



ELECTRONIC POWER STEERING TROUBLESHOOTING MANUAL

***please read before
contacting customer support**

EPS Trouble Shooting Procedures

- I. *Unplug and re-plug all connectors. According to Installation Manual, make sure connections are correct.*
- II. *Check if the fuse is blown out.*



- III. *Check the light pattern which can help us narrow the issue to a specific component*

Start the vehicle and view the LED Diagnostic Light, the light should turn on for one second then turn off, if the light remains on you have an incorrect connection in the system, please refer to Electronic Fault Diagnosis Table.



If there is a malfunction with an electronic part, the system will create a code to identify the problem. Each fault code is displayed by a series of flashes with through the fault light.

- IV. *If the light pattern does not indicate the fault code*
 - a. Check the power supply wire. There should be three wires, red (positive), black (negative) and white (switch). Make sure all wires are working.
 - b. Check the voltage of sensor seat by multimeter.
 - i. Set the selection knob in DC range. Connect the black probe to the ground wire of the sensor seat (green wire). Connect the red probe to the positive wire of the sensor seat (orange wire). If the multimeter has no reading, the problem should be the ECU. The reading of the multimeter should be 5V.
 - ii. Check the main torque sensor. Connect the red probe to the main torque sensor wire (white wire). Connect the black probe to the ground wire of the sensor seat (green wire). The reading of the multimeter should be 2.5 V to indicate the main torque sensor is working.

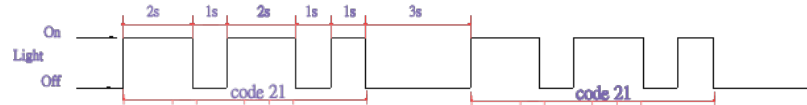
- iii. Check the vice torque sensor, Connect the black probe to the ground wire of the sensor seat (green wire). Connect the red probe to the vice torque sensor wire (black wire). The reading of the multimeter should be 2.5 V to indicate the vice torque sensor is working.
- c. Check the voltage of the Motor seat
 - i. Set the selection knob in DC range. Connect the black probe to the ground wire of the motor seat (black wire). Connect the red probe to the positive wire of the motor seat (red wire). The reading of the multimeter should be 12 V to indicate the motor is working.

If all above seats work properly, the problem is with the ECU.

Every fault code is composed of double digits, Each long flash represents a multiple of 10 and is 2 seconds in length and each short flash represents a single digit and is 1 seconds in length .There will be a 3 seconds space between the long flashes and the short flashes.

For example: long flash\long flash \space\short flash represents the code number 21.

Example:



Code	Diagnosis content	fault code wave
21	Main torque sensor disconnection	
22	Main torque sensor output error(voltage is too high or low)	
23	Vice torque sensor disconnected	
24	Vice torque sensor output error(voltage is too high or low)	
25	Main and vice torque difference is too large	
26	Main torque sensor inner fault	
35	Current sensor zero offset is too large	
32	Motor disconnected	
33	Current of ECU is over the limit	
34	One side of motor has no assistance	
36	Motor voltage abnormal	

Code 21-24: Sensor Problems

Code	Diagnosis Content	Possible Reasons	Rate	Suggestions	Solutions
21	Main torque sensor disconnection	<ol style="list-style-type: none"> The main torque sensor wire (white) disconnected. The vice torque sensor wire (black) disconnected. The voltage difference between ground wire (green) and main/vice torque sensor wire is too large. There is open circuit in main or vice torque sensor 	<ol style="list-style-type: none"> Sensor fault: 80% Sensor seat has bad contact: 17% Pseudo solder: 3% 	<ol style="list-style-type: none"> Unplug and re-plug all wires. Turn the steering wheel, see if the problem still exist or not. Check the voltage of each wire by multimeter (see IV.b for detail). Test with new ECU 	<ol style="list-style-type: none"> Plug all wire properly. Replace ECU Change Motor
22	Main torque output error (voltage is too high or low)				
23	Vice torque sensor disconnection				
24	Vice torque output error (voltage is too high or low)				
25	Main and vice torque difference is too large				

