

Reference Chart

The longevity estimates provided are mean values calculated for the parameters given. The actual longevity achieved for any device while implanted will depend on the actual programmed parameters and patient factors, and may differ significantly from these estimates.

| Model Number | Family | Connector Style | Volume/ Mass* | Delivered Energy | Estimated Longevity | | | | | Elective Replacement (ERI)*** | | End of Life (EOL) Battery Voltage |
|--------------|--------------|-----------------|------------------|------------------|----------------------|--------------|-------------|-------------|--------------|-------------------------------|-------------------------|-----------------------------------|
| | | | | | Charging Frequency** | 100% Pacing# | 50% Pacing# | 15% Pacing# | 100% Sensing | Battery Voltage | Charge Time | |
| 7227 | GEM | B, Cx, D, E | 49 cc* 90 g | 35 J | Monthly | 5.3 | 5.7 | 6.0 | 6.1 | ≤ 2.55 V | — | ≤ 2.40 V [§] |
| | | | | | Quarterly | 7.7 | 8.5 | 9.3 | 9.6 | | | |
| | | | | | Semiannual | 8.8 | 10.0 | 11.0 | 11.5 | | | |
| 7229 | GEM II VR | Cx | 39 cc 77 g | 30 J | Monthly | 3.6 | 3.9 | 4.1 | 4.2 | ≤ 2.55 V | — | ≤ 2.40 V |
| | | | | | Quarterly | 5.0 | 5.5 | 6.0 | 6.2 | | | |
| | | | | | Semiannual | 5.6 | 6.3 | 6.9 | 7.1 | | | |
| 7230 | Marquis VR | B, Cx, E | 36 cc 75 g | 30 J | Monthly | 4.9 | 5.2 | 5.4 | 5.5 | ≤ 2.62 V | > 16-second charge time | 3 months after ERI |
| | | | | | Quarterly | 7.3 | 8.0 | 8.5 | 8.7 | | | |
| | | | | | Semiannual | 8.5 | 9.3 | 10.0 | 10.4 | | | |
| 7231 | GEM III VR | Cx | 39 cc 77 g | 30 J | Monthly | 4.3 | 4.7 | 5.0 | 5.2 | ≤ 2.55 V | — | ≤ 2.40 V |
| | | | | | Quarterly | 6.0 | 6.8 | 7.4 | 7.8 | | | |
| | | | | | Semiannual | 6.6 | 7.5 | 8.5 | 8.9 | | | |
| 7232 | Maximo VR | B, Cx, E | 39 cc 76 g | 35 J | Monthly | 4.4 | 4.7 | 4.8 | 4.9 | ≤ 2.62 V | > 16-second charge time | 3 months after ERI |
| | | | | | Quarterly | 7.0 | 7.5 | 8.0 | 8.3 | | | |
| | | | | | Semiannual | 8.2 | 9.0 | 9.7 | 10.0 | | | |
| 7271 | GEM DR | DR | 62 cc 115 g | 35 J | Monthly | 6.0 | 6.9 | 7.5 | 7.8 | ≤ 4.91 V | — | ≤ 4.57 V [§] |
| | | | | | Quarterly | 7.4 | 8.4 | 9.3 | 9.8 | | | |
| | | | | | Semiannual | 7.9 | 9.0 | 10.0 | 10.6 | | | |
| 7274 | Marquis DR | DR+LV | 36 cc 75 g | 30 J | Monthly | 4.0 | 4.4 | 4.8 | 4.9 | ≤ 2.62 V | > 16-second charge time | 3 months after ERI |
| | | | | | Quarterly | 5.6 | 6.4 | 7.1 | 7.5 | | | |
| | | | | | Semiannual | 6.2 | 7.2 | 8.1 | 8.6 | | | |
| 7275 | GEM III DR | DR | 39.5 cc 78 g | 30 J | Monthly | 3.3 | 3.8 | 4.3 | 4.4 | ≤ 2.55 V | — | ≤ 2.40 V |
| | | | | | Quarterly | 4.2 | 5.0 | 5.8 | 6.3 | | | |
| | | | | | Semiannual | 4.5 | 5.5 | 6.5 | 7.0 | | | |
| 7276 | GEM III AT | DR | 39 cc 77 g | 30 J | Monthly | 3.3 | 3.8 | 4.3 | 4.5 | ≤ 2.55 V | — | ≤ 2.40 V |
| | | | | | Quarterly | 4.3 | 5.1 | 5.9 | 6.3 | | | |
| | | | | | Semiannual | 4.5 | 5.5 | 6.5 | 7.0 | | | |
| 7278 | Maximo DR | DR | 39 cc 77 g | 35 J | Monthly | 3.7 | 4.1 | 4.3 | 4.5 | ≤ 2.62 V | > 16-second charge time | 3 months after ERI |
| | | | | | Quarterly | 5.3 | 6.1 | 6.8 | 7.1 | | | |
| | | | | | Semiannual | 6.0 | 7.0 | 8.0 | 8.5 | | | |
| 7287 | Intrinsic 30 | DR | 36 cc 75 g | 30 J | Monthly | 4.0 | 4.3 | 4.7 | 4.8 | ≤ 2.62 V | > 16-second charge time | 3 months after ERI |
| | | | | | Quarterly | 5.5 | 6.3 | 7.0 | 7.4 | | | |
| | | | | | Semiannual | 6.2 | 7.2 | 8.2 | 8.6 | | | |
| 7288 | Intrinsic | DR | 38 cc 76 g | 35 J | Monthly | 3.7 | 4.1 | 4.3 | 4.5 | ≤ 2.62 V | > 16-second charge time | 3 months after ERI |
| | | | | | Quarterly | 5.4 | 6.1 | 6.8 | 7.1 | | | |
| | | | | | Semiannual | 6.1 | 7.0 | 8.0 | 8.5 | | | |
| 7290 | Onyx | Cx | 39 cc 77 g | 30 J | Monthly | 3.8 | 4.1 | 4.3 | 4.5 | ≤ 2.55 V | > 16-second charge time | ≤ 2.40 V |
| | | | | | Quarterly | 5.0 | 5.6 | 6.2 | 6.4 | | | |
| | | | | | Semiannual | 5.4 | 6.1 | 6.7 | 7.0 | | | |

