HP275 | 53,0 | 84,8 | 159,0 | 228,0 | 399,0 | 624,0 | 759,0 | 969,0 | 1090,0 | 1300,0 | 1430,0 | 1700,0 | 1910,0 |

### Hasta 1.05 V. por elemento / *To 1.05 Volts per cell*

| Type | 5h | 3h | 90min | 60min | 30min | 15min | 10min | 5min | 3min | 1min | 30s | 5s | 1s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HP10 | 2,2 | 3,5 | 6,4 | 9,1 | 15,8 | 24,9 | 30,5 | 39,5 | 45,1 | 55,8 | 61,6 | 74,8 | 85,7 |
| HP14 | 2,8 | 4,4 | 8,2 | 11,6 | 20,2 | 31,8 | 39,9 | 53,5 | 61,3 | 75,8 | 83,7 | 102,0 | 116,0 |
| HP20 | 4,4 | 6,9 | 12,9 | 18,3 | 31,7 | 49,9 | 62,4 | 83,7 | 97,5 | 120,0 | 133,0 | 161,0 | 185,0 |
| HP30 | 6,7 | 10,7 | 19,9 | 28,2 | 49,0 | 77,2 | 96,0 | 126,0 | 145,0 | 179,0 | 198,0 | 240,0 | 274,0 |
| HP40 | 7,5 | 12,0 | 22,2 | 31,5 | 54,7 | 86,3 | 107,0 | 140,0 | 161,0 | 198,0 | 219,0 | 265,0 | 303,0 |
| HP50 | 9,9 | 15,8 | 29,3 | 41,5 | 72,0 | 114,0 | 140,0 | 187,0 | 215,0 | 264,0 | 292,0 | 354,0 | 404,0 |
| HP65 | 13,3 | 21,1 | 39,2 | 55,6 | 94,5 | 148,0 | 183,0 | 243,0 | 279,0 | 343,0 | 379,0 | 459,0 | 523,0 |
| HP80 | 16,8 | 26,8 | 49,7 | 70,6 | 120,0 | 187,0 | 232,0 | 306,0 | 349,0 | 427,0 | 472,0 | 572,0 | 651,0 |
| HP100 | 20,2 | 32,1 | 59,7 | 84,7 | 144,0 | 226,0 | 278,0 | 363,0 | 414,0 | 505,0 | 558,0 | 675,0 | 768,0 |
| HP125 | 25,3 | 40,3 | 74,9 | 106,0 | 180,0 | 284,0 | 348,0 | 453,0 | 510,0 | 620,0 | 686,0 | 828,0 | 940,0 |
| HP150 | 29,1 | 46,3 | 86,0 | 122,0 | 204,0 | 318,0 | 390,0 | 507,0 | 577,0 | 699,0 | 773,0 | 933,0 | 1050,0 |
| HP185 | 37,6 | 59,9 | 111,0 | 158,0 | 264,0 | 404,0 | 497,0 | 637,0 | 718,0 | 863,0 | 956,0 | 1150,0 | 1300,0 |
| HP215 | 41,8 | 66,5 | 123,0 | 175,0 | 293,0 | 445,0 | 540,0 | 696,0 | 786,0 | 941,0 | 1040,0 | 1250,0 | 1410,0 |
| HP235 | 48,3 | 76,9 | 143,0 | 203,0 | 339,0 | 520,0 | 628,0 | 788,0 | 881,0 | 1050,0 | 1160,0 | 1390,0 | 1560,0 |
| HP250 | 50,3 | 80,0 | 149,0 | 211,0 | 353,0 | 541,0 | 655,0 | 817,0 | 913,0 | 1080,0 | 1200,0 | 1440,0 | 1610,0 |
| HP275 | 52,5 | 83,5 | 155,0 | 220,0 | 368,0 | 562,0 | 677,0 | 845,0 | 941,0 | 1110,0 | 1230,0 | 1480,0 | 1660,0 |

### Hasta 1.10 V. por elemento / *To 1.10 Volts per cell*

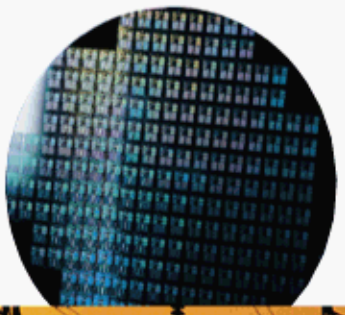
| Type | 5h | 3h | 90min | 60min | 30min | 15min | 10min | 5min | 3min | 1min | 30s | 5s | 1s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HP10 | 2,2 | 3,4 | 6,2 | 8,7 | 14,3 | 21,5 | 25,5 | 32,1 | 36,3 | 45,7 | 51,7 | 62,7 | 71,0 |
| HP14 | 2,7 | 4,4 | 7,9 | 11,1 | 18,5 | 28,2 | 34,2 | 43,5 | 49,5 | 62,1 | 70,3 | 85,2 | 96,5 |
| HP20 | 4,3 | 6,9 | 12,4 | 17,4 | 29,0 | 44,3 | 53,7 | 69,6 | 79,2 | 98,6 | 112,0 | 135,0 | 153,0 |
| HP30 | 6,7 | 10,6 | 19,2 | 26,9 | 44,9 | 68,5 | 83,0 | 105,0 | 119,0 | 147,0 | 166,0 | 201,0 | 228,0 |
| HP40 | 7,4 | 11,9 | 21,5 | 30,0 | 50,2 | 76,6 | 92,7 | 117,0 | 132,0 | 162,0 | 184,0 | 223,0 | 252,0 |
| HP50 | 9,8 | 15,6 | 28,3 | 39,5 | 66,0 | 101,0 | 122,0 | 157,0 | 178,0 | 217,0 | 245,0 | 297,0 | 337,0 |
| HP65 | 13,1 | 20,9 | 37,9 | 52,9 | 87,8 | 131,0 | 155,0 | 194,0 | 220,0 | 282,0 | 318,0 | 386,0 | 437,0 |
| HP80 | 16,7 | 26,5 | 48,0 | 67,2 | 111,0 | 166,0 | 197,0 | 248,0 | 280,0 | 352,0 | 397,0 | 481,0 | 545,0 |
| HP100 | 20,0 | 31,8 | 57,6 | 80,6 | 134,0 | 199,0 | 237,0 | 295,0 | 332,0 | 416,0 | 469,0 | 569,0 | 644,0 |
| HP125 | 25,1 | 39,9 | 72,3 | 101,0 | 168,0 | 250,0 | 297,0 | 370,0 | 415,0 | 512,0 | 576,0 | 700,0 | 792,0 |
| HP150 | 28,8 | 45,9 | 83,1 | 116,0 | 187,0 | 273,0 | 320,0 | 395,0 | 445,0 | 578,0 | 649,0 | 789,0 | 893,0 |
| HP185 | 37,2 | 59,3 | 107,0 | 150,0 | 241,0 | 353,0 | 414,0 | 503,0 | 563,0 | 717,0 | 803,0 | 976,0 | 1100,0 |
| HP215 | 41,4 | 65,8 | 119,0 | 167,0 | 268,0 | 392,0 | 460,0 | 560,0 | 627,0 | 783,0 | 876,0 | 1060,0 | 1200,0 |
| HP235 | 47,8 | 76,1 | 138,0 | 193,0 | 310,0 | 454,0 | 532,0 | 645,0 | 722,0 | 875,0 | 977,0 | 1180,0 | 1340,0 |
| HP250 | 49,8 | 79,2 | 144,0 | 201,0 | 323,0 | 472,0 | 554,0 | 675,0 | 756,0 | 906,0 | 1010,0 | 1230,0 | 1390,0 |
| HP275 | 51,9 | 82,7 | 150,0 | 209,0 | 337,0 | 493,0 | 578,0 | 703,0 | 787,0 | 933,0 | 1040,0 | 1260,0 | 1430,0 |

### Hasta 1.14 V. por elemento / *To 1.14 Volts per cell*

| Type | 5h | 3h | 90min | 60min | 30min | 15min | 10min | 5min | 3min | 1min | 30s | 5s | 1s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HP10 | 2,1 | 3,4 | 5,9 | 8,0 | 12,3 | 17,1 | 19,8 | 24,8 | 28,6 | 37,4 | 42,9 | 52,3 | 59,4 |
| HP14 | 2,7 | 4,3 | 7,6 | 10,2 | 15,7 | 22,8 | 27,0 | 33,8 | 39,0 | 50,9 | 58,3 | 71,0 | 80,8 |
| HP20 | 4,3 | 6,7 | 11,9 | 16,0 | 24,6 | 35,9 | 43,2 | 54,0 | 62,4 | 80,9 | 92,7 | 113,0 | 128,0 |
| HP30 | 6,6 | 10,4 | 18,4 | 24,7 | 38,1 | 55,4 | 64,8 | 81,0 | 93,6 | 120,0 | 138,0 | 168,0 | 191,0 |
| HP40 | 7,4 | 11,6 | 20,5 | 27,6 | 42,6 | 61,9 | 72,0 | 90,0 | 104,0 | 133,0 | 153,0 | 186,0 | 212,0 |
| HP50 | 9,7 | 15,3 | 27,0 | 36,3 | 56,0 | 81,5 | 97,2 | 122,0 | 140,0 | 178,0 | 204,0 | 249,0 | 283,0 |
| HP65 | 13,0 | 20,4 | 36,2 | 48,6 | 73,7 | 102,0 | 121,0 | 154,0 | 177,0 | 232,0 | 264,0 | 323,0 | 368,0 |
| HP80 | 16,5 | 25,9 | 45,9 | 61,6 | 93,5 | 129,0 | 153,0 | 195,0 | 224,0 | 290,0 | 330,0 | 403,0 | 460,0 |
| HP100 | 19,8 | 31,1 | 55,1 | 74,0 | 112,0 | 155,0 | 184,0 | 234,0 | 269,0 | 344,0 | 390,0 | 477,0 | 546,0 |
| HP125 | 24,8 | 39,0 | 69,1 | 92,8 | 141,0 | 195,0 | 231,0 | 295,0 | 339,0 | 425,0 | 480,0 | 588,0 | 673,0 |
| HP150 | 28,5 | 44,8 | 79,4 | 107,0 | 162,0 | 222,0 | 261,0 | 323,0 | 367,0 | 480,0 | 541,0 | 664,0 | 761,0 |
| HP185 | 36,9 | 58,0 | 103,0 | 138,0 | 209,0 | 287,0 | 336,0 | 416,0 | 472,0 | 599,0 | 671,0 | 825,0 | 948,0 |
| HP215 | 40,9 | 64,4 | 114,0 | 153,0 | 232,0 | 319,0 | 374,0 | 464,0 | 526,0 | 656,0 | 732,0 | 901,0 | 1040,0 |
| HP235 | 47,3 | 74,4 | 132,0 | 177,0 | 268,0 | 368,0 | 431,0 | 534,0 | 606,0 | 736,0 | 817,0 | 1010,0 | 1160,0 |
| HP250 | 49,3 | 77,5 | 137,0 | 184,0 | 279,0 | 384,0 | 451,0 | 559,0 | 635,0 | 763,0 | 846,0 | 1040,0 | 1200,0 |
| HP275 | 51,4 | 80,8 | 143,0 | 192,0 | 292,0 | 400,0 | 469,0 | 582,0 | 660,0 | 787,0 | 871,0 | 1070,0 | 1240,0 |

