

EPS (Only EPS Model)

This chapter covers the location and servicing of the steering components for the KYMCO MXU 500i EPS and MXU 700i EPS models.

EPS Operation

The EPS module calculates steering assist by sensing the difference between the input torque of the steering and the output torque required to turn the wheels, and then provides assist by energizing an electric motor. The process provides a smooth seamless assist.

The system is continuously running diagnostic checks and monitoring factors such as battery voltage, ground speed and engine speed. In the event an internal or external issue that affects the EPS system is detected, the system will illuminate a fault indicator and transition to a normal mechanically coupled steering system.

Hard Steering (Heavy)

- Insufficient tire pressure
- EPS does not work

GENERAL SPECIFICATIONS

Torque Specification

No.	Item	Torque			Remark
		kgf.m	N.m	ft.lb	
1	Handlebar To Steering Post	2.4~3.0	24~30	17.4~21.7	M10x1.25
2	Housing With Frame	2.4~3.0	24~30	17.4~21.7	M8x1.25
3	Steering Post with EPS unit	2.4~3.0	24~30	17.4~21.7	M10x1.25
4	EPS Unit With Frame	2.4~3.0	24~30	17.4~21.7	M8x1.25
5	EPS Output Shaft And Pitman Arm	11~13	110~130	79.6~94	M16x1.5
6	Wheels (Aluminum/ Steel)	5.6~6.5	56~65	40.5~47	M10x1.25
7	Shock Mounting Bolts	4.1~5.6	41~56	29.7~40.5	M10x1.25

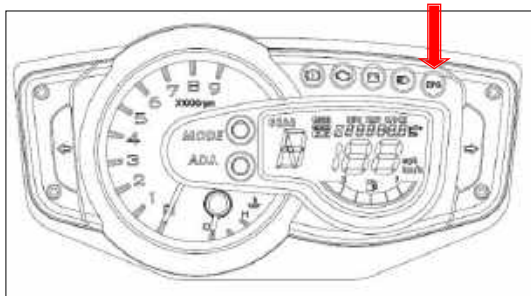
General Specification:

No.	Item	Torque		
		kgf.m	N.m	ft.lb
1	6mm Bolt and Nut	0.8~1.2	8~12	5.8~8.7
2	8mm Bolt and Nut	1.8~2.5	18~25	13~18.1
3	10mm Bolt and Nut	3.4~4.0	30~40	24.6~28.9
4	12mm Bolt and Nut	5.0~6.0	50~60	36.2~43.4
5	14mm Bolt and Nut	6.0~8.0	60~80	43.4~57.9

General Safety:

SAFETY FIRST: Protective gloves and eyewear are recommended at this point.

EPS indicator (EPS Model only)



