



02.2024  
VERSION 1.2

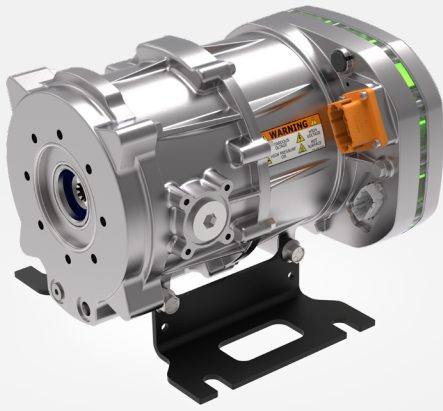
# EHPU

## ELECTRO-HYDRAULIC POWER UNIT

**HIGH VOLTAGE | HEAVY-DUTY**  
SMART HYDRAULIC STEERING UNIT

Onboard pressure transducers  
200vDC to 800vDC





## EHPU

**HIGH VOLTAGE | HEAVY-DUTY**  
ELECTRO-HYDRAULIC POWER UNIT

The **Hydrapulse® EHPU** is a rugged smart motor package that includes functionality specifically designed around increasing efficiency in hydraulic applications, and simplifying the transition to EV and Hybrid platforms.

The EHPU is available in high voltage (200 – 800VDC) for your EV or HEV chassis integration. The EHPU comes with a standard SAE Mounting interfaces for ultimate flexibility in pump selection and integrated pressure sensors for standalone pressure control modes of operation. call our engineering team to discuss custom options for mounting or output interfaces.

## FEATURES

With our integrated cooling, power electronics, motor, and pump, the Hydrapulse® EHPU provides the cleanest and most cost effective integration into your chassis, machine, or vehicle platform.

- Onboard pressure transducers
- Power dense permanent magnet motor
- 200vDC to 800vDC
- HVIL connection
- Integrated cooling (no external cooling required)
- CAN / J1939 Communications
- Onboard diagnostics
- Power-on-demand / energy savings
- Complete temperature monitoring

## APPLICATIONS

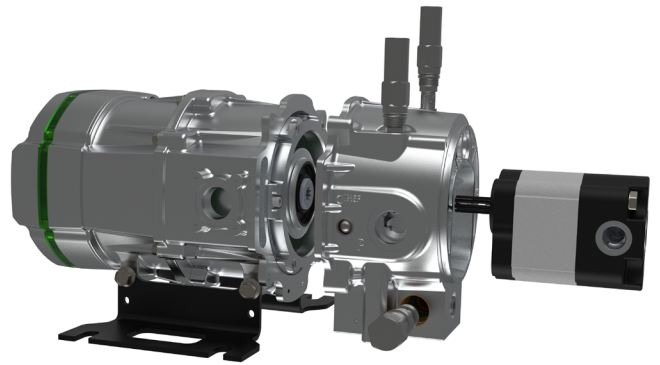
Our high voltage architecture makes the EHPU perfect for any HEV or BEV platform utilizing 200 to 800VDC battery packs. The rugged design of the motor and inverter guarantee a long life in the harshest of environments.

- Auxiliary Hydraulics
- Refuse Truck Applications
- “Idle Free” Auxiliary functions
- Off-Highway Equipment
- Electric Vehicle Steering
- Mining Vehicles
- Airport Ground Support Equipment
- Dump Trucks



## DIRECT ACTUATOR CONTROL

The Hydrapulse® Bi-Rotational Pumps allow a system designer to directly control an actuator with proportional speed control in both directions while simplifying the overall system architecture and improving efficiency. The system includes a relief valve to set the maximum system pressure, pressure sensors on each outlet to electronically limit pressures at the actuator, and valves to divert the low pressure return hydraulic oil back through the motor for cooling purposes.