Todos los datos contenidos en este folleto están sujetos a las tolerancias de fabricación normales.
*All data contained in this brochure are subject to usual manufacturing tolerances.*

Las cifras y datos que aparecen en este folleto no pueden ser tomadas como un compromiso contractual.
*None of the figures herein contained can be considered as a contractual commitment.*



## Aplicaciones

**Compañías de producción y distribución de electricidad, gas, agua. Plataformas petrolíferas, refinerías, industria química, hospitales, telecomunicaciones, ferrocarriles, aeropuertos, etc.**

## *Applications*

***Utilities, oil and gas, industry, hospitals, telecom, railways, airports, etc.***

# DIMENSIONES Y CAPACIDADES
## Elementos con placas de bolsas de gran capacidad
# *CAPACITIES AND DIMENSIONS*
## *High capacity pocket plate cells*

| Tipo de elementos *Type of cells* | Capacidad nominal *Nominal capacity* (Ah) | Dimensiones de elemento (mm) *Cell dimensions* | | | Peso de elemento (lleno) *Cell weight (filled)* (Kg) | Reserva de electrolito *Electrolyte reserve* ($cm^3$) | Número y tamaño de terminales *Number and size of Terminals* |
|---|---|---|---|---|---|---|---|
| | | L | W | H | | | |
| **LB470P** | 470 | 171 | 195 | 405 | 21,0 | 1300 | 4xM10 |
| **LB510P** | 510 | 183 | 195 | 405 | 23,0 | 1400 | 4xM10 |
| **LB600P** | 600 | 219 | 195 | 405 | 28,0 | 1700 | 6xM10 |
| **LB645P** | 645 | 232 | 195 | 405 | 30,0 | 1800 | 6xM10 |
| **LB770P** | 770 | 268 | 195 | 405 | 34,5 | 2100 | 6xM10 |
| **LB860P** | 860 | 304 | 195 | 405 | 40,0 | 2400 | 8xM10 |
| **LB1020P** | 1020 | 352 | 195 | 405 | 46,0 | 2800 | 8xM10 |
| **LB1070P** | 1070 | 377 | 195 | 405 | 49,5 | 3000 | 10xM10 |
| **LB1280P** | 1280 | 437 | 195 | 405 | 57,5 | 3500 | 10xM10 |
| **LB1450P** | 1450 | 497 | 195 | 405 | 66,0 | 4000 | 12xM10 |
| **LB1540P** | 1540 | 522 | 195 | 405 | 69,0 | 4200 | 12xM10 |
| **MB370P** | 369 | 159 | 195 | 405 | 19,5 | 1200 | 4xM10 |
| **MB390P** | 392 | 171 | 195 | 405 | 21,0 | 1300 | 4xM10 |
| **MB415P** | 415 | 183 | 195 | 405 | 23,0 | 1400 | 4xM10 |
| **MB440P** | 438 | 183 | 195 | 405 | 23,5 | 1400 | 4xM10 |
| **MB460P** | 461 | 183 | 195 | 405 | 24,0 | 1400 | 4xM10 |
| **MB505P** | 505 | 213 | 195 | 405 | 27,5 | 1600 | 6xM10 |
| **MB555P** | 555 | 232 | 195 | 405 | 30,0 | 1800 | 6xM10 |
| **MB625P** | 625 | 268 | 195 | 405 | 34,5 | 2100 | 6xM10 |
| **MB690P** | 690 | 268 | 195 | 405 | 36,0 | 2100 | 6xM10 |
| **MB740P** | 740 | 304 | 195 | 405 | 40,0 | 2400 | 8xM10 |
| **MB830P** | 830 | 352 | 195 | 405 | 46,0 | 2800 | 8xM10 |
| **MB920P** | 920 | 352 | 195 | 405 | 48,0 | 2800 | 8xM10 |
| **MB965P** | 965 | 372 | 195 | 405 | 50,5 | 3000 | 12xM10 |
| **MB1040P** | 1040 | 437 | 195 | 405 | 57,5 | 3500 | 10xM10 |
| **MB1150P** | 1150 | 437 | 195 | 405 | 60,0 | 3500 | 10xM10 |
| **MB1220P** | 1220 | 510 | 195 | 405 | 67,5 | 4100 | 12xM10 |
| **MB1390P** | 1390 | 522 | 195 | 405 | 72,0 | 4200 | 12xM10 |
| **HB280P** | 281 | 183 | 195 | 405 | 23,5 | 1400 | 4xM10 |
| **HB305P** | 307 | 183 | 195 | 405 | 24,5 | 1400 | 4xM10 |
| **HB345P** | 345 | 232 | 195 | 405 | 29,5 | 1800 | 6xM10 |
| **HB385P** | 383 | 232 | 195 | 405 | 31,0 | 1700 | 6xM10 |
| **HB420P** | 422 | 268 | 195 | 405 | 34,5 | 2100 | 6xM10 |
| **HB460P** | 460 | 268 | 195 | 405 | 36,0 | 2100 | 6xM10 |
| **HB510P** | 510 | 304 | 195 | 405 | 42,0 | 2300 | 8xM10 |
| **HB560P** | 560 | 352 | 195 | 405 | 46,0 | 2800 | 8xM10 |
| **HB615P** | 615 | 352 | 195 | 405 | 48,0 | 2800 | 8xM10 |
| **HB640P** | 640 | 377 | 195 | 405 | 52,5 | 2900 | 10xM10 |
| **HB705P** | 705 | 437 | 195 | 405 | 57,5 | 3500 | 10xM10 |
| **HB765P** | 765 | 437 | 195 | 405 | 60,0 | 3500 | 10xM10 |
| **HB865P** | 865 | 497 | 195 | 405 | 68,5 | 4000 | 12xM10 |
| **HB920P** | 920 | 522 | 195 | 405 | 72,0 | 4200 | 12xM10 |

Todas las cifras y datos contenidos en este catálogo están sujetas a las tolerancias de fabricación normales. Las cifras y datos que aparecen en este folleto no pueden ser tomadas como un compromiso contractual.

Las capacidades nominales están indicadas para un tiempo de descarga de 5 horas hasta una tensión final de 1.00 voltio por elemento, para elementos totalmente cargados a 20°C. Los elementos de Níquel Cadmio de placas embolsadas de EMISA están fabricados bajo la norma IEC-623.

*All figures and data contained in this catalogue are subject to normal manufacturing tolerances. None of the figures shown in this brochure can be taken as a contractual commitment.*

*The nominal capacities are indicated at the 5 hour discharge rate up to an end voltage of 1.00 Volts per cell, for full charged cells at 20°C. EMISA's pocket plate Nickel-Cadmium cells are made under IEC-623 standard.*

# SERIE LB / *LB RANGE*

## Tablas de descarga en amperios (20°C)
## *Amperes tabular discharge data (20°C)*

La corriente de descarga se refiere a elementos cargados en flotación en períodos largos.
*Discharge current is for fully charged cells after prolonged float charge.*

