

Specifications



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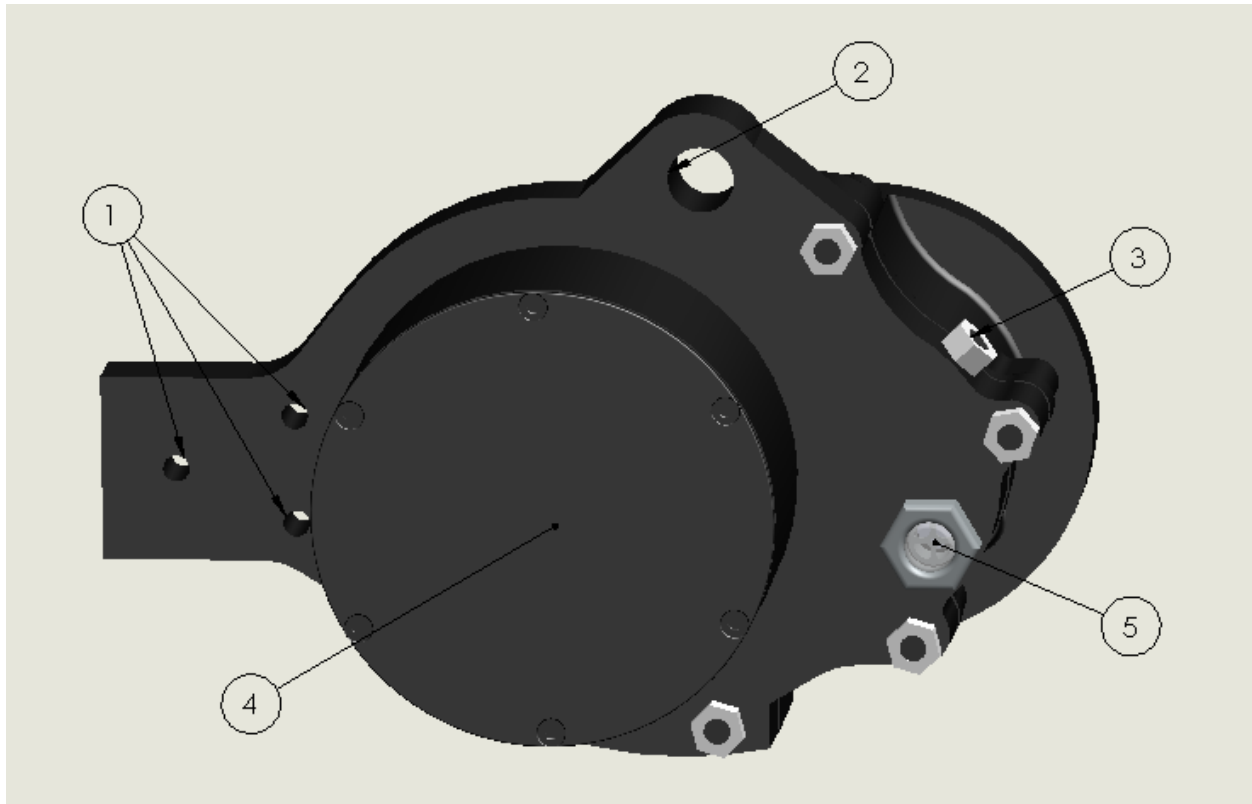
Introduction

This document describes the various parts of the 400 watts geared BLDC motor and provides instructions to ensure successful operation of the geared BLDC motor. Please read through the document before attempting to mount and / or run the motor.

