



Experience the Potential of your Hybrid Investment with the Vanner Hybrid Beltless Alternator

Power Conversion goes Hybrid with the Vanner Hybrid Beltless Alternator (HBA)

As a leader in commercial vehicle power conversion systems for more than three decades, Vanner continues to solve operational, fuel efficiency and emission challenges for the bus industry with the Vanner "Hybrid Beltless Alternator" (HBA).

Unleashing DC Power

The Vanner HBA uses DC Converter technology to replace the traditional alternator and deliver these benefits:

- 25-30% efficiency improvements over traditional alternator technology
- Fuel economy improvements and reduced exhaust emissions
- Stable DC power at all temperatures and speeds
- Precise and maintenance-free integrated voltage regulation
- Rugged, reliable performance built to last through bus mid-life and beyond
- Innovative design and installation location eliminates safety concerns and maintenance problems associated with conventional alternators.

Outperforms Alternators

The Vanner HBA surpasses alternator performance and reliability by providing full power at curb idle. The HBA delivers equal or more power than conventional OEM alternators through 85% of the drive cycle.

The solid-state design eliminates the reduced or lost power experienced by traditional alternators when internal temperatures increase.



The built-in voltage regulator provides constant voltage regardless of engine speed.

With extensive product testing by companies such as Allison Transmission, Vanner has an edge with road-tested, rugged, reliable, and safe products that excel in harsh weather environments.

Eliminating Alternator Maintenance

Save time and money on your way to vehicle electrification. Eliminate costly downtime and emergency road calls with the Vanner HBA by removing these high-maintenance parts from the bus:

- Alternator
- V-Belts
- Voltage Regulator
- Pulleys and Idle Tensioner
- Hydraulic Lines and Fittings
- Moving Parts

A Lighter Design Translates into Big Savings over the Life of the Bus

The Vanner HBA is at least 25% lighter than traditional alternators. This translates into savings of more than 425 gallons of fuel and the associated emissions over the life of the bus.

EXPERIENCE POWER... EXPERIENCE VANNER.



Mounting on the Roof for Safety and Efficiency

Rugged, Reliable & Safe

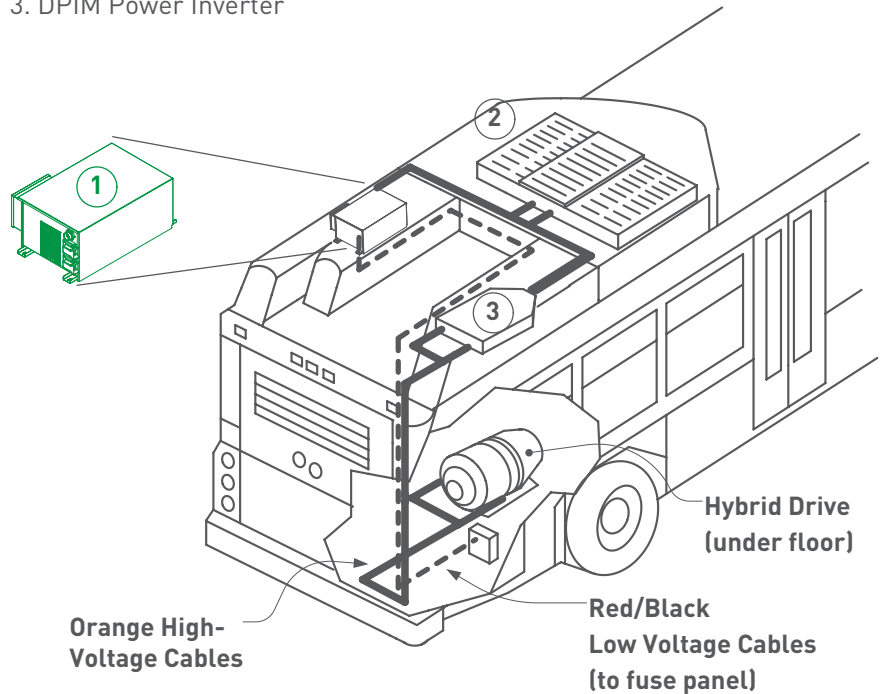
Roof-mount installation provides a cooler and cleaner environment. Located near the battery, the HBA is decoupled from the engine to eliminate the potential for thermal events and for maximum installation flexibility and efficiency.

General Specification

DC Output Voltage	28VDC +/- 2%
DC Output Amperage	250A @ Curb idle
DC Input Voltage	500 VDC Minimum 550 VDC Full Output Power 624 VDC Nominal 780 VDC Maximum
DC Input Amperage	15A Maximum
Ripple	100MV RMS
Storage Temperature	-40C to 105C
Operating Temperature	-40C to 80C -40C to 55C @ full load
Communication / Controls	SAE J-1939
Environmental Standards	SAE J-1455
Radiated Emission Standards	SAE J1113-41
Dimensions	H-9.86" x W-17.0" x D-24.53"
Weight	75 LBS.

Roof Mounted Components:

1. Vanner HBA
2. Battery or ESS
3. DPIM Power Inverter



Vanner Hybrid Beltless Alternator

Performance and Feature Comparison

Specification / Feature	OEM Alternator W	OEM Alternator X	OEM Alternator Y	VANNER HBA
Power Output				
500 RPM (40% of transit drive cycle / 0-750 RPM)	125A	150A	125A	250A
750 RPM (44% of transit drive cycle / 750-1000 RPM)	250A	375A	200A	250A
1000 RPM (14% of transit drive cycle / 1500-2000 RPM)	300A	450A	250A	250A
1500 RPM (2% of transit drive cycle / above 2000 RPM)	340A	480A	260A	250A
Efficiency (Engine - 1000RPM)	75%	75%	53%	92%
Voltage Regulator Required	Yes	Yes	Yes	No
External Cooling Equipment Required	Yes	Yes	Yes	No
Weight	120 lbs	120 lbs	100 lbs	75 lbs
Standard OEM Warranty	2 Years	2 Years	2 Years	3 Years

Specifications are for comparison only. Refer to each manufacturer's website for specific information.