

## RANGE SUMMARY



## Introduction to . . . The Extreme Low Maintenance Range of VARTA® VGL/VGM Batteries

### **VARTA®** **VGL/VGM** **EXTREME LOW MAINTENANCE**

Based on more than 100 years of experience in design and manufacturing, EnerSys® combines the well proven VARTA® Ni-Cd pocket plate construction with the new VGL/VGM concept. VARTA VGL/VGM batteries provide an exceptionally long lifetime and reduces the maintenance requirements to a minimum. It is the ideal solution for applications requiring absolute reliability with the minimum of routine maintenance.

VARTA VGL/VGM batteries provide a 20 years service lifetime. The special single cell design and the valve regulated venting system eliminate the need for topping-up during a normal service life. With a recombination rate of up to 90%, depending on the float voltage and ambient conditions, VARTA batteries lead the market in low maintenance standards.

#### **The VARTA® VGL Battery Range**

This VARTA VGL battery combines the well proven Ni-Cd pocket plate design and the features of the VARTA low-maintenance-concept and is used for low rates of discharge over long periods (e.g. the current is relatively low in comparison with the total stored energy). The discharges can generally be infrequent and the recommended discharge time for the VARTA VGL battery range is 1 hour to 100 hours.

#### **The VARTA® VGM Battery Range**

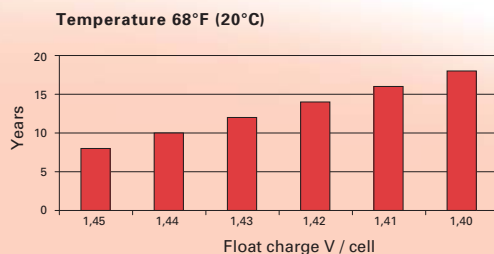
The VARTA VGM battery provides all the advantages of the Ni-Cd pocket plate design and additionally adds the features of the VARTA VGM battery concept. It has been especially designed for "mixed loads" that include a mixture of high and low rates of discharge. It is used for frequent and infrequent discharges and the recommended discharge time is 30 min to 120 min.

### **Features & Benefits**

- Capacity Range:  
VGL: 12 Ah - 1390 Ah  
VGM: 11 Ah - 1250 Ah
- Recommended discharge time:  
VGL: 1 hr to 100 hr  
VGM: 30 min to 120 min
- No need to top off with water during the lifetime but possible if required
- Translucent plastic cases for visible electrolyte level
- Conforms to IEC 62259

### **Temperature Performance**

- The VGL/VGM continuous operational temperature is 0°C to + 40°C.
- Short term temperature fluctuations from - 50 °C to + 70 °C can be tolerated.



Effect of charging voltage on water consumption. Time in years to reach the warning electrolyte level "MIN".

### **Construction**

- 1 Low pressure flame arresting valve**
- 2 VARTA® battery safety terminal**  
Redundant leak protection minimises carbonate formation
- 3 Electrode edge**  
Connected to terminal by screwing or welding providing high mechanical stability
- 4 Electrode frame**  
Consisting of electrode edge and side bars. Seals the plates and works as a current collector
- 5 Horizontal pockets**  
Formed by perforated steel strips containing the active material
- 6 Felt separator**  
Special felt separator insulates the plates and improves the internal recombination



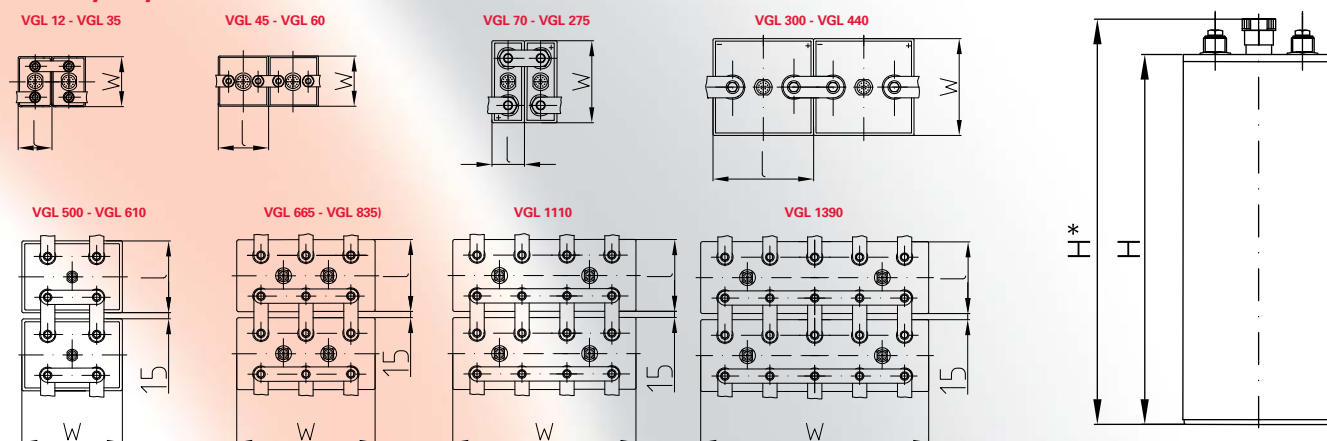
## General Specifications

VARTA® VGL Ni-Cd batteries

| Type     | Rated Capacity (Ah) | Nominal Dimensions |          |           |            | Total weight kg | Terminals                |           |
|----------|---------------------|--------------------|----------|-----------|------------|-----------------|--------------------------|-----------|
|          |                     | Length mm          | Width mm | Height mm | Height* mm |                 | Type M - Male F - Female | Size      |
| VGL 12   | 12                  | 46                 | 85       | 167       | 187        | 1.03            | M                        | 2 x M 10  |
| VGL 20   | 20                  | 46                 | 85       | 237       | 257        | 1.48            | M                        | 2 x M 10  |
| VGL 25   | 25                  | 46                 | 85       | 237       | 257        | 1.51            | M                        | 2 x M 10  |
| VGL 35   | 35                  | 46                 | 85       | 237       | 257        | 1.64            | M                        | 2 x M 10  |
| VGL 45   | 45                  | 85                 | 85       | 237       | 257        | 2.68            | M                        | 2 x M 10  |
| VGL 50   | 50                  | 85                 | 85       | 237       | 257        | 2.82            | M                        | 2 x M 10  |
| VGL 60   | 60                  | 85                 | 85       | 237       | 257        | 2.97            | M                        | 2 x M 10  |
| VGL 70   | 70                  | 53                 | 134      | 364       | 392        | 4.85            | F                        | 2 x M 8   |
| VGL 80   | 80                  | 53                 | 134      | 364       | 392        | 5.00            | F                        | 2 x M 8   |
| VGL 100  | 100                 | 69                 | 134      | 364       | 392        | 6.18            | F                        | 2 x M 8   |
| VGL 120  | 120                 | 69                 | 134      | 364       | 392        | 6.51            | F                        | 2 x M 8   |
| VGL 135  | 135                 | 70                 | 164      | 364       | 392        | 7.67            | F                        | 2 x M 8   |
| VGL 155  | 155                 | 70                 | 164      | 364       | 392        | 7.84            | F                        | 2 x M 8   |
| VGL 175  | 175                 | 108                | 164      | 364       | 392        | 10.61           | F                        | 2 x M 8   |
| VGL 205  | 205                 | 108                | 164      | 364       | 392        | 10.91           | F                        | 2 x M 8   |
| VGL 225  | 225                 | 108                | 164      | 364       | 392        | 11.17           | F                        | 2 x M 8   |
| VGL 245  | 245                 | 108                | 164      | 364       | 392        | 11.62           | F                        | 2 x M 8   |
| VGL 255  | 255                 | 108                | 164      | 364       | 392        | 11.70           | F                        | 2 x M 8   |
| VGL 275  | 275                 | 108                | 164      | 364       | 392        | 12.22           | F                        | 2 x M 8   |
| VGL 300  | 300                 | 164                | 158      | 364       | 392        | 16.30           | F                        | 2 x M 10  |
| VGL 330  | 330                 | 164                | 158      | 364       | 392        | 16.50           | F                        | 2 x M 10  |
| VGL 350  | 350                 | 164                | 158      | 364       | 392        | 17.00           | F                        | 2 x M 10  |
| VGL 375  | 375                 | 164                | 158      | 364       | 392        | 17.50           | F                        | 2 x M 10  |
| VGL 390  | 390                 | 164                | 158      | 364       | 392        | 18.00           | F                        | 2 x M 10  |
| VGL 420  | 420                 | 164                | 158      | 364       | 392        | 18.50           | F                        | 2 x M 10  |
| VGL 440  | 440                 | 164                | 158      | 364       | 392        | 18.90           | F                        | 2 x M 10  |
| VGL 500  | 500                 | 176                | 246      | 382       | 408        | 27.30           | F                        | 4 x M 10  |
| VGL 555  | 555                 | 176                | 246      | 382       | 408        | 28.30           | F                        | 4 x M 10  |
| VGL 610  | 610                 | 176                | 246      | 382       | 408        | 29.30           | F                        | 4 x M 10  |
| VGL 665  | 665                 | 176                | 368      | 382       | 408        | 40.70           | F                        | 6 x M 10  |
| VGL 750  | 750                 | 176                | 368      | 382       | 408        | 41.90           | F                        | 6 x M 10  |
| VGL 835  | 835                 | 176                | 368      | 382       | 408        | 43.10           | F                        | 6 x M 10  |
| VGL 1110 | 1110                | 176                | 448      | 382       | 408        | 56.00           | F                        | 8 x M 10  |
| VGL 1390 | 1390                | 176                | 558      | 382       | 408        | 68.90           | F                        | 10 x M 10 |

