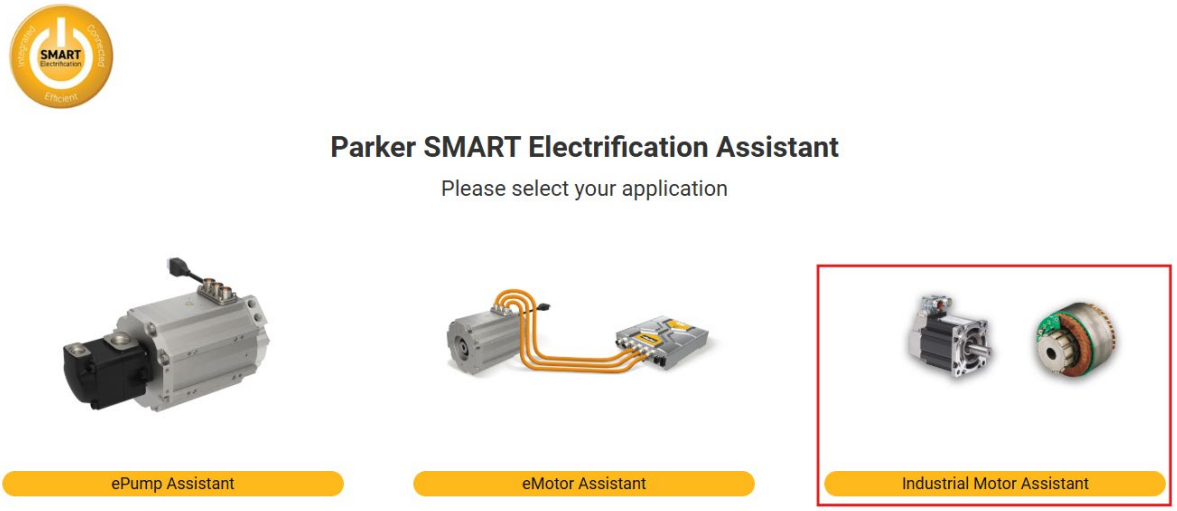
Parker SMART Electrification
Industrial Motor Assistant
How-to-Use Guide



Contents

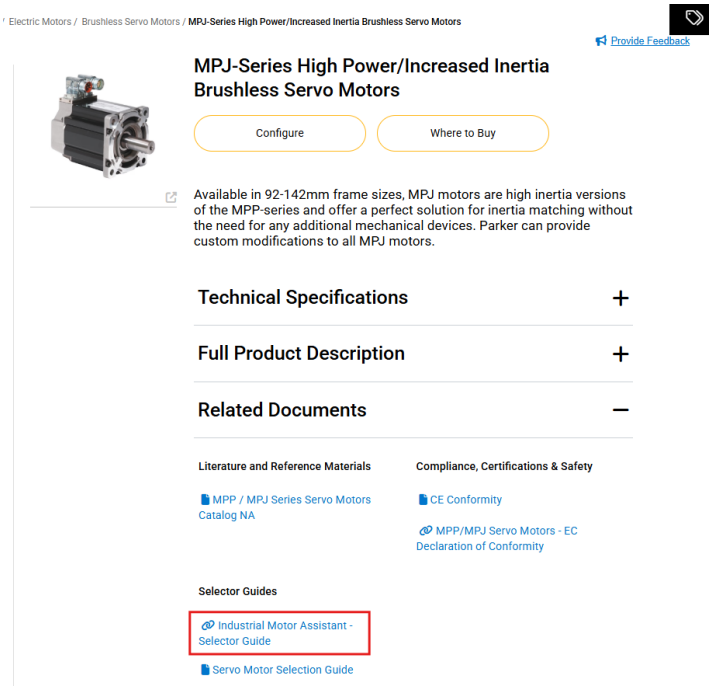
About this Guide

The Industrial Motor Assistant is an intuitive, web-based selection tool accessible directly through the Parker SMART Electrification Assistant platform. Selecting servo motor products no longer requires software downloads or IT support but only an internet connection. This new tool works in harmony with Parker's Virtual Engineer Sizing and Selection Tool, our innovative platform for linear mechanics.

