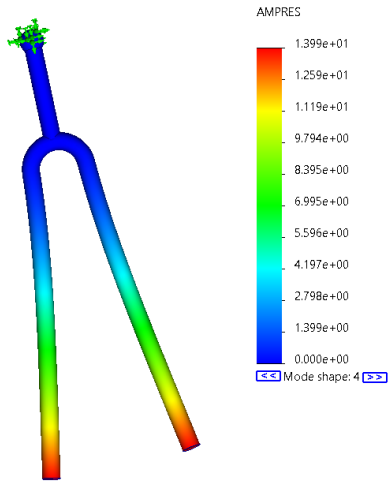
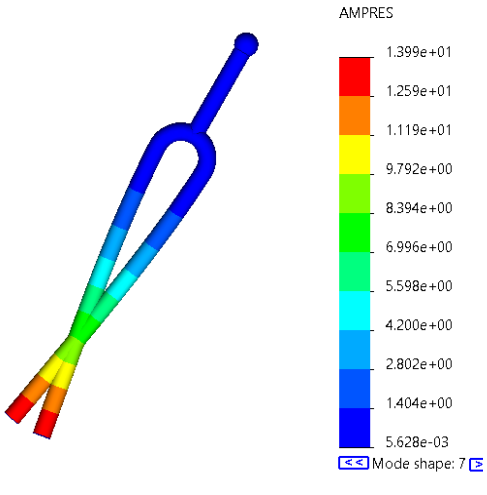
Modal Analysis of Tuning Fork and Plastic Spoon

In this frequency analysis, we learned what simulating an unfixed part produces. We receive 6 invalid mode shapes, which consist of the translational and rotational mode shapes the part may have. Another useful tool used was the compare mode shape selection, that allows us to visualize selected mode shapes.



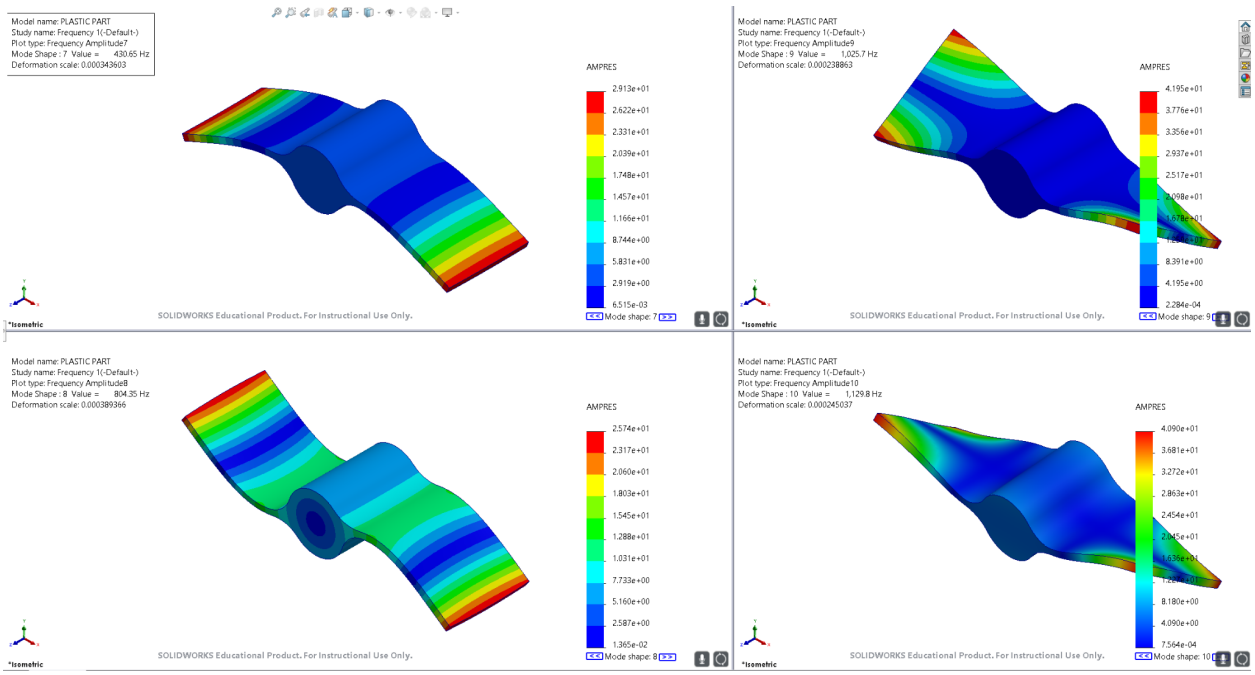
Mode No.	Frequency(Rad/sec)	Frequency(Hertz)	Period(Seconds)
1	1,354.1	215.51	0.0046402
2	1,359.5	216.36	0.0046218
3	2,643.8	420.78	0.0023765
4	2,766.2	440.25	0.0022714
5	9,848.1	1,567.4	0.00063801
6	10,103	1,607.9	0.00062192

Mode 4 of the fixed tuning fork



Mode No.	Frequency(Rad/sec)	Frequency(Hertz)	Period(Seconds)
1	0	0	1e+32
2	0	0	1e+32
3	0.00088399	0.00014069	7,107.7
4	0.022468	0.0035759	279.65
5	0.026036	0.0041437	241.33
6	0.042494	0.0067632	147.86
7	2,766.7	440.33	0.002271
8	4,243.7	675.41	0.0014806
9	10,220	1,626.6	0.00061479
10	10,997	1,750.3	0.00057135
11	17,430	2,774	0.00036049
12	22,702	3,613.1	0.00027677

Mode shape 7 for an unfixed tuning fork



Mode No.	Frequency(Rad/sec)	Frequency(Hertz)	Period(Seconds)
1	0	0	1e+32
2	0	0	1e+32
3	0	0	1e+32
4	0.0019608	0.00031207	3,204.4
5	0.0051288	0.00081628	1,225.1
6	0.0073971	0.0011773	849.41
7	2,705.9	430.65	0.0023221
8	5,053.9	804.35	0.0012432
9	6,445	1,025.7	0.0009749
10	7,099	1,129.8	0.00088508
11	15,123	2,406.9	0.00041547
12	17,762	2,826.8	0.00035375

Unfixed plastic part with modes 7-10 being compared