\* Includes height over terminals

## Battery Layout



## Current (Amps) to 1.15V @ 68°F (20°C)

|          | Minutes |        |        |        | Hours  |        |        |        |        |        |        |        |        |        |        |
|----------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Type     | 5       | 10     | 20     | 30     | 1      | 1.5    | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     |
| VGL 12   | 6.00    | 5.70   | 5.30   | 5.10   | 4.30   | 3.71   | 3.26   | 2.62   | 2.33   | 2.20   | 1.85   | 1.60   | 1.42   | 1.27   | 1.16   |
| VGL 20   | 9.80    | 9.30   | 8.60   | 8.30   | 7.10   | 6.10   | 5.40   | 4.28   | 3.80   | 3.60   | 3.03   | 2.62   | 2.32   | 2.08   | 1.89   |
| VGL 25   | 13.10   | 12.40  | 11.50  | 11.10  | 9.40   | 8.10   | 7.10   | 5.71   | 4.78   | 4.52   | 3.80   | 3.29   | 2.91   | 2.61   | 2.37   |
| VGL 35   | 16.40   | 15.50  | 14.40  | 13.90  | 11.70  | 10.10  | 8.90   | 7.10   | 6.40   | 6.00   | 5.05   | 4.37   | 3.86   | 3.47   | 3.15   |
| VGL 45   | 23.10   | 20.70  | 19.20  | 18.50  | 15.60  | 13.50  | 11.80  | 9.50   | 8.50   | 8.00   | 6.73   | 5.83   | 5.15   | 4.62   | 4.20   |
| VGL 50   | 30.30   | 27.20  | 25.20  | 24.30  | 20.00  | 17.70  | 15.60  | 12.40  | 9.80   | 9.10   | 7.66   | 6.63   | 5.86   | 5.26   | 4.78   |
| VGL 60   | 38.00   | 34.00  | 31.00  | 30.00  | 24.30  | 21.90  | 19.40  | 15.10  | 12.10  | 10.80  | 9.09   | 7.87   | 6.95   | 6.24   | 5.67   |
| VGL 70   | 38.00   | 37.00  | 35.00  | 34.00  | 27.00  | 23.40  | 21.00  | 16.30  | 13.80  | 12.80  | 10.80  | 9.30   | 8.20   | 7.40   | 6.70   |
| VGL 80   | 44.00   | 43.00  | 40.00  | 39.00  | 31.00  | 27.10  | 24.20  | 18.80  | 15.60  | 14.50  | 12.20  | 10.60  | 9.30   | 8.40   | 7.60   |
| VGL 100  | 53.00   | 51.00  | 49.00  | 46.00  | 37.00  | 32.50  | 29.10  | 22.50  | 19.20  | 17.70  | 14.90  | 12.90  | 11.40  | 10.20  | 9.30   |
| VGL 120  | 65.00   | 63.00  | 59.00  | 57.00  | 46.00  | 39.70  | 35.60  | 27.50  | 23.50  | 21.80  | 18.30  | 15.90  | 14.00  | 12.60  | 11.40  |
| VGL 135  | 74.00   | 67.00  | 65.00  | 64.00  | 50.00  | 44.00  | 39.20  | 32.40  | 26.70  | 24.50  | 20.60  | 17.90  | 15.80  | 14.20  | 12.90  |
| VGL 155  | 82.00   | 76.00  | 71.00  | 66.00  | 56.00  | 49.00  | 43.90  | 36.20  | 30.70  | 28.20  | 23.70  | 20.50  | 18.20  | 16.30  | 14.80  |
| VGL 175  | 94.00   | 86.00  | 81.00  | 75.00  | 65.00  | 56.00  | 50.00  | 41.40  | 34.60  | 31.80  | 26.80  | 23.20  | 20.50  | 18.40  | 16.70  |
| VGL 205  | 108.00  | 100.00 | 94.00  | 87.00  | 75.00  | 65.00  | 58.00  | 47.90  | 40.60  | 37.30  | 31.40  | 27.20  | 24.00  | 21.60  | 19.60  |
| VGL 225  | 120.00  | 111.00 | 104.00 | 97.00  | 82.00  | 72.00  | 64.00  | 53.00  | 44.50  | 40.90  | 34.40  | 29.80  | 26.30  | 23.60  | 21.50  |
| VGL 245  | 127.00  | 117.00 | 110.00 | 102.00 | 87.00  | 79.00  | 70.00  | 55.00  | 48.50  | 44.50  | 37.50  | 32.40  | 28.60  | 25.70  | 23.40  |
| VGL 255  | 132.18  | 121.78 | 114.49 | 106.16 | 90.55  | 82.22  | 72.86  | 57.24  | 50.48  | 46.32  | 39.03  | 33.72  | 29.77  | 26.75  | 24.36  |
| VGL 275  | 140.00  | 130.00 | 122.00 | 113.00 | 97.00  | 87.00  | 78.00  | 61.00  | 54.40  | 50.00  | 42.10  | 36.40  | 32.20  | 28.90  | 26.30  |
| VGL 300  | 152.00  | 140.00 | 131.00 | 122.00 | 105.00 | 94.00  | 84.00  | 66.00  | 59.50  | 54.60  | 46.00  | 39.80  | 35.10  | 31.50  | 28.70  |
| VGL 330  | 174.00  | 164.00 | 153.00 | 145.00 | 124.00 | 114.00 | 99.00  | 77.00  | 65.60  | 60.00  | 50.50  | 43.70  | 38.60  | 34.70  | 31.50  |
| VGL 350  | 186.00  | 175.00 | 162.00 | 155.00 | 133.00 | 122.00 | 106.00 | 82.00  | 69.50  | 63.60  | 53.50  | 46.30  | 40.90  | 36.70  | 33.40  |
| VGL 375  | 197.00  | 186.00 | 173.00 | 165.00 | 141.00 | 130.00 | 112.00 | 87.00  | 74.50  | 68.20  | 57.40  | 49.70  | 43.90  | 39.40  | 35.80  |
| VGL 390  | 206.00  | 194.00 | 181.00 | 171.00 | 147.00 | 136.00 | 117.00 | 91.00  | 77.50  | 70.90  | 59.70  | 51.70  | 45.60  | 41.00  | 37.20  |
| VGL 420  | 221.00  | 208.00 | 194.00 | 184.00 | 157.00 | 145.00 | 125.00 | 97.00  | 83.50  | 76.40  | 64.30  | 55.70  | 49.20  | 44.10  | 40.10  |
| VGL 440  | 227.00  | 213.00 | 198.00 | 189.00 | 162.00 | 149.00 | 128.00 | 102.00 | 87.40  | 80.00  | 67.30  | 58.30  | 51.50  | 46.20  | 42.00  |
| VGL 500  | 337.00  | 306.00 | 277.00 | 248.00 | 205.00 | 192.00 | 180.00 | 135.00 | 107.00 | 90.00  | 76.00  | 66.00  | 58.00  | 52.00  | 47.00  |
| VGL 555  | 374.00  | 340.00 | 308.00 | 276.00 | 228.00 | 213.00 | 200.00 | 150.00 | 119.00 | 100.00 | 84.00  | 73.00  | 64.00  | 58.00  | 52.00  |
| VGL 610  | 412.00  | 374.00 | 339.00 | 303.00 | 251.00 | 235.00 | 220.00 | 165.00 | 131.00 | 110.00 | 93.00  | 81.00  | 71.00  | 64.00  | 57.00  |
| VGL 665  | 449.00  | 408.00 | 369.00 | 331.00 | 273.00 | 256.00 | 240.00 | 180.00 | 143.00 | 120.00 | 101.00 | 87.00  | 77.00  | 69.00  | 63.00  |
| VGL 750  | 506.00  | 459.00 | 416.00 | 372.00 | 308.00 | 288.00 | 270.00 | 203.00 | 161.00 | 135.00 | 114.00 | 98.00  | 87.00  | 78.00  | 71.00  |
| VGL 835  | 562.00  | 510.00 | 462.00 | 413.00 | 342.00 | 320.00 | 300.00 | 225.00 | 178.00 | 150.00 | 126.00 | 109.00 | 97.00  | 87.00  | 79.00  |
| VGL 1110 | 749.00  | 680.00 | 616.00 | 551.00 | 456.00 | 427.00 | 400.00 | 300.00 | 238.00 | 200.00 | 168.00 | 146.00 | 129.00 | 116.00 | 105.00 |
| VGL 1390 | 936.00  | 850.00 | 769.00 | 689.00 | 569.00 | 533.00 | 500.00 | 375.00 | 297.00 | 250.00 | 210.00 | 182.00 | 161.00 | 144.00 | 131.00 |

