# **GROUP 32**

# POWER PLANT MOUNT

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# **GENERAL DESCRIPTION**

M1321000100373

 The engine front mounting bracket is a dome-shaped fluid-filled mount for improved responsiveness during acceleration and more stable vehicle performance against road disturbances.

CONSTRUCTION DIAGRAM

- The liquid-filled transaxle mounting body side bracket improves riding comfort by its refined insulator.
- A roll stopper bracket in the upper area limits engine rolling. Furthermore, large diameter insulator reduces idle vibration.



#### <3.8L ENGINE>



# **SPECIAL TOOL**

M1321000600390

TOOL	TOOL NUMBER AND NAME	SUPERSESSION	APPLICATION
AC106827	MB991897 Ball joint remover	MB991113-01, MB990635-01 or General service tool	Knuckle and tie rod end ball joint disconnection <i>NOTE: Steering linkage puller</i> <i>(MB990635 or MB991113)is also</i> <i>used to disconnect the knuckle</i> <i>and tie rod end ball joint.</i>

# **ENGINE MOUNTING**

### **REMOVAL AND INSTALLATION**

M1321001100462

#### 

\*: Indicates parts which should be initially tightened, and then fully tightened after placing the vehicle horizontally and loading the full weight of the engine on the vehicle body.

<3.8L ENGINE>

58 ± 7 N·m\*

43 ± 5 ft-lb\*

58 ± 7 N·m\*

43 ± 5 ft-lb\*

**Pre-removal Operation** Raise the engine and transaxle assembly until its weight is not applied to the insulator, and support it securely.

<2.4L ENGINE>



**REMOVAL STEPS** 

- 1. ENGINE MOUNTING STAY <3.8L **<<A>>** ENGINE>
- 2. GROUNDING CABLE CONNECTION

AC307311AB

1

83 ± 12 N·m\*

61 ± 9 ft-lb\*

9.0 ± 2.0 N⋅m 80 ± 17 in-lb

2

**REMOVAL STEPS (Continued)** 

- POWER STEERING OIL
   RESERVOIR
- 3. SELF-LOCKING NUTS

36 ± 6 N⋅m 27 ± 4 ft-lb

83 ± 12 N·m\*

61 ± 9 ft-lb\*

N 3

4. ENGINE FRONT MOUNTING BRACKET

#### **REMOVAL SERVICE POINT**

#### <<A>> POWER STEERING OIL RESERVOIR REMOVAL

With the hose installed, remove the power steering oil reservoir from the vehicle. (Refer to GROUP 37, Power Steering Hoses P.37-58).

NOTE: After removing the power steering oil reservoir, secure it with a cord in the location where the removal and installation of the engine front mounting bracket cannot be hindered.

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# TRANSAXLE MOUNTING

### **REMOVAL AND INSTALLATION**

M1321001400452

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\*: Indicates parts which should be initially tightened, and then fully tightened after placing the vehicle horizontally and loading the full weight of the engine on the vehicle body.

#### **Pre-removal Operation** Post-installation Operation Powertrain Control Module (PCM) Removal (2.4L Engine Rear Roll Stopper Bracket Installation (Refer to ENGINE: Refer to GROUP 13A, Powertrain Control Mod-P.32-7). ule (PCM) P.13A-1140, 3.8L ENGINE: Refer to GROUP Centermember Installation (Refer to P.32-7). • 13B, Powertrain Control Module (PCM) P.13B-1192). Battery and Battery Tray Installation Air Cleaner Removal (Refer to GROUP 15, Air Cleaner Air Cleaner Installation (Refer to GROUP 15, Air Cleaner • P.15-4). P.15-4). Battery and Battery Tray Removal Powertrain Control Module (PCM) Installation (2.4L • Centermember Removal (Refer to P.32-7). ENGINE: Refer to GROUP 13A, Powertrain Control Mod-Engine Rear Roll Stopper Bracket Removal (Refer to ule (PCM) P.13A-1140, 3.8L ENGINE: Refer to GROUP 13B, Powertrain Control Module (PCM) P.13B-1192). P.32-7). Raise the engine and transaxle assembly until its weight is not applied to the insulator, and support it securely.



