

Driveline System

2.2 Driveline System

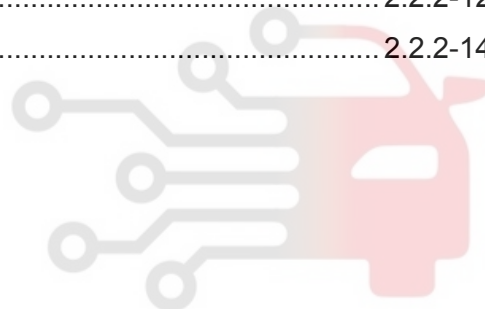
2.2.2 Driveshaft

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دیجیتال خودرو

شرکت دیجیتال خودرو سامانه (مسئولیت محدود)

اولین سامانه دیجیتال تعمیرکاران خودرو در ایران



Specifications**Material specifications****Lubricants, liquids, Sealants and Adhesives**

Item	Specification
High-performance grease (color: black), CV joint	2LN2LN584 / L0 K575 GS
Other alternative grease	GL - 3

Capacity

Item	Weight
High-performance grease, outer CV joint	100 g
High-performance grease, inner CV joint	140 g

Torque Specifications

Item	Nm	lb-ft	lb-in
Tie rod ball retaining nut	63	46	-
Front arm ball joint to knuckle bolt and nut	90	66	-
Driveshaft retaining nut	270	200	-
Wheel nut	95	70	-
Front strut and steering joint connecting bolt and nut	130	96	-

Description and Operation

System Overview

The driveshafts have constant velocity (CV) joints at both.

- Inner CV joints (composed of constant velocity ball, tripod joint, roller, steel ball and universal joint housing) are installed on the drive axle.
- Outer CV joints (composed of steel ball, ball retainer and universal joint housing) are installed to the wheel side.
- Inner CV joints are fixed on the differential through differential spring ring.
- Outer CV joints are fixed on the wheel hub bearing.

The driveshafts transmit torque from the engine to the wheels. In order to allow vertical movement of the wheels and engine. The CV joints allow for changes in driveshaft length during axial movements.

