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SECTION 3A

FRONT DRIVE AXLE

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SPECIFICATIONS

GENERAL SPECIFICATIONS

Application			Description
Drive Shaft Type			CV Joint
Axle Housing Type			Build - up
Differential Type			Conventional
Differential Gear			Hypoid Gear
Reduction Ratio	661NA	M/T	4.56
	662NA	M/T	4.56
		A/T (MB)	3.73
	661LA	M/T	4.56
		A/T (BTRA)	5.38
	662LA	M/T	4.27
		A/T (BTRA)	4.89
	E20	M/T	4.89
		A/T (MB)	4.55
	E23	M/T	4.55
		A/T (MB)	4.55
		A/T (BTRA)	5.86
	E32	M/T	3.73
		A/T (MB)	3.73
		A/T (BTRA)	4.89
Oil Capacity			1.4 L
Oil Specification			SAE 80W/90, API GL - 5

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FASTENER TIGHTENING SPECIFICATIONS

Steering Knuckle and Drive Shaft

Application	N•m
Drive Shaft to Front Axle Inner Shaft	25 - 35
Wheel Speed Sensor	85 - 105
Drive Shaft Cover Bolt	50 - 60
Locking Hub Washer Screw	2 - 4
Hub Flange Bolt	70 - 90
Hub Nut	15

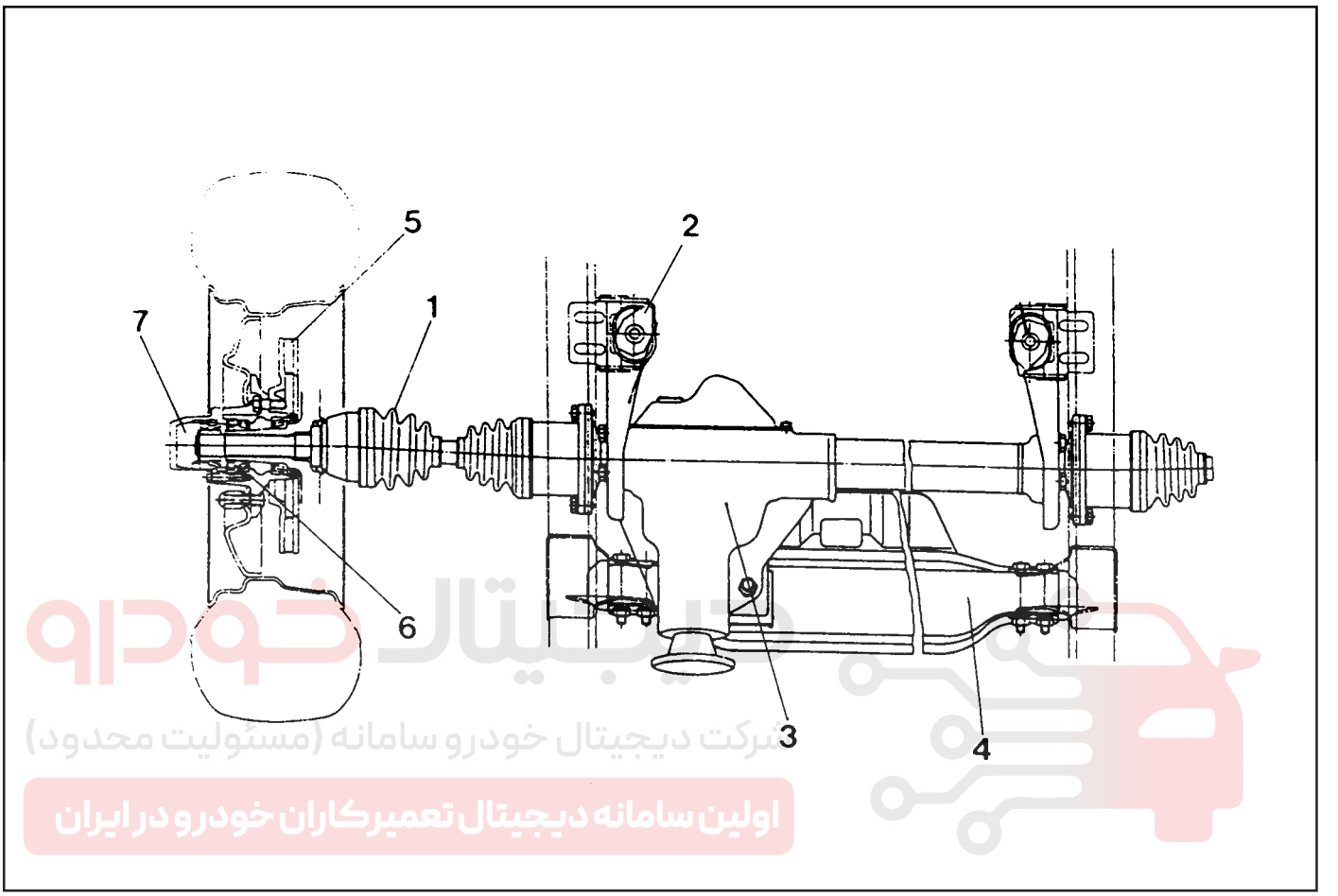
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COMPONENT LOCATOR

FRONT AXLE



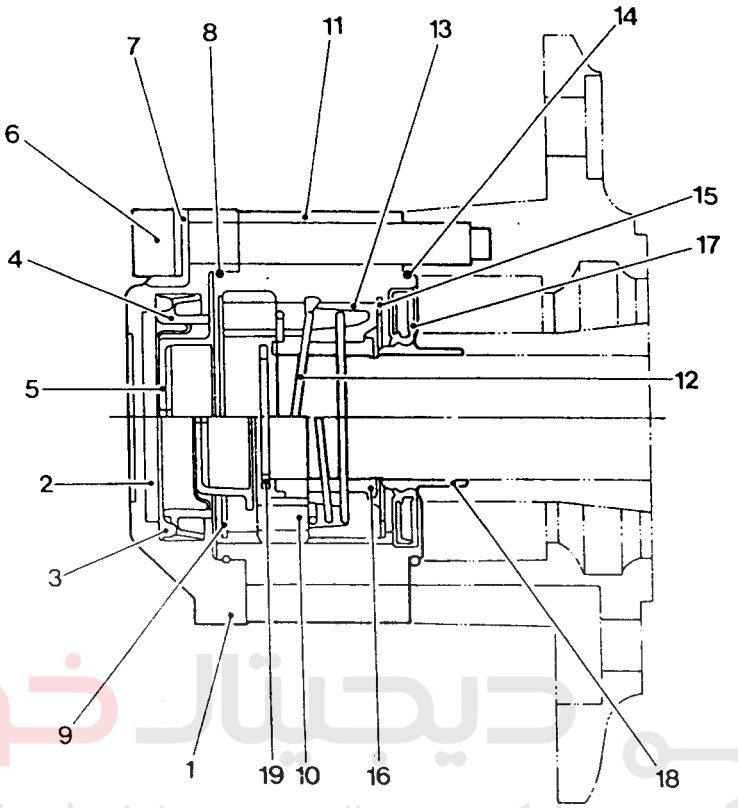
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1 Drive Shaft
2 Axle Housing Mounting Bolt
3 Axle Housing
4 Cross Member
5 Brake Disc
6 Hub-Wheel
7 Locking Hub

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AUTO-LOCKING HUB

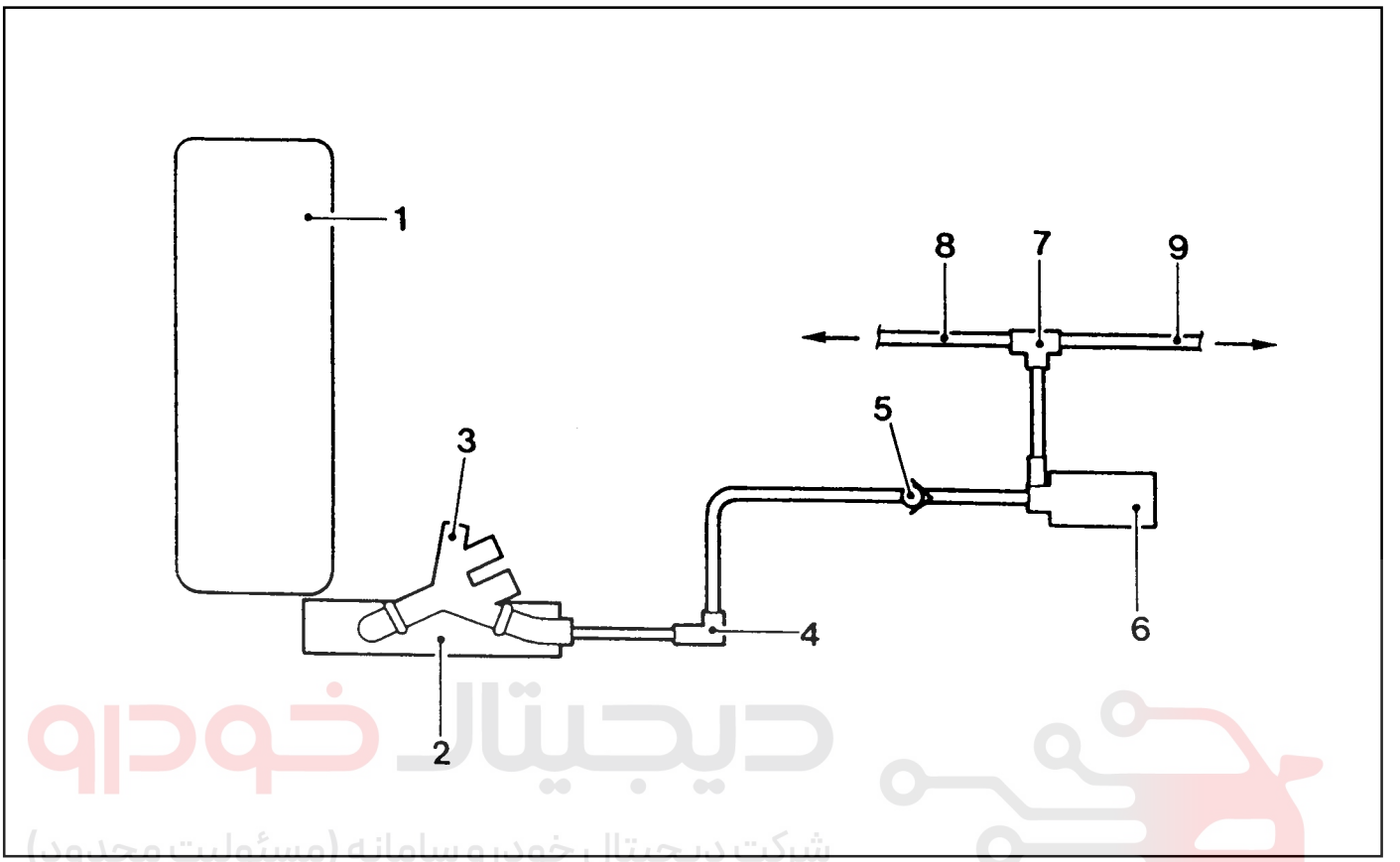


1 Cap
2 Filter
3 Vacuum Diaphragm
4 Diaphragm Retainer
5 Piston
6 Bolt (M10)
7 Lock Washer
8 O-ring
9 Retaining Ring
10 Clutch Ring
11 Body
12 Return Spring
13 Bearing
14 O-ring
15 Retaining Ring
16 Inner Drive Gear
17 Oil Seal
18 Oil Seal Race
19 Axle Retaining Ring

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VACUUM CIRCUIT



1 Engine
2 Vacuum Pump
3 3-way Connector
4 T-connector
5 Check Valve
6 Auto locking Hub Solenoid Valve
7 T-connector Hose
8 Hub Hose (left)
9 Hub Hose (right)

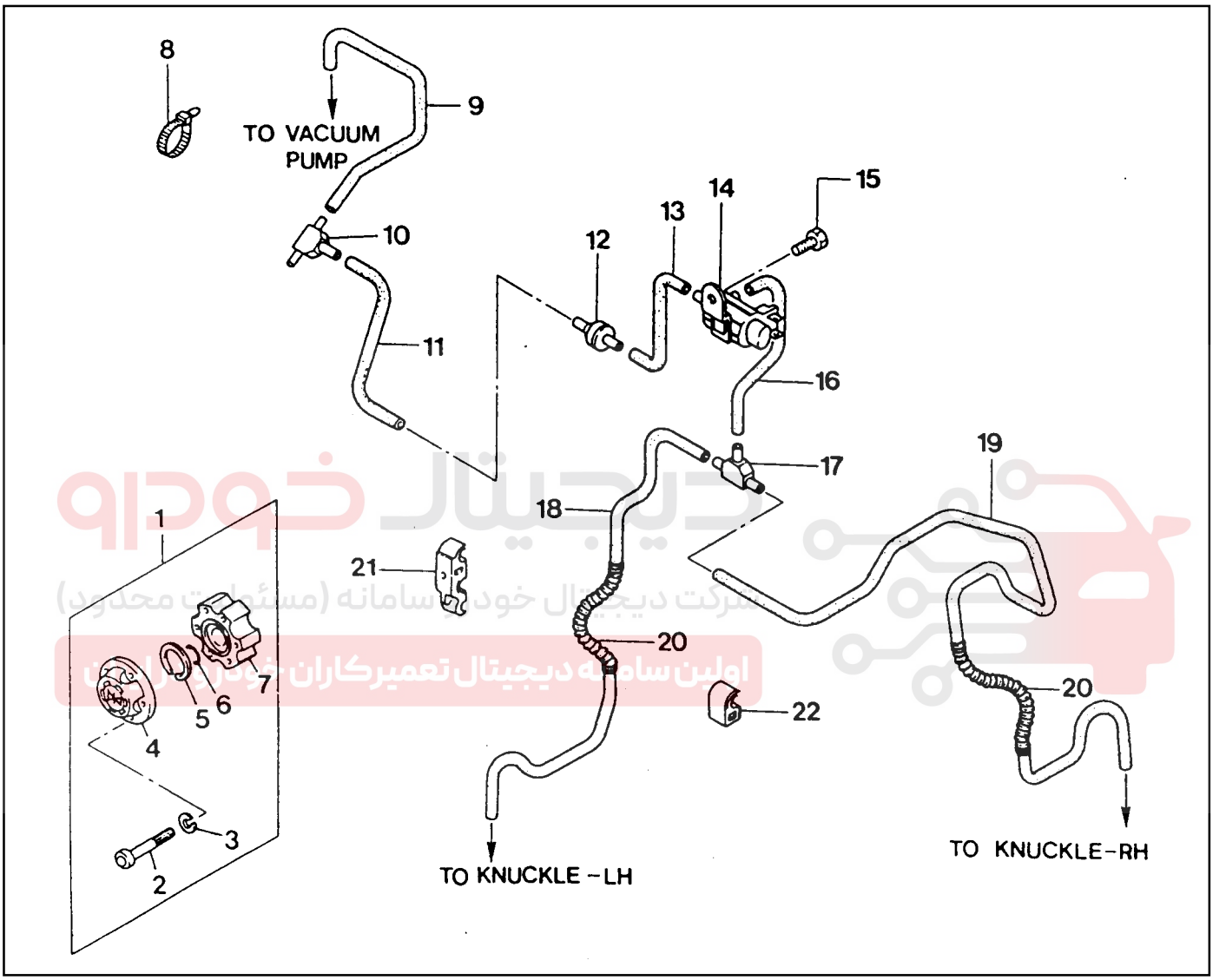
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MAINTENANCE AND REPAIR

ON-VEHICLE SERVICE

VACUUM LINE



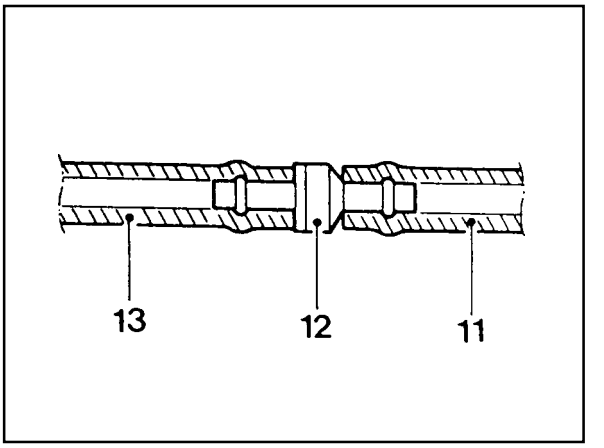
1 Vacuum Auto-locking Hub Assembly
2 Bolt ..... 50-60 Nm
3 Cam Washer
4 Auto-locking Hub Cap
5 Retainer Ring
6 Shim
7 Locking Hub
8 Band
9 Hose (L : 400)
10 T-connector
11 Hose (L : 250, white)
12 Check Valve
13 Hose (L :100, green)
14 Auto Locking Hub Solenoid Valve
15 Bolt
16 Hose (L :100, green)
17 T-connector
18 Hose (L : 720, yellow)
19 Hose (L :2, 360 , red)
20 Corrugated Tube
21 Clip
22 Clip

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Removal & Installation Procedure