Specification

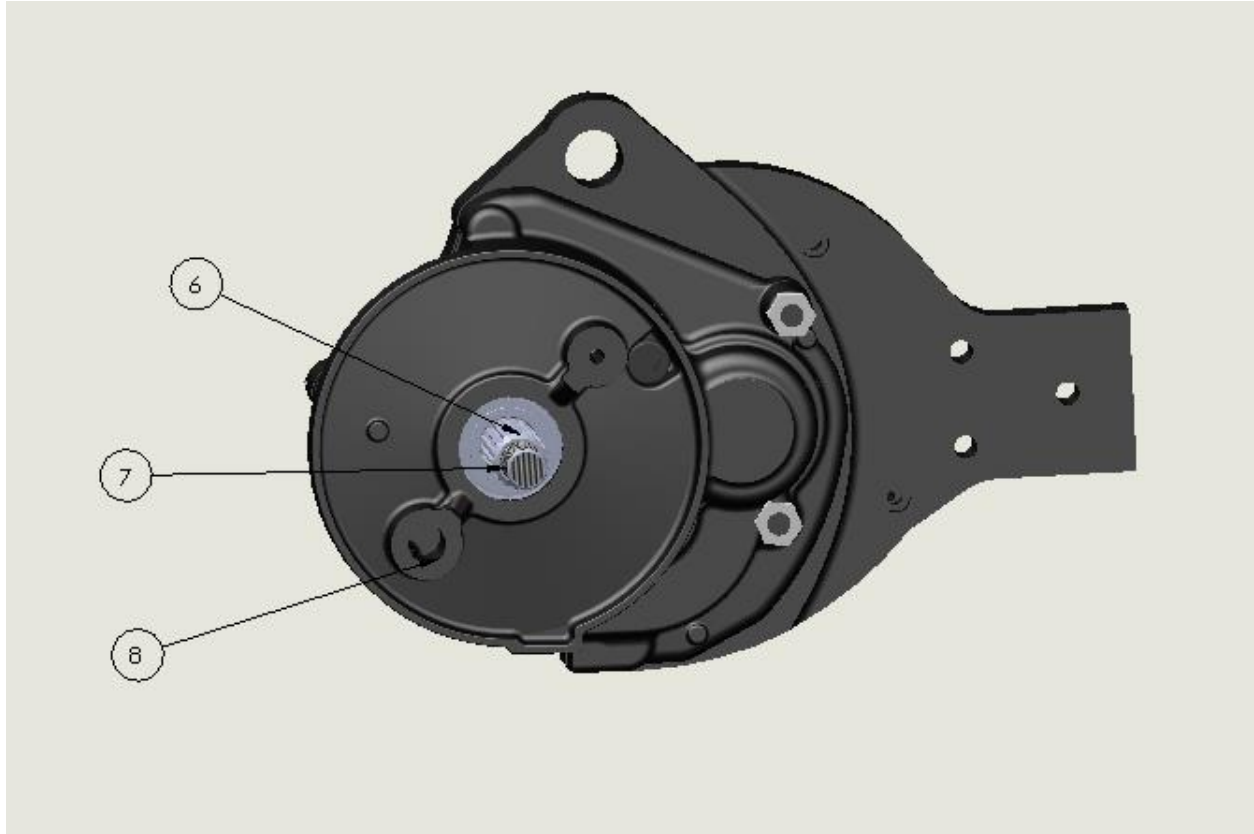
Part Name: IR120 24Volt, 400 Watts, 3000 RPM BLDC Motor, Shaft Output with Helical Gear and E-scooter reduction gear box of 10:1 ratio		
Brushless DC Motor		
1	Power Rating	400 Watts
2	Voltage	24 V
3	Amperes	17 A
4	Torque	1 Nm
5	Motor Speed	3300 RPM
6	Type of motor	3 Phase BLDC, Interior Permanent Magnet, Inner Rotor with Helical Shaft Output
7	Cooling	Air cooled
8	Max operating temperature	120 C
BLDC Motor Controller		
1	Power Rating	400 Watts
2	Voltage	24 V
3	Amperes	20 A
Gear Box		
1	Gear Ratio	10:1 (Input : Output)
2	Gear Output	330 RPM (@ motor input of 3300 RPM)
3	Shaft Output	18T splined shaft with M14 thread
4	Gear Output Torque	10 Nm

Parts Explained



Front View

- 1 – 8 mm through holes to mount swing arm
- 2 - 20 mm through hole to mount shock absorber
- 3 - M8 bolt / Oil Refill Inlet
- 4 – Brushless DC Motor
- 5 – Oil Level Indicator