Cautions for Driveshaft

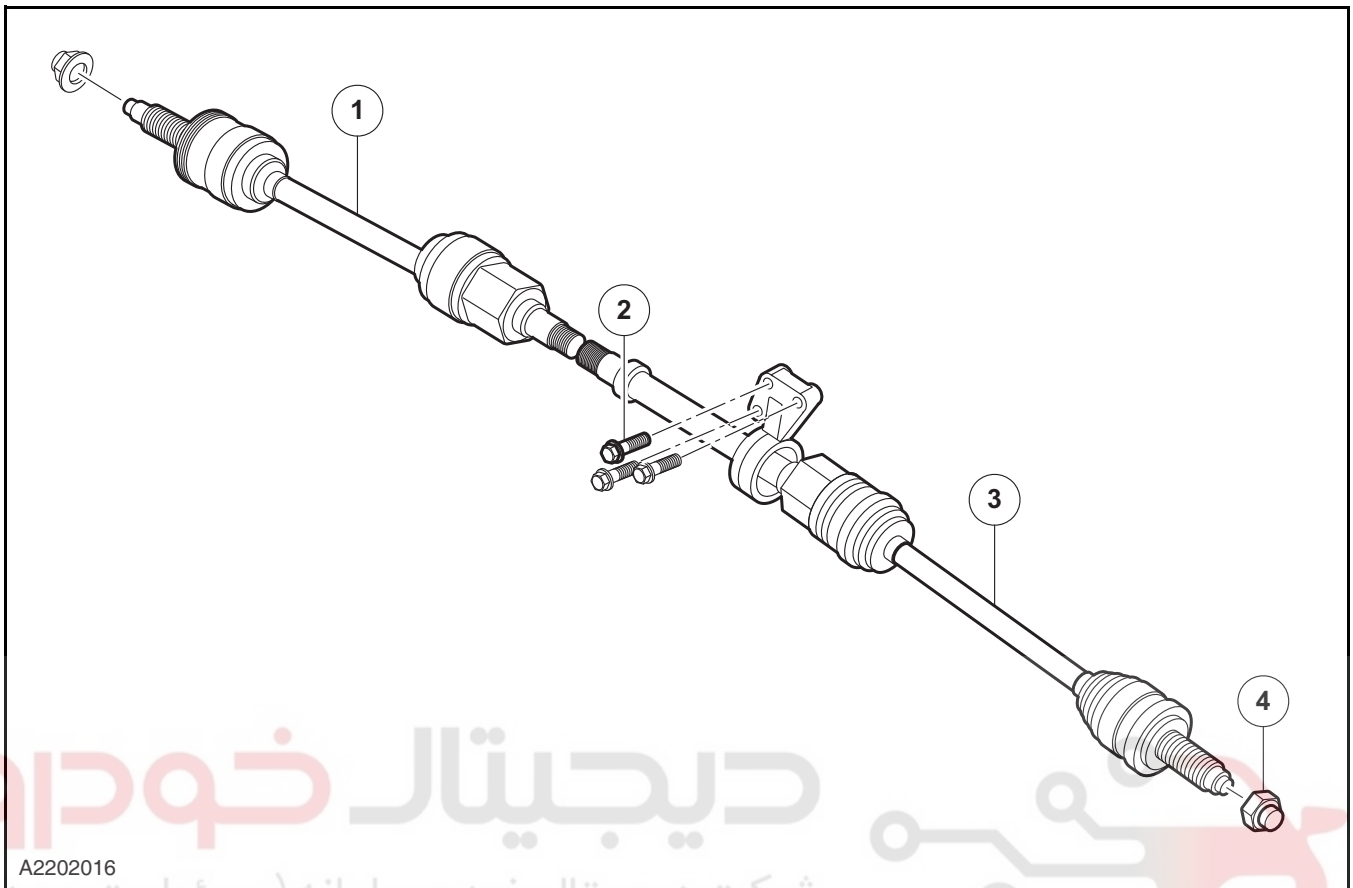
⚠ CAUTION: Be very carefully when removing, installing, disassembling or assembling the driveshaft. The following instruction must be followed:

- Do not push-and-pull the CV joint when removing the driveshaft.
- The operating angle of the CV joint must not be bent more than 22.5 degrees.
- Check whether the polished surface and the spline are damaged.
- The rubber boot is prohibited to contact with sharp edge and a hot engine or exhaust system.
- Do not drop the driveshaft, since it may caused inner damage to the rubber boot with no visual evidence from the outside inspection.
- Do not use the driveshaft as pry tool during the installation of other components. Do not hang the driveshaft randomly.

- Knock on the universal joint housing outside may cause damage to the CV joint.



Exploded View



A2202016

Item	Description	Item	Description
1	Driveshaft assembly (left)	3	Driveshaft assembly (right)
2	Hex flange bolt M10×1.25×45	4	Retaining nut M22×1.5

Symptom Diagnosis and Testing

Refer to: Symptom Chart (2.2.1 Driveline System - General Information, Symptom Diagnosis and Testing).

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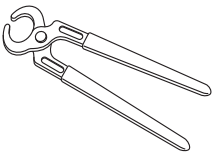



Disassembly and Assembly

Inner Constant Velocity (CV) Joint and Rubber Boot

Removal

Special tool

 <p>CA201-002</p>	<p>Half Shaft Rubber Boot Clamp Remover CA201-002</p>
 <p>CA201-008</p>	<p>Half Shaft Rubber Boot Clamp Installer CA201-008</p>

Materials

Name	Model
High Performance Grease	2LN584 / L0 (fixed end) (GL-3) K575 GS (telescopic end) (GL-3)

1. Remove the half shaft.

Refer to: Left-Hand Half Shaft(2.2.2 Half Shaft, Removal and Installation).

