

eCycle, Inc.

12 -24VDC Compressor Drive

Manual



Contents

Product Description	1
Why an eCycle compressor drive	1
Features	1
Before you get started	1
In the box	2
Unpacking and Inspection	2
What you will need	3
Technical specifications	3
Installation guidelines	3
Circuit breakers	3
Conductor recommendations	3
Motor Connections	4
Compressor Connections	4
Enclosure (optional)	4
Warranty and Disclaimer	5
Contact Information	5



Product Description

eCycle's innovative compressor drive consists of a high-efficiency Solidslot brushless motor/generator close-coupled to a Sanden TRS090 scroll compressor. The compressor drive was designed to be a practical bolt-on battery air-conditioning solution for a wide variety of vehicles. This system allows platforms with standard air-conditioning to be cost effectively upgraded.

Why an eCycle compressor drive?

By removing the air-conditioning load from the engine, and hybridizing its operation, utility is expanded, efficiency is improved and emissions are reduced. The climate control system functions independent of the engine and utilizes battery power to provide reliable cooling. Importantly, eCycle's compressor drive is not a complete system, but a key ingredient for compliance with anti-idling laws and emission standards.

Originally developed for aerospace and marine applications, eCycle's state-of-the-art compressor drive is available now for heavy-duty vehicles, with cooling capacity to 40,000BTU at low voltages. This solution offers high levels of performance and durability, even under extreme conditions.

Features

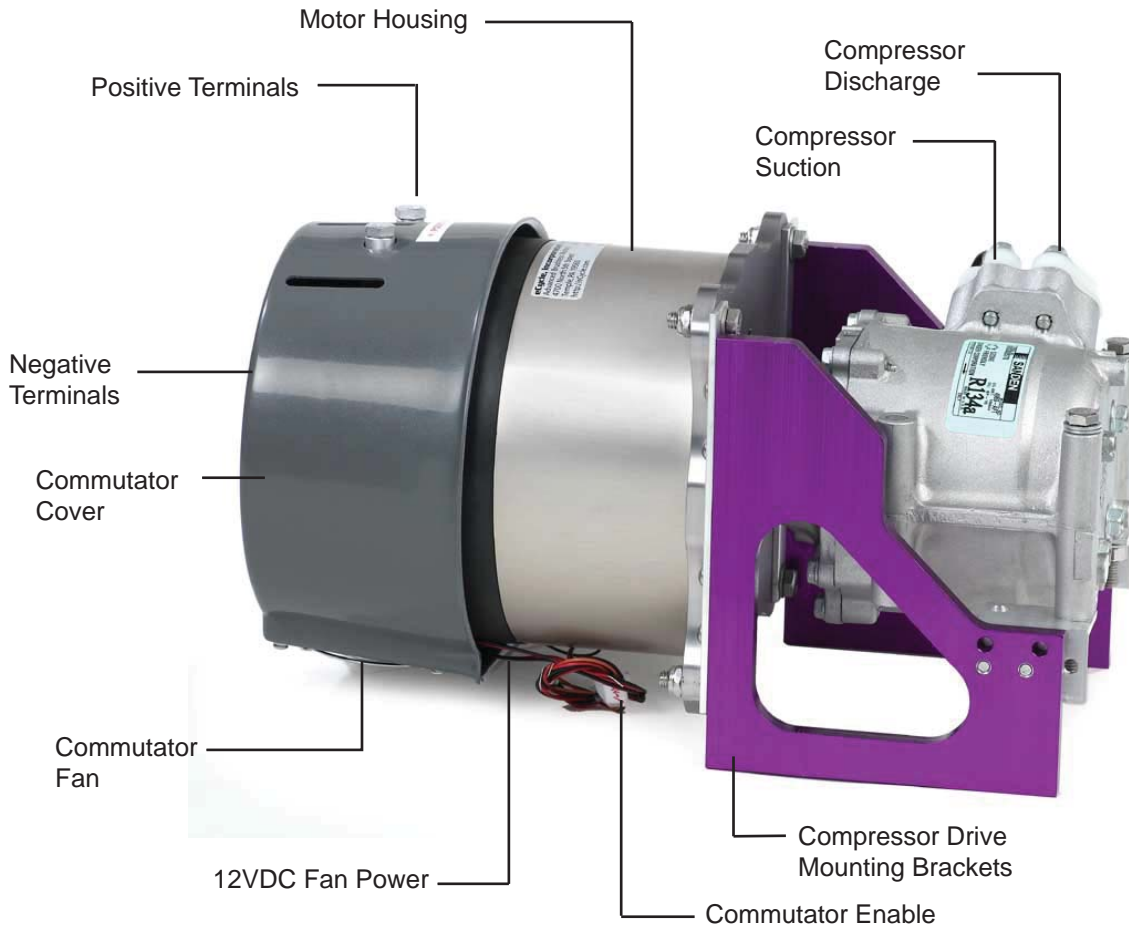
- ▷ Improves fuel economy
- ▷ Reduces emissions
- ▷ Non-parasitic; Operates independent of engine
- ▷ Practical-bolt on solution
- ▷ Low voltage operation 12 - 24VDC
- ▷ Powerful - up to 40,000BTU
- ▷ Works with standard A/C components

Before you get started

- ▷ Please read this manual in its entirety before starting installation, making connections or applying power.
- ▷ Do not attempt to disassemble the motor. These components should only be serviced by an authorized technician.
- ▷ Avoid injury. The eCycle brushless motor/generator is extremely powerful; make sure the motor is securely mounted before attempting to operate.