### Hasta 1.00 V. por elemento / *To 1.00 Volts per cell*

| Type | 10h | 8h | 5h | 3h | 2h | 90min | 60min | 30min | 20min | 15min | 10min | 5min | 1min | 30s | 5s | 1s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LB470P** | 47,8 | 59,3 | 94,0 | 152,0 | 207,0 | 248,0 | 307,0 | 378,0 | 428,0 | 457,0 | 500,0 | 575,0 | 731,0 | 792,0 | 890,0 | 921,0 |
| **LB510P** | 51,8 | 64,4 | 102,0 | 165,0 | 225,0 | 269,0 | 333,0 | 411,0 | 464,0 | 496,0 | 543,0 | 624,0 | 793,0 | 859,0 | 966,0 | 1000,0 |
| **LB600P** | 61,0 | 75,8 | 120,0 | 194,0 | 265,0 | 317,0 | 392,0 | 483,0 | 546,0 | 583,0 | 638,0 | 734,0 | 933,0 | 1010,0 | 1140,0 | 1180,0 |
| **LB645P** | 65,5 | 81,4 | 129,0 | 208,0 | 284,0 | 340,0 | 421,0 | 519,0 | 587,0 | 627,0 | 686,0 | 789,0 | 1000,0 | 1090,0 | 1220,0 | 1260,0 |
| **LB770P** | 78,2 | 97,2 | 154,0 | 249,0 | 339,0 | 406,0 | 502,0 | 620,0 | 701,0 | 749,0 | 819,0 | 942,0 | 1200,0 | 1300,0 | 1460,0 | 1510,0 |
| **LB860P** | 87,4 | 109,0 | 172,0 | 278,0 | 379,0 | 454,0 | 561,0 | 692,0 | 783,0 | 836,0 | 915,0 | 1050,0 | 1340,0 | 1450,0 | 1630,0 | 1690,0 |
| **LB1020P** | 104,0 | 129,0 | 204,0 | 329,0 | 450,0 | 538,0 | 666,0 | 821,0 | 928,0 | 992,0 | 1090,0 | 1250,0 | 1590,0 | 1720,0 | 1930,0 | 2000,0 |
| **LB1070P** | 109,0 | 135,0 | 214,0 | 346,0 | 472,0 | 564,0 | 698,0 | 861,0 | 974,0 | 1040,0 | 1140,0 | 1310,0 | 1660,0 | 1800,0 | 2030,0 | 2100,0 |
| **LB1280P** | 130,0 | 162,0 | 256,0 | 413,0 | 564,0 | 675,0 | 835,0 | 1030,0 | 1170,0 | 1250,0 | 1360,0 | 1570,0 | 1990,0 | 2160,0 | 2430,0 | 2510,0 |
| **LB1450P** | 147,0 | 183,0 | 290,0 | 468,0 | 639,0 | 765,0 | 946,0 | 1170,0 | 1320,0 | 1410,0 | 1540,0 | 1770,0 | 2260,0 | 2440,0 | 2750,0 | 2840,0 |
| **LB1540P** | 156,0 | 194,0 | 308,0 | 497,0 | 679,0 | 812,0 | 1000,0 | 1240,0 | 1400,0 | 1500,0 | 1640,0 | 1880,0 | 2400,0 | 2590,0 | 2920,0 | 3020,0 |

### Hasta 1.05 V. por elemento / *To 1.05 Volts per cell*

| Type | 10h | 8h | 5h | 3h | 2h | 90min | 60min | 30min | 20min | 15min | 10min | 5min | 1min | 30s | 5s | 1s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LB470P** | 47,3 | 58,8 | 93,1 | 136,0 | 182,0 | 220,0 | 259,0 | 315,0 | 351,0 | 375,0 | 418,0 | 476,0 | 598,0 | 646,0 | 723,0 | 769,0 |
| **LB510P** | 51,3 | 63,8 | 101,0 | 148,0 | 197,0 | 239,0 | 281,0 | 342,0 | 381,0 | 407,0 | 453,0 | 517,0 | 648,0 | 701,0 | 785,0 | 835,0 |
| **LB600P** | 60,4 | 75,0 | 119,0 | 174,0 | 232,0 | 281,0 | 331,0 | 403,0 | 449,0 | 478,0 | 533,0 | 608,0 | 763,0 | 825,0 | 923,0 | 982,0 |
| **LB645P** | 64,9 | 80,6 | 128,0 | 187,0 | 250,0 | 302,0 | 355,0 | 433,0 | 482,0 | 514,0 | 573,0 | 654,0 | 820,0 | 887,0 | 992,0 | 1060,0 |
| **LB770P** | 77,5 | 96,3 | 152,0 | 223,0 | 298,0 | 361,0 | 424,0 | 517,0 | 576,0 | 614,0 | 684,0 | 780,0 | 979,0 | 1060,0 | 1190,0 | 1260,0 |
| **LB860P** | 86,5 | 108,0 | 170,0 | 249,0 | 333,0 | 403,0 | 474,0 | 577,0 | 643,0 | 686,0 | 764,0 | 872,0 | 1090,0 | 1180,0 | 1320,0 | 1410,0 |
| **LB1020P** | 103,0 | 128,0 | 202,0 | 295,0 | 395,0 | 478,0 | 562,0 | 685,0 | 763,0 | 813,0 | 907,0 | 1030,0 | 1300,0 | 1400,0 | 1570,0 | 1670,0 |
| **LB1070P** | 108,0 | 134,0 | 212,0 | 310,0 | 414,0 | 502,0 | 590,0 | 718,0 | 800,0 | 853,0 | 951,0 | 1080,0 | 1360,0 | 1470,0 | 1650,0 | 1750,0 |
| **LB1280P** | 129,0 | 160,0 | 253,0 | 370,0 | 495,0 | 600,0 | 705,0 | 859,0 | 957,0 | 1020,0 | 1140,0 | 1300,0 | 1630,0 | 1760,0 | 1970,0 | 2100,0 |
| **LB1450P** | 146,0 | 181,0 | 287,0 | 420,0 | 561,0 | 680,0 | 799,0 | 973,0 | 1080,0 | 1160,0 | 1290,0 | 1470,0 | 1850,0 | 1990,0 | 2230,0 | 2370,0 |
| **LB1540P** | 155,0 | 193,0 | 305,0 | 446,0 | 596,0 | 722,0 | 849,0 | 1030,0 | 1150,0 | 1230,0 | 1370,0 | 1560,0 | 1960,0 | 2120,0 | 2370,0 | 2520,0 |

### Hasta 1.10 V. por elemento / *To 1.10 Volts per cell*

| Type | 10h | 8h | 5h | 3h | 2h | 90min | 60min | 30min | 20min | 15min | 10min | 5min | 1min | 30s | 5s | 1s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LB470P** | 45,0 | 55,9 | 82,1 | 120,0 | 159,0 | 184,0 | 211,0 | 254,0 | 284,0 | 301,0 | 327,0 | 382,0 | 487,0 | 523,0 | 565,0 | 572,0 |
| **LB510P** | 48,8 | 60,6 | 89,1 | 130,0 | 173,0 | 200,0 | 229,0 | 275,0 | 309,0 | 327,0 | 355,0 | 414,0 | 529,0 | 568,0 | 613,0 | 621,0 |
| **LB600P** | 57,4 | 71,3 | 105,0 | 153,0 | 203,0 | 235,0 | 269,0 | 324,0 | 363,0 | 385,0 | 418,0 | 487,0 | 622,0 | 668,0 | 722,0 | 730,0 |
| **LB645P** | 61,7 | 76,7 | 113,0 | 165,0 | 219,0 | 253,0 | 289,0 | 348,0 | 390,0 | 414,0 | 449,0 | 524,0 | 669,0 | 718,0 | 776,0 | 785,0 |
| **LB770P** | 73,7 | 91,5 | 135,0 | 197,0 | 261,0 | 302,0 | 345,0 | 416,0 | 466,0 | 494,0 | 536,0 | 625,0 | 799,0 | 857,0 | 926,0 | 937,0 |
| **LB860P** | 82,3 | 102,0 | 150,0 | 220,0 | 292,0 | 337,0 | 385,0 | 464,0 | 521,0 | 551,0 | 599,0 | 698,0 | 892,0 | 957,0 | 1030,0 | 1050,0 |
| **LB1020P** | 97,6 | 121,0 | 178,0 | 261,0 | 346,0 | 399,0 | 457,0 | 551,0 | 617,0 | 654,0 | 710,0 | 828,0 | 1060,0 | 1140,0 | 1230,0 | 1240,0 |
| **LB1070P** | 102,0 | 127,0 | 187,0 | 274,0 | 363,0 | 419,0 | 479,0 | 578,0 | 648,0 | 686,0 | 745,0 | 869,0 | 1110,0 | 1190,0 | 1290,0 | 1300,0 |
| **LB1280P** | 122,0 | 152,0 | 224,0 | 327,0 | 434,0 | 501,0 | 574,0 | 691,0 | 775,0 | 821,0 | 891,0 | 1040,0 | 1330,0 | 1420,0 | 1540,0 | 1560,0 |
| **LB1450P** | 139,0 | 172,0 | 253,0 | 371,0 | 492,0 | 568,0 | 650,0 | 783,0 | 878,0 | 930,0 | 1010,0 | 1180,0 | 1500,0 | 1610,0 | 1740,0 | 1770,0 |
| **LB1540P** | 147,0 | 183,0 | 269,0 | 394,0 | 522,0 | 603,0 | 690,0 | 832,0 | 932,0 | 987,0 | 1070,0 | 1250,0 | 1600,0 | 1710,0 | 1850,0 | 1880,0 |

### Hasta 1.14 V. por elemento / *To 1.14 Volts per cell*

| Type | 10h | 8h | 5h | 3h | 2h | 90min | 60min | 30min | 20min | 15min | 10min | 5min | 1min | 30s | 5s | 1s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **LB470P** | 42,4 | 52,7 | 71,2 | 106,0 | 132,0 | 149,0 | 170,0 | 201,0 | 227,0 | 239,0 | 261,0 | 300,0 | 388,0 | 422,0 | 452,0 | 459,0 |
| **LB510P** | 46,0 | 57,1 | 77,2 | 115,0 | 143,0 | 162,0 | 185,0 | 218,0 | 246,0 | 260,0 | 283,0 | 325,0 | 421,0 | 458,0 | 490,0 | 498,0 |
| **LB600P** | 54,1 | 67,2 | 90,8 | 136,0 | 169,0 | 191,0 | 217,0 | 257,0 | 290,0 | 305,0 | 333,0 | 382,0 | 496,0 | 539,0 | 577,0 | 586,0 |
| **LB645P** | 58,2 | 72,3 | 97,7 | 146,0 | 181,0 | 205,0 | 234,0 | 276,0 | 312,0 | 328,0 | 358,0 | 411,0 | 533,0 | 579,0 | 620,0 | 630,0 |
| **LB770P** | 69,4 | 86,3 | 117,0 | 174,0 | 217,0 | 245,0 | 279,0 | 330,0 | 372,0 | 392,0 | 427,0 | 491,0 | 636,0 | 691,0 | 740,0 | 752,0 |
| **LB860P** | 77,5 | 96,3 | 130,0 | 194,0 | 242,0 | 273,0 | 312,0 | 368,0 | 415,0 | 438,0 | 477,0 | 548,0 | 710,0 | 772,0 | 827,0 | 839,0 |
| **LB1020P** | 92,0 | 114,0 | 154,0 | 230,0 | 287,0 | 324,0 | 369,0 | 437,0 | 493,0 | 519,0 | 566,0 | 650,0 | 842,0 | 916,0 | 981,0 | 995,0 |
| **LB1070P** | 96,5 | 120,0 | 162,0 | 242,0 | 301,0 | 340,0 | 388,0 | 458,0 | 517,0 | 545,0 | 593,0 | 682,0 | 884,0 | 961,0 | 1030,0 | 1040,0 |
| **LB1280P** | 115,0 | 143,0 | 194,0 | 289,0 | 360,0 | 407,0 | 464,0 | 548,0 | 618,0 | 652,0 | 710,0 | 816,0 | 1060,0 | 1150,0 | 1230,0 | 1250,0 |
| **LB1450P** | 131,0 | 162,0 | 220,0 | 327,0 | 408,0 | 461,0 | 525,0 | 621,0 | 700,0 | 738,0 | 804,0 | 924,0 | 1200,0 | 1300,0 | 1390,0 | 1420,0 |
| **LB1540P** | 139,0 | 173,0 | 233,0 | 348,0 | 433,0 | 489,0 | 558,0 | 659,0 | 744,0 | 784,0 | 854,0 | 981,0 | 1270,0 | 1380,0 | 1480,0 | 1500,0 |

