DIAGNOSIS AND TESTING - HUB BEARING - NOISE

NOTE: The wheel bearing is designed to last for the life of the vehicle and requires no type of periodic maintenance. If it becomes necessary to replace a faulty bearing, do not replace in pairs unless parts manual specifically states to do so.

Bearings will produce noise if worn or damaged. The noise will generally change when the bearings are loaded. A road test of the vehicle is normally required to determine if there is a bearing noise, or if it is some other component. To assist in finding the location, the following procedure, together with the **DIAGNOSTIC TABLE**, should help determine if a bearing is causing the noise, and if so which one. Keep in mind that bearing noises are not typically intermittent. If a particular vehicle road test maneuver results in noise only part of the time, it is not likely a faulty bearing.

NOTE: Wheel bearings normally purge a small amount of grease, sometimes resulting in wet appearance on or around the seals or adjoining knuckle. This is normal, and is not cause for replacement. The only circumstance requiring replacement solely for grease loss would be if a seal is visibly damaged. Evidence of only wetness, such as might be seen during an Inspection, is not cause for replacement. To diagnose the hub, measure hub run-out, refer to brake rotor diagnosis and testing.

1. Perform a drive evaluation. Find a smooth level road surface void of traffic or obstructions. Turn off any accessories which may cause background noise. Evaluate for noise at 50 km/h (30 mph) and 100 km/h (60 mph) and with vehicle in neutral to eliminate potential drivetrain noises. With vehicle at a constant speed, steer back and forth to left and right. This will load and unload the bearings and may change the noise level. When bearing damage is slight, the noise is sometimes noticeable at lower speeds and at other times is more noticeable at higher speeds.
2. Drive evaluation results: Did the noise increase when turning right which may indicate a problem with the left bearing? Did the noise increase when turning left which may indicate a problem with the right bearing?
3. Put vehicle up on hoist. Grab the tire by pushing in on the top center and pulling out on the bottom center to check for excessive movement in the bearing.
4. Check for potential rubbing on rotating components, such as rotor splash shields, heat shields touching driveshaft or halfshaft, wheel well liners contacting tire, wheel cover on wheel, etc. Any cyclic noise (once per wheel revolution for example) is not a wheel bearing fault.
5. Remove the wheel and tire assembly, disc brake caliper and brake rotor.
6. Rotate the wheel hub, checking for resistance or roughness.
7. Any roughness or resistance to rotation may indicate dirt intrusion or a failed hub bearing. If the bearing exhibits any of these conditions, the hub & bearing will require replacement. Do not attempt to disassemble the bearing for repair.
8. Rotate the wheel hub, utilize Chassis Ears (or stethoscope) to check for noise.
9. If none of the above checks indicate a bearing failure, refer to the **DIAGNOSTIC TABLE** for other possible causes.

DIAGNOSTIC TABLE - HUB BEARING

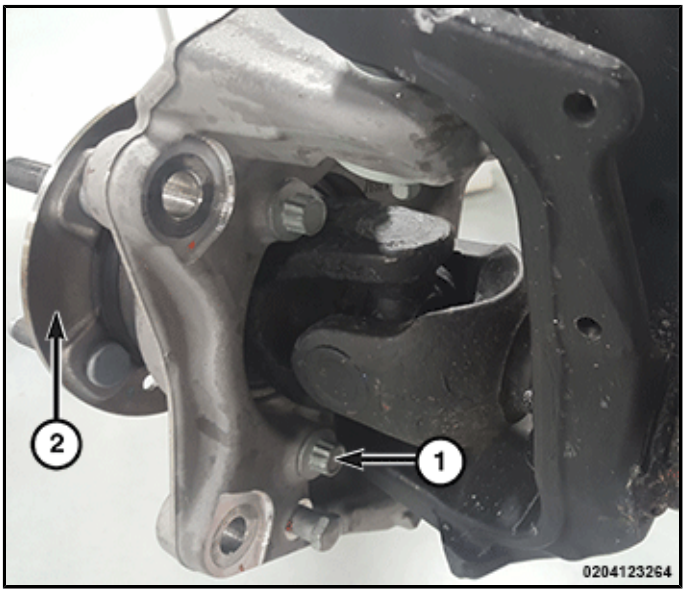
CONDITION	POSSIBLE CAUSES	POTENTIAL CORRECTIONS
FRONT END WHINE ON TURNS	1. Low Power Steering Fluid Level (if applicable)	1. Fill the power steering fluid reservoir to the proper level, check for leaks (make sure all air is bled from system fluid)
	2. Worn Tires or Incorrect Wheel Alignment	2. Replace the Tires, Check And Reset Wheel Alignment
	3. Defective Wheel Bearing	3. Replace the Wheel Bearing
	4. Wrong Power Steering Fluid (if applicable)	4. Replace With Correct Power Steering Fluid
FRONT END GROWL OR GRINDING ON TURNS	1. Loose Wheel Lug Nuts	1. Verify Wheel Lug Nut Torque
	2. Engine Mount Grounding Against Frame Or Body Of Vehicle	2. Check For Engine Mount Hitting Frame Rail And Reposition Engine As Required
	3. Worn Tires or Incorrect Wheel Alignment	3. Replace Tires, Check and Reset Wheel Alignment
	4. Defective Wheel Bearing	4. Replace the Wheel Bearing
	5. Worn or Broken C/V Joint	5. Replace the C/V Joint
	6. Engine Not Centered, Causing Axle Halfshaft to Bottom Out	6. Center the Engine
POPPING/CLICKING/SNAPPING DURING ACCELERATION AFTER DRIVE-TO-REVERSE SHIFT, REVERSE-TO-DRIVE SHIFT OR WHILE TURNING	1. Insufficient Hub Nut Torque	1. Torque Hub Nut to the Proper Specifications
	2. Insufficient Grease on Mating Surface of Axle Halfshaft Outer C/V Joint to Wheel Hub/Bearing, or Worn/Damaged Gasket	2. Separate the Halfshaft From the Hub and Bearing and Wipe the Mating Surfaces Clean. Apply a Light Coating of Wheel Bearing Grease to C/V Joint Surface and Reassemble, or Replace Gasket. Torque the Hub Nut to the Proper Specifications
WHINE/HUM/ROAR WITH VEHICLE GOING STRAIGHT AT A CONSTANT SPEED	1. Worn Tires or Incorrect Wheel Alignment	1. Replace the Tires and Reset Wheel Alignment
	2. Defective Wheel Bearing	2. Replace the Wheel Bearing
GROWL OR GRINDING WITH VEHICLE GOING STRAIGHT AT A CONSTANT SPEED	1. Engine Mount Grinding Against Frame or Body	1. Check and Reposition the Engine as Required
	2. Defective Wheel Bearing	2. Replace the Wheel Bearing
	3. Worn or Broken C/V Joint	3. Replace the C/V Joint