1. Be careful not to change the valve when connecting the check valve and each hose.

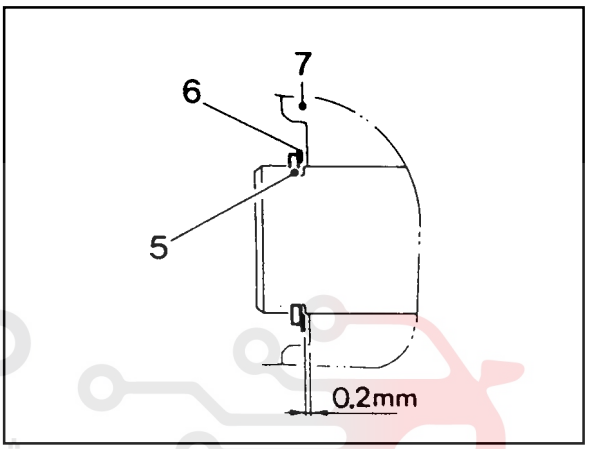


2. Adjust the clearance between the retainer ring (5) and locking hub (7) using the shim(6).

Normal	Max. 0.2 mm

Notice

Shim thickness : 0.1, 0.2, 0.3, 0.5, 1.0 mm



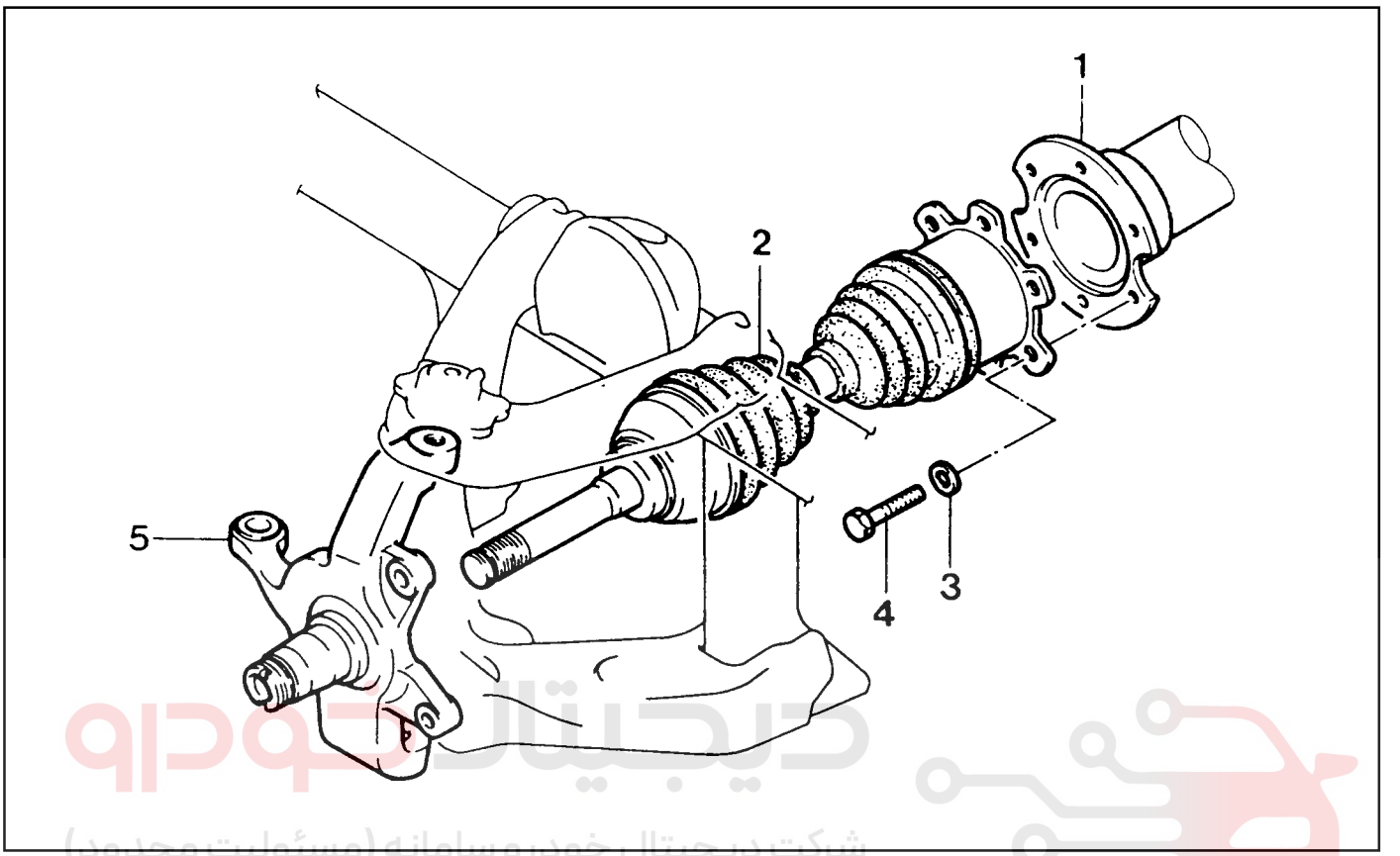
3. Tighten the auto locking hub cap bolt to the specified torque and order.

Tightening Torque	50 - 60 Nm

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STEERING KNUCKLE AND DRIVE SHAFT



1 Front Axle Inner Shaft
2 Front Axle Drive Shaft
3 Spring Washer
4 Bolt ..... 45-60 Nm
5 Steering Knuckle

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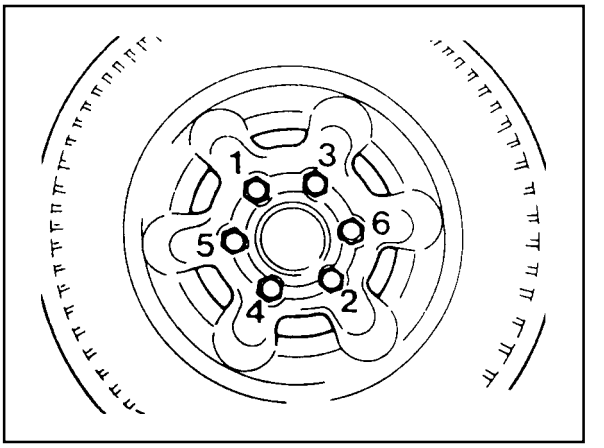
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Removal & Installation Procedure

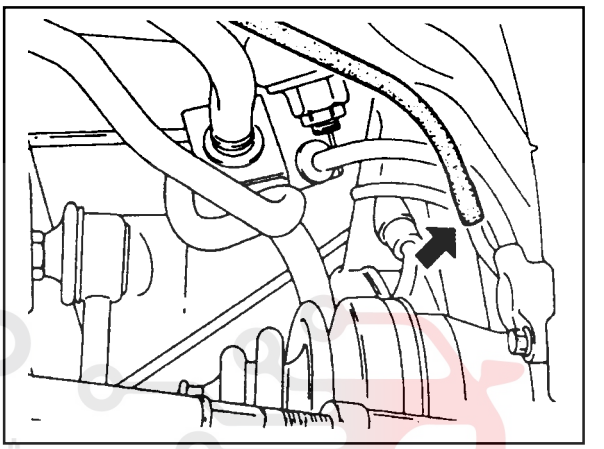
1. Remove the tire.

Installation Notice

Tightening Torque	Steel Wheel	80 - 120 Nm
	Aluminum Wheel	110 - 130 Nm



2. Remove the autolocking hub vacuum hose.

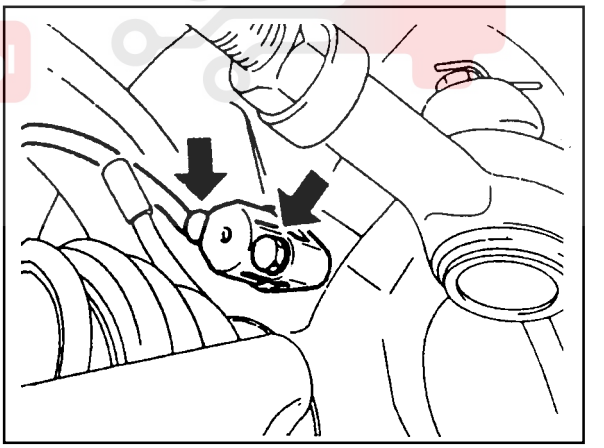


3. With ABS

Remove the wheel speed sensor from the steering knuckle.

Installation Notice

Tightening Torque	6 - 8 Nm



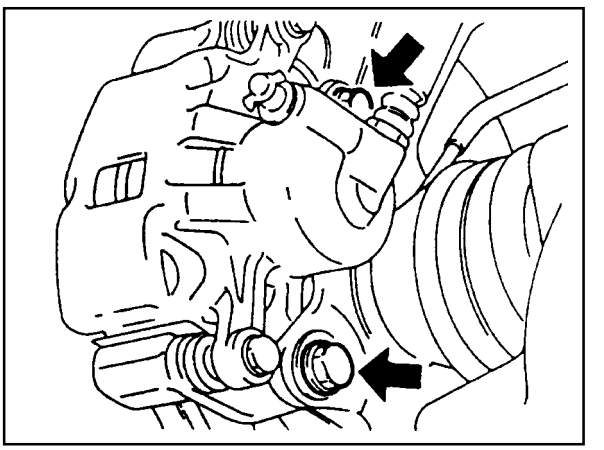
4. Remove the mounting bolts and pull off the caliper assembly.

Installation Notice

Tightening Torque	Hose Bolt	25 - 35 Nm
	Mounting Bolt	85 - 105 Nm

Notice

Be careful not to damage the brake hose.



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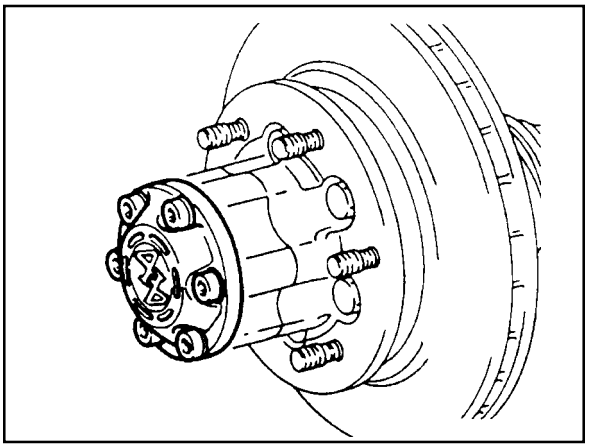
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5. With part time transfer case.

5-1. Remove the cover mounting bolts and pull off the cover.

Installation Notice

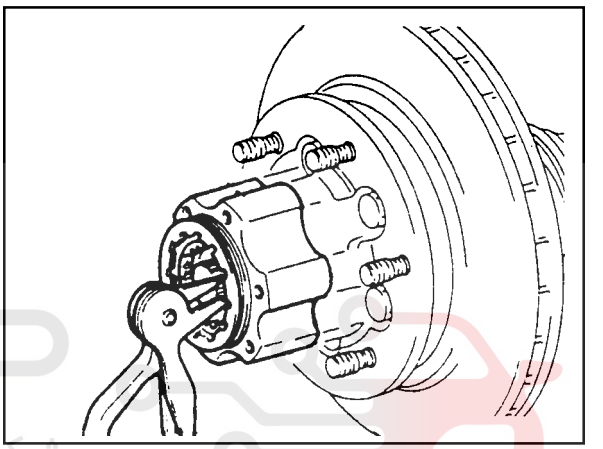
Tightening Torque	50 - 60 Nm



5-2. Remove the snap ring of the drive shaft and pull off the hub body.

Notice

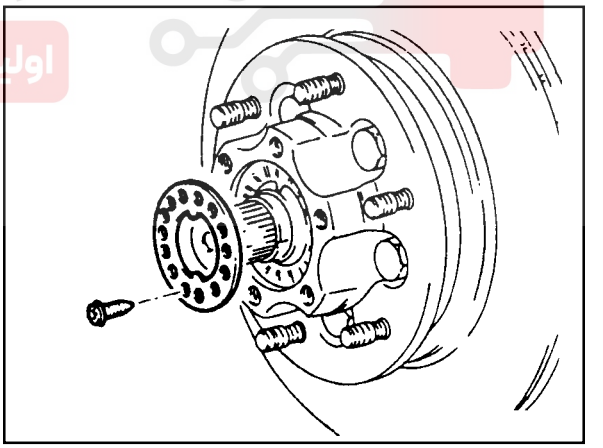
For assembly, adjust the clearance between the snap ring and hub not to exceed 0.2 mm (Shim thickness : 0.1, 0.2, 0.3, 0.5, 1.0 mm).



5-3. Remove the screws and pull off the locking hub washer.

Installation Notice

Tightening Torque	2 - 4 Nm



6. With full time transfer case

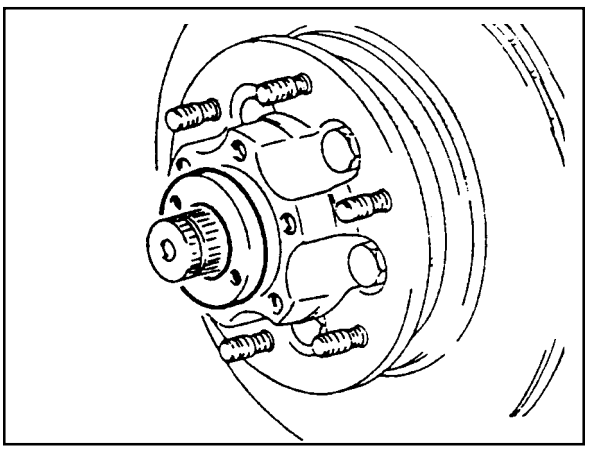
6-1. Detach the hub cap with screw driver and remove the snap ring on drive shaft.

Installation Notice

Tightening Torque	15 Nm

Notice

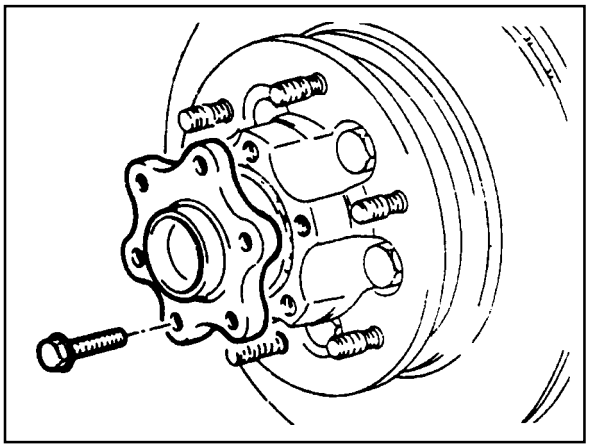
For assembly, adjust the clearance between the snap ring and hub not to exceed 0.2 mm (Shim thickness : 0.1, 0.2, 0.3, 0.5, 1.0 mm).



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6-2. Unscrew the bolts and remove hub flange.

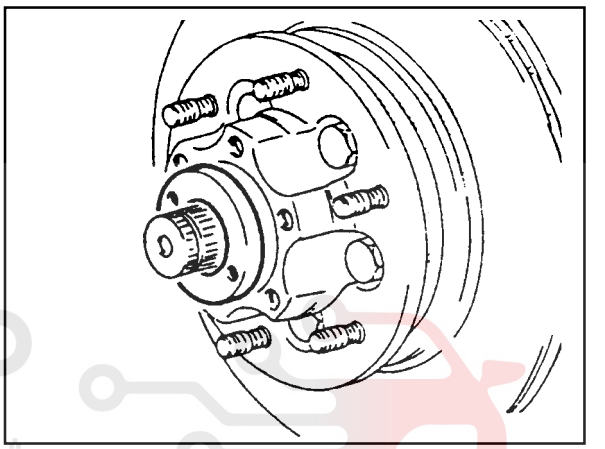


Installation Notice

Tightening Torque	70 - 90 Nm

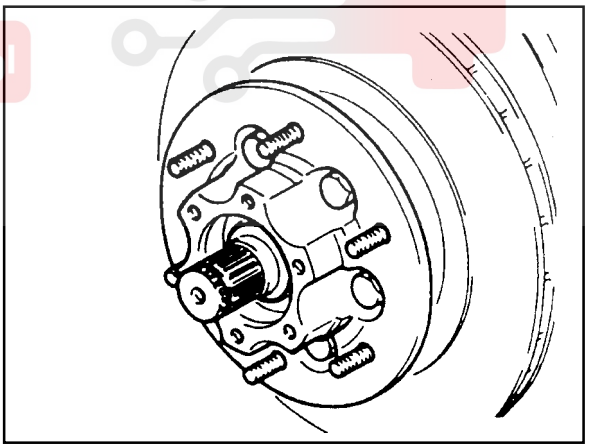
Before installation, apply loctite on the mating surface.

7. Remove the hub nut with special tool.

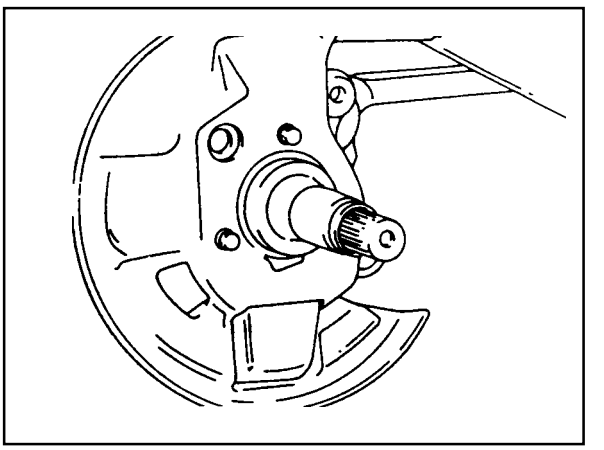


Tightening Torque	15 Nm

8. Remove the hub and disk assembly.



9. Remove the disk brake dust shield.



Installation Notice

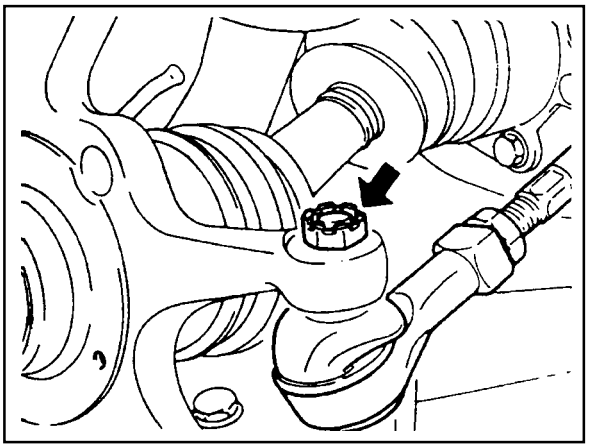
Tightening Torque	4 - 6 Nm

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10. Remove the cotter pin and slotted nut and then remove the steering knuckle arm and tie-rod.

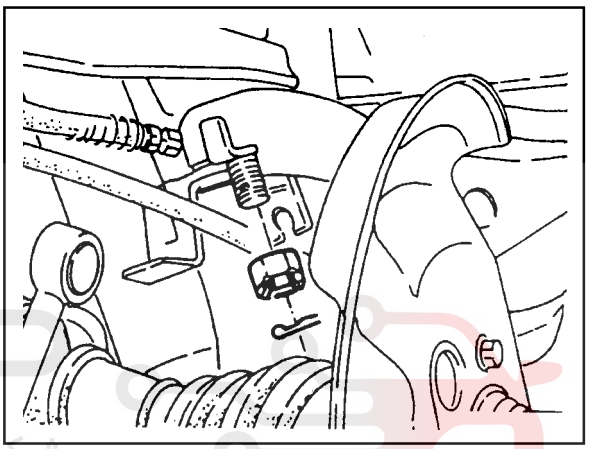


Installation Notice

Tightening Torque	35 - 45 Nm

Replace the cotter pin with new one.

11. Remove the cotter pin and nut from the steering knuckle arm and upper arm ball joint connection.

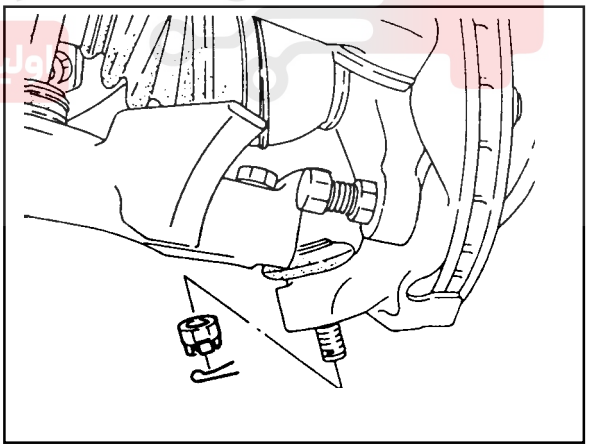


Installation Notice

Tightening Torque	80 - 150 Nm

Replace the cotter pin with new one.

