

SPIRALCELL TECHNOLOGY®

99.99% Pure Lead
Spiralcell design allows for lead to be used in its purest form

Solid Cast Cell Connections
for increased durability and maximum plate height

Spiralcell Technology
for superior vibration resistance and extended life

Tightly Compressed Cells
for added vibration resistance

Absorbent Glass-Mat Separators
holds electrolyte like a sponge to eliminate acid spilling



REDTOP SPECIFICATIONS

Model Number	Voltage	Cold Cranking Amps @ -18C (BCI)	Cold Cranking Amps @ -18C (EN)	Cranking Amps @ 0C	Reserve Capacity	Capacity (C/20 Rate)	Internal Resistance (ohms)	Dimensions(CM)			Weight (Kg)	Post Type	BCI Group
								Length	Width	Height			
34/78	12V	800	815	1000	100	50	.0030	25.4	17.5	19.8	17.6	Dual SAE/ST	34/78
75/25	12V	720	730	910	90	44	.0030	23.7	17.3	19.4	15	Dual SAE/ST	75/25
25	12V	720	730	910	90	44	.0030	23.7	17.3	19.4	14.4	SAE	25
34	12V	800	815	1000	100	50	.0030	25.4	17.5	19.8	17.2	SAE	34
34R	12V	800	815	1000	100	50	.0030	25.4	17.5	19.8	17.2	SAE	34R
35	12V	720	730	910	90	44	.0030	23.7	17.3	19.4	14.4	SAE	35
6V	6V	800	815	1000	100	50	.0019	25.4	9.0	20.6	8.4	SAE	N/A

BLUETOP SPECIFICATIONS

Model Number	Voltage	Cold Cranking Amps @ -18C (BCI)	Cold Cranking Amps @ -18C (EN)	Cranking Amps @ 0C	Reserve Capacity	Capacity (C/20 Rate)	Internal Resistance (ohms)	Dimensions(CM)			Weight (Kg)	Post Type	BCI Group
								Length	Width	Height			
34M***	12V	800	815	1000	100	50	.0030	25.4	17.5	19.8	17.4	Dual SAE & 5/16 Stud	34
D27M	12V	800	845	1000	140	66	.0025	30.9	17.3	22.2	24.4	Dual SAE & 5/16 Stud	27
D34M***	12V	750	765	870	120	55	.0028	25.4	17.5	19.8	19.7	Dual SAE & 5/16 Stud	34
D31M**	12V	900	975	1125	155	75	.0025	32.5	16.5	23.8	27.1	Dual SAE & 5/16 Stud	31

*D31M model fits group size 27 marine boxes and trays **34M and D34M models fit group size 24 marine boxes and trays

