



06-steering system

Hydraulic power steering system6-1037

Technical Specifications.....6-1037

Precautions.....6-1038

Preparation6-1039

Structure and installation location....6-1040

General Inspection.....6-1042

Operating Principle6-1043

Diagnostic Information and Procedures..6-1044

Removal and Installation6-1056

06

دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



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Hydraulic power steering system

Technical Specifications

General Specifications

Name		Specification
The free stroke of the steering wheel		Less than 10
Temperature of steering fluid		-40 °C to 135 °C
Peak value of steering torque		5Nm
Pressure of steering fluid pump		8Mpa
Steering fluid	Specification	ATF220
	Filling capacity	1.6L

06

Torque Specifications

Name	Torque range	
	Metric (Nm)	British (Lb-ft)
Dust cover fixing bolt	10	7
Steering reservoir support mounting bolt	10	7
Steering return pipe fixing support bolt	10	7
Steering support fixing bolt	70	52
Steering pump mounting bolt	90	66
High pressure pipe and steering pump locking bolt	45	33
High pressure pipe and steering gear locking nut	45	33
Return pipe and steering gear locking nut	45	33



Precautions

Precautions

Precautions before repair

1. When there an abnormal clearance, clicking, or swing, analyze immediately the fault causes and eliminate the fault.
2. When checking the steering system, park the vehicle on a level and dry surface.

Maintenance precautions

1. During the repair, replace the bearing upon finding out its seizure or loosening, etc.
2. During the repair, replace the locking bolt or nut in case of finding out at least three damaged threads.
3. Don't weld any part of hydraulic steering gear or system linkage lever in any mode.
4. After installing the steering gear, check its portability and flexibility. You can't feel heavy steering or loosening while turning the steering wheel, and measure the maximum steering angle of front wheel.
5. After repairing the steering system, refill the steering fluid into it and drain the air out of hydraulic system in time.
6. Each bolt of steering system must be fixed up to the specified torque.
7. After testing and repairing the hydraulic steering gear and other steering gears, check the locations of wheels.

Other attentions

1. Check the hydraulic oil for reduction, deterioration or excessive impurities. Refill or change the hydraulic oil in time in case of finding out any adverse situation.
2. In case of adding the hydraulic oil, its brand should be the same as that of original hydraulic oil in power steering system. It will cause the damages and leakage of hose or sealing part to apply the incorrect hydraulic oil, so it's prohibited to mix them.
3. If any abnormal steering noise, heavy operation or seizure occurs while driving, stop the car for repair, find out and remove its faults.
4. Access to check the tires and keep their pressure qualified.
5. Check the steering system parts frequently for abnormal impact, and replace any damaged part or faulty part in time.

6. The duration of steering wheel in steering limit position shall not exceed 3s, otherwise the steering pump may be damaged.
7. If the steering wheel is locked, do not move the vehicle; otherwise it will damage the steering system parts.
8. Ensure no knocking or wears of pipes, free loosening or tightening of each pipe section and no dead bends during the use.



Hydraulic power steering system



Preparation

Speical service tool

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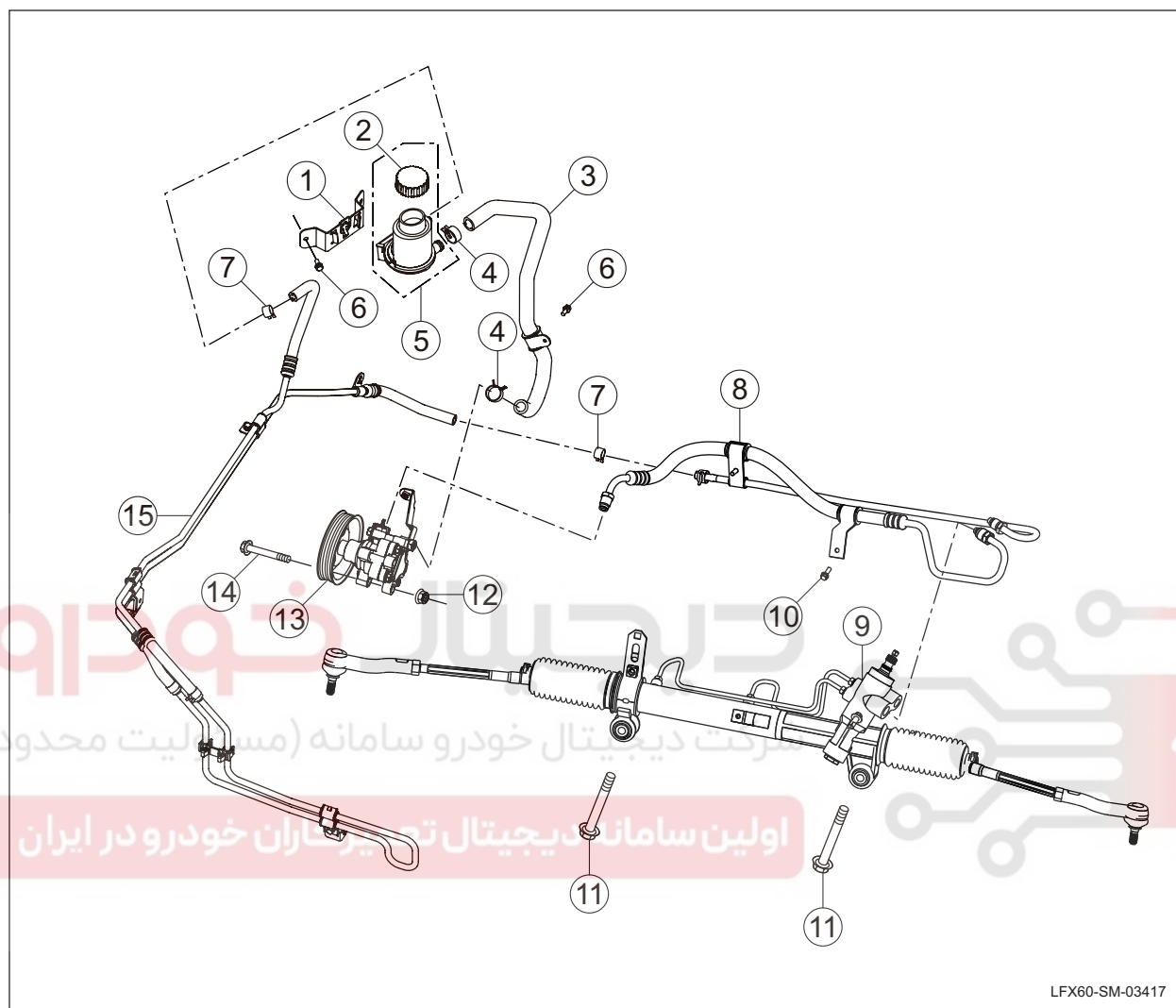
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Hydraulic power steering system

