DRIVE SHAFT

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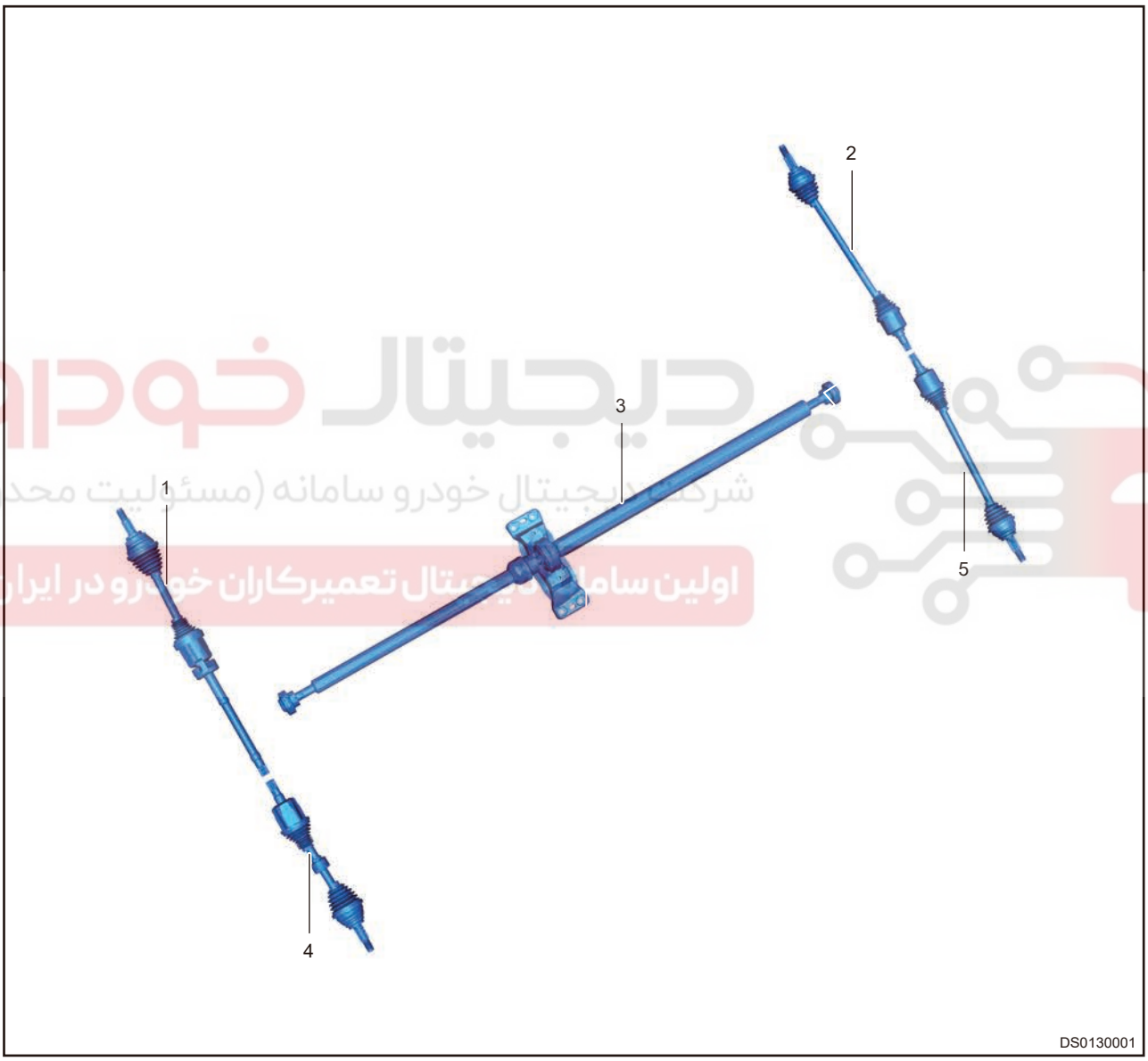
System Overview

System Description

Drive shaft, which is a solid shaft, transmits torque between differential and drive wheels. Generally, the inner end of drive shaft is connected with drive shaft gear by spline, and the outer end is connected with wheel hub. Drive shaft transmits torque from differential to wheels, thus rotating the wheels to run vehicle.