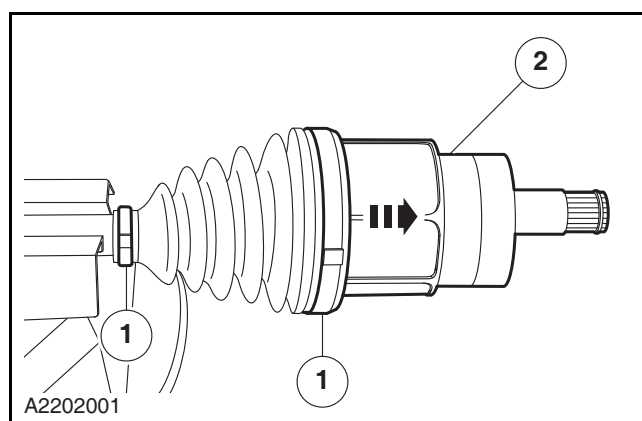
2. Remove the ball joint assembly.

1. Remove the two dust boot clamps with a special tool.

Special Tool: CA201-002

2. Disassemble the ball joint assembly.

3. Clear the grease in the CV joint.

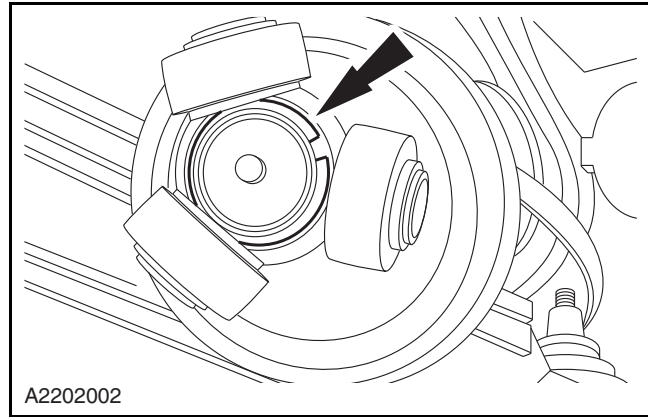


2.2.2-6

Driveshaft

2.2.2-6

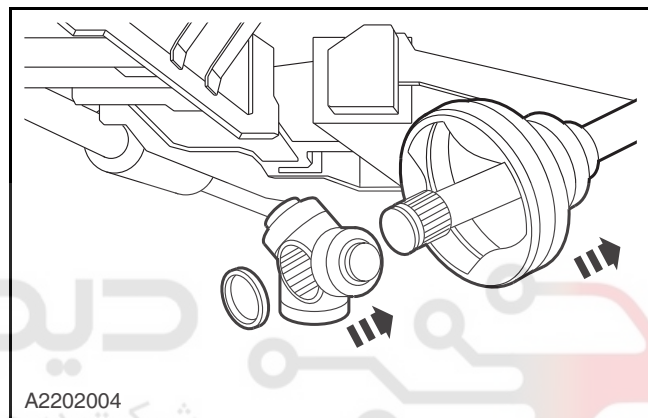
3. Use a suitable tool to remove tripod universal joint snap ring.
4. Remove the inner CV joint rubber boot.



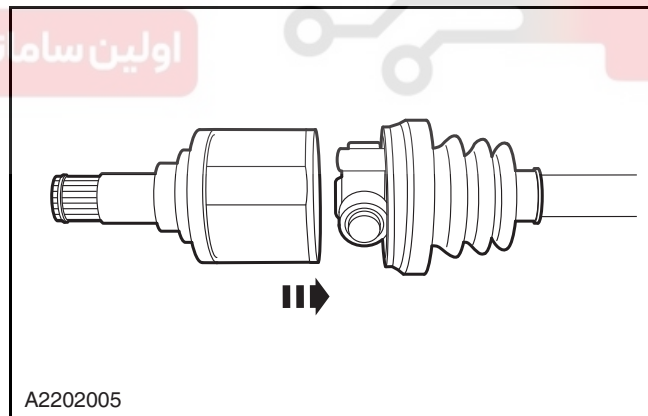
Installation

⚠ CAUTIONS: All the snap ring and clamps should be replaced.

1. Install the rubber boot/ tripod universal joint.
 1. Install the rubber boot.
 2. Install the tripod universal joint.
 3. Install the tripod universal joint snap ring.