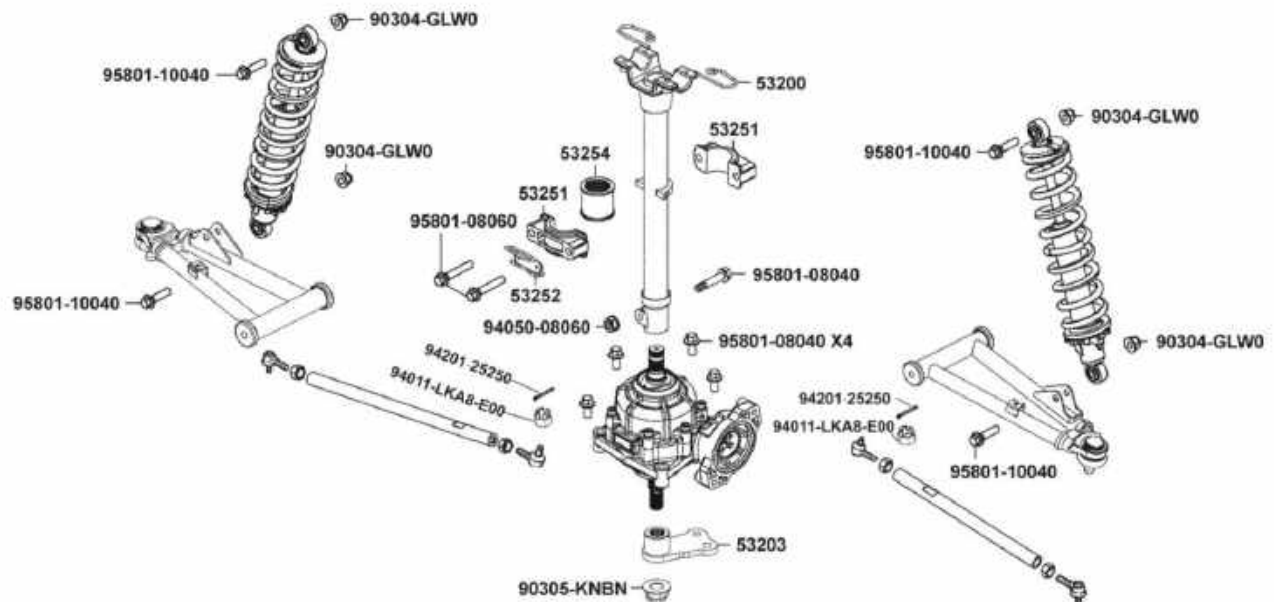
The EPS indicator illuminates when the key is turned to the ON position and will go off after 3 seconds. If the light remains on, the EPS system is inoperative.

Electronic power steering engages when the ignition key is turned to the ON position. EPS remains engaged whether the vehicle is moving or idle.

NOTE:

KYMCO recommends steering component repair and adjustment be performed by an authorized KYMCO Dealer. Only a qualified technician should replace worn or damaged steering parts. Use only genuine KYMCO replacement parts.

Explore View



CAUTION

- If the EPS control module is replaced, Set the EPS system to the neutral position. If not set to the neutral position, the system may not operate correctly.
- Do not drop the EPS control module. Replace the EPS control module if it is subjected to an impact.

Power Steering Unit Removal

EPS Removal

Instrument Display and Cover



Remove the two screws with a #2 Phillips screwdriver.

IMPORTANT: Take note of wire harness and throttle cable routing for reassembly purposes.



Slide the instrument cover forward and free it from the rubber grommet.



Unplug the connector from the back of the instrument display.

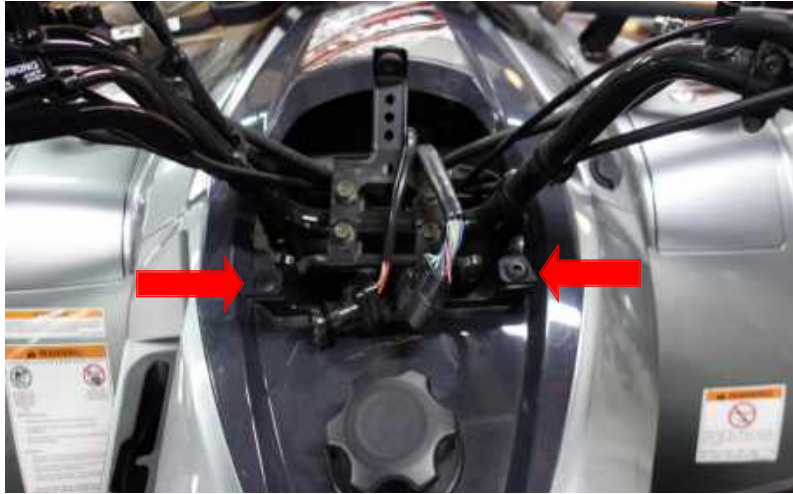


Unscrew the ring around the main switch.

IMPORTANT: Take care not to bend the throttle cable or brake line while the handlebar is removed.



Remove the main switch from the instrument cover.



Removal the front cover



Free the cables, hoses, and wires from the guides and wire bands.



Carefully remove the four handlebar clamp bolts from the steering post.



Open the guide and free the wires, throttle cable and brake hoses.



Loosen and remove the two steering shaft bushing bolts with a 10 mm socket.