# SERIE MB / *MB RANGE*

## Tablas de descarga en amperios (20°C)
## *Amperes tabular discharge data (20°C)*

La corriente de descarga se refiere a elementos cargados en flotación en períodos largos.
*Discharge current is for fully charged cells after prolonged float charge.*

### Hasta 1.00 V. por elemento / *To 1.00 Volts per cell*

| Type | 8h | 5h | 3h | 2h | 90min | 60min | 30min | 20min | 15min | 10min | 5min | 1min | 30s | 5s | 1s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MB370P** | 46,6 | 73,8 | 121,0 | 176,0 | 213,0 | 276,0 | 390,0 | 457,0 | 499,0 | 563,0 | 682,0 | 949,0 | 1060,0 | 1270,0 | 1340,0 |
| **MB390P** | 49,5 | 78,4 | 128,0 | 187,0 | 226,0 | 293,0 | 415,0 | 485,0 | 530,0 | 598,0 | 724,0 | 1010,0 | 1130,0 | 1350,0 | 1430,0 |
| **MB415P** | 52,4 | 83,0 | 136,0 | 198,0 | 239,0 | 310,0 | 439,0 | 514,0 | 561,0 | 634,0 | 767,0 | 1070,0 | 1190,0 | 1430,0 | 1510,0 |
| **MB440P** | 55,3 | 87,6 | 143,0 | 209,0 | 253,0 | 328,0 | 463,0 | 542,0 | 592,0 | 669,0 | 809,0 | 1130,0 | 1260,0 | 1510,0 | 1590,0 |
| **MB460P** | 58,2 | 92,2 | 151,0 | 220,0 | 266,0 | 345,0 | 488,0 | 571,0 | 624,0 | 704,0 | 852,0 | 1190,0 | 1330,0 | 1590,0 | 1680,0 |
| **MB505P** | 63,8 | 101,0 | 165,0 | 241,0 | 291,0 | 378,0 | 534,0 | 625,0 | 683,0 | 771,0 | 933,0 | 1300,0 | 1450,0 | 1740,0 | 1840,0 |
| **MB555P** | 70,1 | 111,0 | 181,0 | 265,0 | 320,0 | 415,0 | 587,0 | 687,0 | 751,0 | 847,0 | 1030,0 | 1430,0 | 1600,0 | 1910,0 | 2020,0 |
| **MB625P** | 78,9 | 125,0 | 204,0 | 299,0 | 360,0 | 468,0 | 661,0 | 774,0 | 845,0 | 954,0 | 1160,0 | 1610,0 | 1800,0 | 2160,0 | 2270,0 |
| **MB690P** | 87,1 | 138,0 | 226,0 | 330,0 | 398,0 | 516,0 | 730,0 | 854,0 | 933,0 | 1050,0 | 1280,0 | 1780,0 | 1990,0 | 2380,0 | 2510,0 |
| **MB740P** | 93,4 | 148,0 | 242,0 | 354,0 | 427,0 | 554,0 | 783,0 | 916,0 | 1000,0 | 1130,0 | 1370,0 | 1900,0 | 2130,0 | 2550,0 | 2690,0 |
| **MB830P** | 105,0 | 166,0 | 271,0 | 397,0 | 479,0 | 621,0 | 878,0 | 1030,0 | 1120,0 | 1270,0 | 1530,0 | 2140,0 | 2390,0 | 2860,0 | 3020,0 |
| **MB920P** | 116,0 | 184,0 | 301,0 | 440,0 | 530,0 | 688,0 | 973,0 | 1140,0 | 1240,0 | 1410,0 | 1700,0 | 2370,0 | 2650,0 | 3170,0 | 3350,0 |
| **MB965P** | 122,0 | 193,0 | 316,0 | 461,0 | 556,0 | 722,0 | 1020,0 | 1200,0 | 1310,0 | 1470,0 | 1780,0 | 2480,0 | 2780,0 | 3330,0 | 3510,0 |
| **MB1040P** | 131,0 | 208,0 | 340,0 | 497,0 | 600,0 | 778,0 | 1100,0 | 1290,0 | 1410,0 | 1590,0 | 1920,0 | 2680,0 | 2990,0 | 3590,0 | 3780,0 |
| **MB1150P** | 145,0 | 230,0 | 376,0 | 550,0 | 663,0 | 860,0 | 1220,0 | 1420,0 | 1560,0 | 1760,0 | 2130,0 | 2960,0 | 3310,0 | 3970,0 | 4180,0 |
| **MB1220P** | 154,0 | 244,0 | 399,0 | 583,0 | 703,0 | 913,0 | 1290,0 | 1510,0 | 1650,0 | 1860,0 | 2260,0 | 3140,0 | 3510,0 | 4210,0 | 4440,0 |
| **MB1390P** | 176,0 | 278,0 | 455,0 | 664,0 | 801,0 | 1040,0 | 1470,0 | 1720,0 | 1880,0 | 2120,0 | 2570,0 | 3580,0 | 4000,0 | 4790,0 | 5060,0 |

### Hasta 1.05 V. por elemento / *To 1.05 Volts per cell*

| Type | 8h | 5h | 3h | 2h | 90min | 60min | 30min | 20min | 15min | 10min | 5min | 1min | 30s | 5s | 1s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MB370P** | 46,1 | 73,1 | 119,0 | 155,0 | 188,0 | 248,0 | 331,0 | 376,0 | 415,0 | 471,0 | 559,0 | 775,0 | 873,0 | 1030,0 | 1110,0 |
| **MB390P** | 49,0 | 77,6 | 127,0 | 165,0 | 200,0 | 263,0 | 352,0 | 399,0 | 441,0 | 501,0 | 594,0 | 824,0 | 927,0 | 1090,0 | 1180,0 |
| **MB415P** | 51,9 | 82,2 | 134,0 | 175,0 | 212,0 | 279,0 | 372,0 | 423,0 | 467,0 | 530,0 | 629,0 | 872,0 | 982,0 | 1150,0 | 1250,0 |
| **MB440P** | 54,8 | 86,7 | 141,0 | 184,0 | 223,0 | 294,0 | 393,0 | 446,0 | 492,0 | 559,0 | 664,0 | 920,0 | 1040,0 | 1220,0 | 1310,0 |
| **MB460P** | 57,6 | 91,3 | 149,0 | 194,0 | 235,0 | 310,0 | 414,0 | 469,0 | 518,0 | 589,0 | 698,0 | 968,0 | 1090,0 | 1280,0 | 1380,0 |
| **MB505P** | 63,1 | 100,0 | 163,0 | 213,0 | 257,0 | 339,0 | 453,0 | 514,0 | 568,0 | 645,0 | 765,0 | 1060,0 | 1200,0 | 1400,0 | 1520,0 |
| **MB555P** | 69,4 | 110,0 | 179,0 | 234,0 | 283,0 | 373,0 | 498,0 | 565,0 | 624,0 | 709,0 | 841,0 | 1170,0 | 1310,0 | 1540,0 | 1670,0 |
| **MB625P** | 78,1 | 124,0 | 202,0 | 263,0 | 319,0 | 420,0 | 561,0 | 636,0 | 703,0 | 798,0 | 947,0 | 1310,0 | 1480,0 | 1740,0 | 1880,0 |
| **MB690P** | 86,3 | 137,0 | 223,0 | 291,0 | 352,0 | 464,0 | 619,0 | 703,0 | 776,0 | 881,0 | 1050,0 | 1450,0 | 1630,0 | 1920,0 | 2070,0 |
| **MB740P** | 92,5 | 147,0 | 239,0 | 312,0 | 377,0 | 497,0 | 664,0 | 754,0 | 832,0 | 945,0 | 1120,0 | 1560,0 | 1750,0 | 2060,0 | 2220,0 |
| **MB830P** | 104,0 | 164,0 | 268,0 | 350,0 | 423,0 | 558,0 | 745,0 | 845,0 | 933,0 | 1060,0 | 1260,0 | 1740,0 | 1960,0 | 2310,0 | 2490,0 |
| **MB920P** | 115,0 | 182,0 | 297,0 | 387,0 | 469,0 | 618,0 | 825,0 | 937,0 | 1030,0 | 1180,0 | 1390,0 | 1930,0 | 2180,0 | 2560,0 | 2760,0 |
| **MB965P** | 121,0 | 191,0 | 312,0 | 406,0 | 492,0 | 649,0 | 866,0 | 983,0 | 1090,0 | 1230,0 | 1460,0 | 2030,0 | 2280,0 | 2680,0 | 2900,0 |
| **MB1040P** | 130,0 | 206,0 | 336,0 | 438,0 | 530,0 | 699,0 | 933,0 | 1060,0 | 1170,0 | 1330,0 | 1580,0 | 2190,0 | 2460,0 | 2890,0 | 3120,0 |
| **MB1150P** | 144,0 | 228,0 | 371,0 | 484,0 | 586,0 | 773,0 | 1030,0 | 1170,0 | 1290,0 | 1470,0 | 1740,0 | 2420,0 | 2720,0 | 3190,0 | 3450,0 |
| **MB1220P** | 153,0 | 242,0 | 394,0 | 514,0 | 622,0 | 820,0 | 1090,0 | 1240,0 | 1370,0 | 1560,0 | 1840,0 | 2560,0 | 2890,0 | 3390,0 | 3660,0 |
| **MB1390P** | 174,0 | 275,0 | 449,0 | 585,0 | 709,0 | 934,0 | 1250,0 | 1420,0 | 1560,0 | 1780,0 | 2110,0 | 2920,0 | 3290,0 | 3860,0 | 4170,0 |