System Components Diagram



1	Front Right Drive Shaft Assembly	2	Rear Right Drive Shaft Assembly
3	Propeller Intermediate Shaft Assembly	4	Front Left Drive Shaft Assembly
5	Rear Left Drive Shaft Assembly		

Propeller intermediate shaft is the shaft which transmits rotation of transmission to main final drive.

Specifications

Torque Specifications

Description	Torque (N•m)
Tightening Bolt Between Propeller Intermediate Shaft Bracket and Body	60 ± 5
Tightening Bolt Between Propeller Intermediate Shaft and Torque Manager	30 ± 3
Tightening Bolt Between Propeller Intermediate Shaft and Transfer Output Flange	30 ± 3
Drive Shaft Self-locking Nut	270 ± 20
Fixing Bolt Between Front Right Drive Shaft Bracket and Engine	60 ± 5

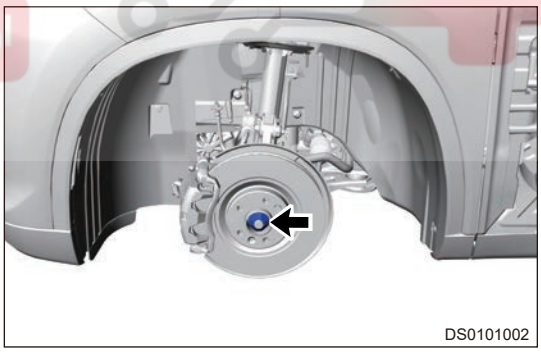
Removal & Installation

Front Drive Shaft Assembly (4WD)

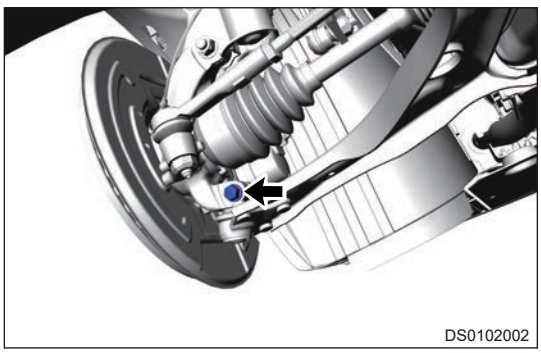
Removal

1. Remove the front left wheel.
2. Remove the right left wheel.
3. Drain the transmission oil.
4. Remove the front left drive shaft assembly.

a. Remove fixing nut (arrow) from front left drive shaft.


DS0101002

b. Remove fixing bolt (arrow) between front left lower control arm and steering knuckle.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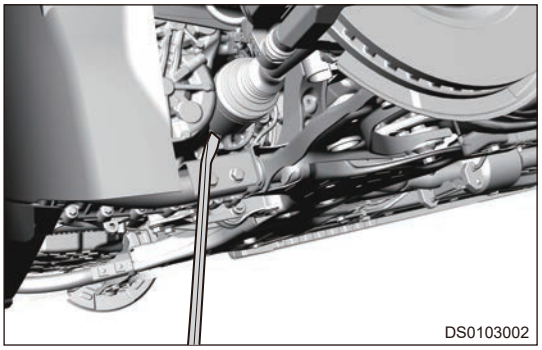
c. Disconnect the connection between front left lower control arm and steering knuckle.

d. Use crowbar to pry out inner ball cage spline inserted into transmission end.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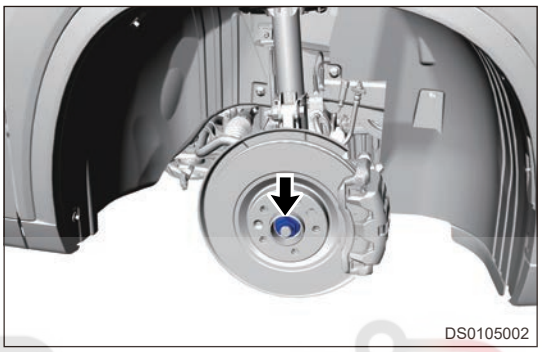
e. Remove the front left drive shaft.

