

# Suspension System

## **GENERAL**

### **FRONT SUSPENSION SYSTEM**

FRONT STRUT ASSEMBLY  
FRONT LOWER ARM  
FRONT STABILIZER BAR

### **REAR SUSPENSION SYSTEM**

REAR SHOCK ABSORBER

REAR UPPER ARM  
REAR LOWER ARM  
REAR ASSIST ARM  
TRAILING ARM  
REAR STABILIZER BAR

### **TIRES / WHEELS**

WHEEL  
TIRE

# GENERAL

## SPECIFICATIONS EBB7B67D

### FRONT SUSPENSION SYSTEM

Items				Specification	
Type				Macpherson strut	
Shock Absorber	Type			Gas	
	Stroke mm(in)			161(6.34)	
	Expansion mm(in)			585.0±3 (23.03±0.12)	
	Compression mm(in)			424.0 +3, -Free (16.69 +0.12, -Free)	
	I.D. Color			Red	
	Damping force (Piston speed : 0.3 m/s)		Expansion N(kgf, lb)	1363±196 (139±20, 306±44)	
		Compression N(kgf, lb)	794±147 (81±15, 179±33)		
Spring	Diesel 2.2	2WD	MT	Free height mm(in)	375.4 (14.78)
				I.D. Color	Yellow - Blue
			AT	Free height mm(in)	380.8 (14.99)
				I.D. Color	Yellow - Sky blue
		4WD	MT	Free height mm(in)	380.8 (14.99)
				I.D. Color	Yellow - Sky blue
		AT	Free height mm(in)	386.2 (15.20)	
			I.D. Color	Yellow - Pink	
	Gasoline 2.7	2WD	MT	Free height mm(in)	364.6 (14.35)
				I.D. Color	Yellow - Violet
			AT	Free height mm(in)	-
				I.D. Color	-
		4WD	MT	Free height mm(in)	370.0 (14.57)
				I.D. Color	Yellow - Yellow
AT			Free height mm(in)	375.4 (14.78)	
			I.D. Color	Yellow - Blue	

REAR SUSPENSION SYSTEM

Items		Specification		
Type		Multi link		
Shock Absorber	Type	Gas		
	Stroke mm(in)	144 (5.67)		
	Expansion mm(in)	436.0±3 (17.17±0.12)		
	Compression mm(in)	292.0 +3, -Free (11.50 +0.12, -Free)		
	I.D. Color	Red		
	Damping force (Piston speed : 0.3 m/s)	Expansion N(kgf, lb)	1442±206 (147±21, 324±46)	
		Compression N(kgf, lb)	520±98 (53±10, 117±22)	
Shock Absorber (Self levelizer)	Type	Gas		
	Stroke mm(in)	142 (5.59)		
	Expansion mm(in)	436.0±3 (17.17±0.12)		
	Compression mm(in)	294.0 +3, -Free (11.57 +0.12, -Free)		
	I.D. Color	Yellow		
	Damping force (Piston speed : 0.3 m/s)	Expansion N(kgf, lb)	1785±255 (182±26, 401±57)	
		Compression N(kgf, lb)	412±88 (42±9, 93±20)	
Spring	2WD	5 Passenger	Free height mm(in)	291.9 (11.49)
		7 Passenger	I.D. Color	Pink - Sky blue
			Free height mm(in)	295.9 (11.65)
		7 Passenger Self levelizer	I.D. Color	Pink - Pink
	Free height mm(in)		293.8 (11.57)	
	4WD	5 Passenger	I.D. Color	Blue - White
			Free height mm(in)	299.9 (11.81)
		7 Passenger	I.D. Color	Pink -White
			Free height mm(in)	303.9 (11.96)
		7 Passenger Self levelizer	I.D. Color	Pink -Yellow
			Free height mm(in)	304.9 (12.00)
		I.D. Color	Blue -Pink	

## WHEELS AND TIRES

Items		Specification	
Tire Size		235/70 R16	
		235/65 R17	
		235/60 R18	
		T 165/90 R17 (Temporary)	
Wheel size	Aluminium	7.0J X 16	
		7.0J X 17	
		7.0J X 18	
		4T X 17 (Temporary)	
Tire Pressure		Front	Rear
	235/70 R16	206 (2.1, 30)	206 (2.1, 30)
	235/65 R17	206 (2.1, 30)	206 (2.1, 30)
	235/60 R18	206 (2.1, 30)	206 (2.1, 30)
	T 165/90 R17 (Temporary)	412 (4.2, 60)	412 (4.2, 60)

## WHEEL ALIGNMENT

Items		Front	Rear
Camber		-30' ± 30'	-1° ± 30'
Caster	to Ground	4° 25' ± 30'	-
	to Body	4° 48' ± 30'	-
Toe-in mm(in)		0 ± 2	2 ± 2
King pin angle		12° 59' ± 30'	-
Tread mm(in)		1615	1619

## TIGHTENING TORQUE

## FRONT SUSPENSION

Items	Nm	Kgf-m	lb-ft
Front wheel nut	88.3 ~ 107.9	9 ~ 11	65.1 ~ 79.6
Front strut assembly mounting nut (to body)	44.1 ~ 58.8	4.5 ~ 6.0	32.5 ~ 43.4
Front strut assembly mounting bolt (to knuckle)	152.0 ~ 171.6	15.5 ~ 17.5	112.1 ~ 126.6
Front strut assembly self-locking nut	58.8 ~ 68.6	6 ~ 7	43.4 ~ 50.6
Front lower arm ball joint mounting bolt (to knuckle)	98.1 ~ 117.7	10 ~ 12	72.3 ~ 86.8
Front lower arm bushing(A) mounting bolt (to subframe)	137.3 ~ 156.9	14 ~ 16	101.3 ~ 115.7
Front lower arm bushing(G) mounting bolt (to subframe)	137.3 ~ 156.9	14 ~ 16	101.3 ~ 115.7
Front stabilizer link nut (to strut assembly)	98.1 ~ 117.7	10 ~ 12	72.3 ~ 86.8
Front stabilizer bar bracket mounting bolt (to Subframe)	49.0 ~ 63.7	5.0 ~ 6.5	36.2 ~ 47.0
Front stabilizer link self-locking nut	98.1 ~ 117.7	10 ~ 12	72.3 ~ 86.8
Front subframe mounting bolt (to body)	137.3 ~ 156.9	14 ~ 16	101.3 ~ 115.7
Front subframe bracket mounting bolt (to body)	68.6 ~ 88.3	7 ~ 9	50.6 ~ 65.1

## REAR SUSPENSION

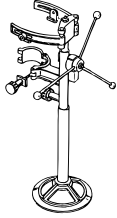
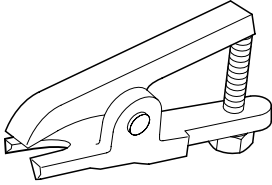
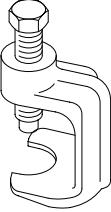
Items	Nm	Kgf-m	lb-ft
Rear wheel nut	88.3 ~ 107.9	9 ~ 11	65.1 ~ 79.6
Rear shock absorber mounting bolt (to body)	137.3 ~ 156.9	14 ~ 16	101.3 ~ 115.7
Rear shock absorber nut (to rear carrier)	98.1 ~ 117.7	10 ~ 12	72.3 ~ 86.8
Rear upper arm ball joint nut (to rear carrier)	78.5 ~ 88.3	8 ~ 9	57.9 ~ 65.1
Rear upper arm mounting bolt (to cross member)	98.1 ~ 117.7	10 ~ 12	72.3 ~ 86.8
Rear lower arm mounting bolt (to rear carrier)	137.3 ~ 156.9	14 ~ 16	101.3 ~ 115.7
Rear lower arm mounting nut (to cross member)	137.3 ~ 156.9	14 ~ 16	101.3 ~ 115.7
Rear assist arm ball joint nut (to rear carrier)	98.1 ~ 117.7	10 ~ 12	72.3 ~ 86.8
Rear assist arm mounting nut (to cross member)	137.3 ~ 156.9	14 ~ 16	101.3 ~ 115.7
Trailing arm mounting bolt (to cross member)	137.3 ~ 156.9	14 ~ 16	101.3 ~ 115.7
Trailing arm mounting bolt (to rear carrier)	137.3 ~ 156.9	14 ~ 16	101.3 ~ 115.7
Rear stabilizer bar bracket mounting bolt (to cross member)	44.1 ~ 53.9	4.5 ~ 5.5	32.5 ~ 39.8
Rear stabilizer link self-locking nut	58.8 ~ 78.5	6 ~ 8	43.4 ~ 57.9

 **CAUTION**

**Replace the self-locking nuts with new ones after removal.**

## SPECIAL SERVICE TOOLS

E806DEFC

Tool (Number and Name)	Illustration	Use
09546-26000 Strut spring compressor	 E4626000	Compression of the coil spring
09568-34000 Ball joint remover	 E6834000	Removal of Ball joint (Rear upper arm)
09568-4A000 Ball joint remover	 KPRE103I	Removal of Ball joint (Front upper arm/lower arm)

TROUBLESHOOTING

E8AA80CE

listed below by filling them. It serves as a place to record information as well as data from the testing to be carried out. To begin a successful diagnosis, fill out the questions.

VEHICLE INSPECTION

To assist the service advisor and the technician, check the suspension and wheel/tire condition with the questions

**WHEEL/TIRE CHECK :**

Tire Pressure Check **Yes/No**

Balance Check **Yes / No**

Maximum Runout Allowed :

Wheel : Radial \_\_\_\_\_ Lateral \_\_\_\_\_

Tire : Radial \_\_\_\_\_ Lateral \_\_\_\_\_

Measured Runout :

Tire/Wheel	Radial :	LF _____	LR _____	RF _____	RR _____
	Lateral :	LF _____	LR _____	RF _____	RR _____
Wheel Only	Radial :	LF _____	LR _____	RF _____	RR _____
	Lateral :	LF _____	LR _____	RF _____	RR _____

**SUSPENSION INSPECTION :**

Concerns Shimmy  Clunk  Squeak  Harshness

Suspension Bushing : Loose  Worn  Missing  OK

Front stabilizer  Rear stabilizer (sway bar)  Rear trailing arm

Front lower arm  Rear suspension front  Rear suspension rear arm

Other \_\_\_\_\_

Suspension/Components : Loose Worn Missing OK

Ball Joint  Shock absorbers F/R  Springs F/R  The rod ends/sleeve

## SYMPTOM CHART

Symptom	Suspect Area	Remedy
Squeak or grunt-noise from the front suspension, occurs more in cold ambient temperatures - more noticeable over rough roads or when turning	Front stabilizer bar	Under these conditions, the noise is acceptable.
Clunk - noise from the front suspension, occurs in and out of turns	Loose front struts or shocks	Inspect for loose nuts or bolts. Tighten to specifications.
Clunk - noise from the rear suspension, occurs when shifting from reverse to drive	Loose rear suspension components	Inspect for loose or damaged rear suspension components. Repair or install new components as necessary.
Click or pop - noise from the front suspension - more noticeable over rough roads or over bumps	Worn or damaged ball joints	Install new lower arm as necessary.
Click or pop - noise occurs when vehicle is turning	Worn or damaged ball joints	Install new lower arm as necessary.
Click or snap - occurs when accelerating around a corner	Damaged or worn Birfield joint	Repair or install a new Birfield joint as necessary. See DS group - driveshaft.
Front suspension noise - A squeak, creak, or rattle noise - occurs mostly over bumps or rough roads	Steering components Loose or bent front struts or shock absorbers Damaged spring or spring mounts Damaged or worn arm bushings Worn or damaged stabilizer bar bushing or links	Go to detailed test A.
Groaning or grinding - noise from the front strut, occurs when driving on bumpy roads or turning the vehicle	Uneven seating surface between the insulator and panel by the burrs around the strut insulator mounting bolts and the insulator bolts mounting holes	Repair or install a new parts as necessary.
Rear suspension noise - a squeak, creak or rattle noise - occurs mostly over bumps or rough roads	Loose or bent rear shock absorbers Damaged spring or spring mounts Damaged or worn control arm bushings	Go to detailed test B.
Shudder - occurs during acceleration from a slow speed or stop	Rear axle assembly mis-positioned Damaged or worn front suspension components	Check the axle mounts and rear suspension for damage or wear. Repair as necessary. Check for a loose stabilizer bar, damaged or loose strut/strut bushings or loose or worn ball joints. Inspect the steering linkage for wear or damage. Repair or Install new components as necessary.
Shimmy - most noticeable on coast/deceleration - also hard steering condition	Excessive positive caster	Check the caster alignment angle. Correct as necessary.



Symptom	Suspect Area	Remedy
Tire noise - hum/moan at constant speeds	Abnormal wear patterns	Spin the tire and Check for tire wear. Install a new tire as necessary. Inspect for damaged/worn suspension components. Perform wheel alignment.
Tire noise - noise tone lowers as the vehicle speed is lowered	Out-of-balance tire	Balance the tire and road test. Install a new tire as necessary.
Tire noise - ticking noise, change with speed	Nail puncture or stone in tire tread	Inspect the tire. Repair or replace as necessary.
Wheel and tire - vibration and noise concern is directly related to vehicle speed and is not affected by acceleration, coasting or decelerating	Damaged or worn tire	Go to detailed test C.
Tire wobble or shudder - occurs at lower speeds	Damaged wheel bearings	Spin the tire and check for abnormal wheel bearing play or roughness. Adjust or Install new wheel bearings as necessary. See DS group - front/rear axle.
	Damaged wheel	Inspect the wheel for damage. Install a new wheel as necessary.
	Damaged or worn suspension components	Inspect the suspension components for wear or damage. Repair as necessary.
	Loosen wheel nuts	Check the wheel nuts. Tighten to specification.
	Damaged or uneven tire wear	Spin the tire and Check for abnormal tire wear or damage. Install a new tire as necessary.
Tire shimmy or shake - occurs at lower speeds	Wheel/tire out of balance	Check for wheel balance.
	Uneven tire wear	Check for abnormal tire wear. Install a new tire as necessary.
	Excessive radial runout of wheel or tire	Perform a radial runout test of the wheel and tire. Install a new tire as necessary.
	Worn or damaged wheel studs or elongate stud holes	Inspect the wheel studs and wheels. Install new components as necessary.
	Excessive lateral runout of the wheel or tire	Perform a lateral runout test of the wheel and tire. Check the wheel, tire and hub. Repair or Install new components as necessary.
	Foreign material between the brake disc and hub.	Clean the mounting surfaces of the brake disc and hub. See DS group - front/rear axle.

Symptom	Suspect Area	Remedy
High speed shake or shimmy - occurs at high speeds	Excessive wheel hub runout Damaged or worn tires Damaged or worn wheel bearings Worn or damaged suspension or steering linkage Brake disc or drum imbalance	Go to detailed test D.
Drift left or right	Tires Steering linkage Alignment Base brake system	Go to detailed test E.
Steering wheel	Alignment Steering linkage Front lower arm ball joint	Go to detailed test F.
Tracks incorrectly	Rear suspension Caster	Go to detailed test G.
Rough ride	Front strut and spring assembly Rear shock absorber and spring assembly	Go to detailed test H.
Excessive noise	Front or rear stabilizer bar components Springs Suspension components Shock absorbers	Go to detailed test I.
Incorrect tire wear	Tire or unbalanced wheels Tire inflation Strut Alignment	Go to detailed test J.
Vibration	Wheel/tire Front wheel driveshaft(s) Steering system Strut and spring assembly Spring and strut mounting Front lower arm ball joint Front lower arm mounting bolt bushing Stabilizer bar bushings Wheel hubs and bearing Rear suspension arms and bushings	Go to detailed test K.
Vehicle leans	Tire/wheel Vehicle load Suspension components  Incorrect ride height	Inflate tires to specification. Redistribute the load as necessary. Visually inspect the suspension system. Correct the ride height as necessary.
Poor steering returnability	High knuckle rotating torque Alignment	Go to detailed test E.

DETAILED TEST A : FRONT SUSPENSION NOISE

CONDITIONS	DETAILS/RESULTS/ACTIONS
<b>A1 ROAD TEST THE VEHICLE</b>	
	<p>1. Test drive the vehicle.                      2. During the road test, drive the vehicle over a rough road. Determine from which area/component the noise is originating.</p> <p>Is there a squeak, creak or rattle noise ?</p> <p><b>YES</b> Go to <b>A2</b>.</p> <p><b>NO</b> The suspension system is OK. Conduct a diagnosis on other suspect systems.</p>
<b>A2 INSPECT THE STEERING SYSTEM</b>	
	<p>1. Check the steering system for wear or damage. Perform a steering linkage test. Inspect the tire wear pattern.</p> <p>Are the steering components worn or damaged ?</p> <p><b>YES</b> Repair the steering system. Install new components as necessary. Test the system for normal operation.</p> <p><b>NO</b> Go to <b>A3</b>.</p>
<b>A3 FRONT SHOCK ABSORBER/STRUT CHECK</b>	
	<p>1. Check the front shock absorbers/strut mounts for loose bolts or nuts.                      2. Check the front shock absorbers/struts for damage. Perform a shock absorber check.</p> <p>Are the front shock absorbers/struts loose or damaged ?</p> <p><b>YES</b> Tighten to specifications if loose. Install new front shock absorbers/struts if damaged. Test the system for normal operation.</p> <p><b>NO</b> Go to <b>A4</b>.</p>
<b>A4 CHECK THE FRONT SPRINGS</b>	
	<p>Check the front spring and front spring mounts/brackets for wear or damage.</p> <p>Are the front springs or spring mounts/brackets worn or damaged ?</p> <p><b>YES</b> Repair or Install new components as necessary. Test the system for normal operation.</p> <p><b>NO</b> Go to <b>A5</b>.</p>


CONDITIONS	DETAILS/RESULTS/ACTIONS
<b>A5 CHECK THE STABILIZER BAR</b>	
	<ol style="list-style-type: none"> <li>1. Check the stabilizer bar bushings and links for damage or wear.</li> <li>2. Check the stabilizer bar for damage.</li> <li>3. Check for loose or damaged stabilizer brackets.</li> </ol> <p style="text-align: center;">Are the stabilizer bar/track bar components loose, worn or damaged ?</p> <p style="text-align: center;"><b>YES</b> Repair or Install new components as necessary. Test the system for normal operation.</p> <p style="text-align: center;"><b>NO</b> Suspension system is OK. Conduct diagnosis on other suspect systems.</p>

**DETAILED TEST B : REAR SUSPENSION NOISE**

CONDITIONS	DETAILS/RESULTS/ACTIONS
<b>B1 ROAD TEST THE VEHICLE</b>	
	<ol style="list-style-type: none"> <li>1. Test drive the vehicle.</li> <li>2. During the road test, drive the vehicle over a rough road. Determine from which area/component the noise is originating.</li> </ol> <p style="text-align: center;">Is there a squeak, creak or rattle noise ?</p> <p style="text-align: center;"><b>YES</b> Go to <b>B2</b>.</p> <p style="text-align: center;"><b>NO</b> The suspension system is OK. Conduct a diagnosis on other suspect systems.</p>
<b>B2 REAR SHOCK ABSORBER/STRUT CHECK</b>	
	<ol style="list-style-type: none"> <li>1. Raise and support the vehicle. See GI group - lift support point.</li> <li>2. Check the rear shock absorber/strut mounts for loose bolts or nuts.</li> <li>3. Check the rear shock absorbers/strut for damage. Perform a shock absorber check.</li> </ol> <p style="text-align: center;">Are the rear shock absorbers/struts loose or damaged ?</p> <p style="text-align: center;"><b>YES</b> Tighten to specifications if loose. Install new rear shock absorbers/struts if damaged. Test the system for normal operation.</p> <p style="text-align: center;"><b>NO</b> Go to <b>B3</b>.</p>
<b>B3 CHECK THE REAR SPRINGS</b>	
	<p>Check the rear springs and rear spring mounts/brackets for wear or damage.</p> <p style="text-align: center;">Are the rear springs or spring mounts/brackets worn or damaged ?</p> <p style="text-align: center;"><b>YES</b> Repair or Install new components as necessary. Test the system for normal operation.</p> <p style="text-align: center;"><b>NO</b> Go to <b>B4</b>.</p>

CONDITIONS	DETAILS/RESULTS/ACTIONS
<b>B4 CHECK THE TRAILING ARMS</b>	
	<p>1. Inspect the trailing arm bushings for wear or damage. Check for loose trailing arm bolts.                      2. Inspect for twisted or bent trailing arms.</p> <p style="text-align: center;">Are the trailing arms loose, damaged or worn ?</p> <p><b>YES</b>                      Repair or Install new components as necessary. Test the system for normal operation.</p> <p><b>NO</b>                      Suspension system is OK. Conduct diagnosis on other suspect systems.</p>

**DETAILED TEST C : WHEEL AND TIRE**

CONDITIONS	DETAILS/RESULTS/ACTIONS
<b>C1 ROAD TEST THE VEHICLE</b>	
	<p> <b>NOTE</b>  <i>Wheel or tire vibrations felt in the steering wheel are most likely related to the front wheel or tire. Vibration felt through the seat are most likely related to the rear wheel or tire. This may not always be true, but it can help to isolate the problem to the front or rear of the vehicle. Test drive the vehicle at different speed ranges.</i></p> <p>During the road test, if the vibration can be eliminated by placing the vehicle in neutral or is affected by the speed of the engine, the cause is not the wheels or tires.</p> <p style="text-align: center;">Is there a vibration and noise ?</p> <p><b>YES</b>                      Go to <b>C2</b>.</p> <p><b>NO</b>                      The wheel and tires are OK. Conduct a diagnosis on other suspect systems.</p>
<b>C2 CHECK THE FRONT WHEEL BEARINGS</b>	
	<p>Check the front wheel bearings.                      Refer to Wheel Bearing Check (See DS group - front axle).</p> <p style="text-align: center;">Are the wheel bearings OK ?</p> <p><b>YES</b>                      Go to <b>C3</b>.</p> <p><b>NO</b>                      Inspect the wheel bearings. Adjust or Repair as necessary. Test the system for normal operation.</p>

CONDITIONS	DETAILS/RESULTS/ACTIONS
<b>C3 INSPECT THE TIRES</b>	
	<ol style="list-style-type: none"> <li>1. Check the tires for missing weights.</li> <li>2. Check the wheels for damage.</li> <li>3. Inspect the tire wear pattern.</li> </ol> <p style="text-align: center;">Do the tires have an abnormal wear pattern ?</p> <p style="text-align: center;"><b>YES</b> Correct the condition that caused the abnormal wear. Install new tire(s). Test the system for normal operation.</p> <p style="text-align: center;"><b>NO</b> Go to <b>C4</b>.</p>
<b>C4 TIRE ROTATION DIAGNOSIS</b>	
	<ol style="list-style-type: none"> <li>1. Spin the tires slowly and watch for signs of lateral runout.</li> <li>2. Spin the tires slowly and watch for signs of radial runout.</li> </ol> <p style="text-align: center;">Are there signs of visual runout ?</p> <p style="text-align: center;"><b>YES</b> Go to <b>C5</b>.</p> <p style="text-align: center;"><b>NO</b> Check the wheel and tire balance. Correct as necessary. Test the system for normal operation.</p>
<b>C5 RADIAL RUNOUT CHECK ON THE TIRE</b>	
	<p>Measure the radial runout of the wheel and tire assembly. A typical specification for total radial runout is 1.15mm (0.059 inch).</p> <p style="text-align: center;">Is the radial runout within specifications ?</p> <p style="text-align: center;"><b>YES</b> Go to <b>C8</b>.</p> <p style="text-align: center;"><b>NO</b> Go to <b>C6</b>.</p>
<b>C6 RADIAL RUNOUT CHECK ON THE WHEEL</b>	
	<p>Measure the radial runout of the wheel. A typical specification for total radial runout is 1.14mm (0.045 inch.).</p> <p style="text-align: center;">Is the radial runout within specifications ?</p> <p style="text-align: center;"><b>YES</b> Install a new tire. Test the system for normal operation.</p> <p style="text-align: center;"><b>NO</b> Go to <b>C7</b>.</p>

CONDITIONS	DETAILS/RESULTS/ACTIONS
<b>C7 CHECK THE HUB/BRAKE DISC OR DRUM PILOT RUNOUT OR BOLT CIRCLE RUNOUT</b>	
	<p>Measure the pilot or bolt circle runout. A typical specification for radial runout is :  pilot runout - less than 0.15mm (0.006 inch.)  bolt circle runout - less than 0.38 mm (0.015 inch.)</p> <p>Is the radial runout within specification ?</p> <p><b>YES</b>  Install a new wheel. Test the system for normal operation.</p> <p><b>NO</b>  Repair or Install new components as necessary.</p>
<b>C8 LATERAL RUNOUT CHECK ON THE TIRE</b>	
	<p>Measure the lateral runout of the wheel and tire assembly. A typical specification for total lateral runout is 2.5mm (0.098 inch).</p> <p>Is the lateral runout within specifications ?</p> <p><b>YES</b>  Wheel and tires are OK. Conduct diagnosis on other suspect systems.</p> <p><b>NO</b>  Go to <b>C9</b>.</p>
<b>C9 LATERAL RUNOUT CHECK ON THE WHEEL</b>	
	<p>Measure the lateral runout of the wheel. A typical specification for total radial runout is 1.2mm (0.047 inch.)</p> <p>Is the lateral runout within specifications ?</p> <p><b>YES</b>  Install a new tire. Test the system for normal operation.</p> <p><b>NO</b>  Go to <b>C10</b>.</p>
<b>C10 CHECK THE FLANGE FACE LATERAL RUNOUT</b>	
	<p>Measure the flange face lateral runout. A typical specification for lateral runout is :  hub/brake disc - less than 0.13mm (0.005 inch)</p> <p>Is the lateral runout within specifications ?</p> <p><b>YES</b>  Install a new wheel. Test the system for normal operation.</p> <p><b>NO</b>  Repair or Install new components as necessary.</p>

## DETAILED TEST D : HIGH SPEED SHAKE OR SHIMMY

CONDITIONS	DETAILS/RESULTS/ACTIONS
<b>D1 CHECK FOR FRONT WHEEL BEARING ROUGHNESS</b>	
	<p>1. Raise and support the front end of the vehicle so that the front wheel and tire assemblies can spin. See GI group - lift support point.</p> <p>2. Spin the front tires by hand.</p> <p>Do the wheel bearings feel rough ?</p> <p><b>YES</b> Inspect the wheel bearings. Repair as necessary. Test the system for normal operation.</p> <p><b>NO</b> Go to <b>D2</b>.</p>
<b>D2 CHECK THE END PLAY OF THE FRONT WHEEL BEARINGS</b>	
	<p>Check the end play of the front wheel bearings.</p> <p>Is the end play OK ?</p> <p><b>YES</b> Go to <b>D3</b>.</p> <p><b>NO</b> Adjust or Repair as necessary. Test the system for normal operation.</p>
<b>D3 MEASURE THE LATERAL RUNOUT AND THE RADIAL RUNOUT OF THE FRONT WHEELS ON THE VEHICLE</b>	
	<p>Measure the lateral runout and the radial runout of the front wheels on the vehicle. Go to detailed test C.</p> <p>Are the measurements within specifications ?</p> <p><b>YES</b> Go to <b>D4</b>.</p> <p><b>NO</b> Install new wheels as necessary and Balance the assembly. Test the system for normal operation.</p>
<b>D4 MEASURE THE LATERAL RUNOUT OF THE FRONT TIRES ON THE VEHICLE</b>	
	<p>Measure the lateral runout of the front tires on the vehicle. Go to detailed test C.</p> <p>Is the runout within specifications ?</p> <p><b>YES</b> Go to <b>D5</b>.</p> <p><b>NO</b> Install new tires as necessary and Balance the assembly. Test the system for normal operation.</p>



CONDITIONS	DETAILS/RESULTS/ACTIONS
<b>D5 MEASURE THE RADIAL RUNOUT OF THE FRONT TIRES ON THE VEHICLE</b>	
	<p>Measure the radial runout of the front tires on the vehicle. Go to detailed test C.</p> <p>Is the runout within specifications ?</p> <p><b>YES</b> Balance the front wheel and tire assemblies. If any tire cannot be balanced, Install a new tire. Test the system for normal operation.</p> <p><b>NO</b> Go to <b>D6</b>.</p>
<b>D6 MATCH MOUNT THE TIRE AND WHEEL ASSEMBLY</b>	
	<p>Mark the high runout location on the tire and also on the wheel. Break the assembly down and rotate the tire 180 degrees (halfway around) on the wheel. Inflate the tire and measure the radial runout.</p> <p>Is the runout within specifications ?</p> <p><b>YES</b> Balance the assembly. Test the system for normal operation.</p> <p><b>NO</b> If the high spot is not within 101.6mm (4 inches) of the first high spot on the tire, Go to <b>D7</b>.</p>
<b>D7 MEASURE THE WHEEL FLANGE RUNOUT</b>	
	<p>Dismount the tire and mount the wheel on a wheel balancer. Measure the runout on both wheel flanges. Go to detailed test C</p> <p>Is the runout within specifications ?</p> <p><b>YES</b> Locate and Mark the low spot on the wheel. Install the tire, matching the high spot on the tire with the low spot on the wheel. Balance the assembly. Test the system for normal operation. If the condition persists, Go to <b>D8</b>.</p> <p><b>NO</b> Install a new wheel. Check the runout on the new wheel. If the new wheel is within limits, locate and Mark the low spot. Install the tire, matching the high spot on the tire with the low spot on the wheel. Balance the assembly. Test the system for normal operation. If the condition persists, Go to <b>D8</b>.</p>
<b>D8 CHECK FOR VIBRATION FROM THE FRONT OF THE VEHICLE</b>	
	<p>Spin the front wheel and tire assemblies with a wheel balancer while the vehicle is raised on a hoist. Feel for vibration in the front fender or while seated in the vehicle.</p> <p>Is the vibration present ?</p> <p><b>YES</b> Substitute known good wheel and tire assemblies as necessary. Test the system for normal operation.</p> <p><b>NO</b> Check the driveline components. Test the system for normal operation.</p>

## DETAILED TEST E : DRIFT LEFT OR RIGHT

CONDITIONS	DETAILS/RESULTS/ACTIONS
<b>E1 CHECK THE TIRES</b>	
	Inspect the tires for excessive wear or damage.  Are the tires excessively worn or damaged ?  <b>YES</b> Install new tires.  <b>NO</b> Go to <b>E2</b> .
<b>E2 CHECK THE STEERING LINKAGE</b>	
	1. Raise and support the vehicle. 2. Check the steering components for indications of excessive wear or damage. See ST group - specification.  Is there an indication of excessive wear or damage ?  <b>YES</b> Repair or Install new components as necessary.  <b>NO</b> Go to <b>E3</b> .
<b>E3 CHECK THE VEHICLE ALIGNMENT</b>	
	1. Place the vehicle on an alignment rack. Check the vehicle alignment.  Is the alignment within specification ?  <b>YES</b> Go to <b>E4</b> .  <b>NO</b> Adjust the alignment as necessary.
<b>E4 BRAKE DRAG DIAGNOSIS</b>	
	Apply the brakes while driving.  Does drift or pull occur when the brakes are applied ?  <b>YES</b> See BR group - specification.  <b>NO</b> If the steering wheel is in the center, the vehicle is OK.  If the steering wheel is off-center, Go to Detailed Test <b>F</b> .