REMOVAL AND INSTALLATION

Primary LOP	Related LOP	Description	Skill Level	Skill Category
05 21 09 02	-	Hub and Bearing, front Right or left	1 - Semi Skilled	5
05 21 09 03	-	Hub and Bearing, front Right or left	1 - Semi Skilled	5

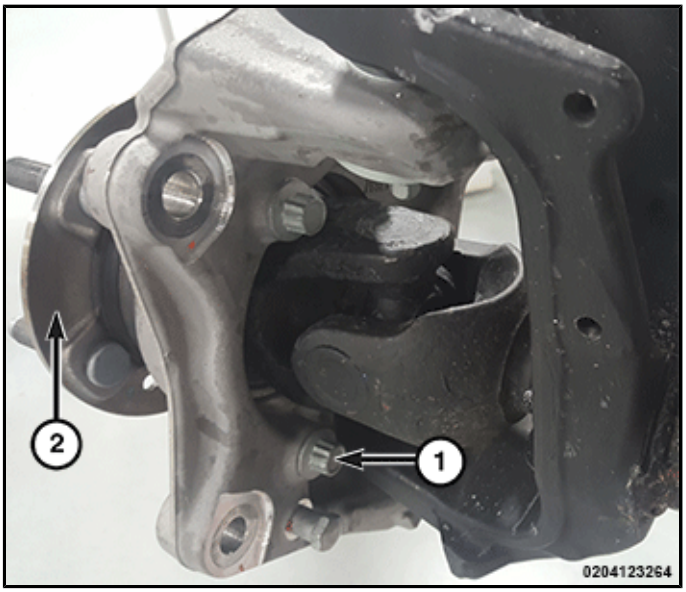
REMOVAL

1. Raise and support the vehicle (Refer to 04 - Vehicle Quick Reference/Hoisting/Standard Procedure).
2. Remove the wheel and tire assembly (Refer to 22 - Tires and Wheels/Removal and Installation).
3. Have a helper apply brake pressure, then remove the hub nut.
4. Remove the front brake rotor (Refer to 05 - Brakes, Base/Hydraulic/Mechanical/ROTOR, Brake/Removal and Installation).
5. Remove the front wheel speed sensor (Refer to 05 - Brakes, ABS/Electrical/SENSOR, Wheel Speed, Front/Removal and Installation).
6. Remove the three hub and bearing bolts (1).
7. Slide the hub and bearing (2) out of the steering knuckle.



INSTALLATION

1. With the axle splines aligned, slide the hub and bearing (2) into the steering knuckle and align the three bolt holes in the hub and bearing to the three bolt holes in the steering knuckle.
2. Install the three hub and bearing bolts (1) and tighten to the proper (Torque Specifications).
3. Install the front wheel speed sensor (Refer to 05 - Brakes, ABS/Electrical/SENSOR, Wheel Speed, Front/Removal and Installation).
4. Install the brake rotor (Refer to 05 - Brakes, Base/ Hydraulic/Mechanical/ROTOR, Brake/Removal and Installation).



5. Install the hub nut (1).
6. Have a helper apply brake pressure then tighten the hub nut (1) to the proper (Torque Specifications).
7. Install the wheel and tire assembly (Refer to 22 - Tires and Wheels/Removal and Installation).
8. Remove the support and lower the vehicle.