### Hasta 1.10 V. por elemento / *To 1.10 Volts per cell*

| Type | 8h | 5h | 3h | 2h | 90min | 60min | 30min | 20min | 15min | 10min | 5min | 1min | 30s | 5s | 1s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MB370P** | 45,2 | 71,7 | 107,0 | 139,0 | 166,0 | 207,0 | 268,0 | 310,0 | 335,0 | 377,0 | 451,0 | 629,0 | 702,0 | 829,0 | 876,0 |
| **MB390P** | 48,0 | 76,1 | 114,0 | 147,0 | 177,0 | 220,0 | 284,0 | 329,0 | 356,0 | 401,0 | 479,0 | 668,0 | 746,0 | 881,0 | 931,0 |
| **MB415P** | 50,9 | 80,6 | 121,0 | 156,0 | 187,0 | 233,0 | 301,0 | 348,0 | 376,0 | 424,0 | 507,0 | 707,0 | 790,0 | 932,0 | 985,0 |
| **MB440P** | 53,7 | 85,0 | 127,0 | 164,0 | 198,0 | 246,0 | 318,0 | 368,0 | 397,0 | 448,0 | 535,0 | 746,0 | 833,0 | 984,0 | 1040,0 |
| **MB460P** | 56,5 | 89,5 | 134,0 | 173,0 | 208,0 | 259,0 | 334,0 | 387,0 | 418,0 | 471,0 | 563,0 | 786,0 | 877,0 | 1040,0 | 1100,0 |
| **MB505P** | 61,9 | 98,1 | 147,0 | 190,0 | 228,0 | 284,0 | 366,0 | 424,0 | 458,0 | 516,0 | 617,0 | 861,0 | 961,0 | 1140,0 | 1200,0 |
| **MB555P** | 68,0 | 108,0 | 162,0 | 208,0 | 250,0 | 312,0 | 402,0 | 466,0 | 503,0 | 567,0 | 678,0 | 946,0 | 1060,0 | 1250,0 | 1320,0 |
| **MB625P** | 76,6 | 121,0 | 182,0 | 235,0 | 282,0 | 351,0 | 453,0 | 525,0 | 567,0 | 639,0 | 763,0 | 1070,0 | 1190,0 | 1400,0 | 1480,0 |
| **MB690P** | 84,6 | 134,0 | 201,0 | 259,0 | 311,0 | 388,0 | 500,0 | 579,0 | 626,0 | 705,0 | 843,0 | 1180,0 | 1310,0 | 1550,0 | 1640,0 |
| **MB740P** | 90,7 | 144,0 | 215,0 | 278,0 | 334,0 | 416,0 | 537,0 | 621,0 | 671,0 | 757,0 | 904,0 | 1260,0 | 1410,0 | 1660,0 | 1760,0 |
| **MB830P** | 102,0 | 161,0 | 242,0 | 312,0 | 375,0 | 466,0 | 602,0 | 697,0 | 753,0 | 849,0 | 1010,0 | 1410,0 | 1580,0 | 1870,0 | 1970,0 |
| **MB920P** | 113,0 | 179,0 | 268,0 | 345,0 | 415,0 | 517,0 | 667,0 | 772,0 | 835,0 | 941,0 | 1120,0 | 1570,0 | 1750,0 | 2070,0 | 2190,0 |
| **MB965P** | 118,0 | 187,0 | 281,0 | 362,0 | 435,0 | 542,0 | 700,0 | 810,0 | 875,0 | 987,0 | 1180,0 | 1650,0 | 1840,0 | 2170,0 | 2290,0 |
| **MB1040P** | 127,0 | 202,0 | 303,0 | 391,0 | 469,0 | 585,0 | 754,0 | 873,0 | 943,0 | 1060,0 | 1270,0 | 1770,0 | 1980,0 | 2340,0 | 2470,0 |
| **MB1150P** | 141,0 | 223,0 | 335,0 | 432,0 | 519,0 | 646,0 | 834,0 | 965,0 | 1040,0 | 1180,0 | 1400,0 | 1960,0 | 2190,0 | 2580,0 | 2730,0 |
| **MB1220P** | 150,0 | 237,0 | 355,0 | 458,0 | 550,0 | 686,0 | 885,0 | 1020,0 | 1110,0 | 1250,0 | 1490,0 | 2080,0 | 2320,0 | 2740,0 | 2900,0 |
| **MB1390P** | 170,0 | 270,0 | 405,0 | 522,0 | 627,0 | 781,0 | 1010,0 | 1170,0 | 1260,0 | 1420,0 | 1700,0 | 2370,0 | 2650,0 | 3120,0 | 3300,0 |

### Hasta 1.14 V. por elemento / *To 1.14 Volts per cell*

| Type | 8h | 5h | 3h | 2h | 90min | 60min | 30min | 20min | 15min | 10min | 5min | 1min | 30s | 5s | 1s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **MB370P** | 43,5 | 69,0 | 94,1 | 119,0 | 142,0 | 167,0 | 214,0 | 246,0 | 267,0 | 304,0 | 364,0 | 510,0 | 566,0 | 652,0 | 675,0 |
| **MB390P** | 46,2 | 73,3 | 100,0 | 127,0 | 151,0 | 178,0 | 227,0 | 261,0 | 284,0 | 323,0 | 386,0 | 542,0 | 601,0 | 693,0 | 718,0 |
| **MB415P** | 48,9 | 77,6 | 106,0 | 134,0 | 160,0 | 188,0 | 241,0 | 277,0 | 300,0 | 342,0 | 409,0 | 573,0 | 637,0 | 734,0 | 760,0 |
| **MB440P** | 51,7 | 81,9 | 112,0 | 142,0 | 169,0 | 199,0 | 254,0 | 292,0 | 317,0 | 361,0 | 432,0 | 605,0 | 672,0 | 774,0 | 802,0 |
| **MB460P** | 54,4 | 86,2 | 118,0 | 149,0 | 178,0 | 209,0 | 267,0 | 307,0 | 334,0 | 380,0 | 454,0 | 637,0 | 707,0 | 815,0 | 844,0 |
| **MB505P** | 59,6 | 94,4 | 129,0 | 163,0 | 195,0 | 229,0 | 293,0 | 337,0 | 365,0 | 416,0 | 498,0 | 698,0 | 775,0 | 893,0 | 924,0 |
| **MB555P** | 65,4 | 104,0 | 142,0 | 179,0 | 214,0 | 252,0 | 322,0 | 370,0 | 402,0 | 457,0 | 547,0 | 767,0 | 852,0 | 981,0 | 1020,0 |
| **MB625P** | 73,7 | 117,0 | 159,0 | 202,0 | 241,0 | 284,0 | 362,0 | 417,0 | 452,0 | 515,0 | 616,0 | 863,0 | 959,0 | 1110,0 | 1140,0 |
| **MB690P** | 81,4 | 129,0 | 176,0 | 223,0 | 266,0 | 313,0 | 400,0 | 460,0 | 499,0 | 569,0 | 680,0 | 953,0 | 1060,0 | 1220,0 | 1260,0 |
| **MB740P** | 87,3 | 138,0 | 189,0 | 239,0 | 285,0 | 336,0 | 429,0 | 493,0 | 535V | 610,0 | 729,0 | 1020,0 | 1140,0 | 1310,0 | 1360,0 |
| **MB830P** | 97,9 | 155,0 | 212,0 | 268,0 | 320,0 | 377,0 | 481,0 | 553,0 | 60,0 | 684,0 | 818,0 | 1150,0 | 1270,0 | 1470,0 | 1520,0 |
| **MB920P** | 108,0 | 172,0 | 235,0 | 298,0 | 355,0 | 417,0 | 533,0 | 613,0 | 666,0 | 758,0 | 906,0 | 1270,0 | 1410,0 | 1630,0 | 1680,0 |
| **MB965P** | 114,0 | 180,0 | 246,0 | 312,0 | 372,0 | 438,0 | 559,0 | 643,0 | 698,0 | 795,0 | 951,0 | 1330,0 | 1480,0 | 1710,0 | 1770,0 |
| **MB1040P** | 123,0 | 194,0 | 265,0 | 336,0 | 401,0 | 472,0 | 603,0 | 693,0 | 753,0 | 857,0 | 1030,0 | 1440,0 | 1600,0 | 1840,0 | 1900,0 |
| **MB1150P** | 136,0 | 215,0 | 293,0 | 372,0 | 443,0 | 522,0 | 667,0 | 766,0 | 832,0 | 948,0 | 1130,0 | 1590,0 | 1760,0 | 2030,0 | 2110,0 |
| **MB1220P** | 144,0 | 228,0 | 311,0 | 395,0 | 470,0 | 553,0 | 707,0 | 813,0 | 883,0 | 1010,0 | 1200,0 | 1690,0 | 1870,0 | 2160,0 | 2230,0 |
| **MB1390P** | 164,0 | 260,0 | 354,0 | 450,0 | 536,0 | 631,0 | 806,0 | 926,0 | 1010,0 | 1150,0 | 1370,0 | 1920,0 | 2130,0 | 2460,0 | 2550,0 |