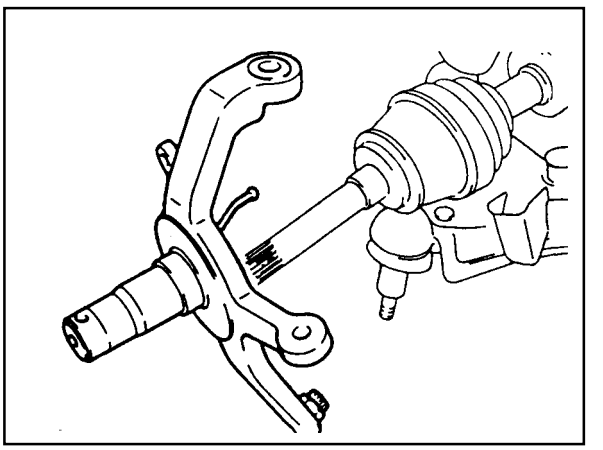
12. Remove the cotter pin and nut from the steering knuckle arm and lower and lower arm boll joint connection.



Installation Notice

Tightening Torque	120 - 180 Nm

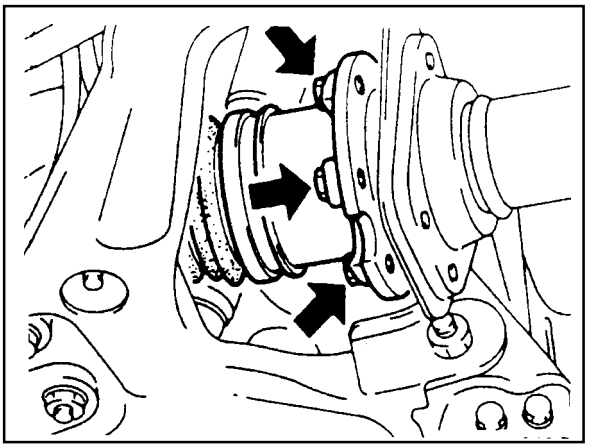
13. Carefully remove the knuckle arm.



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14. Remove the drive shaft mounting bolts and remove the drive shaft.



Installation Notice

Tightening Torque	45 - 60 Nm

Observe the tighening torque and sequence.

15. Installation should follow the removal precedure in the reverse order.

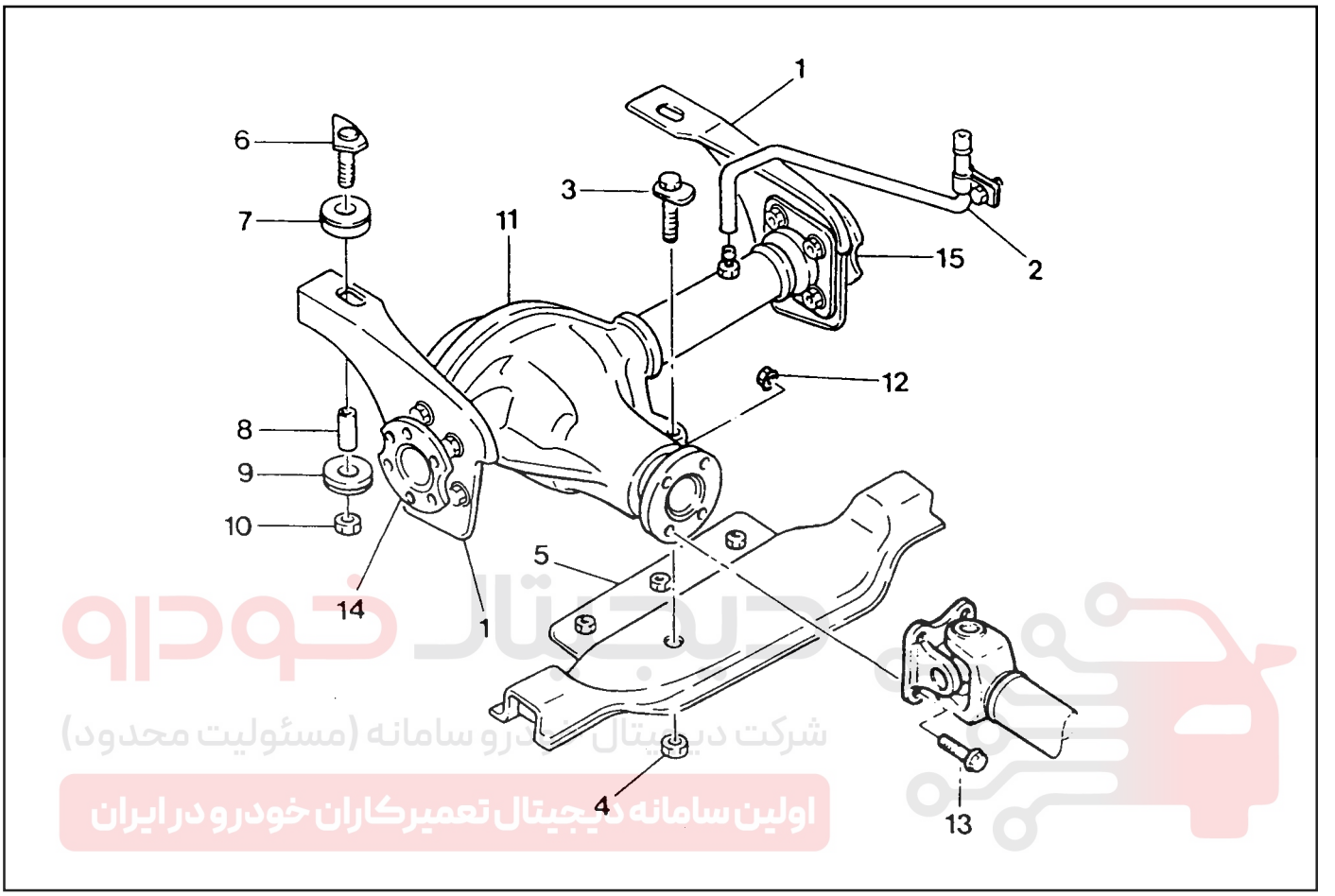
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FRONT AXLE

Preceding Work : Removal of the front axle drive shaft
Removla of the steering gear box

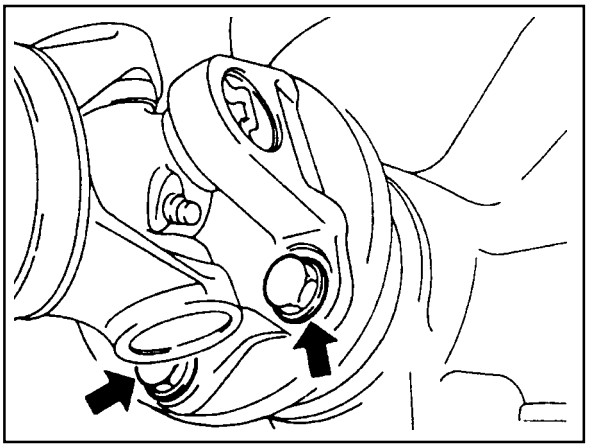


1 Axle Mounting Bracket
2 Breather Hose
3 Bolt (Rear)
4 Nut ..... 95-142 Nm
5 Cross Member
6 Bolt (Front)
7 Bushing
8 Spacer
9 Bushing
10 Nut ..... 95-142 Nm
11 Front Axle Assembly
12 Nut ..... 70-80 Nm
13 Bolt
14 Inner Axle Shaft (LH)
15 Inner Axle Shaft (RH)

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Removal & Installation Procedure



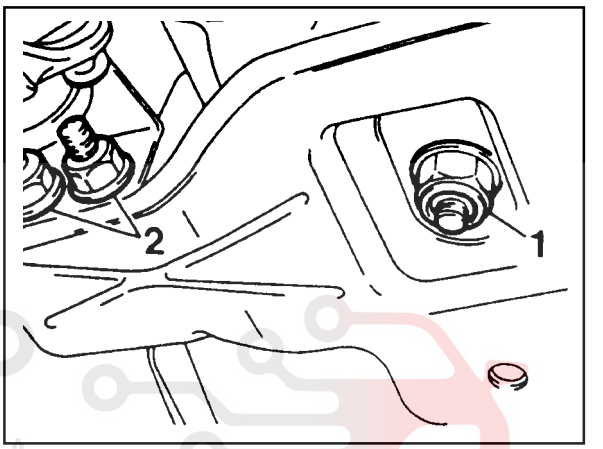
1. Remove the propeller shaft from the front axle input shaft.

   Notice

   Before removal, place the alignment marks.

   Installation Notice

Tightening Torque	70 - 80 Nm



2. Remove the breather hose.
3. Remove the axle housing mounting nuts (1) from the cross member.

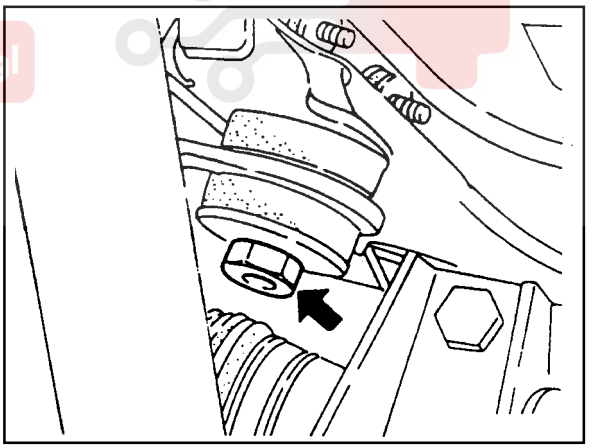
   Installation Notice

Tightening Torque	95 - 142 Nm

4. Remove the cross member mounting nuts (2) from the frame and remove the cross member.

   Installation Notice

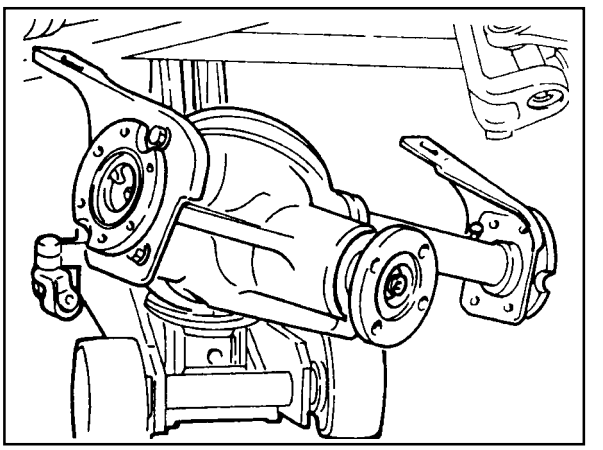
Tightening Torque	62 - 93 Nm



5. Support the axle housing on a suitable jack, Remove the axle housing mounting bracket nuts.

   Installation Notice

Tightening Torque	95 - 142 Nm



6. Lowering the jack carefully, remove the axle housing assembly.
7. Installation should follow the removal precedure in the reverse order.

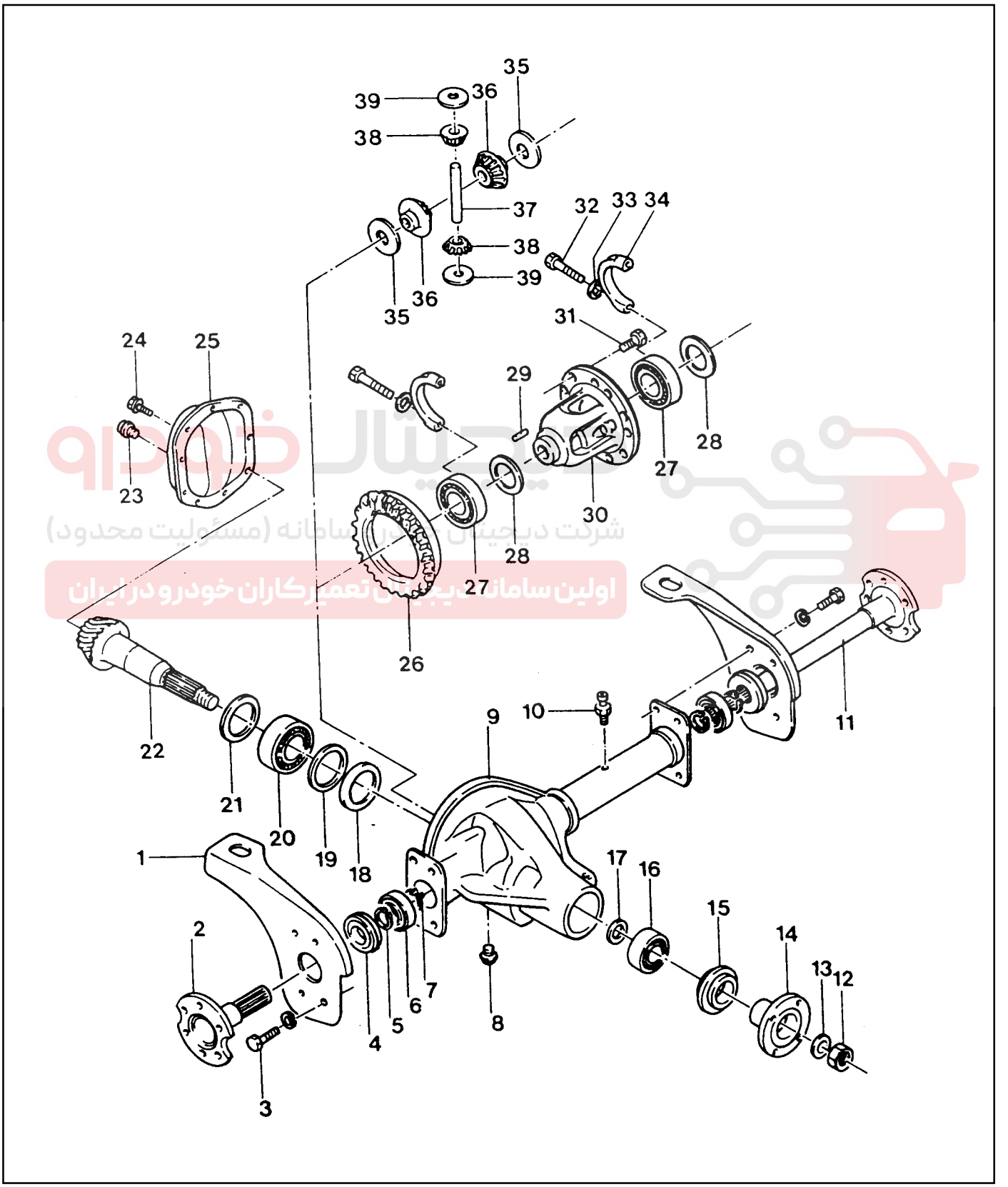
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UNIT REPAIR

AXLE HOUSING

Preceding Work : Removal of the axle housing



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1 Front Axle Housing Mounting Bracket
2 Inner Shaft (Left)
3 Bolt ..... 55-65 Nm
4 Oil Seal ..... Replace
Apply Grease to the Sealing Rib
5 Snap Ring
6 Bearing
7 Snap Ring
8 Oil Drain Plug ..... 28-41 Nm
9 Front Axle Housing
10 Breather Nipple
11 Inner Shaft (Right)
12 Pinion Lock Nut ..... 240-310 Nm
13 Washer
14 Companion Flange
15 Oil Seal ..... Replace
Apply Grease to the Sealing Rib
16 Bearing
17 Shim
18 Bearing Baffle
19 Shim
20 Bearing
21 Oil Slinger
22 Drive Pinion
23 Oil Filler Plug ..... 28-41 Nm
24 Bolt ..... 39-46 Nm
25 Axle Housing Cover ..... Apply Liquid Gasket
to the Contact Surface
26 Ring Gear
27 Bearing
28 Shim
29 Shaft Lock Pin
30 Differential Case
31 Bolt ..... 75-90 Nm
32 Bolt ..... 48-69 Nm
33 Washer
34 Bearing Cap
35 Thrust Washer
36 Side Gear
37 Differential Shaft
38 Differential Pinion
39 Thrust Washer

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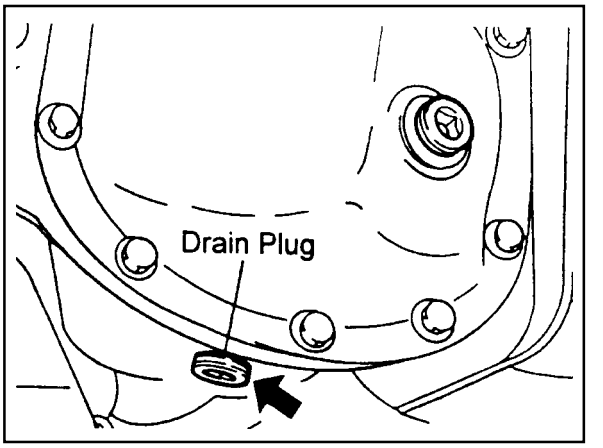
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Disassembly Procedure

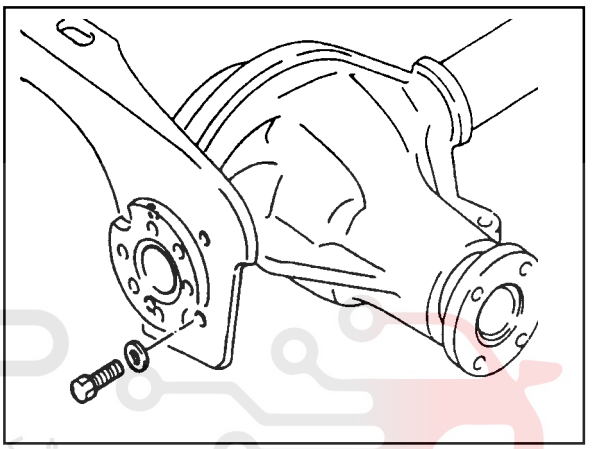
1. Remove the drain plug and drain the oil. Reinstall the drain plug.