2. Fill the ball joint with grease.
3. Install the ball joint assembly.



4. Install the rubber boot.

1. Install the rubber boot.

2. Install the rubber boot clamp with a special tool.

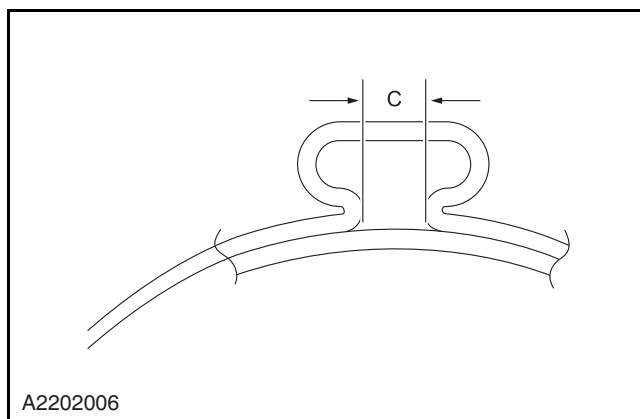
Special tool: Half Shaft Rubber Boot Clamp Installer

CAUTIONS: The clamp size of the mouth should not be more than 1.5mm after tightening the big and the small loop.

CAUTIONS: The tightening torque for 0.8 mm thick clamp is 12 Nm, the tightening torque for 1.1mm thick clamp is 20 Nm.

5. Install the half shaft.

Refer to: Left-Hand Half Shaft (2.2.2 Half Shaft, Removal and Installation).



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Outer Constant Velocity (CV) Joint and Rubber Boot

Removal

Special tool

 <p>CA201-002</p>	<p>Half Shaft Rubber Boot Clamp Remover CA201-002</p>
 <p>CA201-008</p>	<p>Half Shaft Rubber Boot Clamp Installer CA201-008</p>

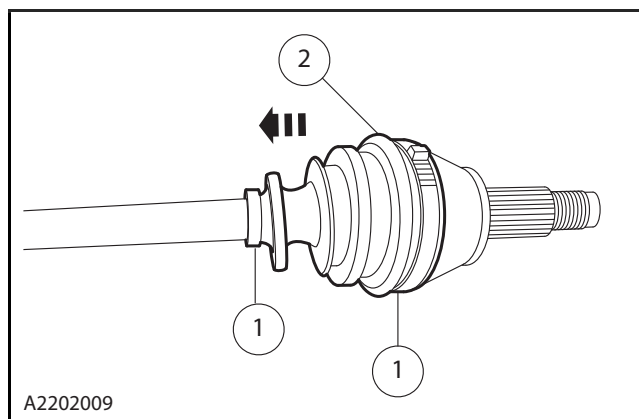
Name	Model
High Performance Grease	2LN584 / L0 (fixed end) (GL-3) K575 GS (telescopic end) (GL-3)