5. Remove the front right drive shaft assembly.

a. Remove fixing nut (arrow) from front right drive shaft.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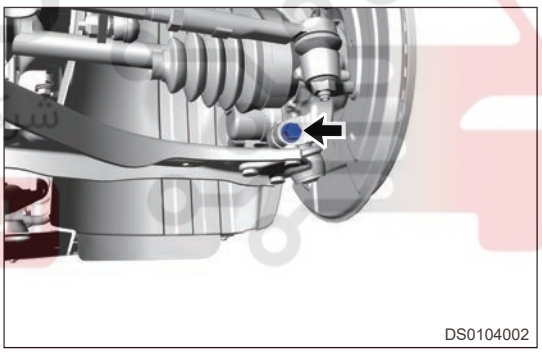
b. Remove fixing nut (arrow) from front right drive shaft.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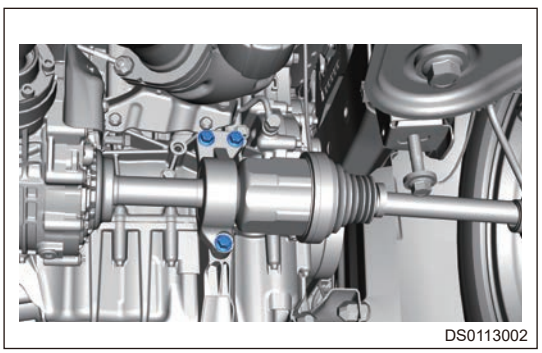
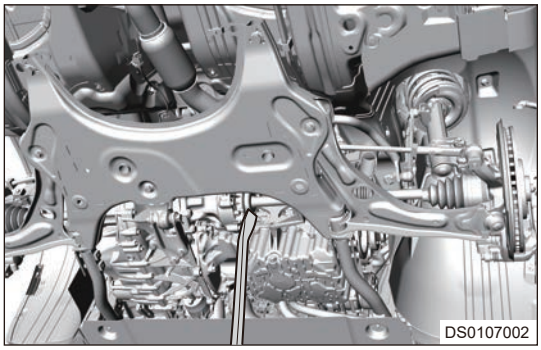
c. Disconnect the connection between front right lower control arm and steering knuckle.

d. Remove 3 fixing bolts (1) and (2) from front right drive shaft bracket.


DS0113002

e. Use crowbar to pry out inner ball cage spline inserted into transfer case.



f. Remove the front right drive shaft assembly.

Installation

1. Install the front right drive shaft.

Caution
• It is necessary to use oil seal mounting fixture to ensure that transmission output shaft oil seal is not scratched during installation. Remove fixture after drive shaft spline is passed through fixture, and do not remove it forcibly. • It is necessary to align drive shaft spline with spline hole when assembling drive shaft. Drive shaft can be pushed firmly and smoothly only drive shaft spline is aligned with spline hole. • Install drive shaft bracket in the order above.

a. Raise the right shaft first until drive shaft spline end axis centering is flush with transmission differential hole center.

