

NetGain Motors, Inc.

800 South State Street / Suite 4 / Lockport, IL 60441 / 630-243-9100 / 630-685-4054 (FAX)

FAQ's

Last updated: January 29, 2021

Welcome to the **NetGain Motors, Inc.** Frequently Asked Questions (FAQ). This document will attempt to answer many of the questions that we are asked related to our **Hyper**™ products. It is not intended to provide answers to all your questions. We suggest you contact one of our [Authorized Motor Dealers](#) for further assistance and guidance.

1. Why can't I find the download file for my **Hyper**™ Motor?

There are new versions of the SmartView software, Firmware, and Clone files. You must download, extract, and install the software from the following link onto your Windows based PC - http://www.go-ev.com/downloads/SmartViewGuiInstaller_2BC_2BD_DLR_Rel_1_1.zip

Use the latest version of the controller firmware to program your X1 or X144 controller via Smartview: (https://www.go-ev.com/downloads/clone_files/TAU_KTSTS_2BD.007.001.bin) The Firmware is installed in SmartView under:

Manage→Firmware→Browse Path→OK→Program. This is Pre-Startup Step 16 in the User Manual. Install Clone file (Hyper_9_100V_2BD_15.clon) under:

Manage→Clone→From File to Controller. This is Pre-Startup Step 17 in the User Manual.

After Pre-Startup Step 19, your sensor can be commissioned by clicking:

Configure→Motor & Control→"Spin Sensor"(tab)→Commission "Sensor" button. The motor will spin slowly for about 1 minute, so please be sure it is safe to do so with minimal load (Neutral and/or wheels suspended off ground). SmartView will prompt that this must initiate 60 seconds from key on, click **YES**. If it fails, it probably indicates there is an active fault or throttle request. Use these links and identify the appropriate motor and controller User Manual:

Hyper 9 System™: https://www.go-ev.com/PDFs/Hyper_9_IS_User_Manual_REV08.pdf

Hyper 9 HV System™: https://www.go-ev.com/PDFs/Hyper_9HV_IS_User_Manual_REV08.pdf

2. When do I need Clone File Management - When is Clone File Management Necessary?

- When you need additional support to solve Diagnostic Codes or abnormal behavior of the vehicle.
- When asking your Authorized Motor Dealer to change parameters in **Hyper-Drive**™ controller programming.
- When updating **Hyper-Drive**™ Controller firmware to a different version.
- During the pre-startup steps of your **Hyper**™ System User Manual.

3. Why is my **Hyper**™ motor making a sound but not moving?

- Please Check that Phases between Controller and Motor are all wired U-U, V-V, W-W.
- You can ensure your encoder is wired properly in the Monitor Block of SmartView. You must turn the key on, then rotate the motor 1 or more revolutions to compare the values below.

Monitor - Realtime Data - Inputs - Encoder Signals

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Sin Analog Input: between 900mv – 4100mV
Cos Analog Input: between 900mv – 4100mV
Sin Input Max Actual: ~4100mV
Sin Input Min Actual: ~950mV
Cos Input Max Actual: ~4100mV
Cost Input Min Actual: ~950mV

4. How do I bench test my **HyPer**™ Motor?

With any bench test, the motor housing should be securely fastened to the bench and restrained from movement. Bench tests of our **HyPer**™ Motor requires a completely wired system, as it would be in a working application. The wiring diagrams and pre-startup steps from the [HyPer™ System User Manuals](#) are the minimum requirements to spin a **HyPer 9**™ Motor. These motors are RPM limited by default. So provided that all pre-startup steps are followed carefully, the motor is not able to over-rev, even with no load. Though it will spin up very quickly with full torque available.

Our brushed DC motors can be tested on a bench with a 12Vdc supply, using our DC motor bench test procedure. Do not run the motor with no load and a DC supply higher than 12V nominal. 24V no load will spin our DC motors too fast. https://www.go-ev.com/PDFs/005_007_Motor_Bench_Test.pdf

5. I'm having trouble connecting to the controller – failure to get a controller response – COMM issues.

Download the FTDI driver for the supplied FTDI serial to USB cable adapter. Extract (unzip) and Install if your computer is not already equipped with a FTDI chipset driver. The driver may be the fix, or it could be a security exception on your PC https://www.ftdichip.com/Drivers/CDM/CDM21228_Setup.zip SmartView works with windows 10. If you are extracting the SmartView program file before installing with setup wizard then it's best to restart the computer. Sometimes the first communication requires the following sequence: 1. connect serial cable 2. Open Smartview 3. Key switch on.