## Current (Amps) to 1.10V @ 68°F (20°C)

|          | Minutes |         |         |        | Hours  |        |        |        |        |        |        |        |        |        |        |
|----------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Type     | 5       | 10      | 20      | 30     | 1      | 1.5    | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     |
| VGL 12   | 8.80    | 7.80    | 6.90    | 6.60   | 5.50   | 4.53   | 3.93   | 3.02   | 2.56   | 2.33   | 1.95   | 1.68   | 1.47   | 1.32   | 1.19   |
| VGL 20   | 14.30   | 12.70   | 11.30   | 10.70  | 9.00   | 7.40   | 6.40   | 4.90   | 4.19   | 3.82   | 3.20   | 2.75   | 2.42   | 2.16   | 1.95   |
| VGL 25   | 19.10   | 17.00   | 15.00   | 14.30  | 12.00  | 9.90   | 8.60   | 6.60   | 5.28   | 4.81   | 4.02   | 3.46   | 3.04   | 2.71   | 2.45   |
| VGL 35   | 23.90   | 21.20   | 18.80   | 17.90  | 15.00  | 12.40  | 10.70  | 8.20   | 6.98   | 6.36   | 5.32   | 4.58   | 4.02   | 3.59   | 3.24   |
| VGL 45   | 29.10   | 26.40   | 24.60   | 23.20  | 19.90  | 16.40  | 14.40  | 11.00  | 9.30   | 8.48   | 7.09   | 6.11   | 5.36   | 4.79   | 4.32   |
| VGL 50   | 38.20   | 34.70   | 32.30   | 30.50  | 24.50  | 20.90  | 18.10  | 13.80  | 10.90  | 9.50   | 7.95   | 6.84   | 6.01   | 5.36   | 4.85   |
| VGL 60   | 47.00   | 43.00   | 40.00   | 38.00  | 29.00  | 25.40  | 21.80  | 16.60  | 13.10  | 11.30  | 9.45   | 8.14   | 7.15   | 6.38   | 5.76   |
| VGL 70   | 53.00   | 50.00   | 47.00   | 44.00  | 34.90  | 28.90  | 25.30  | 18.70  | 15.30  | 13.60  | 11.38  | 9.79   | 8.60   | 7.68   | 6.94   |
| VGL 80   | 62.00   | 58.00   | 54.00   | 51.00  | 41.00  | 33.40  | 29.20  | 21.50  | 17.30  | 15.40  | 12.88  | 11.09  | 9.74   | 8.69   | 7.85   |
| VGL 100  | 74.00   | 70.00   | 66.00   | 61.00  | 48.00  | 40.00  | 35.00  | 25.80  | 21.00  | 18.80  | 15.73  | 13.54  | 11.89  | 10.61  | 9.59   |
| VGL 120  | 90.00   | 86.00   | 80.00   | 75.00  | 60.00  | 49.00  | 42.90  | 31.60  | 25.90  | 23.10  | 19.33  | 16.63  | 14.61  | 13.04  | 11.78  |
| VGL 135  | 96.00   | 89.00   | 86.00   | 80.00  | 64.00  | 55.00  | 47.80  | 36.20  | 29.20  | 25.80  | 21.60  | 18.60  | 16.30  | 14.60  | 13.20  |
| VGL 155  | 107.00  | 99.00   | 96.00   | 89.00  | 75.00  | 62.00  | 53.50  | 40.60  | 33.50  | 29.60  | 24.80  | 21.30  | 18.70  | 16.70  | 15.10  |
| VGL 175  | 123.00  | 113.00  | 110.00  | 103.00 | 86.00  | 71.00  | 61.20  | 46.40  | 37.80  | 33.40  | 27.90  | 24.00  | 21.10  | 18.90  | 17.00  |
| VGL 205  | 143.00  | 131.00  | 126.00  | 118.00 | 99.00  | 82.00  | 70.00  | 53.70  | 44.30  | 39.20  | 32.80  | 28.20  | 24.80  | 22.10  | 20.00  |
| VGL 225  | 158.00  | 145.00  | 140.00  | 131.00 | 110.00 | 91.00  | 78.00  | 59.50  | 48.60  | 43.00  | 36.00  | 31.00  | 27.20  | 24.30  | 21.90  |
| VGL 245  | 166.00  | 153.00  | 147.00  | 139.00 | 116.00 | 99.00  | 86.00  | 63.90  | 52.40  | 46.80  | 39.20  | 33.70  | 29.60  | 26.40  | 23.90  |
| VGL 255  | 172.78  | 159.24  | 153.00  | 144.67 | 120.73 | 103.04 | 89.51  | 66.51  | 54.54  | 48.71  | 40.80  | 35.08  | 30.81  | 27.48  | 24.88  |
| VGL 275  | 185.00  | 170.00  | 164.00  | 153.00 | 128.00 | 111.00 | 96.00  | 71.00  | 58.70  | 52.60  | 44.00  | 37.90  | 33.30  | 29.70  | 26.80  |
| VGL 300  | 200.00  | 184.00  | 177.00  | 166.00 | 139.00 | 119.00 | 103.00 | 76.70  | 64.20  | 57.40  | 48.00  | 41.30  | 36.30  | 32.40  | 29.30  |
| VGL 330  | 234.00  | 215.00  | 208.00  | 190.00 | 160.00 | 143.00 | 117.00 | 85.80  | 70.60  | 63.00  | 52.70  | 45.40  | 39.80  | 35.60  | 32.10  |
| VGL 350  | 249.00  | 229.00  | 222.00  | 203.00 | 170.00 | 152.00 | 125.00 | 92.00  | 75.10  | 66.80  | 55.90  | 48.10  | 42.30  | 37.70  | 34.10  |
| VGL 375  | 265.00  | 243.00  | 236.00  | 216.00 | 181.00 | 162.00 | 133.00 | 97.00  | 80.20  | 71.60  | 59.90  | 51.60  | 45.30  | 40.40  | 36.50  |
| VGL 390  | 277.00  | 254.00  | 246.00  | 226.00 | 189.00 | 170.00 | 138.00 | 102.00 | 83.40  | 74.50  | 62.30  | 53.60  | 47.10  | 42.10  | 38.00  |
| VGL 420  | 296.00  | 272.00  | 263.00  | 241.00 | 202.00 | 181.00 | 149.00 | 109.00 | 89.80  | 80.20  | 67.10  | 57.70  | 50.70  | 45.30  | 40.90  |
| VGL 440  | 304.00  | 279.00  | 270.00  | 248.00 | 207.00 | 186.00 | 152.00 | 114.00 | 94.10  | 84.00  | 70.30  | 60.50  | 53.10  | 47.40  | 42.80  |
| VGL 500  | 443.00  | 400.00  | 369.00  | 337.00 | 272.00 | 238.00 | 203.00 | 149.00 | 115.00 | 94.50  | 79.10  | 68.00  | 59.80  | 53.30  | 48.20  |
| VGL 555  | 492.00  | 444.00  | 410.00  | 374.00 | 302.00 | 264.00 | 226.00 | 166.00 | 128.00 | 105.00 | 87.90  | 75.60  | 66.40  | 59.20  | 53.60  |
| VGL 610  | 541.00  | 489.00  | 451.00  | 412.00 | 332.00 | 291.00 | 248.00 | 182.00 | 141.00 | 116.00 | 96.70  | 83.10  | 73.10  | 65.10  | 58.90  |
| VGL 665  | 591.00  | 533.00  | 492.00  | 449.00 | 363.00 | 317.00 | 271.00 | 199.00 | 153.00 | 126.00 | 105.40 | 90.70  | 79.70  | 71.10  | 64.30  |
| VGL 750  | 665.00  | 600.00  | 554.00  | 506.00 | 408.00 | 357.00 | 305.00 | 224.00 | 173.00 | 142.00 | 118.80 | 102.20 | 89.80  | 80.20  | 72.40  |
| VGL 835  | 738.00  | 667.00  | 615.00  | 562.00 | 453.00 | 397.00 | 338.00 | 248.00 | 192.00 | 158.00 | 132.20 | 113.80 | 99.90  | 89.20  | 80.60  |
| VGL 1110 | 984.00  | 889.00  | 820.00  | 749.00 | 604.00 | 529.00 | 451.00 | 331.00 | 255.00 | 210.00 | 175.70 | 151.20 | 132.80 | 118.50 | 107.10 |
| VGL 1390 | 1231.00 | 1111.00 | 1025.00 | 936.00 | 756.00 | 661.00 | 564.00 | 414.00 | 318.00 | 263.00 | 220.00 | 189.40 | 166.30 | 148.40 | 134.10 |



Current (Amps) to 1.05V @ 68°F (20°C)