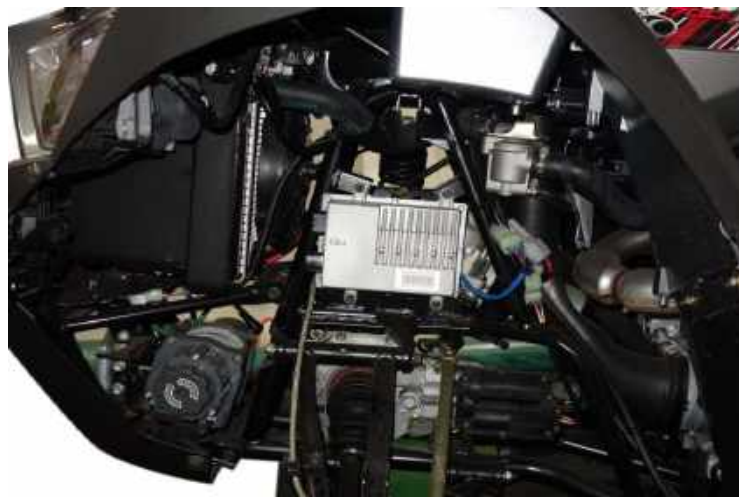
Remove the steering shaft bushing cap.



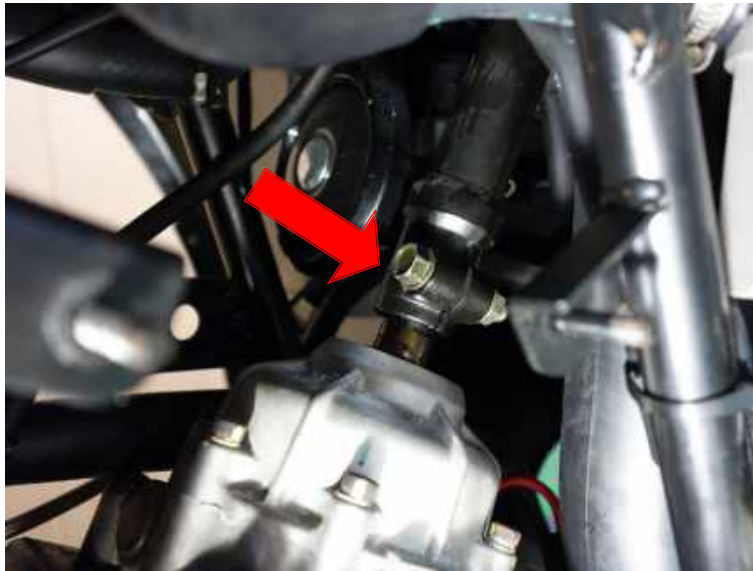
Remove both wheel



Remove both side inner fender trim clips and front shock absorber mounting nuts and bolts



Remove the EPS MCU unit mounting bolts and nuts



Remove the bolt retaining the steering post to the power steering unit. Then lift the upper steering post up from the power steering unit.



Free the inner ends of the tie-rods from the power steering unit.



Disconnect the electrical harness from the power steering unit.



Remove the (4) mounting fasteners that retain the power steering unit to the frame.



Take out the power steering unit through the front right wheel well area.

Carefully lift the power steering unit up to disengage the lower steering coupler and remove it from the chassis.