When verifying the wiring, the only necessary K1 wires for serial port communications are K1-24 (12V+) and K1-1 (12V-). If you're certain this is correct, then the controller should be ready to communicate and load the firmware.

Check for the latest clone, firmware, and SmartView files. If you have not downloaded the "2BD" versions, you will want to uninstall the version you are using and download these. The 2BD files have one extra step at the end that is not yet in the manual:

After Pre-Startup Step 19, your sensor can be commissioned by clicking: **Configure**→**Motor & Control**→**"Spin Sensor" tab**→**Commission "Sensor" button**. The motor will spin slowly for about 1 minute, so please be sure it is safe to do so with minimal load (Neutral and/or wheels suspended off ground). SmartView will prompt that this must initiate 60 seconds from key on, click YES. If it fails, that probably means there is an active fault or throttle request. After Commissioning is Done, you should be ready to roll.

6. How do I get the OEM version of the Smartview software?

This software is ONLY available to our Authorized Motor Dealers. End user use of this software will void

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your warranty as it may damage the motors. In order to install the OEM SmartView, Firmware, and Clone files, you will have to uninstall your current version of Smartview, and delete any .bin or .clon files. There is an additional fee associated with the downloading and use of this software and it is only available to Authorized Motor Dealers and OEMs with specific needs and knowledge base.

7. What is the difference between a **Hyper**™, **WarP**™, **Impulse**™ or **TransWarP**™ Motor?

The **Impulse**™ line of motors were designed to be lower power and/or smaller motors than our traditional **WarP**™ series motors. The **Impulse 9**™ is shorter than a **WarP 9**™, and is less powerful. However, it is more powerful than the 8” diameter motor it was designed to replace. In addition to being more powerful than an 8” motor, it shares many of the beefy components of the **WarP 9**™ Motors (commutator, bearings, brushes, etc.). The **Impulse 9**™ also has the same bolt pattern and mounting characteristics of an 8” motor. The **WarP**™ Motors are our most common motors. The **WarP 9**™ and **WarP 11**™ were designed to be interchangeable with one another. The **WarP**™ Motors are the most common motors we make for EV conversions. The **TransWarP**™ motors were designed to meet the needs of direct drive, racing applications, as well as being used by **EMIS**™. The “rule of thumb” when dealing with direct drive is that #1 it is not good for use as a daily drive #2 it will require twice the motor and twice the controller of a vehicle with a transmission. Our latest offering is the **Hyper 9**™ Motor. This is a **SRIPM** motor – a **S**ynchronous **R**eluctance **I**nternal **P**ermanent **M**agnet motor. This AC motor is vastly superior to DC motors in terms of simplicity of use, weight, RPMs, and efficiency.

8. Which **Hyper**™, **WarP**™, **Impulse**™ or **TransWarP**™ Motor should I use?

The answer to this question depends upon MANY factors! We would be happy to discuss which motor we feel meets your needs the best, and to run your requirements through our motor selection software. The first question you should ask is: What is the intended purpose of the vehicle? Will it be used as a “daily driver”? Will it be used strictly for racing? Will it be a performance vehicle, or will it be designed for greatest range between charges? Generally speaking, the **Hyper**™ Motors are the best choice for street driven vehicles. In addition to knowing the answers to these questions, you should have some realistic thoughts relating to:

- a) Top speed to be maintained on level terrain _____
- b) Top speed to be maintained on grade _____
- c) Percent grade the vehicle will travel on _____
- d) Wind resistance (frontal area) of the vehicle _____
- e) Total vehicle weight (with driver/passengers/load) _____
- f) Final gear ratio _____
- g) Tire Diameter _____
- h) Voltage to be supplied to the motor _____
- i) Coefficient of drag _____
- j) Battery internal resistance _____

9. What is a GUI Version Mismatch?

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The "GUI Version Mismatch" is likely caused by connecting to a controller with a firmware installed that does not match the SmartView version you are using. *You can use the table below for reference -*

SmartView File Name	SmartView Release	Firmware Release	Clone File	Spin Sensor Tab
SmartView_SYSys_DL R_REL3_x SmartView_SYSys_OE M_REL3_x	Rel 3.1; 3.4; 3.5	TAU_SYSYS_A01.E0 1.00A.bin (A01.E01)	H9000000_HyPer_9_IS_Fi le_9 H9HV000000_HyPer_9_I S_File_9	Must use encoder's CCW value for CCW rotation.
SmartView_2BC_2BD _DLR SmartView_2BC_2BD _OEM	Rel 1.0; 1.1	TAU_KTSTS_2BD.00 7.001.bin (2BD.007)	HyPer_9_100V_2BD_15.c lon HyPer_9HV_144V_2BD_ 15.clon	Must commission using 2BD Clone for correct motor/controller type. Can use encoder's CW value for either rotation.