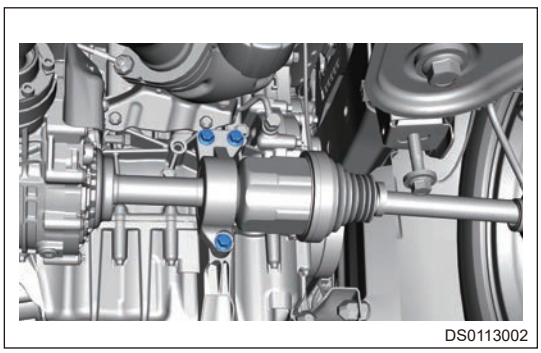
b. Insert oil seal protection fixture into transmission output shaft oil seal.

c. Push drive shaft into fixture, and remove fixture after drive shaft spline passes through fixture.

d. Finally, push the drive shaft to bottom.

e. Install 3 fixing bolts (arrow) from front right drive shaft bracket.

Tightening torque: 60 ± 5 N·m



2. Install the connection between front right lower control arm and steering knuckle.

Tightening torque: 95 ± 9 N·m

3. Install fixing nut to front right drive shaft.

Tightening torque: 270 ± 20 N·m

4. Install the front right wheel.
5. Install the front left drive shaft.

Caution
• It is necessary to use oil seal mounting fixture to ensure that transmission output shaft oil seal is not scratched during installation. Remove fixture after drive shaft spline is passed through fixture, and do not remove it forcibly. • It is necessary to align drive shaft spline with spline hole when assembling drive shaft. Drive shaft can be pushed firmly and smoothly only drive shaft spline is aligned with spline hole. • Install drive shaft bracket in the order above.

a. Raise the left shaft first until drive shaft spline end axis centering is flush with transmission differential hole center.
b. Insert oil seal protection fixture into transmission output shaft oil seal.
c. Push drive shaft into fixture, and remove fixture after drive shaft spline passes through fixture.
d. Finally, push the drive shaft to bottom.

6. Install the connection between front left lower control arm and steering knuckle.

   Tightening torque: 95 ± 9 N·m

7. Install fixing nut to front left drive shaft.

   Tightening torque: 270 ± 20 N·m

8. Install the front left wheel.
9. Fill the transmission oil.

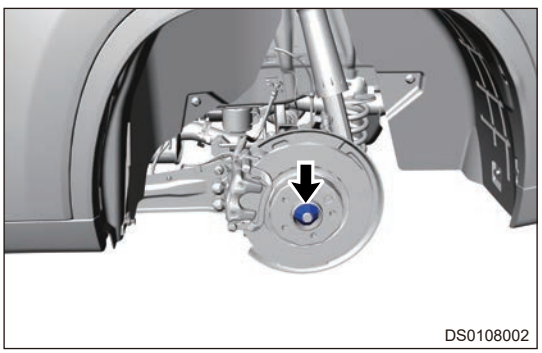
Rear Drive Shaft Assembly (4WD)

Removal

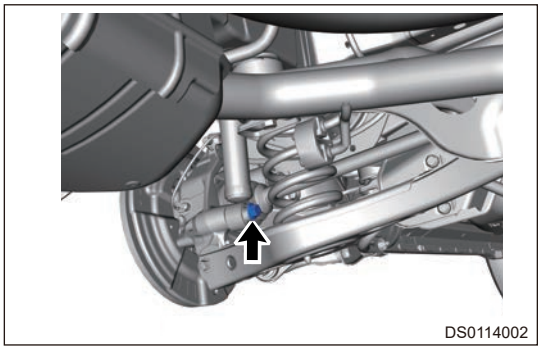
Caution
• Use same removal and installation procedures for left drive shaft and right drive shaft assembly. • Removal procedures listed below are for left drive shaft.

1. Remove the rear left wheel.
2. Drain the final drive oil.
3. Remove the rear left drive shaft assembly.

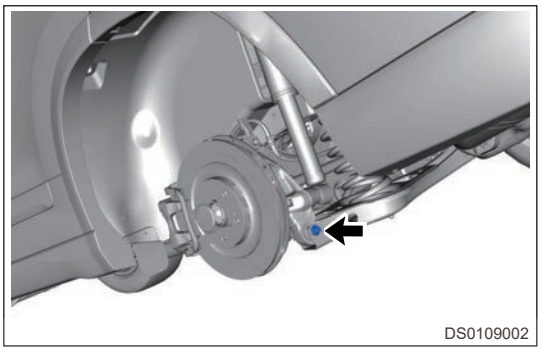
   a. Remove fixing nut (arrow) from rear left drive shaft.



b. Remove fixing bolt (arrow) between rear left shock absorber and steering knuckle.