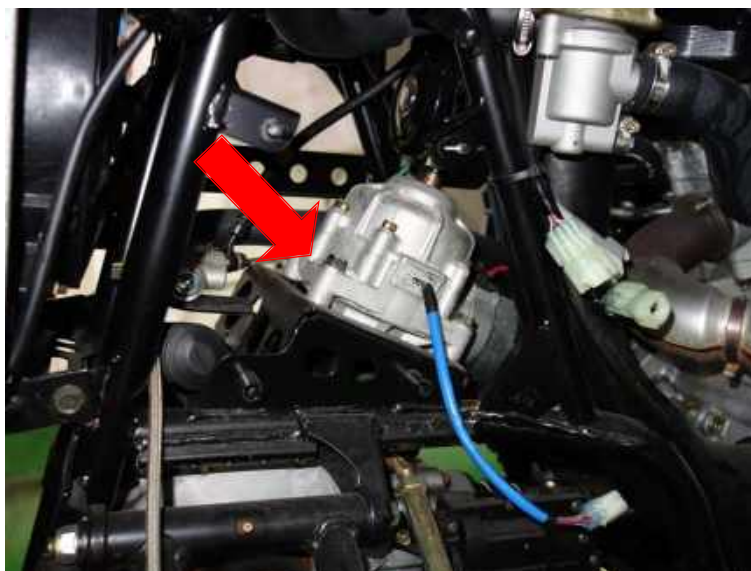
⚠ CAUTION

Striking the steering post can permanently damage the EPS unit and cause a Power Steering Fault.

EPS Installation

Position the vehicle so the front wheels are pointing straight forward.

Clean the steering post so the alignment mark is visible. Mark the skip tooth spline on the power steering shaft

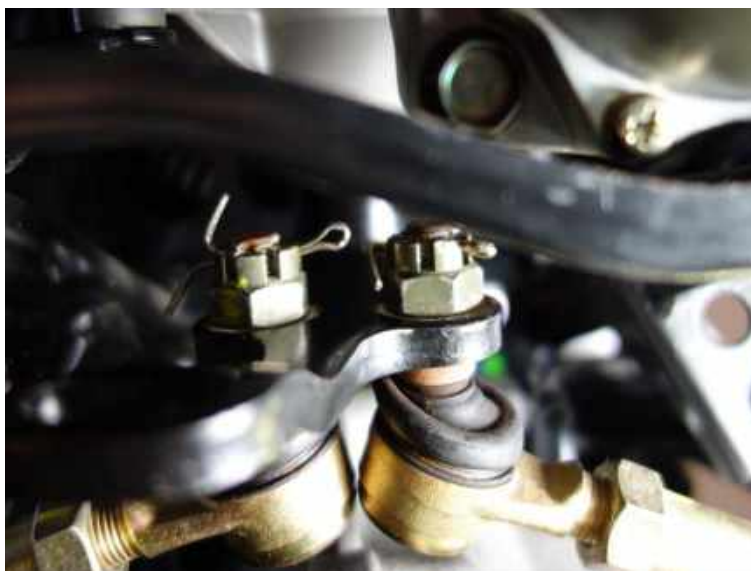


No.	Item	Torque		
		kgf.m	N.m	ft.lb
1	M8x1.25	2.4~3.0	24~30	17.4~21.7

Align mounting holes and install the power steering unit. Install the (4) mounting bolts and torque bolts to specification.



Reconnect the (3) electrical harnesses to the power steering unit.



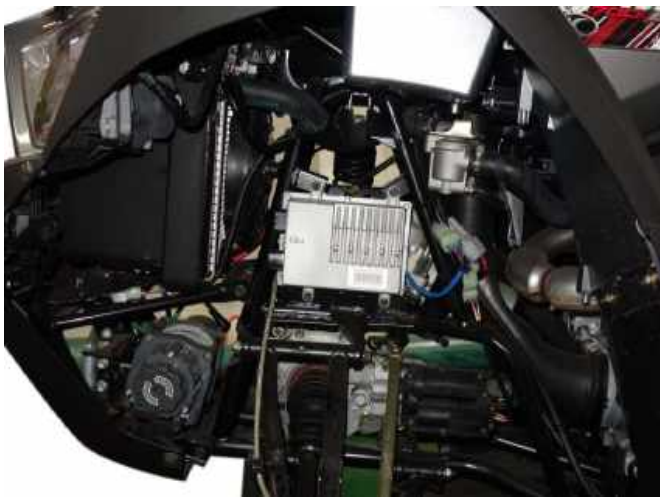
No.	Item	Torque		
		kgf.m	N.m	ft.lb
1	M10x1.25	3.5~4.8	35~48	25.3~34.7

Reinstall the inner ends of the tie-rods with the power steering unit.