Back View

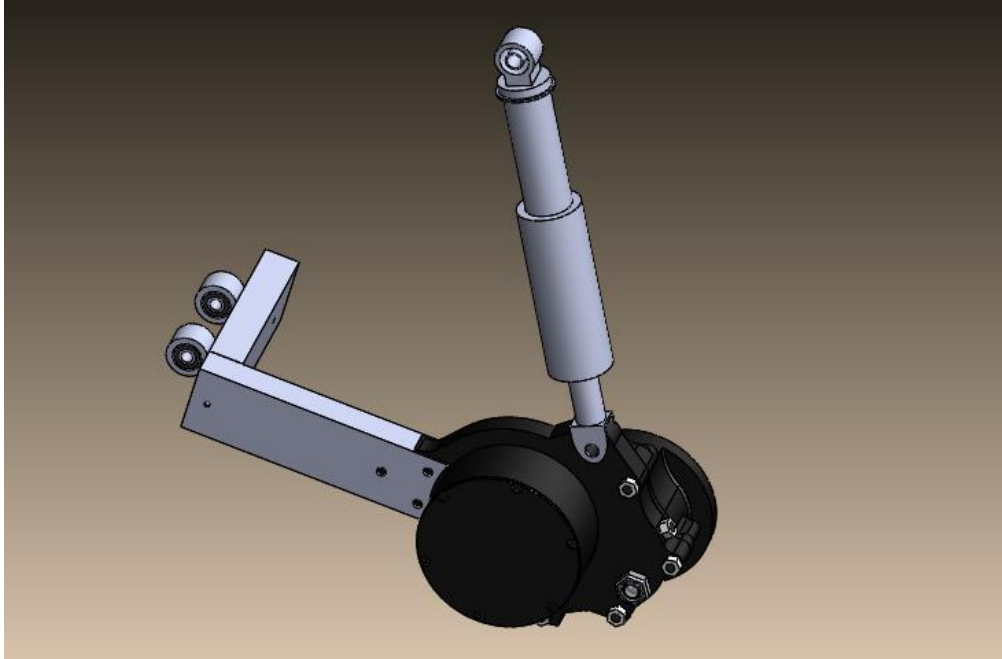
6 – Splined Shaft

7 – M14 thread to secure wheel hub

8 – Through hole to mount brake lever assembly

Mounting Instructions

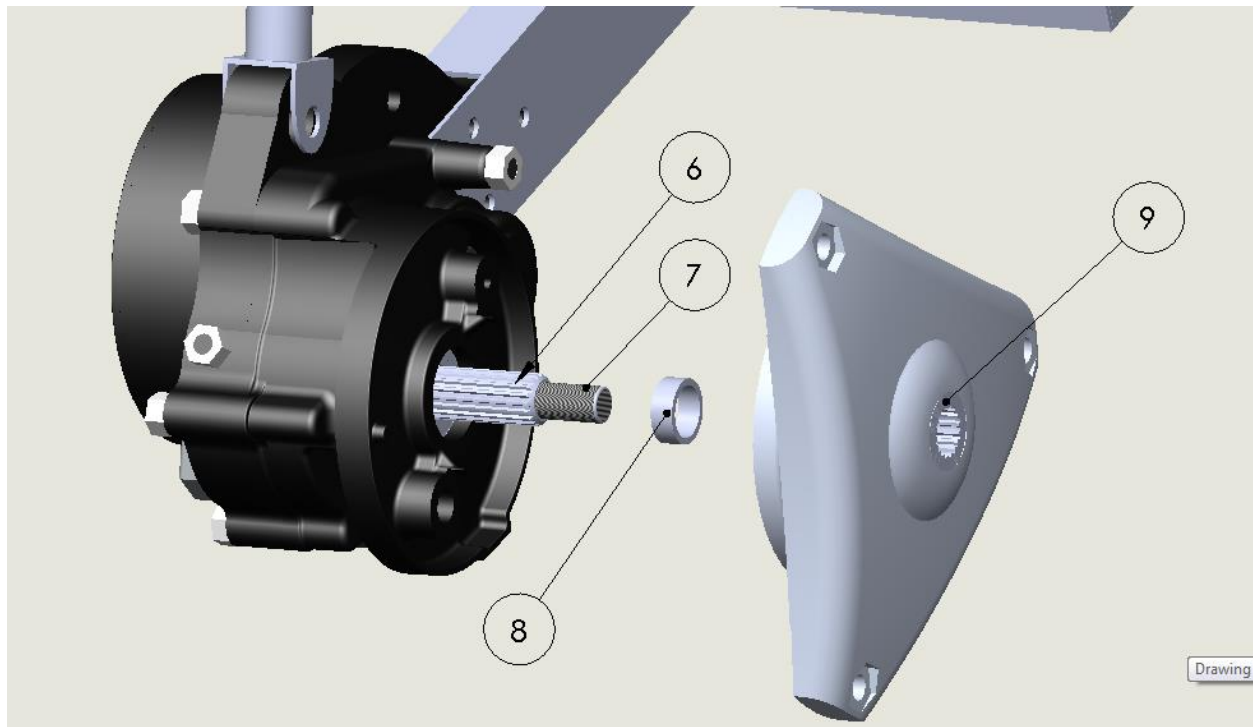
Mount the geared BLDC motor using the two mounting option provided. Please use the three 8 mm through holes provided at the left to mount the geared BLDC motor to the swing arm. A mounting approach is *suggested* below.