## DETAILED TEST F : STEERING WHEEL OFF-CENTER

CONDITIONS	DETAILS/RESULTS/ACTIONS
<b>F1 CHECK THE CLEAR VISION</b>	
	<p>Place the vehicle on an alignment rack.</p> <p>Is the clear vision within specification ?</p> <p><b>YES</b> Go to <b>F2</b>.</p> <p><b>NO</b> Adjust the clear vision to specification.</p>
<b>F2 INSPECT THE STEERING COMPONENTS</b>	
	<ol style="list-style-type: none"><li>1. Raise and support the vehicle.</li><li>2. Inspect the steering components for excessive wear or damage. See ST group - specification.</li></ol> <p>Are the steering components excessively worn or damaged ?</p> <p><b>YES</b> Repair or Install new components as necessary.</p> <p><b>NO</b> If it tracks correctly, vehicle is OK.</p> <p>If it tracks incorrectly, Go to Detailed Test <b>G</b>.</p>

## DETAILED TEST G : TRACKS INCORRECTLY

CONDITIONS	DETAILS/RESULTS/ACTIONS
<b>G1 CHECK THE CASTER</b>	
	Place the vehicle on an alignment rack.  Is the caster within specification ?  <b>YES</b> Go to <b>G2</b> .  <b>NO</b> Replace bent or damaged parts.
<b>G2 CHECK THE REAR SUSPENSION</b>	
	1. Measure the vehicle wheel base for LH and RH. 2. Compare the measurements.  Are the measurements the same ?  <b>YES</b> If the ride is smooth, vehicle is OK.  If the ride is rough, Go to Detailed Test <b>H</b> .  <b>NO</b> Inspect the rear suspension components for wear or damage. Repair or Install new components as necessary.

## DETAILED TEST H : ROUGH RIDE

CONDITIONS	DETAILS/RESULTS/ACTIONS
<b>H1 CHECK THE FRONT SHOCK ABSORBER</b>	
	1. Raise support the vehicle. 2. Inspect the front shock absorber for oil leaks or damage.  Are the tires excessively worn or damaged ?  <b>YES</b> Install new front shock absorbers.  <b>NO</b> Go to <b>H2</b> .
<b>H2 CHECK THE REAR SHOCK ABSORBERS</b>	
	Inspect the rear shock absorbers for oil leaks or damage.  Are the rear shock absorbers leaking ?  <b>YES</b> Install new rear shock absorbers.  <b>NO</b> The vehicle is OK. Go to <b>TROUBLESHOOTING</b> .

## DETAILED TEST I : EXCESSIVE NOISE

CONDITIONS	DETAILS/RESULTS/ACTIONS
<b>I1 INSPECT THE SUSPENSION</b>	
	<p>1. Raise and support the vehicle. 2. Inspect the shock absorber mounting bolts.</p> <p>Are the mounting bolts loose or broken ?</p> <p><b>YES</b> Tighten or Install new shock absorber mounting bolts.</p> <p><b>NO</b> Go to <b>I2</b>.</p>
<b>I2 INSPECT THE SPRING AND TORSION BARS</b>	
	<p>Inspect the springs and stabilizer bars for damage.</p> <p>Are the spring or stabilizer bars damaged ?</p> <p><b>YES</b> Install new spring and/or stabilizer bars.</p> <p><b>NO</b> Go to <b>I3</b>.</p>
<b>I3 INSPECT THE FRONT SUSPENSION</b>	
	<p>Inspect the front suspension components for excessive wear or damage.</p> <p>Are the front suspension components worn or damaged ?</p> <p><b>YES</b> Install new front suspension components.</p> <p><b>NO</b> The vehicle is OK. Go to <b>TROUBLESHOOTING</b>.</p>

## DETAILED TEST J : INCORRECT TIRE WEAR

CONDITIONS	DETAILS/RESULTS/ACTIONS
<b>J1 INSPECT THE TIRES</b>	
	1. Raise and support the vehicle. 2. Inspect the tires for uneven wear on the inner or outer shoulder.  Is there uneven tire wear ?  <b>YES</b> Align the vehicle. Install new tires if badly worn.  <b>NO</b> Go to <b>J2</b> .
<b>J2 UNEVEN TIRE WEAR</b>	
	Inspect the tires for a feathering pattern.  Do the tires have a feathering pattern ?  <b>YES</b> Align the vehicle. Install new tires if badly worn.  <b>NO</b> Go to <b>J3</b> .
<b>J3 CHECK FOR CUPPED TIRE</b>	
	Inspect the tires for cupping or dishing.  Are the tires cupped or dished ?  <b>YES</b> Balance and Rotate the tires.  <b>NO</b> The vehicle is OK. Go to <b>TROUBLESHOOTING</b> .

## DETAILED TEST K : VIBRATION

CONDITIONS	DETAILS/RESULTS/ACTIONS
<b>K1 ROAD TEST</b>	
	<p>Accelerate the vehicle to the speed at which the customer indicated the vibration occurred.</p> <p>Is the vibration present ?</p> <p><b>YES</b> Go to <b>K2</b>.</p> <p><b>NO</b> The vehicle is OK. Go to <b>TROUBLESHOOTING</b>.</p>
<b>K2 INSPECT THE TIRES</b>	
	<ol style="list-style-type: none"> <li>1. Raise and support the vehicle with a frame contact hoist.</li> <li>2. Inspect the tires for extreme wear or damage, cupping, or flat spots.</li> </ol> <p>Are the tires OK ?</p> <p><b>YES</b> Go to <b>K3</b>.</p> <p><b>NO</b> Check the suspension components for misalignment, abnormal wear, or damage that may have contributed to the tire wear. Correct the suspension concerns and Install new tires.</p>
<b>K3 INSPECT THE WHEEL BEARINGS</b>	
	<p>Spin the tires by hand to check for wheel bearing roughness.</p> <p>Is the front wheel bearing OK ?</p> <p><b>YES</b> Go to <b>K4</b>.</p> <p><b>NO</b> Install new front wheel bearings as necessary. See Ds group - front axle.</p>
<b>K4 TIRE/WHEEL BALANCE</b>	
	<p>Check the tire/wheel balance.</p> <p>Are the tires balanced ?</p> <p><b>YES</b> Go to <b>K5</b>.</p> <p><b>NO</b> Balance the tires and wheels as necessary.</p>

## DETAILED TEST K : VIBRATION

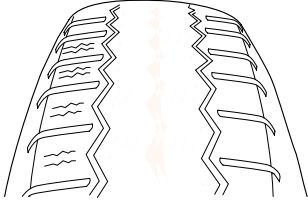
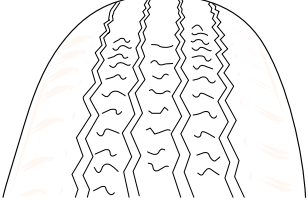
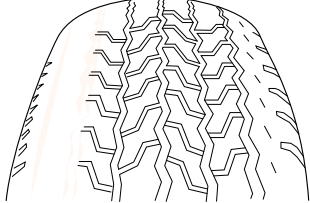
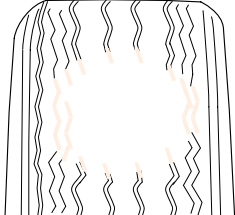
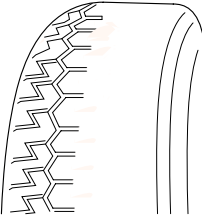
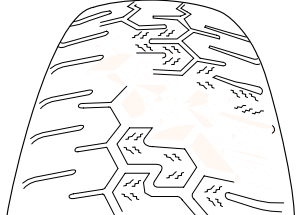
K5 MEASURE THE RUNOUTS	
	<p>For each wheel position measure, locate and mark the following items.</p> <ul style="list-style-type: none"><li>- High point of the tire/wheel assembly total radial runout</li><li>- High point of the wheel radial runout</li><li>- High point of the wheel lateral runout</li></ul> <p>Are the runouts as specified ?</p> <p><b>YES</b> Go to <b>K7</b>.</p> <p><b>NO</b> Go to <b>K6</b>.</p>
K6 SUBSTITUTE THE WHEELS AND TIRE	
	<ol style="list-style-type: none"><li>1. Substitute a known good set of wheels and tires.</li><li>2. Perform a road test.</li><li>3. If the vehicle still exhibits a shake or vibration, note the vehicle speed and/or engine rpm which it occurs.</li></ol> <p>Is the vibration felt ?</p> <p><b>YES</b> Engine/transmission imbalance. See the specification of TR group, EM group, FL group and EC group.</p> <p><b>NO</b> Install the original tire/wheel assemblies one by one, Road testing at each step until the damaged tire(s)/wheel(s) as necessary. Test the system for normal operation.</p>



Wheel /tire noise, vibration and harshness concerns are directly related to vehicle speed and are not generally affected by acceleration, coasting or decelerating. Also, out-of-balance wheel and tires can vibrate at more than one speed. A vibration that is affected by the engine rpm, or is eliminated by placing the transmission in Neutral is not related to the tire and wheel. As a general rule, tire and wheel vibrations felt in the steering wheel are related to the front tire and wheel assemblies. Vibrations felt in the seat or floor are related to the rear tire and wheel

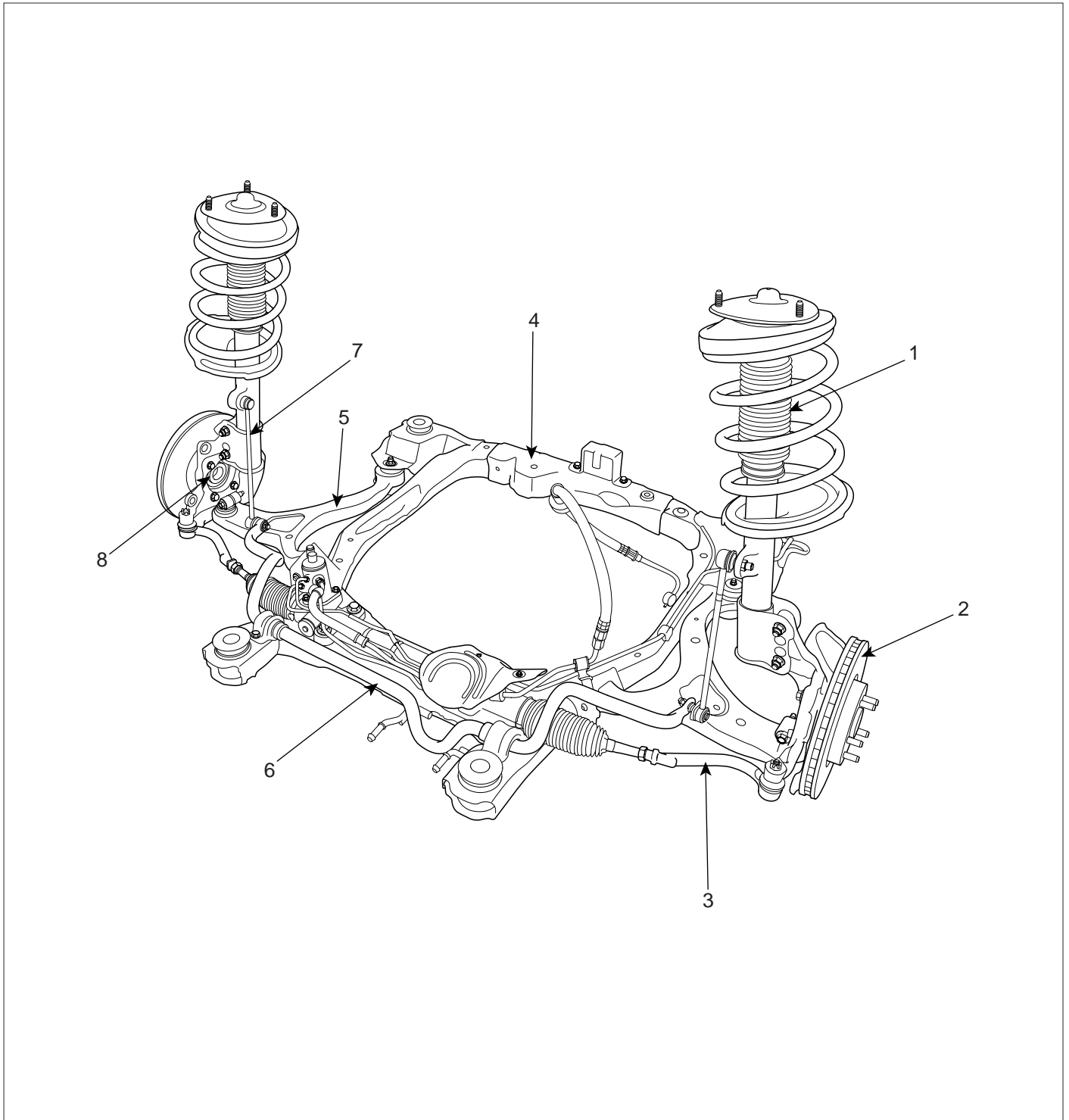
assemblies. This can initially isolate a concern to the front or rear.

Careful attention must be paid to the tire and wheels. There are several symptoms that can be caused by damaged or worn tire and wheels. Perform a careful visual inspection of the tires and wheel assemblies. Spin the tires slowly and watch for signs of lateral or radial runout. Refer to the tire wear chart to determine the tire wear conditions and actions

<b>WHEEL AND TIRE DIAGNOSIS</b>		
<b>Rapid wear at the center</b>	<b>Rapid wear at both shoulders</b>	<b>Wear at one shoulder</b>
 <p style="text-align: right;">AHIE002A</p>	 <p style="text-align: right;">AHIE002B</p>	 <p style="text-align: right;">AHIE002C</p>
<ul style="list-style-type: none"> <li>• Center-tread down to fabric due to excessive over inflated tires</li> <li>• Lack of rotation</li> <li>• Excessive toe on drive wheels</li> <li>• Heavy acceleration on drive</li> </ul>	<ul style="list-style-type: none"> <li>• Under-inflated tires</li> <li>• Worn suspension components</li> <li>• Excessive cornering speeds</li> <li>• Lack of rotation</li> </ul>	<ul style="list-style-type: none"> <li>• Toe adjustment out of specification</li> <li>• Camber out of specification</li> <li>• Damaged strut</li> <li>• Damaged lower arm</li> </ul>
<b>Partial wear</b>	<b>Feathered edge</b>	<b>Wear pattern</b>
 <p style="text-align: right;">AHIE002D</p>	 <p style="text-align: right;">AHIE002F</p>	 <p style="text-align: right;">AHIE002G</p>
<ul style="list-style-type: none"> <li>• Caused by irregular burrs on brake drums</li> </ul>	<ul style="list-style-type: none"> <li>• Toe adjustment out of specification</li> <li>• Damaged or worn tie rods</li> <li>• Damaged knuckle</li> </ul>	<ul style="list-style-type: none"> <li>• Excessive toe on non-drive wheels</li> <li>• Lack of rotation</li> </ul>

# FRONT SUSPENSION SYSTEM

## COMPONENTS EAC2BB36

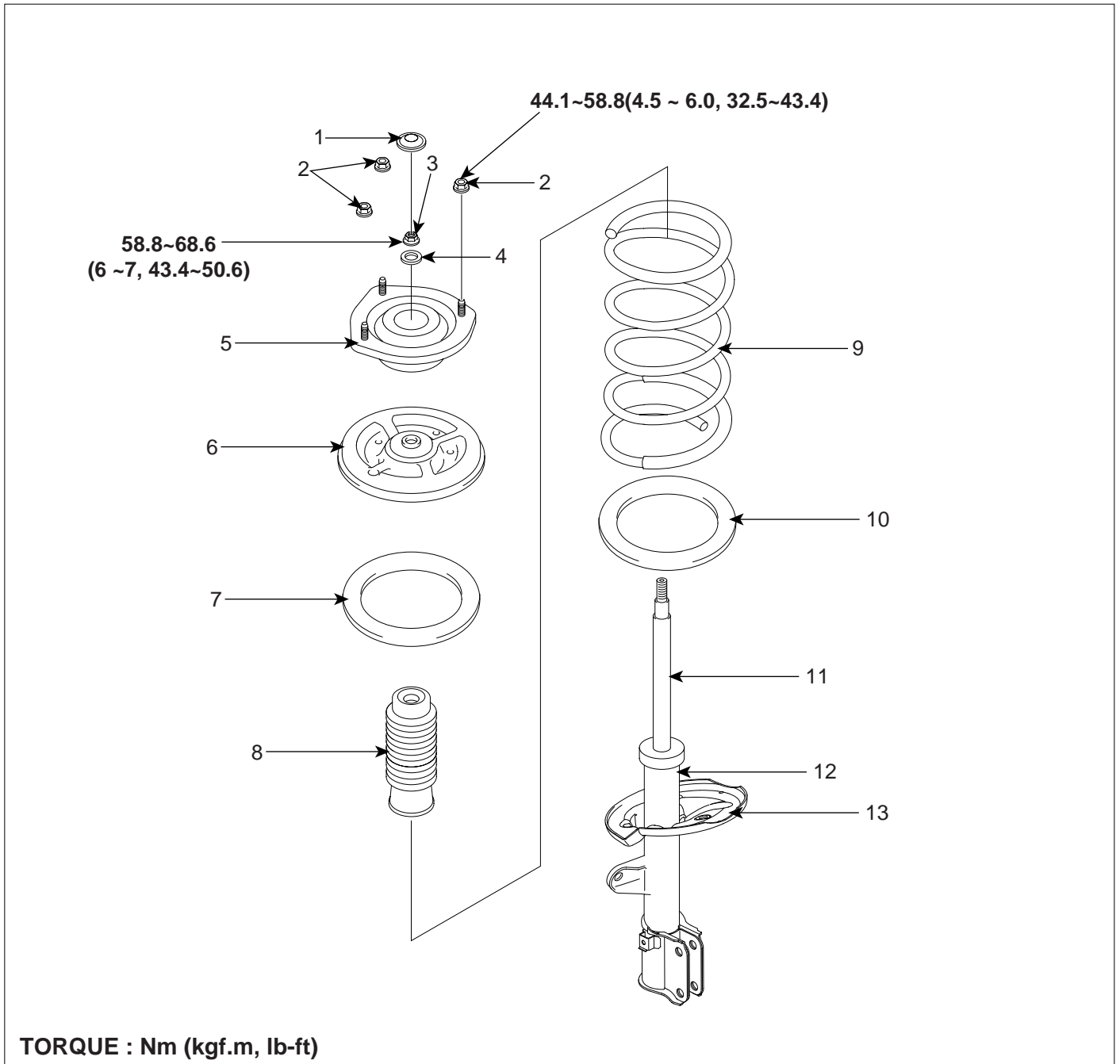


1. Front strut assembly
2. Front disc
3. Tie rod end assembly
4. Front subframe

5. Front lower arm
6. Front stabilizer bar assembly
7. Front stabilizer link assembly
8. Front knuckle assembly

FRONT STRUT ASSEMBLY

COMPONENTS E41E65D1

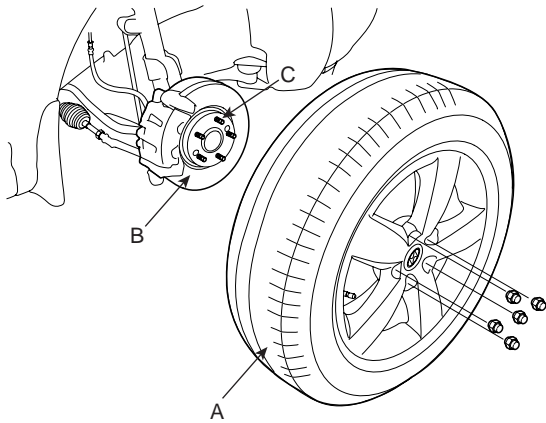


- 1. Dust cover
- 2. Upper mounting nut
- 3. Self-locking nut
- 4. Spacer
- 5. Insulator
- 6. Spring upper seat
- 7. Spring upper pad

- 8. Strut dust cover and bumper rubber
- 9. Coil spring
- 10. Spring lower pad
- 11. Piston rod
- 12. Strut assembly
- 13. Spring lower seat

**REMOVAL** EDC68431

1. Loosen the wheel nuts slightly.  
Raise the vehicle, and make sure it is securely supported.
2. Remove the front wheel and tire (A) from the front hub (B).

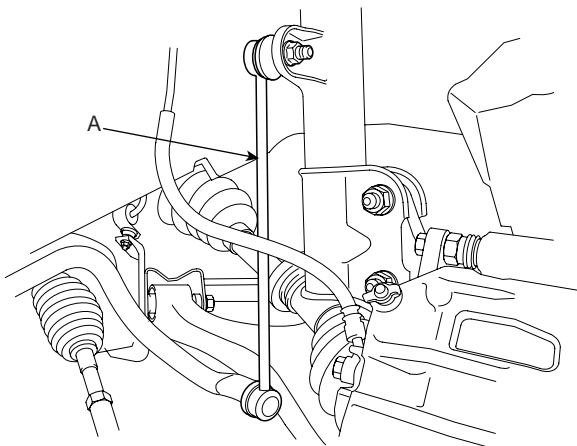


SCMSS6502D

**CAUTION**

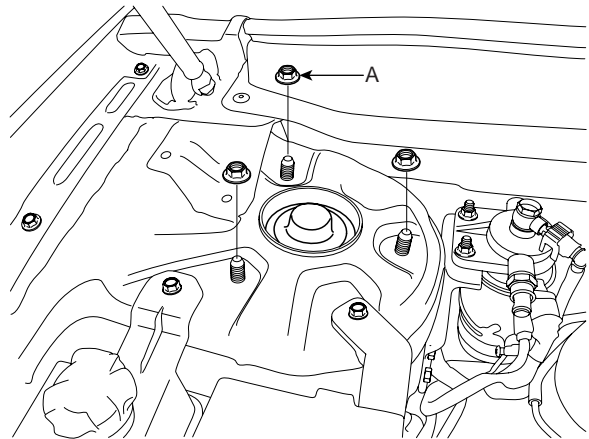
*Be careful not to damage to the hub bolts (C) when removing the front wheel and tire (A).*

3. Remove the front stabilizer link (A) from the strut assembly.



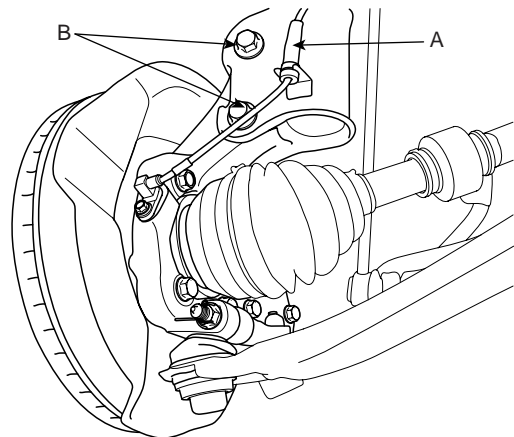
SCMSS6503D

4. Remove the strut upper mounting nuts (A).



SCMSS6001D

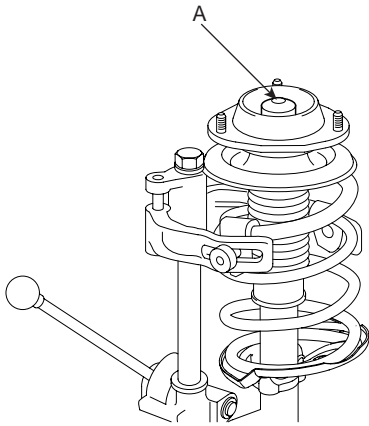
5. Remove the wheel speed sensor cable (A) and strut lower mounting bolts (B), then remove the strut assembly.



SCMSS6030D

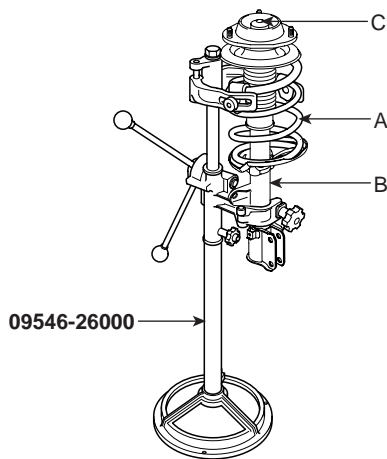
**DISASSEMBLY** ECD04DAF

1. Remove the dust cover (A).



SCMSS6525D

2. Using the special tool (09546-26000), compress the coil spring (A).

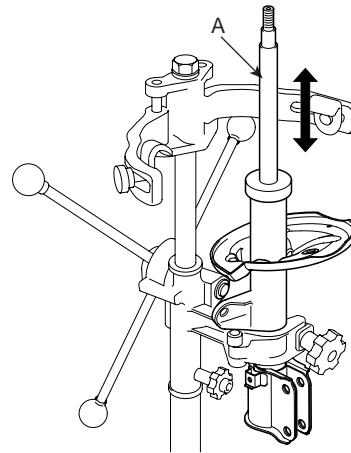


KHQE110C

3. Remove the self-locking nut (C) from the strut assembly(B).
4. Remove the insulator, spring seat, coil spring and dust cover from the strut assembly.

**INSPECTION** E1755BFA

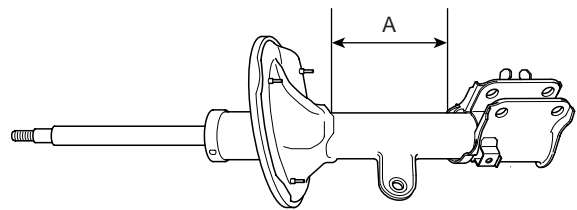
1. Check the strut insulator for wear or damage.
2. Check rubber parts for damage or deterioration.
3. Compress and extend the piston rod (A) and check that there is no abnormal resistance or unusual sound during operation.



