PARKER-TRILOGY Linear Motors

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ML50 Motor FAQ

Is the ML50 the largest motor you make?

No, Parker-Trilogy makes ironcore motors that are larger and more powerful.

Is the ML50 the largest ironless motor you make?

Yes, the ML50 has the largest cross section, 50mm x 150mm. Technically, the 410-8 produces slightly more force than the ML50-9 (198lbs vs 192lbs), but the 410-8 is 28" long and weighs 12.5lbs versus the ML50-9 which is 21.26" long and weighs 7.2lbs.

Why would I use the ML50 instead of the 410?

The ML50 was designed to produce the maximum amount of force using the lightest weight coil. This means it is better suited for very high continuous acceleration rates of relatively light payloads. It will be able to accelerate a given payload faster than a 410 because it weighs less. The motor will also be shorter for a given amount of travel.

Why would I use the ML50 instead of an ironcore motor?

If maximum force output is required, an ironcore motor will do the job for less cost. The ML50 is ideal when the mechanical structure can not support the attractive forces generated by an ironcore motor or when very low velocity ripple is required.

Why does the ML50 have a connector module and the 110, 210, 310, and 410 do not?

The connector module allows the high flex cable and Hall effect sensors to be separated from the motor coil. If the cable or HEDs on one of the other ironless motors gets damaged, the entire motor coil must be replaced. On the ML50, the damaged cable or HED module can be removed and repaired or replaced without replacing the entire motor coil.
The connector module also allows flexibility in the cable exit direction. With the older motors, the cable could only come straight out the end of the coil. The ML50 connector module allows the cable to exit the front, top, or either side of the coil.
Since there is already an external circuit board for the HEDs, home and overtravel limit sensors can be integrated into the motor. This eliminates the need to mount and wire additional sensors and saves time and money.

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Can the ML50 have internal Hall effect devices to minimize overall length?

No, there are no provisions for internal HEDs with the ML50. If the length
needs to be minimized by eliminating the HED module, a Compax3 drive
can be used to commutate the motor based on encoder input only.

How do the ML50 limit sensors work?

The connector module has three reflective optical sensors that are looking at
the side of the magnets. The nickel plated magnets and the plastic spacers
between the magnets are reflective so black tape can be placed on the face
of the magnets to trigger the sensors. Generally two pieces of tape are
used with one placed at either end. One piece of tape is positioned so that it
triggers two sensors (home and negative limit) and the other piece of tape is
placed so that it only triggers one sensor (positive limit). The sensors can
be configured to be either sinking or sourcing and active high or active low.

Is air or liquid cooling available for the ML50?

No, there was no additional space added to the ML50 aluminum attachment
bar to allow for air or liquid cooling passages. This additional material would
have added additional weight and compromised the ML50's design goal of
maximum force with minimum mass. If additional cooling capacity is
needed, an external cooling plate can be added.

What drives work with the ML50?

Because of the ML50's large size and high power requirements, the larger
Compax3 and Aries drives are the best choice.

**Can the mounting holes in the ML50 coils and magnet tracks be
customized?**

Yes, these can be manufactured with custom mounting holes and features.
Please contact an Applications Engineer to configure custom solutions.

What is the maximum speed of the ML50?

The motor itself does not have an inherent velocity limit. The maximum
speed of a complete system is usually limited by the mechanical bearings,
encoder frequency output, or bus voltage. The ML50 has many different
windings available to match a given bus voltage and achieve very high
velocities. With the appropriate winding and linear bearings, velocities can
exceed 8m/s.