

NVH Diagnostic Report

Report Date	Record Name	Record Date	Record Length
November 20, 2022	2020 Ford Ranger (18)	2022-11-20 13:00:42	14:35.0

Vehicle Data:

- Manufacturer: Ford
- Year: 2020
- Model: Ranger
- Powertrain: Four Wheel Drive
- Number of Cylinders: 4.0
- Tire Diameter: 31.61
- Rear Axle Gear Ratio: 3.73
- Front Axle Gear Ratio: 3.73
- Transfer Case Gear Ratio: 1.0
- Transmission Speeds: 10

Relevant Settings:

- Amplitude Threshold: 0.0010g

Diagnostic Results

The diagnosis shown below is the primary vibration detected. Repair this vibration first and then re-test for additional vibrations if needed.

2nd Order Tire Speed Related Vibration (T2)

Definition: Second order tire speed related vibrations cause two shakes or disturbances for each revolution of the tire. These vibrations are usually caused by something spinning the same speed as the tire that is out-of-round. There are over 77 conditions that can cause a tire speed related vibration.

Totals

Tire Speed Related Vibrations

Order	Times Detected	Average Amplitude (g)
1st	195	0.0088
2nd	597	0.0156
3rd	223	0.0096

Driveshaft Speed Related Vibrations

Order	Times Detected	Average Amplitude (g)
1st	42	0.0145
2nd	51	0.0111
3rd	18	0.0134

Engine Speed Related Vibrations

Order	Times Detected	Average Amplitude (g)
1st	69	0.0128
2nd	373	0.0157

Vibration Breakdown By Vehicle Speed

The NVH app takes samples of the vibrations on your vehicle twice per second.

- The "Count" column shown below indicates the number of times each type of vibration was detected in that particular vehicle speed range.
- The "Count (Time) Spent in Range" column shows the number of half second intervals spent driving at that vehicle speed range, and the amount of time spent driving at that vehicle speed range.
- The "Percentage" column shows the percentage of time the vibration was detected at that vehicle speed range. It is possible for this to exceed 100% if multiple instances of the vibration were detected in the same half second interval.

Tire Speed Related Vibration Breakdown

1st Order Tire Speed Related Vibration Breakdown

Vehicle Speed	Count	Count (Time) Spent in Range	Percentage	Average Amplitude (g)
50-54 MPH	4	74 (00:36.5)	5.41%	0.0068
55-59 MPH	2	46 (00:22.5)	4.35%	0.0070
60-64 MPH	2	116 (00:57.5)	1.72%	0.0070
65-69 MPH	2	159 (01:19.0)	1.26%	0.0086
70-74 MPH	175	281 (02:20.0)	62.28%	0.0090
75-79 MPH	10	28 (00:13.5)	35.71%	0.0078

2nd Order Tire Speed Related Vibration Breakdown

Vehicle Speed	Count	Count (Time) Spent in Range	Percentage	Average Amplitude (g)
25-29 MPH	4	27 (00:13.0)	14.81%	0.0066
30-34 MPH	10	35 (00:17.0)	28.57%	0.0307
35-39 MPH	54	71 (00:35.0)	76.06%	0.0258
40-44 MPH	190	380 (03:09.5)	50.00%	0.0210
45-49 MPH	247	352 (02:55.5)	70.17%	0.0119
50-54 MPH	33	74 (00:36.5)	44.59%	0.0087
55-59 MPH	15	46 (00:22.5)	32.61%	0.0058
60-64 MPH	11	116 (00:57.5)	9.48%	0.0057
65-69 MPH	18	159 (01:19.0)	11.32%	0.0064
70-74 MPH	15	281 (02:20.0)	5.34%	0.0058

3rd Order Tire Speed Related Vibration Breakdown

Vehicle Speed	Count	Count (Time) Spent in Range	Percentage	Average Amplitude (g)
15-19 MPH	2	36 (00:17.5)	5.56%	0.0066
20-24 MPH	2	18 (00:08.5)	11.11%	0.0359
25-29 MPH	12	27 (00:13.0)	44.44%	0.0191
30-34 MPH	11	35 (00:17.0)	31.43%	0.0055
35-39 MPH	8	71 (00:35.0)	11.27%	0.0122
40-44 MPH	6	380 (03:09.5)	1.58%	0.0089
45-49 MPH	2	352 (02:55.5)	0.57%	0.0028
55-59 MPH	17	46 (00:22.5)	36.96%	0.0051
60-64 MPH	58	116 (00:57.5)	50.00%	0.0111
65-69 MPH	13	159 (01:19.0)	8.18%	0.0054
70-74 MPH	80	281 (02:20.0)	28.47%	0.0088
75-79 MPH	12	28 (00:13.5)	42.86%	0.0083

Driveshaft Speed Related Vibration Breakdown

1st Order Driveshaft Speed Related Vibration Breakdown

Vehicle Speed	Count	Count (Time) Spent in Range	Percentage	Average Amplitude (g)
15-19 MPH	4	36 (00:17.5)	11.11%	0.0182
20-24 MPH	8	18 (00:08.5)	44.44%	0.0271
25-29 MPH	5	27 (00:13.0)	18.52%	0.0086
30-34 MPH	2	35 (00:17.0)	5.71%	0.0173
40-44 MPH	5	380 (03:09.5)	1.32%	0.0119
45-49 MPH	6	352 (02:55.5)	1.70%	0.0128
50-54 MPH	2	74 (00:36.5)	2.70%	0.0121
55-59 MPH	2	46 (00:22.5)	4.35%	0.0105
60-64 MPH	4	116 (00:57.5)	3.45%	0.0082
70-74 MPH	4	281 (02:20.0)	1.42%	0.0069

2nd Order Driveshaft Speed Related Vibration Breakdown

Vehicle Speed	Count	Count (Time) Spent in Range	Percentage	Average Amplitude (g)
5-9 MPH	1	50 (00:24.5)	2.00%	0.0061
10-14 MPH	15	28 (00:13.5)	53.57%	0.0103
20-24 MPH	2	18 (00:08.5)	11.11%	0.0106
30-34 MPH	2	35 (00:17.0)	5.71%	0.0057
35-39 MPH	18	71 (00:35.0)	25.35%	0.0147
40-44 MPH	5	380 (03:09.5)	1.32%	0.0146
45-49 MPH	8	352 (02:55.5)	2.27%	0.0045

3rd Order Driveshaft Speed Related Vibration Breakdown

Vehicle Speed	Count	Count (Time) Spent in Range	Percentage	Average Amplitude (g)
5-9 MPH	8	50 (00:24.5)	16.00%	0.0159
10-14 MPH	2	28 (00:13.5)	7.14%	0.0225
15-19 MPH	4	36 (00:17.5)	11.11%	0.0047
25-29 MPH	1	27 (00:13.0)	3.70%	0.0075
30-34 MPH	1	35 (00:17.0)	2.86%	0.0353
50-54 MPH	2	74 (00:36.5)	2.70%	0.0032

Engine Speed Related Vibration Breakdown

1st Order Engine Speed Related Vibration Breakdown

Vehicle Speed	Count	Count (Time) Spent in Range	Percentage	Average Amplitude (g)
0-4 MPH	7	50 (00:24.5)	14.00%	0.0262
5-9 MPH	5	50 (00:24.5)	10.00%	0.0195
10-14 MPH	18	28 (00:13.5)	64.29%	0.0155
15-19 MPH	10	36 (00:17.5)	27.78%	0.0058
20-24 MPH	4	18 (00:08.5)	22.22%	0.0082
25-29 MPH	5	27 (00:13.0)	18.52%	0.0086
30-34 MPH	2	35 (00:17.0)	5.71%	0.0173
35-39 MPH	2	71 (00:35.0)	2.82%	0.0163
40-44 MPH	2	380 (03:09.5)	0.53%	0.0125
50-54 MPH	3	74 (00:36.5)	4.05%	0.0060
55-59 MPH	2	46 (00:22.5)	4.35%	0.0066
60-64 MPH	2	116 (00:57.5)	1.72%	0.0071
70-74 MPH	7	281 (02:20.0)	2.49%	0.0073

2nd Order Engine Speed Related Vibration Breakdown

Vehicle Speed	Count	Count (Time) Spent in Range	Percentage	Average Amplitude (g)
15-19 MPH	4	36 (00:17.5)	11.11%	0.0046
30-34 MPH	2	35 (00:17.0)	5.71%	0.0057
35-39 MPH	2	71 (00:35.0)	2.82%	0.0061
40-44 MPH	117	380 (03:09.5)	30.79%	0.0195
45-49 MPH	150	352 (02:55.5)	42.61%	0.0175
55-59 MPH	9	46 (00:22.5)	19.57%	0.0172
60-64 MPH	34	116 (00:57.5)	29.31%	0.0096
65-69 MPH	32	159 (01:19.0)	20.13%	0.0099
70-74 MPH	23	281 (02:20.0)	8.19%	0.0055

This report, along with the data and diagnoses it contains, was generated by the NVH For Android app (version 3.3.4 (80)), created by Vibrate Software, Inc.

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