   Installation Notice

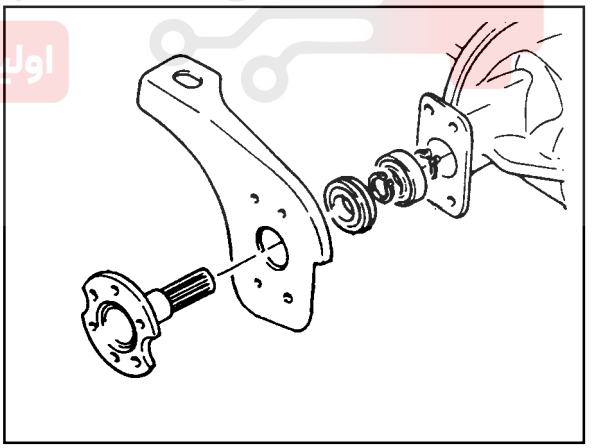
Tightening Torque	28 - 41 Nm



2. Unscrew the axle housing and housing mounting bracket bolts and remove the bracket and inner shaft assembly.



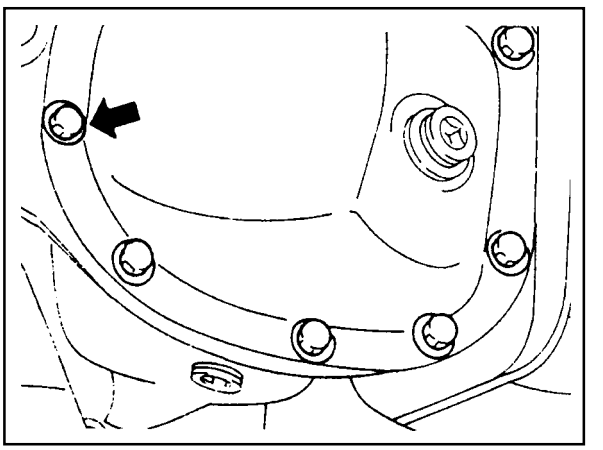
3. Remove the bearing fixing snap ring of the inner shaft and pull out the bearing. Separate the inner shaft and the mounting bracket.



4. Remove the axle housing cover.

   Notice

   Clean the cover and housing contact surfaces.



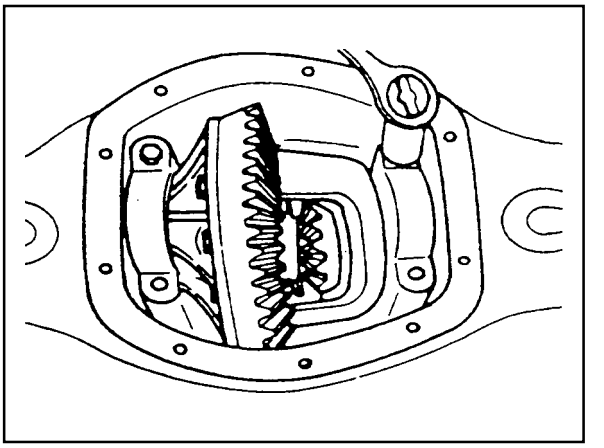
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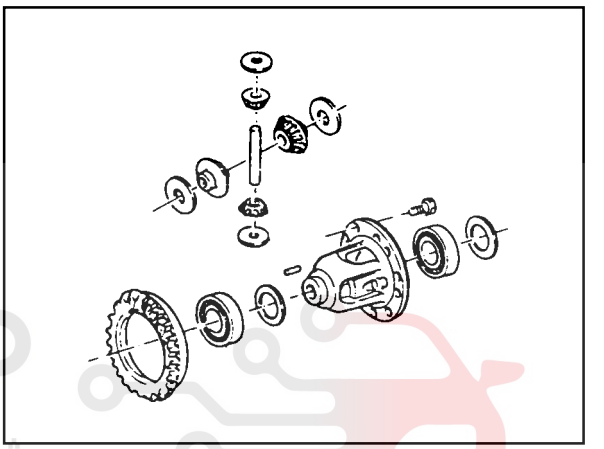
5. Unscrew the bearing cap bolts and remove the bearing caps. Pull out the differential carrier assembly.

   Notice

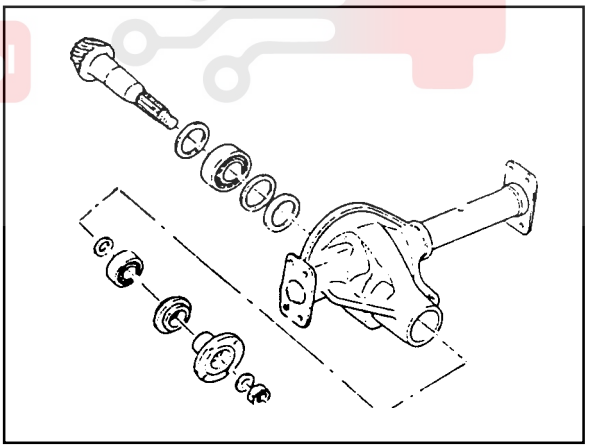
   Place alignment marks on the bearing cap not to change the caps before removal. When pulling out the differential carrier assembly, be careful not to damage the axle housing.



6. Disassemble the parts of the differential carrier assembly.

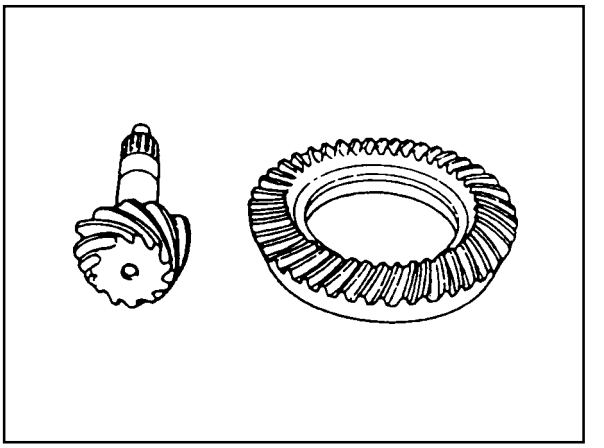


7. Remove the drive pinion lock nut. Disassemble the parts of the drive pinion.



Assembly Procedure

1. Clean the all parts and check the followings :
   - Check the ring gear and drive pinion for wear and damage. If damaged, replace it as a set.
   - Check the bearing for sticks, wear, noise and turning resistance.
   - Check the side gear, pinion, pinion shaft and thrust washer for wear and damage.
   - Check the differential carrier for crack and wear (bearing contact surface). Check the gear case for crack.

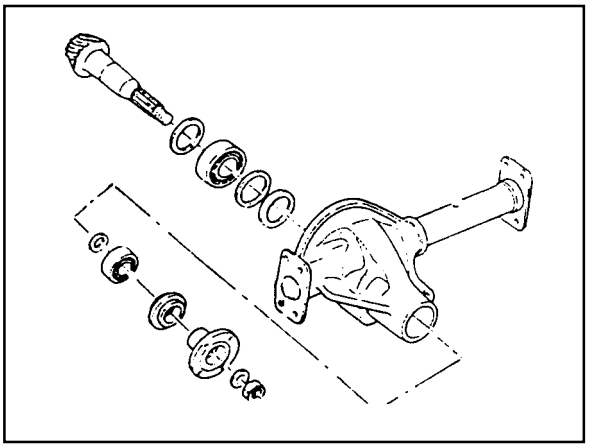


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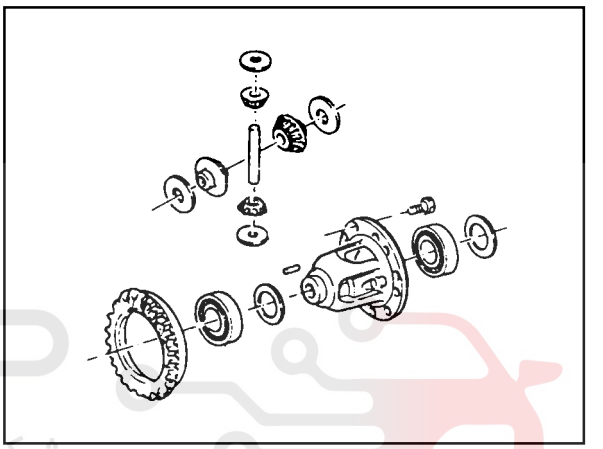
2. Assemble the parts of the drive pinion.

Tightening Torque of the Lock Nut	240 - 310 Nm



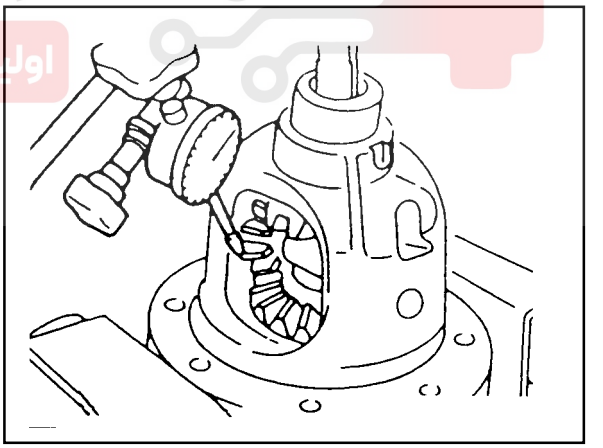
3. Assemble the parts of the differential carrier.

Tightening Torque of the Ring Gear Bolts	75 - 90 Nm



4. Measure backlash of the side gear and pinion.

Standard	0 - 0.05 mm

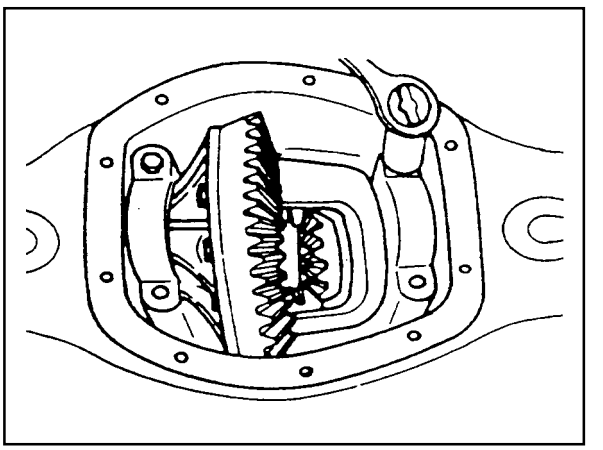


5. Install the differential carrier assembly into the axle housing.

Tightening Torque of the Bearing Cap Bolts	48 - 69 Nm

Notice

Be careful not to change the caps. Be sure to keep the original position of the caps.

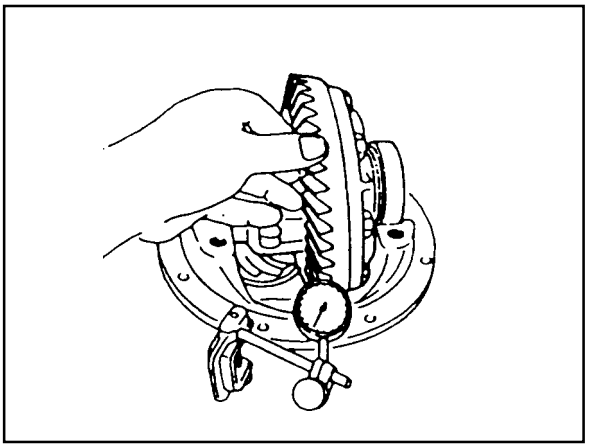


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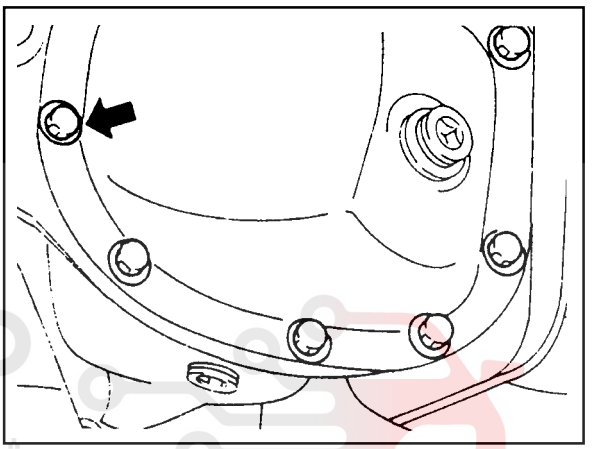
6. Measure backlash of the drive pinion and ring gear.

Specified Value	0.13 - 0.20 mm



7. Install the axle housing cover.

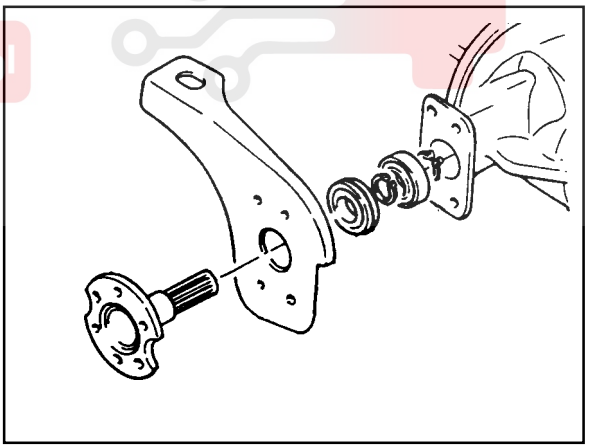
Tightening Torque	39 - 46 Nm



8. Assemble the parts of the front axle shaft and housing mounting bracket.

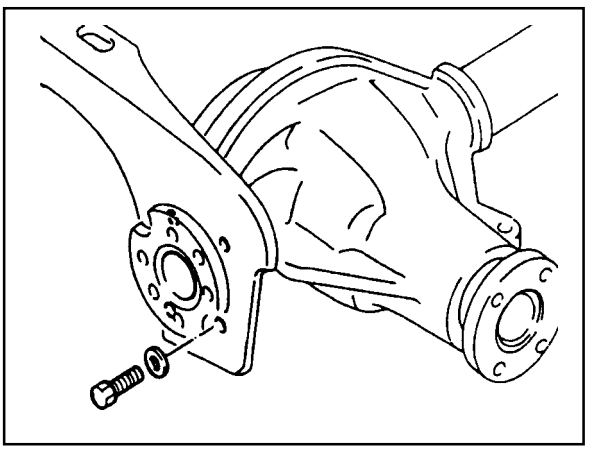
Notice

Apply grease to the oil seal rib.



9. Align the axle shaft and differential carrier spline and insert the axle shaft. Assemble the axle housing mounting bracket to the axle housing.

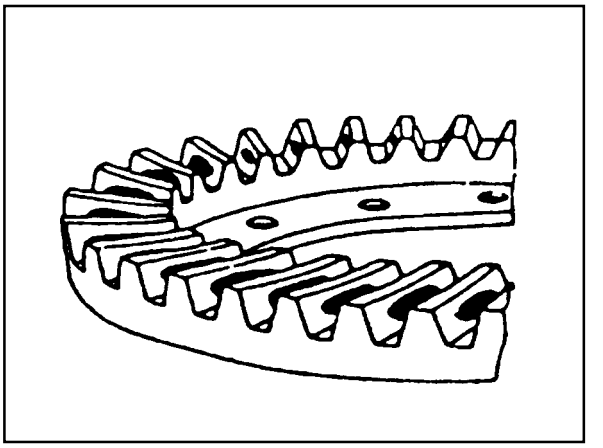
Tightening Torque	55 - 65 Nm



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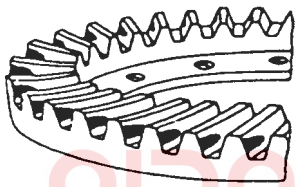
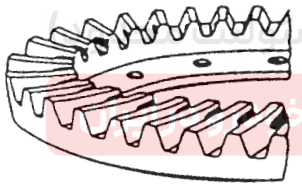
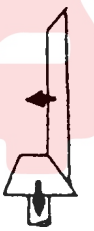
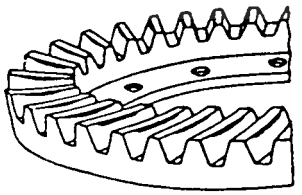
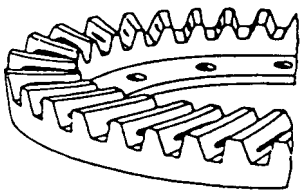
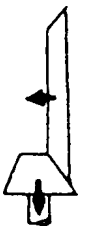
Inspection of Ring Gear Tooth Contact Pattern



Normal Contact

Apply gear-marking compound (prussian blue / red lead) on the ring gear teeth. Rotate the ring gear and check the tooth contact pattern.