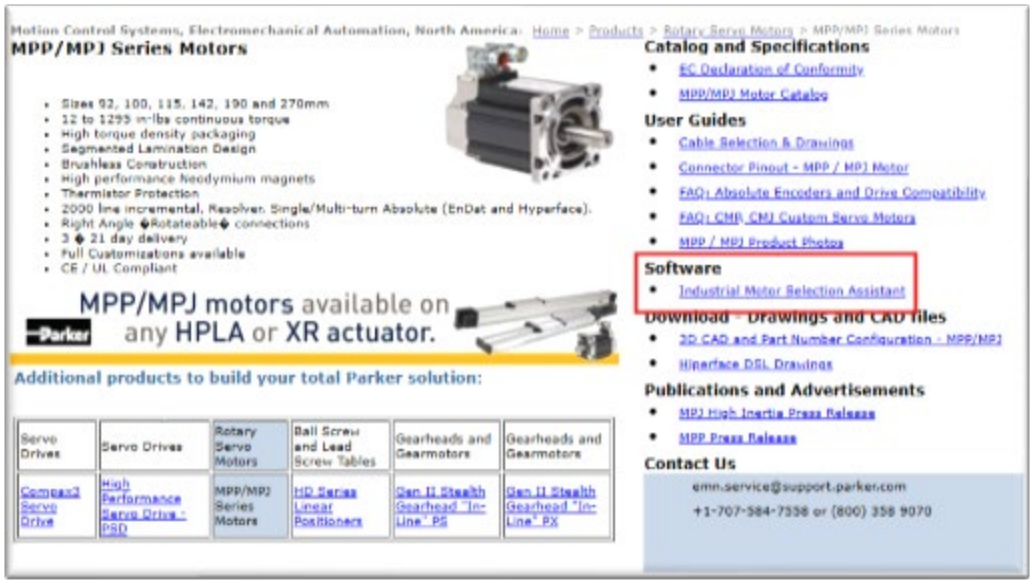
Virtual Engineer provides critical torque and speed parameters that can then be entered directly into the Industrial Motor Assistant by the user, ensuring accurate and efficient motor selection.

How to Find Assistant

1. Parker.com Product Pages for all Rotary Servo Motor Products
    - Expand Related Documents
    - Under Selector Guides
        - Example Page MPJ Motor Product Page
    - Other Product Pages:
        - Brushless Servo Motors: BE, P, MPP, MPJ, and SM Series
        - Frameless Servo Motors: K Series

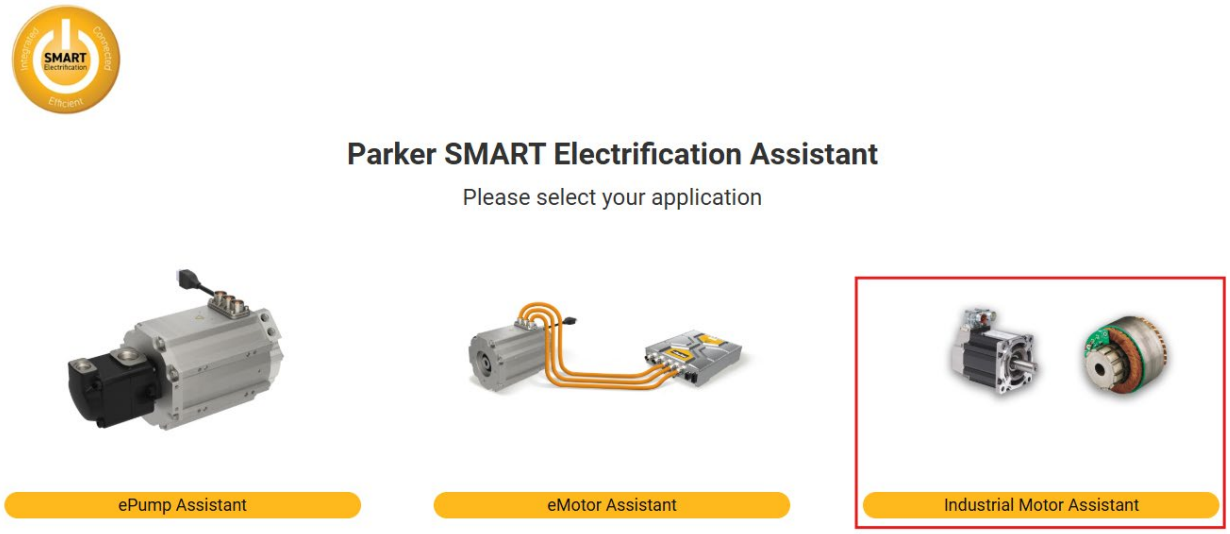


2. Parkermotion.com Product Page for all Rotary Servo Motor Products
    - Under Software Subtitle Name “**Industrial Motor Selection Assistant**”
        - Example Page MPP/MPJ Series Motors
    - Other Product Pages:
        - Brushless Servo Motors: BE, P, MPP/MPJ, and SM Series
        - Frameless Servo Motors: K Series
3. Via Link here: Configurator