YELLOWTOP SPECIFICATIONS

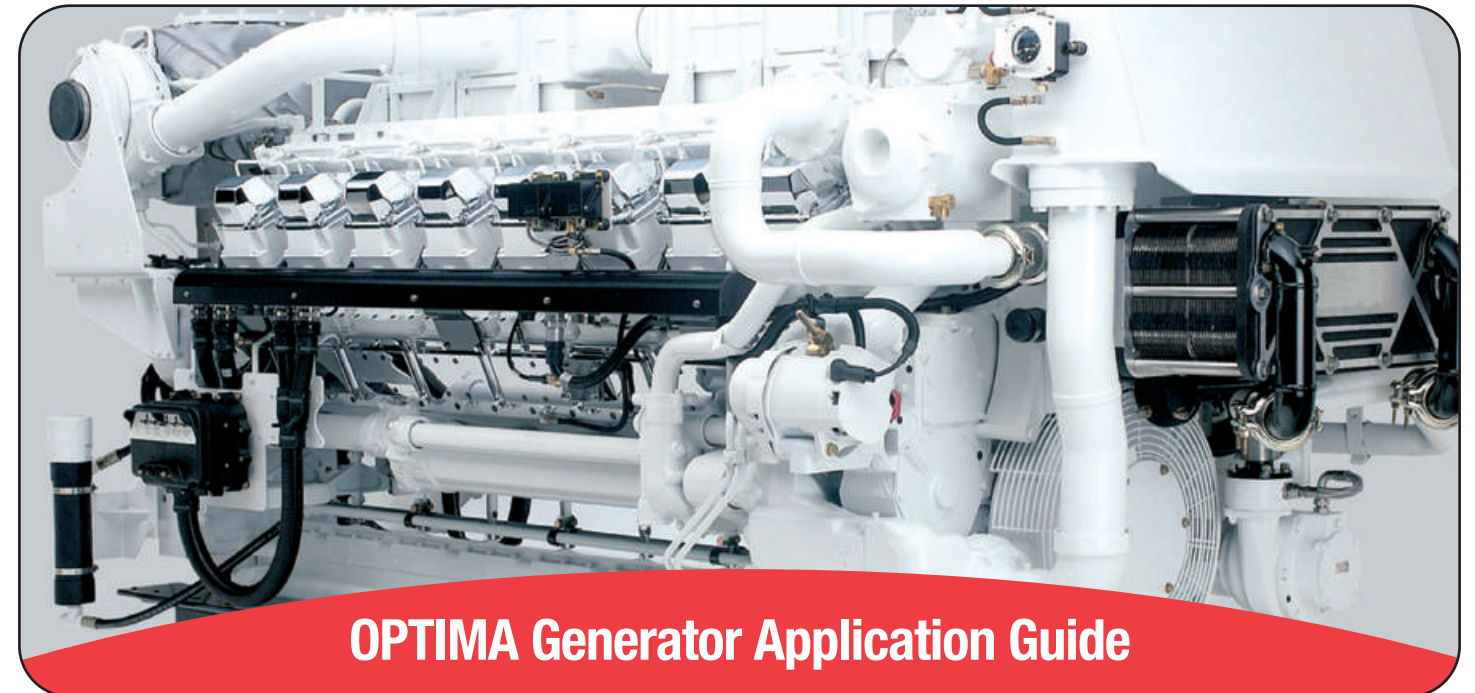
Model Number	Voltage	Cold Cranking Amps @ -18C (BCI)	Cold Cranking Amps @ -18C (EN)	Cranking Amps @ 0C	Reserve Capacity	Capacity (C/20 Rate)	Internal Resistance (ohms)	Dimensions(CM)			Weight (Kg)	Post Type	BCI Group
								Length	Width	Height			
D27F	12V	830	845	1025	140	66	.0025	30.9	17.2	21.9	24.1	SAE	27F
D34/78	12V	750	765	870	120	55	.0028	25.4	17.5	19.8	19.7	Dual SAE/ST	34/78
D75/25	12V	620	660	770	100	48	.0030	23.7	17.3	19.4	17.1	Dual SAE/ST	75/25
D34	12V	750	765	870	120	55	.0028	25.4	17.5	19.8	19.5	SAE	34
D35	12V	620	660	770	100	48	.0030	23.7	17.3	19.4	16.5	SAE	35
D51	12V	450	460	575	66	38	.0046	23.7	12.9	22.7	11.8	SAE	51
D51R	12V	450	460	575	66	38	.0046	23.7	12.9	22.7	11.8	SAE	51R
D31T	12V	900	975	1125	155	75	.0025	32.5	16.5	23.8	27.1	3/8 Stud	31T
D31A	12V	900	975	1125	155	75	.0025	32.5	16.5	23.8	27.1	SAE	31A



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THE ULTIMATE POWER SOURCE™



OPTIMA Generator Application Guide



When it comes to convenience and performance, choosing the right battery to start a generator is critical. OPTIMA batteries are made with pure lead SPIRALCELL TECHNOLOGY that delivers the high cranking power required for cranking large diesel engines within generators. With a higher energy density than conventional batteries, OPTIMA batteries require much less space than conventional batteries. They are completely spill-proof and generate no corrosive gasses, hence cleaner installation. OPTIMA batteries require no water replenishment—in fact, they are completely maintenance-free. For the best power with the least amount of hassle, an OPTIMA battery is the clear choice for powering a generator you can count on.

The advantages of OPTIMA Batteries for Power Generators:

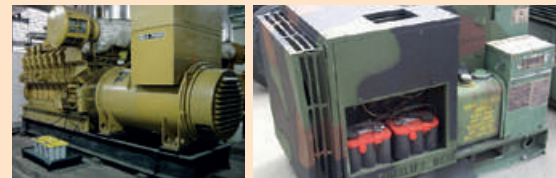
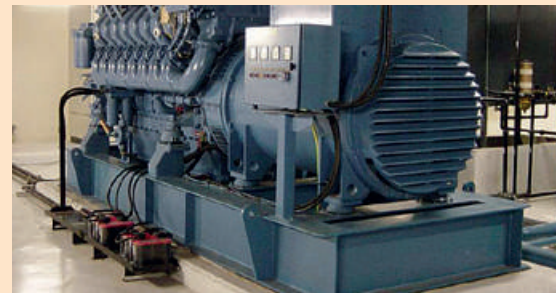
The unique Spiralcell technology of OPTIMA batteries grants superior high current discharge performance to crank generators. OPTIMA is able to crank generators from 500KVA to as large as 2MVA. Advanced design concept and manufacturing technology let OPTIMA batteries function properly and easily under the temperature of -40°C. It is a must-have power source for engineering projects at sub-zero conditions.