|          | Minutes |         |         |         | Hours  |        |        |        |        |        |        |        |        |        |        |
|----------|---------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Type     | 5       | 10      | 20      | 30      | 1      | 1.5    | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     |
| VGL 12   | 11.00   | 10.30   | 9.00    | 8.10    | 6.40   | 5.33   | 4.42   | 3.22   | 2.67   | 2.38   | 1.99   | 1.71   | 1.50   | 1.33   | 1.20   |
| VGL 20   | 18.10   | 16.80   | 14.60   | 13.20   | 10.50  | 8.70   | 7.20   | 5.27   | 4.33   | 3.89   | 3.25   | 2.79   | 2.45   | 2.18   | 1.96   |
| VGL 25   | 24.20   | 22.30   | 19.50   | 17.60   | 13.90  | 11.60  | 9.70   | 7.03   | 5.50   | 4.90   | 4.09   | 3.51   | 3.08   | 2.74   | 2.47   |
| VGL 35   | 30.20   | 27.90   | 24.40   | 22.10   | 17.40  | 14.50  | 12.10  | 8.80   | 7.27   | 6.48   | 5.41   | 4.65   | 4.07   | 3.63   | 3.27   |
| VGL 45   | 36.90   | 33.00   | 29.50   | 27.70   | 23.30  | 19.50  | 16.00  | 11.70  | 9.70   | 8.64   | 7.21   | 6.20   | 5.43   | 4.84   | 4.36   |
| VGL 50   | 48.50   | 43.30   | 38.80   | 36.40   | 28.20  | 23.50  | 19.70  | 14.50  | 11.20  | 9.90   | 8.27   | 7.10   | 6.22   | 5.54   | 5.00   |
| VGL 60   | 60.00   | 54.00   | 48.00   | 45.00   | 33.00  | 28.40  | 23.40  | 17.40  | 13.70  | 11.90  | 9.94   | 8.53   | 7.48   | 6.66   | 6.01   |
| VGL 70   | 64.00   | 60.00   | 56.00   | 52.00   | 40.00  | 33.20  | 26.90  | 19.40  | 15.70  | 13.90  | 11.61  | 9.97   | 8.74   | 7.78   | 7.02   |
| VGL 80   | 74.00   | 69.00   | 64.00   | 61.00   | 47.00  | 38.30  | 31.10  | 22.40  | 17.80  | 15.70  | 13.11  | 11.26  | 9.87   | 8.79   | 7.93   |
| VGL 100  | 89.00   | 83.00   | 78.00   | 72.00   | 55.00  | 46.00  | 37.30  | 26.90  | 21.70  | 19.20  | 16.03  | 13.77  | 12.07  | 10.75  | 9.70   |
| VGL 120  | 108.00  | 101.00  | 94.00   | 89.00   | 68.00  | 56.00  | 45.60  | 32.80  | 26.70  | 23.60  | 19.71  | 16.92  | 14.84  | 13.22  | 11.92  |
| VGL 135  | 116.00  | 106.00  | 102.00  | 95.00   | 76.00  | 64.00  | 52.00  | 37.70  | 30.10  | 26.40  | 22.04  | 18.93  | 16.60  | 14.78  | 13.33  |
| VGL 155  | 136.00  | 125.00  | 120.00  | 112.00  | 89.00  | 72.00  | 58.30  | 42.30  | 34.50  | 30.30  | 25.30  | 21.73  | 19.05  | 16.97  | 15.30  |
| VGL 175  | 155.00  | 143.00  | 138.00  | 128.00  | 102.00 | 82.00  | 66.60  | 48.30  | 39.00  | 34.20  | 28.56  | 24.53  | 21.50  | 19.15  | 17.27  |
| VGL 205  | 179.00  | 166.00  | 159.00  | 148.00  | 118.00 | 95.00  | 77.00  | 55.80  | 45.80  | 40.10  | 33.50  | 28.80  | 25.20  | 22.50  | 20.30  |
| VGL 225  | 199.00  | 184.00  | 176.00  | 164.00  | 131.00 | 106.00 | 85.00  | 61.90  | 50.10  | 44.00  | 36.70  | 31.60  | 27.70  | 24.60  | 22.20  |
| VGL 245  | 209.00  | 194.00  | 186.00  | 173.00  | 138.00 | 116.00 | 93.00  | 67.90  | 54.60  | 47.90  | 40.00  | 34.40  | 30.10  | 26.80  | 24.20  |
| VGL 255  | 217.53  | 201.92  | 193.59  | 180.06  | 143.63 | 120.73 | 96.80  | 70.67  | 56.83  | 49.86  | 41.63  | 35.80  | 31.33  | 27.89  | 25.19  |
| VGL 275  | 233.00  | 215.00  | 206.00  | 192.00  | 153.00 | 129.00 | 104.00 | 75.40  | 61.20  | 53.80  | 44.90  | 38.60  | 33.80  | 30.10  | 27.20  |
| VGL 300  | 251.00  | 232.00  | 222.00  | 207.00  | 166.00 | 139.00 | 113.00 | 81.00  | 66.90  | 58.70  | 49.00  | 42.10  | 36.90  | 32.90  | 29.60  |
| VGL 330  | 283.00  | 265.00  | 252.00  | 233.00  | 190.00 | 160.00 | 124.00 | 88.00  | 72.00  | 64.50  | 53.90  | 46.30  | 40.60  | 36.10  | 32.60  |
| VGL 350  | 302.00  | 282.00  | 269.00  | 248.00  | 202.00 | 170.00 | 132.00 | 93.00  | 76.80  | 68.40  | 57.10  | 49.10  | 43.00  | 38.30  | 34.50  |
| VGL 375  | 320.00  | 300.00  | 286.00  | 264.00  | 215.00 | 181.00 | 141.00 | 100.00 | 81.80  | 73.30  | 61.20  | 52.60  | 46.10  | 41.00  | 37.00  |
| VGL 390  | 335.00  | 314.00  | 298.00  | 276.00  | 224.00 | 189.00 | 147.00 | 104.00 | 85.00  | 76.20  | 63.60  | 54.60  | 47.90  | 42.70  | 38.50  |
| VGL 420  | 358.00  | 335.00  | 319.00  | 295.00  | 241.00 | 202.00 | 157.00 | 112.00 | 91.60  | 82.10  | 68.60  | 58.90  | 51.60  | 46.00  | 41.50  |
| VGL 440  | 368.00  | 344.00  | 328.00  | 303.00  | 247.00 | 208.00 | 161.00 | 117.00 | 96.90  | 86.00  | 71.80  | 61.70  | 54.10  | 48.20  | 43.40  |
| VGL 500  | 558.00  | 506.00  | 464.00  | 421.00  | 320.00 | 269.00 | 218.00 | 156.00 | 120.00 | 99.00  | 82.70  | 71.00  | 62.20  | 55.40  | 50.00  |
| VGL 555  | 620.00  | 562.00  | 516.00  | 468.00  | 356.00 | 299.00 | 242.00 | 173.00 | 133.00 | 110.00 | 91.90  | 78.90  | 69.10  | 61.60  | 55.60  |
| VGL 610  | 682.00  | 618.00  | 567.00  | 515.00  | 391.00 | 329.00 | 266.00 | 191.00 | 146.00 | 121.00 | 101.10 | 86.80  | 76.00  | 67.70  | 61.10  |
| VGL 665  | 744.00  | 675.00  | 619.00  | 561.00  | 427.00 | 359.00 | 291.00 | 208.00 | 161.00 | 132.00 | 110.20 | 94.70  | 83.00  | 73.90  | 66.70  |
| VGL 750  | 837.00  | 759.00  | 696.00  | 632.00  | 480.00 | 404.00 | 327.00 | 234.00 | 181.00 | 149.00 | 124.40 | 106.90 | 93.70  | 83.40  | 75.20  |
| VGL 835  | 930.00  | 843.00  | 773.00  | 702.00  | 533.00 | 448.00 | 363.00 | 260.00 | 201.00 | 165.00 | 137.80 | 118.30 | 103.70 | 92.40  | 83.30  |
| VGL 1110 | 1240.00 | 1124.00 | 1031.00 | 936.00  | 711.00 | 598.00 | 484.00 | 347.00 | 268.00 | 220.00 | 183.70 | 157.80 | 138.30 | 123.20 | 111.10 |
| VGL 1390 | 1550.00 | 1406.00 | 1289.00 | 1169.00 | 889.00 | 747.00 | 606.00 | 433.00 | 335.00 | 275.00 | 229.60 | 197.20 | 172.90 | 154.00 | 138.90 |

Current (Amps) to 1.00V @ 68°F (20°C)

|          | Minutes |         |         |         | Hours   |        |        |        |        |        |        |        |        |        |        |
|----------|---------|---------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Type     | 5       | 10      | 20      | 30      | 1       | 1.5    | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     |
| VGL 12   | 12.70   | 12.20   | 10.80   | 9.70    | 7.30    | 5.80   | 4.68   | 3.39   | 2.73   | 2.40   | 2.00   | 1.72   | 1.51   | 1.34   | 1.21   |
| VGL 20   | 20.80   | 19.90   | 17.70   | 16.20   | 12.30   | 9.50   | 7.70   | 5.54   | 4.56   | 4.00   | 3.34   | 2.87   | 2.52   | 2.24   | 2.02   |
| VGL 25   | 27.80   | 26.50   | 23.60   | 21.60   | 16.50   | 12.60  | 10.20  | 7.39   | 5.69   | 5.00   | 4.18   | 3.59   | 3.14   | 2.80   | 2.53   |
| VGL 35   | 34.70   | 33.20   | 29.50   | 27.10   | 20.70   | 15.80  | 12.80  | 9.24   | 7.97   | 7.00   | 5.85   | 5.02   | 4.40   | 3.92   | 3.54   |
| VGL 45   | 41.60   | 38.60   | 34.00   | 33.80   | 27.50   | 21.10  | 17.10  | 12.32  | 10.25  | 9.00   | 7.52   | 6.45   | 5.66   | 5.04   | 4.55   |
| VGL 50   | 54.50   | 50.70   | 43.80   | 42.90   | 32.10   | 26.20  | 20.90  | 14.90  | 11.50  | 10.00  | 8.35   | 7.17   | 6.29   | 5.60   | 5.05   |
| VGL 60   | 68.00   | 63.00   | 54.00   | 49.60   | 37.80   | 31.30  | 24.60  | 17.60  | 13.80  | 12.00  | 10.02  | 8.61   | 7.55   | 6.72   | 6.06   |
| VGL 70   | 74.00   | 70.00   | 64.00   | 61.00   | 46.00   | 35.20  | 28.20  | 20.00  | 16.00  | 14.00  | 11.69  | 10.04  | 8.80   | 7.84   | 7.07   |
| VGL 80   | 85.00   | 80.00   | 74.00   | 70.00   | 53.00   | 40.60  | 32.50  | 23.10  | 18.20  | 16.00  | 13.36  | 11.47  | 10.06  | 8.96   | 8.08   |
| VGL 100  | 101.00  | 96.00   | 89.00   | 84.00   | 63.00   | 48.70  | 39.00  | 27.70  | 22.70  | 20.00  | 16.70  | 14.34  | 12.58  | 11.20  | 10.10  |
| VGL 120  | 124.00  | 118.00  | 109.00  | 103.00  | 77.00   | 59.50  | 47.60  | 33.90  | 27.30  | 24.00  | 20.04  | 17.21  | 15.09  | 13.44  | 12.12  |
| VGL 135  | 137.00  | 129.00  | 121.00  | 114.00  | 86.00   | 68.00  | 53.70  | 38.50  | 30.80  | 27.00  | 22.55  | 19.36  | 16.98  | 15.12  | 13.64  |
| VGL 155  | 161.00  | 151.00  | 142.00  | 134.00  | 102.00  | 77.00  | 60.10  | 43.10  | 35.30  | 31.00  | 25.89  | 22.23  | 19.49  | 17.36  | 15.66  |
| VGL 175  | 185.00  | 173.00  | 162.00  | 153.00  | 116.00  | 87.00  | 69.00  | 49.30  | 39.90  | 35.00  | 29.23  | 25.10  | 22.01  | 19.60  | 17.68  |
| VGL 205  | 213.00  | 200.00  | 188.00  | 178.00  | 134.00  | 101.00 | 79.00  | 57.00  | 46.70  | 41.00  | 34.20  | 29.40  | 25.80  | 23.00  | 20.70  |
| VGL 225  | 236.00  | 222.00  | 208.00  | 197.00  | 149.00  | 112.00 | 88.00  | 63.10  | 51.30  | 45.00  | 37.60  | 32.30  | 28.30  | 25.20  | 22.70  |
| VGL 245  | 249.00  | 234.00  | 219.00  | 207.00  | 158.00  | 124.00 | 97.00  | 69.30  | 55.80  | 49.00  | 40.90  | 35.10  | 30.80  | 27.40  | 24.70  |
| VGL 255  | 259.16  | 243.55  | 227.94  | 215.45  | 164.45  | 129.06 | 100.96 | 72.13  | 58.08  | 51.00  | 42.57  | 36.53  | 32.06  | 28.52  | 25.71  |
| VGL 275  | 277.00  | 260.00  | 243.00  | 230.00  | 174.00  | 138.00 | 107.00 | 77.00  | 62.30  | 55.00  | 45.90  | 39.40  | 34.60  | 30.80  | 27.80  |
| VGL 300  | 299.00  | 281.00  | 263.00  | 248.00  | 190.00  | 148.00 | 116.00 | 83.20  | 68.30  | 60.00  | 50.10  | 43.00  | 37.70  | 33.60  | 30.30  |
| VGL 330  | 345.00  | 317.00  | 296.00  | 275.00  | 213.00  | 162.00 | 127.00 | 89.90  | 74.10  | 66.00  | 55.10  | 47.30  | 41.50  | 37.00  | 33.30  |
| VGL 350  | 368.00  | 339.00  | 316.00  | 294.00  | 227.00  | 172.00 | 135.00 | 96.00  | 78.80  | 70.00  | 58.50  | 50.20  | 44.00  | 39.20  | 35.40  |
| VGL 375  | 391.00  | 360.00  | 335.00  | 312.00  | 241.00  | 183.00 | 143.00 | 102.00 | 84.20  | 75.00  | 62.60  | 53.80  | 47.20  | 42.00  | 37.90  |
| VGL 390  | 408.00  | 376.00  | 350.00  | 326.00  | 252.00  | 191.00 | 150.00 | 106.00 | 87.60  | 78.00  | 65.10  | 55.90  | 49.00  | 43.70  | 39.40  |
| VGL 420  | 437.00  | 402.00  | 375.00  | 349.00  | 269.00  | 205.00 | 160.00 | 113.00 | 94.30  | 84.00  | 70.10  | 60.20  | 52.80  | 47.00  | 42.40  |
| VGL 440  | 449.00  | 413.00  | 385.00  | 358.00  | 276.00  | 210.00 | 165.00 | 120.00 | 98.80  | 88.00  | 73.50  | 63.10  | 55.30  | 49.30  | 44.40  |
| VGL 500  | 664.00  | 612.00  | 547.00  | 495.00  | 365.00  | 297.00 | 229.00 | 158.00 | 122.00 | 100.00 | 83.40  | 71.60  | 62.80  | 55.90  | 50.40  |
| VGL 555  | 738.00  | 680.00  | 608.00  | 550.00  | 406.00  | 330.00 | 254.00 | 176.00 | 136.00 | 111.00 | 92.70  | 79.60  | 69.80  | 62.10  | 56.00  |
| VGL 610  | 812.00  | 748.00  | 669.00  | 605.00  | 446.00  | 363.00 | 280.00 | 193.00 | 149.00 | 122.00 | 101.90 | 87.50  | 76.80  | 68.30  | 61.60  |
| VGL 665  | 885.00  | 816.00  | 729.00  | 660.00  | 487.00  | 396.00 | 305.00 | 211.00 | 162.00 | 133.00 | 111.10 | 95.40  | 83.60  | 74.50  | 67.20  |
| VGL 750  | 996.00  | 918.00  | 821.00  | 743.00  | 548.00  | 446.00 | 344.00 | 237.00 | 183.00 | 150.00 | 125.30 | 107.60 | 94.30  | 84.00  | 75.80  |
| VGL 835  | 1107.00 | 1020.00 | 912.00  | 825.00  | 608.00  | 495.00 | 382.00 | 263.00 | 203.00 | 167.00 | 139.40 | 119.80 | 105.00 | 93.50  | 84.30  |
| VGL 1110 | 1476.00 | 1360.00 | 1216.00 | 1100.00 | 811.00  | 660.00 | 509.00 | 351.00 | 270.00 | 222.00 | 185.40 | 159.20 | 139.60 | 124.30 | 112.10 |
| VGL 1390 | 1844.00 | 1700.00 | 1519.00 | 1375.00 | 1014.00 | 825.00 | 636.00 | 439.00 | 337.00 | 278.00 | 232.10 | 199.40 | 174.80 | 155.70 | 140.40 |