Use the 20 mm through hole at the top of the geared BLDC motor to mount one end of the shock absorber. Please use appropriate rubber bushings while mounting the shock absorber.

Connecting the wheel to the gear box

The output splined shaft (18T) of the gear box is designed to fit grooved wheel hub that is readily available in the market.



6 – Splined output shaft of the gear box

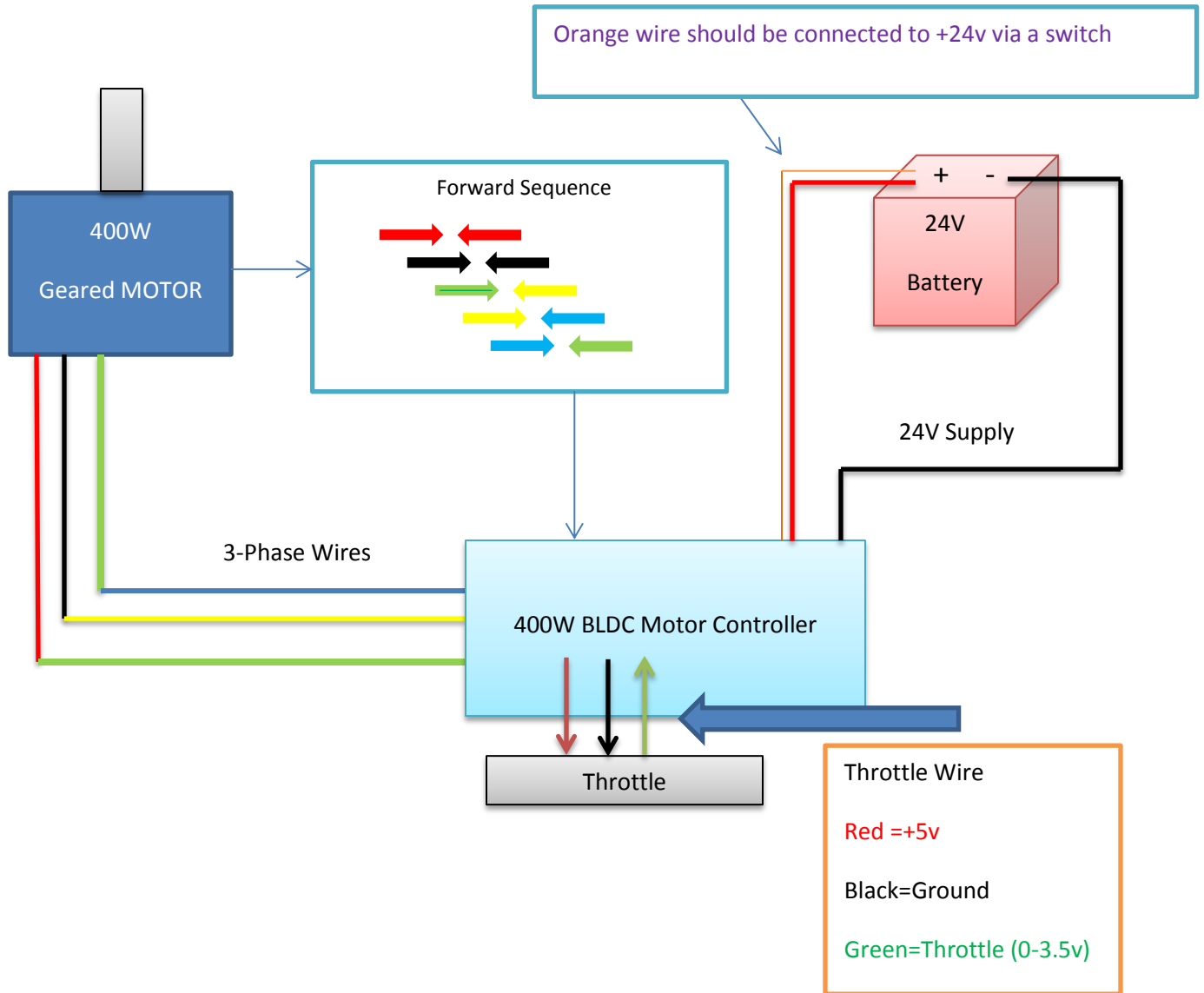
7 – M14 thread to secure the wheel hub

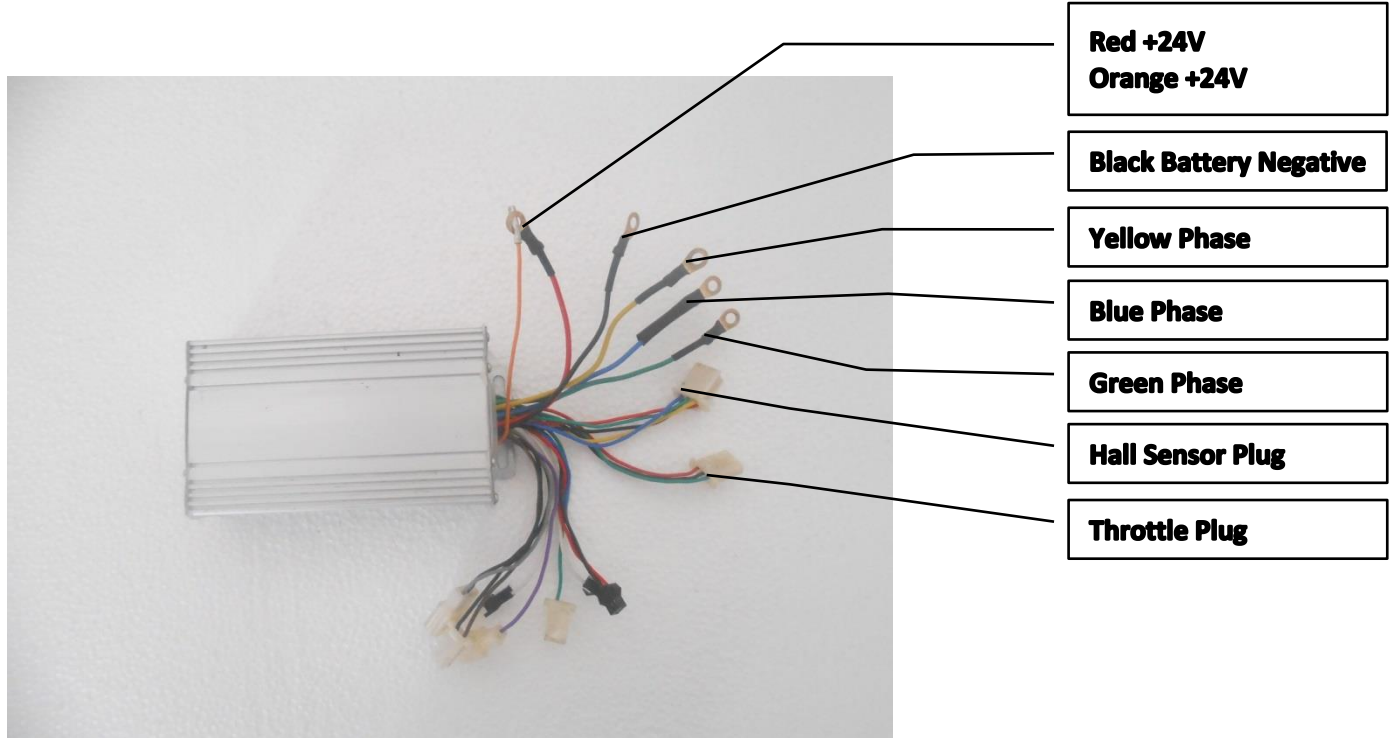
8 – Spacer between the gear box and the wheel hub of dimension (25 OD, 20 ID, 9* mm length)

