Component Procedures: Suspension

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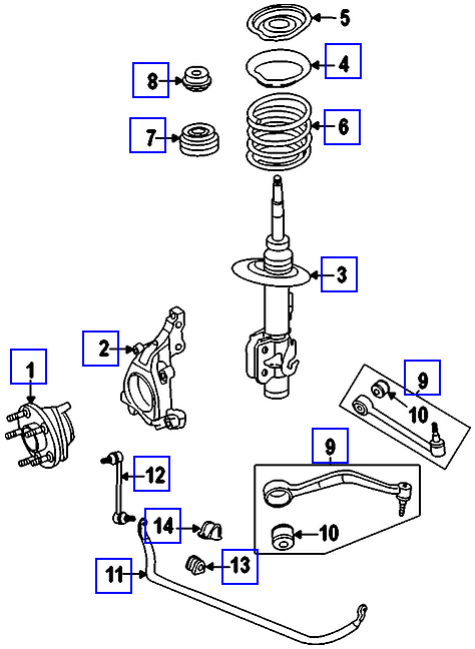
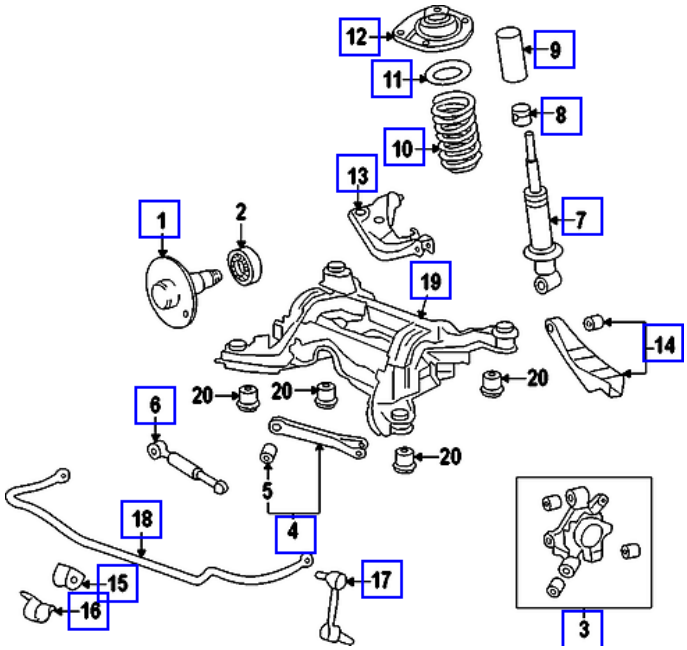
Component Procedures: Suspension

Front Suspension (Article 138762)



Rear Suspension (Article 138763)



Parts and Labor (itype_189)

Labor

Operation	Qualifier Path	Skill	Std Hrs	Wty Hrs
Lubricate	Chassis & Wheels > Chassis, Lubricate > See L?			0.0
Overhaul	Front Suspension > Suspension Service > Suspe?	B	3.8	0.0
Overhaul	Front Suspension > Suspension Service > Suspe?	B	7.4	0.0
Overhaul	Rear Suspension > Suspension Service > Suspen?	B	5.0	0.0
Overhaul	Rear Suspension > Suspension Service > Suspen?	B	9.8	0.0
Remove & Replace	Front Suspension > Crossmember, R&R	B	5.2	3.9
Remove & Replace	Front Suspension > Lower Control Arm > Lower ?	B	1.4	0.0
Remove & Replace	Front Suspension > Lower Control Arm > Lower ?	B	2.0	0.0