1. Remove the half shaft.
Refer to: Left-Hand Half Shaft (2.2.2 Half Shaft, Removal and Installation).

2. Remove the rubber boot clamp.
 1. Remove the rubber boot clamp with a special tool.

Special Tool: CA201-002

 2. Detach the rubber boot.
 3. Remove the grease.



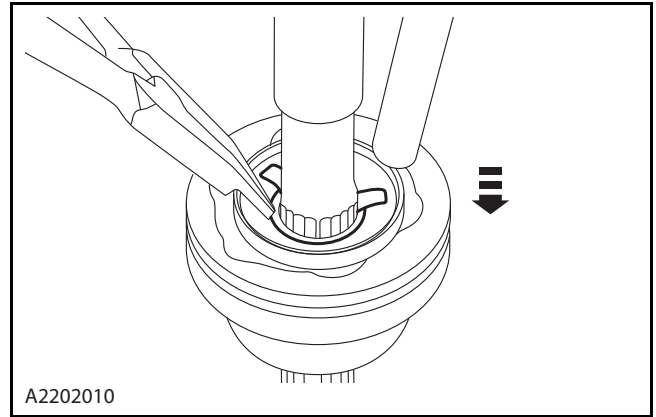
2.2.2-9

Driveshaft

2.2.2-9

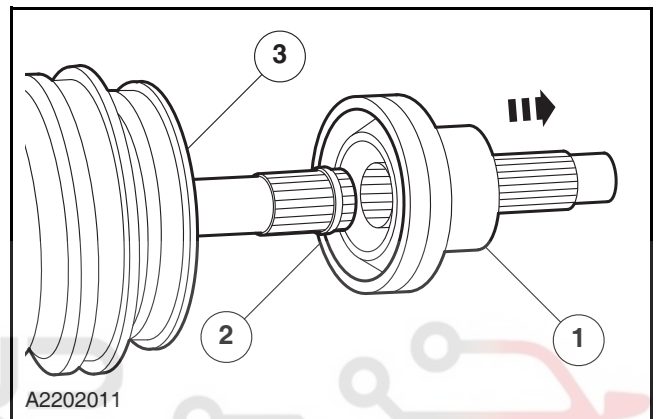
3. Take out the ball cage and the supporter from the case.

1. Use needle nose pliers to shove off the snap ring.
2. Remove the constant velocity universal joint with copper bar.



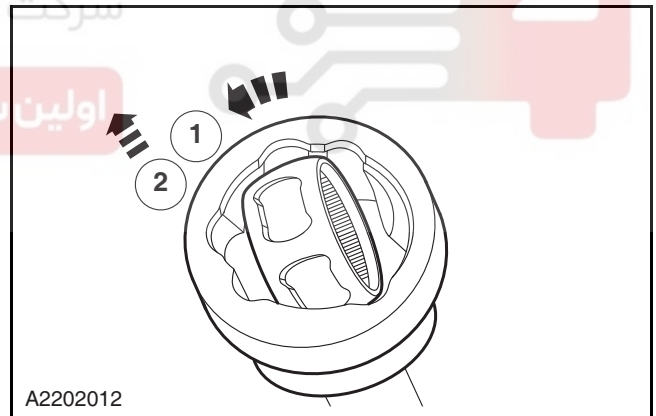
4. Remove the inner CV joint rubber boot.

1. Take out the half shaft ① from the universal joint.
2. Take out the snap ring ② from the universal joint.
3. Take out the rubber boot ③ .



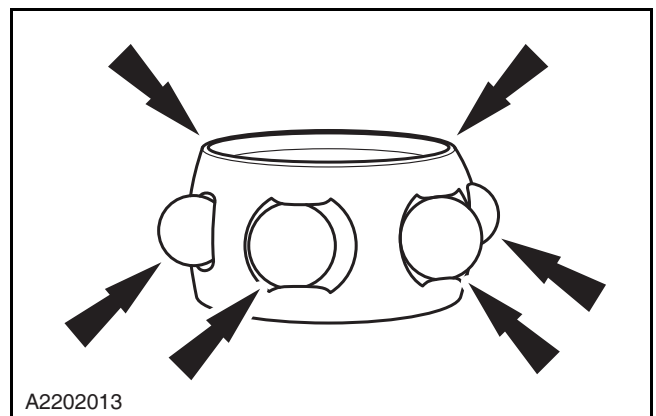
5. Remove the retainer supporter.

1. Rotate the retainer ball cage.
2. Take out the retainer ball cage supporter.



6. Take out the steel ball from the ball cage.
7. Check the wear on the moving surface .

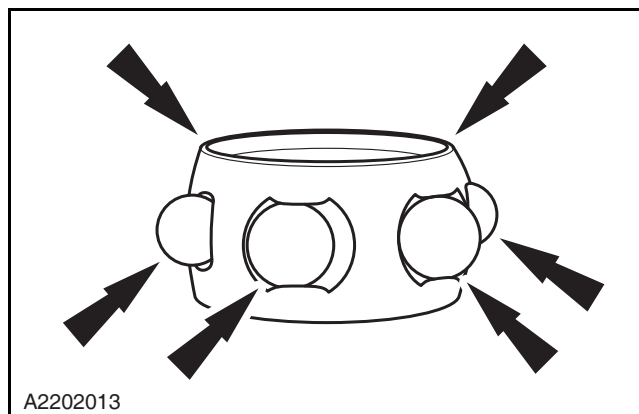
⚠ CAUTIONS: Make sure the ball cage, enclosure, ball and support are free from grease and oil.