#### REMOVAL STEPS

1. SELF-LOCKING NUTS

#### AC306763AB

#### REMOVAL STEPS (Continued)

- 2. TRANSAXLE MOUNTING BODY SIDE BRACKET
- >>A<< 3. TRANSAXLE MOUNTING STOPPER

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#### POWER PLANT MOUNT TRANSAXLE MOUNTING

#### INSTALLATION SERVICE POINT

# >>A<< TRANSAXLE MOUNTING STOPPER INSTALLATION

Install the transaxle mounting stopper so that its arrow points upward.



# ENGINE ROLL STOPPER AND CENTERMEMBER

REMOVAL AND INSTALLATION

#### <2.4L ENGINE>

M1321002300306

#### 

\*: Indicates parts which should be initially tightened, and then fully tightened after placing the vehicle horizontally and loading the full weight of the engine on the vehicle body.

**Pre-removal and Post-installation Operation** Side Under Cover Removal and Installation (Refer to GROUP 51, Under Cover P.51-11).



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#### REAR ROLL STOPPER BRACKET REMOVAL STEPS

- FRONT NO.1 EXHAUST PIPE AND FRONT NO.2 EXHAUST PIPE CONNECTION (REFER TO GROUP 15, EXHAUST PIPE AND MAIN MUFFLER P.15-20).
- 1. SELF-LOCKING NUT
- 2. ENGINE FRONT ROLL STOPPER BRACKET AND CENTERMEMBER
- 6. SELF-LOCKING NUT
- 7. TRANSAXLE CASE REAR ROLL STOPPER BRACKET

### <3.8L ENGINE>

#### 

\*: Indicates parts which should be initially tightened, and then fully tightened after placing the vehicle horizontally and loading the full weight of the engine on the vehicle body.



AC306906AB

#### FRONT ROLL STOPPER AND CENTERMEMBER REMOVAL STEPS

- 1. SELF-LOCKING NUT
- 2. ENGINE FRONT ROLL STOPPER BRACKET AND CENTERMEMBER
- →B<< 3. ENGINE FRONT ROLL STOPPER BRACKET
  - 4. CENTERMEMBER REAR ROLL STOPPER REMOVAL STEPS
  - FRONT AXLE NO.1 CROSSMEMBER ASSEMBLY (REFER TO P.32-10).
- >>A<< 5. ENGINE REAR ROLL STOPPER BRACKET

#### REAR ROLL STOPPER BRACKET REMOVAL STEPS

- FRONT NO.1 EXHAUST PIPE (REFER TO GROUP 15, EXHAUST PIPE AND MAIN MUFFLER P.15-20).
- 1. SELF-LOCKING NUT
- 2. ENGINE FRONT ROLL STOPPER BRACKET AND CENTERMEMBER
- 6. SELF-LOCKING NUT
- 7. TRANSAXLE CASE REAR ROLL STOPPER BRACKET

### INSTALLATION SERVICE POINTS

### >>A<< ENGINE REAR ROLL STOPPER BRACKET INSTALLATION

Tighten the bolts in the following sequence:

- 1. Tighten bolts E finger tight.
- 2. Tighten bolt C and then tighten bolts D.
- 3. Tighten bolts E.



### >>B<< ENGINE FRONT ROLL STOPPER BRACKET INSTALLATION

Install the engine front roll stopper bracket so that its hole points towards the front side of the vehicle.