No.	Item	Torque		
		kgf.m	N.m	ft.lb
1	M8x1.25	1.5~2.5	15~25	10.8~18.1

Align the mark on the steering post with the skip tooth spline on the power steering shaft upon installation. Apply anti-seize to the shaft splines to aid assembly.



No.	Item	Torque		
		kgf.m	N.m	ft.lb
1	Bolt	0.8~1.2	8~12	5.8~8.7
2	Nut	0.8~1.2	8~12	5.8~8.7

Install the EPS MCU unit mounting bolts and nuts



No.	Item	Torque		
		kgf.m	N.m	ft.lb
1	M10x1.25	4.1~5.6	41~56	29.7~40.5

Install both side inner fender trim clips and front shock absorber mounting nuts and bolts



No.	Item	Torque		
		kgf.m	N.m	ft.lb
1	M10x1.25	5.6~6.5	56~65	40.5~47

Reinstall both wheel



No.	Item	Torque		
		kgf.m	N.m	ft.lb
1	Bolt (M8x1.25) x2	2.4~3.2	24~32	17.4~23.1

Install the steering post bushing bracket and torque the (2) fasteners to specification.



No.	Item	Torque		
		kgf.m	N.m	ft.lb
1	Bolt(M8x1.25) x 4	2.4~3.0	24~30	17.4~21.7

Install the four handle clamp bolts and make sure the handlebar is positioned so that the punch mark lines up a show.



Fit and route the wires, throttle cable and brake hoses as show.

Turn the ignition key to the “ON” position and move the handlebar from left to right several times to ensure the power steering doesn’t bind.



Install front cover with trim clips.



Install the ignition switch



Plug the connector from the back of the instrument display.



Slide the instrument cover backward and install it with the rubber grommet. Then install the two screws with a #2 Phillips screwdriver.

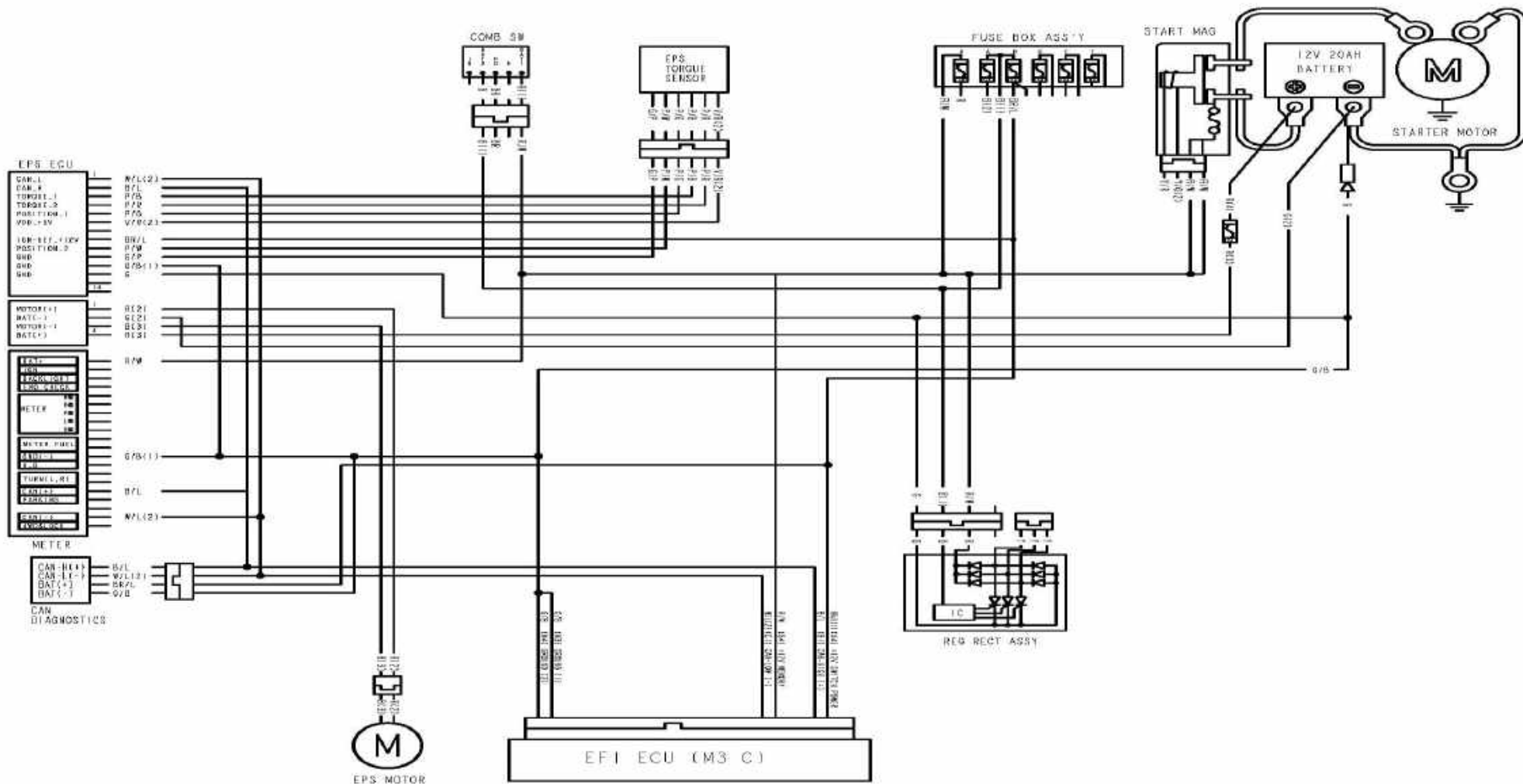
No.	Item	Torque		
		kgf.m	N.m	ft.lb
1	M5x0.8	0.35~0.5	3.5~5	2.5~3.6