## General Specifications

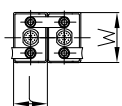
### VARTA® VGM Ni-Cd batteries

| Type     | Rated Capacity (Ah) | Nominal Dimensions |          |           |            | Total weight kg | Terminals                      |           |
|----------|---------------------|--------------------|----------|-----------|------------|-----------------|--------------------------------|-----------|
|          |                     | Length mm          | Width mm | Height mm | Height* mm |                 | Type<br>M - Male<br>F - Female | Size      |
| VGM 11   | 11                  | 46                 | 85       | 167       | 187        | 1.03            | M                              | 2 x M 10  |
| VGM 18   | 18                  | 46                 | 85       | 237       | 257        | 1.48            | M                              | 2 x M 10  |
| VGM 24   | 24                  | 46                 | 85       | 237       | 257        | 1.59            | M                              | 2 x M 10  |
| VGM 30   | 30                  | 46                 | 85       | 237       | 257        | 1.72            | M                              | 2 x M 10  |
| VGM 40   | 40                  | 85                 | 85       | 237       | 257        | 2.76            | M                              | 2 x M 10  |
| VGM 48   | 48                  | 85                 | 85       | 237       | 257        | 2.82            | M                              | 2 x M 10  |
| VGM 55   | 55                  | 85                 | 85       | 237       | 257        | 2.97            | M                              | 2 x M 10  |
| VGM 65   | 65                  | 53                 | 134      | 364       | 392        | 4.85            | F                              | 2 x M 8   |
| VGM 75   | 75                  | 53                 | 134      | 364       | 392        | 5.00            | F                              | 2 x M 8   |
| VGM 90   | 90                  | 69                 | 134      | 364       | 392        | 6.18            | F                              | 2 x M 8   |
| VGM 110  | 110                 | 69                 | 134      | 364       | 392        | 6.51            | F                              | 2 x M 8   |
| VGM 125  | 125                 | 70                 | 164      | 364       | 392        | 7.67            | F                              | 2 x M 8   |
| VGM 140  | 140                 | 70                 | 164      | 364       | 392        | 7.84            | F                              | 2 x M 8   |
| VGM 160  | 160                 | 108                | 164      | 364       | 392        | 10.61           | F                              | 2 x M 8   |
| VGM 185  | 185                 | 108                | 164      | 364       | 392        | 10.91           | F                              | 2 x M 8   |
| VGM 205  | 205                 | 108                | 164      | 364       | 392        | 11.17           | F                              | 2 x M 8   |
| VGM 225  | 225                 | 108                | 164      | 364       | 392        | 11.62           | F                              | 2 x M 8   |
| VGM 250  | 250                 | 108                | 164      | 364       | 392        | 12.22           | F                              | 2 x M 8   |
| VGM 270  | 270                 | 164                | 158      | 364       | 392        | 16.30           | F                              | 2 x M 10  |
| VGM 300  | 300                 | 164                | 158      | 364       | 392        | 16.50           | F                              | 2 x M 10  |
| VGM 320  | 320                 | 164                | 158      | 364       | 392        | 17.00           | F                              | 2 x M 10  |
| VGM 340  | 340                 | 164                | 158      | 364       | 392        | 17.50           | F                              | 2 x M 10  |
| VGM 355  | 355                 | 164                | 158      | 364       | 392        | 18.00           | F                              | 2 x M 10  |
| VGM 380  | 380                 | 164                | 158      | 364       | 392        | 18.50           | F                              | 2 x M 10  |
| VGM 400  | 400                 | 164                | 158      | 364       | 392        | 18.90           | F                              | 2 x M 10  |
| VGM 450  | 450                 | 176                | 246      | 382       | 408        | 27.30           | F                              | 4 x M 10  |
| VGM 500  | 500                 | 176                | 246      | 382       | 408        | 28.30           | F                              | 4 x M 10  |
| VGM 550  | 550                 | 176                | 246      | 382       | 408        | 29.30           | F                              | 4 x M 10  |
| VGM 600  | 600                 | 176                | 368      | 382       | 408        | 40.70           | F                              | 6 x M 10  |
| VGM 675  | 675                 | 176                | 368      | 382       | 408        | 41.90           | F                              | 6 x M 10  |
| VGM 750  | 750                 | 176                | 368      | 382       | 408        | 43.10           | F                              | 6 x M 10  |
| VGM 1000 | 1000                | 176                | 448      | 382       | 408        | 56.00           | F                              | 8 x M 10  |
| VGM 1250 | 1250                | 176                | 558      | 382       | 408        | 68.90           | F                              | 10 x M 10 |

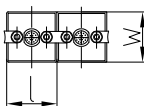
\* Includes height over terminals

## Battery Layout

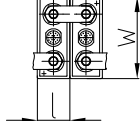
VGM 11 - VGM 30



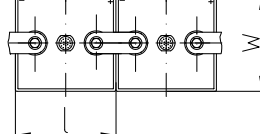
VGM 40 - VGM 55



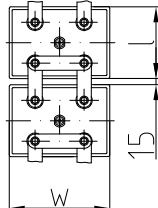
VGM 65 - VGM 250



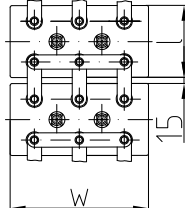
VGM 270 - VGM 400



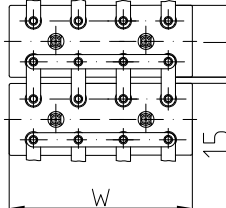
VGM 450 - VGM 550



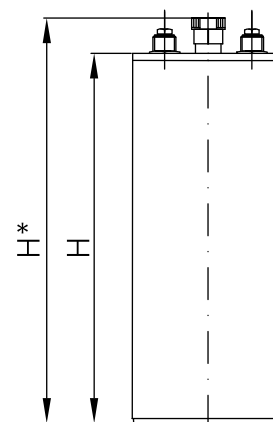
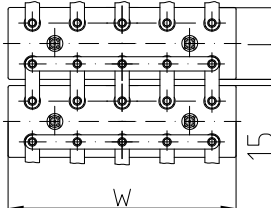
VGM 600 - VGM 750