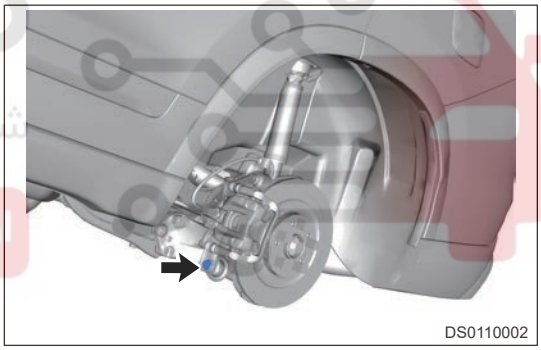


c. Remove fixing bolt (arrow) between rear left lower control arm and steering knuckle.

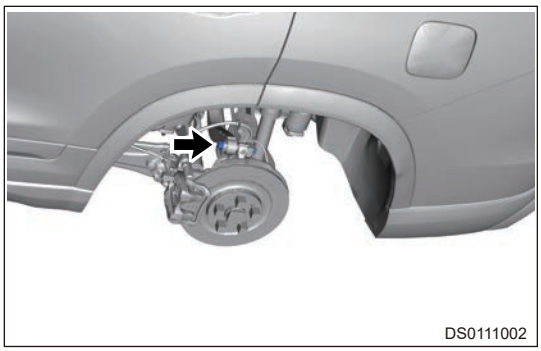


d. Disconnect the connection between rear left lower control arm and steering knuckle, and remove coil spring.

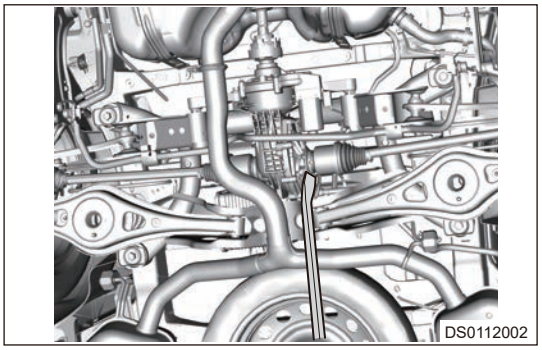
e. Remove fixing bolt (arrow) between left tie rod and steering knuckle.



f. Remove fixing bolt (arrow) between upper left control arm and steering knuckle.



g. Use crowbar to pry out the rear left drive shaft assembly.



h. Remove the rear left drive shaft assembly.

Installation

Caution
• Use same installation procedures for left drive shaft and right drive shaft assembly. • Installation procedures listed below are for left drive shaft.

1. Install the rear left drive shaft assembly.
2. Install fixing bolt between upper left control arm and steering knuckle.
   Tightening torque: 160 ± 16 N·m
3. Install fixing bolt between left tie rod and steering knuckle.
   Tightening torque: 160 ± 16 N·m
4. Install fixing bolt between rear left shock absorber and steering knuckle.
   Tightening torque: 160 ± 12 N·m
5. Install fixing nut to rear left drive shaft.
   Tightening torque: 270 ± 20 N·m
6. Install the rear left wheel.
7. Use same installation procedures for right drive shaft and left drive shaft assembly.
8. Fill the final drive oil.