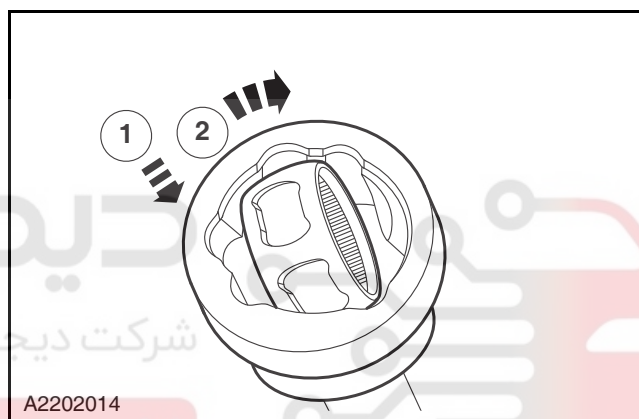
Installation

⚠ CAUTIONS: All the snap ring and clamps shall be replaced.

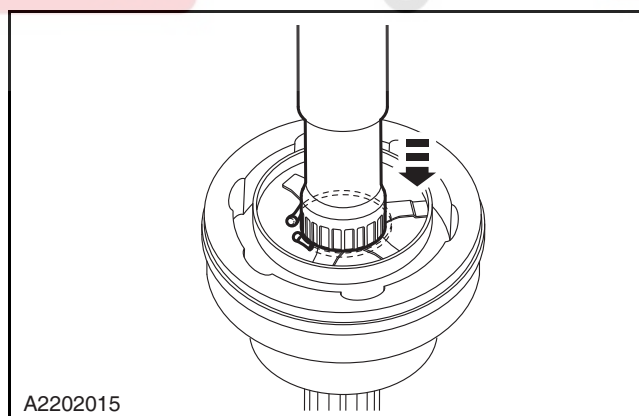
1. Install the steel ball on the ball cage supporter.



2. Install the retainer ball cage.
 1. Install the retainer ball cage into the case.
 2. Rotate the retainer ball cage.



3. Put the half shaft in the universal joint.
 1. Install the rubber boot and inner clamp.
 2. Insert a new snap ring in the halfshaft CV joint groove.
 3. Insert the half shaft into the half shaft universal joint until it meshes the snap spring.
4. Fill the half shaft outer universal joint with high-performance grease.



5. Install the rubber boot.
6. Install the rubber boot clamp with a special tool.

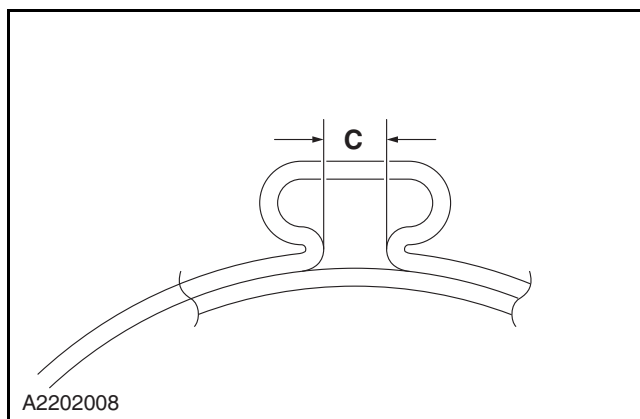
Special Tool: CA201-008

⚠ CAUTIONS: The clamp size of the mouth should not be more than 1.5mm after tightening the big and the samll loop.

⚠ CAUTIONS: The tightening torque for 0.8 mm thick clamp is 12 Nm, the tightening torque for 1.1mm thick clamp is 20 Nm.

7. Install the half shaft.

Refer to: [Left-Hand Half Shaft \(2.2.2 Half Shaft, Removal and Installation\)](#).