# DISTRIBUTED ON-DEMAND HYDRAULIC SYSTEMS

ON-DEMAND CONTROL | MAXIMIZE EFFICIENCY | REDUCE TOTAL COST OF OWNERSHIP | REDUCED DOWN TIME



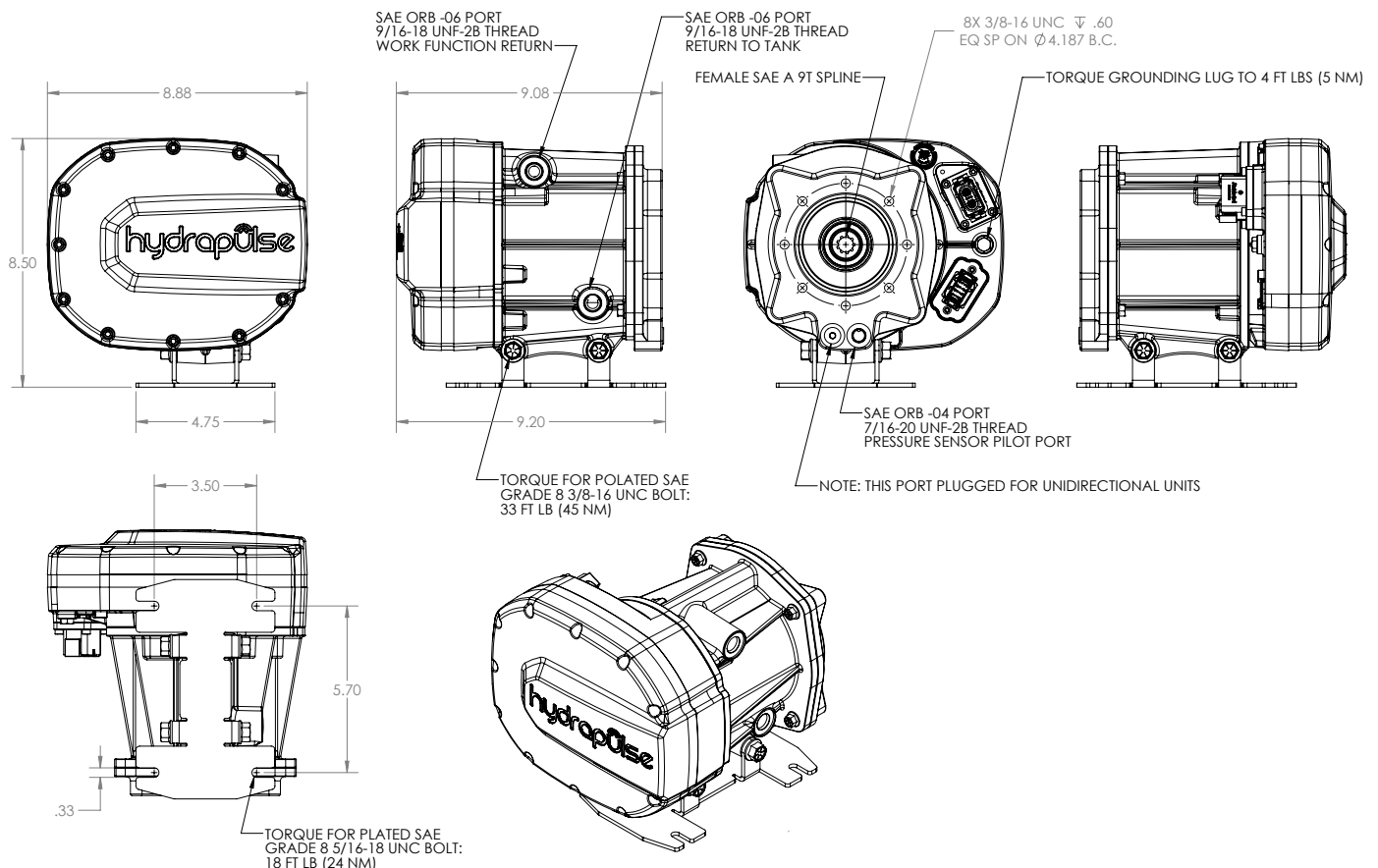
## MOTOR SPECIFICATIONS

EHPU MODEL	EHPU-1-056-350	EHPU-1-056-650
Rated Voltage (Vdc)	350	650
Rated Power kW (HP)	2.5 (3.3)	2.5 (3.3)
Cont Torque Rating (Nm)	5.5	5.5
Peak Torque Rating (Nm)	10	10
Cont. Rated Current (A)	7	3.8
Protection	IP67	IP67
Max Speed (RPM)	4000	4000
Operating Temp.	-40 C to 85 C	-40 C to 85 C
Storage Temp.	-40 C to 125 C	-40 C to 125 C
Weight lbs. (kg)	31.4 (14.2)	31.4 (14.2)

Specifications are nominal and subject to change. Consult Factory prior to ordering.