10. How do I become an Authorized Motor Dealer of **HyPer**™ and **WarP**™ Motors?

You can find information online at <https://www.go-ev.com>. There is an “Authorized Motor Dealer Application” Web Page (https://www.go-ev.com/dealer_app.html) or print a PDF copy of the **Authorized Motor Dealer Application** (https://www.go-ev.com/PDFs/001_05_Dealer_Application.pdf). Fill out one of the forms completely and Email it or FAX it back to us. If you are a US company, you must be a valid existing business with a state resale sales tax number in order to begin the process. We also consider proximity to other Authorized Motor Dealers, experience converting vehicles to electric, prepared to place a minimum opening order, and other factors in the approval process. Web only Dealers will not be considered. You should also look at the information provided here: <https://www.go-ev.com/dealers-apply.html>

11. What is an ICE, what is an EV, Hybrid?

ICE stands for Internal Combustion Engine. EV stands for Electric Vehicle. A hybrid vehicle is one that uses a mixture or combination of technologies to propel the vehicle. Hybrids are generally one of two types: series or parallel. A parallel hybrid uses multiple, possibly combined, means of powering the vehicle, while a series hybrid generally uses a source to produce electricity in order to power an electric motor that actually drives the vehicle.

12. How can I order **HyPer**™ Motors ?

HyPer™ Motors may only be ordered through an Authorized Motor Dealer. A list of Authorized Motor Dealers is available on our web page at <https://www.go-ev.com/dealers.html>

13. Where can I get replacement parts for my motor.

Replacement parts and components can be ordered through any Authorized Motor Dealer.

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14. Can I put an alternator or generator or windmill or solar panels on my vehicle to keep the battery charged?

In brief: "NO"! We receive this question on almost a daily basis! If you figure out a method of actually getting more energy out of something than you put into it – please let us know immediately! To date, no one has figured out how to accomplish this feat – and though you aren't going to receive a ticket for trying, there are certain laws that you would be in violation of. Though windmills and solar cells may certainly be used to help charge batteries, most of the motors we sell are for use in vehicles that can draw between 340,000 watts (for a short time), and 15,000+ watts at highway speeds. If you have the time and plenty of sunlight and wind, these resources could certainly replace at least some of the energy consumed – just not as fast as people generally use it, or as quickly as you may want.

15. Can I use your motors in marine applications?

Certainly, but don't submerge them, and protect them from saltwater. Also, pay particular attention to previous question. It is extremely difficult to create a watercraft with 10-12 hours worth of wide-open power with generally available battery technology.

16. Can I direct drive my vehicle using your *HyPer*™ Motors?

Direct drive may work well in racing applications, however it is normally not the best choice for a daily street driven vehicle. The generally accepted rule of thumb is this: Direct drive will require twice the motor and twice the controller of a vehicle with a transmission. This means you would have to use a ***HyPer 9*™** coupled to a ***HyPer 9D*™** in an application where a single ***HyPer 9*™** would normally suffice if a transmission were used.

17. What motor controller should I use with these motors?

The ***HyPer*™** Motors ALL require the use of either the ***HyPer-Drive X1*™** or ***HyPer-Drive X144*™ - SRIPM Motor Controller/Inverter**. These controllers are the only controllers that will drive the unique SRIPM motors, and they must be matched to each motor.

18. How much power can these motors produce?

The ***HyPer 9*™** Motors are rated up to 8,000 RPMs and up to 95% efficiency. The ***HyPer 9*™** Motors are rated at a peak of 130 Volts and 750 Amps (~129 HP). The ***HyPer 9HV*™** Motors are rated at a peak of 180 Volts and 500 Amps (~119 HP).

19. Where can I obtain an adapter plate made for my vehicles transmission?

Many ***HyPer*™** Motor dealers specialize in making transmission adapter plates, as well as providing the other components used in EV conversions. Our **Authorized Motor Dealers** are listed on our web-site at

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<http://www.go-ev.com/dealers.html>. You can check the annotations in each Dealers listing to locate the best match for your specific needs. The transmission adapters made for **WarP™ Motors** will also work with the **HyPer™ Motors**.