VGM 1000



VGM 1250



Current (Amps) to 1.15V @ 68°F (20°C)

| Type     | Minutes |        |        |        | Hours  |        |        |        |        |        |        |        |        |        |
|----------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|          | 5       | 10     | 20     | 30     | 1      | 1.5    | 2      | 3      | 5      | 6      | 7      | 8      | 9      | 10     |
| VGM 11   | 7.70    | 7.10   | 6.40   | 6.00   | 4.90   | 4.17   | 3.61   | 2.80   | 2.20   | 1.85   | 1.60   | 1.42   | 1.27   | 1.16   |
| VGM 18   | 12.60   | 11.70  | 10.40  | 9.80   | 8.10   | 6.80   | 5.95   | 4.59   | 3.60   | 3.03   | 2.62   | 2.32   | 2.08   | 1.89   |
| VGM 24   | 16.80   | 15.60  | 13.90  | 13.10  | 10.70  | 9.14   | 7.90   | 6.12   | 4.80   | 4.04   | 3.50   | 3.09   | 2.77   | 2.52   |
| VGM 30   | 21.00   | 19.50  | 17.40  | 16.40  | 13.40  | 11.40  | 9.80   | 7.60   | 6.00   | 5.05   | 4.37   | 3.86   | 3.47   | 3.15   |
| VGM 40   | 29.60   | 26.10  | 23.20  | 21.80  | 17.80  | 15.20  | 13.10  | 10.20  | 8.00   | 6.73   | 5.83   | 5.15   | 4.62   | 4.20   |
| VGM 48   | 38.80   | 34.20  | 30.40  | 28.70  | 22.80  | 19.90  | 17.30  | 13.20  | 9.60   | 8.08   | 6.99   | 6.18   | 5.55   | 5.04   |
| VGM 55   | 48.00   | 42.30  | 37.60  | 35.40  | 27.70  | 24.60  | 21.50  | 16.20  | 11.00  | 9.26   | 8.01   | 7.08   | 6.36   | 5.78   |
| VGM 65   | 49.00   | 46.20  | 42.50  | 39.70  | 31.00  | 26.30  | 23.30  | 17.40  | 13.00  | 10.90  | 9.50   | 8.40   | 7.50   | 6.80   |
| VGM 75   | 56.60   | 53.90  | 48.30  | 45.50  | 35.90  | 30.40  | 26.80  | 20.10  | 15.00  | 12.60  | 10.90  | 9.70   | 8.70   | 7.90   |
| VGM 90   | 68.20   | 64.50  | 58.90  | 54.20  | 42.70  | 36.50  | 32.30  | 24.10  | 18.00  | 15.20  | 13.10  | 11.60  | 10.40  | 9.50   |
| VGM 110  | 83.50   | 78.90  | 71.40  | 66.80  | 52.40  | 44.60  | 39.40  | 29.50  | 22.00  | 18.50  | 16.00  | 14.20  | 12.70  | 11.60  |
| VGM 125  | 94.10   | 84.70  | 78.20  | 75.50  | 57.20  | 49.60  | 43.40  | 34.70  | 25.00  | 21.00  | 18.20  | 16.10  | 14.40  | 13.10  |
| VGM 140  | 104.60  | 95.20  | 85.90  | 78.40  | 64.00  | 55.40  | 48.70  | 38.80  | 28.00  | 23.60  | 20.40  | 18.00  | 16.20  | 14.70  |
| VGM 160  | 120.00  | 108.70 | 97.50  | 89.10  | 73.70  | 63.20  | 55.60  | 44.40  | 32.00  | 26.90  | 23.30  | 20.60  | 18.50  | 16.80  |
| VGM 185  | 138.20  | 126.00 | 112.90 | 102.60 | 85.40  | 72.90  | 64.40  | 51.30  | 37.00  | 31.10  | 27.00  | 23.80  | 21.40  | 19.40  |
| VGM 205  | 153.60  | 139.50 | 125.50 | 114.20 | 94.10  | 80.70  | 71.20  | 56.80  | 41.00  | 34.50  | 29.90  | 26.40  | 23.70  | 21.50  |
| VGM 225  | 162.20  | 147.20 | 132.20 | 120.00 | 98.90  | 88.50  | 78.00  | 58.80  | 45.00  | 37.90  | 32.80  | 29.00  | 26.00  | 23.60  |
| VGM 250  | 179.50  | 163.50 | 146.70 | 133.60 | 110.60 | 98.20  | 86.80  | 65.40  | 50.00  | 42.10  | 36.40  | 32.20  | 28.90  | 26.30  |
| VGM 270  | 193.90  | 176.00 | 158.30 | 144.20 | 119.30 | 105.90 | 93.60  | 70.60  | 54.00  | 45.50  | 39.30  | 34.80  | 31.20  | 28.40  |
| VGM 300  | 222.70  | 206.80 | 184.30 | 171.30 | 141.60 | 128.30 | 109.20 | 82.30  | 60.00  | 50.50  | 43.70  | 38.60  | 34.70  | 31.50  |
| VGM 320  | 238.10  | 220.30 | 195.90 | 183.00 | 151.30 | 137.10 | 117.00 | 87.80  | 64.00  | 53.90  | 46.60  | 41.20  | 37.00  | 33.60  |
| VGM 340  | 252.50  | 233.80 | 208.40 | 194.60 | 161.00 | 145.80 | 123.80 | 93.30  | 68.00  | 57.20  | 49.50  | 43.80  | 39.30  | 35.70  |
| VGM 355  | 264.00  | 244.30 | 218.10 | 202.30 | 167.80 | 152.60 | 129.70 | 97.00  | 71.00  | 59.80  | 51.70  | 45.70  | 41.00  | 37.30  |
| VGM 380  | 282.20  | 261.70 | 233.50 | 216.80 | 179.50 | 163.30 | 138.50 | 103.90 | 76.00  | 64.00  | 55.40  | 48.90  | 43.90  | 39.90  |
| VGM 400  | 289.90  | 268.40 | 239.30 | 222.60 | 184.30 | 167.20 | 142.40 | 109.80 | 80.00  | 67.30  | 58.30  | 51.50  | 46.20  | 42.00  |
| VGM 450  | 324.00  | 294.00 | 267.00 | 240.00 | 199.00 | 187.00 | 176.00 | 132.00 | 90.00  | 76.00  | 66.00  | 58.00  | 52.00  | 47.00  |
| VGM 500  | 359.00  | 327.00 | 297.00 | 267.00 | 221.00 | 207.00 | 195.00 | 147.00 | 100.00 | 84.00  | 73.00  | 64.00  | 58.00  | 52.00  |
| VGM 550  | 396.00  | 360.00 | 327.00 | 293.00 | 243.00 | 228.00 | 215.00 | 162.00 | 110.00 | 93.00  | 81.00  | 71.00  | 64.00  | 57.00  |
| VGM 600  | 431.00  | 392.00 | 356.00 | 320.00 | 265.00 | 249.00 | 234.00 | 176.00 | 120.00 | 101.00 | 87.00  | 77.00  | 69.00  | 63.00  |
| VGM 675  | 486.00  | 442.00 | 401.00 | 360.00 | 299.00 | 280.00 | 263.00 | 199.00 | 135.00 | 114.00 | 98.00  | 87.00  | 78.00  | 71.00  |
| VGM 750  | 540.00  | 491.00 | 446.00 | 400.00 | 332.00 | 311.00 | 293.00 | 221.00 | 150.00 | 126.00 | 109.00 | 97.00  | 87.00  | 79.00  |
| VGM 1000 | 719.00  | 654.00 | 594.00 | 533.00 | 442.00 | 415.00 | 390.00 | 294.00 | 200.00 | 168.00 | 146.00 | 129.00 | 116.00 | 105.00 |
| VGM 1250 | 899.00  | 818.00 | 742.00 | 667.00 | 552.00 | 518.00 | 488.00 | 368.00 | 250.00 | 210.00 | 182.00 | 161.00 | 144.00 | 131.00 |

Current (Amps) to 1.10V @ 68°F (20°C)