KHQE120A

**DISPOSAL**

1. Fully extend the piston rod.
2. Drill a hole on the A section to remove gas from the cylinder.



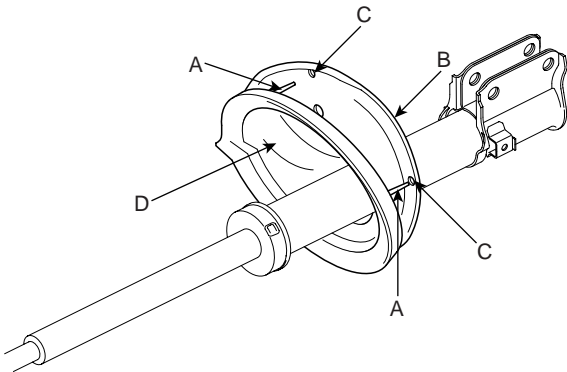
KHQE121A

**CAUTION**

*The gas coming out is harmless, but be careful of chips that may fly when drilling. Be sure to wear safety goggles or eye protection when performing this task.*

**REASSEMBLY** EEA17FEF

1. Install the spring lower pad (D) so that the protrusions(A) fit in the holes (C) in the spring lower seat (B).

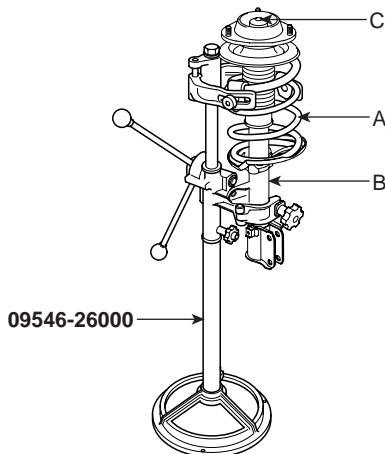


KHQE130A

2. Compress coil spring using special tool (09546-26000). Install compressed coil spring into shock absorber.

**NOTE**

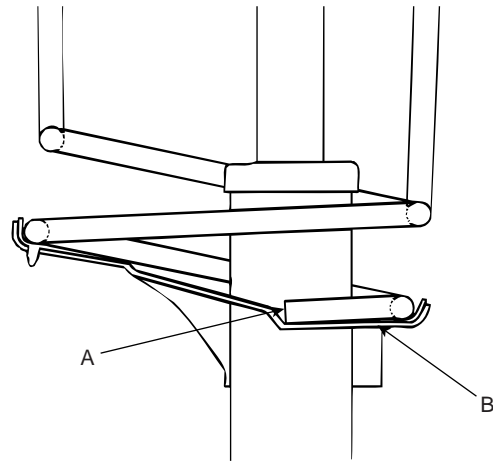
- a. Indicated identification color marks on the coil spring. Pay attention to identification mark and then install them.
- b. Install the coil spring with the identification mark directed toward the knuckle.



KHQE110C

3. After fully extending the piston rod, install the spring upper seat and insulator assembly.

4. After seating the upper and lower ends of the coil spring (A) in the upper and lower spring seat grooves (B) correctly, tighten new self-locking nut temporarily.



KSMS44B

5. Remove the special tool (09546-26000).
6. Tighten the self-locking nut to the specified torque.

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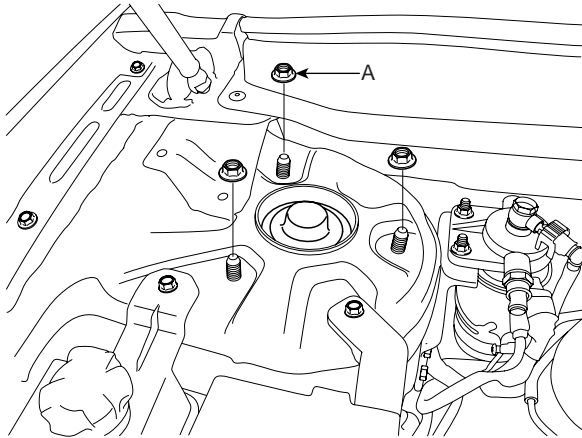
**Tightening torque Nm (kgf-m, lb-ft) :**  
58.8~68.6 (6~7, 43.4~50.6)

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**INSTALLATION** E16F245F

1. Install the strut assembly and then tighten the strut upper mounting nuts (A).

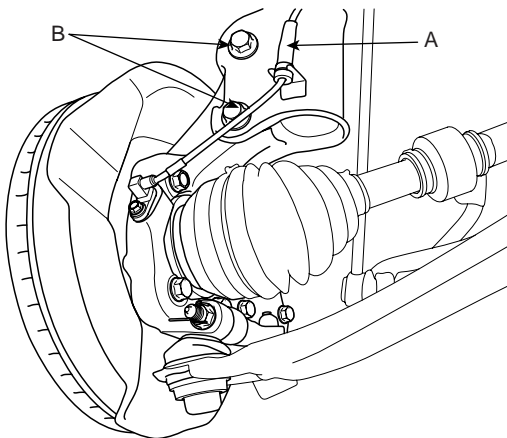
**Tightening torque Nm (kgf-m, lb-ft) :**  
44.1~58.8 (4.5~6.0, 32.5~43.4)



SCMSS6001D

2. Install the wheel speed sensor cable(A) and strut lower mounting bolts(B).

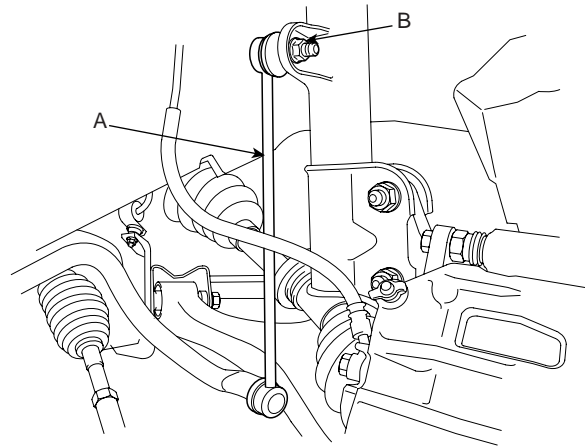
**Tightening torque Nm (kgf-m, lb-ft) :**  
Bolt(B) : 152.0~171.6 (15.5~17.5, 112.1~126.6)



SCMSS6030D

3. Install the front stabilizer link (A) to the strut assembly.

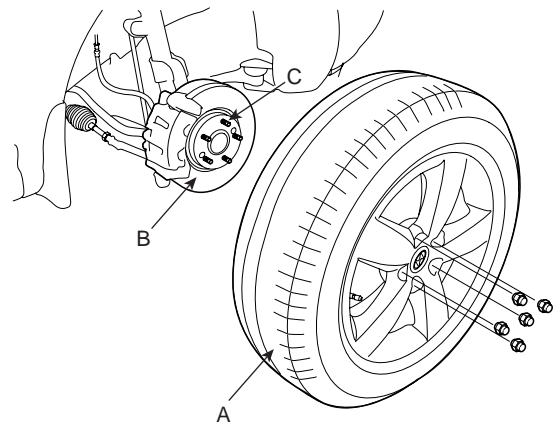
**Tightening torque Nm (kgf-m, lb-ft) :**  
Nut(B) : 98.1~117.7 (10.0~12.0, 72.3~86.8)



SCMSS6504D

4. Install the wheel and tire (A) to the front hub (B).

**Tightening torque Nm (kgf-m, lb-ft) :**  
88.3~107.9 (9~11, 65.1~79.6)



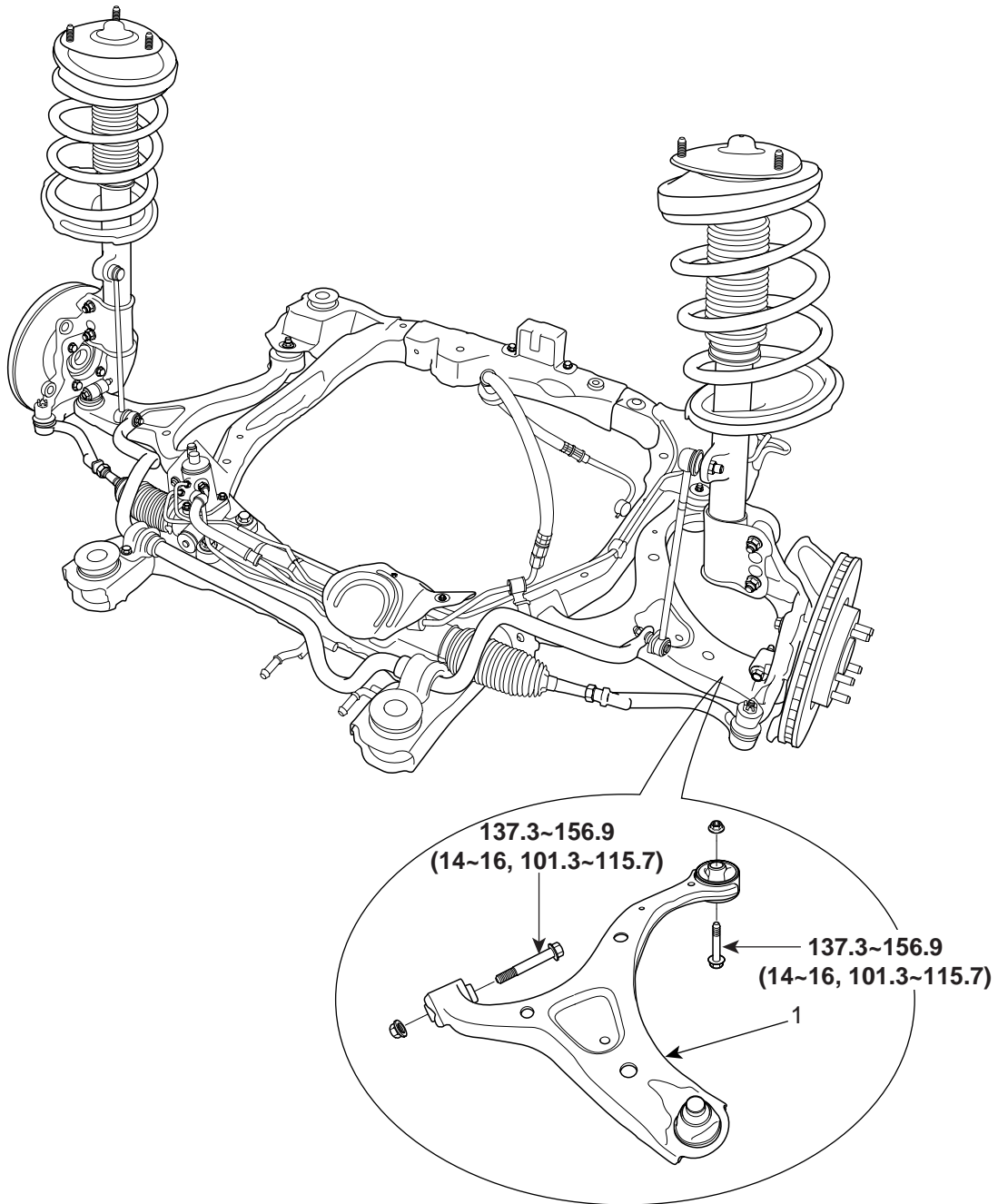
SCMSS6502D

**⚠ CAUTION**

**Be careful not to damage the hub bolts (C) when installing the front wheel and tire (A).**

# FRONT LOWER ARM

COMPONENT EA0C06AB



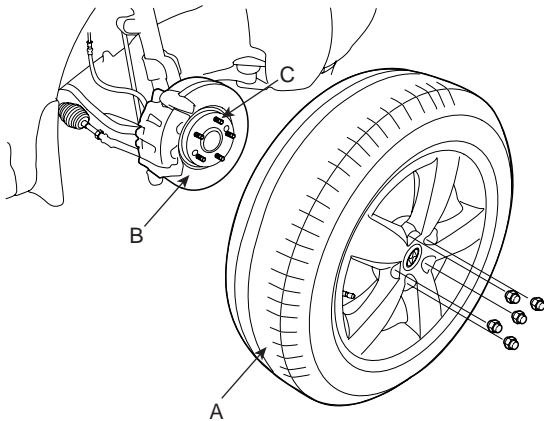
**TORQUE : Nm (kgf.m, lb-ft)**

1. Front lower arm



**REMOVAL** E1F461EA

1. Loosen the wheel nuts slightly.  
Raise the vehicle, and make sure it is securely supported.
2. Remove the front wheel and tire (A) from the front hub (B).

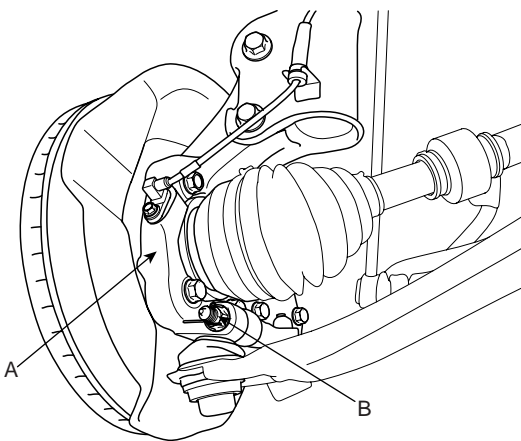


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**! CAUTION**

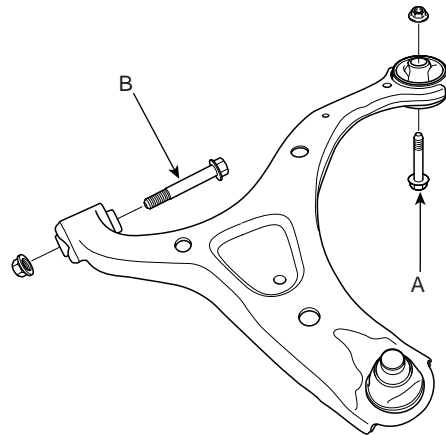
**Be careful not to damage to the hub bolts (C) when removing the front wheel and tire (A).**

3. Remove the split pin and front lower arm mounting bolt (B) from the knuckle (A).



SCMSS6505D

4. Remove the lower arm mounting bolts (A,B) and then remove the lower arm.



SCMSS6002D

**! CAUTION**

**If the bush is excessive worn and damaged, replace the lower arm assembly.**

**INSPECTION** ECA7D9CF

1. Check the bushing for wear and deterioration.
2. Check the lower arm for bending or breakage.
3. Check the ball joint dust cover for cracks.
4. Check all bolts.

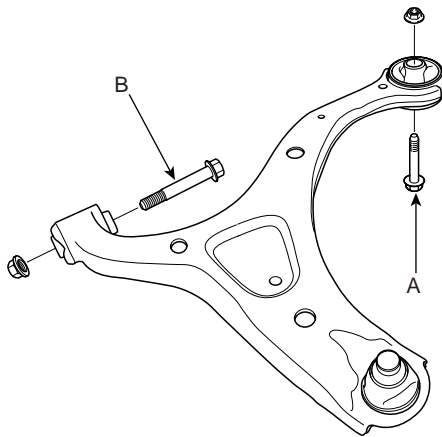
**INSTALLATION** EFFDBA92

1. Install the lower arm and then tighten the lower arm mounting bolts (A, B).

**Tightening torque Nm (kgf-m, lb-ft) :**

Bolt(A) : 137.3~156.9 (14~16, 101.3~115.7)

Bolt(B) : 137.3~156.9 (14~16, 101.3~115.7)

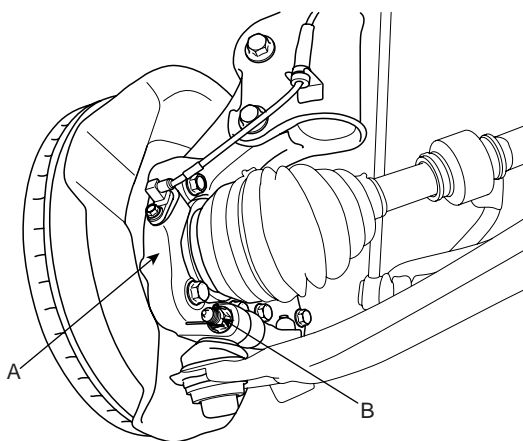


SCMSS6002D

2. Install the split pin and front lower arm mounting bolt (B) to the knuckle (A).

**Tightening torque Nm (kgf-m, lb-ft) :**

98.1~117.7 (10.0~12.0, 72.3~86.8)

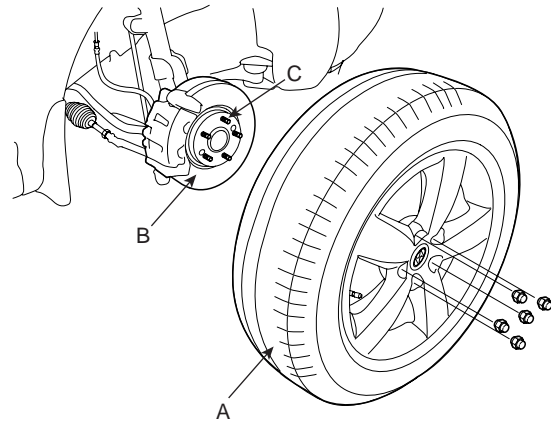


SCMSS6505D

3. Install the wheel and tire (A) to the front hub (B).

**Tightening torque Nm (kgf-m, lb-ft) :**

88.3~107.9 (9~11, 65.1~79.6)



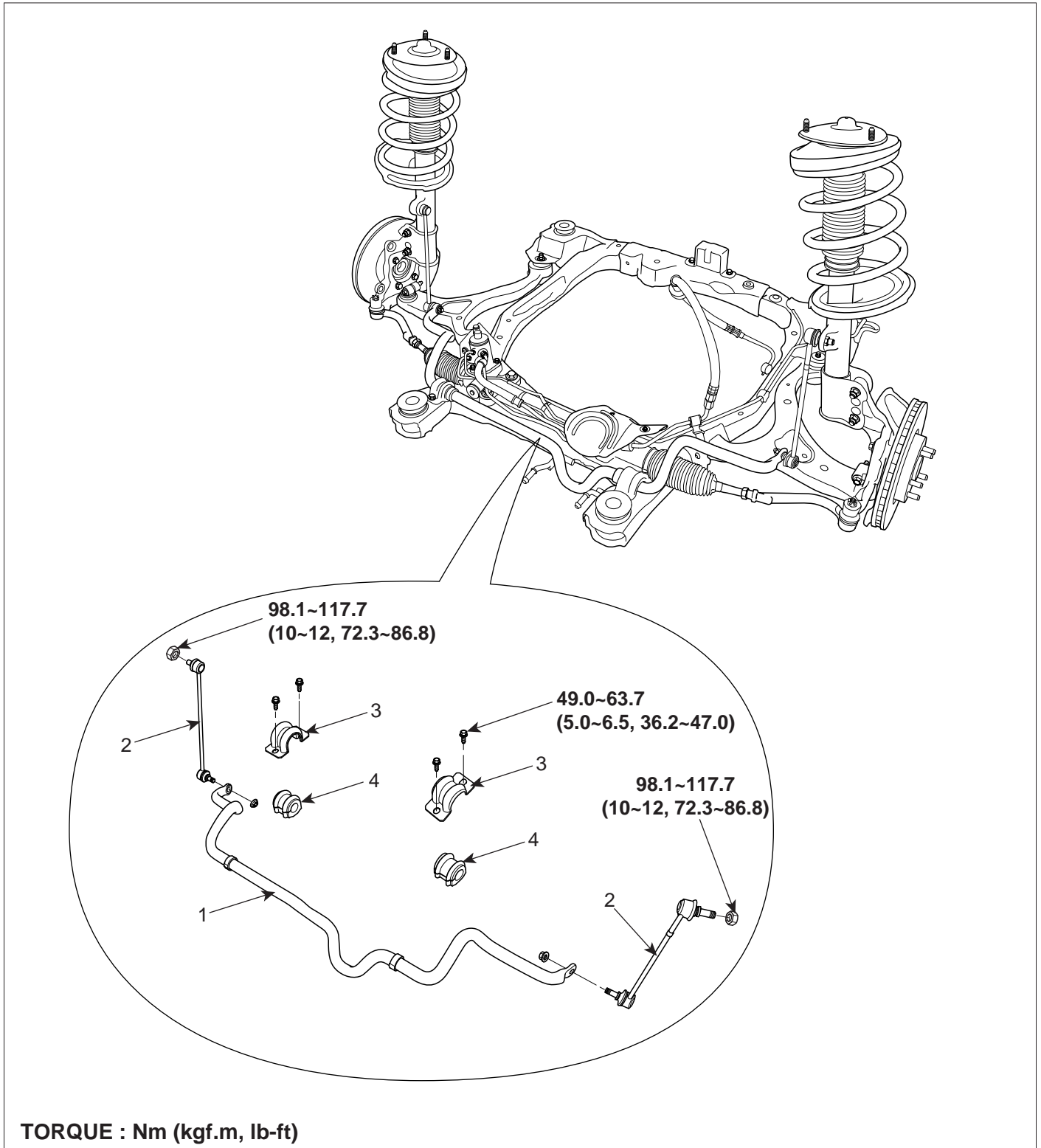
SCMSS6502D

**CAUTION**

*Be careful not to damage the hub bolts(C) when installing the front wheel and tire (A).*

FRONT STABILIZER BAR

COMPONENT EA57CFB0

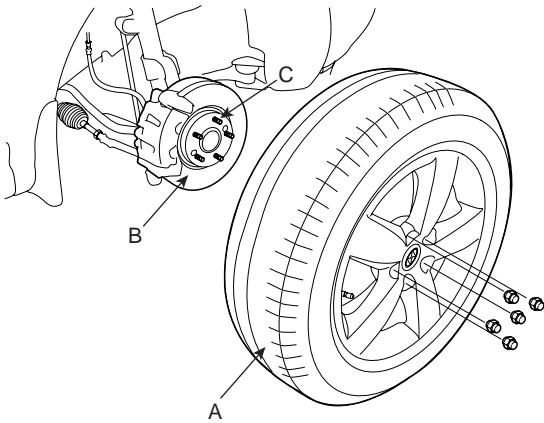


- 1. Front stabilizer bar
- 2. Front stabilizer link

- 3. Front stabilizer bar bracket
- 4. Front stabilizer bushing

**REMOVAL** EBD7E8CF

1. Loosen the wheel nuts slightly.  
Raise the vehicle, and make sure it is securely supported.
2. Remove the front wheel and tire (A) from the front hub (B).

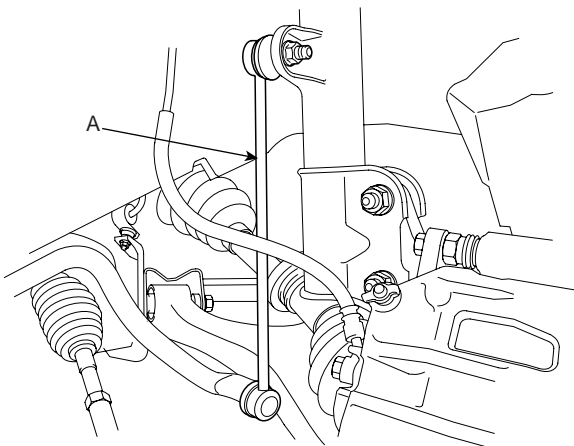


SCMSS6502D

**CAUTION**

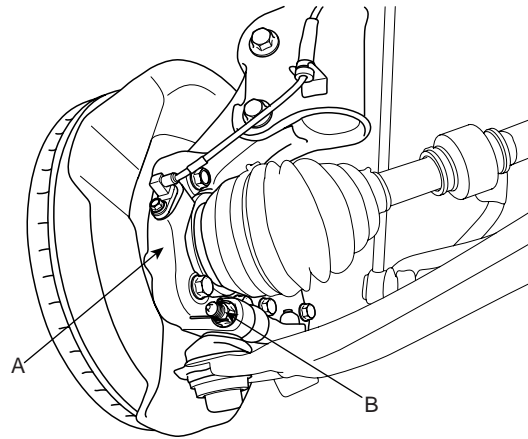
*Be careful not to damage to the hub bolts (C) when removing the front wheel and tire (A).*

3. Remove the front stabilizer link (A) from the strut assembly.



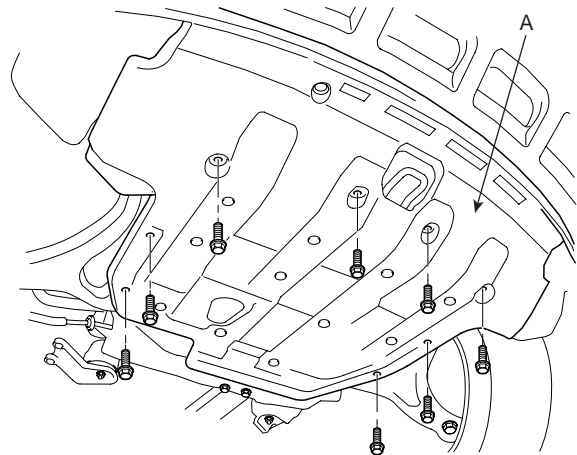
SCMSS6503D

4. Remove the split pin and front lower arm mounting bolt (B) from the knuckle (A).



SCMSS6505D

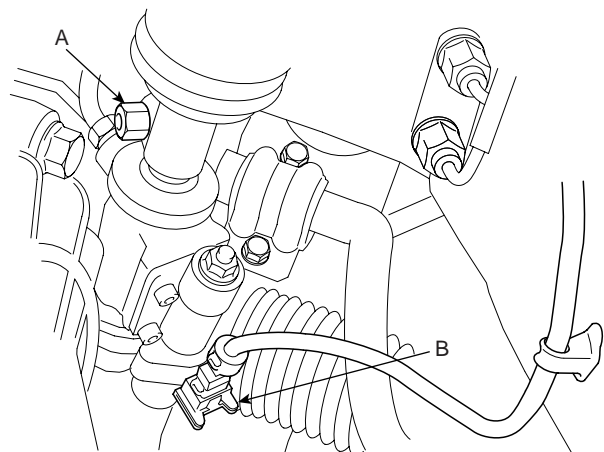
5. Remove the under cover (A).



SCMSS6506D

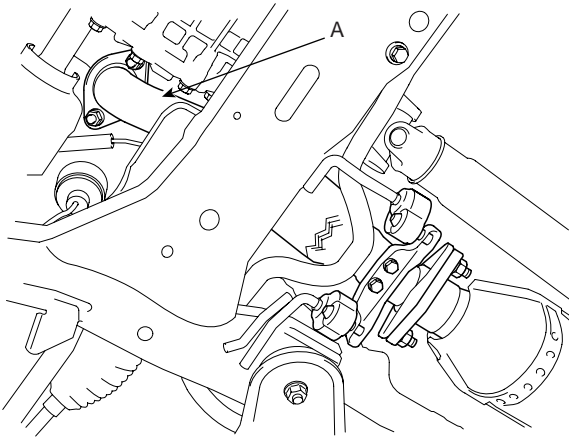
6. Remove the connecting bolt (A) between the steering universal joint assembly and the pinion shaft.