Abnormal Contact

Tooth Contact pattern	Possible Cause	Remedy
1. Heel Contact 	Excessive backlash (little) • Noise can be occurred	Adjust backlash(Decrease backlash) • Select proper shim(s) to move the drive pinion toward the ring gear (toward toe) 
2. Toe Contact 	Insufficient backlash (little) • Tooth can be damaged or broken under heavy load	Adjust backlash(Increase backlash) • Select proper shim(s) to move the drive pinion against the ring gear (toward heel) 
3. Face Contact 	Excessive backlash (much) • Drive pinion shaft is apart from the ring gear • Noise can be occurred	Adjust backlash(Increase pinion shim) • Move the drive pinion toward the ring gear (toward center of ring gear) 
4. Flank Contact 	Insufficient backlash (much) • Gear contacts on the low flank • Gear can be damaged or worn • Noise can be occurred	Adjust backlash(Decrease pinion shim) • Move the ring gear toward the drive pinion (toward ring gear center line) 

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SECTION 3C

PROPELLER SHAFT

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On-Vehicle Service 3C-3
Propeller Shaft 3C-3

SPECIFICATIONS

GENERAL SPECIFICATIONS

Application				Description
Joint Type	Diesel		Front	Single or Single & Double Cardan
			Rear	Single Cardan
	Gasoline		Front	Constant Velocity(CV) & Double Carden
			Rear	Single Cardan
Number of Spider Front	Diesel		Front (Full-Time)	3
			Front (Part-Time)	2
			Rear	2
	Gasoline		Front	CV Joint : 1, Double Spiders : 1
			Rear	2
Shaft Dimensions (L´O.D´I.D) When Compressed Fully	Diesel	Front	-	576´ƒ59.5´ƒ63.5
		Rear	-	973´ƒ63.5´ƒ659.5
	Gasoline (M161)	Front	-	583.5´ƒ44.7´ƒ50.8
		Rear	M/T & MB A/T	973´ƒ63.5´ƒ459.5
			BTRA A/T (2p-Type)	380.8´ƒ63.5´ƒ59.5 591.5´ƒ63.5´ƒ59.5
	Gasoline (M162)	Front	TONGIL	601.6´ƒ50.8´ƒ44.7
			KSC	579.6´ƒ50.8´ƒ44.7
		Rear	-	776.8´ƒ63.5´ƒ59.5

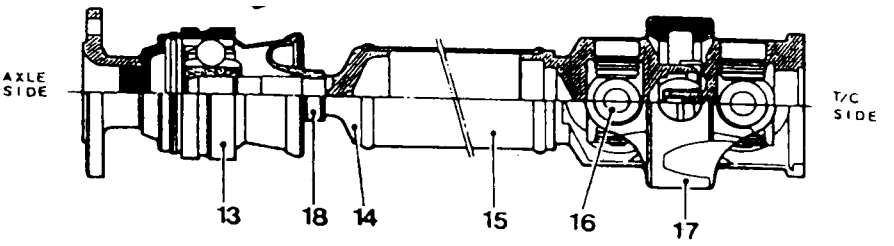
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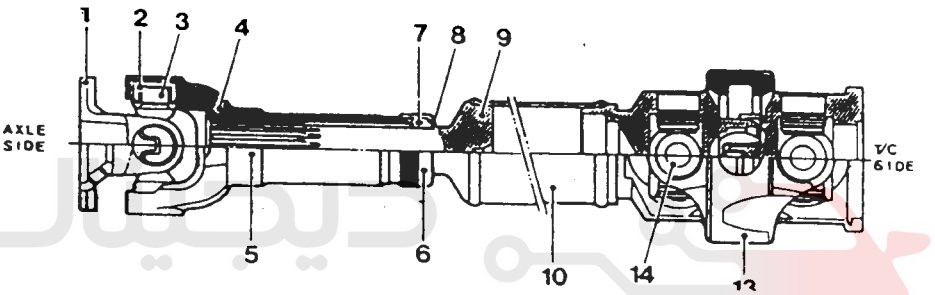
COMPONENT LOCATOR

M/T & A/T (PART-TIME T/C)

1. Gasolin : E32
   - Fromt Propeller Shaft

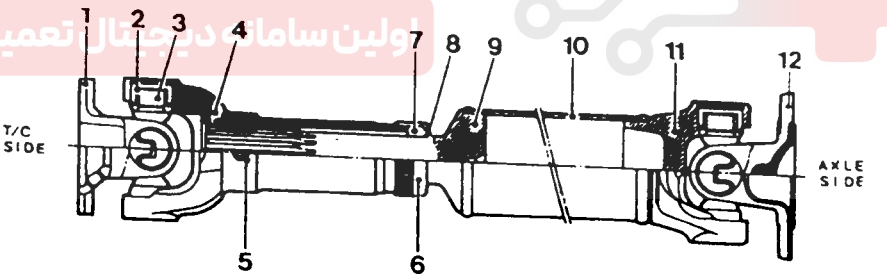


2. Diesel/Gasolin : E23,20
   - Fromt Propeller Shaft
   : A/T + Full - Time T/C



3. Gasolin
   - Rear Propeller Shaft

   Diesel
   - Fromt & Rear Propeller Shaft
   : M/T & A/T + FPart - Time T/C



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1	Flange Yoke	11	Tube Yoke
2	Cross and Bearing Assembly (with Snap Ring)	12	Flange Yoke
3	Cross and Bearing Assembly (with Snap Ring)	13	Diesel : Cross and Bearing Assembly (with Snap Ring) Gasoline : CV Joint (DOJ)
4	Slip Yoke Assembly	14	Diesel : Double Cardan Gasoline : Stub Shaft
5	Grease Nipple	15	Tube
6	Dust Cap	16	Cross and Bearing Assembly (with Snap Ring)
7	Oil Seal	17	Center Couping Yoke
8	Split Washer	18	Boots Band
9	Slip Tube Shaft		
10	Tube		

Notice

Only the length of shaft is different and the components of front/rear shaft are the same.

(The deadener is inserted to the inside of tube of rear shaft, both ends)

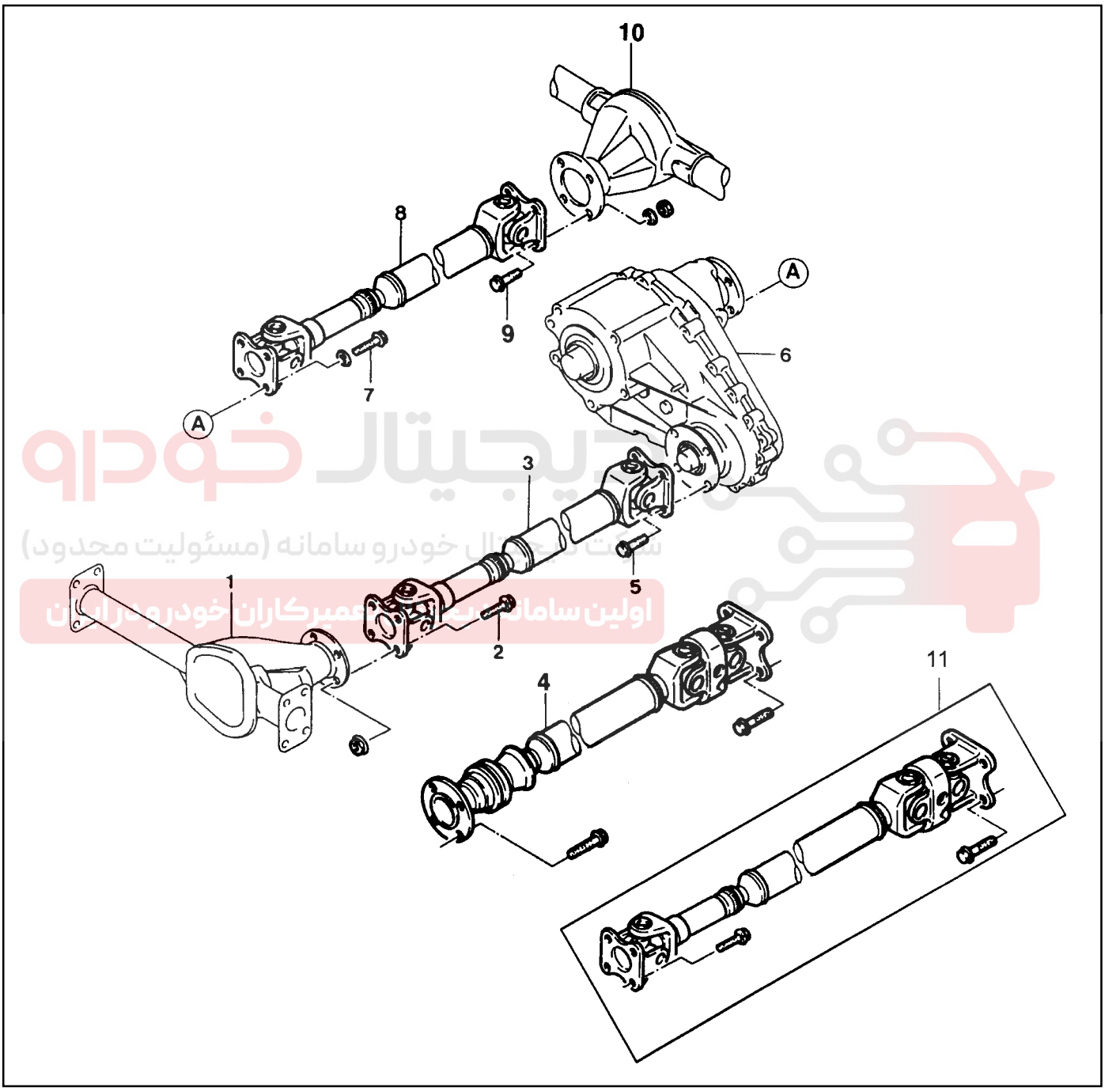
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MAINTENANCE AND REPAIR

ON-VEHICLE SERVICE

PROPELLER SHAFT



1 Front Axle
2 Bolt ..... 70-80 Nm
3 Front Propeller Shaft (661LA/662LA)
4 Front Propeller Shaft (E32)
5 Bolt ..... 81-89 Nm
6 Transfer Case
7 Bolt ..... 81-89 Nm
8 Rear Propeller Shaft
9 Bolt ..... 70-80 Nm
10 Rear Axle
11 Front Propeller Shaft (E20/E23)

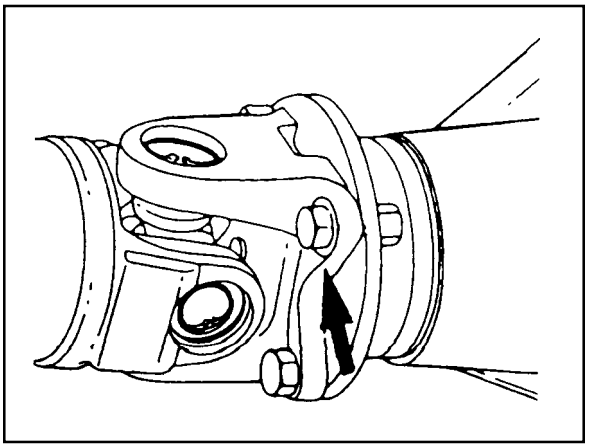
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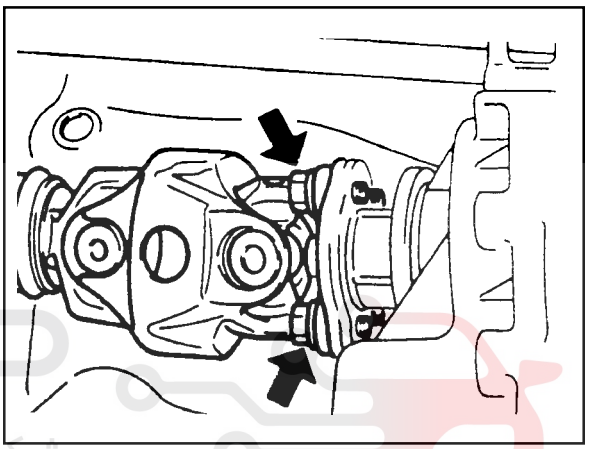
Removal Procedure

1. Place alignment marks and remove the propeller shaft.

Diesel

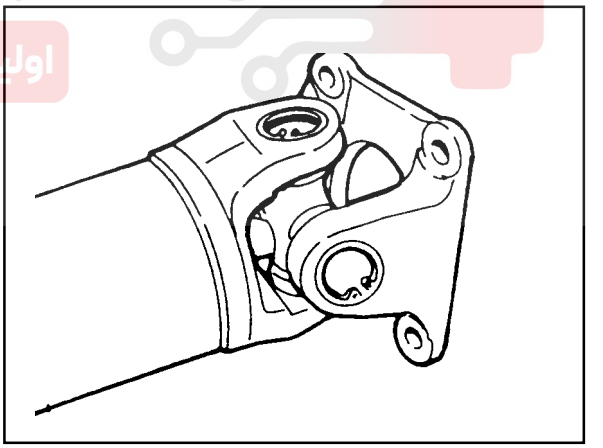


Gasoline

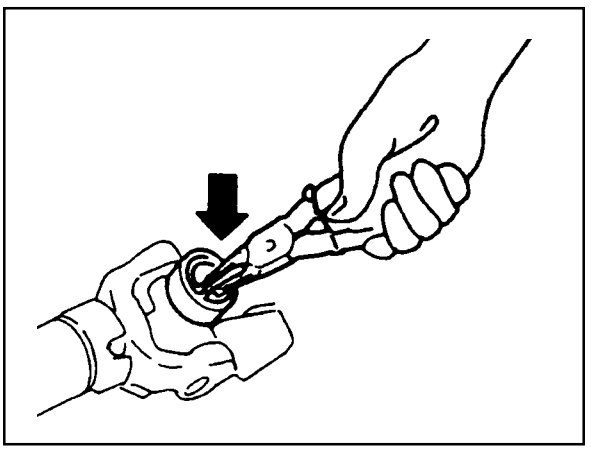


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2. Place alignment marks before removing the spider.



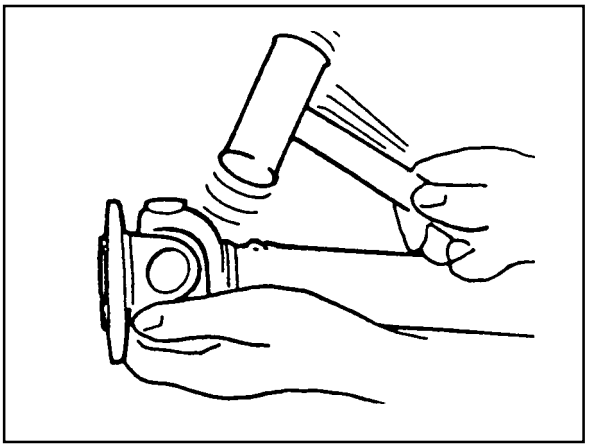
3. Using a snap ring pliers, remove the snap ring.



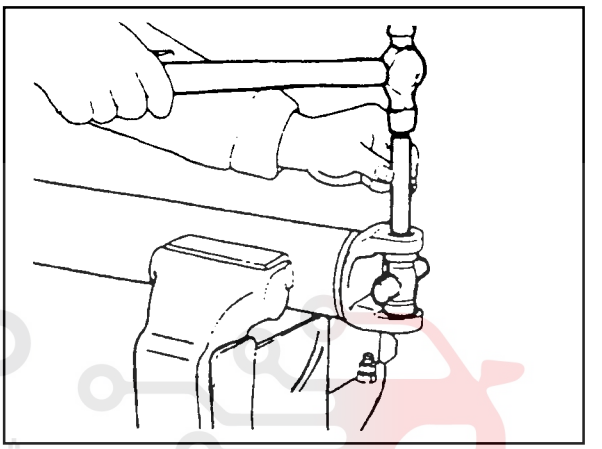
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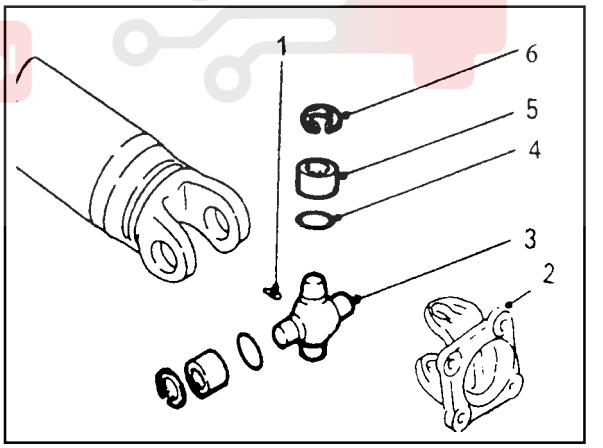
4. Slightly tapping the yoke shoulder using a brass hammer, remove the bearing. Remove the remaining bearings in the same way.



5. If difficult to remove, clamp the yoke side in a vise and tap off the needle bearing, using a proper tool.



6. Disassemble the universal joint parts.
   - As axles move up and down, universal joints allow drive angles to change without binding propeller shaft.



1	Grease Nipple	4	Seal
2	Flange Yoke	5	Needle Roller Bearing
3	Spider	6	Snap Ring

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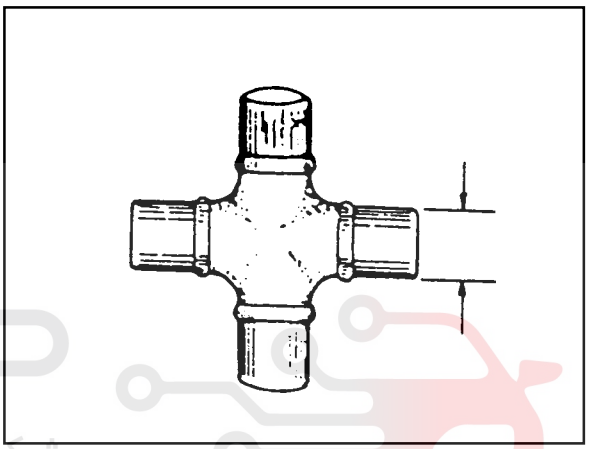
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Inspection Procedure

1. Visual check.
   Check the disassembled parts for wear or crack.
   Replace them if necessary.

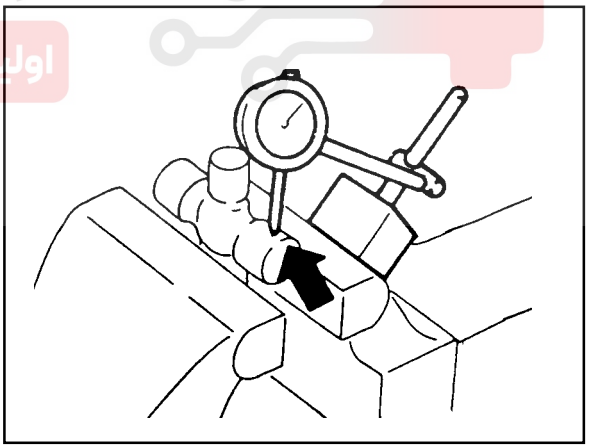
2. Spider outer diameter (mm).

Standard	Limit
16.668	16.647



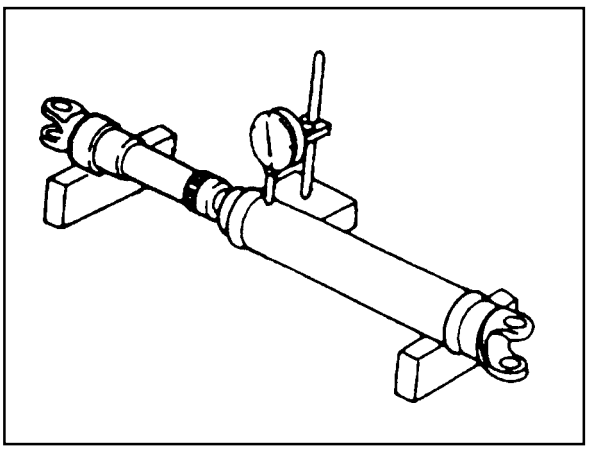
3. Clearance between the spider and bearing.

Standard	Limit
0.03 - 0.098 mm	0.25 mm



4. Propeller shaft runout
   - Using a dial indicator, measure propeller shaft runout by turning the shaft. If runout exceeds limit, replace the propeller shaft or correct it using a press.

Limit	0.4 mm

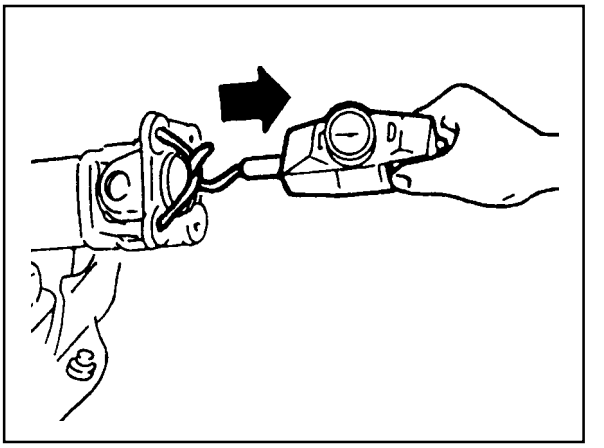


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5. Universal joint starting torque.