| Type     | Minutes |         |        |        | Hours  |        |        |        |        |        |        |        |        |        |
|----------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|          | 5       | 10      | 20     | 30     | 1      | 1.5    | 2      | 3      | 5      | 6      | 7      | 8      | 9      | 10     |
| VGM 11   | 11.20   | 9.80    | 8.30   | 7.70   | 6.30   | 5.09   | 4.36   | 3.23   | 2.33   | 1.95   | 1.68   | 1.47   | 1.32   | 1.19   |
| VGM 18   | 18.30   | 16.00   | 13.60  | 12.70  | 10.30  | 8.36   | 7.12   | 5.29   | 3.82   | 3.20   | 2.75   | 2.42   | 2.16   | 1.95   |
| VGM 24   | 24.40   | 21.40   | 18.10  | 16.80  | 13.70  | 11.08  | 9.56   | 7.06   | 5.09   | 4.26   | 3.66   | 3.22   | 2.87   | 2.60   |
| VGM 30   | 30.50   | 26.60   | 22.70  | 21.10  | 17.10  | 13.90  | 11.90  | 8.80   | 6.36   | 5.32   | 4.58   | 4.02   | 3.59   | 3.24   |
| VGM 40   | 37.20   | 33.20   | 29.70  | 27.40  | 22.70  | 18.50  | 16.00  | 11.80  | 8.48   | 7.09   | 6.11   | 5.36   | 4.79   | 4.32   |
| VGM 48   | 48.90   | 43.60   | 39.00  | 36.00  | 27.90  | 23.50  | 20.10  | 14.80  | 10.00  | 8.37   | 7.20   | 6.33   | 5.64   | 5.10   |
| VGM 55   | 60.50   | 53.90   | 48.30  | 44.50  | 33.10  | 28.60  | 24.20  | 17.70  | 11.50  | 9.62   | 8.28   | 7.27   | 6.49   | 5.87   |
| VGM 65   | 68.20   | 63.50   | 56.90  | 52.30  | 39.80  | 32.50  | 28.10  | 20.00  | 13.80  | 11.55  | 9.94   | 8.73   | 7.79   | 7.04   |
| VGM 75   | 78.70   | 73.10   | 65.60  | 60.00  | 46.60  | 37.50  | 32.40  | 23.00  | 15.90  | 13.30  | 11.45  | 10.06  | 8.97   | 8.11   |
| VGM 90   | 94.10   | 88.50   | 79.10  | 71.60  | 55.30  | 45.00  | 38.80  | 27.60  | 19.10  | 15.98  | 13.75  | 12.08  | 10.78  | 9.74   |
| VGM 110  | 115.20  | 107.70  | 96.50  | 88.10  | 67.90  | 55.00  | 47.50  | 33.80  | 23.30  | 19.49  | 16.78  | 14.74  | 13.15  | 11.88  |
| VGM 125  | 122.90  | 111.60  | 103.30 | 94.90  | 72.80  | 62.20  | 52.90  | 38.80  | 26.30  | 22.00  | 18.90  | 16.60  | 14.80  | 13.40  |
| VGM 140  | 137.30  | 125.10  | 115.80 | 105.50 | 85.40  | 70.00  | 59.30  | 43.50  | 29.40  | 24.60  | 21.20  | 18.60  | 16.60  | 15.00  |
| VGM 160  | 157.40  | 142.40  | 132.20 | 121.00 | 98.00  | 79.70  | 67.80  | 49.70  | 33.60  | 28.10  | 24.20  | 21.30  | 19.00  | 17.10  |
| VGM 185  | 182.40  | 164.50  | 152.50 | 139.40 | 112.50 | 92.30  | 78.00  | 57.50  | 38.90  | 32.50  | 28.00  | 24.60  | 22.00  | 19.80  |
| VGM 205  | 201.60  | 182.80  | 168.90 | 154.90 | 125.10 | 102.10 | 86.80  | 63.70  | 43.10  | 36.10  | 31.00  | 27.30  | 24.30  | 22.00  |
| VGM 225  | 212.20  | 192.40  | 177.60 | 163.60 | 131.90 | 111.80 | 95.60  | 68.40  | 47.30  | 39.60  | 34.10  | 29.90  | 26.70  | 24.10  |
| VGM 250  | 236.20  | 213.60  | 197.80 | 181.00 | 146.50 | 124.40 | 106.30 | 76.00  | 52.60  | 44.00  | 37.90  | 33.30  | 29.70  | 26.80  |
| VGM 270  | 255.40  | 230.90  | 213.30 | 195.50 | 158.10 | 134.10 | 114.10 | 82.10  | 56.80  | 47.50  | 40.90  | 35.90  | 32.10  | 29.00  |
| VGM 300  | 299.50  | 270.30  | 250.90 | 224.60 | 182.40 | 160.40 | 129.70 | 91.90  | 63.00  | 52.70  | 45.40  | 39.80  | 35.60  | 32.10  |
| VGM 320  | 318.70  | 287.60  | 267.30 | 240.10 | 194.00 | 171.10 | 138.50 | 98.00  | 67.20  | 56.20  | 48.40  | 42.50  | 37.90  | 34.30  |
| VGM 340  | 338.90  | 305.90  | 284.70 | 254.60 | 206.60 | 181.80 | 147.20 | 103.90 | 71.40  | 59.70  | 51.40  | 45.20  | 40.30  | 36.40  |
| VGM 355  | 354.20  | 319.40  | 297.20 | 266.20 | 215.30 | 190.50 | 153.10 | 108.80 | 74.60  | 62.40  | 53.70  | 47.20  | 42.10  | 38.00  |
| VGM 380  | 379.20  | 342.50  | 317.50 | 284.60 | 230.90 | 203.10 | 164.80 | 116.60 | 79.80  | 66.80  | 57.50  | 50.50  | 45.00  | 40.70  |
| VGM 400  | 388.80  | 351.10  | 326.20 | 292.30 | 236.70 | 209.00 | 168.70 | 122.50 | 84.00  | 70.30  | 60.50  | 53.10  | 47.40  | 42.80  |
| VGM 450  | 425.00  | 385.00  | 356.00 | 326.00 | 264.00 | 231.00 | 198.00 | 146.00 | 94.50  | 79.10  | 68.00  | 59.80  | 53.30  | 48.20  |
| VGM 500  | 472.00  | 427.00  | 396.00 | 362.00 | 293.00 | 257.00 | 220.00 | 163.00 | 105.00 | 87.90  | 75.60  | 66.40  | 59.20  | 53.60  |
| VGM 550  | 519.00  | 470.00  | 435.00 | 399.00 | 322.00 | 283.00 | 242.00 | 178.00 | 116.00 | 96.70  | 83.10  | 73.10  | 65.10  | 58.90  |
| VGM 600  | 567.00  | 513.00  | 475.00 | 435.00 | 352.00 | 308.00 | 264.00 | 195.00 | 126.00 | 105.40 | 90.70  | 79.70  | 71.10  | 64.30  |
| VGM 675  | 638.00  | 577.00  | 535.00 | 490.00 | 396.00 | 347.00 | 297.00 | 220.00 | 142.00 | 118.80 | 102.20 | 89.80  | 80.20  | 72.40  |
| VGM 750  | 708.00  | 642.00  | 593.00 | 544.00 | 439.00 | 386.00 | 330.00 | 243.00 | 158.00 | 132.20 | 113.80 | 99.90  | 89.20  | 80.60  |
| VGM 1000 | 945.00  | 855.00  | 791.00 | 725.00 | 586.00 | 514.00 | 440.00 | 324.00 | 210.00 | 175.70 | 151.20 | 132.80 | 118.50 | 107.10 |
| VGM 1250 | 1182.00 | 1069.00 | 989.00 | 906.00 | 733.00 | 642.00 | 550.00 | 406.00 | 263.00 | 220.00 | 189.40 | 166.30 | 148.40 | 134.10 |

## Current (Amps) to 1.05V @ 68°F (20°C)

| Type     | Minutes |         |         |         | Hours  |        |        |        |        |        |        |        |        |        |
|----------|---------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|          | 5       | 10      | 20      | 30      | 1      | 1.5    | 2      | 3      | 5      | 6      | 7      | 8      | 9      | 10     |
| VGM 11   | 14.10   | 12.90   | 10.80   | 9.60    | 7.30   | 5.99   | 4.89   | 3.45   | 2.38   | 1.99   | 1.71   | 1.50   | 1.33   | 1.20   |
| VGM 18   | 23.10   | 21.10   | 17.70   | 15.60   | 11.90  | 9.82   | 8.00   | 5.64   | 3.89   | 3.25   | 2.79   | 2.45   | 2.18   | 1.96   |
| VGM 24   | 30.90   | 28.10   | 23.50   | 20.80   | 15.90  | 13.02  | 10.73  | 7.53   | 5.18   | 4.33   | 3.71   | 3.26   | 2.90   | 2.62   |
| VGM 30   | 38.60   | 35.10   | 29.40   | 26.00   | 19.90  | 16.30  | 13.40  | 9.40   | 6.48   | 5.41   | 4.65   | 4.07   | 3.63   | 3.27   |
| VGM 40   | 47.20   | 41.50   | 35.60   | 32.70   | 26.60  | 21.90  | 17.70  | 12.50  | 8.64   | 7.21   | 6.20   | 5.43   | 4.84   | 4.36   |
| VGM 48   | 62.00   | 54.40   | 46.80   | 43.00   | 32.20  | 26.40  | 21.80  | 15.60  | 10.40  | 8.68   | 7.46   | 6.54   | 5.82   | 5.25   |
| VGM 55   | 76.80   | 67.30   | 57.90   | 53.20   | 37.80  | 31.90  | 25.90  | 18.60  | 12.10  | 10.10  | 8.68   | 7.61   | 6.78   | 6.11   |
| VGM 65   | 81.60   | 75.00   | 67.60   | 62.00   | 45.60  | 37.30  | 29.80  | 20.80  | 14.10  | 11.77  | 10.11  | 8.87   | 7.90   | 7.12   |
| VGM 75   | 94.10   | 86.60   | 77.20   | 71.60   | 53.40  | 43.10  | 34.40  | 24.00  | 16.20  | 13.53  | 11.62  | 10.19  | 9.07   | 8.18   |
| VGM 90   | 113.30  | 103.90  | 93.60   | 85.20   | 63.10  | 51.70  | 41.30  | 28.80  | 19.50  | 16.28  | 13.98  | 12.26  | 10.92  | 9.85   |
| VGM 110  | 138.20  | 127.00  | 113.90  | 104.50  | 77.60  | 63.20  | 50.50  | 35.20  | 23.80  | 19.87  | 17.07  | 14.96  | 13.33  | 12.02  |
| VGM 125  | 147.80  | 133.70  | 122.60  | 112.30  | 86.30  | 71.90  | 57.60  | 40.40  | 26.90  | 22.46  | 19.29  | 16.91  | 15.06  | 13.58  |
| VGM 140  | 173.80  | 157.80  | 144.80  | 132.60  | 101.90 | 80.70  | 64.50  | 45.30  | 30.10  | 25.13  | 21.59  | 18.93  | 16.86  | 15.20  |
| VGM 160  | 198.70  | 179.90  | 166.00  | 151.00  | 116.40 | 92.30  | 73.80  | 51.70  | 34.40  | 28.72  | 24.67  | 21.63  | 19.26  | 17.37  |
| VGM 185  | 229.40  | 208.80  | 192.00  | 174.20  | 134.80 | 106.90 | 85.80  | 59.80  | 39.80  | 33.20  | 28.50  | 25.00  | 22.30  | 20.10  |
| VGM 205  | 254.40  | 230.90  | 212.30  | 193.60  | 149.40 | 118.60 | 94.60  | 66.20  | 44.10  | 36.80  | 31.60  | 27.70  | 24.70  | 22.30  |
| VGM 225  | 267.80  | 243.40  | 223.90  | 204.20  | 157.10 | 130.20 | 103.40 | 72.70  | 48.40  | 40.40  | 34.70  | 30.40  | 27.10  | 24.40  |
| VGM 250  | 297.60  | 270.30  | 249.00  | 226.50  | 174.60 | 144.80 | 115.10 | 80.80  | 53.80  | 44.90  | 38.60  | 33.80  | 30.10  | 27.20  |
| VGM 270  | 321.60  | 291.50  | 268.30  | 244.90  | 189.20 | 156.50 | 124.80 | 87.20  | 58.10  | 48.50  | 41.70  | 36.50  | 32.50  | 29.30  |
| VGM 300  | 361.90  | 332.90  | 304.00  | 274.90  | 216.30 | 179.80 | 137.50 | 94.10  | 64.50  | 53.90  | 46.30  | 40.60  | 36.10  | 32.60  |
| VGM 320  | 385.90  | 355.00  | 324.20  | 293.30  | 230.90 | 191.50 | 146.30 | 100.00 | 68.80  | 57.40  | 49.30  | 43.30  | 38.50  | 34.70  |
| VGM 340  | 409.90  | 377.10  | 344.50  | 311.70  | 245.40 | 203.10 | 156.00 | 106.80 | 73.10  | 61.00  | 52.40  | 46.00  | 40.90  | 36.90  |
| VGM 355  | 428.20  | 394.40  | 359.90  | 325.20  | 256.10 | 211.90 | 162.80 | 111.70 | 76.30  | 63.70  | 54.70  | 48.00  | 42.70  | 38.50  |
| VGM 380  | 457.90  | 421.40  | 385.00  | 348.50  | 274.50 | 227.40 | 173.60 | 119.60 | 81.70  | 68.20  | 58.60  | 51.40  | 45.80  | 41.30  |
| VGM 400  | 470.40  | 432.90  | 395.70  | 357.20  | 281.30 | 233.30 | 178.40 | 125.40 | 86.00  | 71.80  | 61.70  | 54.10  | 48.20  | 43.40  |
| VGM 450  | 536.00  | 487.00  | 448.00  | 408.00  | 310.00 | 261.00 | 213.00 | 153.00 | 99.00  | 82.70  | 71.00  | 62.20  | 55.40  | 50.00  |
| VGM 500  | 595.00  | 541.00  | 498.00  | 453.00  | 345.00 | 291.00 | 236.00 | 170.00 | 110.00 | 91.90  | 78.90  | 69.10  | 61.60  | 55.60  |
| VGM 550  | 655.00  | 595.00  | 547.00  | 499.00  | 379.00 | 320.00 | 259.00 | 187.00 | 121.00 | 101.10 | 86.80  | 76.00  | 67.70  | 61.10  |
| VGM 600  | 714.00  | 649.00  | 597.00  | 543.00  | 414.00 | 349.00 | 284.00 | 204.00 | 132.00 | 110.20 | 94.70  | 83.00  | 73.90  | 66.70  |
| VGM 675  | 804.00  | 730.00  | 672.00  | 612.00  | 466.00 | 393.00 | 319.00 | 229.00 | 149.00 | 124.40 | 106.90 | 93.70  | 83.40  | 75.20  |
| VGM 750  | 893.00  | 811.00  | 746.00  | 680.00  | 517.00 | 435.00 | 354.00 | 255.00 | 165.00 | 137.80 | 118.30 | 103.70 | 92.40  | 83.30  |
| VGM 1000 | 1190.00 | 1081.00 | 995.00  | 906.00  | 690.00 | 581.00 | 472.00 | 340.00 | 220.00 | 183.70 | 157.80 | 138.30 | 123.20 | 111.10 |
| VGM 1250 | 1488.00 | 1353.00 | 1244.00 | 1132.00 | 862.00 | 726.00 | 591.00 | 424.00 | 275.00 | 229.60 | 197.20 | 172.90 | 154.00 | 138.90 |