Structure and installation location

Part exploded view

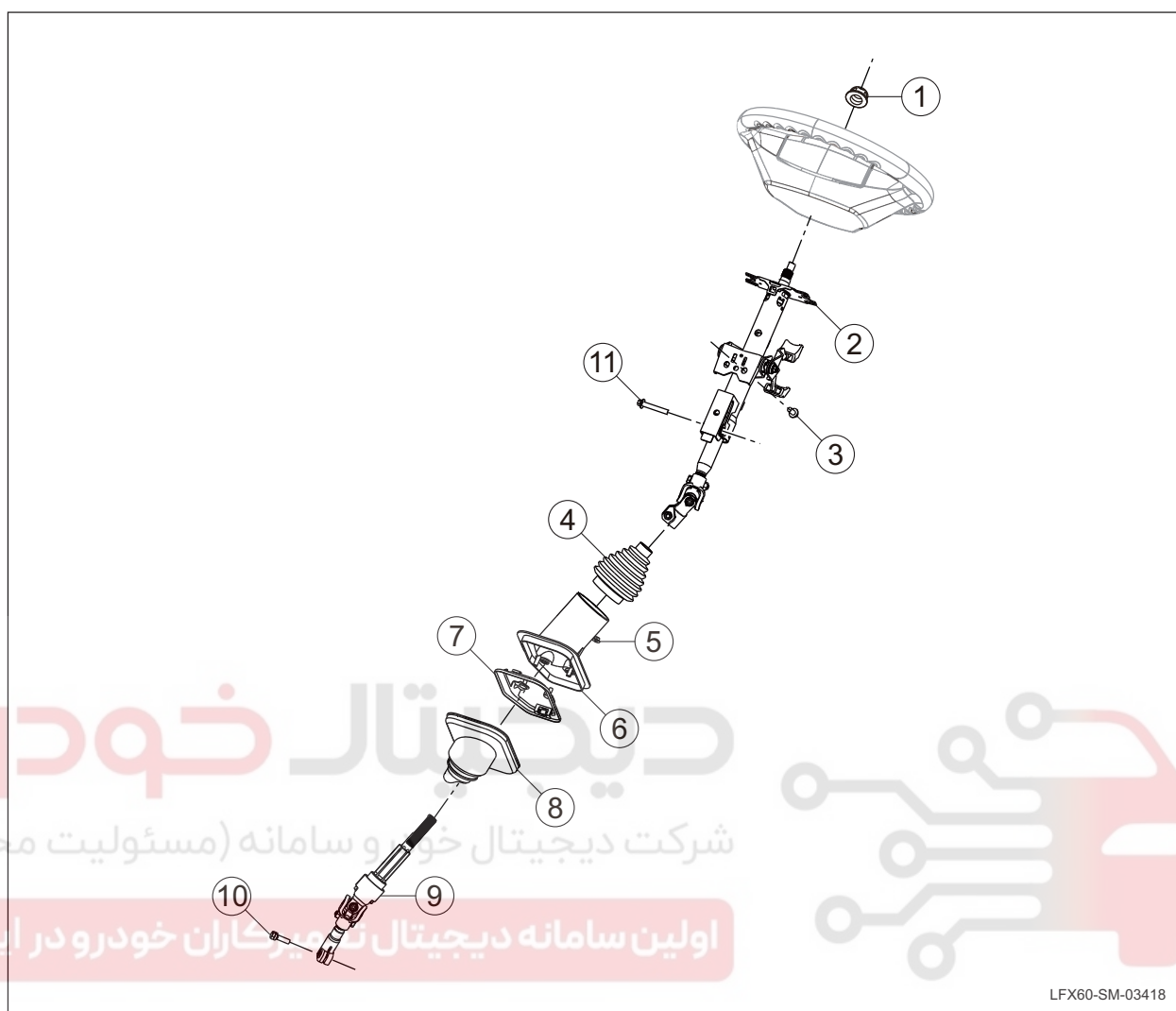
Steering gear



LFX60-SM-03417

No.	Part name
1	Power steering reservoir support assembly
2	Steering reservoir cover assembly
3	Steering pump and oil outlet pipe
4	Hoop, worm drive hose, type A
5	Power steering reservoir assembly
6	Hexagon flange bolt
7	Steel strip elastic clamp
8	Return pipe II

No.	Part name
9	Steering gear assembly
10	Hexagon head bolt, spring washer and plain washer subassembly
11	Hexagon flange bolt
12	Hex flange nut
13	Power steering oil pump assembly
14	Hex flange nut
15	Steering gear inlet/outlet pipe assembly

Steering column

06

LFX60-SM-03418

No.	Part name
1	Hex flange nut
2	Upper steering shaft assembly
3	Hexagon flange bolt
4	Steering column dust coverIII
5	Hex flange nut

No.	Part name
6	Steering column dust coverII
7	Dust cover mounting support
8	Steering column dust coverII
9	Lower steering shaft assembly
10	Hexagon flange bolt



General Inspection

General Inspection

Check of power steering pump

Check whether any of the following abnormal conditions occurs to the power steering pump belt:

- Check it for wrong teeth.
- Check it for cracks.
- Check it for excessive wears.
- Check the tension of belt, and replace the steering pump belt if necessary.

❶Note:

If its tension is unqualified, adjust or replace the belt or pump belt tension pulley as per the standards.

Check of steering wheel free clearance

❶Note:

Check the steering wheel in the case that the engine stops and the car is fixed forward on the ground.

Check the steering system for abnormal conditions below:

- Whether the ball end of steering tie rod is worn or loosened.
- Whether the cross joint of steering column drive shaft is worn or loosened.
- Internal wears of steering gear.
- Loosening of steering component fastener.

If the free clearance of steering wheel is not within the specified range, repair or replace the damaged parts.

Check of steering column drive shaft

Check the steering column drive shaft for abnormal conditions below:

- Loosening of steering column drive shaft fastener
- Excessive wears or clearance of cross joints on both drive ends
- The steering column drive shaft can't extend/retract freely or is seized.

If the steering column drive shaft is abnormal, repair or replace the damaged parts in time.

Check of steering gear

Check the steering gear for abnormal conditions below:

- Loosening of steering gear fastener
- Abnormal noises inside the steering gear
- Seizure of steering gear rotation
- Cracking of steering gear case
- Oil leakage of steering gear

- Wears or loosening of steering gear pitman head

If the steering gear is abnormal, repair or replace the damaged parts in time.

Check of steering tie rod ball joint

Check the steering tie rod ball joint for abnormal conditions below:

- Loosening or improper installation of tie rod ball joint fixing nut
- Damages of steering tie rod ball joint dust cover
- Wears or excessive clearance of steering tie rod ball head



Operating Principle

System overview

The power steering system equipped for this car type is a mechanical hydraulic power steering system, which applies the power steering fluid as a power transmission medium, and makes the power steering pump produce the power to push the mechanical steering gear, thus its steering operation can be realized. The power steering pump of mechanical hydraulic power steering system is driven by car engine. After the car starts, this system will work regardless of steering. It will steer at the low speed of engine, and the power steering pump needs a higher power output to get more steering power. In case of turning the steering wheel to limit position, avoid any stay of over 5s in limit position, otherwise the power steering system will be damaged. In case of turning the steering wheel, the power steering fluid will open the valve on one end of bi-directional piston, and its pressure will provide the auxiliary power required to push the piston movement according to the turning direction of steering wheel.

Part description

Steering column

The steering column is equipped with a strictly tested multi-way steering wheel lock, which has a high-security lock cylinder. The steering column and its upper end are fixed on the periphery of instrument panel. The steering wheel is fixed on the steering column assembly via fixing nuts, and connected to the steering gear through its drive shaft. It transmits the force applied to the steering wheel by the driver to the steering gear. The driver can operate the control arm of steering column to adjust the height of steering wheel as per the driving habits, so as to improve its driving comfort.

Steering tie rod

The function of steering tie rod is to transmit the movement of steering gear to steering knuckle, thus its steering operation can be realized. The toe-in value of front wheel can be changed by adjusting the length of tie rod on left or right side.

Steering gear

The function of steering gear is to change the steering torque and steering angle of steering wheel properly (mainly including speed reduction and torque increase), and output them to the steering tie rod mechanism, thus the steering operation of car can be realized.

Power steering pump

The power steering pump is a mechanical hydraulic pump, and produces the power (via the attachment driving belt driven by the engine) for the steering system to push the steering gear, thus its power steering operation can be realized.





Diagnostic Information and Procedures

Diagnosis Instructions

Before diagnosing the faults of hydraulic power steering system, first know and understand the operating principle of hydraulic power steering system, and then start the diagnosis of hydraulic power steering system, thus it can determine the correct fault diagnosis procedures and it's more important to determine whether the client's problem is within the range of normal operation if any fault occurs.

The diagnosis of any fault for hydraulic power steering system should start from the test of hydraulic power steering system, and tell the next logic step to repairmen for fault diagnosis. It can shorten the diagnostic time and avoid any wrong judgement of its parts to understand and correctly use the diagnostic flow chart.

Visual Inspection

1. Confirm the problem raised by the customer.
2. Check the evident mechanical faults.

Visual inspection table

Mechanical
<ul style="list-style-type: none"> • Boosting pump belt • Steering tie rod • Steering tie rod ball joint • Steering gear • Steering column • Steering knuckle • Steering pipe • Booster pump

3. Solve the problem finding before the next step inspection.
4. If the observed or raised problem is the evident and the cause has been found, ensure to fix this fault before proceeding with the next step.
5. If no problem is found through the visual check, confirm the fault and refer to the fault symptom list.

List of fault symptoms

Symptom	Possible point of failure	Recommended Measures
Car runout	<ul style="list-style-type: none"> • Wheel and tire, tire pressure • Left or right wheel base • Front suspension component • Driving height • Steering system components • Incorrect wheel alignment 	Refer to:Diagnostic procedures for car runout
Heavy steering	<ul style="list-style-type: none"> • Missing of steering fluid • Air mixed into steering fluid • Tensile force of steering pump belt • Blockage of steering pump pipe • Steering boosting pump • Steering column • Damages of steering gear 	Refer to:Diagnostic procedures for heavy steering
High noises of steering system (standstill of steering wheel)	<ul style="list-style-type: none"> • Missing of steering fluid • Air mixed into steering fluid • Boosting pump belt • Interference of steering pipes • Steering boosting pump 	Refer to:Diagnostic procedures for high noises of steering system(standstill of steering wheel)
Clicking in case of turning to left or right	<ul style="list-style-type: none"> • Front suspension component • Outside link ball head • Inside link ball head • Steering gear • Steering column 	Refer to:Diagnostic procedures for clicking in case of turning to left or right
Shaking of steering wheel while braking	<ul style="list-style-type: none"> • Wheel and tire, tire pressure • Brake disc • Incorrect wheel alignment • Outside link ball head • Inside link ball head • Upper and lower arm ball joints • Lower arm and its ball joint • Steering gear 	Refer to:Diagnostic procedures for steering wheel shaking while braking



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Hydraulic power steering system

Diagnostic procedures for car runout

⚠Warning:

In order to avoid personal injury caused by control loss of car, its road test should be performed by both persons, so as to keep its driving safety. Be sure to maintain the proper control of steering wheel . It may lead to personal injury not to follow these instructions.

Test condition	Details/results/measures
1. Check the car for runout.	<p>A. Drive the car on flat and straight road at 88 km/h, and ensures no side wind or high wind while driving.</p> <p>B. Drive the car back and forth at least twice. If the car is 3.6m deviated from its track within 7s, it indicates the runout of car.</p> <p>Does the car run out?</p> <p>→Yes To step 2.</p> <p>→No Adjust the steering wheel for alignment.</p>
2. Check the wheel, tire and tire pressure.	<p>A. Check the all the wheels and tire models to see if consistent.</p> <p>B. Check whether the wear degree of all tires is similar.</p> <p>C. Check the tires for bulge or cracking etc.</p> <p>D. Check the tire pressure.</p> <p>Is it OK after checking?</p> <p>→Yes To step 3.</p> <p>→No Adjust the tire pressure or replace the wheel and tire. Refer to: Replacement of wheel</p>
3. Check the influences of tires on the fault.	<p>A. Lift the vehicle.</p> <p>B. Change the front left or right wheel.</p> <p>Refer to: Replacement of wheel</p> <p>Does the car run out?</p> <p>→Yes To step 4.</p> <p>→No The fault has been removed.</p>

Test condition	Details/results/measures
4. Check left or right wheel base.	
	A. Check left or right wheel base. Are the left and right wheel bases the same? → Yes To step 5. → No Calibrate the left or right wheel base.
5. Check the front suspension components.	
	A. Check the front suspension fasteners for looseness. B. Whether the rubber bushing is aged or abraded. C. Whether the suspension components are damaged. Is it OK after checking? → Yes To step 6. → No Repair or replace the damaged components.
6. Check the driving height.	
	A. Check the uniformity of car driving height. Refer to: Diagnosis flow for different height of bodywork side to side Is it OK after checking? → Yes To step 7. → No Remove the inconformity of driving height.
7. Check the steering system components.	
	A. Check the steering system fasteners for looseness. B. Check the steering tie rod for deformation. C. Check the steering components for wears or loosening. Is it OK after checking? → Yes To step 8. → No Repair or replace the damaged components.
8. Wheel alignment.	
	A. Carry out the wheel alignment. B. Carry out trial run. Confirm that the fault has been ruled out.



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Diagnostic procedures for heavy steering

Test condition	Details/results/measures
1. Check the boosting fluid.	<p>A. Check whether the level of steering fluid is normal.</p> <p>B. Check whether the boosting fluid meets the standard requirements.</p> <p>Is it OK after checking?</p> <p>→Yes</p> <p>To step 2.</p> <p>→No</p> <p>Refill or change the standard steering fluid.</p>
2. Check whether the steering fluid is mixed into air.	<p>A. Start the engine, and observe the fluid for air bubbles.</p> <p>Is it OK after checking?</p> <p>→Yes</p> <p>To step 3.</p> <p>→No</p> <p>Boosting system bleed.</p> <p>Refer to : Power steering system bleed procedures</p>
3. Check the boosting pump belt.	<p>A. Check whether the boosting pump belt installation is correct.</p> <p>B. Check the boosting pump belt for abrasion and fracture.</p> <p>C. Check the boosting pump belt tension.</p> <p>Is it OK after checking?</p> <p>→Yes</p> <p>To step 4.</p> <p>→No</p> <p>Replace the power steering pump belt or adjust the tension of its belt.</p>
4. Check the fluid pipe of power steering pump.	<p>A. Check the power steering pump fluid pipe for blockage.</p> <p>B. Check the power steering pump return pipe for blockage.</p> <p>C. Check the boosting pump belt tension.</p> <p>Is it OK after checking?</p> <p>→Yes</p> <p>To step 5.</p> <p>→No</p> <p>Repair or replace the fluid line of power steering pump.</p>

Test condition	Details/results/measures
5. Check the steering boosting pump.	
	<p>A. Check the power steering pump for wears or abnormal noises.</p> <p>B. Check the pressure of power steering pump. Refer to: Check of fuel pump pressure Is it OK after checking? → Yes To step 6. → No Replace the power steering pump. Refer to: Replacement of the power steering pump</p>
6. Check the steering column.	
	<p>A. Check whether the floor covering can impair the steering column.</p> <p>B. Check the rotation of steering column for abnormal noises. Is it OK after checking? → Yes To step 7. → No Repair the fault parts or replace the steering column. Refer to: Replacement of the steering column</p>
7. Check the steering gear.	
	<p>A. Check the steering gear for fluid leakage.</p> <p>B. Check the steering gear for abnormal noises or damages. Is it OK after checking? → Yes To step 8. → No Replace the steering gear. Refer to: Replacement of the steering gear</p>



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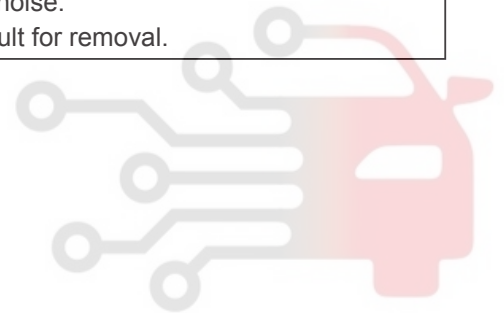
Diagnostic procedures for high noises of steering system(standstill of steering wheel)

Test condition	Details/results/measures
1. Check the boosting fluid.	<p>A. Check the steering fluid for missing. B. Check whether the boosting fluid meets the standard requirements. Is it OK after checking? → Yes To step 2. → No Refill or change the power steering fluid.</p>
2. Check whether the steering fluid is mixed into air.	<p>A. Start the engine, and check the steering fluid for air bubbles. Is it OK after checking? → Yes To step 3. → No Boosting system bleed. Refer to: Power steering system bleed procedures</p>
3. Check the boosting pump belt.	<p>A. Check whether the boosting pump belt installation is correct. B. Check the boosting pump belt for abrasion and fracture. C. Check the boosting pump belt tension. Is it OK after checking? → Yes To step 4. → No Replace the belt or adjust the tension of power steering pump belt.</p>
4. Check the tension pulley.	<p>A. Check the tension pulley tightening bolt for loosening. B. Check the tension pulley for abnormal noises. C. Check the tension of tension pulley. Is wheel inspection normal? → Yes To step 5. → No Repair replacement of damaged components</p>

Test condition	Details/results/measures
5. Check the steering pipeline.	
	A. Check the steering pipeline fastener for loosening. B. Check the steering pipeline for interference. Is it OK after checking? → Yes To step 6. → No Repair or replace the damaged components.
6. Check the steering boosting pump.	
	A. Check the fasteners of power steering pump for loosening. B. Check the power steering pump for abnormal noises. Is it OK after checking? → Yes To step 7. → No Repair or replace the damaged components.
7. Check the other noise.	
	A. Check the other noise. Determine the fault for removal.

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Diagnostic procedures for clicking in case of turning to left or right

Test condition	Details/results/measures
1. Check the front suspension components.	<p>A. Check the front suspension fasteners for looseness. B. Whether the rubber bushing is aged or abraded. C. Whether the suspension components are damaged. Is it OK after checking? → Yes To step 2. → No Repair or replace the damaged components.</p>
2. Check the outside link ball head.	<p>A. Check the outside link ball head fixing nut for looseness. B. Check the outside link ball head for abrasion and looseness. C. Check the front vibration absorber plane bearing for abnormal noise. Is it OK after checking? → Yes To step 3. → No Tighten the outside link ball head fixing nut or replacement of outside link ball head. Refer to: Replacement of outside link ball head</p>
3. Check the inside link ball head.	<p>A. Check the inside link ball head fixing nut for looseness. B. Check the inside link ball head for abrasion and looseness. Is wheel inspection normal? → Yes To step 4. → No Tighten the fixing nut of inner tie rod ball joint or replace it. Refer to: Replacement of steering inner tie rod ball joint</p>
4. Check the steering gear.	<p>A. Check the steering gear fastener for loosening. B. Check the plumbing arm ball joint of steering gear for wears or loosening. C. Check the fixing nut of steering gear plumbing arm ball joint for loosening, and check its ball joint for wears or loosening. D. Check the rotation of steering gear for abnormal noises. Is it OK after checking? → Yes To step 5. → No Repair replacement of damaged components</p>

Test condition	Details/results/measures
5. Check the steering column.	<p>A. Check whether the floor covering can impair the steering column.</p> <p>B. Check the steering column fastener for loosening.</p> <p>C. Check the rotation of steering column for abnormal noises.</p> <p>Is it OK after checking?</p> <p>→Yes</p> <p>To step 6.</p> <p>→No</p> <p>Repair the fault parts or replace the steering column.</p> <p>Refer to: Replacement of steering column</p>
6. Check the other noise.	<p>A. Check the other noise.</p> <p>B. Carry out trial run.</p> <p>Confirm that the fault has been ruled out.</p>

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Diagnostic procedures for steering wheel shaking while braking

Test condition	Details/results/measures
1. Check the wheel, tire and tire pressure.	<p>A. Check the all the wheels and tire models to see if consistent. B. Check whether the wear degree of all tires is similar. C. Check the tires for bulge or cracking etc. D. Check the tire pressure. Is it OK after checking? → Yes To step 2. → No Adjust the tire pressure or replace the wheel and tire. Refer to: Replacement of wheel</p>
2. Check the brake disc.	<p>A. Check the brake disc for excessive wears, deformation or uneven surface. B. Check the brake plate. Is it OK after checking? → Yes To step 3. → No Replace the brake disc or brake plate. Refer to: Replacement of brake disc</p>
3. Check the wheel alignment.	<p>A. Check whether the location of wheel is standard. Is it OK after checking? → Yes To step 4. → No Locate the wheel.</p>
4. Check the outside link ball head.	<p>A. Check the outside link ball head fixing nut for looseness. B. Check the outside link ball head for abrasion and looseness. Is it OK after checking? → Yes To step 5. → No Tighten the outside link ball head fixing nut or replacement of outside link ball head. Refer to "Replacement of Steering Outer Tie Road Ball Joint".</p>

Test condition	Details/results/measures
5. Check the inside link ball head.	
	A. Check the inside link ball head fixing nut for looseness. B. Check the inside link ball head for abrasion and looseness. Is it OK after checking? → Yes To step 6. → No Repair or replace the damaged components.
6. Swing arm and swing arm ball joint.	
	A. Check the fasteners of swing arm and swing arm ball joint for loosening. B. Check the swing arm rubber bushing and swing arm ball joint for wears or loosening. Is it OK after checking? → Yes To step 7. → No Repair or replace the damaged components.
7. Check the steering gear.	
	A. Replace the steering gear. B. Carry out trial run. Confirm that the fault has been ruled out.

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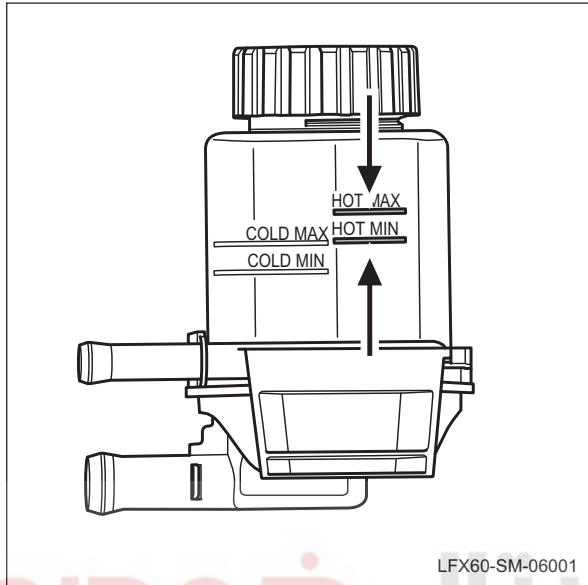


Removal and Installation

Exhausting procedures of steering system

Exhaust

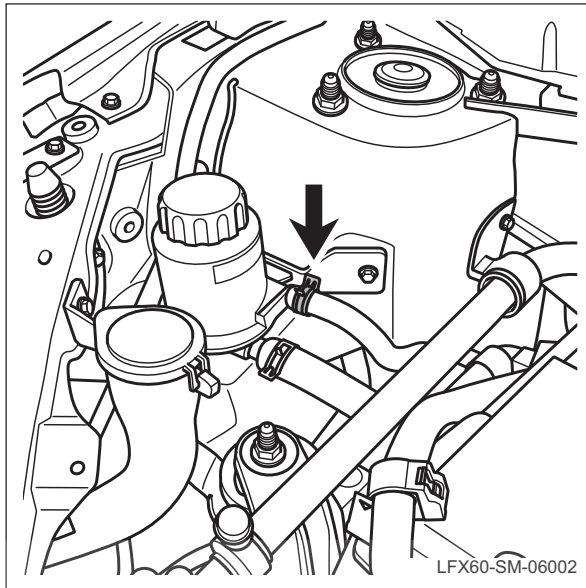
1. Exhausting of steering system



- (a). When the engine stops, turn the steering wheel from one to another locked position, and repeat it several times.
- (b). Start the engine, and make it running at idling speed. Check the fluid, and ensure that its level is above the minimum scale.
- (c). Turn the steering wheel back and forth, but it shouldn't be turned to its locked position on any side.
- (d). Turn the steering wheel to left or right, until no air bubbles or milky fluid exists in the fluid reservoir. Exhaust the air out of system, and ensure that the fluid level is above the minimum scale.
- (e). Check whether the fluid level is changed within the standard range in case of stopping or running the engine.
- (f). For any vehicle for road test, ensure the normal function and no abnormal noises of its steering system.

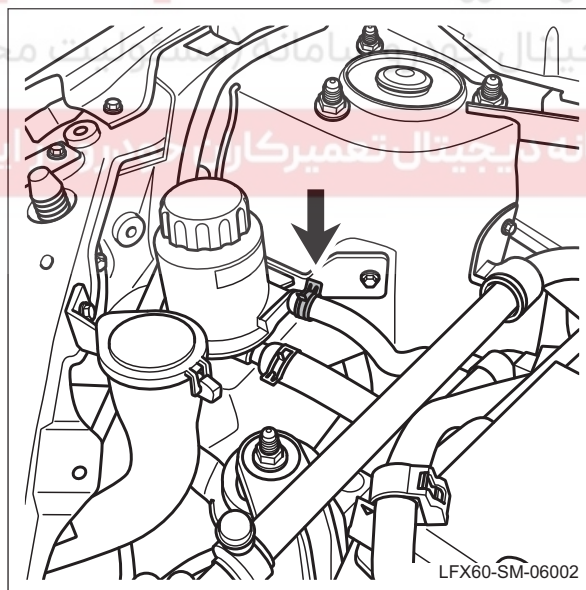
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Procedure for Discharging and Filling in Steering Oil**Discharge****1. Discharge steering oil.**

- (a). Dismount the bar clasp of return tube and disconnect the tube.
- (b). Connect the vessel tube to the return tube to discharge the steering oil into the vessel.
- (c). Start the engine idling and rotate the steering wheel back and forth. But do not rotate it to the locking position at any side. Discharge the steering oil completely.

06

Filling**1. Fill in the steering oil.**

- (a). Install the return tube, fix the tube bar clasp and fill in the steering oil to the highest scale.
- (b). Steering system exhaust. Reference: Procedure for Steering System Exhaust.

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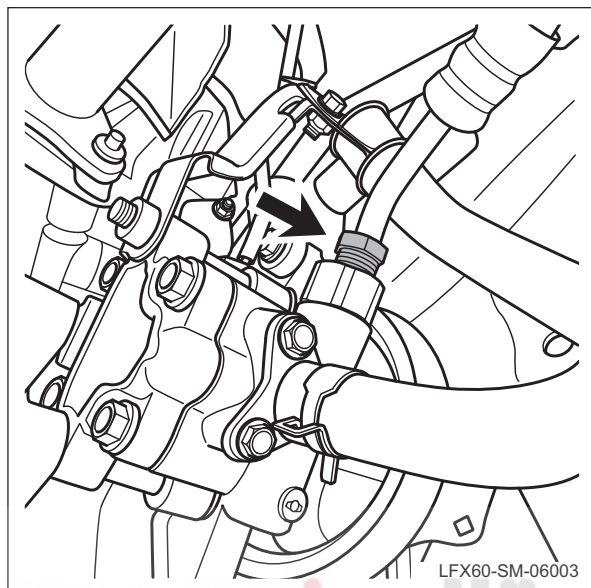
Hydraulic power steering system

Replacement of Booster Pump Flowline

Removal

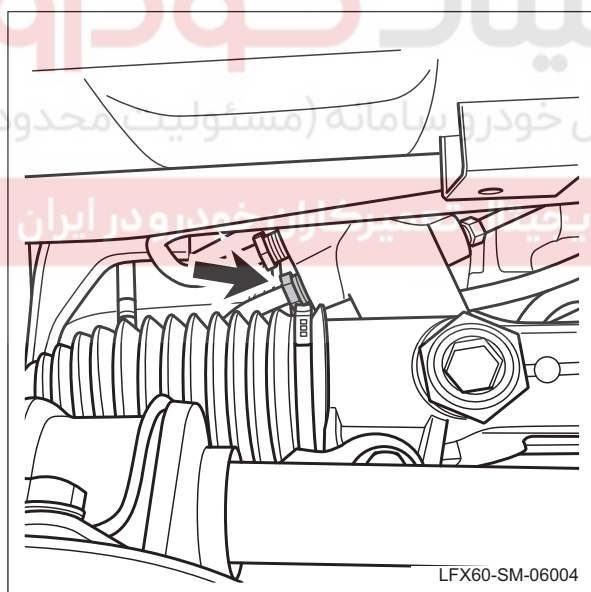
1. Dismount the booster pump flowline.

(a). Drain the steering boosting fluid, refer to steering boosting fluid draining and filling procedures.

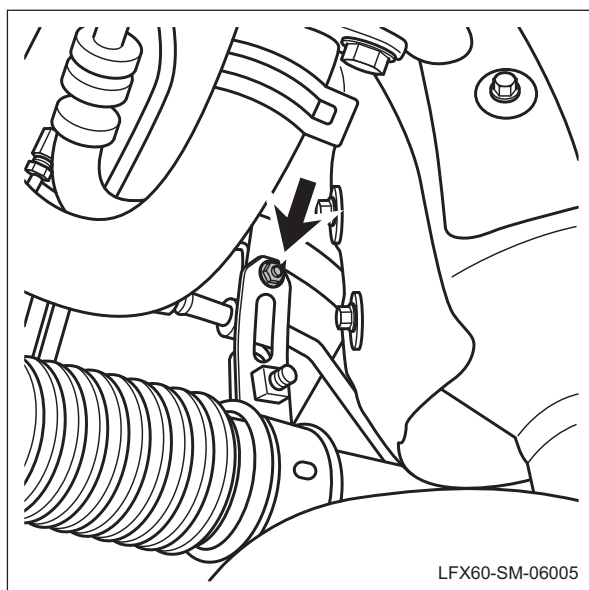


(b). Lift the vehicle. Refer to the vehicle lift and support.

(c). Dismount the locknuts of booster pump flowline and booster pump.

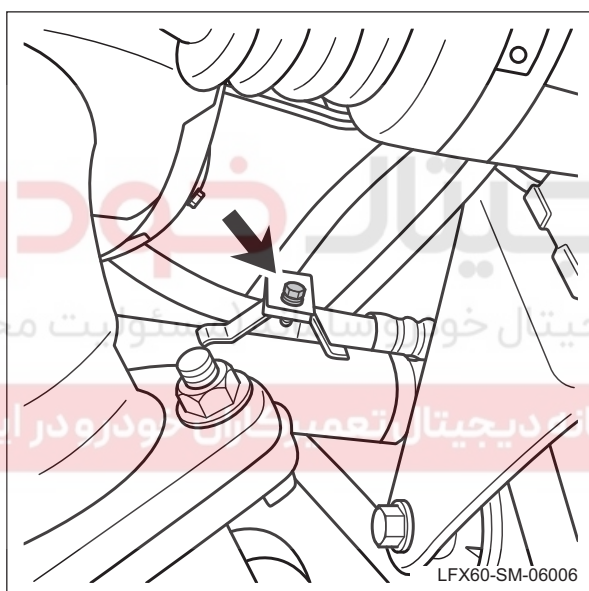


(d). Dismount the locknuts of flowline and steering device.



- (e). Dismount the bolt of fixing stand of booster pump.

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- (f). Dismount the bolt of fixing stand of booster pump flowline.
 (g). Detach the assembly of booster pump flowline.

Installation

1. Install the booster pump flowline.

- (a). The installation sequence is the reverse of the disassembly order.
 (b). Fill the steering boosting fluid, refer to steering boosting fluid draining and filling procedures.

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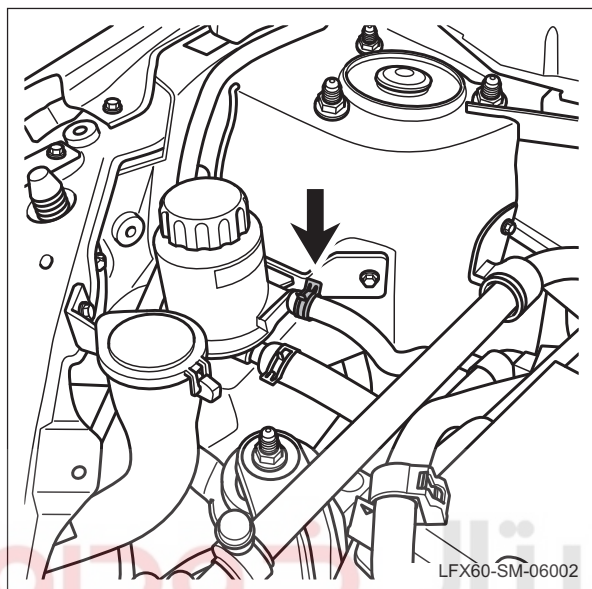
Hydraulic power steering system

Replacement of Return Tube

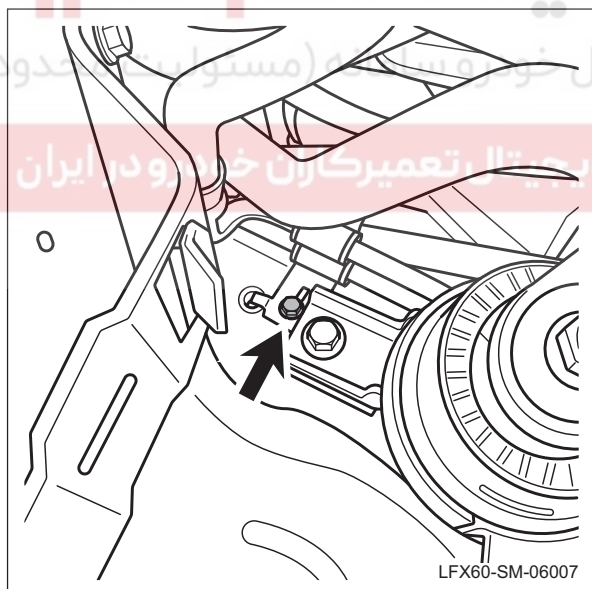
Removal

1. Remove the return tube.

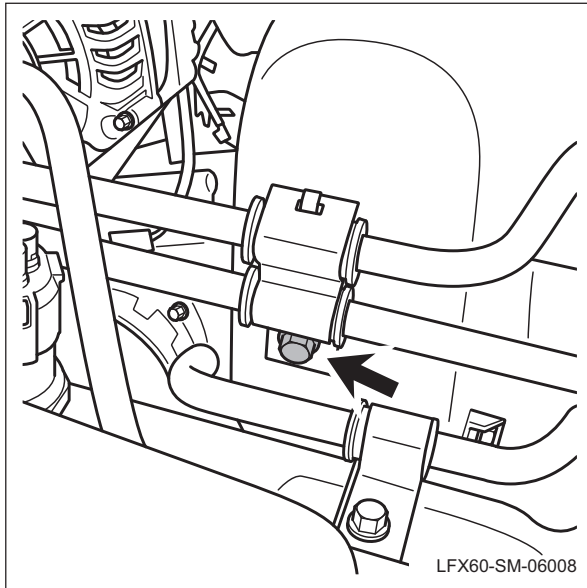
- Drain the steering boosting fluid, refer to steering boosting fluid draining and filling procedures.
- Remove the front bumper assembly. Refer to the replacement of front bumper assembly.
- Remove the front combination lamp. Refer to the replacement of front combination lamp.



- Dismount the bar clasp of return tube and disconnect the tube.

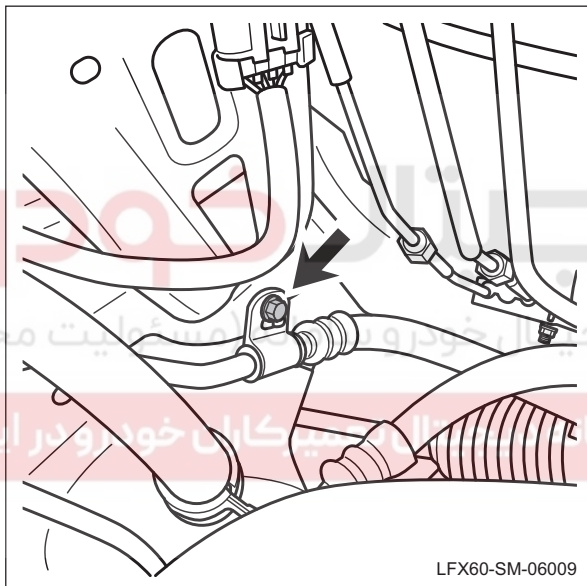


- Dismount the tap bolt of return tube.