7. Disconnect the EPS connector (B).



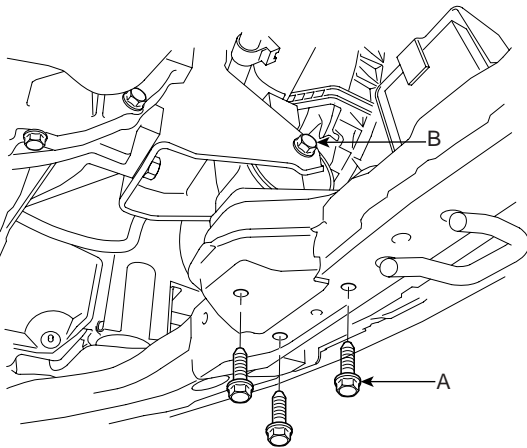
SCMSS6507D

8. Remove the front muffler (A).



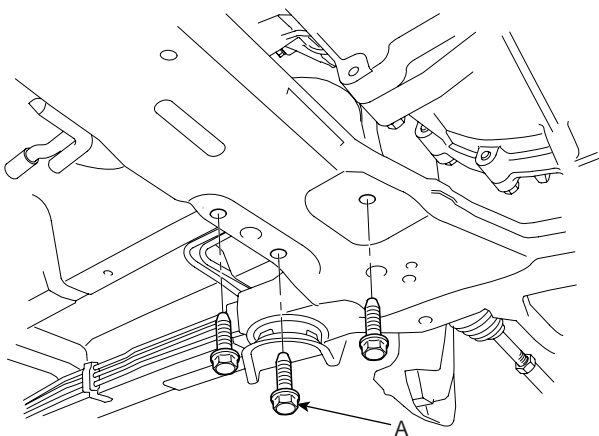
SCMSS6508D

9. Remove the front roll stopper mounting bolts (A).



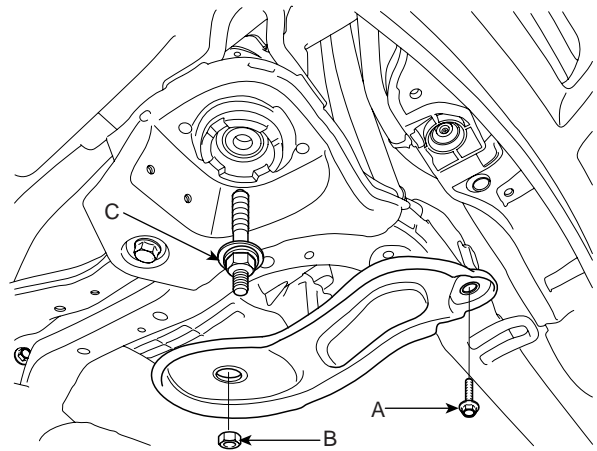
SCMSS6509D

10. Remove the rear roll stopper mounting bolts (A).

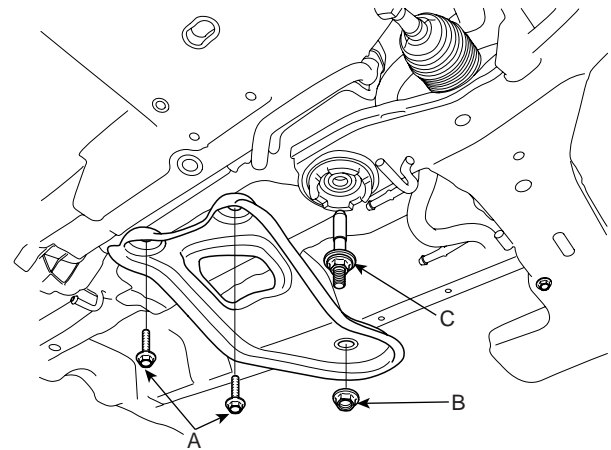


SCMSS6510D

11. Remove the sub frame stay mounting bolts (A), nuts (B) and the sub frame mounting bolts (C) by supporting it with a jack.

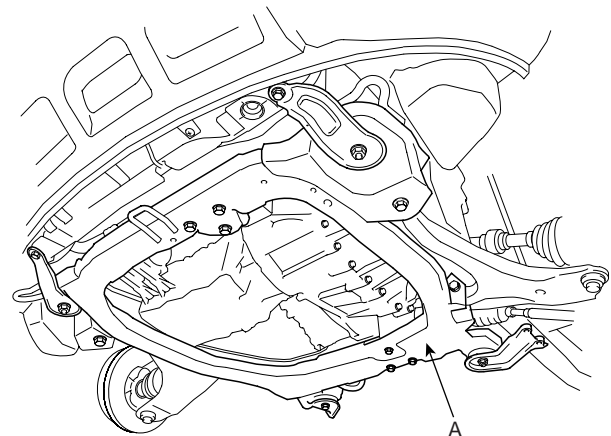


SCMSS6004D



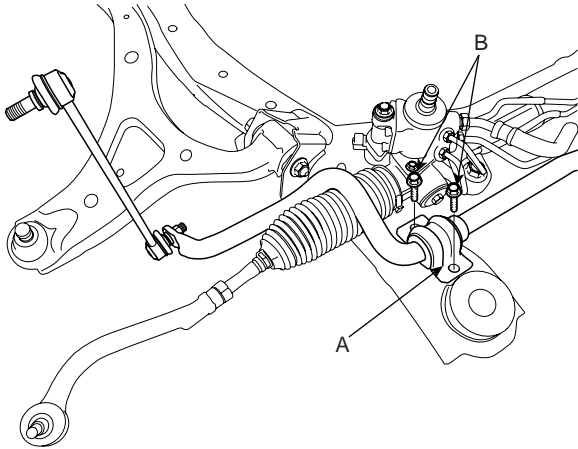
SCMSS6005D

12. Remove the sub frame (A).



SCMSS6511D

13. Remove the stabilizer bar bracket (A) mounting bolts (B) from the sub frame.



SCMSS6006D

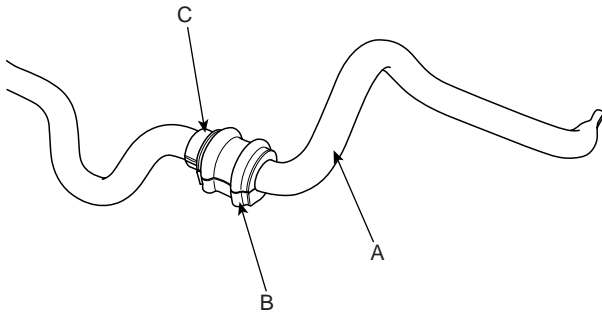
14. Remove the stabilizer bar.

### INSPECTION EEE538DD

1. Check the bushing for wear and deterioration.
2. Check the stabilizer bar for bending or breakage.
3. Check the ball joint dust cover for cracks.
4. Check all bolts.

INSTALLATION E2DAFBCB

1. Install the bushing (B) on the stabilizer bar (A).



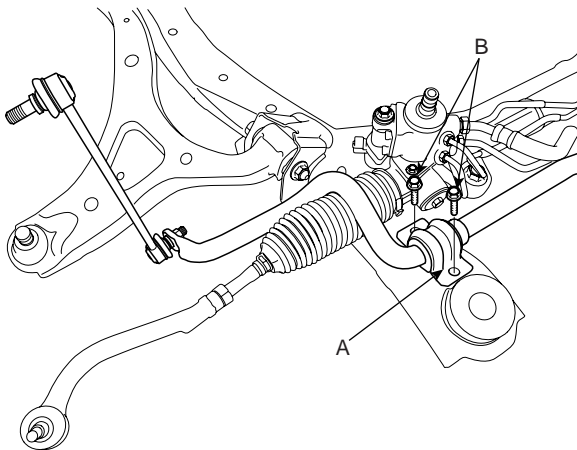
SCMSS6007D

**NOTE**

Bring clamp (C) of stabilizer bar (A) into contact with bushing (B).

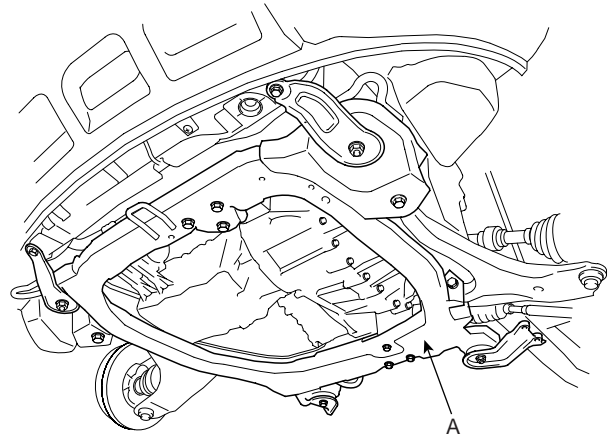
2. Install the bracket on the bushing (B).
3. Install the stabilizer bar to the sub frame.
4. Install the stabilizer bar bracket (A) mounting bolts (B).

**Tightening torque Nm (kgf-m, lb-ft) :**  
 Bolt(B) : 49.0~63.7 (5.0~6.5, 36.2~47.0)



SCMSS6006D

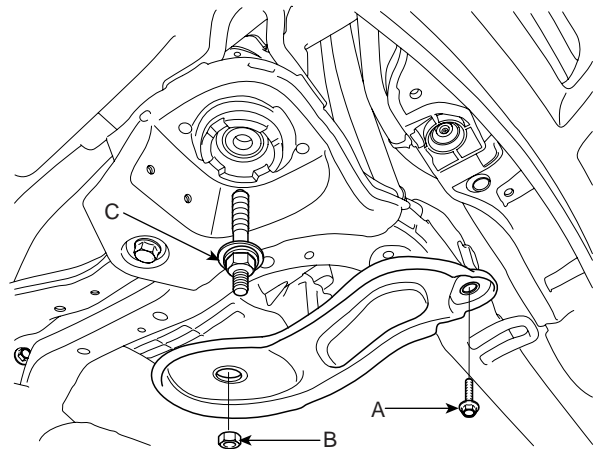
5. Install the sub frame (A) by supporting it with a jack.



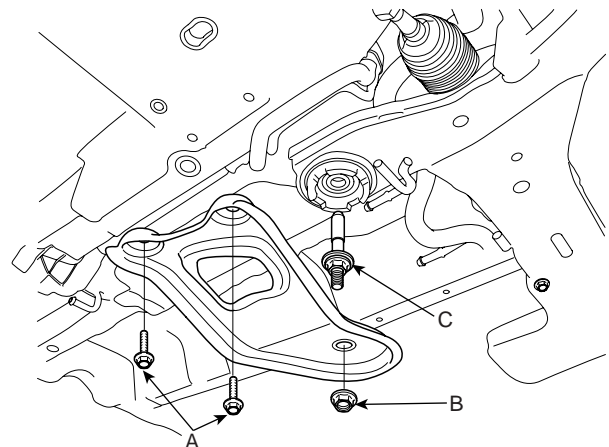
SCMSS6511D

6. Install the sub frame stay mounting bolts(A), nuts(B) and the sub frame mounting bolts(C).

**Tightening torque Nm (kgf-m, lb-ft) :**  
 Bolt(A) : 68.6~88.3 (7.0~9.0, 50.6~65.1)  
 Nut(B) : 68.6~88.3 (7.0~9.0, 50.6~65.1)  
 Bolt(C) : 137.3~156.9 (14~16, 101.3~115.7)



SCMSS6004D

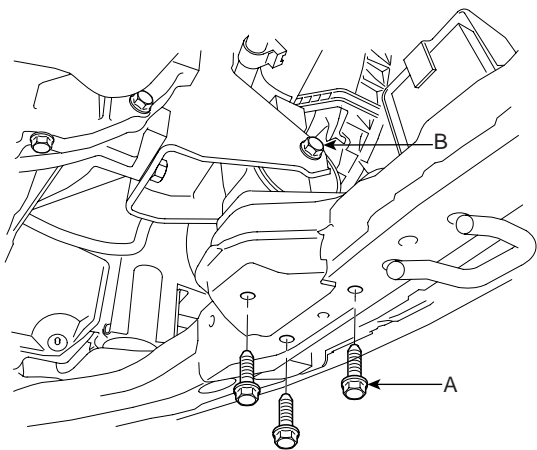


SCMSS6005D



7. Install the front roll stopper mounting bolts (A).

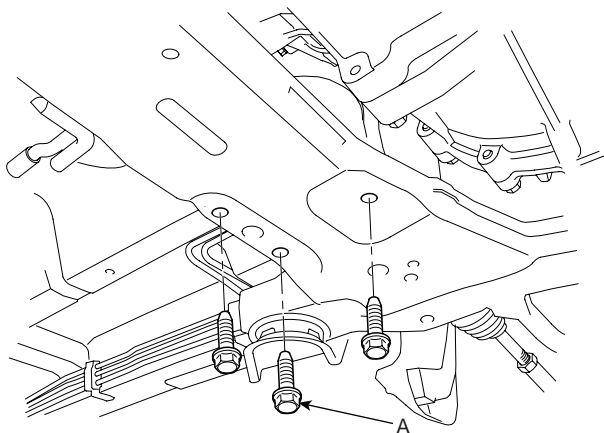
**Tightening torque Nm (kgf-m, lb-ft) :**  
 Bolt(A) : 49.0~63.7 (5.0~6.5, 36.2~47.0)  
 Bolt(B) : 78.5~98.1 (8.0~10.0, 57.9~72.3)



SCMSS6509D

8. Install the rear roll stopper mounting bolts (A).

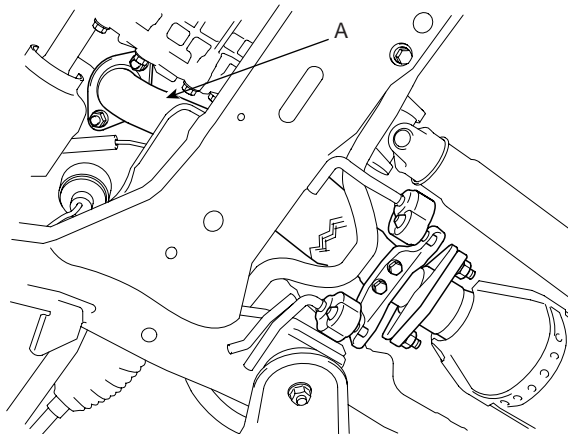
**Tightening torque Nm (kgf-m, lb-ft) :**  
 Bolt(A) : 49.0~63.7 (5.0~6.5, 36.2~47.0)



SCMSS6510D

9. Install the front muffler (A).

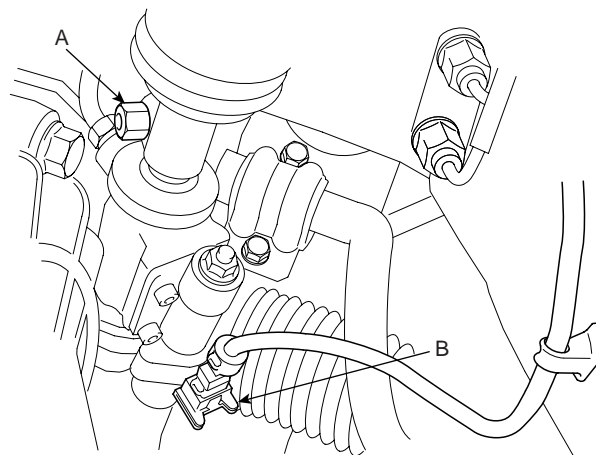
**Tightening torque Nm (kgf-m, lb-ft) :**  
 39.2~58.8 (4.0~6.0, 28.9~43.4)



SCMSS6508D

10. Install the connecting bolt (A) between the steering universal joint assembly and the pinion shaft.

**Tightening torque Nm (kgf-m, lb-ft) :**  
 29.4~44.1 (3.0~4.5, 21.7~32.5)

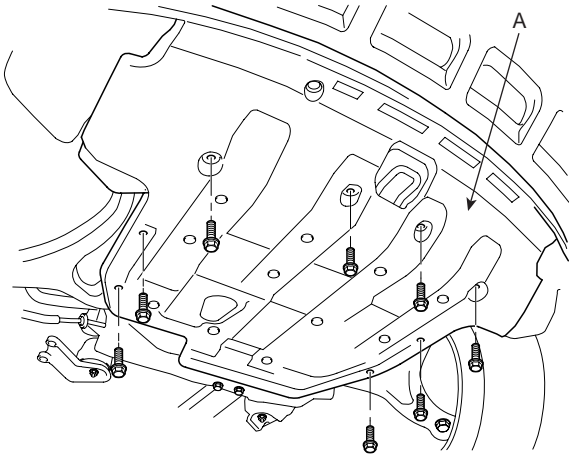


SCMSS6507D



12. Install the under cover (A).

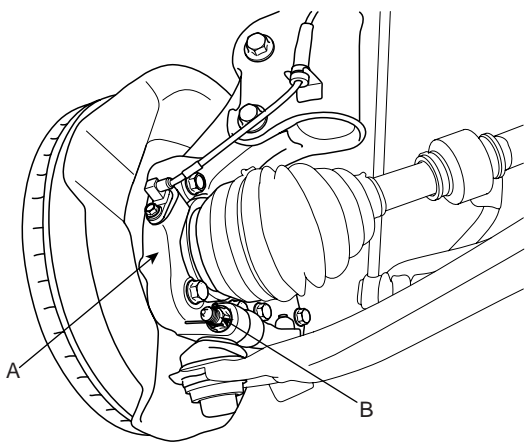
**Tightening torque Nm (kgf-m, lb-ft) :**  
16.7~25.5 (1.7~2.6, 12.3~18.8)



SCMSS6506D

13. Install the split pin and front lower arm mounting bolt (B) to the knuckle (A).

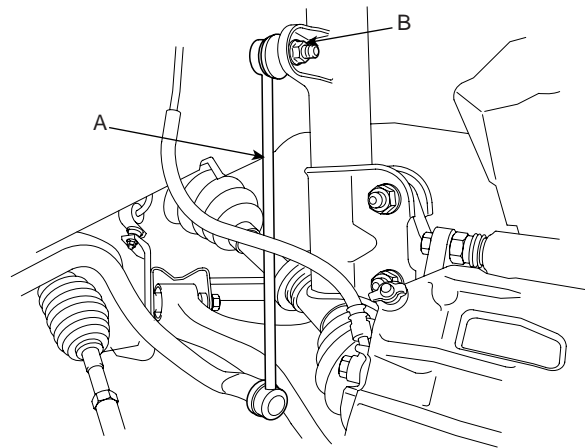
**Tightening torque Nm (kgf-m, lb-ft) :**  
98.1~117.7 (10.0~12.0, 72.3~86.8)



SCMSS6505D

14. Install the front stabilizer link (A) to the strut assembly.

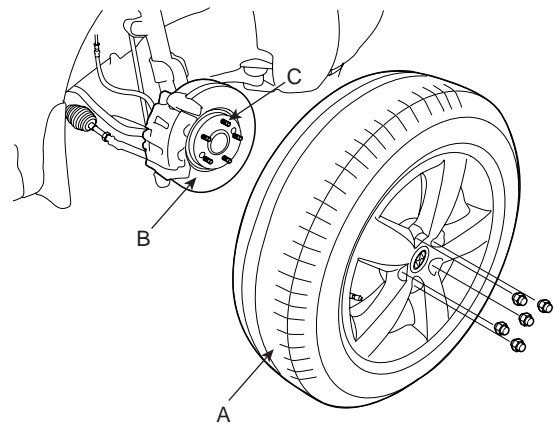
**Tightening torque Nm (kgf-m, lb-ft):**  
Nut(B) : 98.1~117.7 (10.0~12.0, 72.3~86.8)



SCMSS6504D

15. Install the wheel and tire (A) to the front hub (B).

**Tightening torque Nm (kgf-m, lb-ft):**  
88.3~107.9 (9~11, 65.1~79.6)



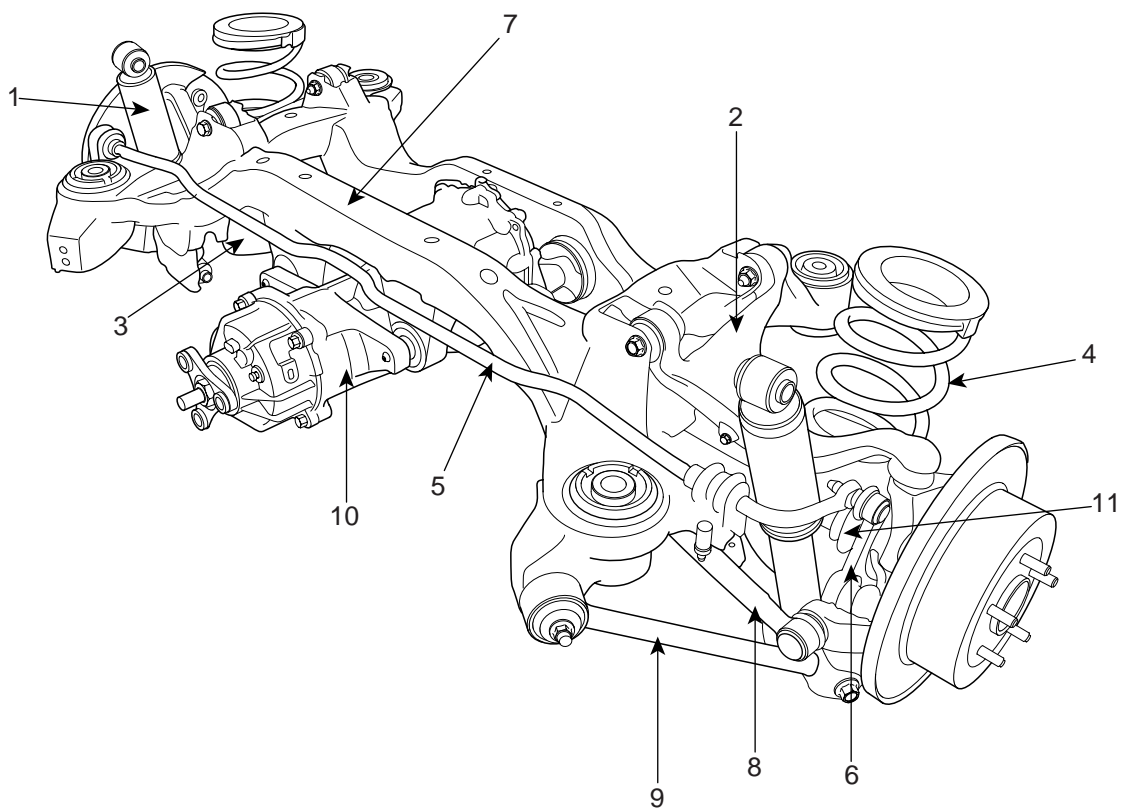
SCMSS6502D

**⚠ CAUTION**

*Be careful not to damage the hub bolts (C) when installing the front wheel and tire (A).*

# REAR SUSPENSION SYSTEM

COMPONENT E0ADC96A

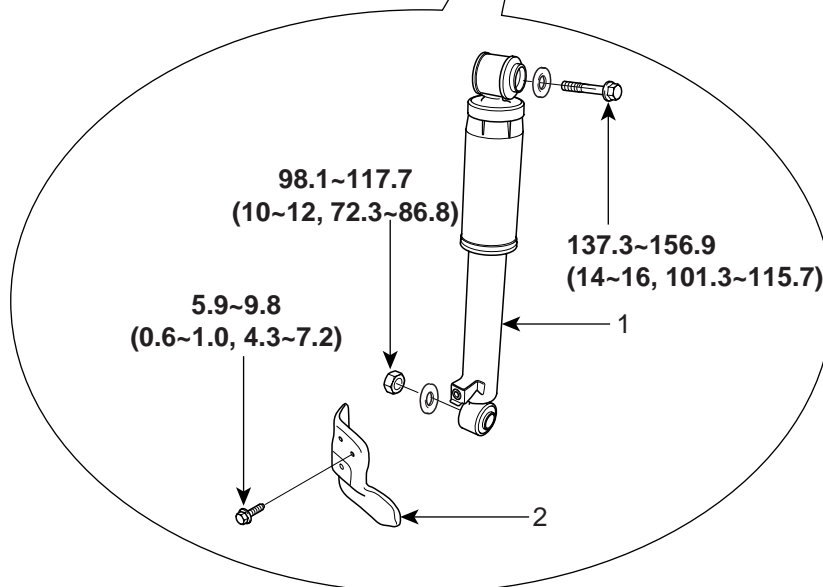
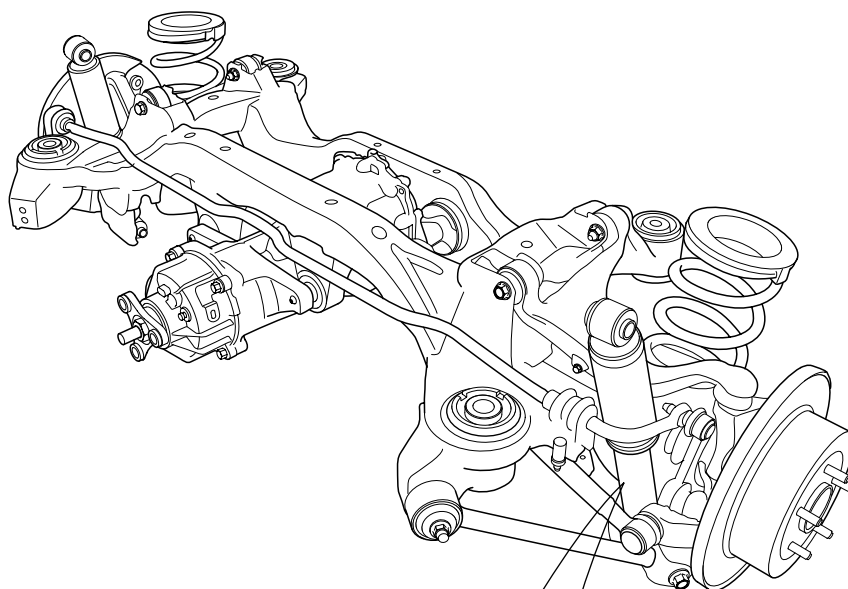


1. Rear shock absorber assembly
2. Rear upper arm
3. Rear lower arm
4. Rear coil spring
5. Rear stabilizer bar assembly
6. Rear stabilizer link assembly

7. Rear cross member
8. Rear assist arm
9. Trailing arm
10. Differential Carrier (4WD)
11. Drive shaft (4WD)

REAR SHOCK ABSORBER

COMPONENT EFEACBB1

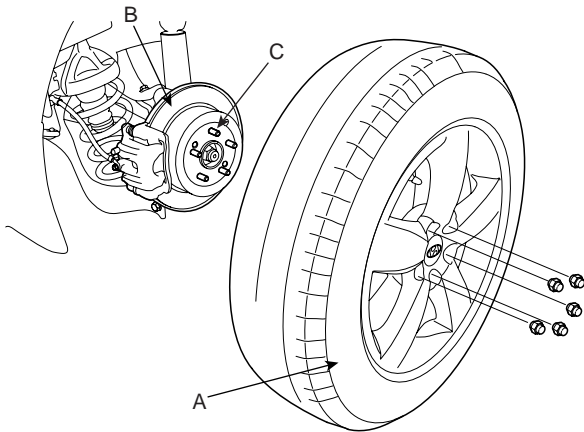


**TORQUE : Nm (kgf.m, lb-ft)**

- 1. Rear shock absorber
- 2. Dust cover

**REMOVAL** E01096EE

1. Loosen the wheel nuts slightly.  
Raise the vehicle, and make sure it is securely supported.
2. Remove the rear wheel and tire (A) from the rear hub (B).

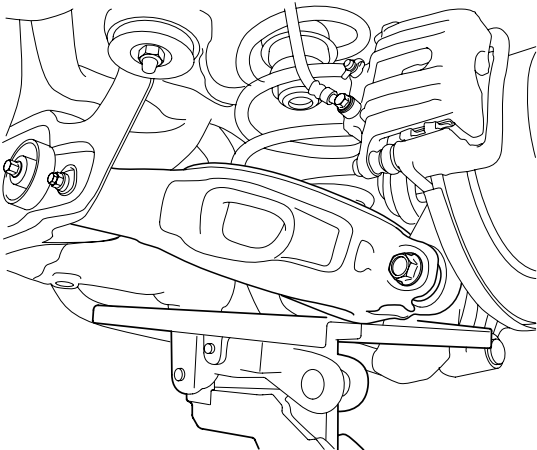


SCMSS6512D

**CAUTION**

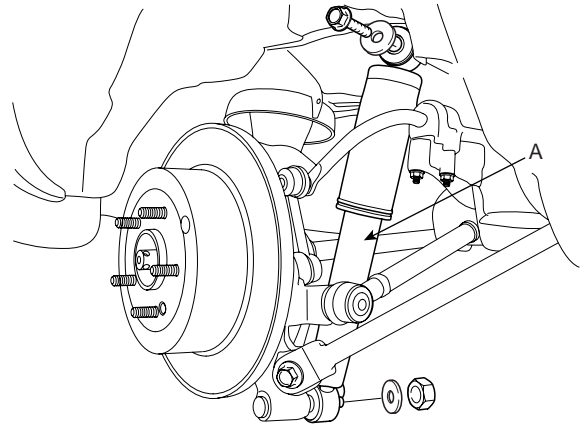
**Be careful not to damage to the hub bolts (C) when removing the rear wheel and tire (A).**

3. Support the rear lower arm with a jack as shown in the illustration.



SCMSS6526D

4. Remove the rear shock absorber(A).



SCMSS6514D

**CAUTION**

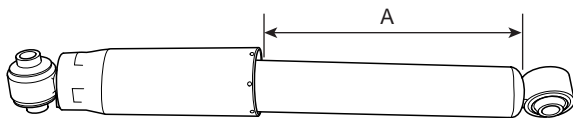
**If the bush is excessive worn and damaged, replace the shock absorber assembly.**

**INSPECTION** EFF7BFD5

1. Check the rubber parts for damage or deterioration.
2. Check the shock absorber for abnormal resistance or unusual sounds.