In the box

eCycle SolidSlot Brushless Motor Generator, Sanden compressor, brackets, resistor.



Unpacking and Inspection

Unpack the motor and related equipment carefully and examine all packing materials for any small parts. Compare the contents unpacked against the packing list and check carefully for shipping damage. Save the shipping box and packing materials in case the unit needs to be shipped again later.

NOTE: Report any shipping damage to the carrier immediately.

IMPORTANT! Do not attempt to operate the system if visible damage is evident to either the motor or compressor.

NOTE: The compressor drive comes fully assembled and ready to install.

NOTE: Do not attempt to disassemble any part of the compressor drive.

What you will need to install the compressor drive

- ▷ Bracket/plate/enclosure for compressor drive (Not Included)
- ▷ Bracket mounting screws - 10-24 (min. 3/8" thread engagement into compressor drive brackets) (Not Included)
- ▷ Circuit Breaker - 200A (Not Included)
- ▷ Resistor for capacitor charging (Included)
- ▷ Power switch (Not Included)
- ▷ Multi-meter (for checking voltages) (Not Included)

Technical Specifications

Cooling Capacity	40,000BTU/Hr
Compressor	Sanden TRS090, Scroll Type
Motor	eCycle Solidslot
Voltage/Max	12-24VDC
Current/Max	220A
Dimensions (L x W x H)	15.5" x 8" x 8"
Weight	30lbs.
Control	Compressor drive enable and fan can be controlled by the same circuit that normally controls compressor clutch in standard systems.

Installation Guidelines

NOTE: The compressor drive is designed to give the installer flexible mounting options. Some things to consider when choosing a location: Accessibility, conductor length, refrigerant lines, sufficient airflow for motor, safety and extreme environment.

Circuit breakers

- ▷ Circuit breaker capacity of 200A is recommended.

NOTE: Contactors are **NOT** recommended.

Conductor Recommendations

- ▷ Short conductor lengths are recommended with 1 gauge conductor.
- ▷ If longer runs cannot be avoided, 1/0 conductor, or heavier, must be used.
- ▷ Lugs: Positive Terminal 5/16", Negative Terminal 1/4".

Motor Connections

Standard Connection

1. Connect the negative conductor to the negative terminal.
2. Connect commutator fan to 12VDC source.
3. Connect commutator enable to 12VDC source.
4. Prior to connecting main power, it is necessary to pre-charge the capacitors in the electronic commutator. Touch one end of the resistor to the positive terminal, then touch the other end of the resistor to the conductor. Put the resistor aside and carefully connect the positive conductor to the positive terminal.
5. Disconnecting the power from the motor will lead to capacitor discharge. Re-charging the capacitors will be necessary prior to reconnecting power.

NOTE: Ensure that the polarity is correct before making connections to the battery or power source.

NOTE: Reversing polarity will severely damage the motor

NOTE: Variable speed is possible through the use of a DC controller and appropriate external inductors. Contact the manufacturer if variable speed operation is desired.

Connecting the compressor

NOTE: Installation by an experienced professional is recommended.

Enclosure (Optional)

The compressor drive is designed for a wide variety of environments and may be used with or without an enclosure. An enclosure is recommended for outdoor environments where the compressor drive will be subject to extreme conditions.

If an enclosure is needed:

Sufficient airflow is important for maintaining motor temperature. A fan providing at least 200CFM is recommended.

Warranty

Motor

eCycle, Incorporated warrants its products to be free from defects in materials and workmanship. The exclusive remedy is an eCycle factory replacement of any part or parts within 12 months after delivery to the purchaser. All returns to eCycle shall be made with transportation charges prepaid. This warranty shall not extend to defects in assembly by other than eCycle or to any article which has been repaired or altered by other than eCycle, or to any article which eCycle determines has been subjected to improper use. eCycle assumes no responsibility for the design characteristics of any platform or its operation in any circuit or assembly. eCycle makes no warranties, expressed or implied, including warranties of merchantability and fitness for a particular purpose. This warranty replaces all other warranties, express or implied; all other liabilities or obligations on the part of eCycle, including consequential damages are hereby expressly excluded. In no event will eCycle be liable for direct, indirect, special, incidental, or consequential damages arising out of the use of this product, even if advised of the possibility of such damage.

Disclaimer

Use of this product is at the exclusive risk of the operator. All information in the eCycle compressor drive user manual is intended to be correct and accurate. The information in this manual may change without notice. Purchaser is encouraged to visit the eCycle website (www.ecycle.com) for all product updates. eCycle makes no warranty of any kind with regard to this information or data. eCycle is not responsible for any omissions, errors, or consequential damages caused by the user of the compressor drive. eCycle reserves the right to make design changes which may not be included in this manual.

Compressor warranty: Contact Sanden

Contact information

Motor

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