

# NOISE, VIBRATION AND HARSHNESS (NVH) TROUBLESHOOTING

ABS00476

## Use the Chart Below to Help You Find the Cause of the Symptom.

1. Locate the area where noise occurs.
2. Confirm the type of noise.
3. Specify the operating condition of engine.
4. Check specified noise source.

If necessary, repair or replace these parts.

| Location of noise   | Type of noise        | Operating condition of engine |               |               |             |             |               | Source of noise                        | Check item  | Reference page   |
|---|----------------------|-------------------------------|---------------|---------------|-------------|-------------|---------------|--|---|--|
|   |                      | Before warm-up                | After warm-up | When starting | When idling | When racing | While driving |  |   |  |
| Top of engine<br>Rocker cover<br>Cylinder head                  | Ticking or clicking  | C                             | A             | —             | A           | B           | —             | Tappet noise                           | Valve clearance   | <a href="#">EM-119</a>   |
|   | Rattle               | C                             | A             | —             | A           | B           | C             | Camshaft bearing noise                 | Camshaft runout<br>Camshaft journal oil clearance   | <a href="#">EM-110</a><br><a href="#">EM-111</a>   |
| Crankshaft pulley<br>Cylinder block (Side of engine)<br>Oil pan | Slap or knock        | —                             | A             | —             | B           | B           | —             | Piston pin noise                       | Piston to piston pin oil clearance<br>Connecting rod bushing oil clearance  | <a href="#">EM-168</a><br><a href="#">EM-171</a>   |
|   | Slap or rap          | A                             | —             | —             | B           | B           | A             | Piston slap noise                      | Piston to cylinder bore clearance<br>Piston ring side clearance<br>Piston ring end gap<br>Connecting rod bend and torsion | <a href="#">EM-172</a><br><a href="#">EM-169</a><br><a href="#">EM-169</a><br><a href="#">EM-170</a> |
|   | Knock                | A                             | B             | C             | B           | B           | B             | Connecting rod bearing noise           | Connecting rod bushing oil clearance<br>Connecting rod bearing oil clearance  | <a href="#">EM-171</a><br><a href="#">EM-175</a>   |
|   | Knock                | A                             | B             | —             | A           | B           | C             | Main bearing noise                     | Main bearing oil clearance<br>Crankshaft runout   | <a href="#">EM-175</a><br><a href="#">EM-174</a>   |
| Front of engine<br>Timing chain case                            | Tapping or ticking   | A                             | A             | —             | B           | B           | B             | Timing chain and chain tensioner noise | Timing chain cracks and wear<br>Timing chain tensioner operation  | <a href="#">EM-77</a><br><a href="#">EM-67</a>   |
| Front of engine   | Squeaking or fizzing | A                             | B             | —             | B           | —           | C             | Drive belts (Sticking or slipping)     | Drive belts deflection  | <a href="#">EM-14</a>  |
|   | Creaking             | A                             | B             | A             | B           | A           | B             | Drive belts (Slipping)                 | Idler pulley bearing operation  |  |
|   | Squall<br>Creak      | A                             | B             | —             | B           | A           | B             | Water pump noise                       | Water pump operation  | <a href="#">CO-23</a> ,<br><a href="#">"WATER PUMP"</a>  |

A: Closely related B: Related C: Sometimes related —: Not related