## Current (Amps) to 1.00V @ 68°F (20°C)

| Type     | Minutes |         |         |         | Hours  |        |        |        |        |        |        |        |        |        |
|----------|---------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|          | 5       | 10      | 20      | 30      | 1      | 1.5    | 2      | 3      | 5      | 6      | 7      | 8      | 9      | 10     |
| VGM 11   | 16.20   | 15.30   | 13.00   | 11.40   | 8.30   | 6.52   | 5.19   | 3.63   | 2.42   | 2.02   | 1.74   | 1.52   | 1.36   | 1.22   |
| VGM 18   | 26.60   | 25.00   | 21.30   | 19.20   | 14.10  | 10.69  | 8.48   | 5.94   | 3.96   | 3.31   | 2.84   | 2.49   | 2.22   | 2.00   |
| VGM 24   | 35.50   | 33.40   | 28.50   | 25.60   | 18.80  | 14.19  | 11.31  | 7.92   | 5.28   | 4.41   | 3.79   | 3.32   | 2.96   | 2.67   |
| VGM 30   | 44.40   | 41.80   | 35.60   | 31.90   | 23.60  | 17.80  | 14.10  | 9.90   | 6.60   | 5.51   | 4.73   | 4.15   | 3.70   | 3.33   |
| VGM 40   | 53.20   | 48.60   | 41.00   | 39.90   | 31.40  | 23.70  | 18.90  | 13.20  | 8.80   | 7.35   | 6.31   | 5.53   | 4.93   | 4.44   |
| VGM 48   | 69.80   | 63.80   | 52.90   | 50.60   | 36.70  | 29.50  | 23.10  | 16.00  | 10.50  | 8.77   | 7.53   | 6.60   | 5.88   | 5.30   |
| VGM 55   | 86.40   | 78.90   | 64.70   | 58.60   | 43.20  | 35.20  | 27.20  | 18.80  | 12.20  | 10.19  | 8.75   | 7.67   | 6.83   | 6.16   |
| VGM 65   | 94.10   | 87.50   | 77.20   | 71.60   | 52.40  | 39.60  | 31.20  | 21.50  | 14.30  | 11.94  | 10.26  | 8.99   | 8.01   | 7.22   |
| VGM 75   | 108.50  | 101.00  | 89.70   | 82.30   | 60.10  | 45.60  | 36.00  | 24.70  | 16.50  | 13.78  | 11.83  | 10.37  | 9.24   | 8.33   |
| VGM 90   | 129.60  | 121.20  | 107.10  | 98.70   | 71.80  | 54.70  | 43.20  | 29.70  | 19.80  | 16.53  | 14.20  | 12.45  | 11.09  | 10.00  |
| VGM 110  | 158.40  | 148.10  | 131.20  | 121.00  | 88.30  | 66.90  | 52.70  | 36.30  | 24.20  | 20.21  | 17.35  | 15.22  | 13.55  | 12.22  |
| VGM 125  | 174.70  | 161.60  | 145.70  | 134.60  | 98.00  | 76.80  | 59.50  | 41.30  | 27.50  | 22.96  | 19.72  | 17.29  | 15.40  | 13.89  |
| VGM 140  | 206.40  | 190.50  | 171.80  | 158.80  | 116.40 | 86.50  | 66.60  | 46.20  | 30.80  | 25.72  | 22.09  | 19.37  | 17.25  | 15.55  |
| VGM 160  | 236.20  | 217.40  | 195.90  | 181.00  | 132.90 | 98.20  | 76.10  | 52.80  | 35.20  | 29.39  | 25.24  | 22.13  | 19.71  | 17.78  |
| VGM 185  | 272.60  | 252.00  | 226.80  | 210.10  | 153.30 | 113.70 | 87.80  | 61.10  | 40.70  | 34.00  | 29.20  | 25.60  | 22.80  | 20.60  |
| VGM 205  | 302.40  | 279.00  | 250.90  | 232.30  | 169.80 | 126.40 | 97.50  | 67.60  | 45.10  | 37.70  | 32.30  | 28.40  | 25.30  | 22.80  |
| VGM 225  | 318.70  | 294.40  | 264.40  | 244.90  | 180.40 | 139.00 | 107.30 | 74.20  | 49.50  | 41.30  | 35.50  | 31.10  | 27.70  | 25.00  |
| VGM 250  | 354.20  | 327.10  | 293.40  | 272.00  | 198.90 | 154.50 | 119.00 | 82.40  | 55.00  | 45.90  | 39.40  | 34.60  | 30.80  | 27.80  |
| VGM 270  | 382.10  | 353.10  | 317.50  | 293.30  | 216.30 | 166.20 | 128.70 | 89.10  | 59.40  | 49.60  | 42.60  | 37.30  | 33.30  | 30.00  |
| VGM 300  | 441.60  | 399.20  | 357.10  | 324.30  | 242.50 | 181.80 | 140.40 | 96.30  | 66.00  | 55.10  | 47.30  | 41.50  | 37.00  | 33.30  |
| VGM 320  | 471.40  | 426.20  | 381.20  | 346.50  | 259.00 | 193.40 | 149.20 | 102.90 | 70.40  | 58.80  | 50.50  | 44.30  | 39.40  | 35.60  |
| VGM 340  | 500.20  | 453.10  | 404.30  | 367.80  | 274.50 | 206.10 | 158.90 | 108.80 | 74.80  | 62.50  | 53.60  | 47.00  | 41.90  | 37.80  |
| VGM 355  | 522.20  | 473.30  | 422.70  | 384.30  | 287.10 | 214.80 | 165.80 | 113.70 | 78.10  | 65.20  | 56.00  | 49.10  | 43.70  | 39.40  |
| VGM 380  | 559.70  | 506.00  | 452.60  | 411.40  | 307.50 | 230.40 | 177.50 | 121.50 | 83.60  | 69.80  | 60.00  | 52.60  | 46.80  | 42.20  |
| VGM 400  | 574.10  | 519.50  | 464.20  | 422.00  | 315.30 | 236.20 | 182.30 | 128.40 | 88.00  | 73.50  | 63.10  | 55.30  | 49.30  | 44.40  |
| VGM 450  | 637.00  | 589.00  | 528.00  | 479.00  | 354.00 | 289.00 | 223.00 | 155.00 | 99.90  | 83.40  | 71.60  | 62.80  | 55.90  | 50.40  |
| VGM 500  | 708.00  | 654.00  | 587.00  | 532.00  | 394.00 | 321.00 | 248.00 | 172.00 | 111.00 | 92.70  | 79.60  | 69.80  | 62.10  | 56.00  |
| VGM 550  | 780.00  | 720.00  | 646.00  | 586.00  | 433.00 | 353.00 | 273.00 | 189.00 | 122.00 | 101.90 | 87.50  | 76.80  | 68.30  | 61.60  |
| VGM 600  | 850.00  | 785.00  | 703.00  | 639.00  | 472.00 | 385.00 | 297.00 | 207.00 | 133.00 | 111.10 | 95.40  | 83.60  | 74.50  | 67.20  |
| VGM 675  | 956.00  | 883.00  | 792.00  | 719.00  | 532.00 | 434.00 | 335.00 | 232.00 | 150.00 | 125.30 | 107.60 | 94.30  | 84.00  | 75.80  |
| VGM 750  | 1063.00 | 981.00  | 880.00  | 799.00  | 590.00 | 481.00 | 372.00 | 258.00 | 167.00 | 139.40 | 119.80 | 105.00 | 93.50  | 84.30  |
| VGM 1000 | 1417.00 | 1308.00 | 1173.00 | 1065.00 | 787.00 | 642.00 | 496.00 | 344.00 | 222.00 | 185.40 | 159.20 | 139.60 | 124.30 | 112.10 |
| VGM 1250 | 1770.00 | 1635.00 | 1466.00 | 1331.00 | 984.00 | 802.00 | 620.00 | 430.00 | 278.00 | 232.10 | 199.40 | 174.80 | 155.70 | 140.40 |



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