Remove & Replace	Front Suspension > Lower Control Arm > Lower ?	B	1.5	0.0
Remove & Replace	Front Suspension > Lower Control Arm > Lower ?	B	2.2	0.0
Remove & Replace	Front Suspension > Stabilizer Bar > Bushings,?	C	0.5	0.3
Remove & Replace	Front Suspension > Stabilizer Bar > Link, R&R?	C	0.5	0.4
Remove & Replace	Front Suspension > Stabilizer Bar > Link, R&R?	C	0.6	0.5
Remove & Replace	Front Suspension > Stabilizer Bar > Stabilize?	C	0.8	0.7
Remove & Replace	Front Suspension > Suspension Components > Co?	B	1.4	1.1
Remove & Replace	Front Suspension > Suspension Components > Co?	B	2.6	2.0
Remove & Replace	Front Suspension > Suspension Components > Hu?	B	1.1	0.6
Remove & Replace	Front Suspension > Suspension Components > Hu?	B	2.0	0.0
Remove & Replace	Front Suspension > Suspension Components > Kn?	B	1.5	0.0
Remove & Replace	Front Suspension > Suspension Components > Kn?	B	2.8	0.0
Remove & Replace	Front Suspension > Suspension Components > St?	B	1.4	1.1
Remove & Replace	Front Suspension > Suspension Components > St?	B	2.6	2.0
Remove & Replace	Front Suspension > Suspension Components > St?	B	1.4	1.1
Remove & Replace	Front Suspension > Suspension Components > St?	B	2.6	2.0
Remove & Replace	Rear Suspension > Crossmember, R&R	B	4.5	0.0
Remove & Replace	Rear Suspension > Lower Control Arm > Lower C?	B	1.6	0.0
Remove & Replace	Rear Suspension > Lower Control Arm > Lower C?		0.2	
Remove & Replace	Rear Suspension > Lower Control Arm > Lower C?	B	3.0	0.0
Remove & Replace	Rear Suspension > Lower Control Arm > Lower C?		0.2	
Remove & Replace	Rear Suspension > Stabilizer Bar > Bushings, ?	C	0.9	0.0
Remove & Replace	Rear Suspension > Stabilizer Bar > Bushings, ?	C	1.1	0.0
Remove & Replace	Rear Suspension > Stabilizer Bar > Link, R&R ?	C	0.5	0.0
Remove & Replace	Rear Suspension > Stabilizer Bar > Link, R&R ?	C	0.8	0.0
Remove & Replace	Rear Suspension > Stabilizer Bar > Stabilizer?	C	0.8	0.0
Remove & Replace	Rear Suspension > Suspension Components > Adj?	B	1.3	0.0
Remove & Replace	Rear Suspension > Suspension Components > Adj?	B	2.4	0.0
Remove & Replace	Rear Suspension > Suspension Components > Coi?	B	1.2	0.0
Remove & Replace	Rear Suspension > Suspension Components > Coi?	B	2.4	0.0
Remove & Replace	Rear Suspension > Suspension Components > Hub?	B	1.0	0.8
Remove & Replace	Rear Suspension > Suspension Components > Hub?	B	1.8	0.0
Remove & Replace	Rear Suspension > Suspension Components > Knu?	B	1.7	1.3
Remove & Replace	Rear Suspension > Suspension Components > Knu?	B	3.2	0.0
Remove & Replace	Rear Suspension > Suspension Components > Str?	B	1.2	0.0
Remove & Replace	Rear Suspension > Suspension Components > Str?	B	2.4	0.0
Remove & Replace	Rear Suspension > Suspension Components > Str?	B	1.2	0.0
Remove & Replace	Rear Suspension > Suspension Components > Str?	B	2.4	0.0
Remove & Replace	Rear Suspension > Suspension Components > Tra?	B	1.0	0.0
Remove & Replace	Rear Suspension > Suspension Components > Tra?	B	1.8	0.0
Remove & Replace	Rear Suspension > Upper Control Arm > Upper C?	B	4.6	0.0
Remove & Replace	Rear Suspension > Upper Control Arm > Upper C?	B	5.2	0.0

Specifications Quick Reference (itype_439)

Quick Specifications
- item

Front Suspension (Article 13529)

The front suspension has 2 primary purposes:
- Isolate the driver from irregularities in the road surface.
- Define the ride and handling characteristics of the vehicle.

The front suspension absorbs the impact of the road wheel travelling over irregular road surfaces and dissipates this energy throughout the suspension system. This process isolates the vehicle occupants from the road surface. This process isolates the vehicle occupants from the road surface. The suspension system must allow for the vertical movement of the tire and wheel assembly as the vehicle travels over irregular road surfaces while maintaining the tire's horizontal relationship to the road.