Symptom Troubleshooting

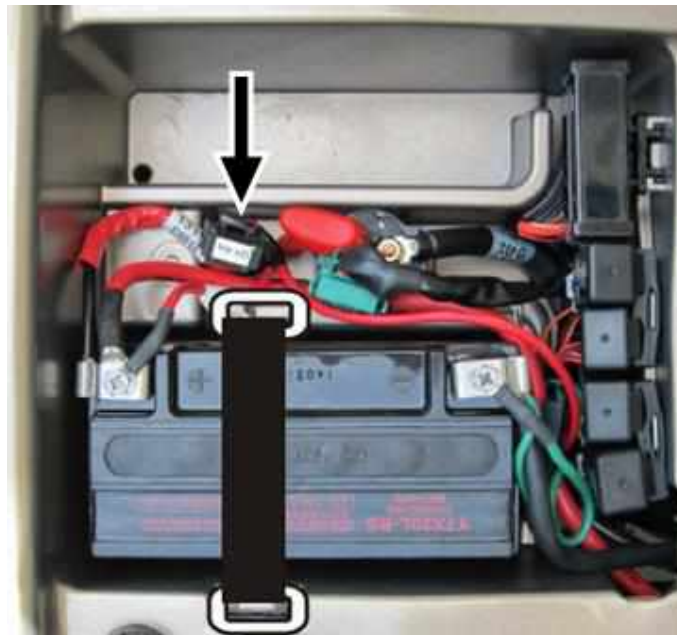
EPS indicate light go on, and diagnostic procedure

DTC	Hint	Inspection	Detection Condition	Action
Ox232	Byte [0]	Torque sensor	Sensor malfunction	Check voltage:2.5±0.1V (at neutral position setting)Replace EPS unit
	Byte [1]	Speed sensor	disable	
	Byte [2]	Battery	Battery over the normal range (9~16V)	Check battery voltage or charging system
	Byte [3]	Current sensor	Can not detect current	Replace EPS MCU unit
	Byte [4]	MCU	MCU malfunction	Replace EPS MCU unit
	Byte [5]	Motor	EPS motor malfunction	Replace EPS motor
	Byte [6]	MCU Relay	MCU relay malfunction	Replace EPS MCU unit
	Byte [7]	Motor driver	MCU motor control modular malfunction	Replace EPS MCU unit