* Volume and mass differ by connector style.

** A full charge is a full energy therapeutic shock or capacitor reformation.

*** The minimum time between ERI and EOL is 3 months (100% pacing, two charges per month).

‡ Pacing mode is VVI for single chamber models and DDD for dual chamber and CRT models. Parameter settings; lower rate at 60 ppm, sensing rate at 70 bpm, (A, RV, LV) 3.0 V amplitude, 0.4 ms pulse width, and 510-ohm pace load per applicable channel. CRT models with shared biventricular pacing; InSync Marquis 7277 (LV impedance set to 510 ohms), InSync ICD 7272 (RV amplitude set to 4.0 V).

For Model 7223 devices, if charge time exceeds 60 seconds, the devices are at EOL. If two consecutive charge cycles exceed 60 seconds, the “charge circuit inactive” indicator is tripped and all therapies except emergency output VVI pacing are disabled.

§ For Model 7271 and 7227 devices, if charge time exceeds 30 seconds, the device is at EOL. Immediate replacement is recommended. If three consecutive charge cycles exceed 30 seconds, the “charge circuit inactive” indicator is tripped and all therapies except emergency VVI pacing are disabled.

continued

Reference Chart continued

| Model Number | Family | Connector Style | Volume/ Mass* | Delivered Energy | Charging Frequency** | Estimated Longevity | | | | Recommended Replacement (RRT)*** | | End of Service (EOS) |
|---------------------|--------------|-----------------|------------------|------------------|----------------------|---------------------|-------------|-------------|--------------|----------------------------------|-------------|---|
| | | | | | | 100% Pacing† | 50% Pacing† | 15% Pacing† | 100% Sensing | Battery Voltage | Charge Time | |
| D153ATG, D153DRG | EnTrust | DR | 33 cc 63 g | 30 J | Monthly | 3.5 | 3.8 | 4.1 | 4.2 | ≤ 2.61 V | — | 3 months after RRT or > 16-second charge time |
| | | | | | Quarterly | 4.8 | 5.4 | 6.0 | 6.3 | | | |
| | | | | | Semiannual | 5.3 | 6.1 | 6.9 | 7.2 | | | |
| D153VRC | EnTrust | Cx | 32 cc 63 g | 30 J | Monthly | 4.4 | 4.7 | 4.9 | 5.0 | ≤ 2.61 V | — | 3 months after RRT or > 16-second charge time |
| | | | | | Quarterly | 6.8 | 7.4 | 7.9 | 8.1 | | | |
| | | | | | Semiannual | 7.9 | 8.7 | 9.5 | 9.8 | | | |
| D154ATG, D154DRG | EnTrust | DR | 35 cc 68 g | 35 J | Monthly | 3.8 | 4.2 | 4.4 | 4.6 | ≤ 2.61 V | — | 3 months after RRT or > 16-second charge time |