Starting Torque	3 - 8 kg•cm

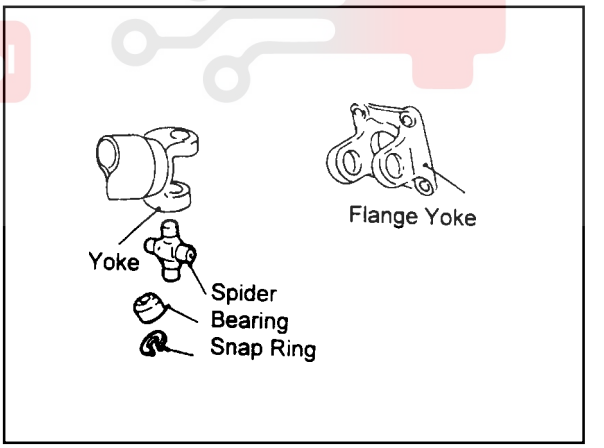


6. Possible cause of vibration.
   - Drift away of balance weights.
   - Excessive runout of the propeller shaft.
   - Using normal bolts.
   - Excessive wear of the universal joint.
   - Sticks in sleeve joint.
   - Drive angle changes in universal joints or cross causes vibration and can be detected around 60~100 km/h.

Installation Procedure

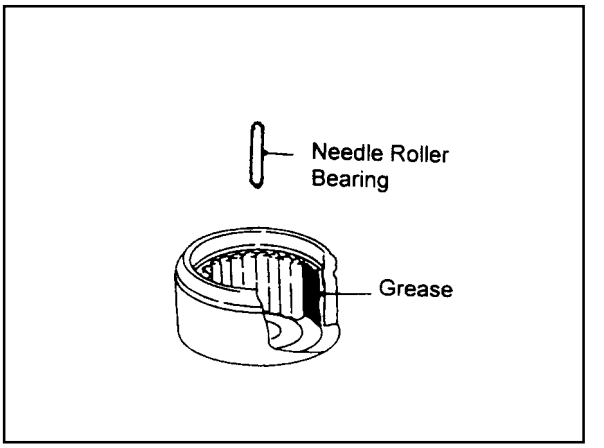
Clean the disassembled parts and replace them if damaged.

1. Align the alignment marks of the yoke and assemble the spider, bearing and snap ring.



2. Apply grease to the inner of the bearing cap of the needle roller bearing and assemble the needle roller.

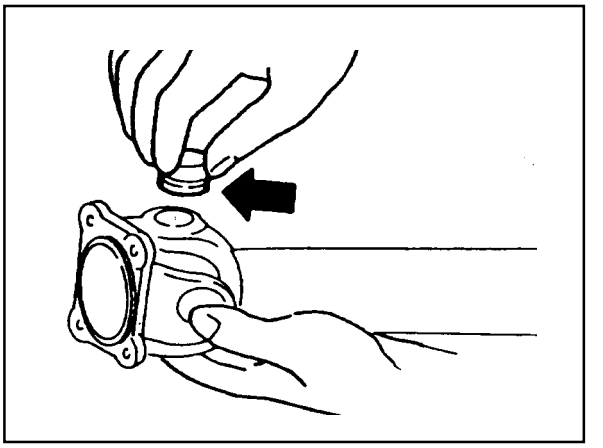
Grease	EP #2



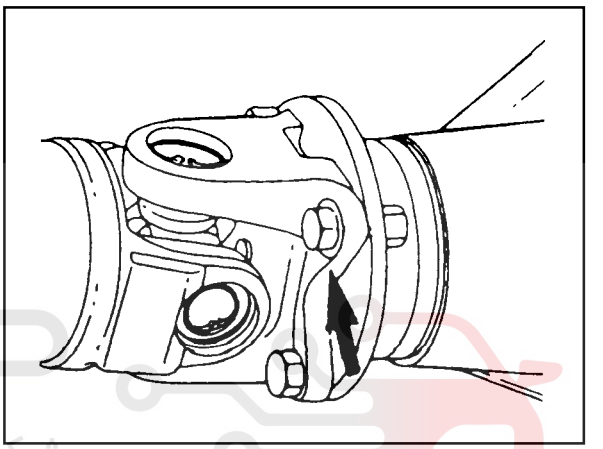
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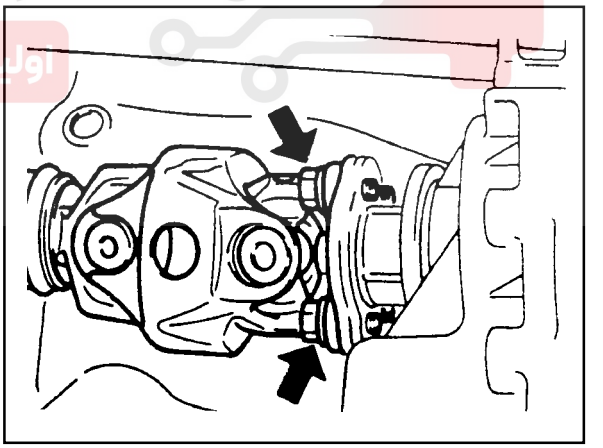
3. Install the bearing cap to the yoke and insert the spider. Install the opposite side cap by tapping with a plastic hammer. Adjust clearance of the spider pin to be within 0.1 mm and install the snap ring.



4. Align the alignment marks and install the front and rear propeller shaft. Tighten the nuts to the specified torque.



Diesel



Gasoline

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SECTION 3D

REAR DRIVE AXLE

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SPECIFICATIONS

GENERAL SPECIFICATIONS

Application			Description
Axle Shaft Type			Semi - floating
Axle Housing Type			Salibury (Build-up)
Differential		Type	Conventional Type
		Gear	Hypoid Gear
Reduction Ratio	661NA	M/T	4.55
	662NA	M/T	4.55
		A/T (MB)	3.73
	661LA	M/T	4.55
		A/T (BTRA)	5.38
	662LA	M/T	4.27
		A/T (BTRA)	4.89

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GENERAL SPECIFICATIONS(CONT'D)

Application			Description
Reduction Ratio	E20	M/T	4.55
		A/T (MB)	4.55
	E23	M/T	4.55
		A/T (MB)	4.27
		A/T (BTRA)	5.86
	E32	M/T	3.73
		A/T (MB)	3.73
		A/T (BTRA)	4.89
Oil Capacity			1.9 L
Oil Specification			SEA 80W/90, API GL - 5

FASTENER TIGHTENING SPECIFICATIONS

Application	N·m
Inner Bracket Mounting Nut	50 - 65
Propeller Shaft to Rear Axle Input Shaft	70 - 80
Lower Arm Mounting Nut	150 - 180
Lower Shock Absorber to Axle Housing	50 - 65
Upper Arm Mounting Nut	150 - 180
Stabilizer Bar Mounting Bolt	30 - 45
Lateral Rod Mounting Nut	150 - 180
Drive Pinion Lock Nut	240 - 310
Oil Drain Plug	28 - 42
Ring Gear Mounting Bolt	75 - 90
Oil Filler Plug	28 - 42

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DIAGNOSIS

NOISE (DURING STRAIGHT DRIVING)

Checks	Action
Lack of Oil	Replenish
Low Viscosity of Oil	Replace
Insufficient Oil	Replace
Excessive Backlash of Ring Gear	Adjust
Worn or Damaged Tooth of Ring and Pinion Gear	Replace
Worn or Damaged Drive Pinion Bearing	Replace
Bent Axle Housing	Replace
Bent Differential Case	Replace
Worn Pinion Shaft	Replace
Incorrect Drive Pinion Preload	Adjust
Incorrect Contact of Ring Gear and Pinion	Retightening

OIL LEAKAGE

Checks	Action
Excessive Oil	Adjust
Faulty Seal of Carrier Contact Surface	Repair
Axle Housing Crack	Replace
Worn or Damaged Oil Seal	Replace

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NOISE (DURING TURNING)

Checks	Action
Worn or Damaged Tooth of Pinion or Side Gear	Replace
Worn Pinion Shaft	Replace
Excessive Backlash of Pinion Gear and Side Gear	Replace
Excessive End-play of Rear Axle Shaft	Adjust
Incorrect Contact of Side Gear and Differential Case	Replace
Axle Housing Crack	Replace
Bent or Poor Installation of Drive Pinion Oil Seal	Replace
Damaged or Torn Drive Pinion Oil Seal	Replace
Loosened Bearing Collar	Replace
Worn or Damaged Universal Joint	Replace
Worn or Damaged Axle Shaft Bearing	Replace

HEATING

Checks	Action
Lack of Oil	Replenish
Insufficient Backlash of Gears	Adjust
Excessive Preload of Bearing	Adjust

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VIBRATION

Checks	Action
Faulty Connection of Sliding Joint	Adjust
Bent Propeller Shaft	Replace
Symmetry of Universal Joint Snap Ring	Adjust
Loosened Yoke Bolts	Tighten

NOISE

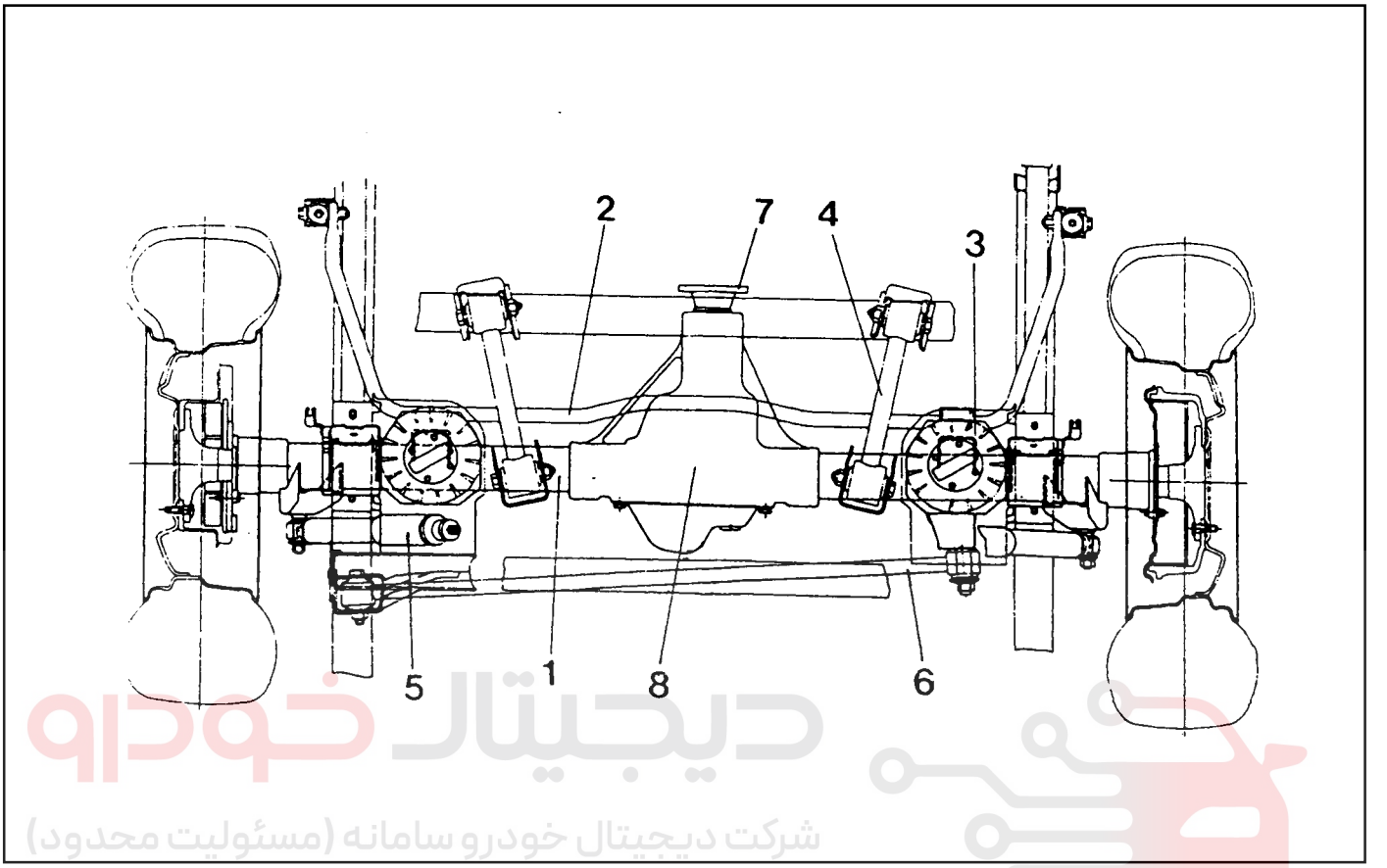
Checks	Action
Worn or Damaged Universal Joint Bearing	Replace
Fallen Off Universal Joint Snap Ring	Adjust or Replace
Loosened Yoke Connection	Tighten
Worn Sliding Joint Spline	Replace
Insufficient Grease	Apply as Necessary

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COMPONENT LOCATOR



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1 Spring Seat
2 Coil Spring
3 Lateral Rod
4 Shock Absorber
5 Upper Arm
6 Lower Arm
7 Connecting Link
8 Stabilizer Bar

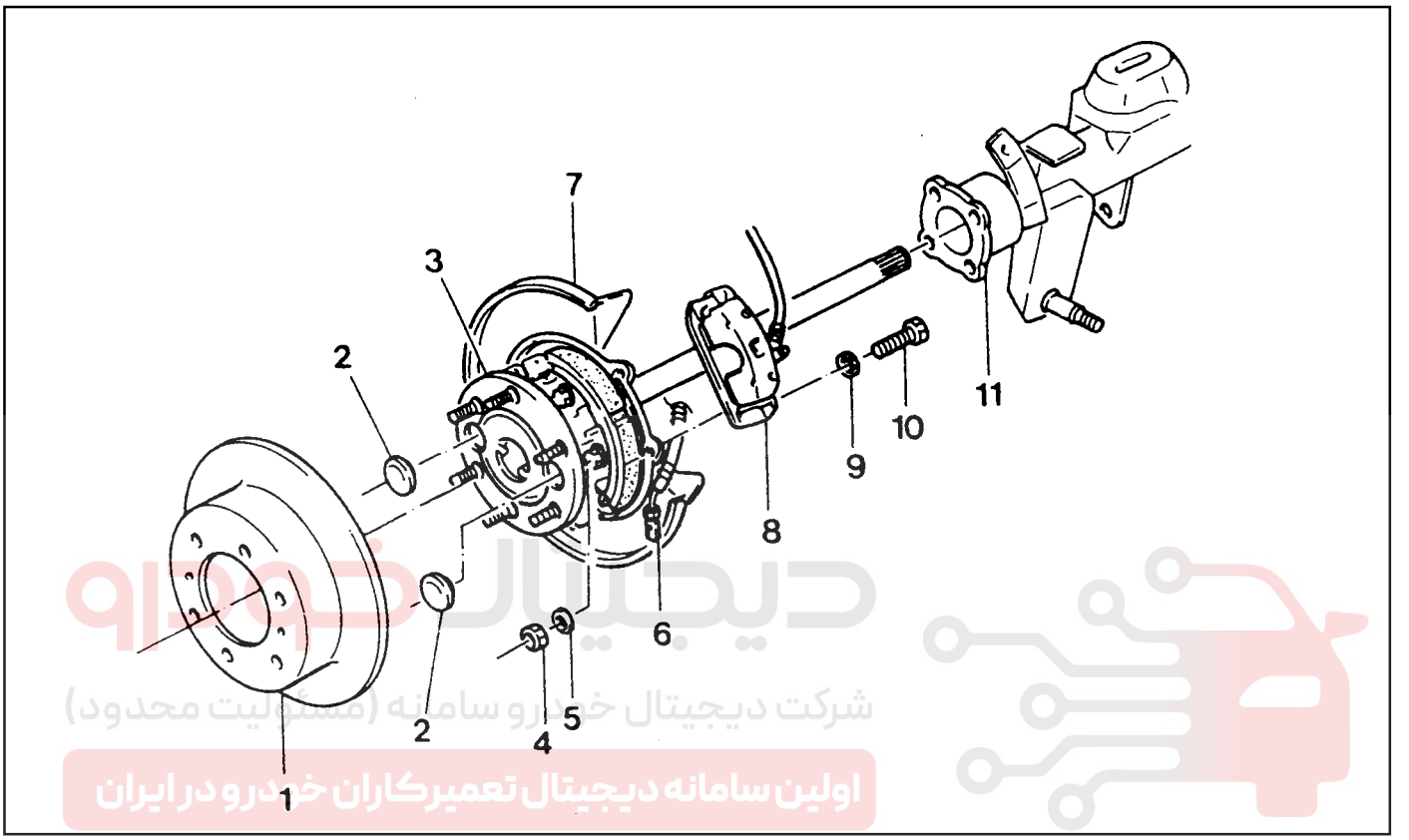
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MAINTENANCE AND REPAIR

ON-VEHICLE SERVICE

AXLE SHAFT



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1 Brake Disc
2 Dust Plug
3 Rear Axle Shaft
4 Nut ..... 50-65 Nm
5 Washer
6 Parking Brake Cable
7 Parking Brake Lining and Back Plate Assembly
8 Caliper Assembly
9 Gasket
10 Bolt ..... 85-100 Nm
11 Rear Axle Housing

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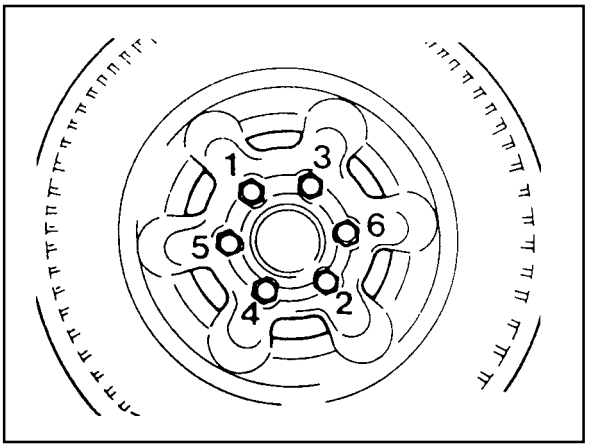
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Removal & Installation Procedure

1. Remove the tire.

Installation Notice

Tightening Torque	Steel Wheel	80 - 120 Nm
	Aluminum Wheel	110 - 130 Nm



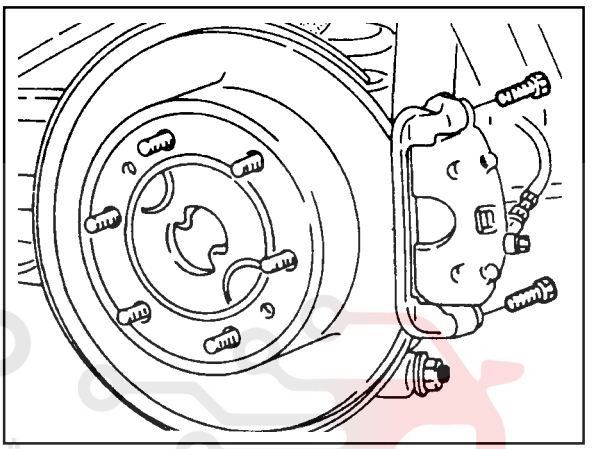
2. Release the parking brake.