**DISPOSAL**

1. Fully extend the shock absorber rod.
2. Drill a hole to remove gas from the cylinder.



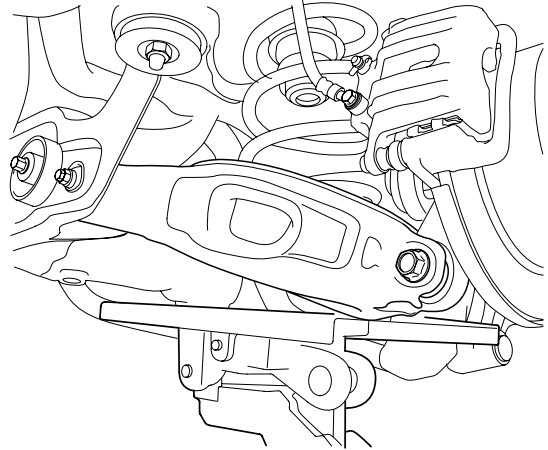
AHKF210G

**CAUTION**

*The gas coming out is harmless, but be careful of chips that may fly up when drilling. Be sure to use face shield and safety goggles.*

**INSTALLATION** E6FBAED1

1. Support the rear lower arm with a jack as shown in the illustration.



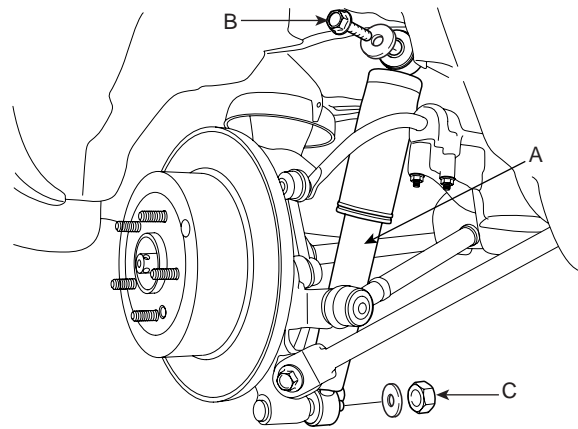
SCMSS6526D

2. Install the rear shock absorber (A).

**Tightening torque Nm (kgf-m, lb-ft) :**

Bolt(B) : 137.3~156.9 (14~16, 101.3~115.7)

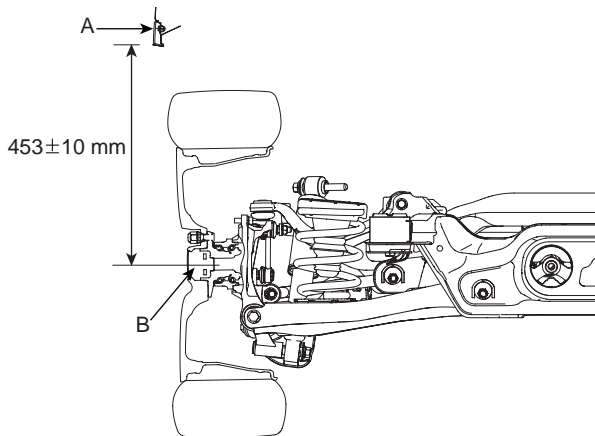
Nut(C) : 98.1~117.7 (10.0~12.0, 72.3~86.8)



SCMSS6527D

 **NOTE**

After checking the distance ( $453 \pm 10 \text{ mm}$  ( $17.83 \pm 0.39 \text{ in}$ )) between the wheel housing garnish (A) and the hub assembly (B) as shown in the illustration, tighten the mounting bolts and nuts of rear chassis part with specified torque.



SCMSS6528D

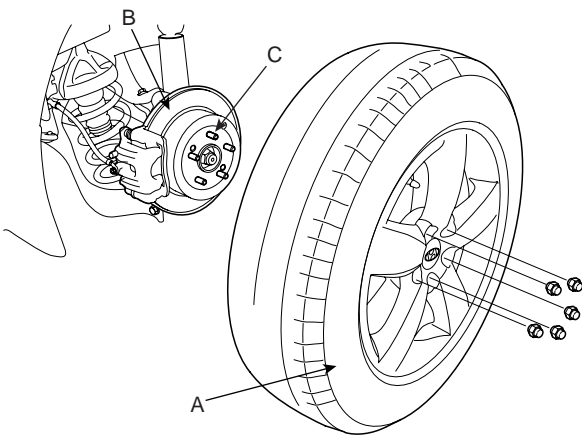
3. Install the wheel and tire (A) to the rear hub (B).

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**Tightening torque Nm (kgf-m, lb-ft) :**

88.3~107.9 (9~11, 65.1~79.6)

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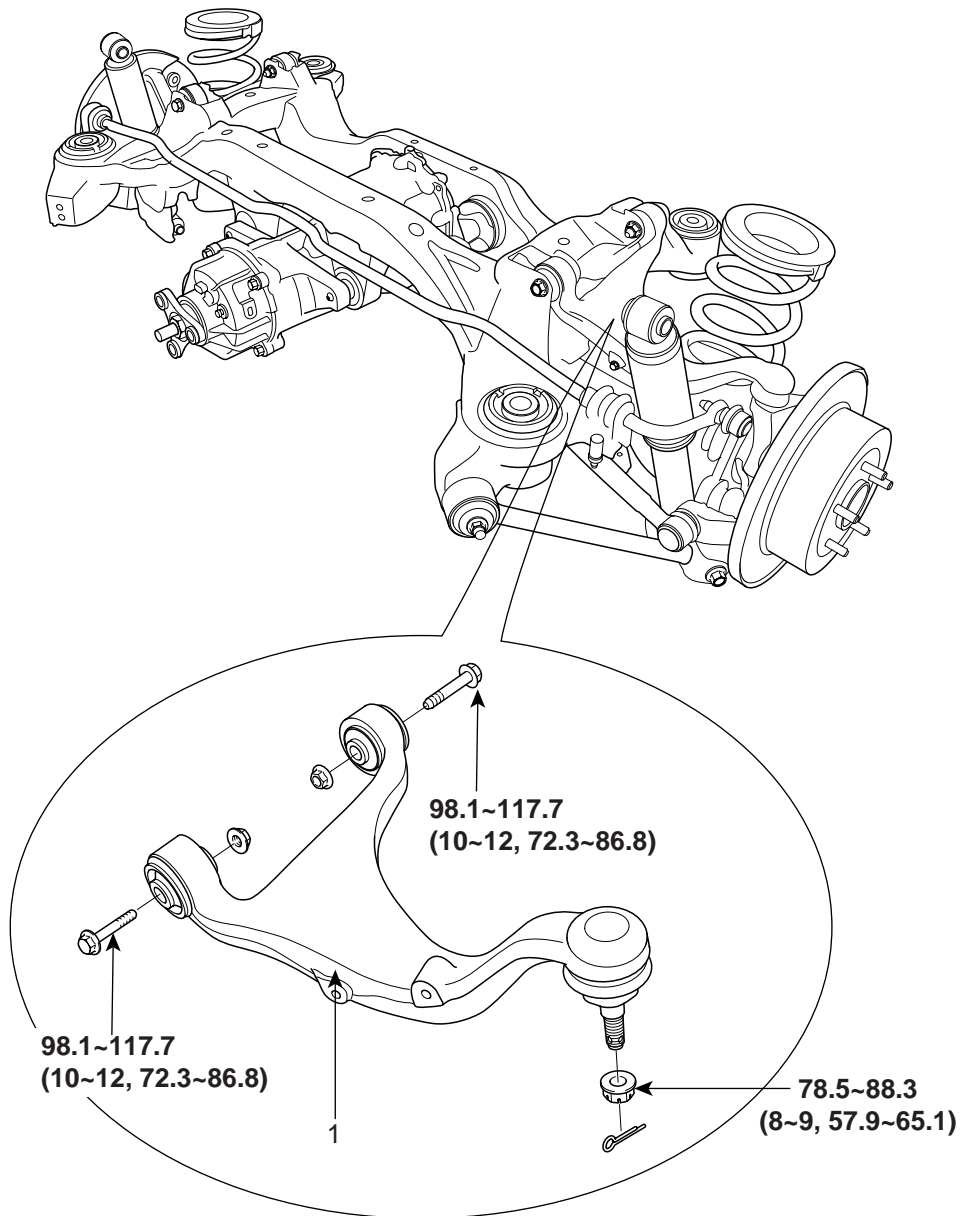
SCMSS6512D

 **CAUTION**

Be careful not to damage the hub bolts (C) when installing the rear wheel and tire (A).

REAR UPPER ARM

COMPONENT E2E5AEF7

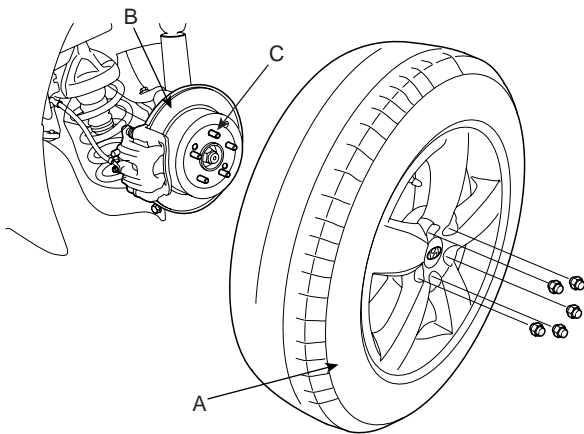


TORQUE : Nm (kgf.m, lb-ft)

1. Rear upper arm

## REMOVAL E56EEAC8

1. Loosen the wheel nuts slightly.  
Raise the vehicle, and make sure it is securely supported.
2. Remove the rear wheel and tire (A) from the rear hub (B).

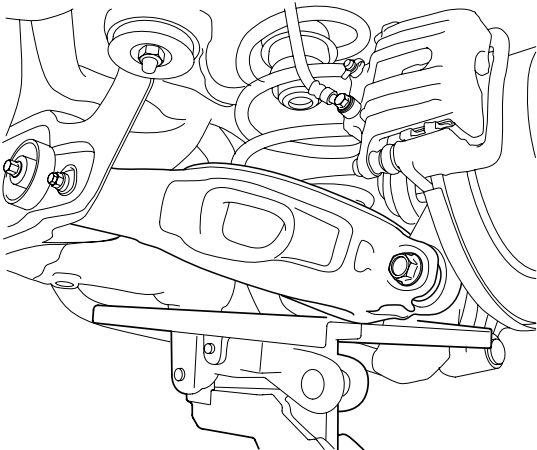


SCMSS6512D

**⚠ CAUTION**

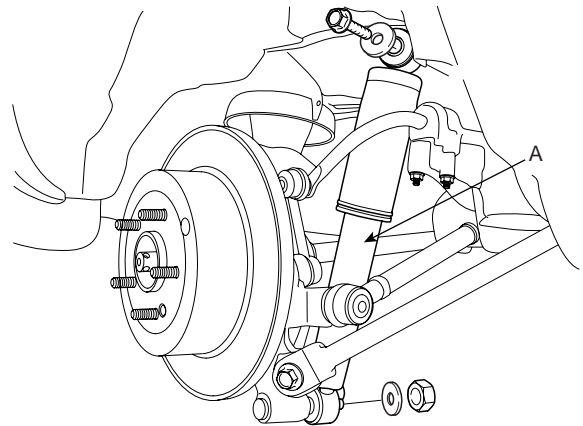
**Be careful not to damage to the hub bolts (C) when removing the rear wheel and tire (A).**

3. Support the rear lower arm with a jack as shown in the illustration.



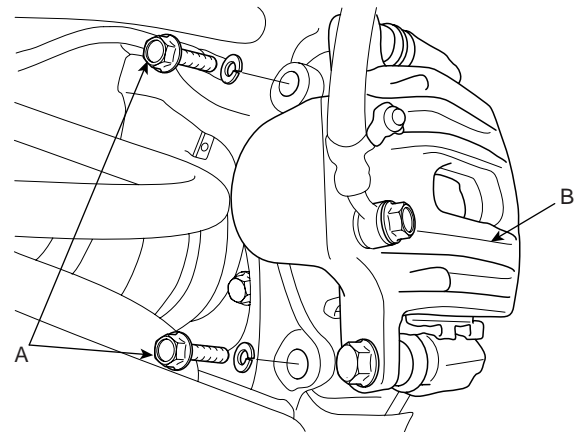
SCMSS6526D

4. Remove the rear shock absorber (A).

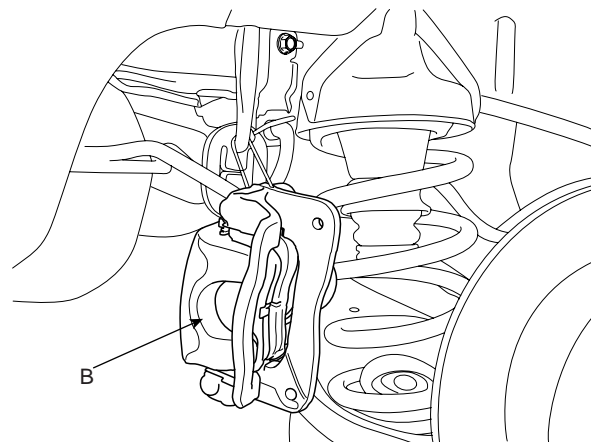


SCMSS6514D

5. Remove the brake caliper mounting bolts (A), and then place the brake caliper assembly (B) with wire as shown in the illustration.



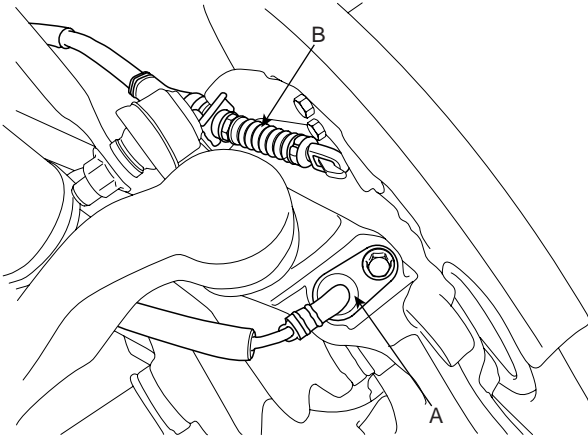
SCMSS6515D



SCMSS6516D

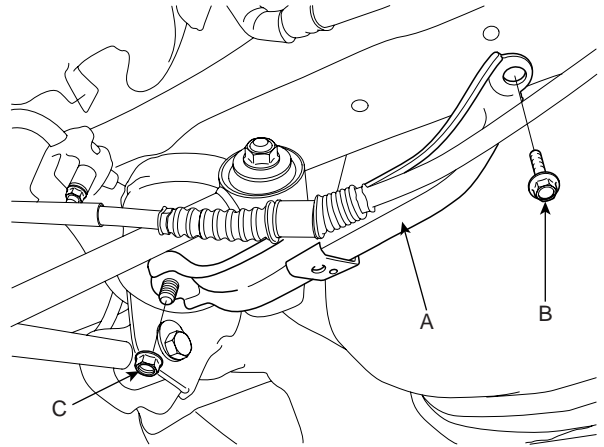


6. Remove the wheel speed sensor (A) and the parking brake cable (B) from the rear axle carrier.



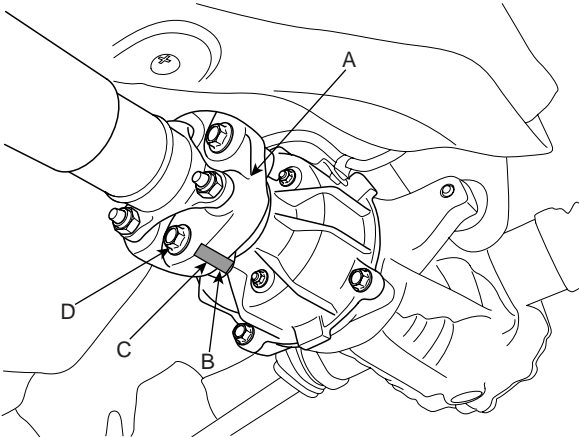
SCMSS6517D

9. Remove the rear cross member stay (A) and mounting bolt (B) and nut (C).



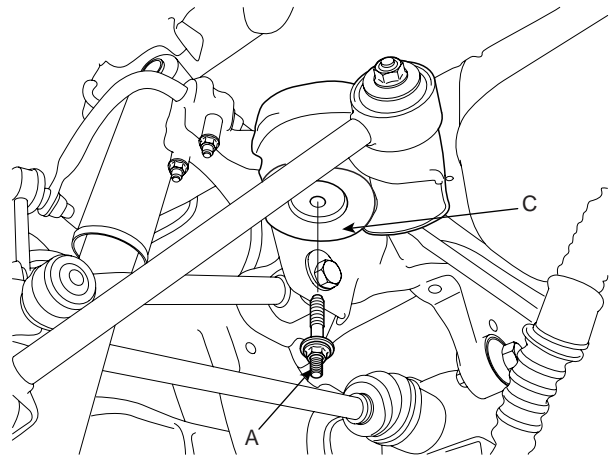
SCMSS6011D

7. After making a match mark (C) on the rubber coupling (A) and rear differential companion (B), remove the propeller shaft mounting bolts (D).



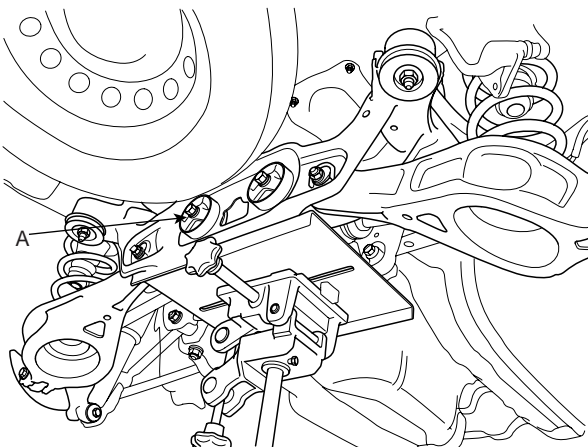
SCMSS6518D

10. Remove the rear cross member mounting bolts (A), nuts (B) and plate (C).

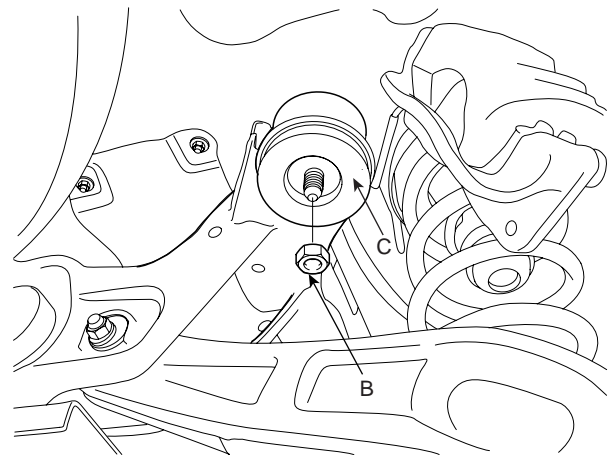


SCMSS6012D

8. Support the rear cross member assembly (A) with the jack.

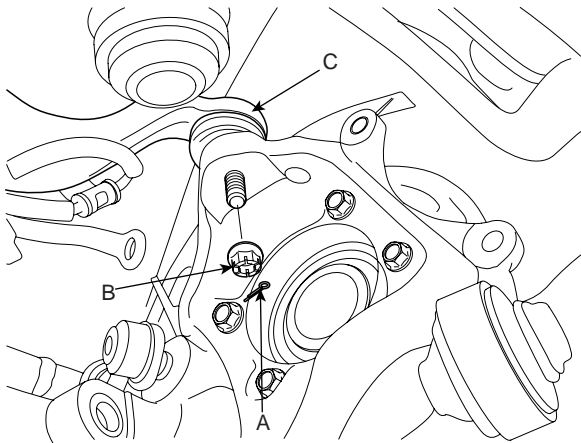


SCMSS6010D

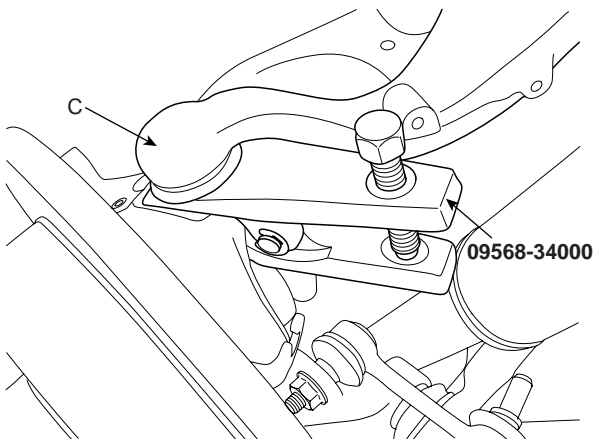


SCMSS6013D

11. Remove the rear cross member.
12. Remove the split pin (A) and the castle nut (B) from the rear upper arm ball joint (C), and then remove the rear upper arm ball joint (C) by using the special tool(09568-34000).

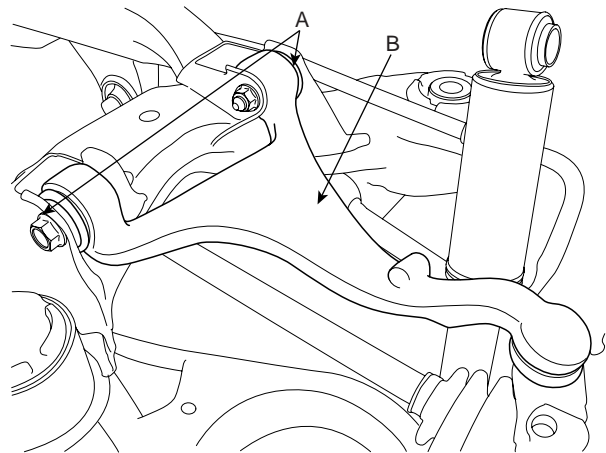


SCMSS6521D



SCMSS6519D

13. Remove the mounting bolts (A) of the rear upper arm and the cross member, then remove the rear upper arm (B).



SCMSS6014D

**CAUTION**

*If the bush is excessive worn and damaged, replace the upper arm assembly.*

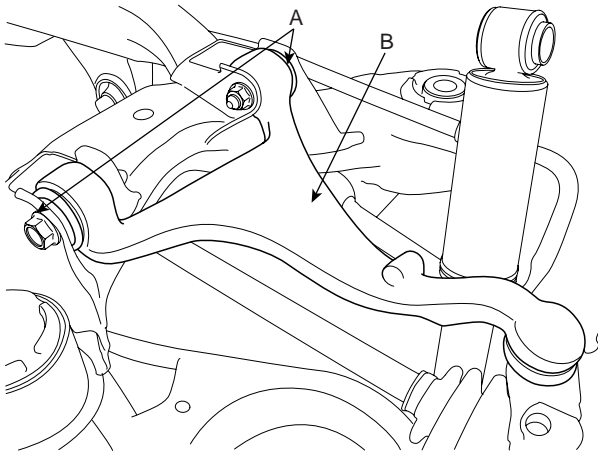
**INSPECTION** EDD1FF86

1. Check the bushing for wear and deterioration.
2. Check the rear upper arm for bending or breakage.
3. Check the ball joint dust cover for cracks.
4. Check all bolts.

**INSTALLATION** E163969D

1. Install the rear upper arm (B), then install the mounting bolts (A) of the rear upper arm and the cross member.

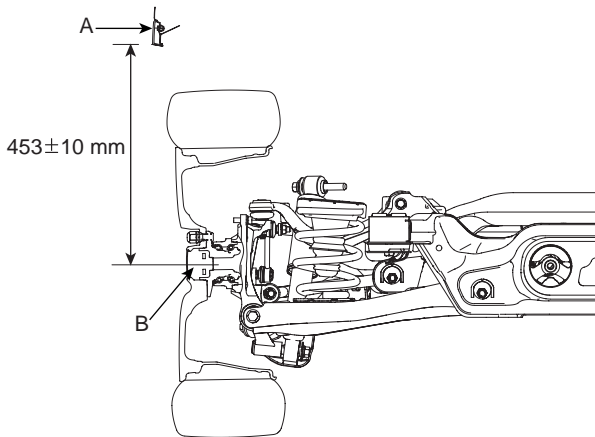
**Tightening torque Nm (kgf-m, lb-ft) :**  
98.1~117.7 (10.0~12.0, 72.3~86.8)



SCMSS6014D

**NOTE**

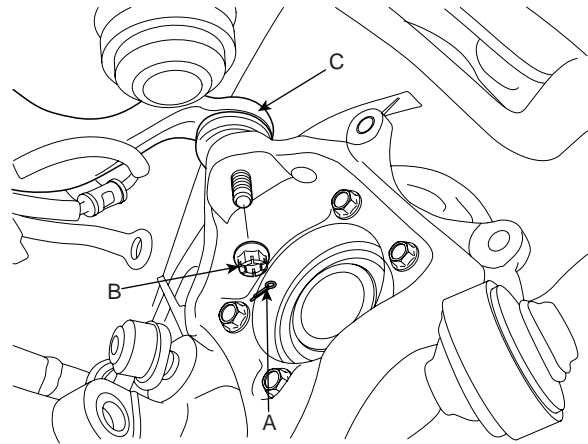
After checking the distance ( $453 \pm 10 \text{ mm}$  ( $17.83 \pm 0.39 \text{ in}$ )) between the wheel housing garnish (A) and the hub assembly (B) as shown in the illustration, tighten the mounting bolts and nuts of rear chassis part with specified torque.



SCMSS6528D

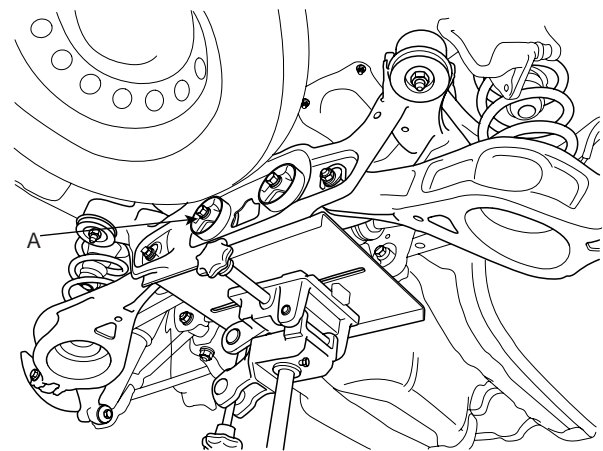
2. Install the split pin (A) and the castle nut (B) to the rear upper arm ball joint (C).