EPS Circuit Diagram (Only EPS Model)



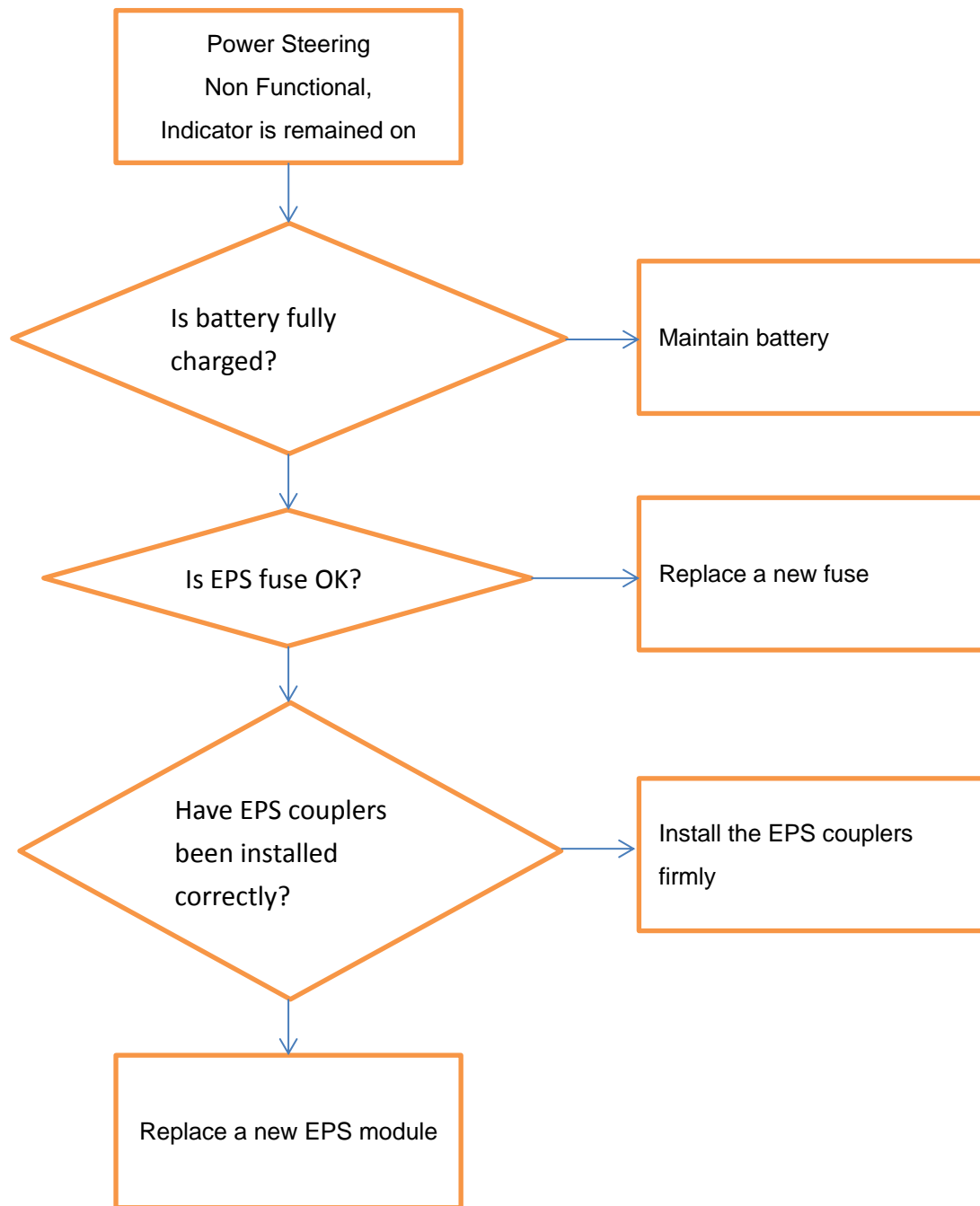
There is 40 A fuse for the power steering system in the battery box. If the fuse is blown, steering becomes heavy. Replace the blown fuse with a fuse of the same specific amperage and type.