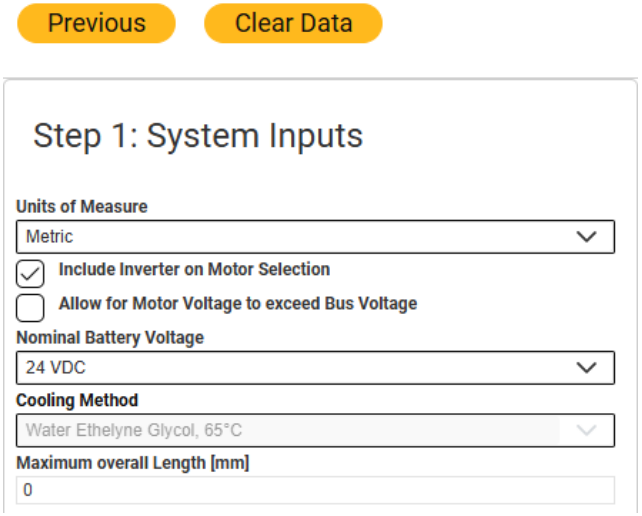
SMART Electrification Guide

1. Select the industrial motor assistant tab to gain access.



Step One

Subsystem Inputs A



1. Units of Measure
    - If Metric is selected your units will be Torque (Nm), Power (W) for inputs

- If Imperial is selected your units will be Torque (lb-ft), Power (HP) for inputs

2. Include Inverter on Motor Selection
    - Function currently does not work
    - For Version 2 Release, we anticipate to have Servo Drives Included
3. Allow for Motor Voltage to exceed Bus Voltage
    - Ignore Function as this does not pertain to industrial motors

System Inputs B

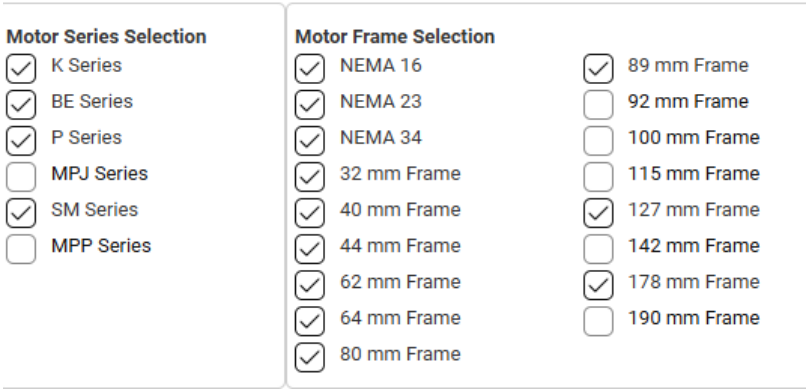
1. Nominal Battery Voltage
    - This would be the application Bus Voltage Available from the Servo Drive
        - Voltage Non-Parentheses is Power Supply from Line Voltage
        - Voltage in Parentheses is Bus Voltage (Line Voltage *$\sqrt{2}$)
    - This will affect the motor selection type
        - For Example: MPP/MPJ is unselected at 24VDC, and BE Series unselects at 460VAC (650VDC)
2. Cooling Method
    - Ignore as this parameter is not used in the Industrial Selection Assistant Assumes Natural Convection and heatsink per catalog
3. Maximum Overall Length (mm)
    - Measures overall motor length; Does not account for added brake length. Please reference Catalog for added Brake Length

System Inputs C

Motor Series and Frame Selection:

- Choose All or desired Product Families
    - Motor Performance is based on 25C
    - Other Selection Criteria such as Ingress Protection, Feedback Device, Brake, etc. please reference Product Catalog
- Both Motor Family and Frame Size are dependent on catalog offering.

- Example: 190mm Frame is only available to MPP Product Family
- Example: NEMA 16 Frame is only available to BE and SM Product Family