**Tightening torque Nm (kgf-m, lb-ft) :**  
78.5~88.3 (8.0~9.0, 57.9~65.1)



SCMSS6521D

3. Install the rear cross member.
4. Support the rear cross member assembly (A) with the jack.



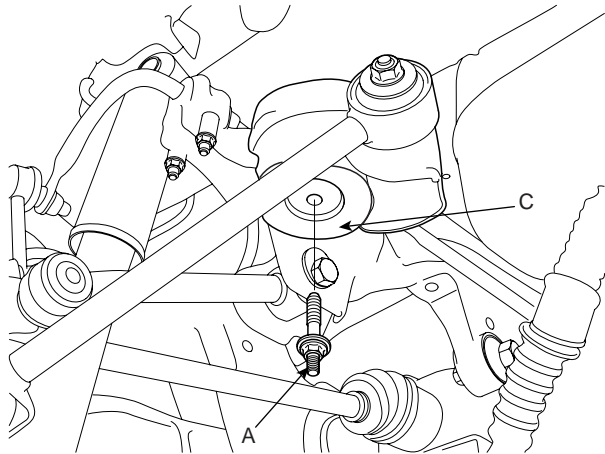
SCMSS6010D

5. Install the rear cross member mounting bolts (A), nuts (B) and plate (C).

**Tightening torque Nm (kgf-m, lb-ft) :**

Bolts(A) : 156.9~176.5 (16~18, 115.7~130.2)

Nuts(B) : 156.9~176.5 (16~18, 115.7~130.2)



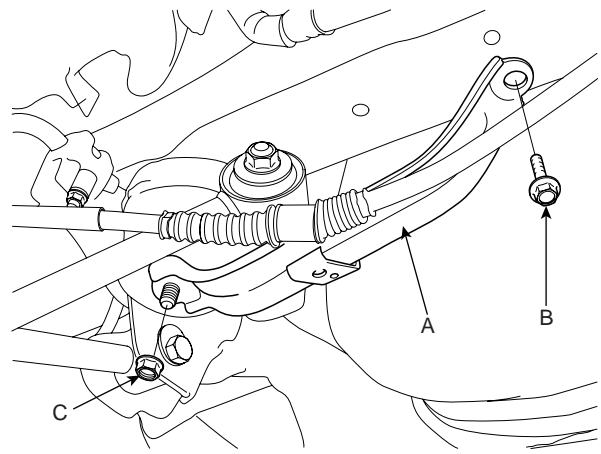
SCMSS6012D

6. Install the rear cross member stay (A) and mounting bolt (B) and nut (C).

**Tightening torque Nm (kgf-m, lb-ft) :**

Bolt(B) : 68.6~88.3 (7~9, 50.6~65.1)

Nut(C) : 68.6~88.3 (7~9, 50.6~65.1)

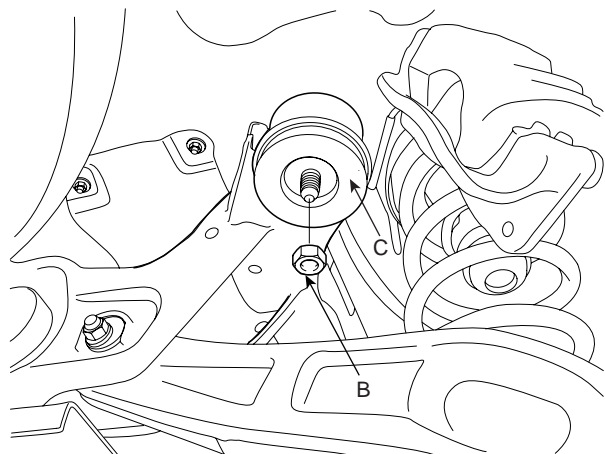


SCMSS6011D

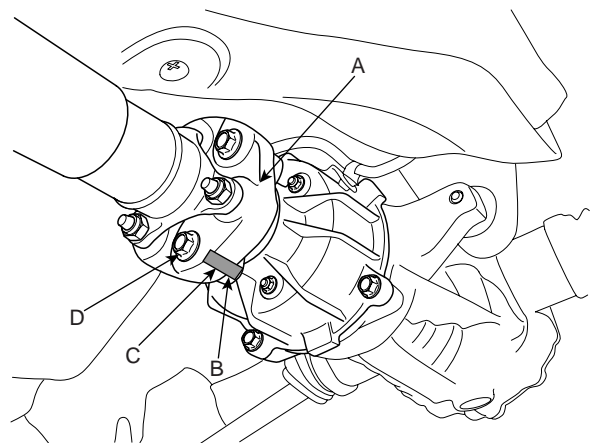
7. After matching a match mark (C) on the rubber coupling (A) and rear differential companion (B), Install the propeller shaft mounting bolts (D).

**Tightening torque Nm (kgf-m, lb-ft) :**

49.0~68.6 (5~7, 36.2~50.6)



SCMSS6013D

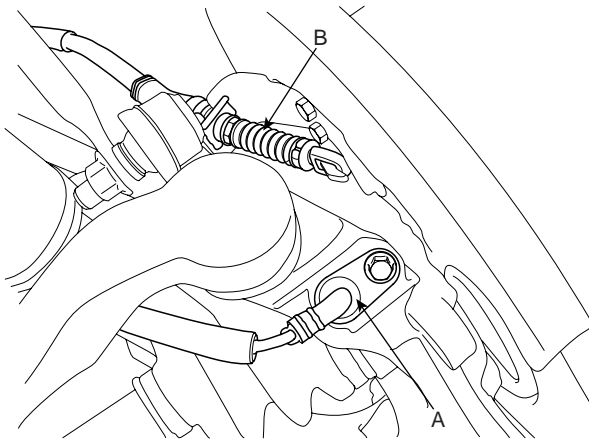


SCMSS6518D

8. Install the wheel speed sensor (A) and the parking brake cable (B) to the rear axle carrier.

**Tightening torque Nm (kgf-m, lb-ft) :**

Wheel speed sensor (A) :  
6.9~10.8 (0.7~1.1, 5.1~8.0)

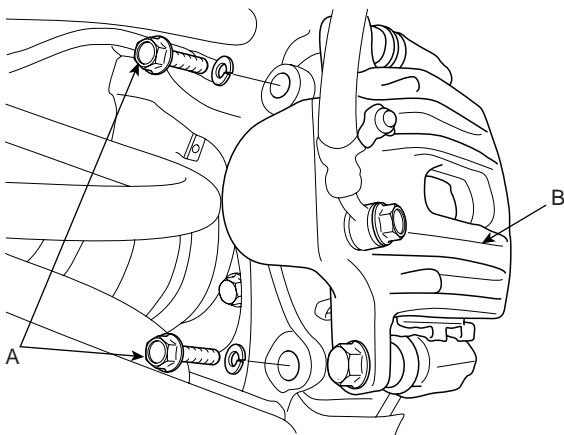


SCMSS6517D

9. Install the brake caliper (B), then tighten the brake caliper mounting bolts (A).

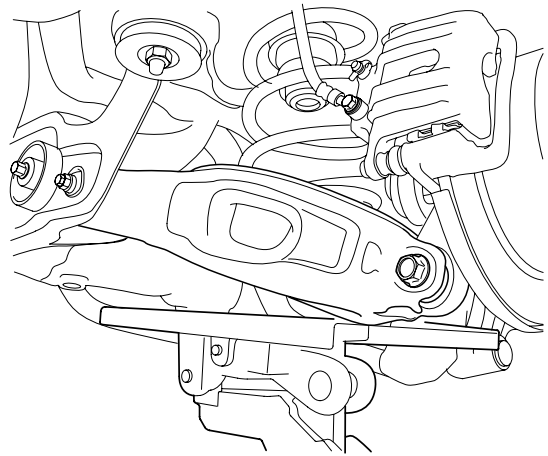
**Tightening torque Nm (kgf-m, lb-ft) :**

63.7~73.5 (6.5~7.5, 47.0~54.2)



SCMSS6515D

10. Support the rear lower arm with a jack as shown in the illustration.

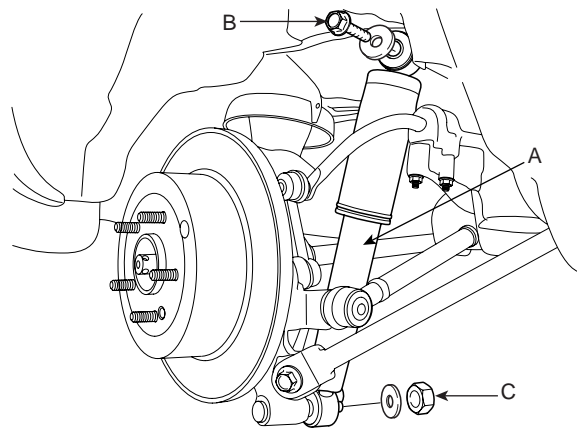


SCMSS6526D

11. Install the rear shock absorber (A).

**Tightening torque Nm (kgf-m, lb-ft) :**

Bolt(B) : 137.3~156.9 (14~16, 101.3~115.7)  
Nut(C) : 98.1~117.7 (10.0~12.0, 72.3~86.8)



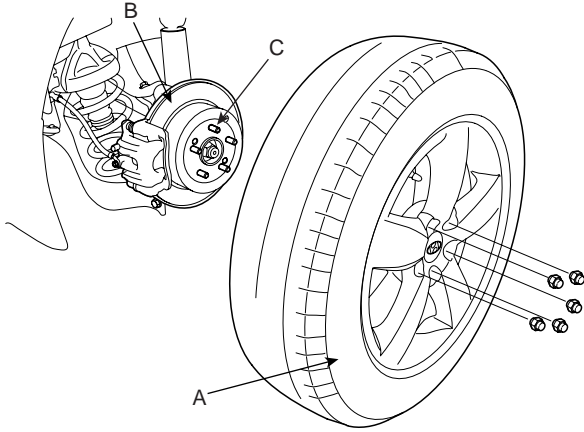
SCMSS6527D

12. Install the wheel and tire (A) to the rear hub (B).

---

**Tightening torque Nm (kgf-m, lb-ft) :**  
88.3~107.9 (9~11, 65.1~79.6)

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SCMSS6512D

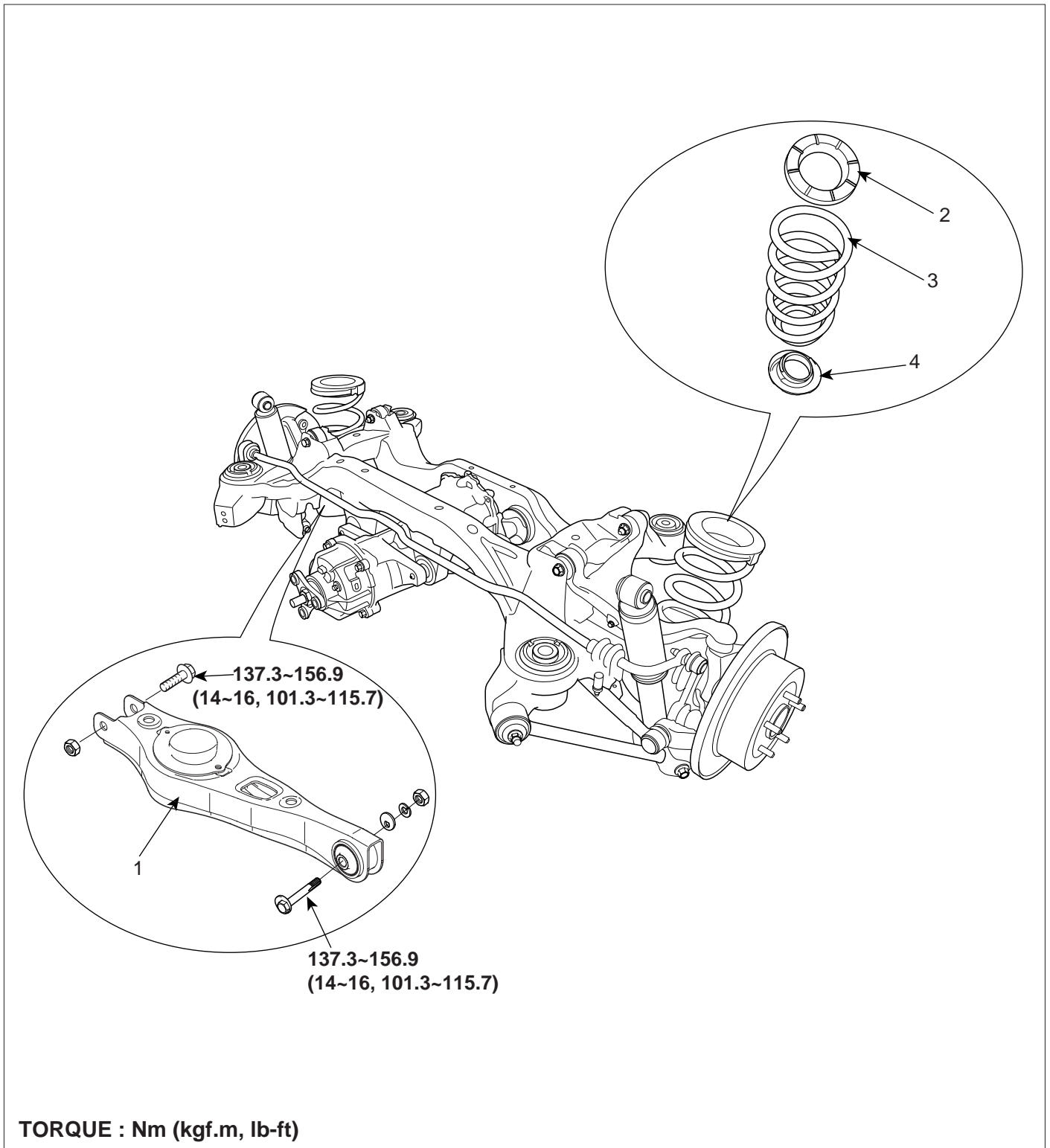


**CAUTION**

***Be careful not to damage the hub bolts (C) when installing the rear wheel and tire (A).***

REAR LOWER ARM

COMPONENT EBAFBDF9



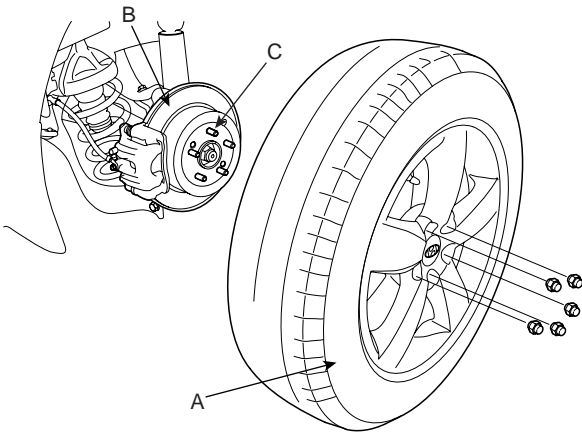
- 1. Rear lower arm
- 2. Rear coil spring upper pad

- 3. Rear coil spring
- 4. Rear coil spring lower pad



**REMOVAL** E9AD5A7C

1. Loosen the wheel nuts slightly.  
Raise the vehicle, and make sure it is securely supported.
2. Remove the rear wheel and tire (A) from the rear hub (B).

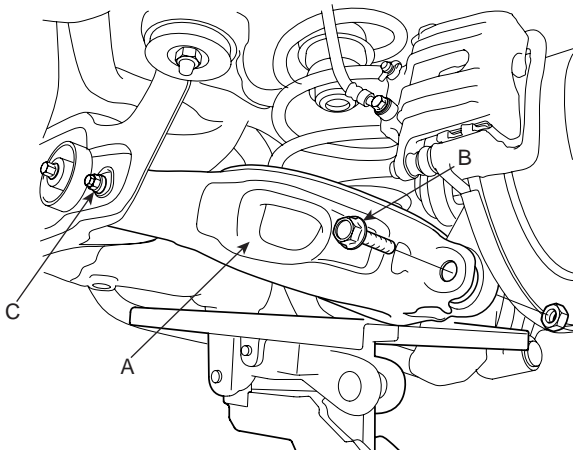


SCMSS6512D

**CAUTION**

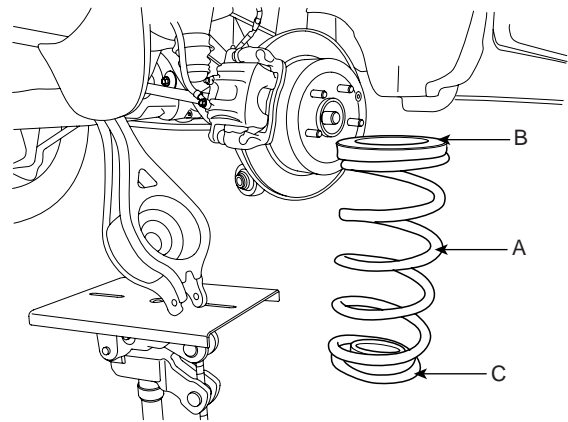
**Be careful not to damage to the hub bolts (C) when removing the rear wheel and tire (A).**

3. Remove the mounting bolt (B) of the rear lower arm (A) and the rear carrier, while supporting the lower arm (A) with a jack as shown in the illustration. Loosen the mounting bolt (C) of the cross member and the rear lower arm.



SCMSS6529D

4. Remove the spring (A), the upper pad (B) and the lower pad (C).



SCMSS6522D

5. Remove the lower arm.

**CAUTION**

**If the bush is excessive worn and damaged, replace the lower arm assembly.**

**INSPECTION** E852A9AA**REAR LOWER ARM**

1. Check the bushing for wear and deterioration.
2. Check the rear lower arm for bending or breakage.
3. Check the bolts for damage.

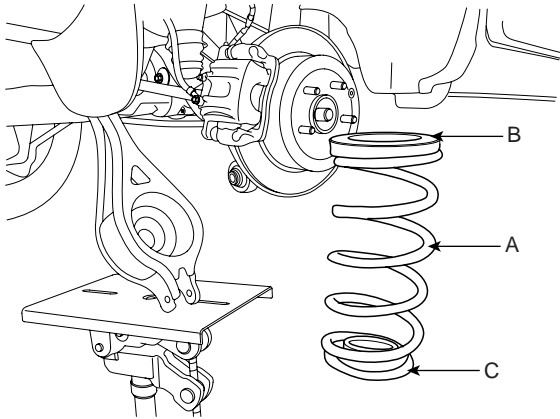
**SPRING**

1. Check the spring for distortion, aging or damage.
2. Check the spring upper pad and lower pad for aging or damage.



**INSTALLATION**    EEF25C9F

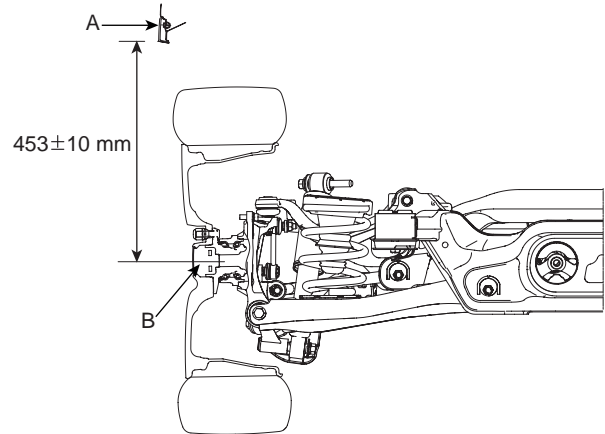
1. Pretighten the mounting bolt of the cross member and the rear lower arm.
2. Install the spring (A), the upper pad (B) and the lower pad (C).



SCMSS6522D

**NOTE**

After checking the distance ( $453 \pm 10 \text{ mm}$  ( $17.83 \pm 0.39 \text{ in}$ )) between the wheel housing garnish (A) and the hub assembly (B) as shown in the illustration, tighten the mounting bolts and nuts of rear chassis part with specified torque.



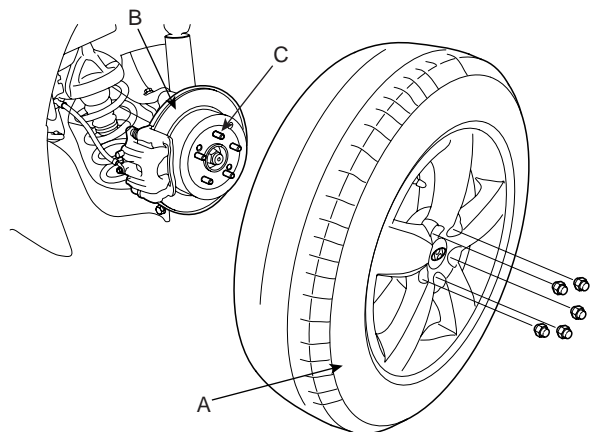
SCMSS6528D

3. Install the mounting bolt (B) of the rear lower arm (A) and the rear carrier with a specified torque, while supporting the lower arm (A) with a jack as shown in the illustration. Tighten the mounting bolt (C) of the cross member and the rear lower arm with a specified torque.

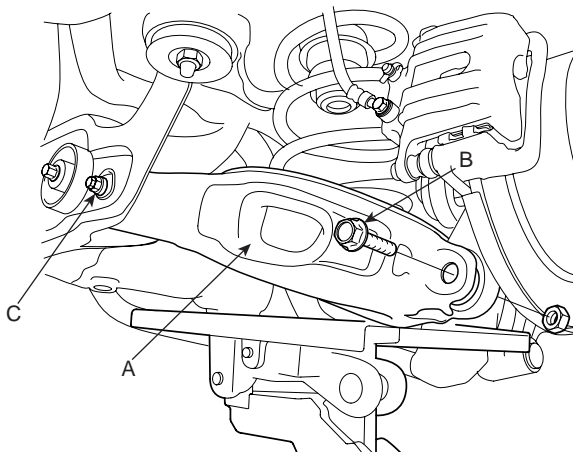
4. Install the wheel and tire (A) to the rear hub (B).

**Tightening torque Nm (kgf-m, lb-ft) :**  
 88.3~107.9 (9~11, 65.1~79.6)

**Tightening torque Nm (kgf-m, lb-ft) :**  
 Bolt(B) : 137.3~156.9 (14~16, 101.3~115.7)  
 Nut(C) : 137.3~156.9 (14~16, 101.3~115.7)



SCMSS6512D



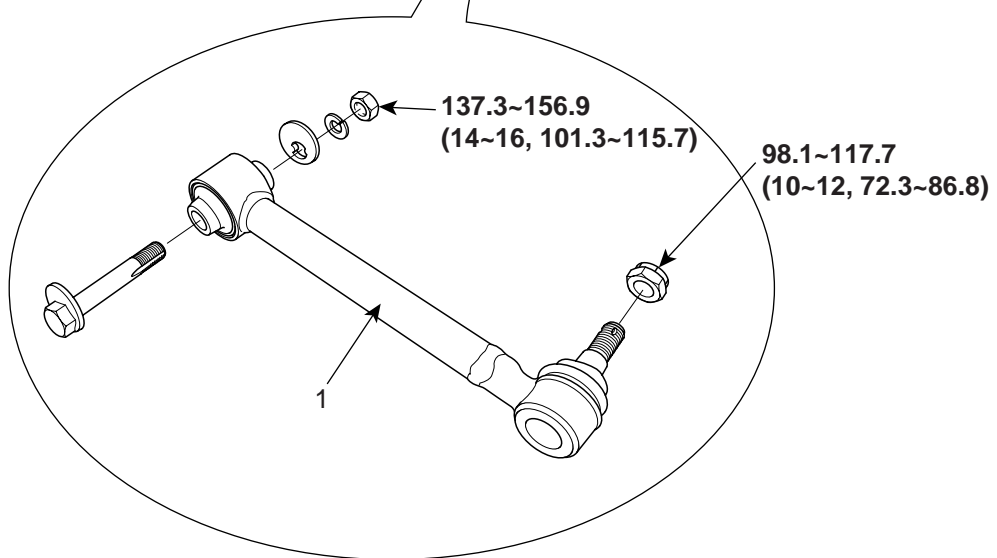
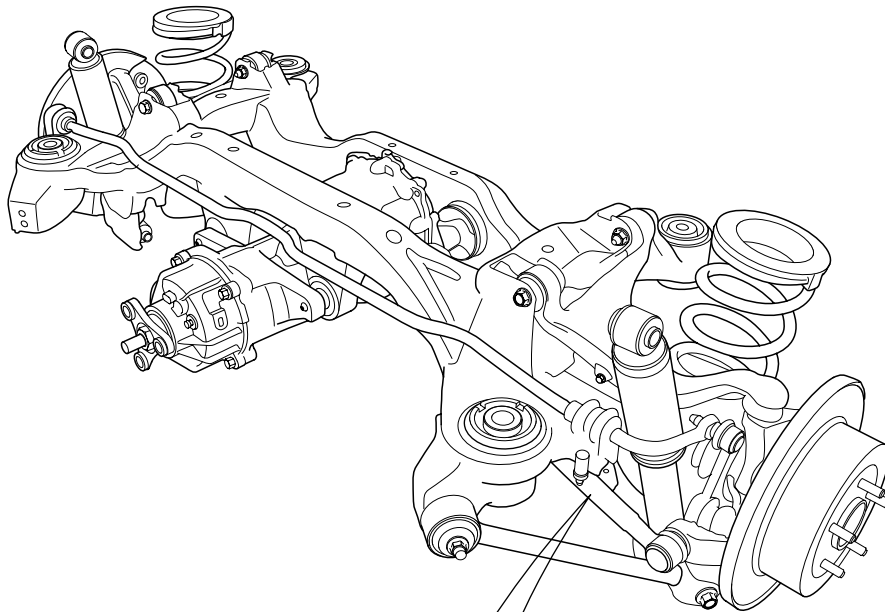
SCMSS6529D

**CAUTION**

Be careful not to damage the hub bolts (C) when installing the rear wheel and tire (A).

# REAR ASSIST ARM

COMPONENT EBE5C437

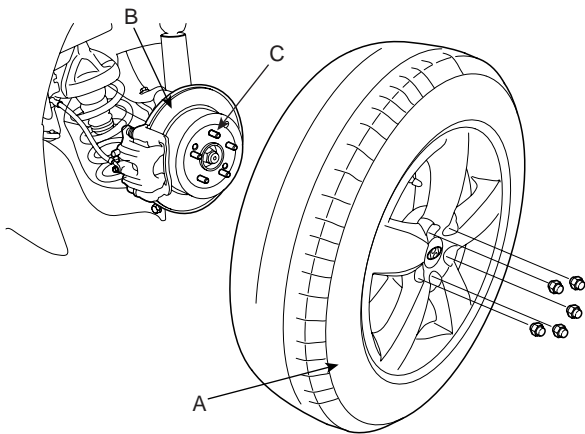


**TORQUE : Nm (kgf.m, lb-ft)**

1. Rear assist arm

**REMOVAL** E46DA66A

1. Loosen the wheel nuts slightly.  
Raise the vehicle, and make sure it is securely supported.
2. Remove the rear wheel and tire (A) from the rear hub (B).

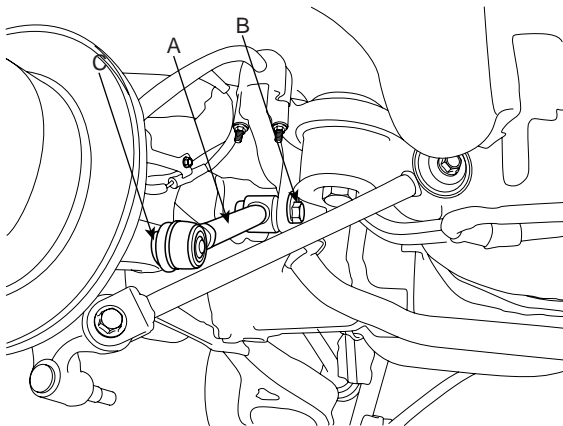


SCMSS6512D

**CAUTION**

**Be careful not to damage to the hub bolts (C) when removing the rear wheel and tire (A).**

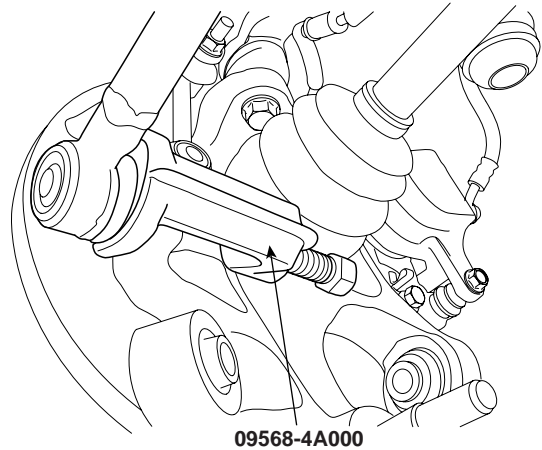
3. Remove the assist arm (A) from the rear carrier.



SCMSS6031D

**NOTE**

Remove the rear assist arm ball joint (A) by using the special tool(09568-4A000).



SCMSS6523D

**CAUTION**

**If the bush is excessive worn and damaged, replace the assist arm assembly.**

**INSPECTION** EDACAA4A

1. Check the bushing for wear and deterioration.
2. Check the rear assist arm for bending or breakage.
3. Check the ball joint dust cover for cracks.
4. Check all bolts.