20. Can I run the motors at 10,000 RPMs?

We do not recommend running these motors beyond 5500 RPMS as the power torque start dropping off. For short durations (i.e. drag racing) the motors have been known to approach 8,000 RPMs, but this is discouraged!

21. Where can I get additional assistance with my conversion?

An excellent resource is your local chapter of the Electric Auto Association. These groups have been doing conversions to pure electric for ~40 years and have extensive knowledge. Some of the Members of the EAA are world renown for their abilities. There are numerous books available, (i.e. ***Build Your Own Electric Vehicle*** by Seth Leitman and Bob Brandt or ***ICE FREE*** by John Hardy) and most of our Authorized Motor Dealers are willing to discuss your project with you and offer guidance advice. There is also a very active discussion group on the Internet called the EVDL (<http://www.evdl.org/index.html>) and the DIY forums (<http://www.diyelectriccar.com/forums/>). Our Authorized Motor Dealers are some of the best resources in the world. They have generally completed numerous conversions and will work with you to supply parts and insight into a vehicle conversion, as well as supplying you with the various components you'll need.

22. What is the EVDL and how do I subscribe?

The EVDL is the Electric Vehicle Discussion List. You can find all the details needed to subscribe and view the archives at: <https://www.evdl.org/>

23. What components do I need to make an electric vehicle?

You will obviously need an electric motor. You'll also need a motor controller, and a device to act as the throttle and signal the motor controller as to the power needed - a 5K potentiometer is the most common method, but the Hall Effect method is a safer/better alternative. You'll also need batteries, a battery charger(s), possibly a battery management system, possibly a transmission adapter plate, battery boxes/enclosures, a DC-to-DC converter, lots of cable, lugs, contactor[s], connectors, gauges and wiring.

24. What makes a good conversion vehicle?

First pick a vehicle you like that is in good condition. It is not uncommon for people to keep EVs for many years. As the weight of the vehicle will probably increase (I've never seen one that decreased if lead-acid was being used), consider the gross vehicle weight constraints. Choose a lightweight vehicle with strong suspension and brakes - sports cars and small pick-up trucks make ideal candidates. Do not change the ride height of the vehicle, or the ride characteristics. The heavier the vehicle, the more likely you are to be dissatisfied with the range and performance. Small pickup trucks make very good candidates, as the batteries

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can be placed under the bed along the frame rails, and they are designed for carrying additional weight (i.e. Batteries). They also have brakes designed to stop the vehicle with the extra weight you may add.

25. I want to go 300 miles on a charge at 75 miles per hour in my Suburban – okay?

NO! The typical range of a lead-acid EV is 25-50 miles on level terrain – depending upon the batteries and weight of the vehicle. Even with the most advanced battery chemistry currently available this is beyond current technology, but we're getting closer. Conversions using the various Lithium batteries available are claiming 75-150 mile ranges and more, so we are headed in the right direction, just not there yet... And the same goes for recharging the batteries in 5 minutes – it won't happen for quite awhile.

26. I want to use a small generator to run the electric motor while I am driving on the highway.

At first this sounds plausible, but using \$5.00/gallon fuel (gasoline) to derive \$1.00 per gallon fuel (electricity) is only the beginning of the issues surrounding this. Generators are noisy. Most generators are not designed to operate in a mobile environment and gas can spill from their tanks. If you try to quiet them you will reduce their ability to produce electricity. When generators are running they typically produce more pollutants in one hour than 250 hours of driving an ICE. Even in a lightweight vehicle you will require around 150 amps at 144 volts to maintain 60 MPH – that's more than a 21Kw generator! So the question becomes: "Trains do it why can't a car?". The simple answer is that trains run level, and straight as much as possible, with few stops, and cost millions of dollars. Trains are not concerned about their 0-60 MPH time, or merging with traffic. It only takes a small fraction of the power needed to obtain a speed to maintain the speed. Additionally, steel wheels on steel tracks offer 1/50th of the rolling resistance of rubber on concrete. A typical EV will use 144 Volts and 500 to 1000 Amps to get started from a dead stop. This is 144 Kw of power – a VERY big generator.

27. Can I use capacitors to power the vehicle?

Probably not entirely. Though capacitors offer very high power density, their energy densities are very low (the opposite of fuel cells). Super-capacitors (aqueous based) and ultra-capacitors (organic based) usually become a slave to the batteries. There is potential (no pun intended) for the use of capacitors in EVs, particularly when used with regen braking. The use of capacitors might be beneficial in obtaining a speed, but probably doesn't make much sense to use them to maintain speed.