System Inputs D

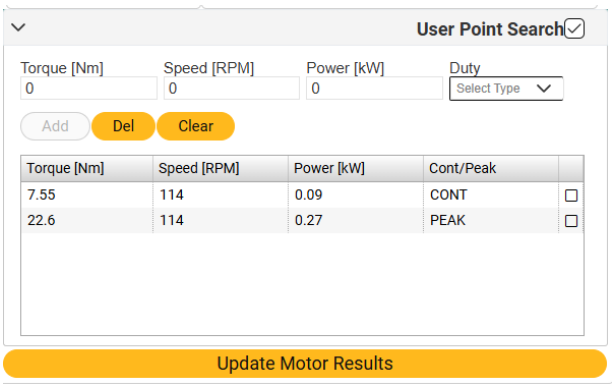
Torque, Speed, and Power Inputs

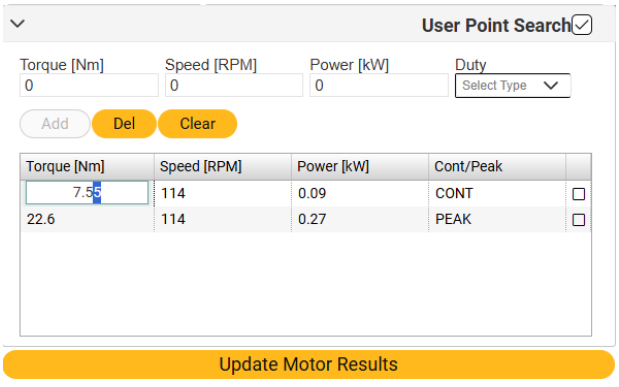
- Enter Continuous and/or Peak Performance Parameters
- Only two parameters need to be inserted, the third will auto calculate.
    - Example Input 7.55 Nm and 114 RPM and auto calculates to 0.09kW of Power
- Must Select Either Continuous or Peak Performance
- Must Select Add Button to input into table

Data in the Table

- Fields can be edited when in table by double clicking into the field you want to edit
- Rows can be deleted by selecting Check Box on the left then selecting Del Button

Must Select Update Motor Results to get motor selection availability



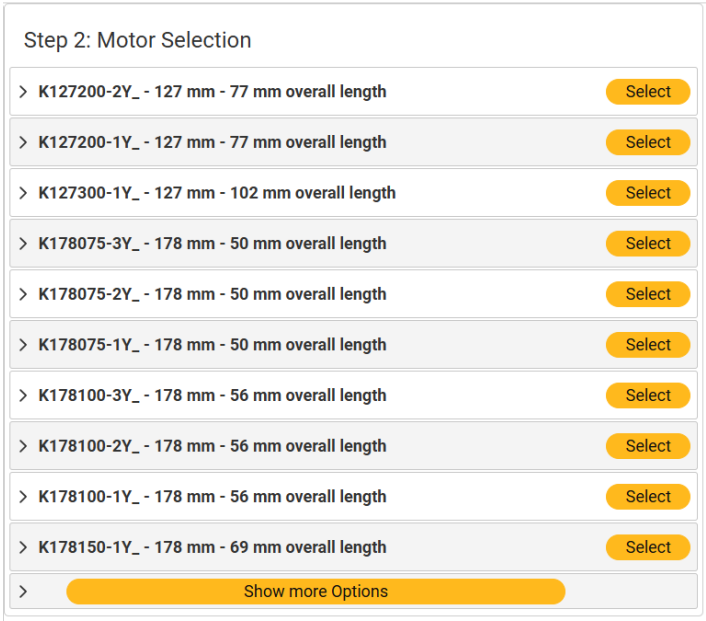


Step Two

Motor Selection A

Motors Provided are in list of weighting:

1. Frame Size (mm)
    - Selects Smallest Frame Size Available
2. Stack Length/Overall Length
    - Selects Shortest Length Available
3. Current Pull (Amps rms)
    - In order of lowest current draw



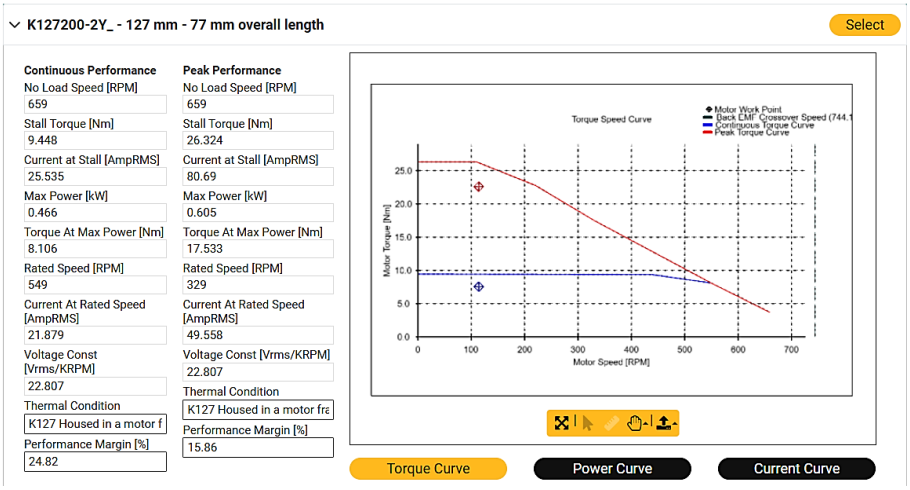
Motor Selection B

Verify:

- Frame Size
- Stack Length
- Continuous Torque Point
- Peak Torque Point
- Continuous Current Point