Founded in 1885, Johnson Controls is a global leader in automotive systems and facility management and control. Total sales revenue in 2012 reached US\$42 billion and Johnson Controls was awarded #5 company in Corporate Responsibility Magazine annual “100 Best Corporate Citizens” list, with its global battery market share reached 37%.



OPTIMA batteries are the premier position product of Johnson Controls Power Solutions Group, which also represent the highest technology level of the current battery market globally. OPTIMA batteries with the unique SPIRALCELL TECHNOLOGY® and SIX PACK™ design bring perfect performance in almost all extreme environments.



What does the OPTIMA SPIRALCELL TECHNOLOGY design do?

- More plate surface with closer plate spacing and the usage of high-purity material, leads to low internal resistance. This low resistance provides more power in a smaller package, faster recharging, and a cleaner voltage characteristic during discharge.
- Immobilized plates locked under compression, allow for higher vibration resistance, no shedding of active paste material, and reducing gradual loss of power and capacity as the battery ages.
- Preventing the active paste material from loosening, this can cause plate-to-plate shorting.

Why does an OPTIMA battery last longer than other batteries?

- The high-purity lead grid material in OPTIMA batteries is more resistant to grid degradation – a type of internal corrosion that affects the plates inside a battery as it ages.
- The completely sealed design prevents loss of water which can lead to plate dry-out and failure.
- OPTIMA batteries have an increased ability to withstand the high demands being placed on batteries today, including high-heat situations, heavy electronic loads and increased vibration.

Why does OPTIMA have a low rate of self-discharge?

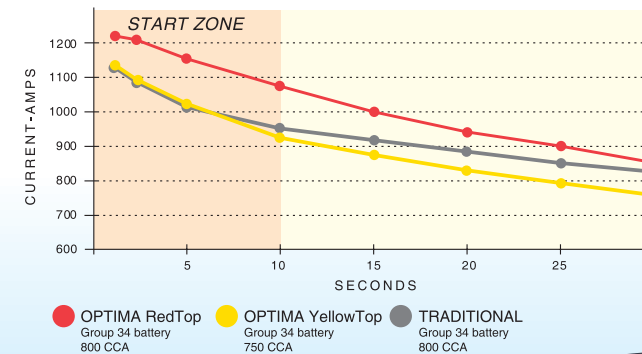
- Unlike conventional batteries which use alloys that are more prone to electron transfer, resulting in higher self-discharge.
- OPTIMA batteries use 99.99% pure lead that reduces self-discharge characteristics.



Damage from vibration is a leading cause of battery failure. OPTIMA batteries have over **15 times more vibration resistance** than traditional batteries due to patented Spiralcell Technology.

More Starting Power

OPTIMA batteries deliver a higher level of power to the starter in the critical first 10 seconds of the vehicle starting cycle.



Damage from heat is the leading cause of battery failure. Even in high heat environments, OPTIMA batteries can outlast traditional batteries by **up to 2 times**.

Key Features:

- High Performance** – High CCA and Low Internal Resistance provides fast and smooth cranks
- Robust** – Supports multiple or continuous cranking of the generator
- Safety** – Sealed AGM design, no leakage of liquid, no discharge of toxic gas
- Space Saving** - Relatively smaller foot print.
- Maintenance Free** – AGM separators eliminate the needs to top up battery water
- Easy Handling** – Lighter weight offers portability
- Long Life** – Spiralcell Technology delivers superior Vibration Resistance and Extended Life



OPTIMA® Batteries are just different. By different, we mean game-changing, and best-in-class different. We've completely revolutionized the way batteries are designed and built.

And honestly, nothing else comes close.

Traditional batteries will spill acid after a rotation of 45°, OPTIMA batteries can be **rotated up to 180°** with no acid spill. That's because they're sealed and maintenance free.