## DRAWINGS

EHSU-1-56-350-U-SAEA





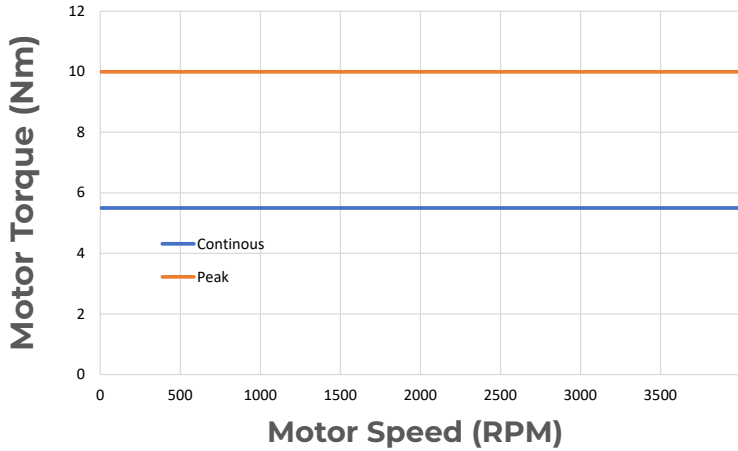
## PERFORMANCE CURVES



**EHPU-1-56-XXX-U-SAE**  
**Frame Size 1**  
**56 mm motor**  
**350-800Vdc**

### Motor Torque Ratings

Continuous and Peak torque ratings determined using 80° C cooling fluid



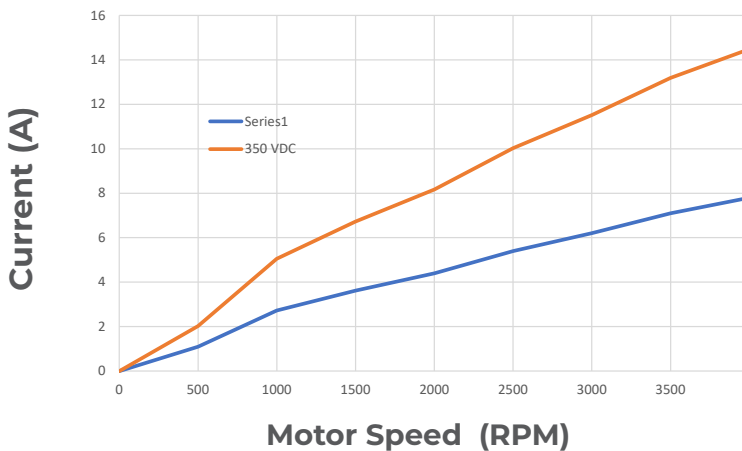
Temperature = 40° +/- 3°C  
 Kinematic Viscosity = 28.8 mm<sup>2</sup>/s (cSt)

\*All curves dependant on loading conditions and may vary.

**The charts on this page represent expected performance at 350 and 650Vdc Nominal**

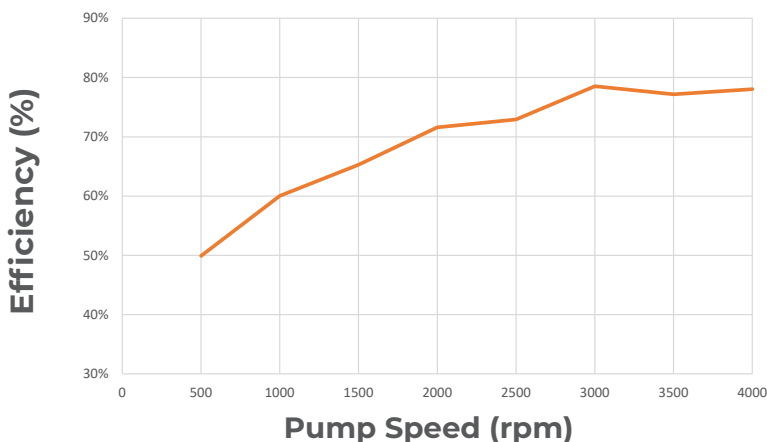
### Current Draw vs Motor Speed

Current draw at various speeds with motor torque load of about 22Nm of torque



### Efficiency

Overall efficiency of motor and inverter, motor running at various speeds at a constant torque load