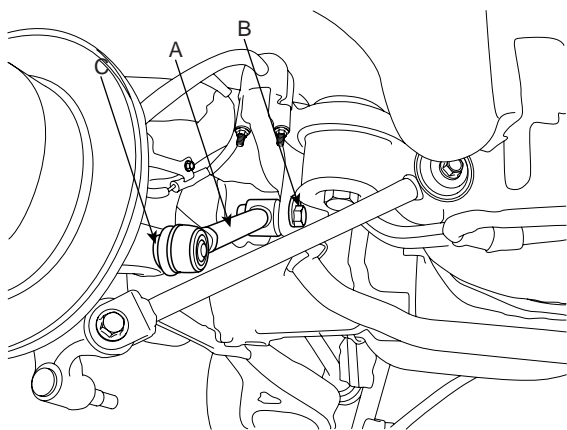
**INSTALLATION** EC8E3BD8

1. Install the rear assist arm (A) to the rear carrier.

**Tightening torque Nm (kgf-m, lb-ft) :**

Bolt(B) : 137.3~156.9 (14~16, 101.3~115.7)

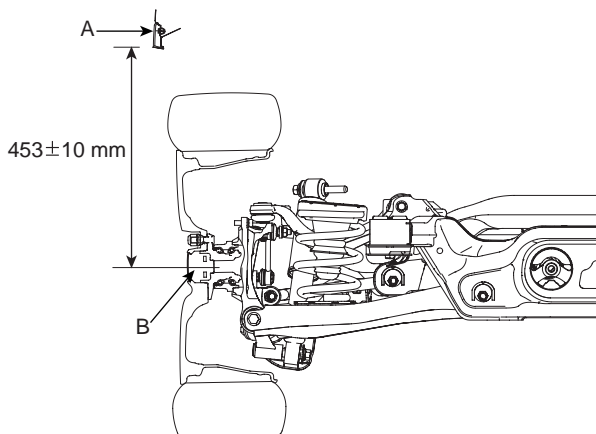
Nut(C) : 98.1~117.7 (10.0~12.0, 72.3~86.8)



SCMSS6031D

**NOTE**

After checking the distance ( $453 \pm 10 \text{ mm}$  ( $17.83 \pm 0.39 \text{ in}$ )) between the wheel housing garnish (A) and the hub assembly (B) as shown in the illustration, tighten the mounting bolts and nuts of rear chassis part with specified torque.

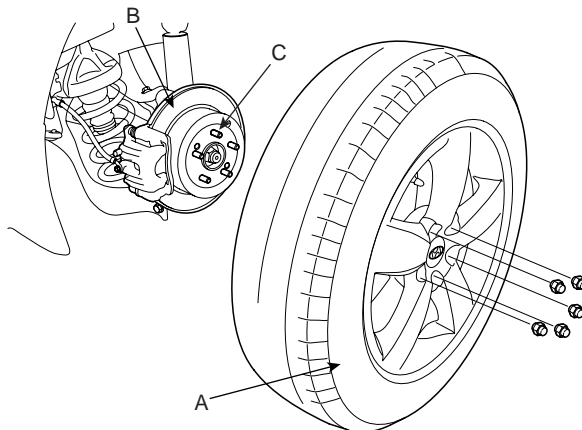


SCMSS6528D

2. Install the wheel and tire (A) to the rear hub (B).

**Tightening torque Nm (kgf-m, lb-ft) :**

88.3~107.9 (9~11, 65.1~79.6)



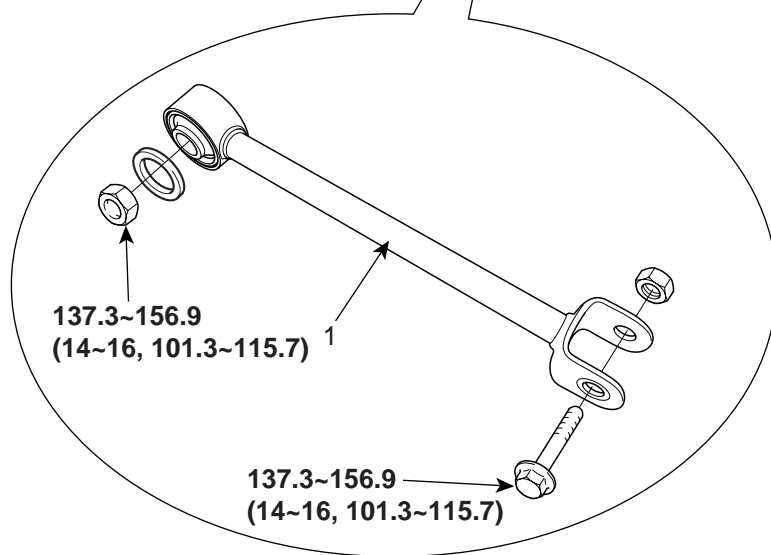
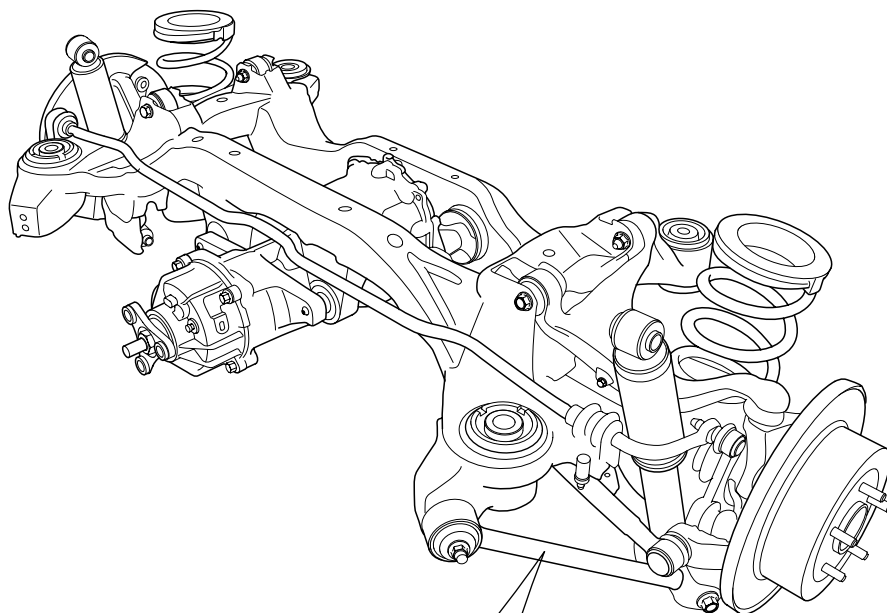
SCMSS6512D

**CAUTION**

Be careful not to damage the hub bolts (C) when installing the rear wheel and tire (A).

TRAILING ARM

COMPONENT E39A3EAF

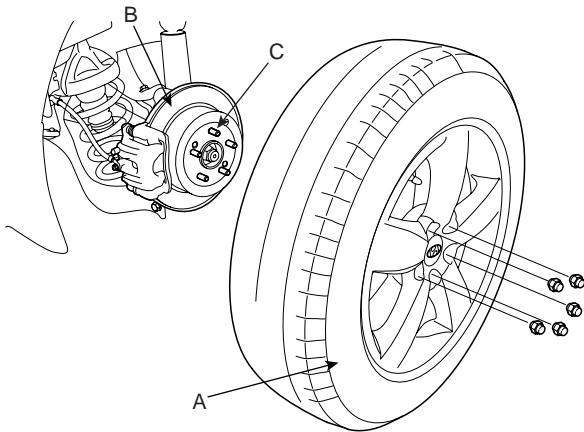


TORQUE : Nm (kgf.m, lb-ft)

1. Rear trailing arm

**REMOVAL** EBA34130

1. Loosen the wheel nuts slightly.  
Raise the vehicle, and make sure it is securely supported.
2. Remove the rear wheel and tire (A) from the rear hub (B).

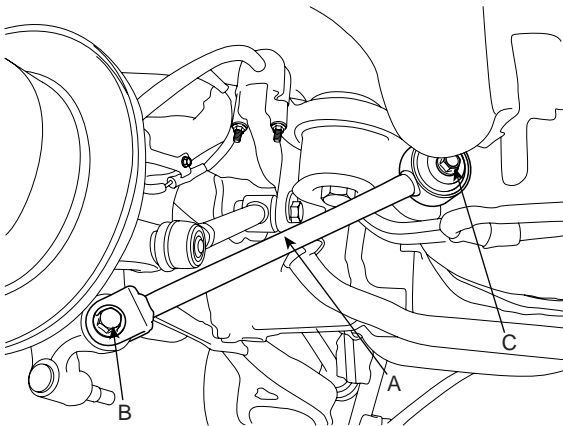


SCMSS6512D

**CAUTION**

**Be careful not to damage to the hub bolts (C) when removing the rear wheel and tire (A).**

3. Remove the trailing arm (A) from the rear carrier.



SCMSS6039D

**CAUTION**

**If the bush is excessive worn and damaged, replace the assist arm assembly.**

**INSPECTION** EDFCCDEE

1. Check the bushing for wear and deterioration.
2. Check the rear trailing arm for bending or breakage.
3. Check all bolts.

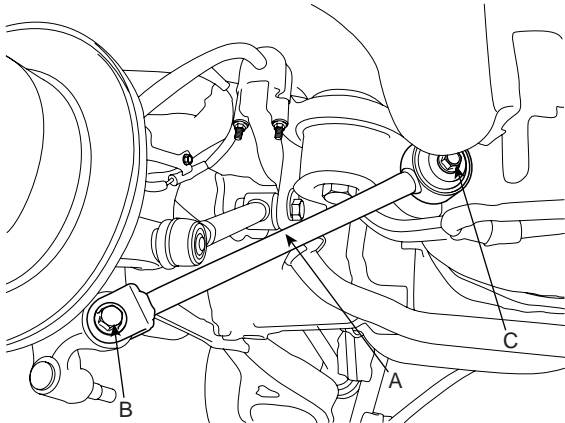
**INSTALLATION** EC498CBE

1. Install the rear trailing arm (A) to the rear carrier.

**Tightening torque Nm (kgf-m, lb-ft) :**

Bolt(B) : 137.3~156.9 (14~16, 101.3~115.7)

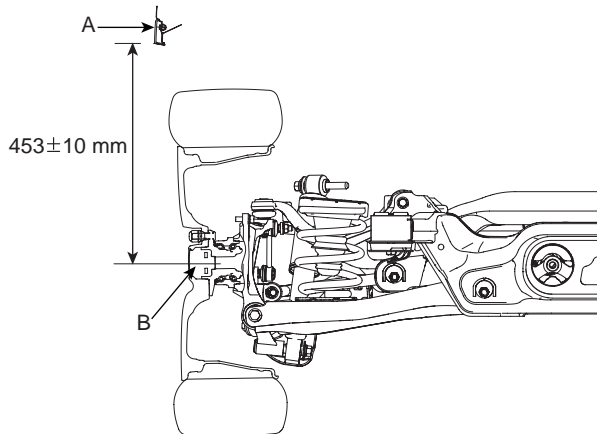
Nut(C) : 137.3~156.9 (14~16, 101.3~115.7)



SCMSS6039D

**NOTE**

After checking the distance ( $453 \pm 10 \text{ mm}$  ( $17.83 \pm 0.39 \text{ in}$ )) between the wheel housing garnish (A) and the hub assembly (B) as shown in the illustration, tighten the mounting bolts and nuts of rear chassis part with specified torque.

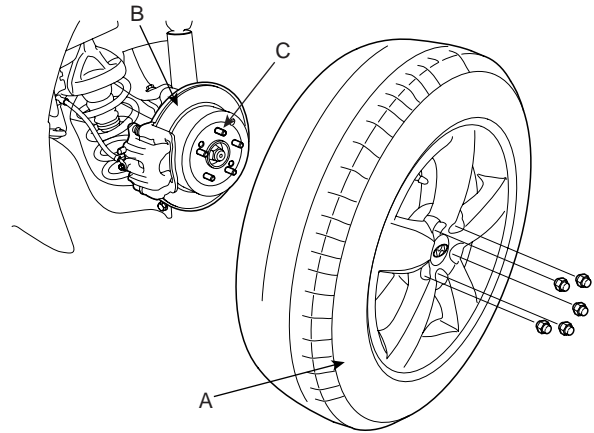


SCMSS6528D

2. Install the wheel and tire (A) to the rear hub (B).

**Tightening torque Nm (kgf-m, lb-ft) :**

88.3~107.9 (9~11, 65.1~79.6)



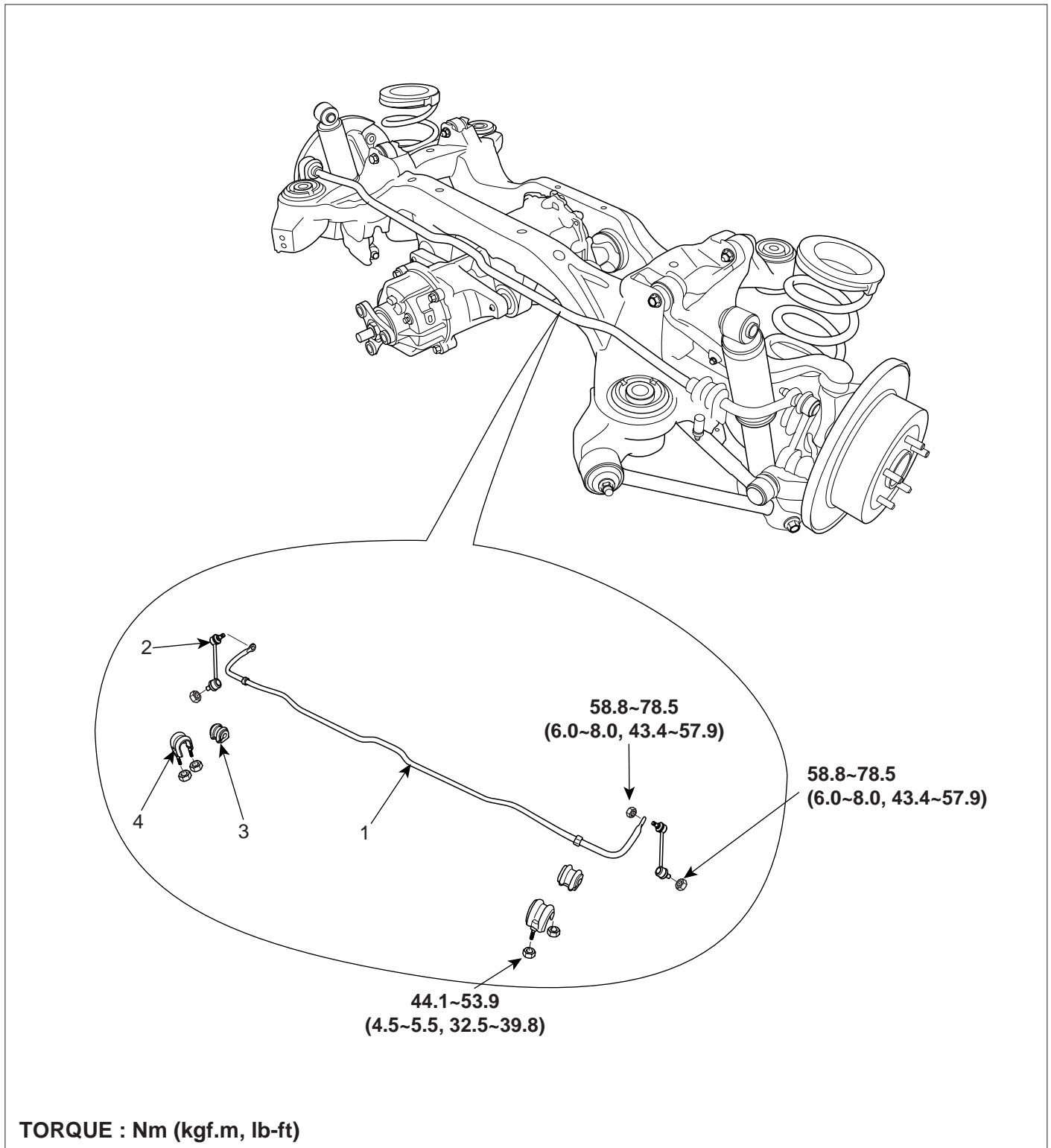
SCMSS6512D

**CAUTION**

Be careful not to damage the hub bolts (C) when installing the rear wheel and tire (A).

REAR STABILIZER BAR

COMPONENT E4306EFA



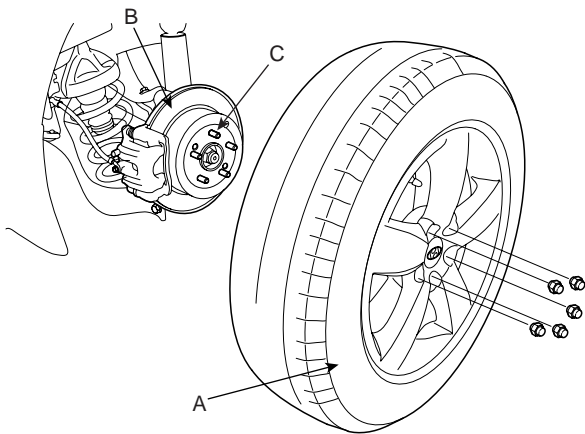
- 1. Rear stabilizer bar
- 2. Rear stabilizer link

- 3. Rear stabilizer bar bushing
- 4. Rear stabilizer bar bracket



REMOVAL EE1591DC

1. Loosen the wheel nuts slightly.  
Raise the vehicle, and make sure it is securely supported.
2. Remove the rear wheel and tire (A) from the rear hub (B).

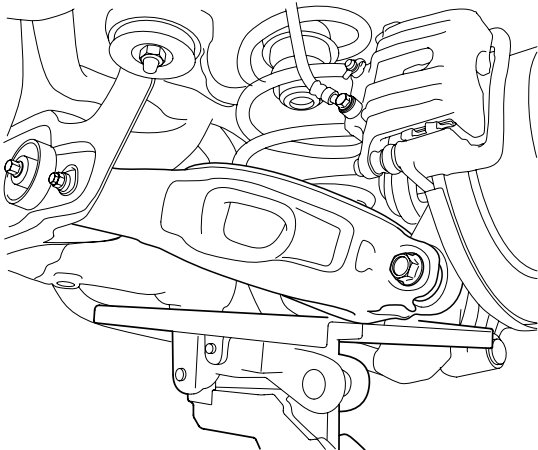


SCMSS6512D

**CAUTION**

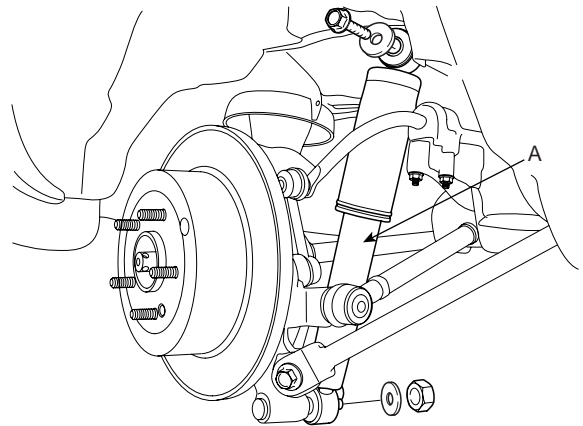
Be careful not to damage to the hub bolts (C) when removing the rear wheel and tire (A).

3. Support the rear lower arm with a jack as shown in the illustration.



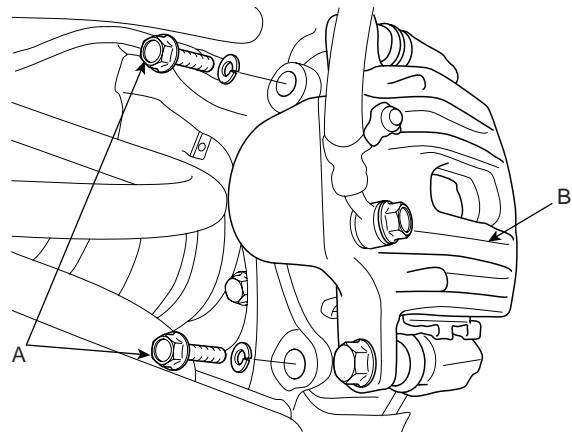
SCMSS6526D

4. Remove the rear shock absorber (A).

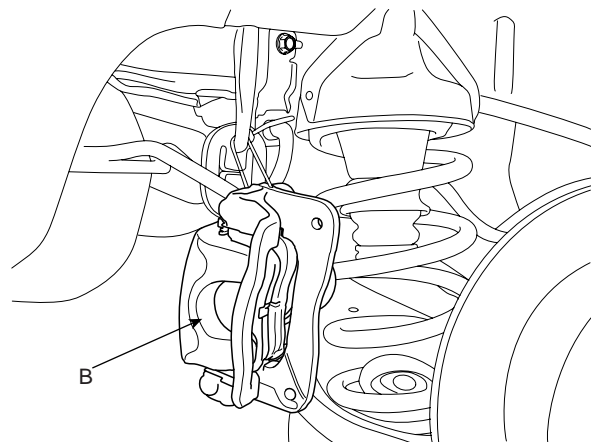


SCMSS6514D

5. Remove the brake caliper mounting bolts (A), and then place the brake caliper assembly (B) with wire as shown in the illustration.

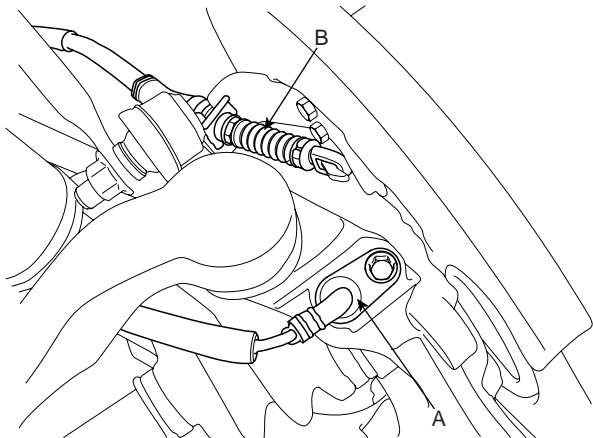


SCMSS6515D



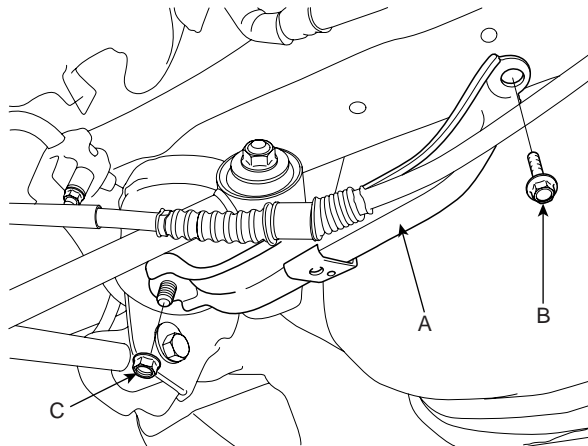
SCMSS6516D

6. Remove the wheel speed sensor (A) and the parking brake cable (B) from the rear axle carrier.



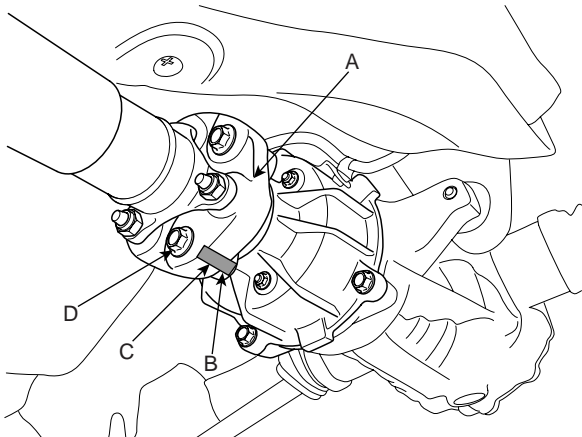
SCMSS6517D

9. Remove the rear cross member stay (A) and mounting bolt (B) and nut (C).



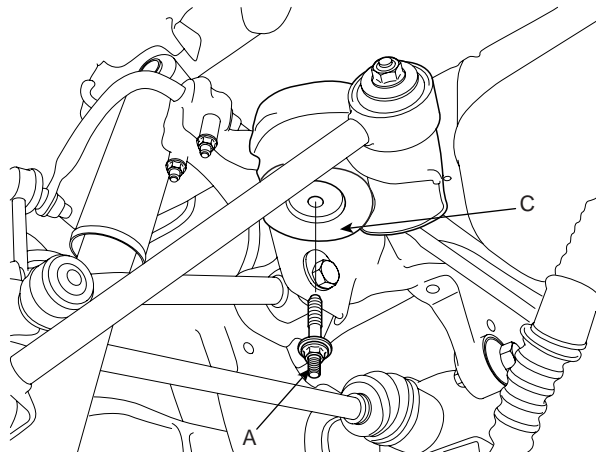
SCMSS6011D

7. After making a match mark (C) on the rubber coupling (A) and rear differential companion (B), remove the propeller shaft mounting bolts (D).



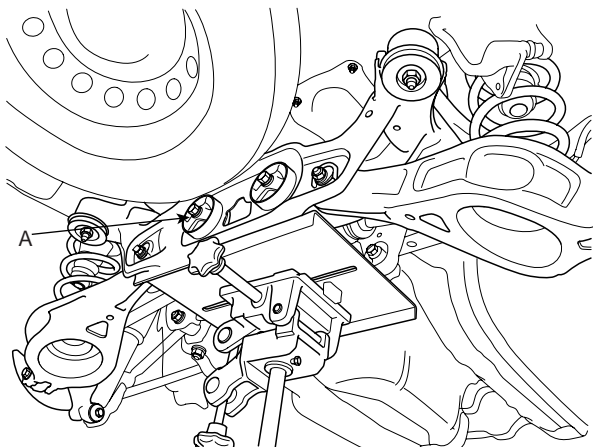
SCMSS6518D

10. Remove the rear cross member mounting bolts (A), nuts (B) and plate (C).

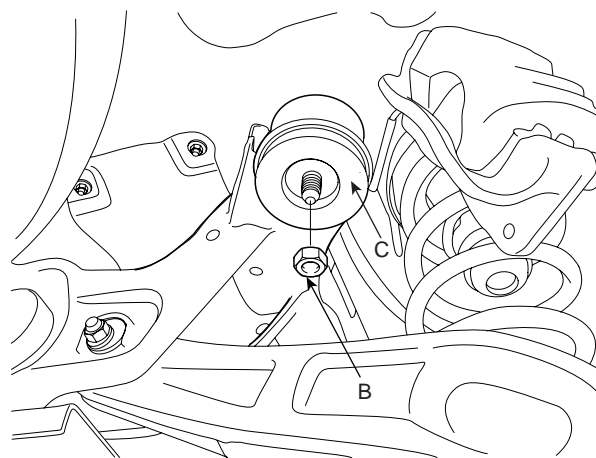


SCMSS6012D

8. Support the rear cross member assembly (A) with the jack.

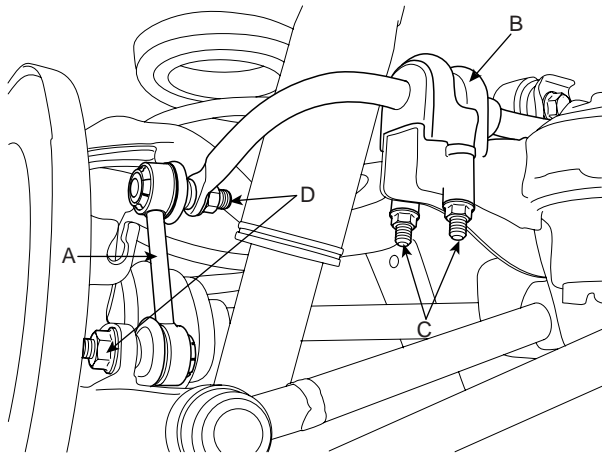


SCMSS6010D



SCMSS6013D

11. Remove the rear cross member.
12. Remove the rear stabilizer bar link (A) and bracket (B).



SCMSS6020D

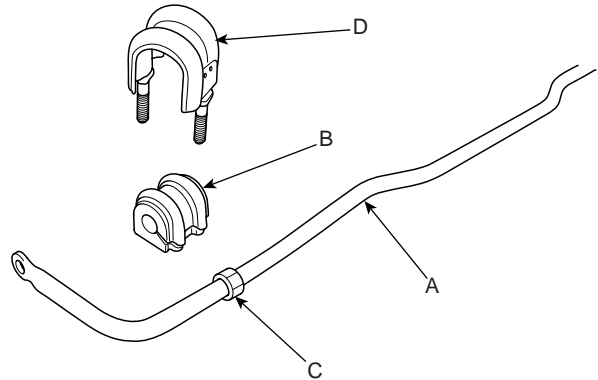
13. Remove the rear stabilizer bar.

**INSPECTION** ECE1FBDC

1. Check the bushing for wear and deterioration.
2. Check the stabilizer bar for bending or breakage.
3. Check the ball joint dust cover for cracks.
4. Check all bolts.

**INSTALLATION** EF4C9769

1. Install the bushing (B) on the stabilizer bar (A).



SCMSS6021D

**NOTE**

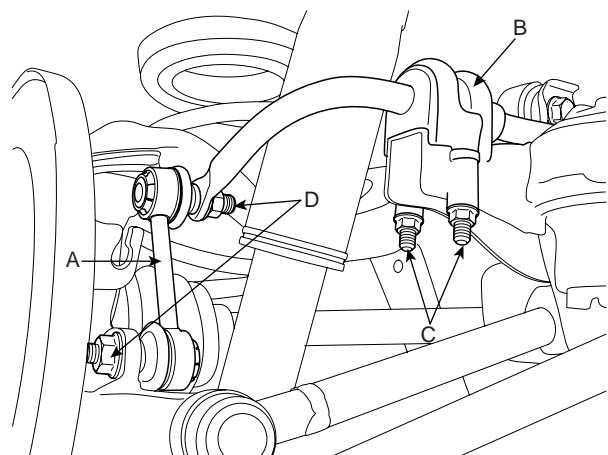
Bring clamp (C) of stabilizer bar (A) into contact with bushing (B).