40A of fuse

NOTE:

The electrical system can produce electrical shocks. When replacing the 40 A fuse, first remove the cables from the battery terminals to avoid electric shock.

EPS Troubleshooting for user

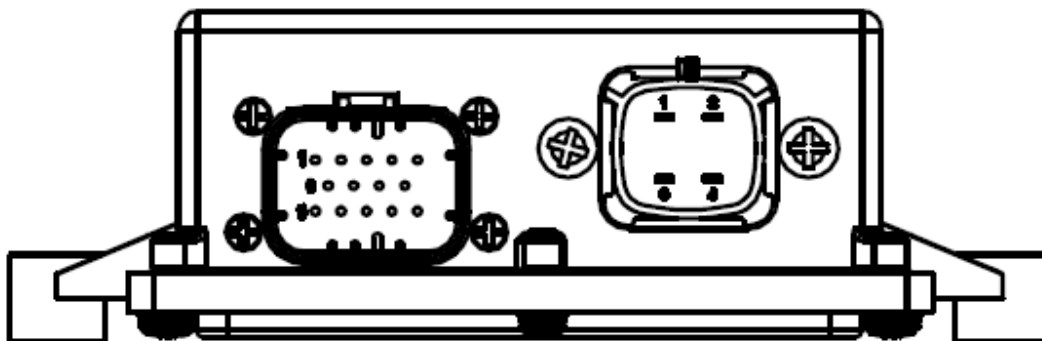
**NOTE:**

The EPS module is not maintainable, when the EPS problem occurs, check the battery voltage, fuse and the couplers. If the problem remained, replace the EPS whole module. Do not try to dismantle the components of the EPS module for repair.

EPS Troubleshooting for dealer

Terminal Table:

EPS control module wiring harness side



Pin ID				
1	2	3	4	5
6	7	8	9	
10	11	12	13	14
Signal name				
CAN_L	CAN_H	TORQUE_1	TORQUE_2	POSITION_1
VDD_5V	NC	IGN_KEY	POSITION_2	
GROUND	GND	GND	NC	NC

Pin ID for EPS motor and power

1	2
3	4

EPS motor connector signal name

MOTOR_Voltage (+)	Battery_Voltage (-)
MOTOR_Voltage (-)	Battery_Voltage (+)

Verify the symptom, and perform troubleshooting according to the appropriate number.

No.	Symptom
1	EPS warning light does not illuminate with ignition switch at on
2	EPS warning light does not go out even though engine has started

No.	Symptom
1	EPS warning light does not illuminate with ignition switch at on
Troubleshooting hints <ul style="list-style-type: none"> ● EPS warning light circuit malfunction in the instrument . ● An error originates from the EPS control module. <ul style="list-style-type: none"> ■ EPS control module malfunction 	

Step	Inspection		EPS warning light does not illuminate with ignition switch at on
1	Inspect Pin ID/ Data in EPS control module: ~Is the EPS lamp on while the ignition switch is turned to the on position?	Yes	EPS warning light circuit malfunction in the instrument.
		No	EPS control module malfunction. Replace the EPS control module

No.	Symptom
2	EPS warning light does not go out even though engine has started
Troubleshooting hints	
<ul style="list-style-type: none">● EPS system malfunction<ul style="list-style-type: none">▪ Wiring harness malfunction▪ Connector condition malfunction▪ Torque sensor malfunction▪ EPS motor malfunction▪ Fuse malfunction▪ EPS control module malfunction● EPS control module detects an EPS system malfunction even though the EPS system is normal.● Can communication line malfunction<ul style="list-style-type: none">▪ Vehicle speed signal malfunction▪ Engine speed signal malfunction▪ CAN wiring harness malfunction● EPS warning light circuit malfunction in the instrument● Can wiring harness malfunction<ul style="list-style-type: none">▪ Malfunction in wiring harness between EPS control module and instrument	