# SERIE HB / *HB RANGE*

## Tablas de descarga en amperios (20°C)
## *Amperes tabular discharge data (20°C)*

La corriente de descarga se refiere a elementos cargados en flotación en períodos largos.
*Discharge current is for fully charged cells after prolonged float charge.*

### Hasta 0.65 V. por elemento / *To 0.65 Volts per cell*

| Type | 90s | 60s | 30s | 15s | 5s | 1s |
|---|---|---|---|---|---|---|
| HB280P | 2600 | 2880 | 3240 | 3700 | 4060 | 4400 |
| HB305P | 2840 | 3140 | 3530 | 4030 | 4420 | 4790 |
| HB345P | 3210 | 3550 | 3990 | 4560 | 5000 | 5420 |
| HB385P | 3580 | 3970 | 4450 | 5090 | 5580 | 6040 |
| HB420P | 3910 | 4330 | 4860 | 5550 | 6090 | 6590 |
| HB460P | 4280 | 4740 | 5320 | 6080 | 6670 | 7220 |
| HB510P | 4740 | 5250 | 5900 | 6740 | 7390 | 8010 |
| HB560P | 5210 | 5770 | 6470 | 7400 | 8120 | 8790 |
| HB615P | 5720 | 6330 | 7110 | 8120 | 8910 | 9660 |
| HB640P | 5950 | 6590 | 7400 | 8450 | 9280 | 10050 |
| HB705P | 6560 | 7260 | 8150 | 9310 | 10220 | 11070 |
| HB765P | 7120 | 7880 | 8840 | 10110 | 11090 | 12010 |
| HB865P | 8050 | 8910 | 10000 | 11430 | 12540 | 13580 |
| HB920P | 8560 | 9480 | 10640 | 12150 | 13330 | 14440 |

### Hasta 0.85 V. por elemento / *To 0.85 Volts per cell*

| Type | 90s | 60s | 30s | 15s | 5s | 1s |
|---|---|---|---|---|---|---|
| HB280P | 1990 | 2170 | 2430 | 2760 | 3000 | 3260 |
| HB305P | 2160 | 2370 | 2650 | 3000 | 3260 | 3550 |
| HB345P | 2450 | 2680 | 2990 | 3400 | 3690 | 4010 |
| HB385P | 2730 | 2990 | 3340 | 3790 | 4120 | 4480 |
| HB420P | 2980 | 3260 | 3640 | 4130 | 4490 | 4880 |
| HB460P | 3260 | 3570 | 3990 | 4530 | 4920 | 5350 |
| HB510P | 3620 | 3960 | 4420 | 5020 | 5460 | 5930 |
| HB560P | 3970 | 4350 | 4860 | 5510 | 5990 | 6510 |
| HB615P | 4360 | 4780 | 5330 | 6050 | 6580 | 7150 |
| HB640P | 4540 | 4970 | 5550 | 6300 | 6850 | 7440 |
| HB705P | 5000 | 5470 | 6110 | 6940 | 7540 | 8200 |
| HB765P | 5430 | 5940 | 6640 | 7530 | 8180 | 8900 |
| HB865P | 6140 | 6720 | 7500 | 8510 | 9250 | 10060 |
| HB920P | 6530 | 7140 | 7980 | 9060 | 9840 | 10700 |

### Hasta 1.00 V. por elemento / *To 1.00 Volts per cell*

| Type | 8h | 5h | 3h | 2h | 90min | 60min | 30min | 20min | 15min | 10min | 5min | 1min | 30s | 5s | 1s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HB280P | 35,4 | 56,0 | 92,1 | 137,0 | 180,0 | 263,0 | 479,0 | 641,0 | 720,0 | 811,0 | 959,0 | 1320,0 | 1500,0 | 1820,0 | 1930,0 |
| HB305P | 38,5 | 61,0 | 100,0 | 149,0 | 196,0 | 287,0 | 521,0 | 698,0 | 785,0 | 884,0 | 1040,0 | 1440,0 | 1630,0 | 1990,0 | 2100,0 |
| HB345P | 43,6 | 69,0 | 113,0 | 168,0 | 221,0 | 324,0 | 590,0 | 789,0 | 888,0 | 1000,0 | 1180,0 | 1630,0 | 1850,0 | 2250,0 | 2380,0 |
| HB385P | 48,6 | 77,0 | 127,0 | 188,0 | 247,0 | 362,0 | 658,0 | 881,0 | 991,0 | 1120,0 | 1320,0 | 1820,0 | 2060,0 | 2510,0 | 2650,0 |
| HB420P | 53,0 | 84,0 | 138,0 | 205,0 | 270,0 | 395,0 | 718,0 | 961,0 | 1080,0 | 1220,0 | 1440,0 | 1980,0 | 2250,0 | 2740,0 | 2890,0 |
| HB460P | 58,1 | 92,0 | 151,0 | 224,0 | 295,0 | 432,0 | 786,0 | 1050,0 | 1180,0 | 1340,0 | 1580,0 | 2170,0 | 2460,0 | 3000,0 | 3170,0 |
| HB510P | 64,4 | 102,0 | 168,0 | 249,0 | 327,0 | 479,0 | 872,0 | 1160,0 | 1310,0 | 1480,0 | 1750,0 | 2410,0 | 2730,0 | 3320,0 | 3510,0 |
| HB560P | 70,7 | 112,0 | 184,0 | 27,0 | 360,0 | 526,0 | 957,0 | 1280,0 | 1440,0 | 1620,0 | 1920,0 | 2640,0 | 3000,0 | 3650,0 | 3860,0 |
| HB615P | 77,7 | 123,0 | 202,0 | 300,0 | 395,0 | 578,0 | 1050,0 | 1410,0 | 1580,0 | 1780,0 | 2110,0 | 2900,0 | 3290,0 | 4010,0 | 4230,0 |
| HB640P | 80,8 | 128,0 | 211,0 | 312,0 | 411,0 | 602,0 | 1090,0 | 1470,0 | 1650,0 | 1850,0 | 2190,0 | 3020,0 | 3420,0 | 4170,0 | 4410,0 |
| HB705P | 89,0 | 141,0 | 232,0 | 344,0 | 453,0 | 663,0 | 1210,0 | 1610,0 | 1810,0 | 2040,0 | 2410,0 | 3330,0 | 3770,0 | 4590,0 | 4850,0 |
| HB765P | 96,6 | 153,0 | 252,0 | 373,0 | 491,0 | 719,0 | 1310,0 | 1750,0 | 1970,0 | 2220,0 | 2620,0 | 3610,0 | 4090,0 | 4980,0 | 5270,0 |
| HB865P | 109,0 | 173,0 | 285,0 | 422,0 | 555,0 | 813,0 | 1480,0 | 1980,0 | 2230,0 | 2510,0 | 2960,0 | 4080,0 | 4630,0 | 5630,0 | 5960,0 |
| HB920P | 116,0 | 184,0 | 303,0 | 449,0 | 591,0 | 865,0 | 1570,0 | 2110,0 | 2370,0 | 2670,0 | 3150,0 | 4340,0 | 4920,0 | 5990,0 | 6330,0 |

### Hasta 1.05 V. por elemento / *To 1.05 Volts per cell*

| Type | 8h | 5h | 3h | 2h | 90min | 60min | 30min | 20min | 15min | 10min | 5min | 1min | 30s | 5s | 1s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HB280P | 35,0 | 55,4 | 90,7 | 134,0 | 176,0 | 255,0 | 454,0 | 548,0 | 598,0 | 670,0 | 780,0 | 1110,0 | 1250,0 | 1510,0 | 1580,0 |
| HB305P | 38,1 | 60,4 | 98,8 | 146,0 | 192,0 | 278,0 | 494,0 | 597,0 | 651,0 | 729,0 | 849,0 | 1210,0 | 1370,0 | 1650,0 | 1720,0 |
| HB345P | 43,1 | 68,3 | 112,0 | 165,0 | 217,0 | 314,0 | 559,0 | 676,0 | 736,0 | 825,0 | 961,0 | 1370,0 | 1540,0 | 1860,0 | 1940,0 |
| HB385P | 48,1 | 76,2 | 125,0 | 184,0 | 242,0 | 350,0 | 624,0 | 754,0 | 822,0 | 921,0 | 1070,0 | 1530,0 | 1720,0 | 2080,0 | 2170,0 |
| HB420P | 52,5 | 83,2 | 136,0 | 201,0 | 264,0 | 382,0 | 680,0 | 823,0 | 897,0 | 1000,0 | 1170,0 | 1670,0 | 1880,0 | 2270,0 | 2360,0 |
| HB460P | 57,5 | 91,1 | 149,0 | 220,0 | 289,0 | 419,0 | 745,0 | 901,0 | 982,0 | 1100,0 | 1280,0 | 1830,0 | 2060,0 | 2480,0 | 2590,0 |
| HB510P | 63,8 | 101,0 | 165,0 | 244,0 | 320,0 | 464,0 | 826,0 | 999,0 | 1090,0 | 1220,0 | 1420,0 | 2030,0 | 2280,0 | 2750,0 | 2870,0 |
| HB560P | 70,0 | 111,0 | 181,0 | 268,0 | 352,0 | 510,0 | 907,0 | 1100,0 | 1200,0 | 1340,0 | 1560,0 | 2220,0 | 2510,0 | 3020,0 | 3150,0 |
| HB615P | 76,9 | 122,0 | 199,0 | 295,0 | 386,0 | 560,0 | 996,0 | 1210,0 | 1310,0 | 1470,0 | 1710,0 | 2440,0 | 2750,0 | 3320,0 | 3460,0 |
| HB640P | 80,0 | 127,0 | 207,0 | 307,0 | 402,0 | 582,0 | 1040,0 | 1250,0 | 1370,0 | 1530,0 | 1780,0 | 2540,0 | 2860,0 | 3460,0 | 3600,0 |
| HB705P | 88,1 | 140,0 | 228,0 | 338,0 | 443,0 | 642,0 | 1140,0 | 1380,0 | 1510,0 | 1690,0 | 1960,0 | 2800,0 | 3160,0 | 3810,0 | 3970,0 |
| HB765P | 95,6 | 151,0 | 248,0 | 366,0 | 480,0 | 696,0 | 1240,0 | 1500,0 | 1630,0 | 1830,0 | 2130,0 | 3040,0 | 3420,0 | 4130,0 | 4300,0 |
| HB865P | 108,0 | 171,0 | 280,0 | 414,0 | 543,0 | 787,0 | 1400,0 | 1690,0 | 1850,0 | 2070,0 | 2410,0 | 3440,0 | 3870,0 | 4670,0 | 4870,0 |
| HB920P | 115,0 | 182,0 | 298,0 | 441,0 | 578,0 | 837,0 | 1490,0 | 1800,0 | 1960,0 | 2200,0 | 2560,0 | 3650,0 | 4120,0 | 4970,0 | 5180,0 |