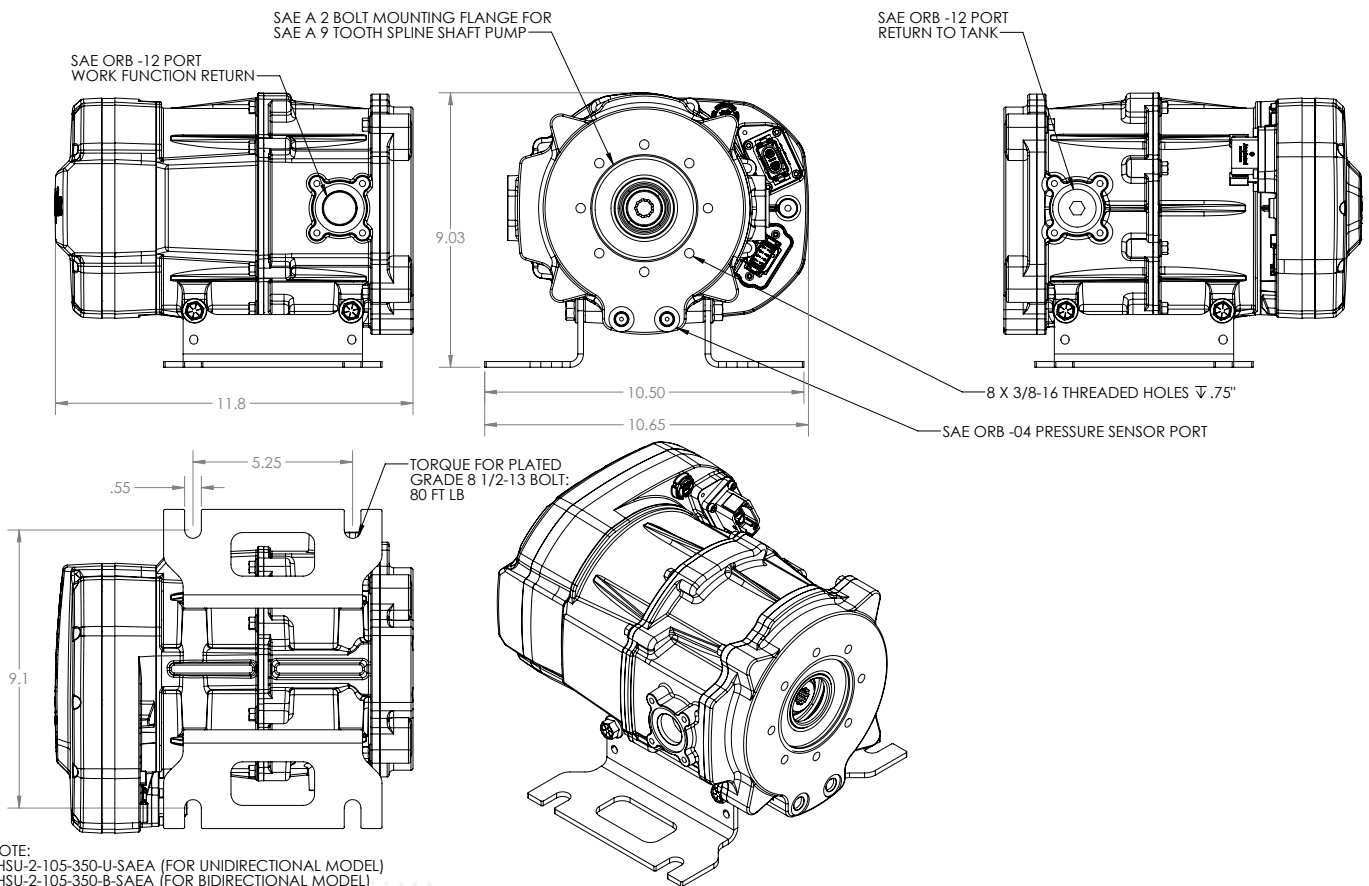
## MOTOR SPECIFICATIONS

EHPU MODEL	EHPU-2-105-350	EHPU-2-105-650
Rated Voltage (Vdc)	350	650
Rated Power kW (HP)	10 (13.4)	10 (13.4)
Cont Torque Rating (Nm)	21	21
Peak Torque Rating (Nm)	30	30
Cont. Rated Current (A)	30	17
Protection	IP67	IP67
Max Speed (RPM)	3500	3500
Operating Temp.	-40 C to 85 C	-40 C to 85 C
Storage Temp.	-40 C to 125 C	-40 C to 125 C
Weight lbs. (kg)	48 (21.8)	48 (21.8)

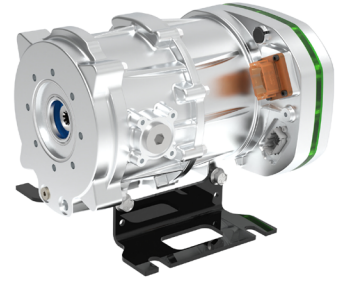
Specifications are nominal and subject to change. Consult Factory prior to ordering.