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اولین سامانه دیجیتال تعمیرکاران خودرو در ایران

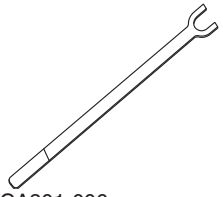


Removal and Installation

Left-Hand Half Shaft

Removal

Special tool

 <p>CA201-006</p>	<p>Half Shaft Remover (Puller) CA201-006</p>
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1. Disconnect the battery negative cable.

Refer to: [Battery Inspection \(3.1.10 Charging System, General Procedures\)](#).

2. Remove the wheel.

Refer to: [Wheel and Tire \(2.1.4 Wheels and Tires, Removal and Installation\)](#).

3. Lift the vehicle.

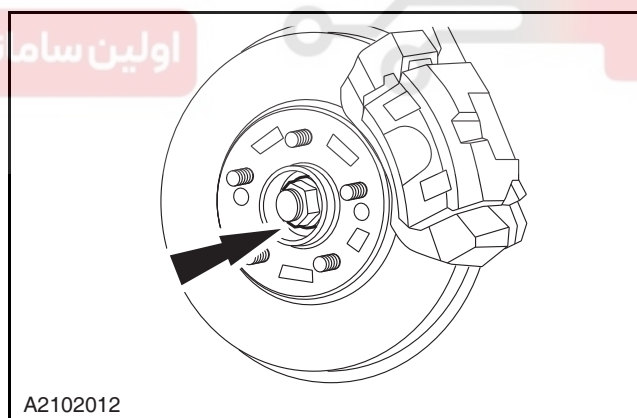
Refer to: [Lifting \(1.1.3 Traction and Lifting, Description and Operation\)](#).

4. Remove the half shaft nut.

Torque: 270 Nm

5. Remove the steering tire bar ball joint.

Refer to: [Tie Rod Ball Joint \(2.4.3 Steering Gear, Removal and Installation\)](#).



2.2.2-13

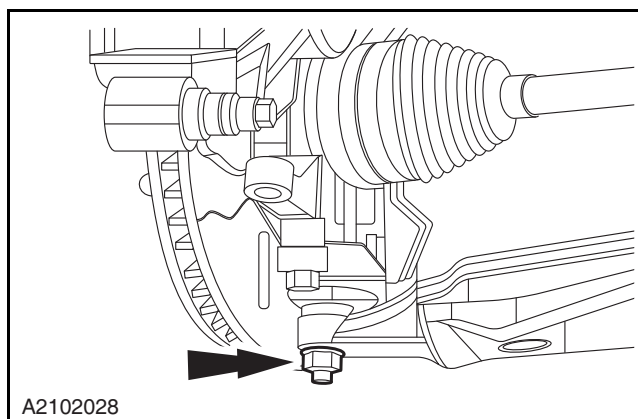
Driveshaft

2.2.2-13

6. Take out the front arm ball joint from the steering knuckle.

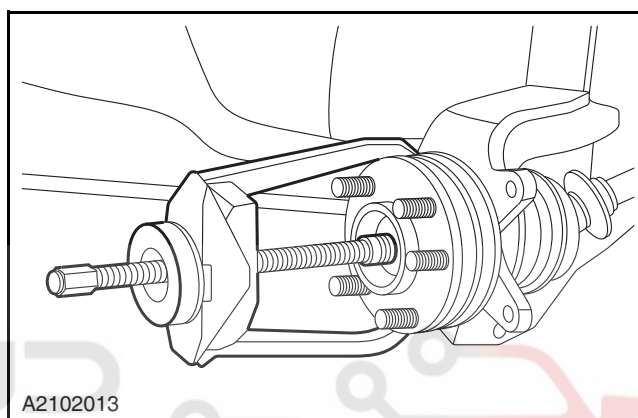
1. Straighten and remove the locking pin.
2. Remove the locking nut of the front control arm ball joint.