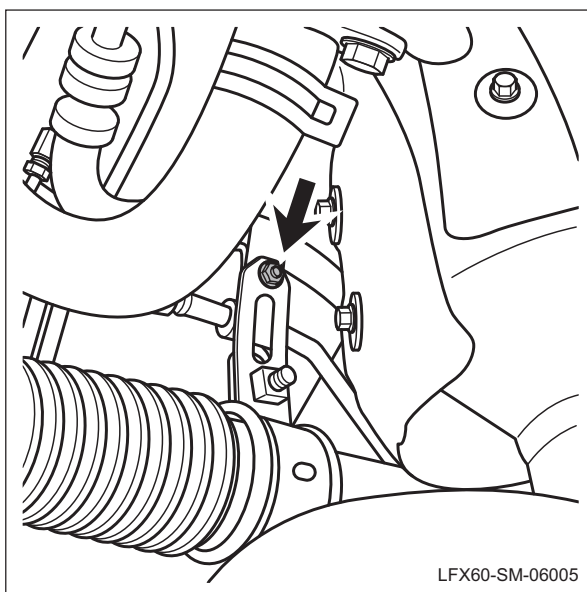


(f). Dismount the tap bolt of return tube.

06

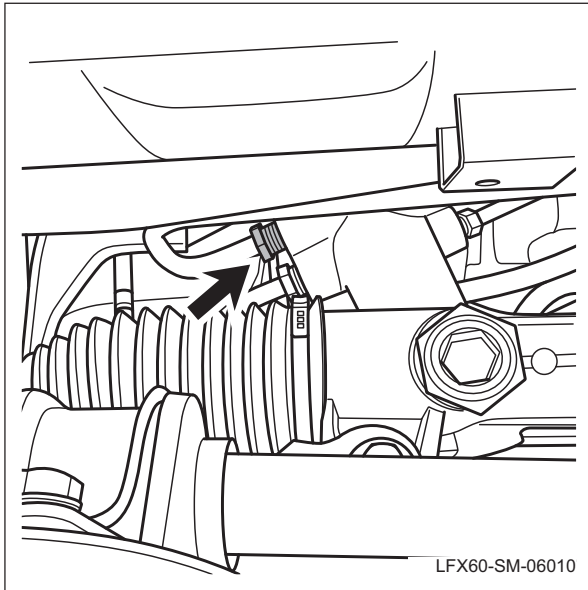


(g). Dismount the tap bolt of return tube.



(h). Lift the vehicle. **Reference: Vehicle Lifting and Supporting**

(i). Dismount the tap bolt of return tube.



- (j). Dismount the locknut of return tube.
- (k). Detach the return tube.

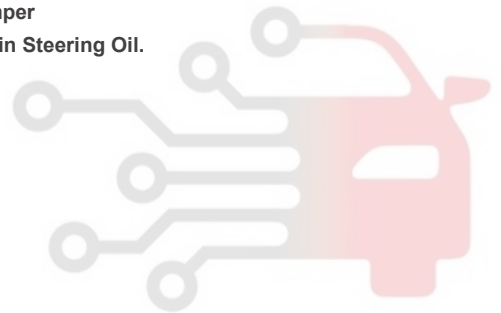
Installation

1. Install the return tube.

- (a). The installation sequence is the reverse of the disassembly order.
- (b). Install front combination light. Refer to replacement of Front Combination Light
- (c). Install the assembly of front bumper. Refer to replacement of Front Bumper
- (d). Filling in the steering oil. Reference: Procedure for Discharging and Filling in Steering Oil.

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران

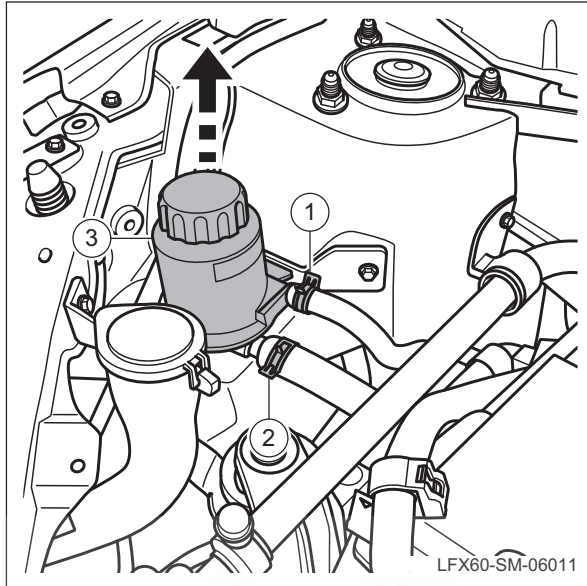


Replacement of Steering Oiler

Removal

1. Dimount the steering oiler.

(a). Drain the steering boosting fluid, refer to steering boosting fluid draining and filling procedures.



- (b). Dismount the bar clasp of return tube and disconnect the return tube 1.
- (c). Dismount the bar clasp of flowline and disconnect the flowline 2.
- (d). Detach the steering oiler 3.

06

Installation

1. Install the steering oiler.

(a) The installation sequence is the reverse of the disassembly order.

(b). Fill the steering boosting fluid, refer to steering boosting fluid draining and filling procedures.

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران

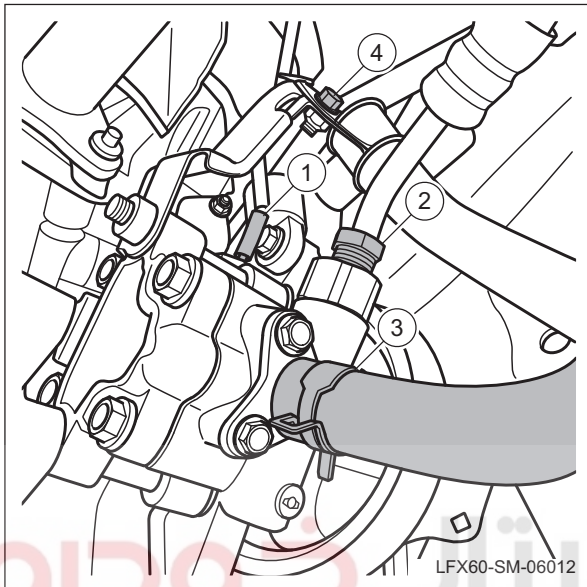


Replacement of Steering Booster Pump

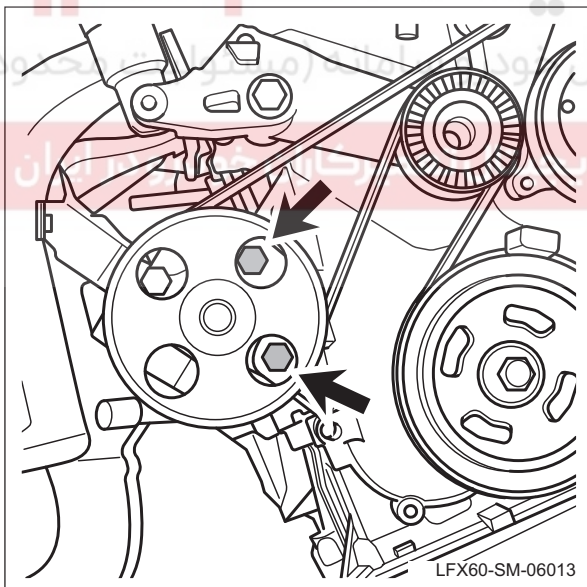
Removal

1. Dismount the steering booster pump.

- Drain the steering boosting fluid, refer to steering boosting fluid draining and filling procedures.
- Remove the accessory belt. Refer to replacement of accessory belt.
- Disconnect the battery negative terminal.



- Dismount the harness plug 1 of steering booster pump.
- Dismount the locknuts of booster pump flowline and booster pump.
- Dismount the bar clasp and disconnect the sucker 3 of steering booster pump.
- Dismount the tap bolt 4 of sucker stand of steering booster pump.



- Dismount the tap bolt of steering booster pump and detach the pump.

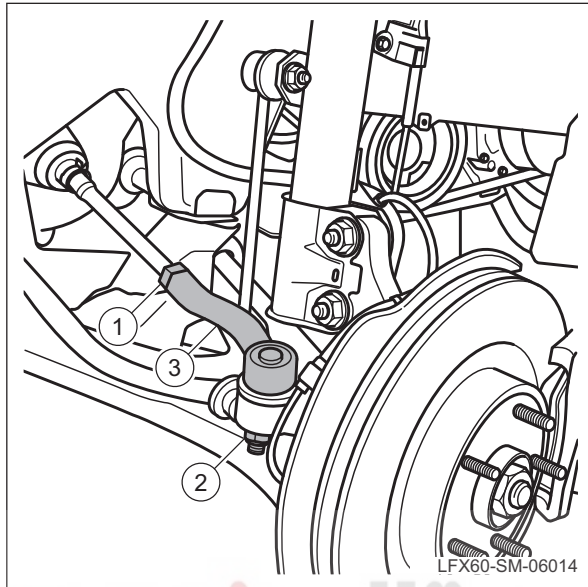
Installation

1. Install the steering booster pump.

- The installation sequence is the reverse of the disassembly order.
- Install the accessories belt. Refer to: Accessories belt replacement.
- Fill in the steering booster oil. Reference: Procedure for Discharging and Filling in Steering Booster Oil.