## DRAWINGS

EHSU-2-105-350-SAEA

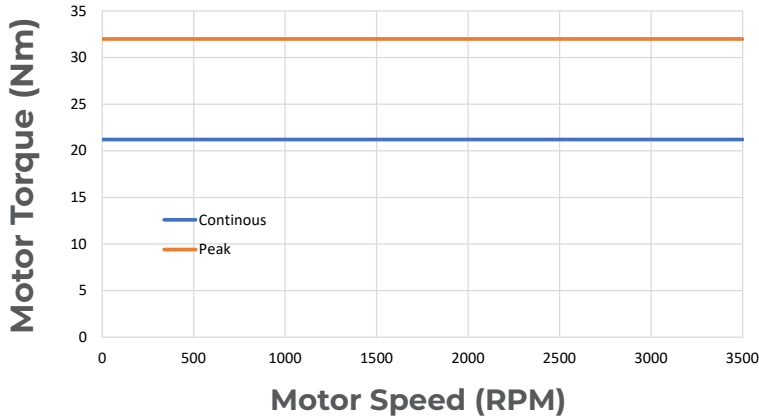


## PERFORMANCE CURVES



### Motor Torque Ratings

Continuous and Peak torque ratings determined using 80° C cooling fluid



**EHPU-2-105-XXX-U-SAE**  
**Frame Size 2**  
**105 mm motor**  
**350-800Vdc**

Temperature = 40° +/- 3°C

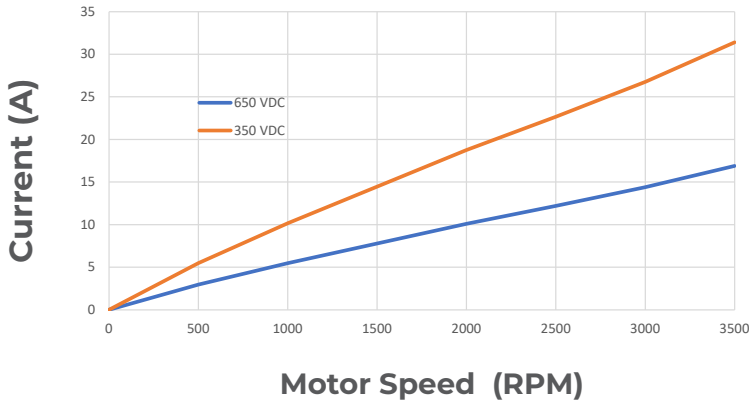
Kinematic Viscosity = 28.8 mm<sup>2</sup>/s (cSt)

\*All curves dependant on loading conditions and may vary.

**The charts on this page represent expected performance at 350 and 650Vdc Nominal**

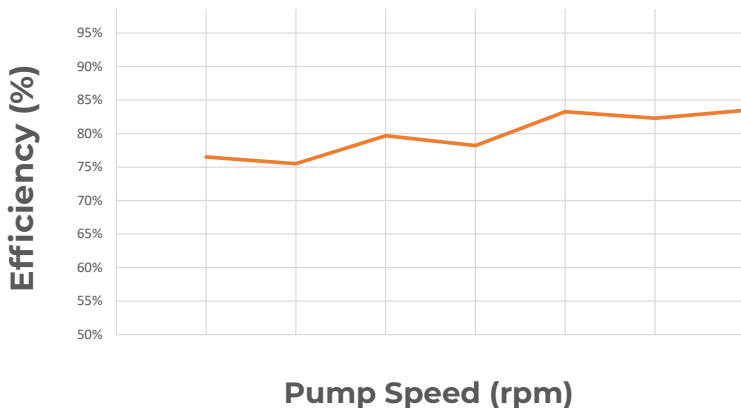
### Current Draw vs Motor Speed

Current draw at various speeds with motor torque load of about 22Nm of torque



### Efficiency

Overall efficiency of motor and inverter, motor running at various speeds at a constant torque load