3. Remove the bolts and the brake caliper.

Installation Notice

Be careful not to damage the brake hose.

Tightening Torque	85 - 100 Nm

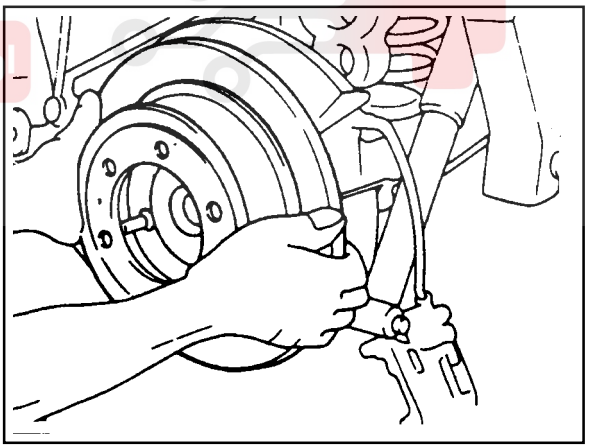


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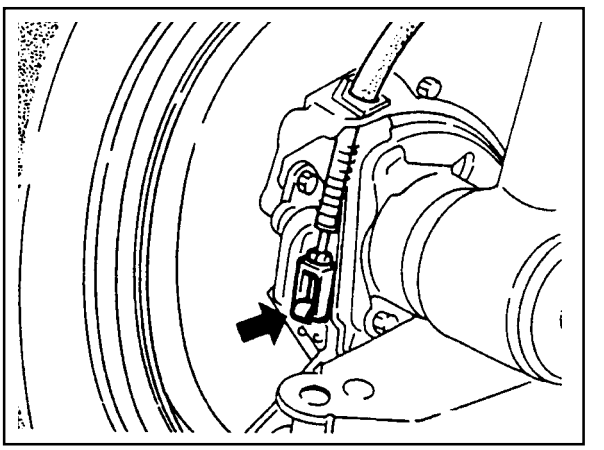
4. Remove the brake disc.

Notice

To remove the disc, install the bolts (M8 x 1.25) into the service hole and uniformly tighten the bolts.



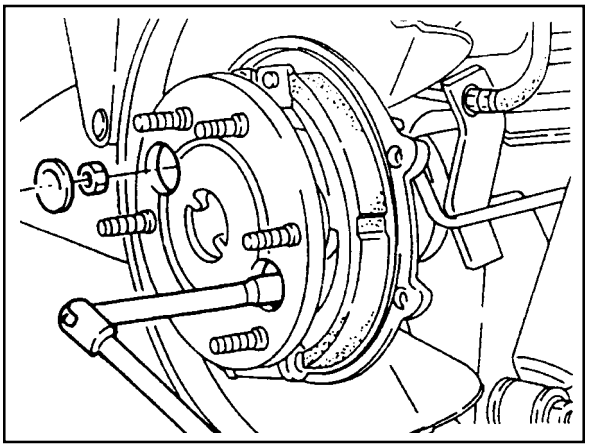
5. Disconnect the parking brake cable.



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6. Remove the plug from the axle shaft flange and remove the inner shaft mounting nuts.



Installation Notice

Tightening Torque	50 - 65 Nm

7. Remove the axle shaft, parking brake lining and back plate assembly.

8. Installation should follow the removal precedure in the reverse order.

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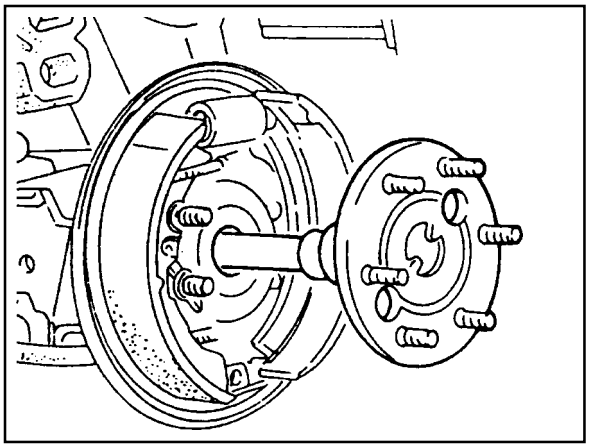
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AXLE

Removal & Installation Procedure

1. Lift up the vehicle and support the frame safely.
2. Remove the axle shaft.



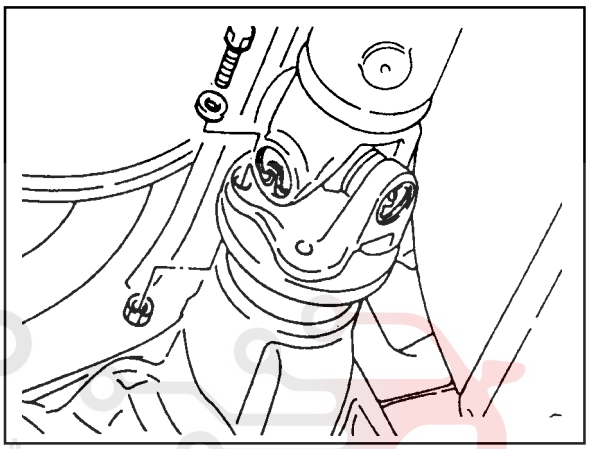
3. Remove the propeller shaft from the rear axle input shaft.

Installation Notice

Tightening Torque	81 - 89 Nm

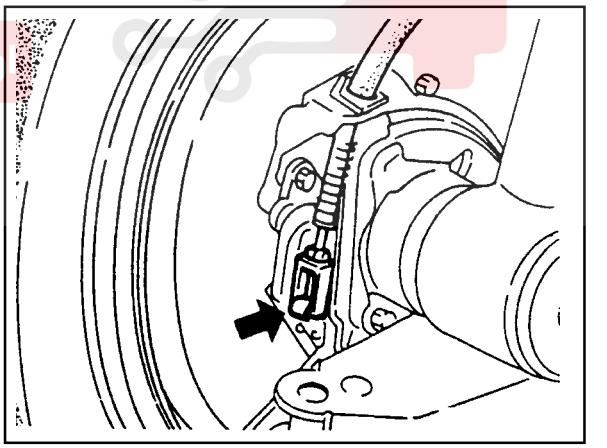
Notice

Place alignment marks before removal.



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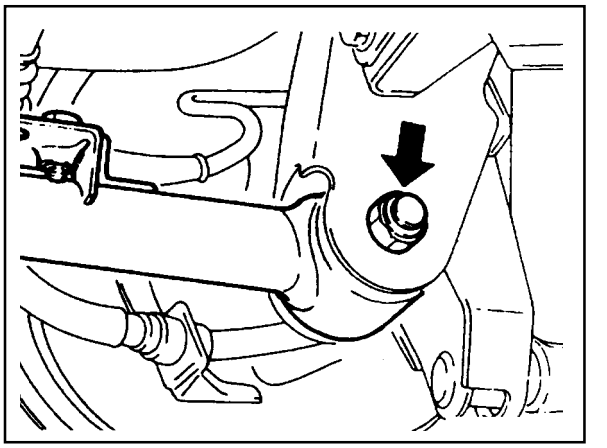
4. Disconnect the parking brake cable and brake hose.



5. Remove the lower arm mounting nuts and remove the lower arm from the axle housing.

Installation Notice

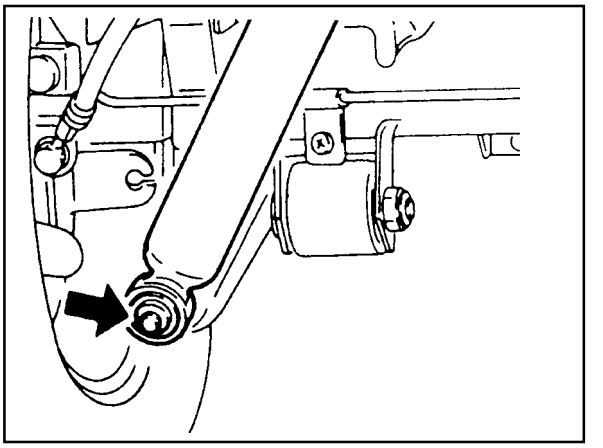
Tightening Torque	150 - 180 Nm



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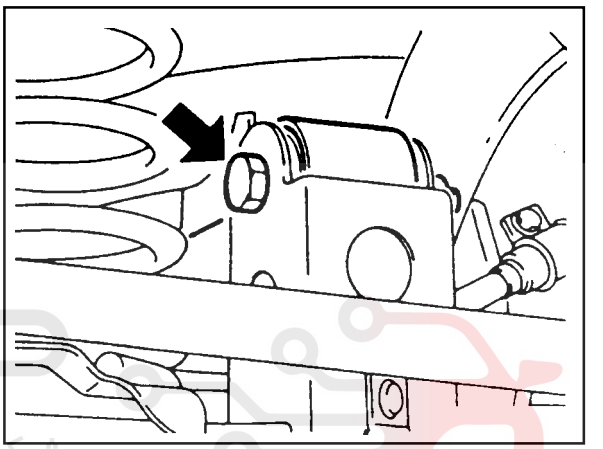
6. Separate the lower shock absorber from the axle housing.



Installation Notice

Tightening Torque	50 - 65 Nm

7. Remove the upper arm mounting nuts and remove the upper arm form the axle housing.

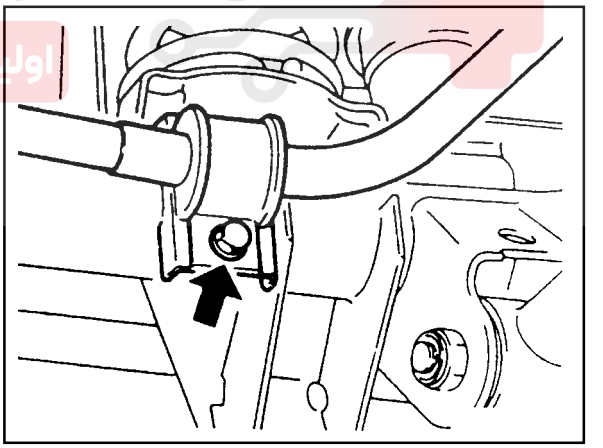


Installation Notice

Tightening Torque	150 - 180 Nm

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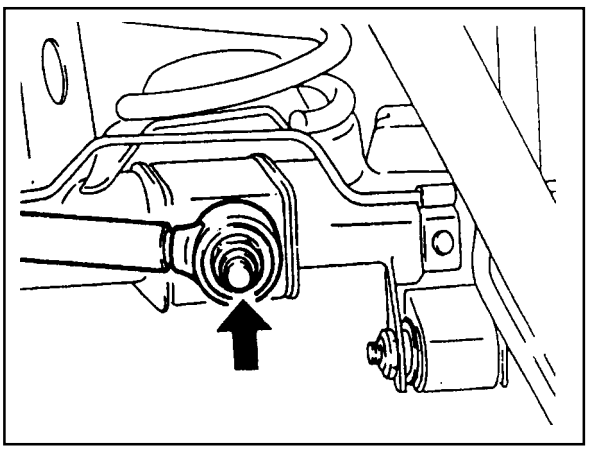
8. Remove the stabilizer bar.



Installation Notice

Tightening Torque	30 - 45 Nm

9. Remove the lateral rod mounting nuts and remove the lateral rod from the axle housing.



Installation Notice

Tightening Torque	150 - 180 Nm

10. Lowering the axle housing slowly, remove the coil springs and spring seats.

11. Installation should follow the removal precedure in the reverse order.

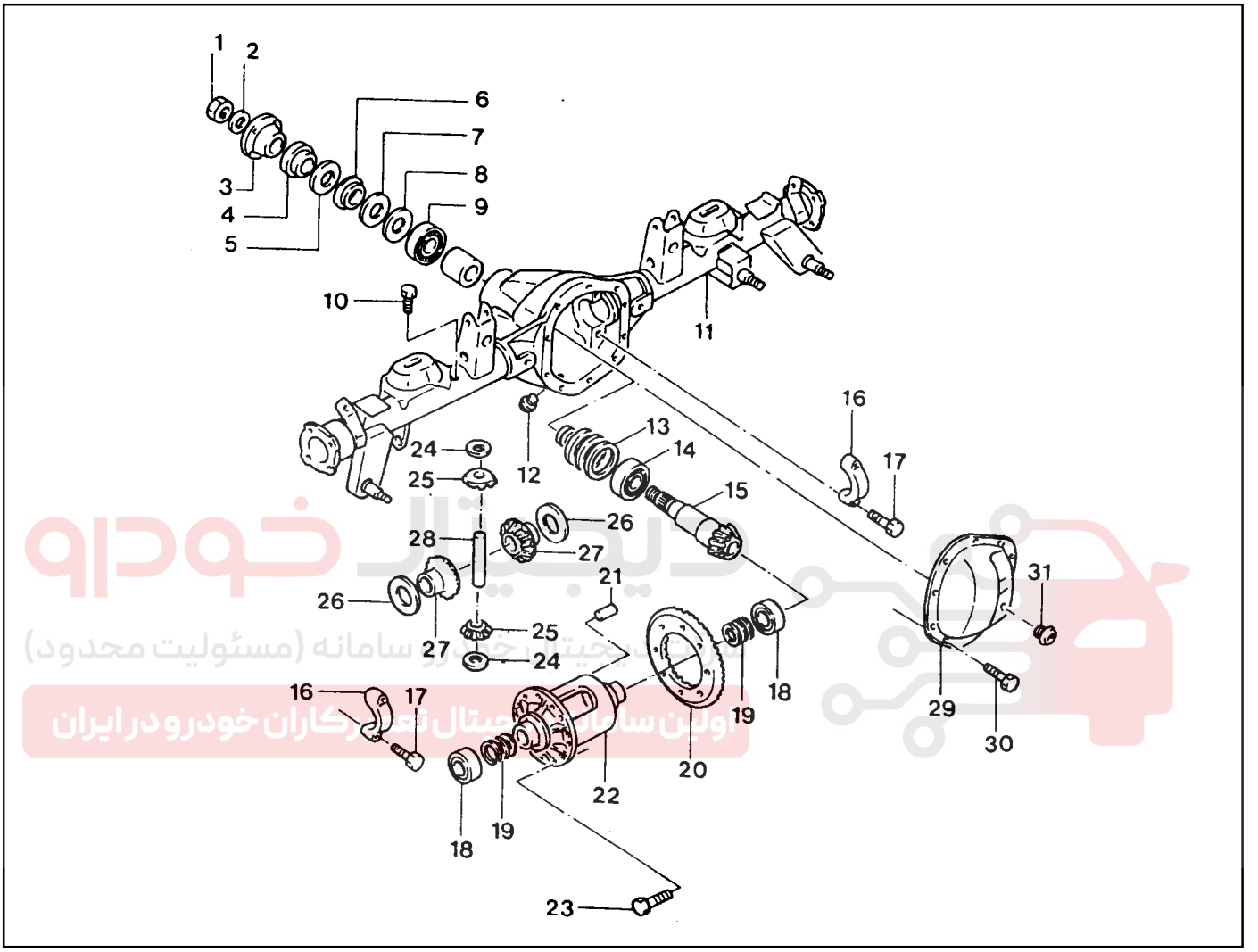
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UNIT REPAIR

AXLE HOUSING

Preceding Work : Removal of the axle shaft
Removal of the axle housing



1	Drive Pinion Lock Nut	240-310 Nm
2	Washer	
3	Companion Flange	
4	Pinion Oil Seal	
5	Bearing Slinger	
6	Bearing	
7	Shim	
8	Shim	
9	Bearing Cup	
10	Breather Nipple	
11	Rear Axle Housing	
12	Oil Drain Plug	28-42 Nm
13	Shim	
14	Bearing	
15	Drive Pinion	
16	Bearing Cap	
17	Bolt	87-124 Nm
18	Bearing	
19	Shim	
20	Ring Gear	
21	Shaft Lock Pin	
22	Differential Case	
23	Ring Gear Mounting Bolt	75-90 Nm
24	Thrust Washer	
25	Differential Pinion	
26	Thrust Washer	
27	Side Gear	
28	Differential Shaft	
29	Housing Cover	
30	Bolt	38-46 Nm
31	Oil Filler Plug	28-42 Nm

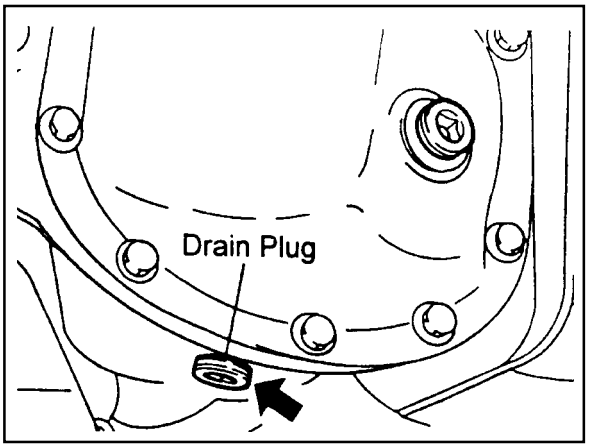
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Disassembly Procedure

1. Remove the drain plug and drain the oil. Reinstall the drain plug.

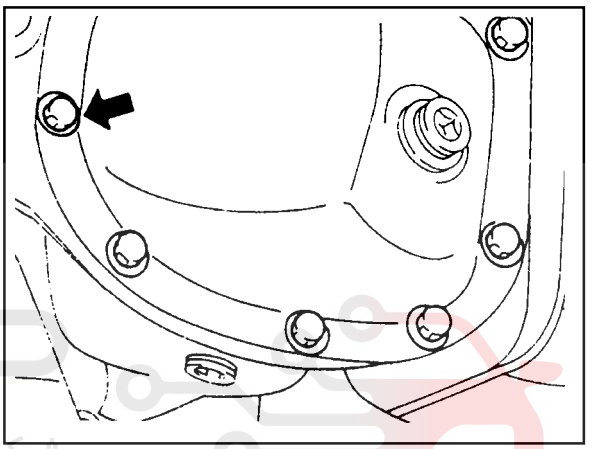
Tightening Torque	28 - 42Nm



2. Remove the axle housing cover.

   Notice

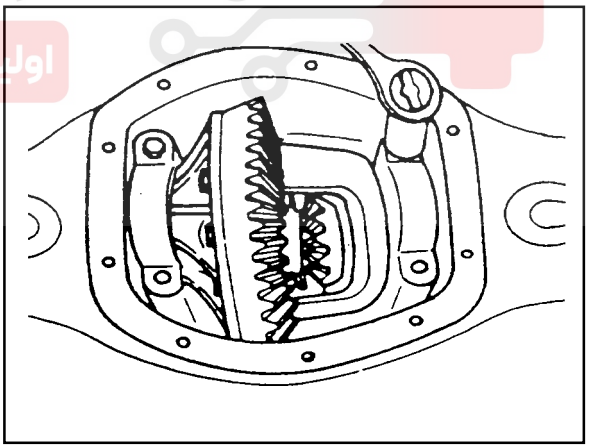
   Clean the cover and housing contact surface.