Replacement of Steering Outer Tie Rod Ball Joint**Removal****1. Dismount the bulb of steering pull rod.**

(a). Dismount the front wheel. Refer to replacement of Wheel.



- (b). Undo the grip nut 1 of steering pull rod bulb.
- (c). Dismount the grip nut 2 of steering pull rod bulb.
- (d). Dismount the bulb 3 of steering pull rod.

06

Installation**1. The installation sequence is reverse to the removal sequence.**

- (a). Install the front wheel. Refer to replacement of Wheel.
- (b). Adjust the toe-in. Reference: Adjustment of toe-in.

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



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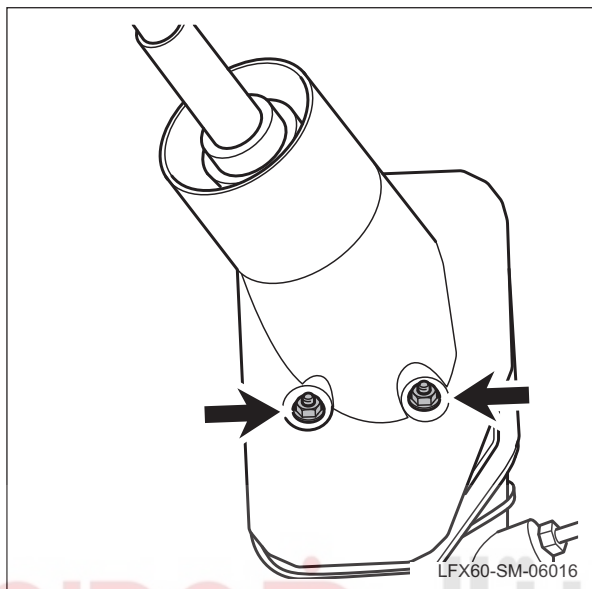
Hydraulic power steering system

Replacement of Steering Device

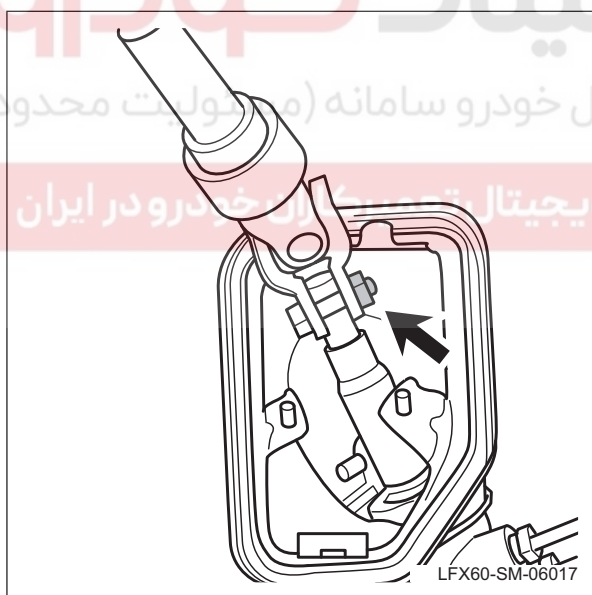
Removal

1. Dismount the steering device.

- (a). Drain the steering boosting fluid, refer to steering boosting fluid draining and filling procedures.
- (b). Dismount the assembly of front sub-frame. Reference: replacement of Front Sub-frame Assembly



- (c). Dismount the tap bolt of steering device dirt-proof boot.

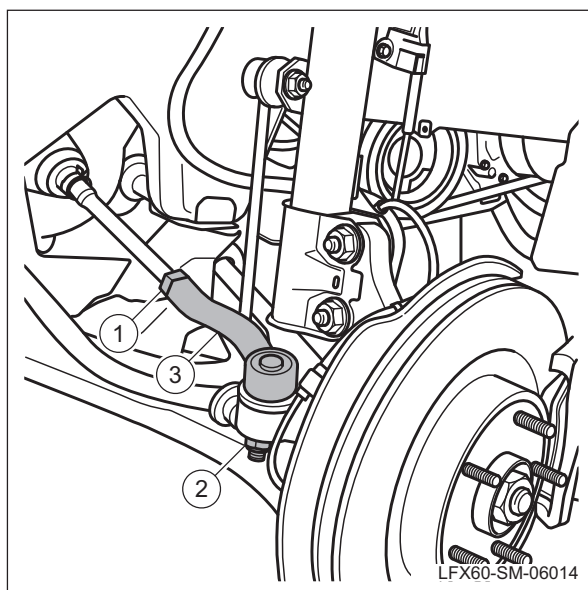


- (d). Dismount the nut connecting the steering device and transmission shaft of steering column.

Note:

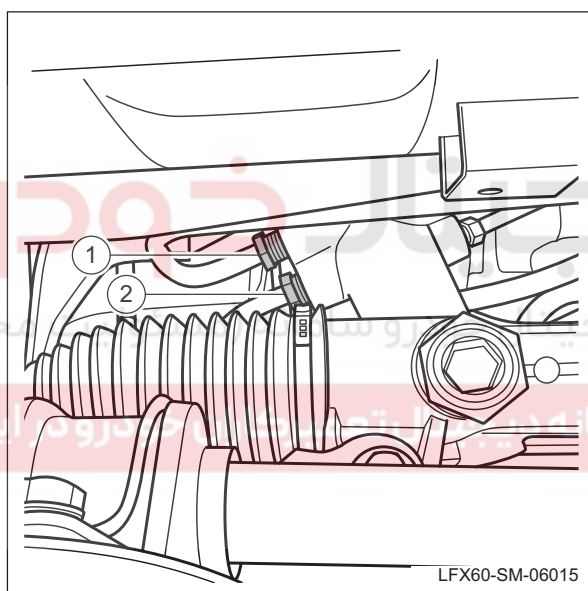
Adjust the steering wheel to the horizontal position and fix it to prevent rotating.

Hydraulic power steering system

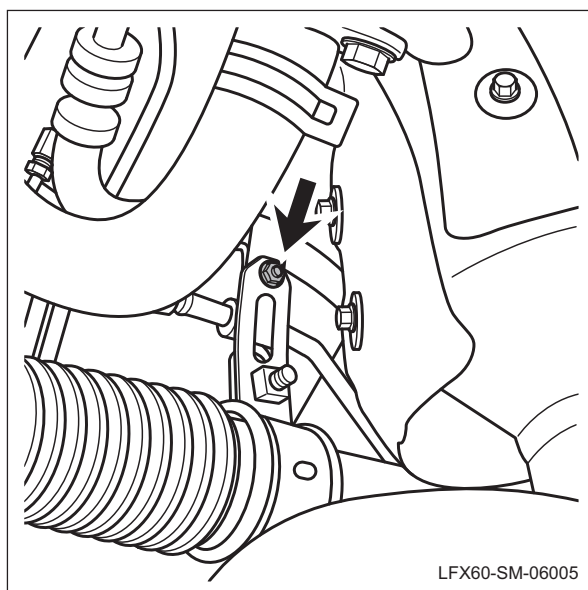


- (e). Undo the grip nut 1 of steering pull rod bulb.
- (f). Dismount the grip nut 2 of steering pull rod bulb.
- (g). Dismount the bulb 3 of steering pull rod.

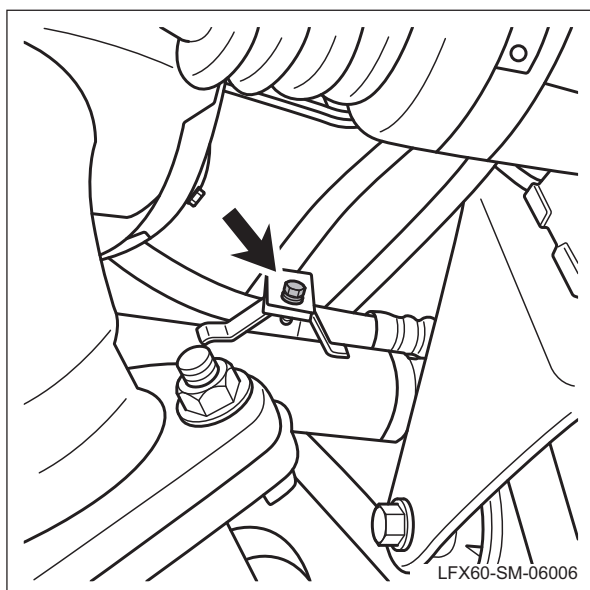
06



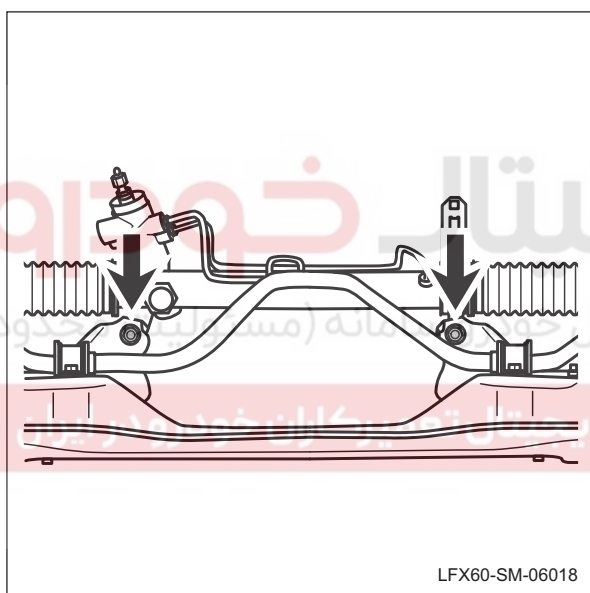
- (h). Dismount the locknut 1 of steering device sucker.
- (i). Dismount the locknut 2 of steering device flowline.



