

# Frameless Motors in Space

## Frameless Servo Motor Series



### To The Moon:

Parker frameless motors have been specified into a series of lunar rovers, which will be making their way to the moon over the next several years.

The motors are being used to rotate the lunar tires that propel the vehicles across the moon's surface. Some of the rovers will have redundant motors (2 per wheel). With both motors operating together, peak performance can be reached. If a failure occurs to one motor, the other motor can still operate in a sufficient manner to complete the mission.

The motors were sized to operate on 48vdc and at vacuum levels down to  $10^{-12}$  torr. Heat dissipation is always a concern in an environment with no atmosphere.

Parker made sure to provide in-depth information such as the Dissipated Power Speed Curve (shown on the next page).

With this information, the customer was able to identify proper conduction and radiation paths in the design of a special housing that helps to wick heat away from the motor.



*Credit: NASA / Daniel Rutter*

An artist's concept of the completed design of NASA's Volatiles Investigating Polar Exploration Rover, or VIPER.

VIPER will get a close-up view of the location and concentration of ice and other resources at the Moon's South Pole, bringing NASA a significant step closer to its ultimate goal of a long-term presence on the Moon – making it possible to eventually explore Mars and beyond.

### Product Features:

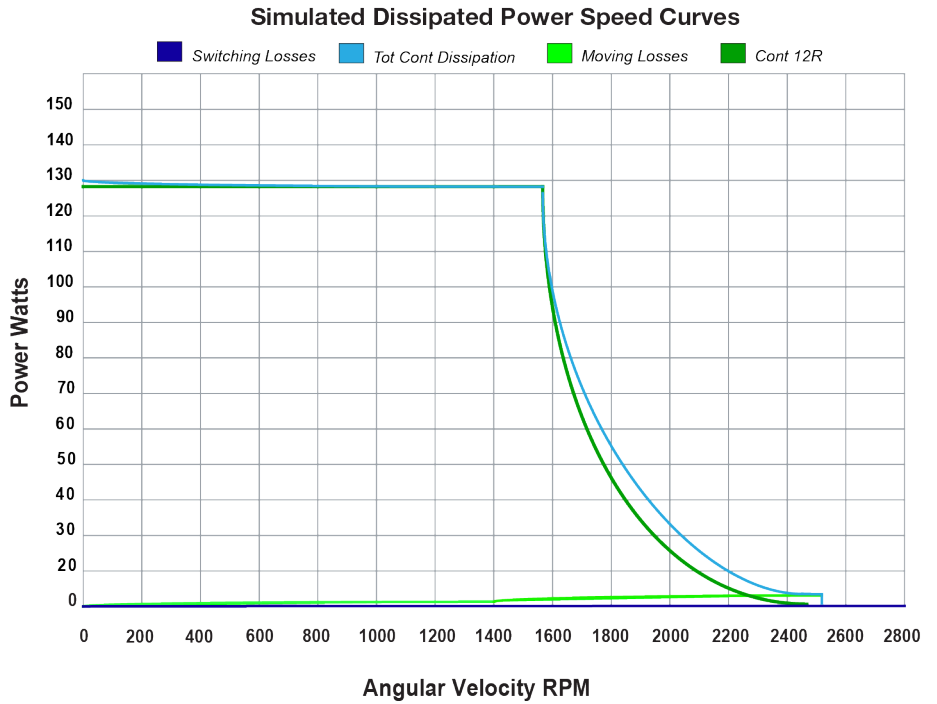
- Zero mechanical connections between motor and load
- Smaller envelope for tight spaces
- 6 frame sizes with multiple stack lengths
- Rated torques up to 26 Nm (227 in-lbs)
- Multiple winding selections for optimized performance
- Lower cost solution



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By optimizing the performance of the motor in such a way, the overall envelope size and weight was kept to a minimum. This feature was important to the success of the design.

Whether being used for rovers on the moon, for robots here on earth, or for equipment in the factory, Parker has the range of products, information, and support to satisfy your application needs. For more information on the Frameless Motor product line make sure to visit our product page at [parker.com/frameless\\_motors](http://parker.com/frameless_motors).



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