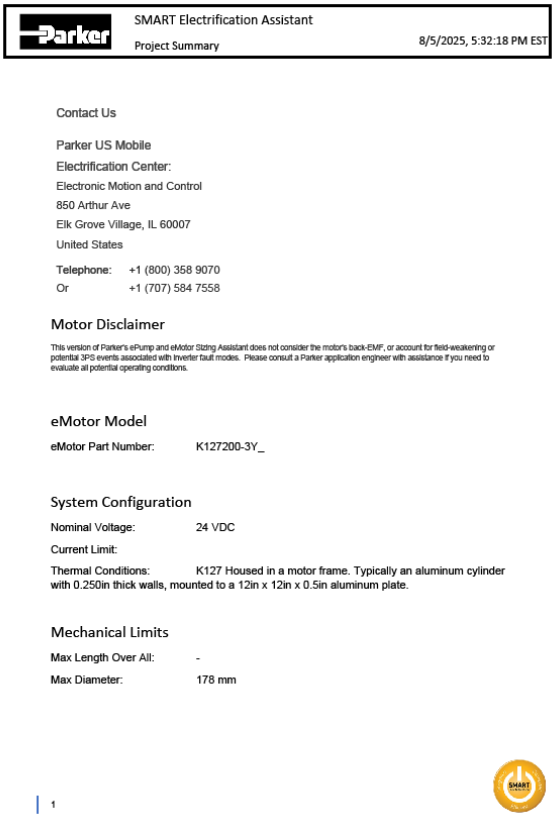
- Peak Current Point

Finally Select “Select” Button in the top right corner



Recommended eMotor Solution

View Summary Sheet prints a summary sheet of the entire application. Example is pasted below.



SMART Electrification Assistant

Project Summary

8/5/2025, 5:32:18 PM EST

Contact Us

Parker US Mobile Electrification Center:
Electronic Motion and Control
850 Arthur Ave
Elk Grove Village, IL 60007
United States

Telephone: +1 (800) 358 9070
Or +1 (707) 584 7558

Motor Disclaimer

This version of Parker's ePump and eMotor Sizing Assistant does not consider the motor's back-EMF, or account for field-weakening or potential 3PS events associated with inverter fault modes. Please consult a Parker application engineer with assistance if you need to evaluate all potential operating conditions.

eMotor Model

eMotor Part Number: K127200-3Y_

System Configuration

Nominal Voltage: 24 VDC

Current Limit:

Thermal Conditions: K127 Housed in a motor frame. Typically an aluminum cylinder with 0.250in thick walls, mounted to a 12in x 12in x 0.5in aluminum plate.

Mechanical Limits

Max Length Over All: -

Max Diameter: 178 mm

1

Example One

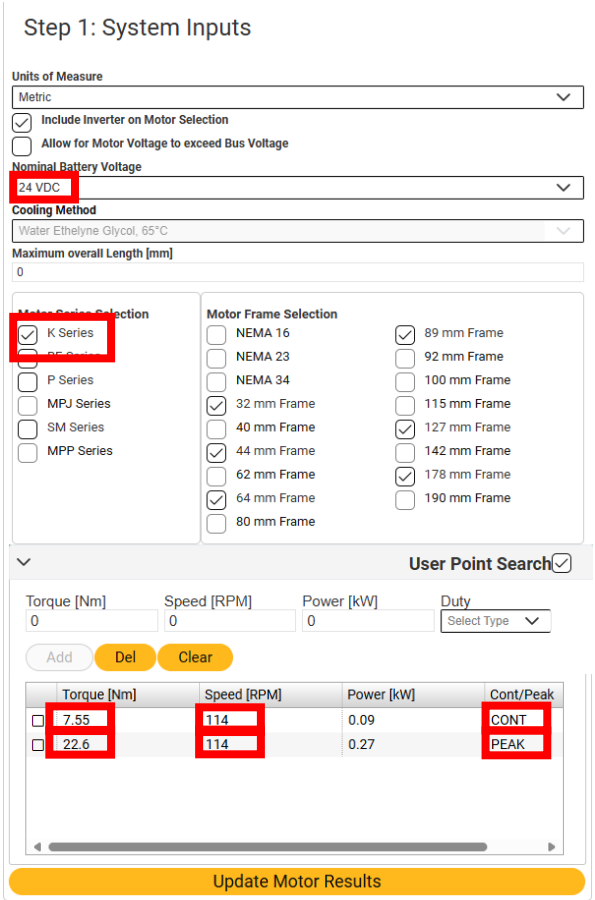
Frameless Rotary Motor; Torque and Speed Given

Givens

- 24 VDC Available
- Torque Continuous 7.5 Nm
- Torque Peak 22.6 Nm
- 114 RPM Continuous and Peak Conditions
- Frameless Motor Required
- No Diameter or Length Limitations