### Hasta 1.10 V. por elemento / *To 1.10 Volts per cell*

| Type | 8h | 5h | 3h | 2h | 90min | 60min | 30min | 20min | 15min | 10min | 5min | 1min | 30s | 5s | 1s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HB280P | 34,3 | 54,4 | 88,2 | 130,0 | 169,0 | 241,0 | 366,0 | 419,0 | 464,0 | 513,0 | 599,0 | 887,0 | 1010,0 | 1200,0 | 1260,0 |
| HB305P | 37,4 | 59,2 | 96,1 | 141,0 | 185,0 | 263,0 | 399,0 | 457,0 | 505,0 | 559,0 | 652,0 | 966,0 | 1100,0 | 1310,0 | 1370,0 |
| HB345P | 42,3 | 67,0 | 109,0 | 160,0 | 209,0 | 297,0 | 451,0 | 517,0 | 572,0 | 632,0 | 738,0 | 1090,0 | 1240,0 | 1480,0 | 1550,0 |
| HB385P | 47,2 | 74,8 | 121,0 | 178,0 | 233,0 | 332,0 | 503,0 | 577,0 | 638,0 | 706,0 | 823,0 | 1220,0 | 1390,0 | 1650,0 | 1730,0 |
| HB420P | 51,5 | 81,6 | 132,0 | 194,0 | 254,0 | 362,0 | 549,0 | 629,0 | 696,0 | 770,0 | 898,0 | 1330,0 | 1510,0 | 1800,0 | 1890,0 |
| HB460P | 56,4 | 89,3 | 145,0 | 213,0 | 278,0 | 396,0 | 601,0 | 689,0 | 762,0 | 843,0 | 984,0 | 1460,0 | 1660,0 | 1980,0 | 2070,0 |
| HB510P | 62,5 | 99,0 | 161,0 | 236,0 | 309,0 | 439,0 | 666,0 | 764,0 | 845,0 | 935,0 | 1090,0 | 1620,0 | 1840,0 | 2190,0 | 2290,0 |
| HB560P | 68,6 | 109,0 | 176,0 | 259,0 | 339,0 | 482,0 | 732,0 | 839,0 | 928,0 | 1030,0 | 1200,0 | 1770,0 | 2020,0 | 2410,0 | 2520,0 |
| HB615P | 75,4 | 119,0 | 194,0 | 285,0 | 372,0 | 530,0 | 804,0 | 921,0 | 1020,0 | 1130,0 | 1320,0 | 1950,0 | 2220,0 | 2640,0 | 2770,0 |
| HB640P | 78,4 | 124,0 | 202,0 | 296,0 | 387,0 | 551,0 | 836,0 | 958,0 | 1060,0 | 1170,0 | 1370,0 | 2030,0 | 2310,0 | 2750,0 | 2880,0 |
| HB705P | 86,4 | 137,0 | 222,0 | 326,0 | 427,0 | 607,0 | 921,0 | 1060,0 | 1170,0 | 1290,0 | 1510,0 | 2230,0 | 2540,0 | 3030,0 | 3170,0 |
| HB765P | 93,8 | 149,0 | 241,0 | 354,0 | 463,0 | 659,0 | 1000,0 | 1150,0 | 1270,0 | 1400,0 | 1640,0 | 2420,0 | 2760,0 | 3290,0 | 3440,0 |
| HB865P | 106,0 | 168,0 | 272,0 | 400,0 | 523,0 | 745,0 | 1130,0 | 1300,0 | 1430,0 | 1590,0 | 1850,0 | 2740,0 | 3120,0 | 3710,0 | 3890,0 |
| HB920P | 113,0 | 179,0 | 290,0 | 426,0 | 557,0 | 792,0 | 1200,0 | 1380,0 | 1520,0 | 1690,0 | 1970,0 | 2910,0 | 3310,0 | 3950,0 | 4140,0 |

### Hasta 1.14 V. por elemento / *To 1.14 Volts per cell*

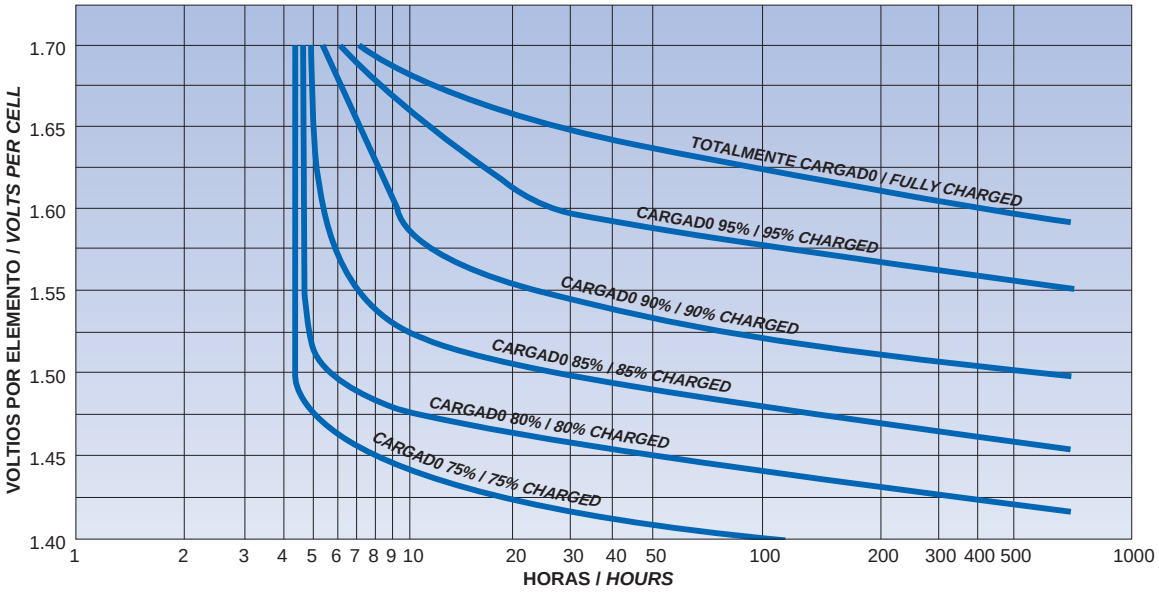
| Type | 8h | 5h | 3h | 2h | 90min | 60min | 30min | 20min | 15min | 10min | 5min | 1min | 30s | 5s | 1s |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HB280P | 33,0 | 52,3 | 84,6 | 124,0 | 160,0 | 211,0 | 281,0 | 324,0 | 356,0 | 390,0 | 473,0 | 705,0 | 808,0 | 951,0 | 984,0 |
| HB305P | 36,0 | 57,0 | 92,1 | 135,0 | 174,0 | 229,0 | 306,0 | 353,0 | 388,0 | 425,0 | 515,0 | 768,0 | 880,0 | 1040,0 | 1070,0 |
| HB345P | 40,7 | 64,5 | 104,0 | 153,0 | 197,0 | 259,0 | 346,0 | 400,0 | 439,0 | 481,0 | 583,0 | 869,0 | 996,0 | 1170,0 | 1210,0 |
| HB385P | 45,4 | 72,0 | 116,0 | 170,0 | 220,0 | 290,0 | 386,0 | 446,0 | 490,0 | 537,0 | 651,0 | 969,0 | 1110,0 | 1310,0 | 1350,0 |
| HB420P | 49,5 | 78,5 | 127,0 | 186,0 | 240,0 | 316,0 | 421,0 | 487,0 | 534,0 | 586,0 | 710,0 | 1060,0 | 1210,0 | 1430,0 | 1480,0 |
| HB460P | 54,2 | 86,0 | 139,0 | 203,0 | 263,0 | 346,0 | 462,0 | 533,0 | 585,0 | 641,0 | 777,0 | 1160,0 | 1330,0 | 1560,0 | 1620,0 |
| HB510P | 60,1 | 95,3 | 154,0 | 225,0 | 292,0 | 384,0 | 512,0 | 591,0 | 649,0 | 711,0 | 862,0 | 1280,0 | 1470,0 | 1730,0 | 1790,0 |
| HB560P | 66,0 | 105,0 | 169,0 | 248,0 | 320,0 | 421,0 | 562,0 | 649,0 | 712,0 | 781,0 | 946,0 | 1410,0 | 1620,0 | 1900,0 | 1970,0 |
| HB615P | 72,5 | 115,0 | 186,0 | 272,0 | 352,0 | 462,0 | 617,0 | 713,0 | 782,0 | 857,0 | 1040,0 | 1550,0 | 1780,0 | 2090,0 | 2160,0 |
| HB640P | 75,5 | 120,0 | 193,0 | 283,0 | 366,0 | 481,0 | 642,0 | 742,0 | 814,0 | 892,0 | 1080,0 | 1610,0 | 1850,0 | 2170,0 | 2250,0 |
| HB705P | 83,1 | 132,0 | 213,0 | 312,0 | 403,0 | 530,0 | 707,0 | 817,0 | 897,0 | 983,0 | 1190,0 | 1780,0 | 2040,0 | 2390,0 | 2480,0 |
| HB765P | 90,2 | 143,0 | 231,0 | 338,0 | 438,0 | 575,0 | 768,0 | 886,0 | 973,0 | 1070,0 | 1290,0 | 1930,0 | 2210,0 | 2600,0 | 2690,0 |
| HB865P | 102,0 | 162,0 | 261,0 | 382,0 | 495,0 | 650,0 | 868,0 | 1000,0 | 1100,0 | 1210,0 | 1460,0 | 2180,0 | 2500,0 | 2940,0 | 3040,0 |
| HB920P | 108,0 | 172,0 | 278,0 | 407,0 | 526,0 | 692,0 | 923,0 | 1070,0 | 1170,0 | 1280,0 | 1560,0 | 2320,0 | 2660,0 | 3130,0 | 3230,0 |