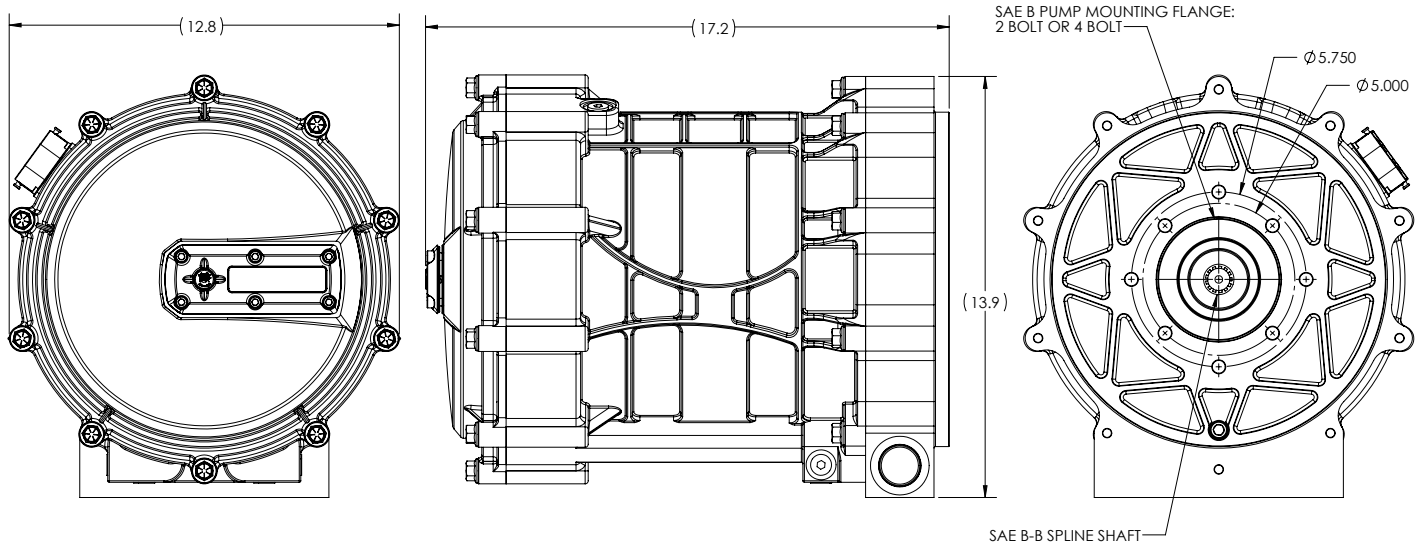
## SPECIFICATIONS

EHPU MODEL	EHPU-3-105-350	EHPU-3-105-650	EHPU-3-215-350	EHPU-3-215-650	EHPU-3-340-350	EHPU-3-340-650
Rated Voltage (Vdc)	350	650	350	650	350	650
Rated Power kW (HP)	30 (40)	30 (40)	60 (80)	60 (80)	90 (120)	90 (120)
Cont. Torque Rating (Nm)	80	80	160	160	260	260
Peak Torque Rating (Nm)	140	140	240	240	340	340
Rated Current (A)						
Protection	IP67	IP67	IP67	IP67	IP67	IP67
Max Speed (RPM)	4000	4000	4000	4000	4000	4000
Operating Temp.	-40 C to 85 C	-40 C to 85 C	-40 C to 85 C	-40 C to 85 C	-40 C to 85 C	-40 C to 85 C
Storage Temp.	-40 C to 125 C	-40 C to 125 C	-40 C to 125 C	-40 C to 125 C	-40 C to 125 C	-40 C to 125 C
Weight lbs. (kg)	150 (68)	150 (68)	185 (83)	185 (83)	210 (95)	210 (95)

Specifications are nominal and subject to change. Consult Factory prior to ordering.