Torque: 90 Nm



7. Pull out the half shaft from the steering knuckle by the puller.

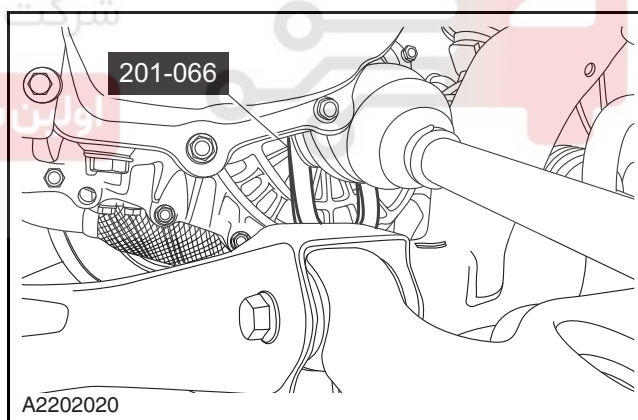
CAUTION: Make sure the inner CV joint not separate from the half shaft.



8. Remove the left-hand half shaft with a special tool.

Special Tool: CA201-066

9. Put the oil collector under the vehicle.



Installation

1. Install the half shaft to the transaxle.

⚠ CAUTION: Protect the half shaft to prevent damage to the CV joint. The inner CV joint operating angle must not be bent more than 22.5 degrees. The outer CV joint operating angle must not be bent more than 45 degrees.

⚠ CAUTION: When inserting the half shaft, use the oil seal installer (provided with oil seal) to protect drive axle oil seal.

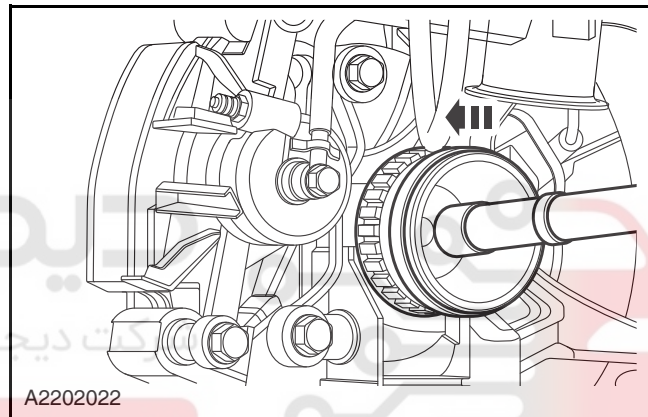
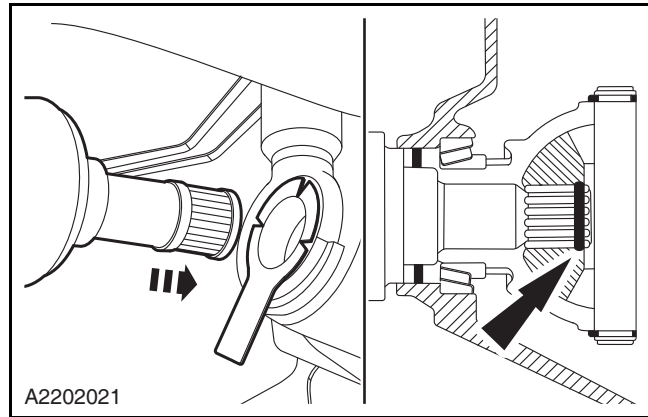
⚠ CAUTION: Make sure the retainer ring is installed in the groove already.

2. Install the half shaft to the wheel hub bearing.
3. Install the arm ball joint.
4. Install the half shaft nut.
5. Install steering tie rod ball joint.
6. Install the wheel.

Refer to: [Wheel and Tire \(2.1.4 Wheels and Tires, Removal and Installation\)](#).

7. Connect the battery negative cable.

Refer to: [Battery Inspection \(3.1.10 Charging System, General Procedures\)](#).



Right-Hand Half shaft

Refer to: [Left-Hand Half shaft \(2.2.2 Half shaft, Removal and Installation\)](#).

⚠ CAUTION: When removing the left-hand half shaft, the half shaft middle support retaining bolt shall be removed firstly. See chart:

