

28JUL24 ETN 240016 C

Technical Note:

Taxonomy of Audio Signatures of Automotive Malfunctions

Percussive

Events repeat at regular interval

ENGINE

Harmonic

Narrow Band (<200Hz tall)

Center Hz >1kHz

BELT

500Hz > Center Hz > 100Hz

DRIVELINE BEARING

Percussive

Events repeat at random interval

High & Low Frequency

INTERIOR

Only Low (<1kHz) Frequency

SUSPENSION LOOSE

Harmonic

Wide Band (>1kHz tall)

Continuous

BRAKE WEAR

Interrupted at regular intervals
>5Hz

BOUND BALL JOINT

Taxonomy of Audio Signatures of Auto Problems

Percussive
Regular Ticks

Engine

Harmonic
Narrow Band $< 200\text{Hz}$

$> 1\text{kHz}$

Bolt

$< 500\text{Hz}, 7100\text{Hz}$

Bearing

Percussive
Irregular Ticks

Low ~~High~~ Frequency

Interior

Harmonic
Wide Band $> 1\text{kHz}$

Continuous

Brake Wear

Only Low Frequency

Susp

Interrupted at
regular interval 75Hz

Ball ball joint

None of above - Noil