## DRAWINGS

EHPU-3-100-650

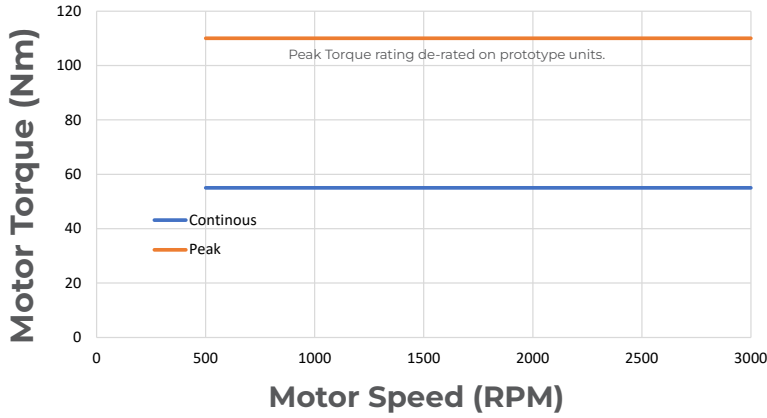


## PERFORMANCE CURVES



### Motor Torque Ratings

Continuous and Peak torque ratings determined using 80° C cooling fluid



**EHPU-3-100-350-U-SAE**  
**Frame Size 3**  
**100 mm motor**  
**350vDC Nominal**

Temperature = 40° +/- 3°C

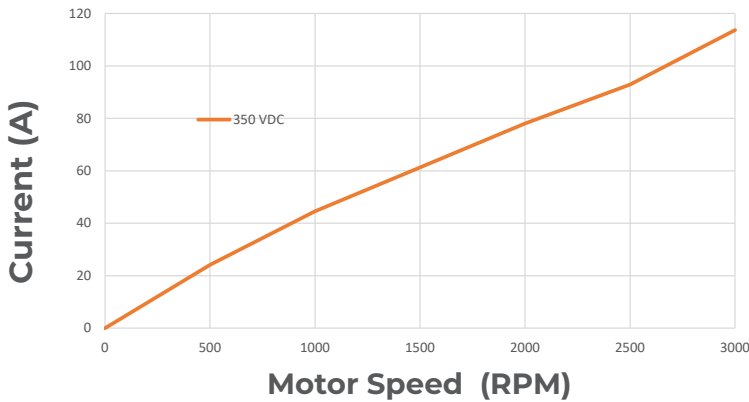
Kinematic Viscosity = 28.8 mm<sup>2</sup>/s (cSt)

\*All curves dependant on loading conditions and may vary.

**The charts on this page represent expected performance at 350 and 650Vdc Nominal**

### Current Draw vs Motor Speed

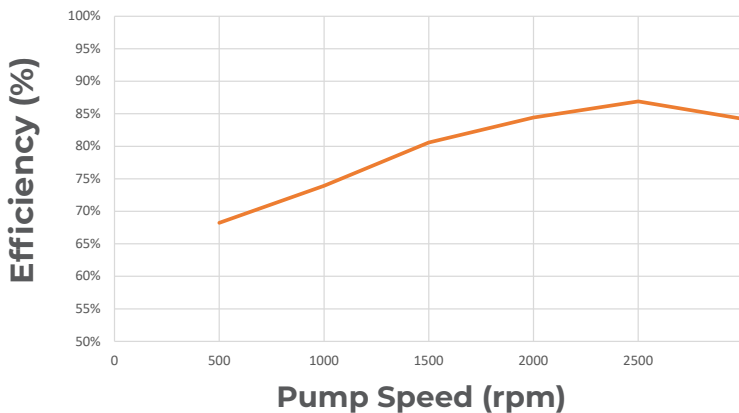
Current draw at various speeds with motor torque load of about 100Nm of torque



### Efficiency

Overall efficiency of motor and inverter, motor running at various speeds at a constant torque load

Torque Load applied using 40cc Gear pump at 2000 PSI, approximately 100Nm.



## PERFORMANCE CURVES



**EHPU-3-100-650-U-SAE**  
**Frame Size 3**  
**100 mm motor**  
**650vDC Nominal**

Temperature = 40° +/- 3°C

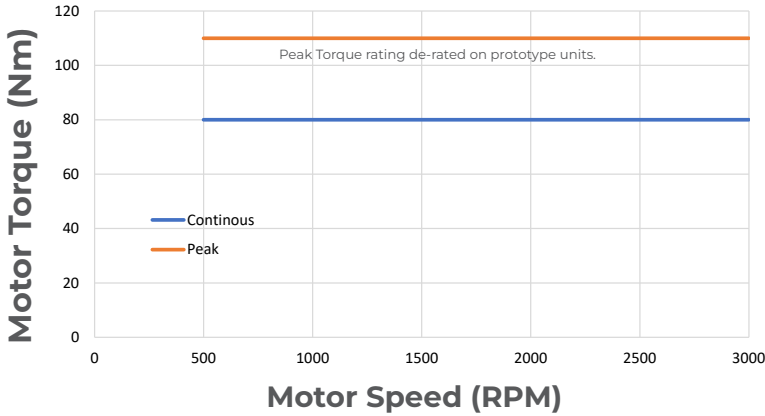
Kinematic Viscosity = 28.8 mm<sup>2</sup>/s (cSt)