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# L STOPPER

32-9

# CROSSMEMBER

#### REMOVAL AND INSTALLATION

M1321003200551

#### <2.4L ENGINE>

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- Before removing the steering wheel and air bag module as sembly, always refer to GROUP 52B -Service Precautions (P.52B-26), Air bag Module and Clock Spring (P.52B-369). Also, set the front wheels so that they are facing straight forward, and remove the ignition key. If you fail to do this, the SRS clock spring will be damaged, causing the SRS air bag to be inoperative and serious injury.
- \*1: Indicates parts which should be initially tightened, and then fully tightened after placing the vehicle horizontally and loading the full weight of the engine on the vehicle body.
- \*<sup>2</sup>: Indicates parts which should be temporarily tightened, and then fully tightened with the vehicle on the ground in the unladen condition.

<ul> <li>Pre-removal Operation</li> <li>Power Steering Fluid Draining (Refer to GROUP 37, On-vehicle Service – Fluid Replacement P.37-21).</li> <li>Air Bag Module and Steering Wheel Assembly Removal</li> </ul>	<ul> <li>Post-installation Operation</li> <li>Centermember Installation (Refer to P.32-7).</li> <li>Front Floor Carpet Installation</li> <li>Accelerator Stopper Installation (Refer to GROUP 17,</li> </ul>
<ul> <li>(Refer to GROUP 37, Steering Wheel P.37-26).</li> <li>Clock Spring Removal (Refer to GROUP 52B, Air Bag Module and Clock Spring P.52B-369).</li> <li>Floor Console Assembly Removal (Refer to GROUP 52A, Floor Console Assembly P.52A-9).</li> <li>Front Scuff Plate (LH) and Cowl Side Trim (LH) Removal (Refer to GROUP 52A, Trims P.52A-10).</li> <li>Trunk Lid Release Handle Cover Removal (Refer to GROUP 42, Trunk Lid P.42-62).</li> <li>Accelerator Stopper Removal (Refer to GROUP 17, Accelerator Pedal P. 17-9).</li> <li>Front Floor Carpet Removal</li> <li>Centermember Removal (Refer to P.32-7).</li> </ul>	<ul> <li>Accelerator Pedal P. 17-9).</li> <li>Trunk Lid Release Handle Cover Installation (Refer to GROUP 42, Trunk Lid P.42-62).</li> <li>Front Scuff Plate (LH) and Cowl Side Trim (LH) Installation (Refer to GROUP 52A, Trims P.52A-10).</li> <li>Floor Console Assembly Installation (Refer to GROUP 52A, Floor Console Assembly P.52A-9).</li> <li>Clock Spring Installation (Refer to GROUP 52B, Air Bag Module and Clock Spring P.52B-369).</li> <li>Steering Wheel Assembly and Air Bag Module Installation (Refer to GROUP 37, Steering Wheel P.37-26).</li> <li>Check the dust cover for cracks or damage by pushing it with your finger.</li> <li>Power Steering Fluid Supplying (Refer to GROUP 37, On-vehicle Service – Fluid Replacement P.37-21).</li> <li>Power Steering Fluid Line Bleeding (Refer to GROUP 37, On-vehicle Service – Power Steering System Air Bleeding P.37-21).</li> <li>Checking Steering Wheel Position with Wheels Straight Ahead.</li> <li>Front Wheel Alignment Adjustment (Refer to GROUP 33, On-vehicle Service – Front Wheel Alignment Check and Adjustment P.33-6).</li> </ul>

POWER PLANT MOUNT CROSSMEMBER



#### **REMOVAL STEPS (Continued)**

- >>B<< 17. POWER STEERING GEAR BRACKET
  - 18. POWER STEERING GEAR AND LINKAGE
- >>A<< 19. STABILIZER BAR
  - 20. FRONT AXLE NO.1 CROSSMEMBER

#### **Required Special Tool:**

• MB991897: Ball Joint Remover

#### <3.8L ENGINE>

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- Before removing the steering wheel and air bag module as sembly, always refer to GROUP 52B -Service Precautions (P.52B-26), Air bag Module and Clock Spring (P.52B-369). Also, set the front wheels so that they are facing straight forward, and remove the ignition key. If you fail to do this, the SRS clock spring will be damaged, causing the SRS air bag to be inoperative and serious injury.
- \*<sup>1</sup>: Indicates parts which should be initially tightened, and then fully tightened after placing the vehicle horizontally and loading the full weight of the engine on the vehicle body.
- \*<sup>2</sup>: Indicates parts which should be temporarily tightened, and then fully tightened with the vehicle on the ground in the unladen condition.

Pre-removal Operation	Post-installation Operation
Power Steering Fluid Draining (Refer to GROUP 37,	Centermember Installation (Refer to P.32-7).
On-vehicle Service – Fluid Replacement P.37-21).	Front Floor Carpet Installation
• Air Bag Module and Steering Wheel Assembly Removal (Refer to GROUP 37, Steering Wheel P.37-26).	Accelerator Stopper Installation (Refer to GROUP 17, Accelerator Pedal P.17-9).
Clock Spring Removal (Refer to GROUP 52B, Air Bag Module and Clock Spring P.52B-369).	• Trunk Lid Release Handle Cover Installation (Refer to GROUP 42, Trunk Lid P.42-62).
• Floor Console Assembly Removal (Refer to GROUP 52A, Floor Console Assembly P.52A-9).	• Front Scuff Plate (LH) and Cowl Side Trim (LH) Installa- tion (Refer to GROUP 52A, Trims P.52A-10).
• Front Scuff Plate (LH) and Cowl Side Trim (LH) Removal (Refer to GROUP 52A, Trims P.52A-10).	Floor Console Assembly Installation (Refer to GROUP 52A, Floor Console Assembly P.52A-9).
Trunk Lid Release Handle Cover Removal (Refer to GROUP 42, Trunk Lid P.42-62).	Clock Spring Installation (Refer to GROUP 52B, Air Bag Module and Clock Spring P.52B-369).
Accelerator Stopper Removal (Refer to GROUP 17, Accelerator Pedal P. 17-9).	• Steering Wheel Assembly and Air Bag Module Installation (Refer to P.37-26).
<ul> <li>Front Floor Carpet Removal</li> <li>Centermember Removal (Refer to P.32-7).</li> </ul>	• Check the dust cover for cracks or damage by pushing it with your finger.
	Power Steering Fluid Supplying (Refer to GROUP 37, On-vehicle Service – Fluid Replacement P.37-21).
	• Power Steering Fluid Line Bleeding (Refer to P.37-21).
	Checking Steering Wheel Position with Wheels Straight Ahead.
	• Front Wheel Alignment Adjustment (Refer to GROUP 33, On-vehicle Service – Front Wheel Alignment Check and Adjustment P.33-6).

#### POWER PLANT MOUNT CROSSMEMBER



			REMOVAL STEPS (Continued)
< <d>&gt;&gt;</d>	≫D<<	14.	FRONT AXLE CROSSMEMBER
			STAY
< <b>E</b> >>	>>C<<	15.	ENGINE REAR ROLL STOPPER
			BRACKET, POWER STEERING
			GEAR AND LINKAGE,
			STABILIZER BAR AND FRONT
			AXLE NO.1 CROSSMEMBER
			ASSEMBLY
	≫B<<	16.	ENGINE REAR ROLL STOPPER
			BRACKET
	≫B<<	17.	POWER STEERING GEAR
			BRACKET
		18.	STEERING GEAR AND LINKAGE
			PROTECTOR
		19.	POWER STEERING GEAR AND
			LINKAGE

- >>A<< 20. STABILIZER BAR
  - 21. FRONT AXLE NO.1 CROSSMEMBER

#### **Required Special Tool:**

• MB991897: Ball Joint Remover

### **REMOVAL SERVICE POINTS**

### <<A>> STEERING COLUMN ASSEMBLY AND STEERING GEAR DISCONNECTION

Pinch the steering column shaft clip with pliers, and pull up the shaft in the direction shown to disengage the steering column assembly.