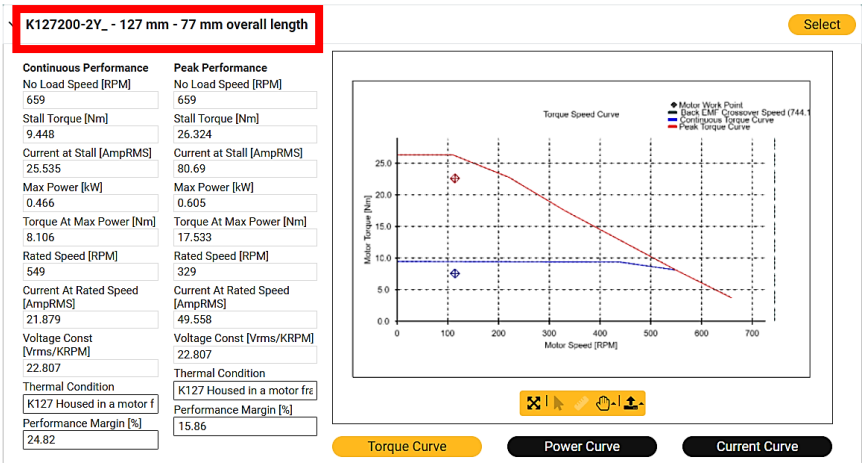
Frameless Rotary Motor: System Inputs Torque & Speed Givens

- 24VDC Voltage
- K Series (Frameless Motor)
- Selected All Frame Sizes of K Series
- Input both Peak and Continuous moves



Motor Selection

- Peak and Continuous Torque requirements show as red and blue stars under motor curves
- Continuous Current Pull is 17.5 Amps
- 127mm Diameter Kit Motor Frame Size
- 77mm Overall Length

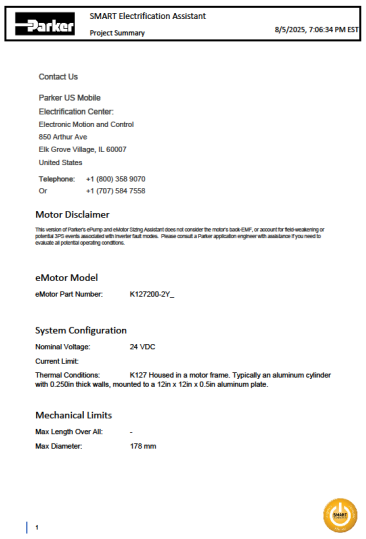


[Frameless Servo Motors Series | Parker NA]

[Parker-K-Series-Frameless-Kit-Motors-Brochure.pdf]

Motor Report

Motor Performance Report shares critical Motor Parameters for Drive.


SMART Electrification Assistant
Project Summary
8/5/2025, 7:06:34 PM EST

Contact Us

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United States

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Motor Disclaimer

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eMotor Model

eMotor Part Number: K127200-2Y_

System Configuration

Nominal Voltage: 24 VDC
Current Limit:
Thermal Conditions: K127 Housed in a motor frame. Typically an aluminum cylinder with 0.250in thick walls, mounted to a 12in x 12in x 0.5in aluminum plate.

Mechanical Limits

Max Length Over All: -
Max Diameter: 178 mm

Performance Output

Motor Part Number: K127200-2Y_

Parameter	Continuous Motor Data	Peak Motor Data
No Load Speed (RPM)	659.3 RPM	659.3 RPM
Stall Torque (Nm)	9.448 Nm	26.324 Nm
Current at Stall (AmpRMS)	25.535 AmpRMS	80.69 AmpRMS
Max Power (kW)	0.466 kW	0.605 kW
Torque at Max Power (Nm)	8.106 Nm	17.533 Nm
Speed at Max Power (RPM)	549.5 RPM	329.7 RPM
Current at Max Power (AmpRMS)	21.879 AmpRMS	49.558 AmpRMS
Voltage Const (Vrms/krpm)	22.807 Vrms/KRPM	22.807 Vrms/KRPM
Thermal Conditions	K127 Housed in a motor frame. Typically an aluminum cylinder with 0.250in thick walls, mounted to a 12in x 12in x 0.5in aluminum plate.	K127 Housed in a motor frame. Typically an aluminum cylinder with 0.250in thick walls, mounted to a 12in x 12in x 0.5in aluminum plate.
Performance Margin (%)	24.82%	15.86%

Example Two

Givens from Virtual Engineer

Sizing Completed by Virtual Engineer

Application: A garage can crusher

Givens:

- Up to 20 Oz cans of 6.5” (Stroke of 200mm needed)
- Cylinder Style ETH032 with Rod Guide and 30lbs steel plate attached
- Requires 100lbs of force to crush can
- 3 Seconds Downstroke, 3 Seconds Return, and 3 second Dwell
- 120VAC Wall Plug Available

