Navitas Vehicle Systems Ltd.

Navitas 440A-600A DC CONTROLLER

YAMAHA® G19/22 Conversion

Installation/Service Manual

INSTALLATION INSTRUCTIONS FOR:

YAMAHA® G19/22 GE (Lowside) Conversion
YAMAHA® G19/22 Moric (Highside) Conversion

NAVITAS

02/19

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INSTALLATION INSTRUCTIONS

YAMAHA G19/22 Installation (GE and MORIC)

DANGER

- Make sure the RUN/TOW Switch is in the TOW position.
- Make sure to Disconnect the Main Positive ⊕ and ⊖ Negative Cable on the Vehicle's Battery System.

Before removing the original Controller take note or take a photo of the 5 Controller Terminals and their corresponding Wires. Make sure that the groups of wires stay together.

Which Controller does your car have?

Determine which controller is presently installed in your car, the GE 2001-2004.5 Lowside Drive, or the Moric 2004.5-2007 Highside Drive (pictured left and right respectively in *fig. 1*), then follow the appropriate directions below.

fig. 1

YAMAHA G19/22 Installation (GE)

1. If pre-charge resistor is present, then remove and discard
2. Remove GE OEM Controller
3. Install the new TSX 3.0 controller (TSX)
4. Connect A2 to M post using a M8 Bolt, Lock Washer and Flat Washer
5. Connect both A1 and Main Positive (B+) to the B+ post using a M8 Bolt, Lock Washer and Flat Washer
6. Connect Main Negative(B-) to B- using a M8 Bolt, Lock Washer and Flat Washer
7. Connect F1 from OEM Controller to F1 terminal using spade connector
8. Connect F2 from OEM Controller to F2 terminal using spade connector

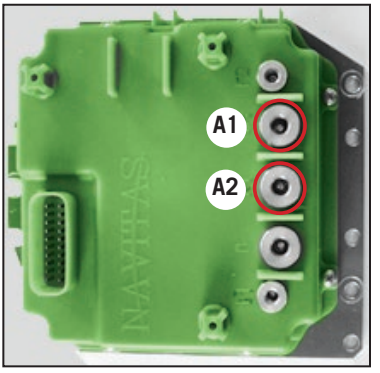


fig. 2

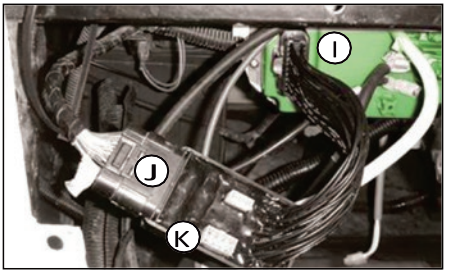
Torque Specifications

F1 & F2	**6 mm Bolt**	60 in-lbs/ 5ftlbs/ 6.8Nm
B-/M/B+	**8 mm Bolt**	150 in-lbs/ 12.5ftlbs/ 16.9Nm

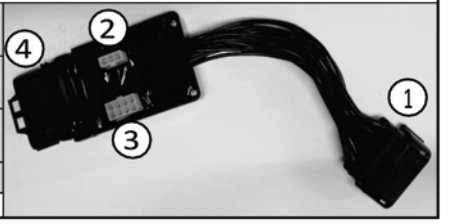
INSTALLATION INSTRUCTIONS

YAMAHA G19/22 Installation (GE) Cont'd

9. Install the 20 Pin Connector on the Navitas Vehicle Module Harness to TSX Controller
10. Install the 23 Pin OEM Connector to the Navitas Vehicle 23 Pin Module Harness
11. Optional (install 8 pin connector for the "On The Fly" Programmer).



NOTE: The harness should be oriented and secured with Zip Ties to prevent water and debris from accumulating in the connectors

Connector Plug Location				Vehicle Module Harness (Yamaha G19/22)
1	Controller	20 Pin	Controller Harness Connector	
2	Reserved	3 Pin	NOT USED	
3	OTF	8 Pin	"On The Fly" Programmer *(Optional) Not included	
4	Vehicle	23 Pin	Vehicle Harness Connector	

Now the Vehicle's Main Battery Positive and Negtive Cables can be re-connected

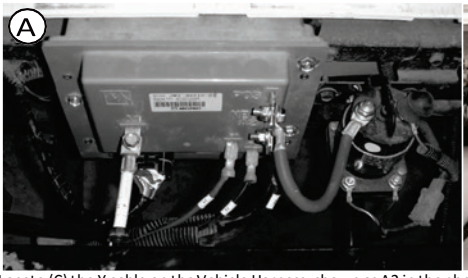
INSTALLATION INSTRUCTIONS

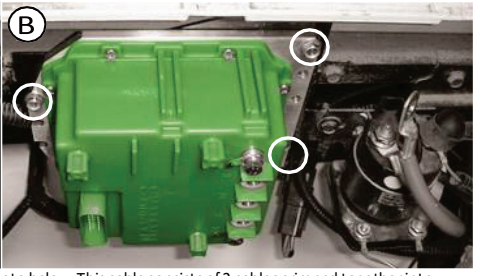
YAMAHA G19/22 Installation (MORIC)

DANGER

- **Make sure the RUN/TOW Switch is in the TOW position.**
- **Make sure to Disconnect the Main Positive ⊕ and ⊖ Negative Cable on the Vehicle's Battery System.**

Before removing the original Controller take note or take a photo of the 5 Controller Terminals and their corresponding Wires. Make sure that the groups of wires stay together.
Remove (A) the Original Vehicle Controller. (B) Install the Controller using the 3 screws from the original controller.
CAUTION: DO NOT CONNECT ANY WIRES OR CABLES UNTIL AFTER STEP C.