CROSSMEMBER NOTE: If the steering column shaft is removed accidentally, remove the steering column assembly and be sure to insert the

steering column shaft into the steering column as shown in the

POWER PLANT MOUNT

figure.



#### 

- Do not remove the nut from ball joint. Loosen it and use special tool MB991897 to avoid possible damage to ball joint threads.
- Hang special tool MB991897 with a cord to prevent it from falling.
- 1. Replace the self locking nut for lower arm ball joint with a regular nut, because the original one is a little bit large to install special tool MB991897. Install special tool MB991897 as shown in the figure.



CORD

MB991897

BOLT

2. Turn the bolt and knob as necessary to make the jaws of special tool parallel, tighten the bolt by hand and confirm that the jaws are still parallel.

NOTE: When adjusting the jaws in parallel, make sure the knob is in the position shown in the figure.

3. Tighten the bolt with a wrench to disconnect the lower arm ball joint, tie rod end and remove the self locking nut.

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#### <<C>> FRONT AXLE CROSSMEMBER STOPPER REMOVAL

The crossmember mounting bolts need not be unscrewed when the front axle crossmember stopper is replaced. However, the bolts may become loosened when the front axle crossmember stopper is removed. Retighten the bolts to  $180 \pm 20$  N·m ( $133 \pm 15$  ft-lb).

# CROSSMEMBER MOUNTING BOLT FRONT AXLE CROSSMEMBER STAY AC306568 AB

### <<D>>> FRONT AXLE CROSSMEMBER STAY REMOVAL

The crossmember mounting bolts need not be unscrewed when the front axle crossmember stay is replaced. However, the bolts may become loosened when the front axle crossmember stay is removed. Retighten the bolts to  $180 \pm 20$  N·m ( $133 \pm 15$  ft-lb).



### <<E>> ENGINE REAR ROLL STOPPER BRACKET, POWER STEERING GEAR AND LINKAGE, STABILIZER BAR AND FRONT AXLE NO.1 CROSSMEMBER ASSEMBLY REMOVAL

Support the front axle number 1 crossmember with a transmission jack, and then remove the crossmember mounting nuts and bolts.

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#### INSTALLATION SERVICE POINTS

### >>A<< STABILIZER BAR INSTALLATION

Align the stabilizer bar identification mark with the right end of the bushing (LH).





### >>B<< POWER STEERING GEAR BRACKET/ENGINE REAR ROLL STOPPER BRACKET INSTALLATION

Tighten the bolts in the following sequence:

- 1. Tighten bolt A and then tighten bolt B.
- 2. Tighten bolts E finger tight.
- 3. Tighten bolt C and then tighten bolts D.
- 4. Tighten bolts E and then tighten bolt F.



### >>C<< ENGINE REAR ROLL STOPPER BRACKET, POWER STEERING GEAR AND LINKAGE, STABILIZER BAR AND FRONT AXLE NO.1 CROSSMEMBER ASSEMBLY INSTALLATION

Align the steering column dash panel cover notch (arrow A) with the steering gear lug (arrow B), and install the engine rear roll stopper bracket, power steering gear and linkage, stabilizer bar and front axle number 1 crossmember assembly.

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#### POWER PLANT MOUNT CROSSMEMBER

## CROSSMEMBER MOUNTING BOLT FRONT AXLE CROSSMEMBER STAY SELF-LOCKING NUT AC306568 AC

#### >>D<< FRONT AXLE CROSSMEMBER STAY/SELF-LOCKING NUTS INSTALLATION

Ensure that the crossmember mounting bolts have been tightened to  $180 \pm 20$  N·m ( $133 \pm 15$  ft-lb), and then install the front crossmember stay with the self-locking nut.

# CROSSMEMBER MOUNTING BOLT FRONT AXLE CROSSMEMBER STOPPER SELF-LOCKING NUT AC307551AC

### >>E<< FRONT AXLE CROSSMEMBER STOPPER/SELF-LOCKING NUTS INSTALLATION

Ensure that the crossmember mounting bolts have been tightened to  $180 \pm 20$  N·m ( $133 \pm 15$  ft-lb), and then install the front crossmember stopper with the self-locking nut.