Garage Build Can Crusher

Equations

- Motor Speed
  - Motor Speed is Linear Velocity / Screw Lead
  - Linear Velocity (trap) = 1.5 * Distance / Time
  - M05 Ball Screw = 1.5 * 0.2m / 3 sec / .0.005m = 20 rps = 1200 rpm
  - M05 Ball Screw = 1.5 * 0.2m / 3 sec / .0.01m = 10 rps = 600 rpm
- Motor Nominal Torque
  - M05 Ball Screw RMS Torque = 71.18 oz in = 0.502 Nm
  - M10 Ball Screw RMS Torque = 73.86 oz in = 0.522 Nm
- Motor Peak Torque
  - M05 Ball Screw Peak Torque 128.95 oz in = 0.911 Nm
  - M10 Ball Screw Peak Torque = 160.19 oz in = 1.13 Nm

ETH032M05A1XXXFRN0200A

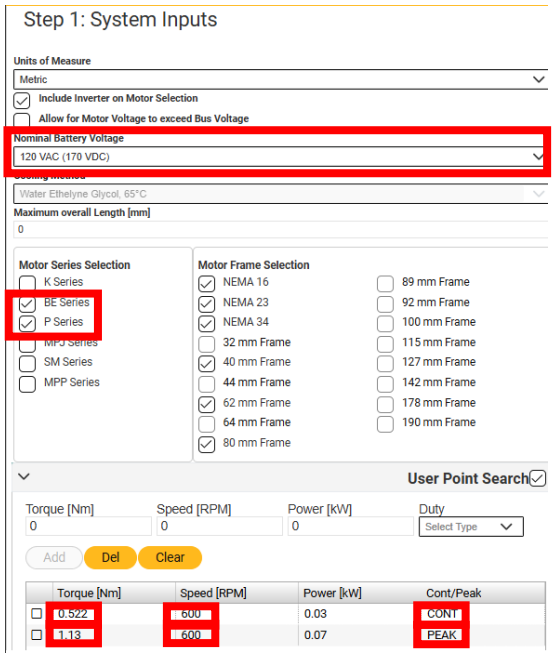
MOTOR REQUIREMENTS	
Max Shaft Speed	1200 RPM
Peak Torque	128.95 oz in
RMS Torque	71.18 oz in
Inertia Reflected from System to Rotor	1.46 oz in²

ETH032M10A1XXXFRN0200A

MOTOR REQUIREMENTS	
Max Shaft Speed	600 RPM
Peak Torque	160.19 oz in
RMS Torque	73.86 oz in
Inertia Reflected from System to Rotor	3.1 oz in²

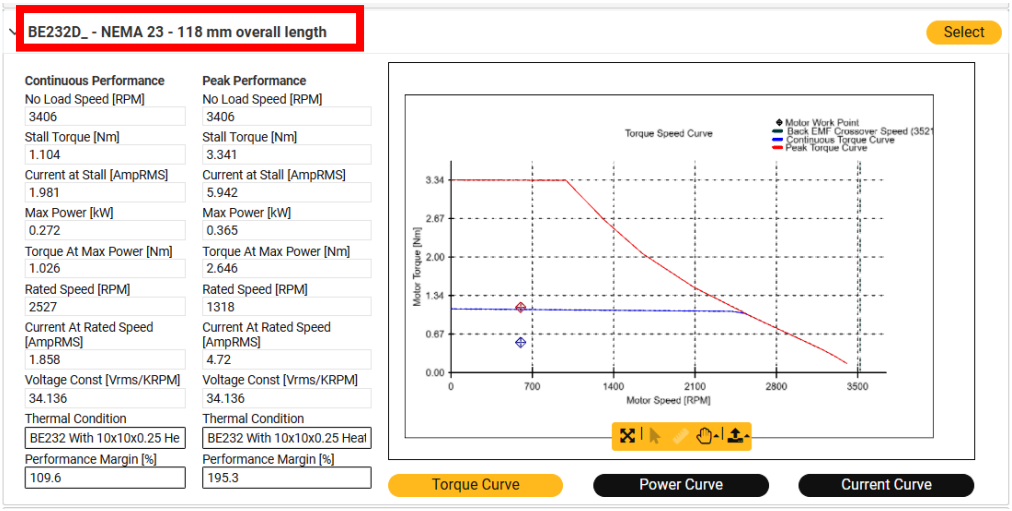
System Inputs

- 120VAC Voltage (170VDC rectified)
- Housed Motor Lower the Current the better
- Selected All Frame Sizes of BE and P Series
- Input both Peak and Continuous moves
- Both Move profiles use about the same torque so lower speed is chosen