Note: * Suggested length is 9 mm. Please use appropriate length depending on the wheel hub used.

Connecting the motor to the controller

The below diagram describes the connection sequence for the motor





Controller Connections

Connect the Controller Phase Wires and the Hall Sensor wires to the respective wires from the motor as given below to achieve the desired direction

Controller Connections

Controller Red & Yellow	Battery Positive. Connect thinner gauge Orange wire to Battery Positive via a switch
Controller Black	Battery Negative

Forward Direction - Clockwise

Motor Phase Connection	1 (Red)	2 (Black)	3 (Green)
Controller Phase Connection	1 (Green)	2 (Yellow)	3 (Blue)
Motor Hall Sensor Connection	1 (Yellow)	2 (Blue)	3 (Green)
Controller Hall Sensor Connection	1 (Blue)	2 (Green)	3 (Yellow)

Reverse Direction – Anti-Clockwise

Motor Phase Connection	1 (Red)	2 (Black)	3 (Green)
Controller Phase Connection	1 (Green)	2 (Yellow)	3 (Blue)
Motor Hall Sensor Connection	1 (Yellow)	2 (Blue)	3 (Green)
Controller Hall Sensor Connection	1 (Yellow)	2 (Blue)	3 (Green)

Throttle Connection

Controller Side	1 (Red)	2 (Black)	3 (Green)
Throttle Side	1 (Red)	2 (Black)	3 (Green)

Operating Instructions

Before operating the geared BLDC motor please ensure that the following pre-requisites are addressed

1. Ensure that the gear box is filled with gear oil. Please fill gear oil till the oil reaches the red dot in the oil level indicator.
2. Ensure that the gear box is firmly held in place by mounting the same.
3. Ensure that the controller is connected to the batteries via a switch and all wire connections are insulated properly.
4. Ensure that the motor phase wires and the hall sensor wires are connected firmly and are insulated properly.
5. Connect the throttle / pot to the controller as mentioned in the connection sequence diagram. Ensure that the output is at minimum while switching on the controller
6. Before mounting the wheel, please ensure use of appropriate spacers (not included) to make sure that the wheel moves freely along with the gear shaft output and does not interfere with the gear box housing. Use a M14 flanged nut (not included) to tighten the wheel in place.
7. Apply throttle to run the motor

General Instructions

1. Handle the motor with due care. Please ensure the following
 - a. Do not drop the motor or cause severe physical shock to the outer casing of the motor.
 - b. Do not use a hammer on the motor to prevent damage to the outer casing and the flange that mounts the motor. Use a wooden / nylon mallet.
 - c. Do not lift the motor using the wires as it can damage the wires/short the motor windings.

Failure to ensure the above instructions can cause severe damage to motor.

2. Do not attempt to open the motor casings as special fixtures are required to open the same without causing any damage. Do not attempt to service the motor by using the services of local technicians / consultants. If you require the motor /gear box to be serviced, please contact us at the given below address.
3. Do not attempt to run the motor using the wrong hall sensor or phase wire sequence. As under extreme conditions it can cause the following
 - a. Heat the motor windings
 - b. Fail the motor controller
 - c. Dislocate the magnets
4. Please ensure that motor is not overloaded continuously. Use appropriate gear ratios to ensure that the motor is not loaded above the 17A rated limit during normal operating condition.
5. Please ensure that there is sufficient gear oil before operating the geared BLDC motor.
6. Please note that failure to adhere to above the instructions will invalidate the warranty for the motor and the controller.

Contact Address

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