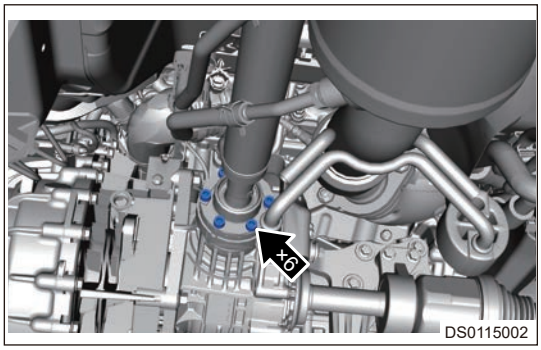
Caution
• Check wheel alignment after installation. Adjust wheel alignment to the standard range as necessary.

Propeller Intermediate Shaft Assembly (4WD)

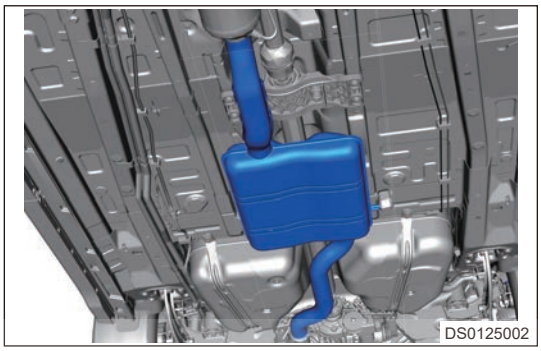
Removal

1. Turn off all electrical equipment and the ENGINE START STOP switch.
2. Disconnect the negative battery cable.
3. Remove the front muffler assembly.
4. Remove the propeller intermediate shaft assembly.

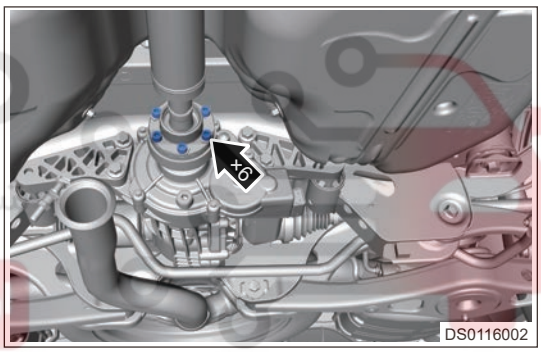
a. Remove 6 fixing bolts (arrow) between propeller shaft and PTU output flange.



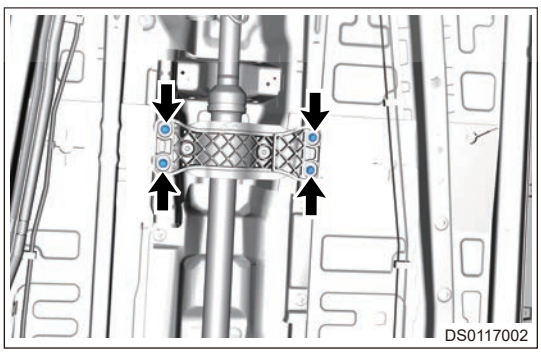
b. Remove the front muffler.



c. Remove 4 fixing bolts (arrow) between propeller shaft and torque manager flange.



d. Remove 4 fixing bolts (arrow) between intermediate bracket and lower body.



e. Remove the propeller intermediate shaft assembly.

Installation

1. Install the propeller intermediate shaft assembly.
2. Install 4 fixing bolts between intermediate bracket and lower body.

   Tightening torque: 60 ± 5 N·m

3. Install 6 fixing bolts between propeller shaft and torque manager flange.

   Tightening torque: 30 ± 3 N·m

4. Install 6 fixing bolts between propeller shaft and transfer output flange.

   Tightening torque: 30 ± 3 N·m

5. Install the front muffler assembly.
6. Install the negative battery cable.

Caution
• Raise the propeller shaft to installation height with a lifter, fit front end cross fork flange with PTU output shaft flange, align 4 bolt holes separately and tighten them with bolts. Installation of bolt should follow the principle of diagonal tightening. • Fit rear end cross fork flange with torque manager flange, align 4 bolt holes separately and tighten them with bolts. Installation of bolt should follow the principle of diagonal tightening.