*\*All curves dependant on loading conditions and may vary.*

**The charts on this page represent expected performance at 350 and 650Vdc Nominal**

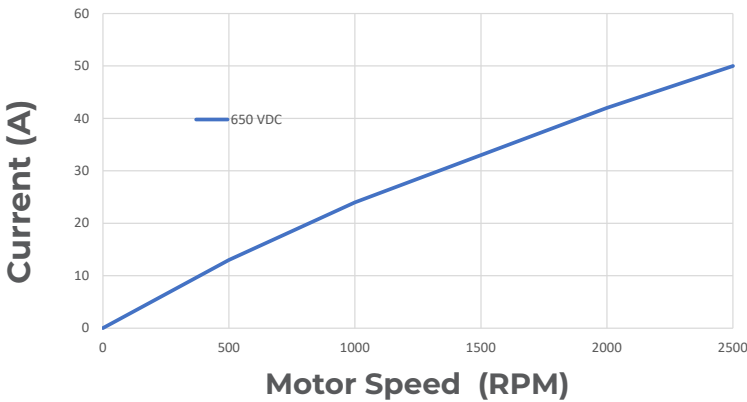
### Motor Torque Ratings

Continous and Peak torque ratings determined using 80° C cooling fluid



### Current Draw vs Motor Speed

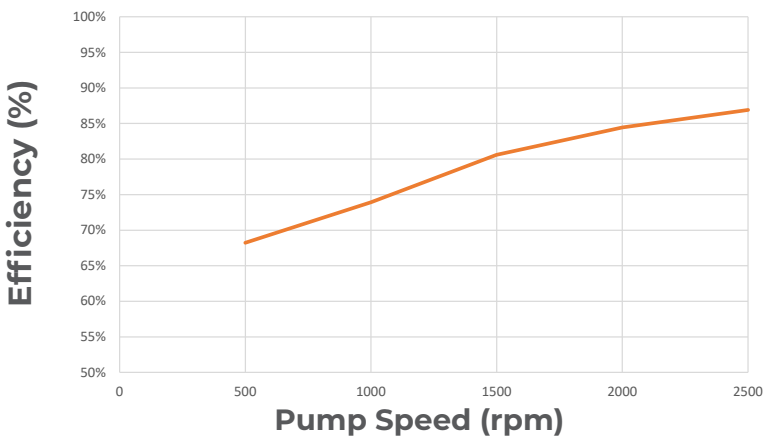
Current draw at various speeds with motor torque load of about 100Nm



### Efficiency

Overall efficiency of motor and inverter, motor running at various speeds at a constant torque load

Torque Load applied using 40cc Gear pump at 2000 PSI, approximately 100Nm.





## ENVIRONMENTAL PROTECTION

### CLIMATE

- SAE J1455-4.1.3 Temperature Cycle
- SAE J1455-4.1.3 Thermal Shock
- SAE J1455-4.1.3 Thermal Stress
- SAE J1455-4.2 Humidity
- SAE J1455-4.3 Salt Spray Atmosphere
- SAE J1455-4.3.3 Immersion Testing
- SAE J1455-4.4 High Exposure Splash Testing
- SAE J1455-4.5 Steam Cleaning and Pressure Washing

### MECHANICAL VIBRATION

- SAE J1455-4.10 Swept Sine Vibration
- SAE J1455-4.10.4 Random Vibration
- SAE J1455-4.11 Mechanical Shock
- SAE J1455-4.11 Operational Shock / Harness Shock
- SAE J1455-4.12 Combined Environmental
- ISO 16750 Vibration

### ELECTRICAL

- SAE J1455-4.13 Heavy-Duty Truck Electrical Environment

### EMI/EMC

- EIC 61000-6-4 Radiated Emissions
- IEC 61000-6-2 Industrial Immunity
- FCC Part 15B Class A
- CISPR 25
- ISO 11452-2 RI
- ISO 11452-4 BCI
- ISO 10605 ESD
- ISO 7637-2 3rd Edition transients (on 12vdc)

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WARNING: This product can expose you to chemicals including lead, which is known to the State of California to cause cancer. For more information, go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

WARNING!

EHSU Datasheet v1.0 -02.2022

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