Todos los datos contenidos en este folleto están sujetos a las tolerancias de fabricación normales.
*All data contained in this brochure are subject to usual manufacturing tolerances.*

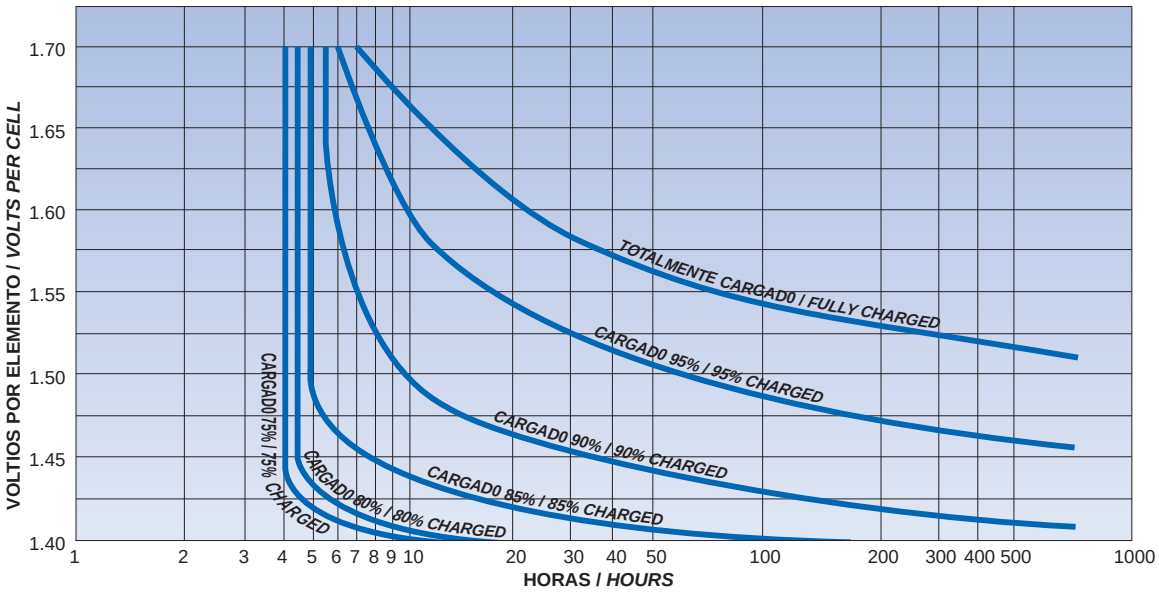
Las cifras y datos que aparecen en este folleto no pueden ser tomadas como un compromiso contractual.
*None of the figures herein contained can be considered as a contractual commitment.*

# CURVAS DE CARGA
# *CHARGING CURVES*

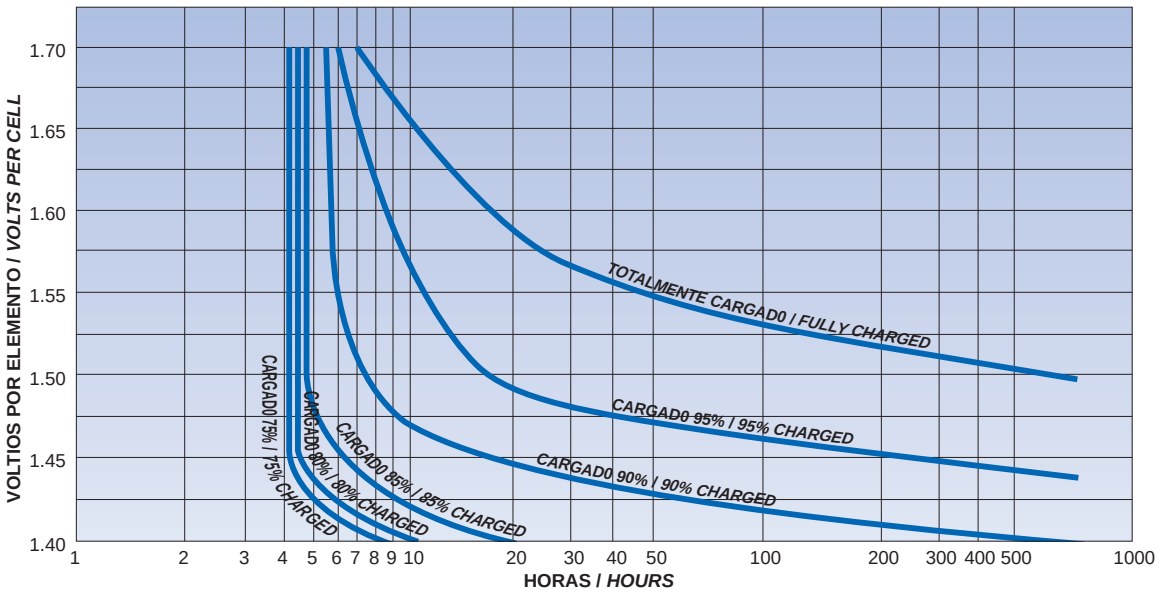
## Elementos L / *L cells*




## Elementos M / *M cells*




## Elementos H / *H cells*



## DATOS BÁSICOS REQUERIDOS PARA EL CÁLCULO DEL DIMENSIONAMIENTO DE UNA BATERíA

## *BASIC DATA REQUIRED FOR A PRECISE BATTERY SIZING CALCULATION*

- TENSIÓN MÁXIMA EN CARGA
- TENSIÓN MÍNIMA EN DESCARGA
- CORRIENTE DE SERVICIO (A)
- TIEMPO DE AUTONOMÍA
- SISTEMA DE CARGA
- TENSIÓN NOMINAL DEL SISTEMA
- RANGO DE TEMPERATURA
- DISPOSICIÓN DE LA BATERÍA Y ESPACIO DISPONIBLE
- CONDICIONES FÍSICAS

- *MAXIMUM CHARGING VOLTAGE*
- *MINIMUM DISCHARGING VOLTAGE*
- *LOAD CURRENT (AMPERES)*
- *BACKUP TIME*
- *METHOD OF CHARGING*
- *NOMINAL VOLTAGE OF THE SYSTEM*
- *TEMPERATURE RANGE*
- *BATTERY LAYOUT AND AVAILABLE SPACE*
- *PHYSICAL CONDITIONS*

## DETERMINACIÓN DEL NÚMERO DE ELEMENTOS EN UNA BATERÍA

## *CALCULATION OF THE NUMBER OF CELLS IN A BATTERY*

El número de elementos en una batería puede ser determinado simplemente dividiendo la tensión nominal del sistema entre la tensión nominal del elemento (1,2V), con los siguientes resultados:

*The number of cells in a battery may be determined by simply dividing the nominal voltage of the system by the nominal voltage of a cell (1.2 V):*

| TENSIÓN DEL SISTEMA<br>*SYSTEM VOLTAGE* | NÚMERO DE ELEMENTOS<br>*NUMBER OF CELLS* | VARIACIÓN EN LA PRÁCTICA<br>*SPREAD IN THE PRACTICE* |
|---|---|---|
| **24** | **20** | **18 - 21** |
| **36** | **30** | **27 - 31** |
| **48** | **40** | **36 - 41** |
| **110** | **92** | **88 - 93** |
| **220** | **184** | **180 - 186** |

En la práctica, el número de elementos se debe seleccionar de acuerdo con los límites de la tensión del sistema, debiendo reunir dos condiciones:

- La tensión en corriente contínua con la que funciona normalmente el sistema cuando existe tensión de entrada en corriente alterna (tensión de flotación), debe ser adecuada para cargar correctamente la batería.
- La batería debe ser capaz de proporcionar la carga requerida por la aplicación y su tensión no deberá caer por debajo de la tensión mínima especificada.

*In the practice, the number of cells must be selected to suit the voltage limits of the system, while meeting two conditions:*

- *The voltage at which the system normally operates when the mains are healthy (the floating charge voltage) must be adequate to properly charge the battery.*
- *The battery must be capable of supplying the required load for the application and its voltage must not fall lower than the specified minimum end of discharge voltage.*

Emisa ofrece una amplia gama de productos para aquellas aplicaciones que necesitan alimentación de emergencia:

- RECTIFICADORES Y CARGADORES DE BATERÍAS
  Desde 12V/2,5 A a 220V/660 A.
- RECTIFICADORES CON TECNOLOGÍA DE CONMUTACIÓN DE ALTA FRECUENCIA (FUENTES CONMUTADAS)
  Desde 12V/25 A a 48V/600 A.
- BATERÍAS DE NIQUEL-CADMIO CON PLACAS DE BOLSAS
  Para bajos, medios y altos regímenes de descarga.
  Desde 10 Ah a 1540 Ah de capacidad nominal.

*Emisa offers a wide range of products for emergency power supply demands:*

- *RECTIFIERS AND BATTERY CHARGERS*
  *Ranging from 12V / 2.5A to 220V / 660A.*
- *SWITCH MODE RECTIFIERS*
  *Ranging from 12V / 25A to 48V / 600A.*
- *POCKET PLATE NICKEL CADMIUM BATTERIES*
  *For low, medium and high discharge rates.*
  *From 10 Ah to 1540 Ah nominal capacities.*

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Edic. 09-03  Ref. 2003/JI/Jch.  Válido hasta nueva edición. / *Valid until new edition.*