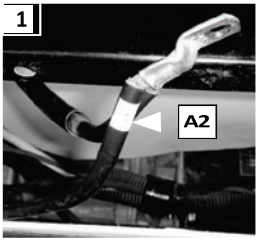


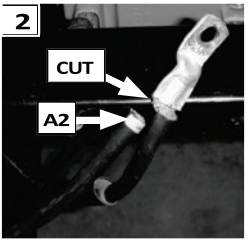
Locate (C) the Y cable on the Vehicle Harness: shown as A2 in the photo below. This cable consists of 2 cables crimped together into a Ring Terminal. The one side comes from the Battery Negative and the other side comes from the A2 on the Motor. Use a pair of side cutters to cut the A2 side of the cable at the Ring Terminal. Then crimp on a new ring terminal (included in the Harness bag). NOTE: The Ring Terminals on the original Harness may need to be drilled out to 5/16" to allow the New Harness to be connected to the new Controller.

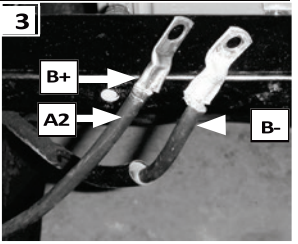
Torque Specifications

F1 & F2	**6 mm Bolt**	60 in-lbs/ 5ftlbs/ 6.8Nm
B-/M/B+	**8 mm Bolt**	150 in-lbs/ 12.5ftlbs/ 16.9Nm

C







SEE PHOTO ON FOLLOWING PAGE

(D) Connect the Motor Cable (usually white) from the original Controller to the M Terminals on the Controller using a M8 Bolt, Lock Washer and Flat Washer.

(E) Connect the Main Positive Red Power Cable from the Vehicle Solenoid and the Black A2 Cable (Cable that was cut and has the New Ring Terminal) to the B+ Terminals on the Controller using a M8 Bolt, Lock Washer and Flat Washer.

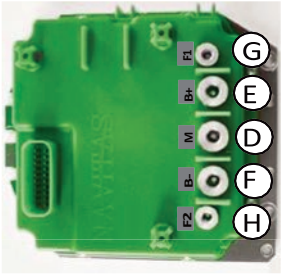
(F) Connect the Main Negative Black Power Cable (Cable from the Battery with the original Ring Terminal) to the B- Terminal on the Controller using a M8 Bolt, Lock Washer and Flat Washer.

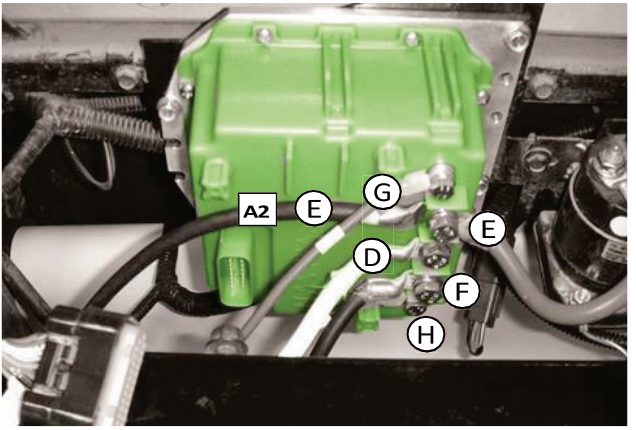
(G) Install the F1 Field Wire (usually green) from the original Controller to the F1 Terminal on the Controller using a Spade Connector.

(H) Install the F2 Field Wire (usually black) from the original Controller to the F2 Terminal on the Controller Terminal using a Spade Connector.

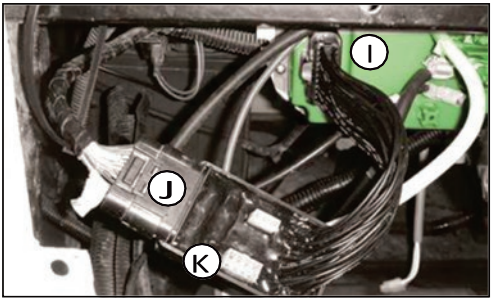
INSTALLATION INSTRUCTIONS

YAMAHA G19/22 Installation (MORIC) Cont'd

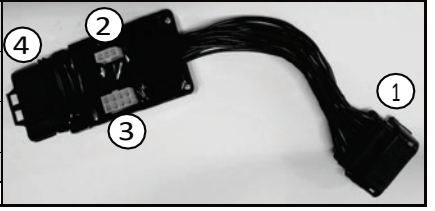




(I) Install the 20 Pin Connector on the Vehicle Module Harness to the Controller.
(J) Install the 26 PIN Connector from the Vehicle Wiring Harness to the 26 Pin Connector on the NAVITAS Vehicle Module Harness.
(K) This 8 Pin Connector is for the optional OTF "On The Fly" Programmer.



NOTE: The Harness should be oriented and secured with ZipTies so that water and debris does not accumulate in the Connectors.

Connector Plug Location				Vehicle Module Harness (Yamaha DR.)
1	**Controller**	**20 Pin**	Controller Harness Connector	
2	**Reserved**	**3 Pin**	NOT USED	
3	**OTF**	**8 Pin**	"On The Fly" Programmer *(Optional) Not included	
4	**Vehicle**	**26 Pin**	Vehicle Harness Connector	

Now the Vehicle's Main Battery Positive and Negative Cables can be re-connected.

INSTALLATION INSTRUCTIONS

YAMAHA G19/22 Installation (MORIC) Cont'd

Pinout for Controller

Diagrams and other updates available at: **NavitasVS.com/support**

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