The steering knuckle is connected to two lower control arm s and a strut assembly . The lower control arm s attach to the steering knuckle with balls joints at the outermost point. The upper portion of the steering knuckle is attached to a strut assembly by two bolts and nuts. The upper most hole in the strut is a slot

which allows for front camber adjustment.
The strut assembly contains a spring , shock absorber , a jounce bumper, boot, and a top mount. The top mount includes a bearing to allow the strut assembly and knuckle to rotate when the steering wheel is turned. The strut assembly is a coil over shock design that bolts to the lower control arm and the body structure. The spring absorbs the movement of the knuckle as the wheel travels over rough roads. The shock absorber dampens the oscillations of the coil spring .
The lower control arms are connected to the vehicle frame through two rigid bushings which allow the control top pivot up and down with respect to the vehicle frame and body structure. The forward most attachment points uses a bolt with a cam and slotted hole to allow for caster adjustment. A ball joint at the outermost and of the control arm allows the steering knuckle to maintain the perpendicular relationship to the road surface and to rotate as the steering wheel is turned.
A stabilizer shaft is used to help reduce body roll when the vehicle is driven around a turn. The stabilizer shaft is mounted to the sub frame or front cradle by two clamps and insulators. A link is used to connect the ends of the stabilizer shaft to each front suspension strut assembly. Each link has a ball joint on each end.

Rear Suspension (Article 13559)

Non Standards
- Description (13560)

Front Suspension - Adhesives, Fluids, Lubricants, and Sealers (Article 13556)

Application Type of Material GM Part Number
United States Canada
Steering Knuckle Bearing Pilot Bore Grease 12345996 10953501

Rear Suspension - Adhesives, Fluids, Lubricants, and Sealers (Article 13595)

Application Type of Material GM Part Number
United States Canada
Knuckle Bearing Pilot Bore Grease 12345996 10953501
Rear Wheel Hub Bolt Threadlocker 89021297 10953488

Front Suspension - Fastener Specifications (Article 13558)

Application Specification
Metric English
Front Lower Control Arm Nut
First Pass: 50 Nm 37 lb ft
- First Pass:
Final Pass: plus 150 degrees
- Final Pass:
Front Lower Control Arm Nut at the Steering Knuckle
First Pass: 40 Nm 30 lb ft
Final Pass: plus 90 degrees
Front Lower Rear Control Arm Nut at the Steering Knuckle
Front Lower Rear Control Arm Nut at the Frame
Final Pass: plus 120 degrees
Front Stabilizer Shaft Link Nut at the Front Strut 120 Nm 89 lb ft
Front Stabilizer Shaft Link Nut at the Stabilizer Shaft 120 Nm 89 lb ft
Front Stabilizer Shaft Insulator Clamp Nuts 43 Nm 32 lb ft
Front Suspension Strut Bolts at the Steering Knuckle
First Pass: 80 Nm 59 lb ft
Final Pass: plus 180 degrees
Front Suspension Strut Nut at the Front Suspension Strut Mount ing Plate 70 Nm 52 lb ft
Front Suspension Strut Nut at the Front Suspension Strut Insulator 70 Nm 52 lb ft
Front Wheel Bearing / Hub Bolt s (LFX) 115 Nm 85 lb ft
Front Wheel Bearing/ Hub Bolts (LSA, LS3, L99)
First Pass: 100 Nm 74 lb ft
Final Pass: plus 28 degrees

Rear Suspension - Fastener Specifications (Article 13597)