| | | | | | Quarterly | 5.5 | 6.1 | 6.8 | 7.0 | | | |
| | | | | | Semiannual | 6.1 | 7.0 | 7.9 | 8.3 | | | |
| D154AWG, D164AWG | Virtuoso | DR | 37 cc 68 g | 35 J | Monthly | 4.1 | 4.5 | 4.8 | 5.0 | ≤ 2.62 V | — | 3 months after RRT or > 16-second charge time |
| | | | | | Quarterly | 6.3 | 7.3 | 8.3 | 8.8 | | | |
| | | | | | Semiannual | 7.3 | 8.7 | 10.1 | 11.0 | | | |
| D154VRC | EnTrust | Cx | 35 cc 68 g | 35 J | Monthly | 4.8 | 5.0 | 5.2 | 5.3 | ≤ 2.61 V | — | 3 months after RRT or > 16-second charge time |
| | | | | | Quarterly | 7.5 | 8.3 | 8.8 | 9.0 | | | |
| | | | | | Semiannual | 9.0 | 10.0 | 10.7 | 11.0 | | | |
| D154VWC, D164VWC | Virtuoso | Cx | 37 cc 68 g | 35 J | Monthly | 4.8 | 5.1 | 5.3 | 5.4 | ≤ 2.62 V | — | 3 months after RRT or > 16-second charge time |
| | | | | | Quarterly | 8.1 | 9.0 | 9.6 | 10.0 | | | |
| | | | | | Semiannual | 10.0 | 11.2 | 12.3 | 12.9 | | | |
| D224DRG | Secura DR | DR | 37 cc 68 g | 35J | Monthly | 3.60 | 4.08 | 4.50 | 4.67 | ≤ 2.63 V | — | 3 months after RRT or > 16-second charge time |
| | | | | | Quarterly | 5.07 | 6.05 | 7.00 | 7.50 | | | |
| | | | | | Semiannual | 5.70 | 7.00 | 8.27 | 9.00 | | | |
| D224VRC | Secura VR | Cx | 37 cc 68 g | 35J | Monthly | 4.33 | 4.67 | 4.92 | 5.00 | ≤ 2.63 V | — | 3 months after RRT or > 19-second charge time |
| | | | | | Quarterly | 6.67 | 7.45 | 8.05 | 8.41 | | | |
| | | | | | Semiannual | 7.76 | 8.85 | 9.79 | 10.25 | | | |
| D284DRG | Maximo II DR | DR | 37 cc 68 g | 35J | Monthly | 3.60 | 4.08 | 4.50 | 4.67 | ≤ 2.63 V | — | 3 months after RRT or > 16-second charge time |
| | | | | | Quarterly | 5.07 | 6.05 | 7.00 | 7.50 | | | |
| | | | | | Semiannual | 5.70 | 7.00 | 8.27 | 9.00 | | | |
| D284VRC | Maximo II VR | Cx | 37 cc 68 g | 35J | Monthly | 4.33 | 4.67 | 4.92 | 5.00 | ≤ 2.63 V | — | 3 months after RRT or > 19-second charge time |
| | | | | | Quarterly | 6.67 | 7.45 | 8.05 | 8.41 | | | |
| | | | | | Semiannual | 7.76 | 8.85 | 9.79 | 10.25 | | | |

* Volume and mass differ by connector style.

** A full charge is a full energy therapeutic shock or capacitor reformation.

*** The minimum time between RRT and EOS is 3 months (100% pacing, two charges per month).

† Pacing mode is VVI for single chamber models and DDD for dual chamber models. Parameter settings; lower rate at 60 ppm, sensing rate at 70 bpm, (A, RV, LV) 3.0 V amplitude, 0.4 ms pulse width, and 510-ohm pace load per applicable channel.