2. Install the bracket (D) on the bushing (B).
3. Install the rear stabilizer bar to the rear cross member.
4. Install the rear stabilizer bar bracket (B) and link (A).

**Tightening torque Nm (kgf-m, lb-ft) :**

Nut(C) : 44.1~53.9 (4.5~5.5, 32.5~39.8)

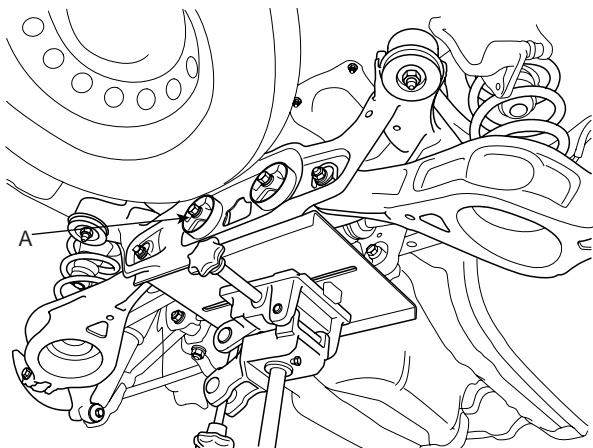
Nut(D) : 58.8~78.5 (6.0~8.0, 43.4~57.9)



SCMSS6020D

5. Install the rear cross member.

6. Support the rear cross member assembly (A) with the jack.



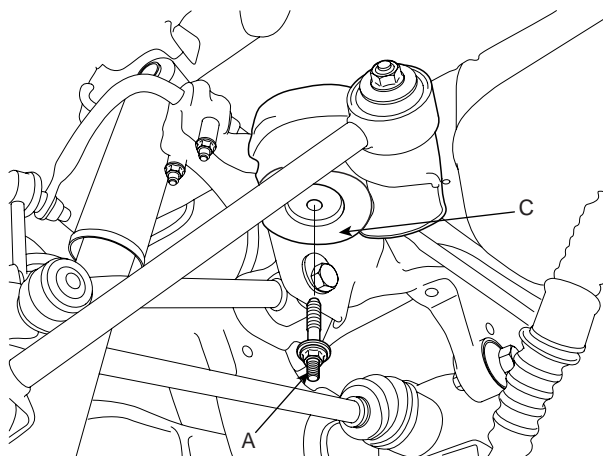
SCMSS6010D

7. Install the rear cross member mounting bolts (A), nuts (B) and plate (C).

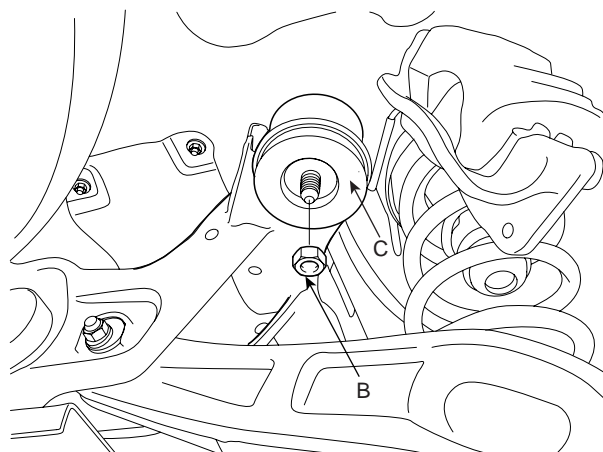
**Tightening torque Nm (kgf-m, lb-ft) :**

Bolts(A) : 156.9~176.5 (16~18, 115.7~130.2)

Nuts(B) : 156.9~176.5 (16~18, 115.7~130.2)



SCMSS6012D



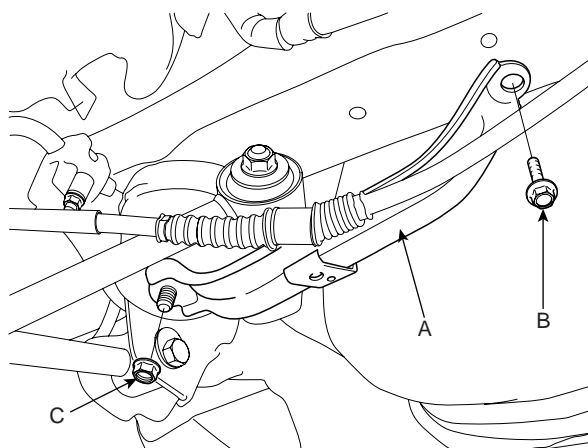
SCMSS6013D

8. Install the rear cross member stay (A) and mounting bolt (B) and nut (C).

**Tightening torque Nm (kgf-m, lb-ft) :**

Bolt(B) : 68.6~88.3 (7~9, 50.6~65.1)

Nut(C) : 68.6~88.3 (7~9, 50.6~65.1)

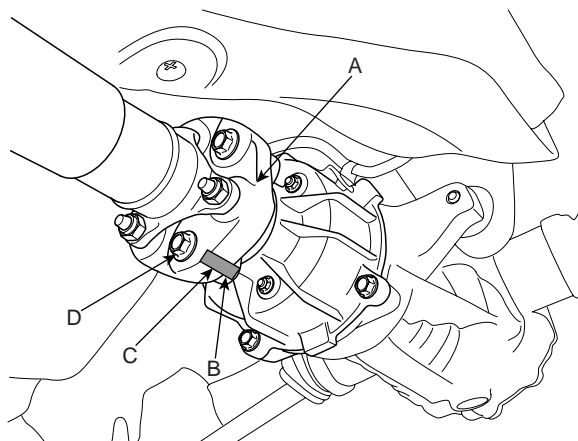


SCMSS6011D

9. After matching a match mark (C) on the rubber coupling (A) and rear differential companion (B), Install the propeller shaft mounting bolts (D).

**Tightening torque Nm (kgf-m, lb-ft) :**

49.0~68.6 (5~7, 36.2~50.6)

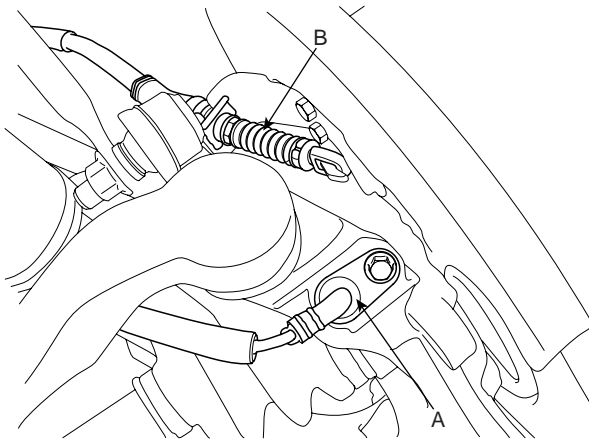


SCMSS6518D

10. Install the wheel speed sensor (A) and the parking brake cable (B) to the rear axle carrier.

**Tightening torque Nm (kgf-m, lb-ft) :**

Wheel speed sensor (A) :  
6.9~10.8 (0.7~1.1, 5.1~8.0)

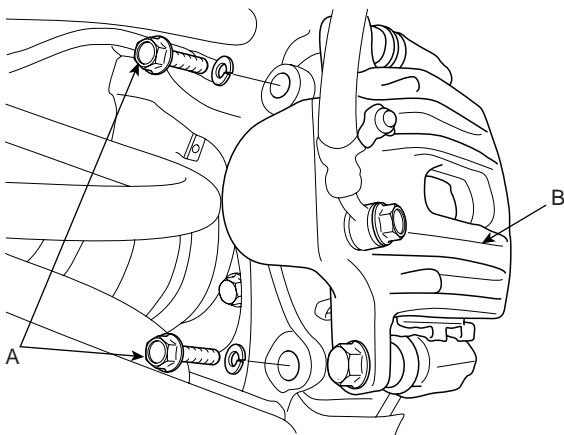


SCMSS6517D

11. Install the brake caliper (B), then tighten the brake caliper mounting bolts (A).

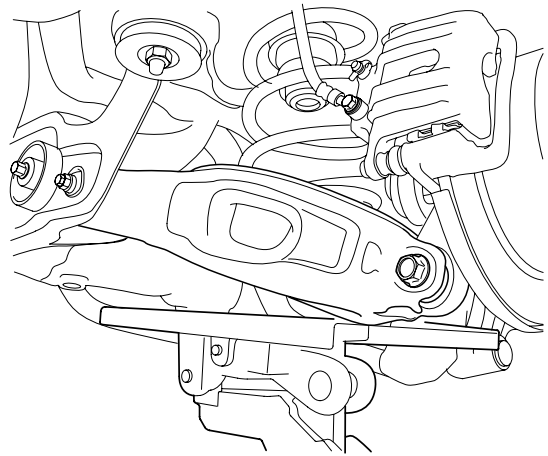
**Tightening torque Nm (kgf-m, lb-ft) :**

63.7~73.5 (6.5~7.5, 47.0~54.2)



SCMSS6515D

12. Support the rear lower arm with a jack as shown in the illustration.

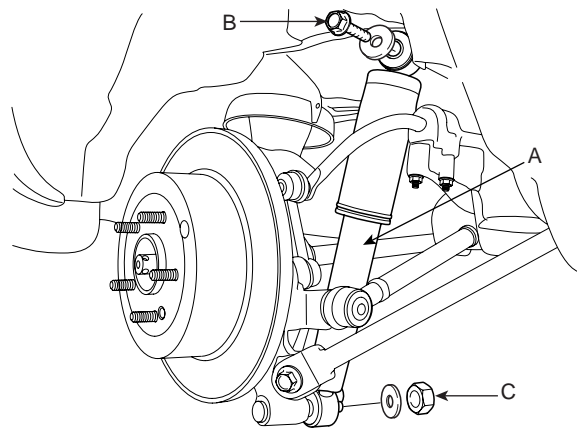


SCMSS6526D

13. Install the rear shock absorber (A).

**Tightening torque Nm (kgf-m, lb-ft) :**

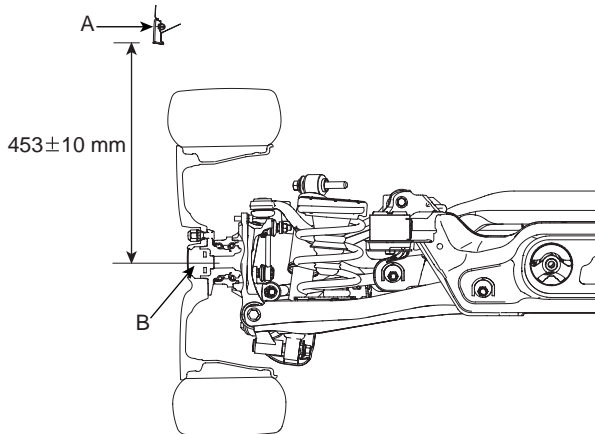
Bolt(B) : 137.3~156.9 (14~16, 101.3~115.7)  
Nut(C) : 98.1~117.7 (10.0~12.0, 72.3~86.8)



SCMSS6527D

 **NOTE**

After checking the distance ( $453 \pm 10 \text{ mm}$  ( $17.83 \pm 0.39 \text{ in}$ )) between the wheel housing garnish (A) and the hub assembly (B) as shown in the illustration, tighten the mounting bolts and nuts of rear chassis part with specified torque.



SCMSS6528D

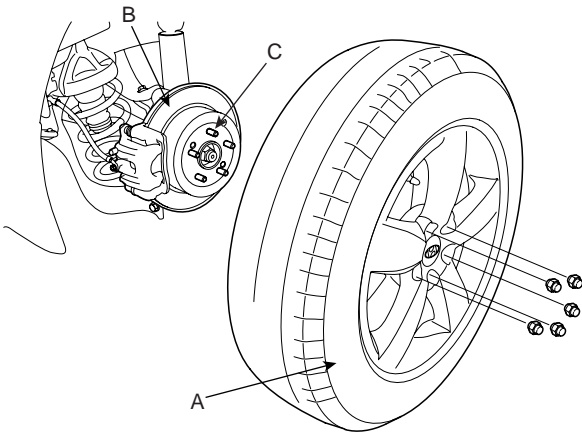
14. Install the wheel and tire (A) to the rear hub (B).

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**Tightening torque Nm (kgf-m, lb-ft) :**

88.3~107.9 (9~11, 65.1~79.6)

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SCMSS6512D

 **CAUTION**

**Be careful not to damage the hub bolts (C) when installing the rear wheel and tire (A).**

# TIRES / WHEELS

## WHEEL

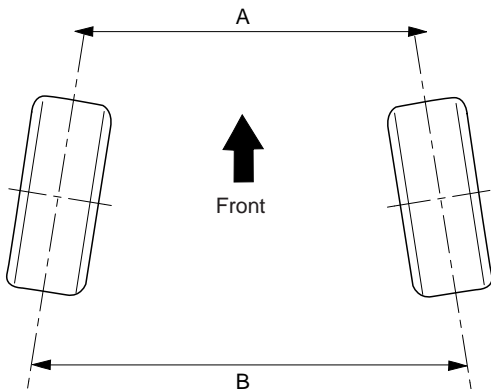
### WHEEL ALIGNMENT EDA8EF14

When using commercially available computerized four wheel alignment equipment (caster, camber, toe) to inspect the front wheel alignment, always position the car on a level surface with the front wheels facing straight ahead.

Prior to inspection, make sure that the front suspension and steering system are in normal operating condition and that the wheels and tires face straight ahead and the tires are inflated to the specified pressure.

### TOE

Toe is a measurement of how much the front of the wheels are turned in or out from the straight-ahead position.



EHRF400A

Item	Description
A-B < 0	Positive (+) toe (toe in)
A-B > 0	Negative (-) toe (toe out)

When the wheels are turned in toward the front of the vehicle, toe is positive (+) (toe in). When the wheels are turned out toward the front of the vehicle, toe is negative (-) (toe out). Toe is measured in degrees, from side to side, and totaled.

### TOE [FRONT]

Toe-in (B-A) is adjusted by turning the tie rod turnbuckles. Toe-in on the left front wheel can be reduced by turning the tie rod toward the rear of the car. Toe-in change is adjusted by turning the tie rods for the right and left heels simultaneously at the same amount as follows.

#### Standard value :

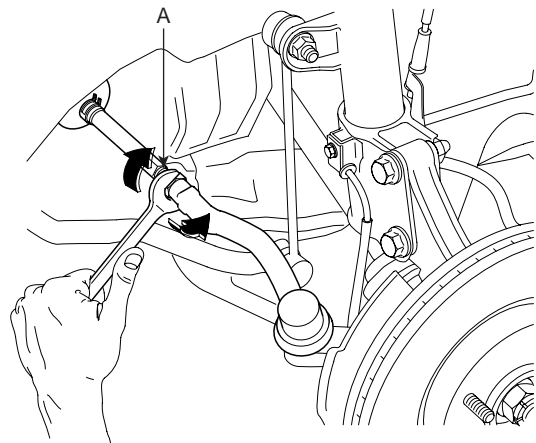
Toe-in (B-A) mm (in) :  $0 \pm 2$  ( $0 \pm 0.0787$ )

#### NOTE

- Toe-in adjustment should be made by turning the right and left tie rods at the same amount.
- When adjusting toe-in, loosen the outer bellows clip to prevent twisting the bellows.
- After the adjustment, tighten the tie rod end lock nuts firmly and reinstall the bellows clip.
- Adjust each toe-in to be the range of  $\pm 1$  mm.

#### Tightening torque Nm (kgf-m, lb-ft) :

Tie rod adjusting nut (A):  
49.0~53.9 (5.0~5.5, 36.2~39.8)



AHIE107B



**TOE [REAR]**

**Standard value :**

Toe-in (B-A) mm (in) :  $2 \pm 2$  (0.0787  $\pm$  0.0787)

Adjust the toe-in by turning the cambolt of the rear assist arm.

Left cambolt : Clockwise toe- out

Right cambolt : Clockwise toe- in

The variation of toe by a rotation of the cambolt :

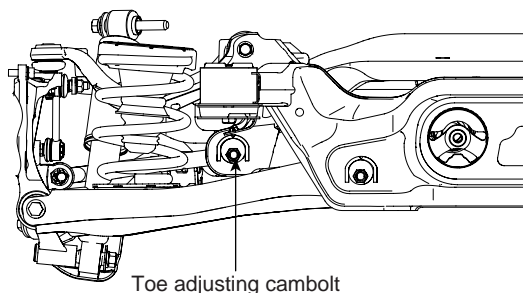
About 4.3 mm (0.17 in)

**CAUTION**

- Each toe should be within  $1 \pm 1$  mm (0.039  $\pm$  0.039 in). If the difference between right and left is not within +2mm (0.079 in), repeat adjustment.
- After adjusting the cambolt, tighten the nut to the specified torque.

**Tightening torque Nm (kgf-m, lb-ft) :**

137.3~156.9 (14~16, 101.3~115.7)



SCMSS6511L

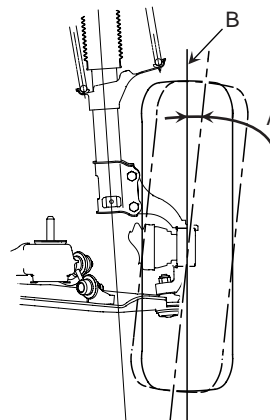
**CAMBER**

Camber is the inward or outward tilting of the wheels at the top.

**CAMBER [FRONT]**

**Standard value :**

Camber angle (A) :  $30' \pm 30'$



AHKF400F

Item	Description
A	Positive camber angle
B	True vertical

When the wheel tilts out at the top, then the camber is positive (+).

When the wheel tilts in at the top, then the camber is negative(-).

**NOTE**

Camber is pre-set at the factory and doesn't need to be adjusted. If the camber is not within the standard value, replace the bent or damaged parts.



**CAMBER [REAR]**

**Standard value :**

Camber angle (A) :  $-1^\circ \pm 30'$

Difference between right and left angle is within  $30'$

Adjust the camber by turning the cambolt of the rear lower arm.

Left cambolt : Clockwise camber(-)

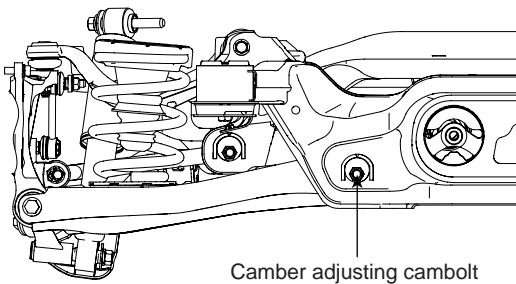
Right cambolt : Clockwise camber(+)

The variation of camber by a rotation of the cambolt : About  $0^\circ 0.9'$

After adjusting the cambolt, tighten the nut to the specified torque.

**Tightening torque Nm (kgf-m, lb-ft) :**

137.3~156.9 (14~16, 101.3~115.7)



SCMSS6513L

**CASTER [FRONT]**

Caster is the tilting of the strut axis either forward or backward from vertical. A backward tilt is positive (+) and a forward tilt is negative (-).

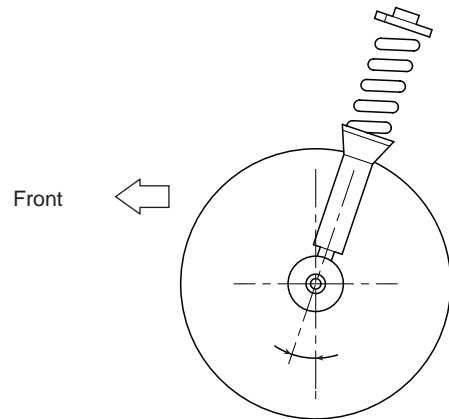
Caster is pre-set at the factory and doesn't need to be adjusted. If the caster is not within the standard value, replace the bent or damaged parts.

**Standard value :**

Caster :

$4^\circ 25' \pm 30'$  (to ground)

$4^\circ 48' \pm 30'$  (to body)



SCMSS6514L

**NOTE**

- The worn loose or damaged parts of the front suspension assembly must be replaced prior to measuring front wheel alignment.
- Caster are pre-set to the specified value at the factory and don't need to be adjusted.
- If the caster are not within specifications, replace bent or damaged parts.
- The difference of left and right wheels about the the caster must be within the range of  $0^\circ 30'$ .

**WHEEL NUT TIGHTENING**

1. Tightening torque.

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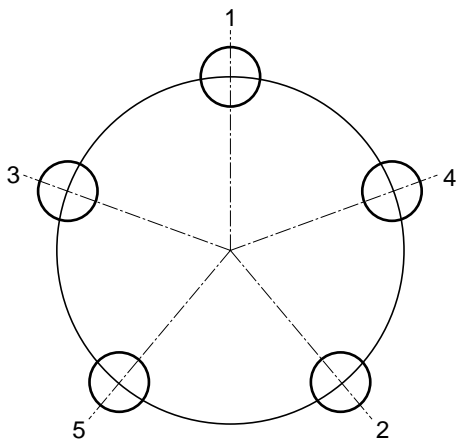
**Tightening torque Nm (kgf-m, lb-ft) :**  
88.3~107.9 (9~11, 65.1~79.6)

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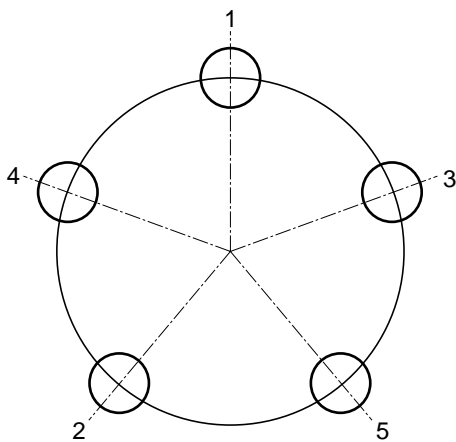
**⚠ CAUTION**

*When using an impact gun, final tightening torque should be checked using a torque wrench.*

2. Tightening order.  
Check the torque again after tightening the wheel nuts diagonally.



KHQE810A

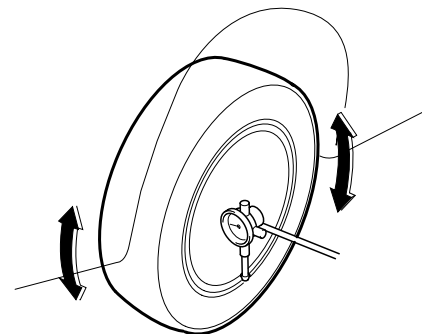
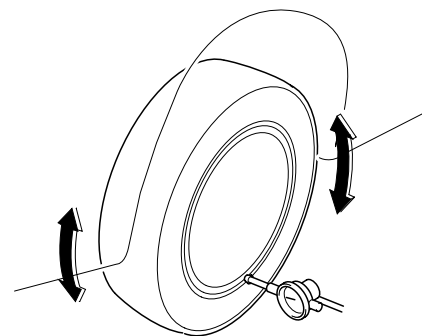


KHQE810B

**WHEEL RUNOUT**

1. Jack up the vehicle and support it with jack stands.
2. Measure the wheel runout with a dial indicator as illustrated.
3. Replace the wheel if the wheel runout exceeds the limit.

Limit		Radial	Axial
Runout mm(in)	Aluminium	0.3(0.012)	0.3(0.012)
	Spare	0.5(0.020)	0.5(0.020)



KHRE402A

**TIRE**

**TIRE WEAR** E36BFEC6

1. Measure the tread depth of the tires.

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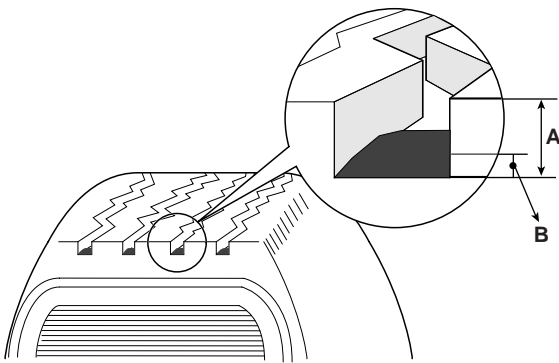
Tread depth [limit] : 1.6 mm (0.063 in)

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2. If the remaining tread(A) depth is less than the limit, replace the tire.

 **NOTE**

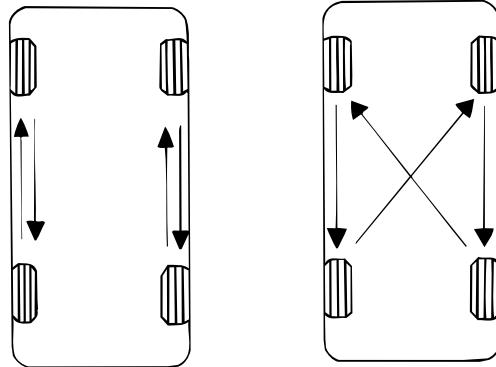
When the tread depth of the tires is less than 1.6 mm(0.063 in), the wear indicators (B) will appear.



KHRE404A

**TIRE ROTATION**

Rotate the tires in the pattern illustrated.

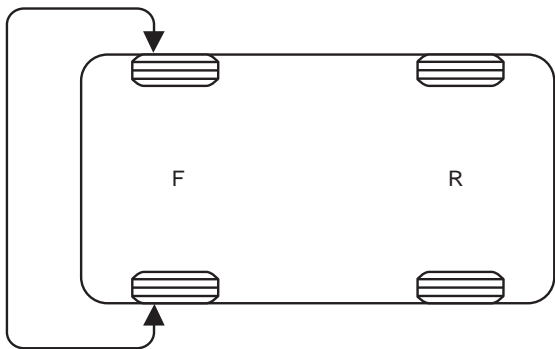


KHRE405A

**CHECKING FOR PULL AND WANDER**

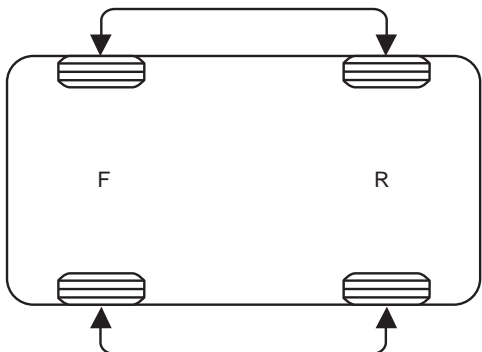
If the steering pulls to one side, rotate the tires according to the following wheel rotation procedure.

1. Rotate the front right and front left tires, and perform a road test in order to confirm vehicle stability.



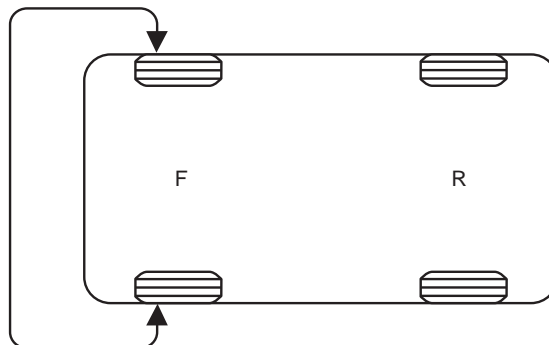
EHRF405B

2. If the steering pulls to the opposite side, rotate the front and rear tires, and perform a road test again.



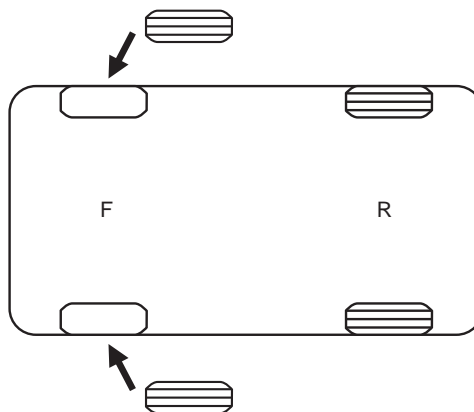
EHRF405C

3. If the steering continues to pull to one side, rotate the front right and left tires again, and perform a road test.



EHRF405B

4. If the steering continues to pull to the opposite side, replace the front wheels with new ones.



EHRF405E