Application Specification

Metric English
Adjustable Link Bolt to Knuckle 175 Nm 129 lb ft
Adjustable Link Adjuster Nut 115 Nm 85 lb ft
Lower Control Arm Adjuster Nut 115 Nm 85 lb ft
Lower Control Arm to Knuckle Bolt
First Pass 40 Nm 30 lb ft
- First Pass
Final Pass + 120°
- Final Pass
Lower Rear Shock Absorber Nut
First Pass 80 Nm 59 lb ft
Rear Shock Absorber Nut 45 Nm 33 lb ft
Rear Stabilizer Shaft Insulator Clamp Bolts 58 Nm 43 lb ft
Rear Stabilizer Shaft Link Nuts (w/o FE4, FE5, FE6) 49 Nm 36 lb ft
Rear Stabilizer Shaft Link Nuts (w FE4, FE5, FE6) 26 Nm 19 lb ft
Rear Wheel Bearing and Hub Bolt s 115 Nm 85 lb ft
Trailing Arm to Frame Bolt 100 Nm 74 lb ft
Trailing Arm to Knuckle Bolts
Upper Control Arm to Bushing Bolt 160 Nm 118 lb ft
Upper Control Arm to Knuckle Bolts
First Pass 60 Nm 44 lb ft
Final Pass + 90°
Upper Control Arm to Frame Bolt
Upper Control Arm to Bushing to Frame Bolt 175 Nm 129 lb ft
Upper Rear Shock Absorber Bolt 58 Nm 43 lb ft

Wheel Alignment - Fastener Specifications (Article 13675)

Application Specification
Metric English
Front Lower Control Arm to Frame Nut 50 Nm + 150 degrees 37 lb ft + 150 degrees
Inner Tie Rod End Nut 75 Nm 55 lb ft
Rear Adjuster Link to Frame Nuts 115 Nm 85 lb ft
Rear Lower Control Arm to Frame Nuts 115 Nm 85 lb ft
Shock to Steering Knuckle 80 Nm + 180 degrees 59 lb ft + 180 degrees

Rear Suspension - Adhesives, Fluids, Lubricants, and Sealers (Article 13596)

Application Type of Material GM Part Number
United States Canada
Knuckle Bearing Pilot Bore Grease 12345996 10953501
Rear Wheel Hub Bolt Threadlocker 89021297 10953488

All New Technical Service Bulletins (itype_432)

Tsbs
- Information on Diagnosis and Replacement of Shock Absorber and Strut Due to Fluid Leak (05-03-08-002J, 2024/08/22)

All Technical Service Bulletins (itype_100)

Tsbs
- Information on Diagnosis and Replacement of Shock Absorber and Strut Due to Fluid Leak (05-03-08-002J, 2024/08/22)
- Ratchet Click or Grind Noise From Front of Vehicle Slow Speeds (16-NA-298, 2016/09/13)

Customer Interest Bulletins (itype_109)

Tsbs
- Ratchet Click or Grind Noise From Front of Vehicle Slow Speeds (16-NA-298, 2016/09/13)

Suspension General Diagnosis (Article 13598)

Non Standards
- Symptoms - Suspension General Diagnosis (13610)

- Ride Diagnosis (13606)
- Vehicle Leads/Pulls (13612)
- Body Leans or Sways in Corners (13599)
- Suspension Bottoms (13607)
- Memory Steer (13603)
- Noise Diagnosis - Front Suspension (13604)
- Noise Diagnosis - Rear Suspension (13605)

Suspension General Diagnosis (Article 13614)

Illustration Tool Number/ Description
Click for full-size image J 8001 Dial Indicator Set

Front Suspension - Special Tools (Article 13555)

Illustration Tool Number/ Description
Click for full-size image CH 48845 Spring Compressor
Click for full-size image J 35669 Wrench
Click for full-size image J 42188 Ball Joint Separator
Click for full-size image J 43631 Ball Joint Remover

Rear Suspension - Special Tools (Article 13594)

Illustration Tool Number/ Description
Click for full-size image CH 48845 Spring Compressor
Click for full-size image J 43631 Ball Joint Remover
Click for full-size image DT 51438 Hub Punch

Noise (itype_156)

Tsbs
- Ratchet Click or Grind Noise From Front of Vehicle Slow Speeds (16-NA-298, 2016/09/13)

OEM Policies and Procedures (itype_120)

Tsbs
- Information on Diagnosis and Replacement of Shock Absorber and Strut Due to Fluid Leak (05-03-08-002J, 2024/08/22)