### INSPECTION

M1321003300194

Check the crossmembers for cracks or damage.

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#### POWER PLANT MOUNT SPECIFICATIONS

# SPECIFICATIONS

### FASTENER TIGHTENING SPECIFICATIONS

M1321004100308

ITEM		SPECIFICATION		
Crossmember				
Engine rear roll stopper bracket bolt and nut		58 ± 7 N·m (43 ± 5 ft-lb)		
Front axle crossmember stay bolt and nut <3.8L ENGINE>		83 ± 12 N·m (61 ± 9 ft-lb)		
Front axle crossmember stopper nut <2.4L ENGINE>		83 ± 12 N⋅m (61 ± 9 ft-lb)		
Front axle No.1 crossmember bolt and nut		180 ± 20 N·m (133 ± 15 ft-lb)		
Lower arm assembly bolt		165 ± 15 N·m (122 ± 11 ft-lb)		
Lower arm assembly nut (flange nut, self-locking) M14		165 ± 15 N·m (122 ± 11 ft-lb)		
Lower arm assembly nut (nut, self-locking)	M14	65 ± 6 N·m (48 ± 4 ft-lb)		
Power steering gear and linkage bolt	-	83 ± 12 N·m (61 ± 9 ft-lb)		
Power steering gear bracket bolt	M10	58 ± 7 N·m (43 ± 5 ft-lb)		
	M12	83 ± 12 N·m (61 ± 9 ft-lb)		
Pressure hose clamp bolt and nut	$12 \pm 2 \text{ N} \cdot \text{m} (102 \pm 22 \text{ in-lb})$			
Pressure hose nut		15 ± 3 N·m (11 ± 2 ft-lb)		
Return tube clamp bolt and nut		$12 \pm 2$ N·m (102 $\pm$ 22 in-lb)		
Return tube nut		15 ± 3 N·m (11 ± 2 ft-lb)		
Stabilizer bracket bolt		58 ± 7 N·m (43 ± 5 ft-lb)		
Stabilizer link nut		48 ± 7 N·m (36 ± 5 ft-lb)		
Steering column assembly bolt		$18 \pm 2$ N·m ( $13 \pm 2$ ft-lb)		
Steering gear and linkage protector bolt <3.8L ENGINE>		$12 \pm 2 \text{ N} \cdot \text{m} (102 \pm 22 \text{ in-lb})$		
Tie rod end nut		29 ± 4 N·m (21 ± 3 ft-lb)		
Engine mounting				
Engine front mounting bracket bolt	M10	58 ± 7 N·m (43 ± 5 ft-lb)		
Engine front mounting bracket bolt and nut	M12	83 ± 12 N⋅m (61 ± 9 ft-lb)		
Engine mounting stay bolt <3.8L ENGINE>		36 ± 6 N·m (27 ± 4 ft-lb)		
Grounding cable bolt		9.0 ± 2.0 N·m (80 ± 17 in-lb)		
Engine roll stopper and centermember				
Centermember bolt		83 ± 12 N⋅m (61 ± 9 ft-lb)		
Engine front roll stopper bracket bolt and nut		58 ± 7 N·m (43 ± 5 ft-lb)		
Engine rear roll stopper bracket bolt and nut		58 ± 7 N·m (43 ± 5 ft-lb)		
Transaxle case rear roll stopper bracket bolt		90 ± 10 N·m (67 ± 7 ft-lb)		
Transaxle mounting				
Transaxle mounting body side bracket nut (nut, flange)	M12	83 ± 12 N⋅m (61 ± 9 ft-lb)		
Transaxle mounting body side bracket nut (nut, self-locking)	M12	$58 \pm 7 \text{ N} \cdot \text{m} (43 \pm 5 \text{ ft-lb})$		

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