Code 26-35: ECU Problems

Code	Diagnosis Content	Possible Reasons	Rate	Suggestions	Solution
26	Main torque sensor inner fault	Motor disconnect ECU damaged	35%	Check the motor. If motor is good, test with new ECU	Replace the motor Replace ECU
32	Motor disconnected	ECU damaged	5%	Test with new ECU	Replace ECU
34	One side of motor has no assistance	ECU damaged	25%	Test with new ECU	Replace ECU
35	Current sensor zero offset is too large	ECU damaged	5%	Test with new ECU	Replace ECU

System Trouble Shooting

No.	Failure Encountered	Possible Reason	Troubleshooting
1.	Steering without assistance	<ol style="list-style-type: none"> 1. Connectors of wire have bad contact 2. The fuse is burnt out 3. Relay damage 4. The ECU, motor or sensor is damaged 	<ol style="list-style-type: none"> 1. Check whether wire connectors are fully inserted 2. Replace the fuse (30A) 3. Replace the relay 4. Replace the motor or the sensor
2.	Steering with inconsistent assistance	<ol style="list-style-type: none"> 1. Misconnection between power supply wire and switch wire 2. Switch wire have bad contact 3. ECU has Pseudo solder 	<ol style="list-style-type: none"> 1. Connect all wire correctly 2. Unplug and re-plug all wires 3. Replace ECU
3.	System has noise	<ol style="list-style-type: none"> 1. Motor damaged 2. Gap of lower steering shaft assembly or mechanical steering assembly is too large 3. Installation of lower steering shaft assembly or mechanical steering assembly loose 	<ol style="list-style-type: none"> 1. Replace motor 2. Replace assembly 3. Check whether the installation screw is tight, adjust 4. Check whether the universal joint and connecting shaft interfere each other
4.	Steering is not accurate	<ol style="list-style-type: none"> 1. The parameter of the sensor is abnormal 2. The air pressure of front tires is abnormal 3. ECU damaged 	<ol style="list-style-type: none"> 1. Replace the motor 2. Inflate tires 3. Replace the ECU
5.	Steering becomes heavy	<ol style="list-style-type: none"> 1. Battery power loss 2. Motor damaged (power reduction) 3. Air pressure of the tires (front) is insufficient 4. Thermal protection 	<ol style="list-style-type: none"> 1. Charge battery 2. Contact with suppliers and replace it 3. Inflate tires
6.	The vehicle swings on both sides	<ol style="list-style-type: none"> 1. The swing arm or tie rod is damaged 	<ol style="list-style-type: none"> 1. Replace the swing arm or tie rod
7.	When system is on, the steering wheel swings on both sides	<ol style="list-style-type: none"> 1. Motor is mounted backwards 2. ECU or sensor is damaged 3. Resistor has bad contact 	<ol style="list-style-type: none"> 1. Reverse the motor seat and plug in in correct order 2. Replace the ECU
8.	Stuck in somewhere when steering	<ol style="list-style-type: none"> 1. There is interferer in shaft assembly 2. Angle of steering shaft is not match with steering tube 3. Motor damaged 	<ol style="list-style-type: none"> 1. Adjust the distance between the lower shaft and rack and pinion 2. When installation, tight the first and third screw first. Then rotate the steering wheel left and right,

			free the lower steering shaft. Then, tight the second screw 3. Replace the motor
9.	There is strong rebounding force when turn the steering wheel to full lock	1. The parameter of sensor over the range of ECU	1. Replace the ECU
10.	Power is not the same for left and right	1. The median output voltage has deviation 2. ECU, motor or sensor is damaged	1. Disconnect motor connections, loosen the sensor adjustment screw, adjust the sensor position to keep the voltage in $1.65V \pm 0.05V$ 2. Contact with suppliers and replace it

System Cautions

In order to ensure the performance of the steering system, and improve the life of the steering system, we must insist on strict compliance with the following rules:

1. Do not dismantle the control box because you can create an imbalance between the power to the right and left steering.
2. Maintain good battery, loss of battery power will result in heavy steering.
3. Pack all electrical connections with dielectric grease where possible to help against corrosion especially in damp humid conditions.
4. Do not tap into the EPS electrical harness for any other aftermarket components.
5. Connector of the system must be in good contact.
6. The controller must not be near high temperatures and protected from moisture.
7. When steering your machine and reaching maximum turn angle, do not hold that maximum position for longer than 3 seconds to ensure you do not overheat the electric motor and controller.
8. When motor is working, you must not insert or extract the connector of controller, motor and sensor.