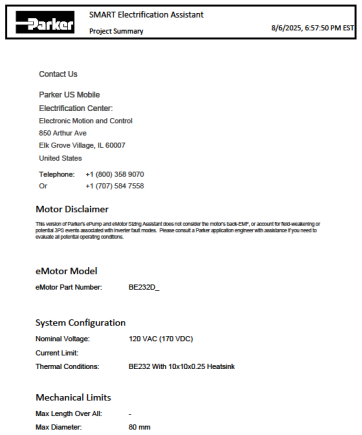
Motor Selection

- Peak and Continuous Torque requirements show as red and blue stars under motor curves
- Continuous Current Pull is 1.9 Amps
- 60mm Motor Frame Size
- 118mm Overall Length



Motor Report

- Motor Performance Report shares critical Motor Parameters for Drive
- Inertia in BE232 Catalog is 1.50x10^-4 in-lb-sec^2 = 0.0579 lb in^2 = 0.926 oz in^2
- System Inertia is 3.1 oz in^2
- Ratio = 3.1 oz in^2/ 0.926 oz in^2 = 3.35:1 System to Motor Inertia Ratio



Performance Output

Motor Part Number: BE232D_

Parameter	Continuous Motor Data	Peak Motor Data
No Load Speed (RPM)	3406 RPM	3406 RPM
Stall Torque (Nm)	1.104 Nm	3.341 Nm
Current at Stall (AmpRMS)	1.981 AmpRMS	5.942 AmpRMS
Max Power (kW)	0.272 kW	0.365 kW
Torque at Max Power (Nm)	1.026 Nm	2.646 Nm
Speed at Max Power (RPM)	2527 RPM	1318 RPM
Current at Max Power (AmpRMS)	1.858 AmpRMS	4.72 AmpRMS
Voltage Const (Vrms/krpm)	34.136 Vrms/KRPM	34.136 Vrms/KRPM
Thermal Conditions	BE232 With 10x10x0.25 Heatsink	BE232 With 10x10x0.25 Heatsink
Performance Margin (%)	27.42%	79.33%

Model Size	Symbol	Units	BE232D
Stall Torque Continuous [1, 2, 3]	T_{cs}	Nm	1.10
		in-lb	9.8
Stall Current Continuous [1, 2, 3]	$I_{cs(rms)}$	A_{rms}	2.0
Peak Torque	T_{pk}	Nm	3.34
		in-lb	29.6
Peak Current	$I_{pk(rms)}$	A_{rms}	5.9
Rated Speed [1, 2, 3]	S_r	rpm	4965
Rated Torque [1, 2, 3]	T_r	Nm	0.99
	T_r	in-lb	8.8
Shaft Power @ Rated Speed [1, 2, 3]	Pout	kW	0.51
Current @ Rated Speed [1, 2, 3]	I_r	Arms	1.8
Voltage Constant [4, 7]	K_e	V_{rms}/k_{rpm}	34.14
Torque Constant [4, 7]	$K_{t(sine)}$	Nm/A_{rms}	0.56
Resistance [4, 7]	R	ohm	7.72
Inductance [5, 7]	L	mH	35.8
Max DC bus Voltage [6]	V_{mbus}	VDC_{max}	340
Max AC Voltage [6]	V_s	VAC	240
Rotor Inertia [6]	J	kg-m2	1.70^{-5}
		in-lb-sec^2	1.50^{-4}
Motor Weight [6]		kg	1.41
		lb	3.1

Industrial Motor Assistant Overview

V1 Release

What it is

Selection Guide Tool

- 25C Natural Convection Cooling Only With Heatsink (Reference Catalogs)
- Default Common 6 Voltage Supplies
- Motor Frame Size Selection
- Motor Series Product Family Selection
- Standard Winding Selection per Catalogs
- Current Limitation Selection

What it is not

Sizing Tool

- Requires user to understand Drive Bus Voltage
- Requires user to determine Inertial mismatching
- Requires user to understand duty cycles from move profiles
- Requires user to understand response times (Accel/Decel ramps)
- No Bearing Sizing
- No custom winding options

Future State

Revision 2 will introduce the following:

- Critical Motor Parameters
    - Voltage Constant (Ke: Vrms/krpm)
    - Torque Constant (Kt(sine): Nm/Arms)
    - Inertia of Rotor Shaft from Motor (J: kg-m2 or in-lb-sec2)
    - Resistance (R: ohm)
    - Inductance (L: mH)
- Parker Servo Drive Selection
    - P Series
    - IPA Drive
    - ACR7k Platform
    - PSD1 Series
    - Compax3
- Version 2 will have “Nominal Battery Voltage” change to “Nominal Voltage”