- (j). Dismount the tap bolt of return tube.



- (k). Dismount the fixing stand bolt of booster pump flowline.



- (l). Dismount the tap bolt of steering device.
(m). Detach the steering device.

Installation

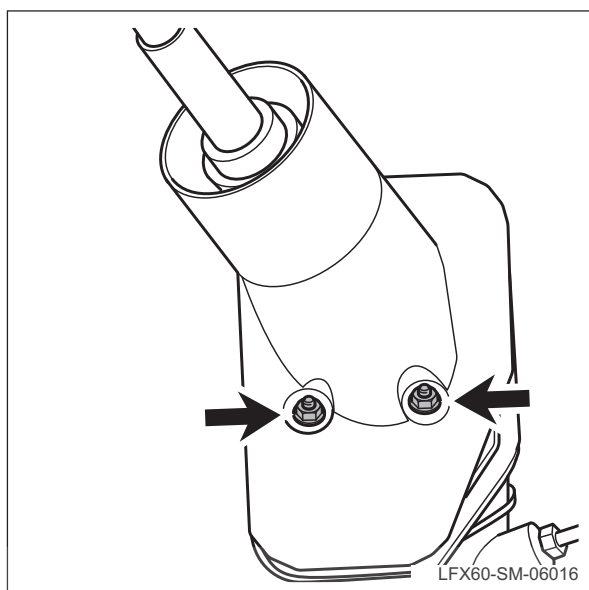
1. The installation sequence is reverse to the removal sequence.

- (a). Install the assembly of front sub-frame, refer to the replacement of Front Sub-frame Assembly.
(b). Fill the steering boosting fluid, refer to steering boosting fluid draining and filling procedures.

Replacement of Steering Column Transmission Shaft Assembly

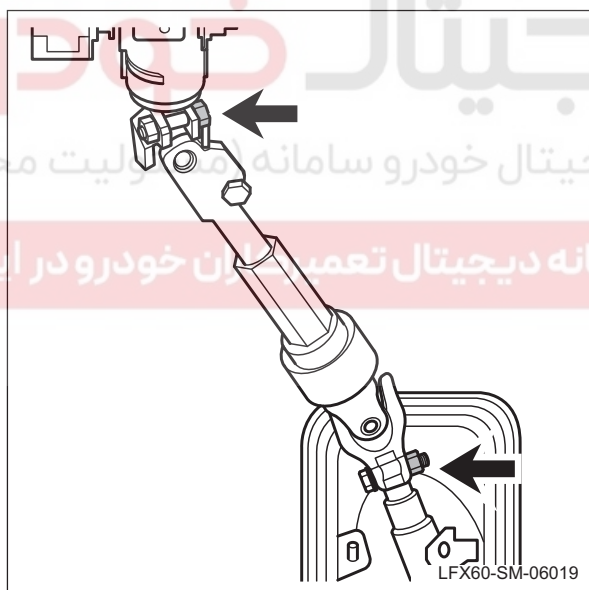
Removal

1. Dismount the assembly of steering column transmission shaft.



- (a). Dismount the tap bolt of steering device dirt-proof boot.

06



- (b). Dismount the tap bolt of steering column transmission shaft.

Note:

Adjust the steering wheel to the horizontal position and fix it to prevent rotating.

- (c). Detach the transmission shaft of steering column

Installation

1. Install the assembly of steering column transmission shaft.

- (a). The installation sequence is the reverse of the disassembly order.



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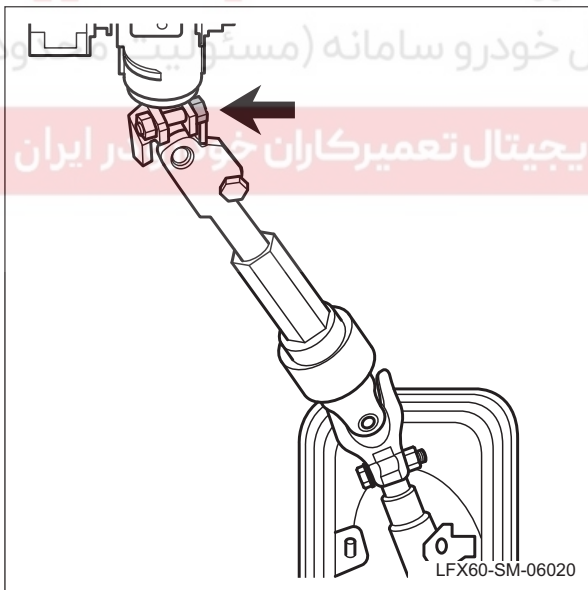
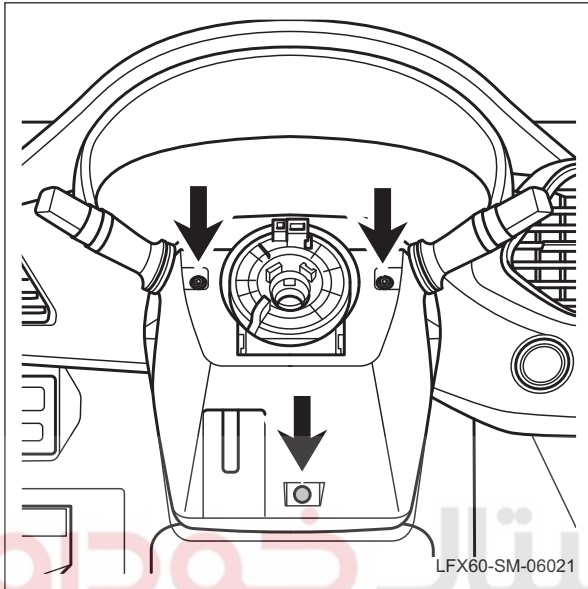
Hydraulic power steering system

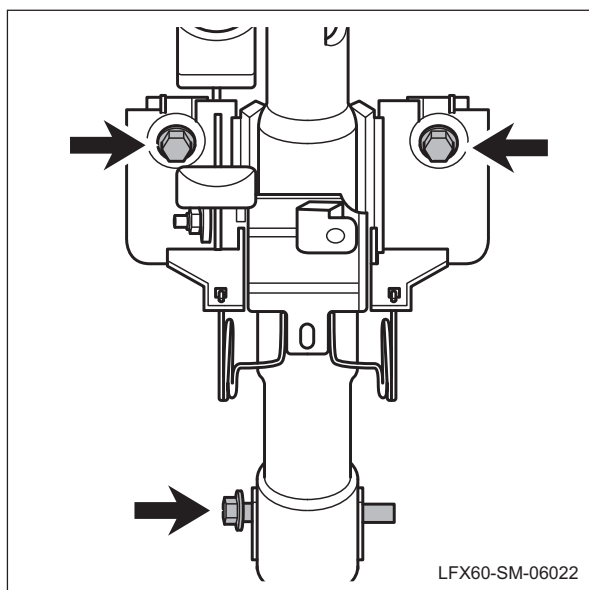
Replacement of Steering Column Assembly

Removal

1. Remove the steering column assembly.

- (a). Disconnect the battery negative connector.
- (b). Dismount the multi-functional steering wheel. Reference: replacement of Multi-functional Steering Wheel.
- (c). Dismount the Left lower guard plate of dashboard. Refer to replacement of Dashboard Assembly.
- (d). Remove the multi-function steering wheel upper and lower shield fixing bolt.
- (e). Take down the multi-function steering wheel upper and lower shield.
- (f). Remove the clock spring. Refer to the replacement of clock spring.
- (g). Dismount the combination switch. Refer to replacement of Combination Switch
- (h). Dismount the bolt connecting the steering column and steering column transmission shaft.
- (i). Disconnect the harness plug of steering column and detach the harness fastener of steering column.





- (j). Dismount the tap bolt of steering column.
- (k). Detach the steering column assembly.

Installation

1. The installation sequence is reverse to the removal sequence.

- (a). Install the combination switch. Refer to replacement of Combination Switch
- (b). Install the clock spring. Replacement of Clock Spring.
- (c). Install the multi-functional steering wheel. Reference: replacement of Multi-functional Steering Wheel.
- (d). Install the left lower guard plate of dashboard. Replacement of Left Lower Guard Plate of Dashboard

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



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