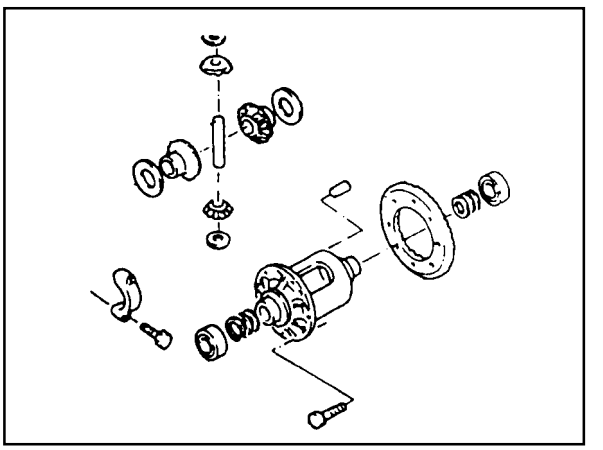
3. Remove the bearing cap bolts and remove the bearing caps. Pull out the differential carrier assembly.

   Notice

   Place alignment marks on the bearing cap not to change the caps before removal. When pulling out the differential carrier assembly, be careful not to damage the axle housing.



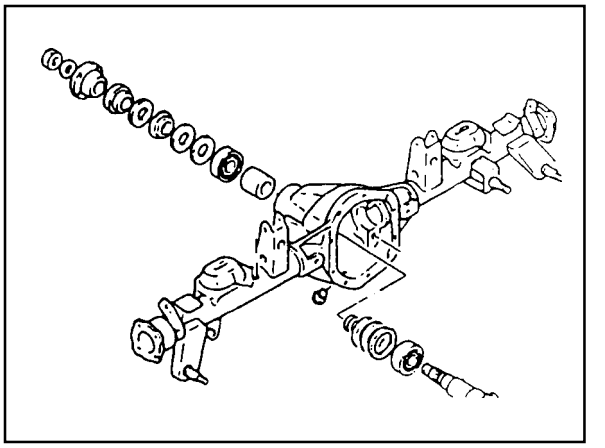
4. Disassemble the parts of the differential carrier assembly.



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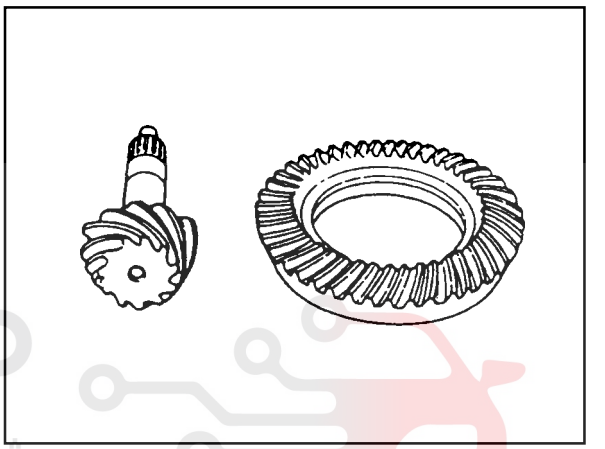
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5. Remove the drive pinion lock nut. Disassemble the parts of the drive pinion.



Assembly Procedure

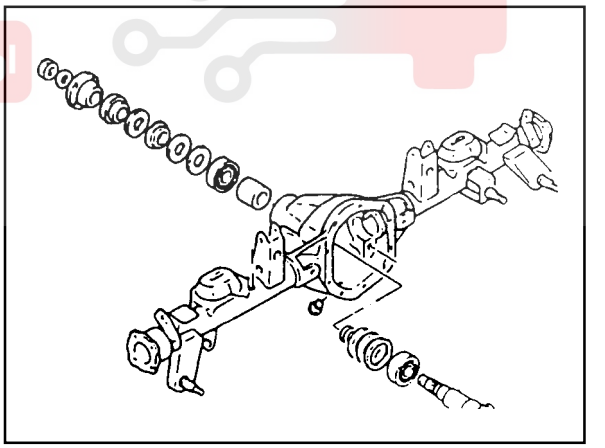
1. Clean the all parts and check the followings.
   - Check the ring gear and drive pinion for wear or damage. If damaged, replace it as set.
   - Check the bearing for sticks, wear, noise or turning resistance.
   - Check the side gear, pinion, pinion shaft and thrust washer for wear or damage.
   - Check the differential carrier for crack or wear (bearing contact surface). Check the gear case for crack.



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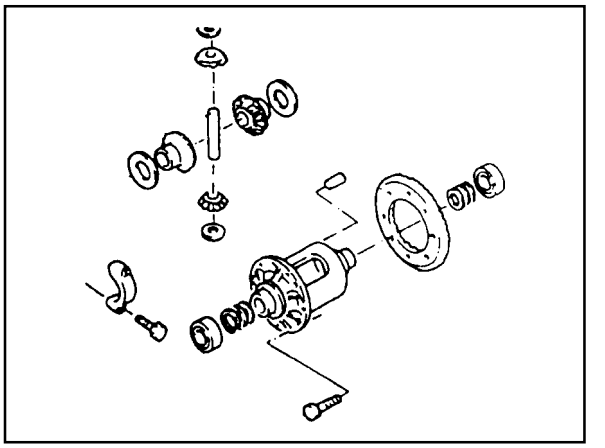
2. Assemble the parts of the drive pinion.

Tightening Torque of The Pinion Lock Nut	240 - 310 Nm



3. Assemble the parts of the differential carrier.

Tightening Torque of The Ring Gear Bolts	75 - 90 Nm

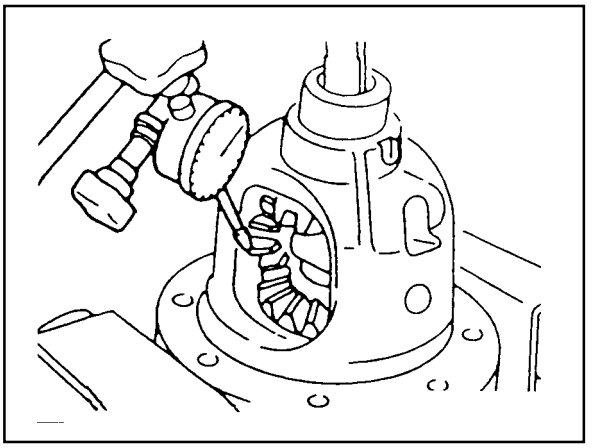


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4. Measure backlash of the side gear and pinion gear.

Specified Value	0 - 0.05 mm

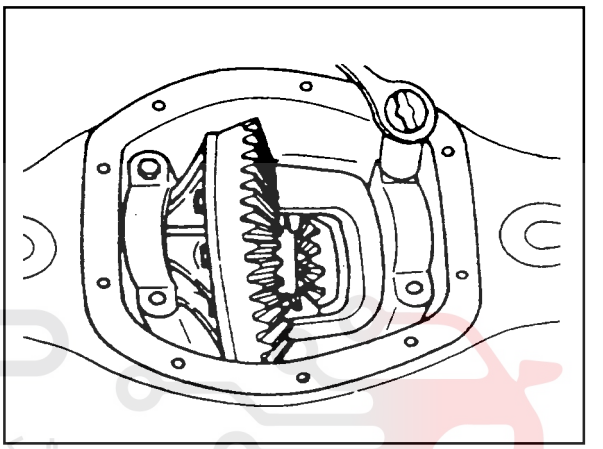


5. Install the differential carrier assembly into the axle housing.

Tightening Torque of The Bearing Cap Bolts	48 - 69 Nm

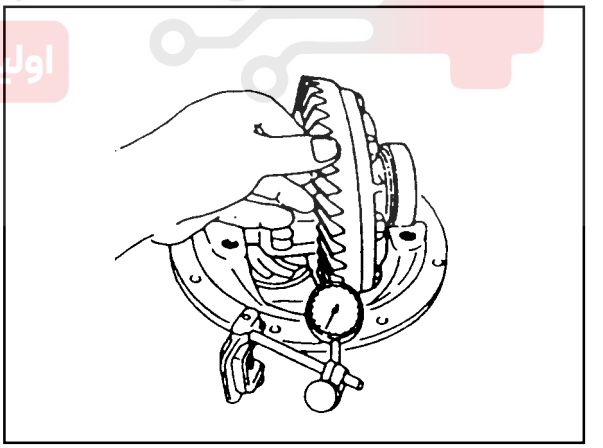
Notice

Be careful no to change the caps. Be sure to keep the original position of the caps.



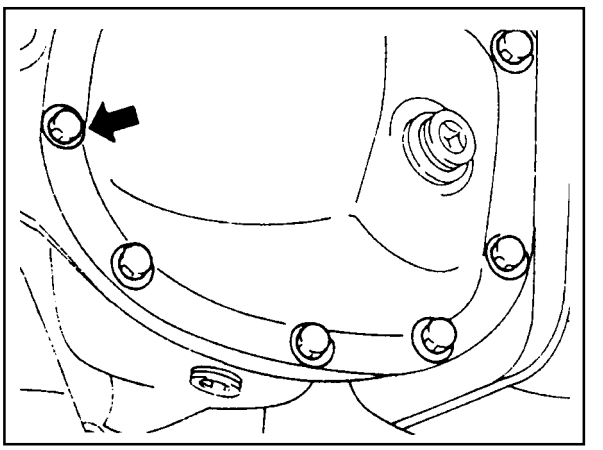
6. Measure backlash of the drive pinion and ring gear.

Specified Value	0.13 - 0.20 mm



7. Install the axle housing cover.

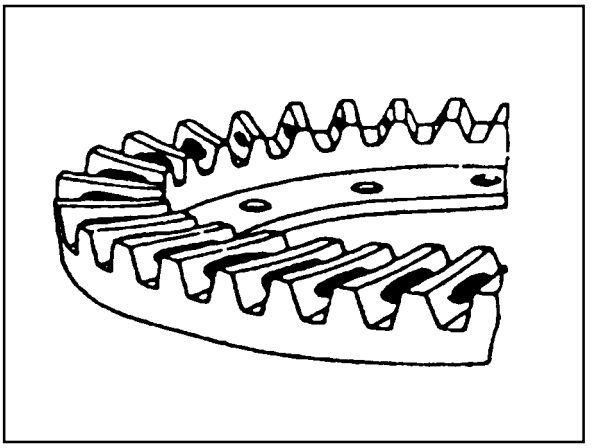
Tightening Torque	39 - 46 Nm



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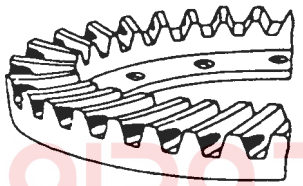
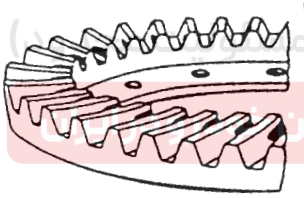
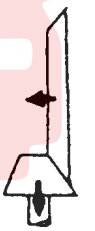
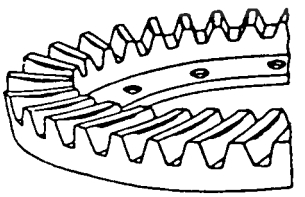
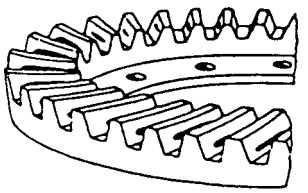
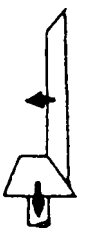
Inspection of Ring Gear Tooth Contact Pattern



Normal Contact

Apply gear-marking compound (prussian blue / red lead) on the ring gear teeth. Rotate the ring gear and check the tooth contact pattern.

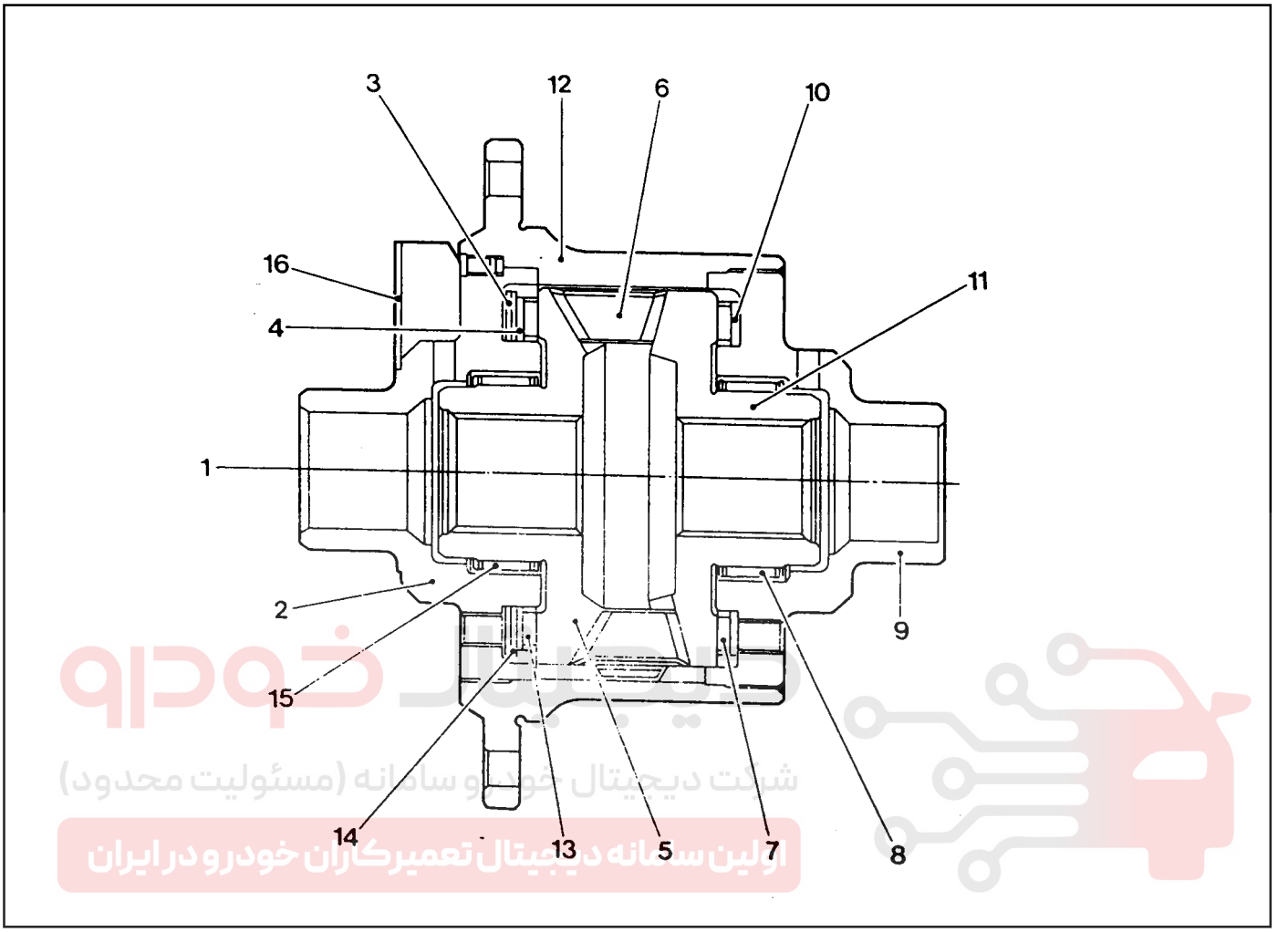
Abnormal Contact

Tooth Contact pattern	Possible Cause	Remedy
1. Heel Contact 	Excessive backlash (little) • Noise can be occurred	Adjust backlash(Decrease backlash) • Select proper shim(s) to move the drive pinion toward the ring gear (toward toe) 
2. Toe Contact 	Insufficient backlash (little) • Tooth can be damaged or broken under heavy load	Adjust backlash(Increase backlash) • Select proper shim(s) to move the drive pinion against the ring gear (toward heel) 
3. Face Contact 	Excessive backlash (much) • Drive pinion shaft is apart from the ring gear • Noise can be occurred	Adjust backlash(Increase pinion shim) • Move the drive pinion toward the ring gear (toward center of ring gear) 
4. Flank Contact 	Insufficient backlash (much) • Gear contacts on the low flank • Gear can be damaged or worn • Noise can be occurred	Adjust backlash(Decrease pinion shim) • Move the ring gear toward the drive pinion (toward ring gear center line) 

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LSD (LIMITED SLIP DIFFERENTIAL)



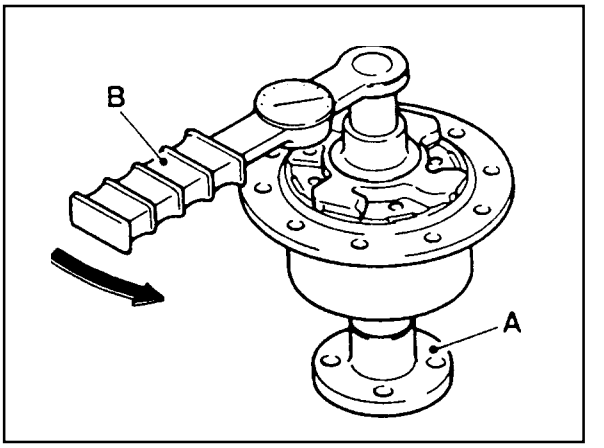
1 Limited Slip Differential Assembly
2 Shaft, Hub (left)
3 Shim
4 Thrust Washer
5 Face Cam (left)
6 Cam Whillom
7 Thrust Bearing
8 Radial Bearing
9 Shaft, Hub (right)
10 Thrust Washer
11 Face Cam (right)
12 Cage
13 Thrust Bearing
14 Plate Spring
15 Radial Bearing
16 Oil Catcher

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Inspection

- Remove the LSD assembly and check the pre-load torque.
- If necessary, replace LSD assembly.



Procedure

1. Fix the right shaft of LSD to the special tool (A).
2. Install the special tool (B) to the left shaft and rotate counterclockwise and check the pre-load torque.

Normal Torque	3.6 - 9.0kgm

Notice

If necessary, replace LSD assembly.

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