

## Length of Diagonal given Horizontal and Vertical LEGO Unit Measurements

	0	0,5	1	1,5	2	2,5	3	3,5	4
0,4	.50 - 10.0%	.75 - 10.97%	1.00 + 7.7%	1.50 + 5.24%	2.00 + 3.96%	2.50 + 3.18%	3.00 + 2.65%	3.50 + 2.28%	4.00 + 2.0%
0,8	.75 + 5.0%	1.00 - 5.66%	1.25 + 3.06%	1.75 - 5.0%	2.25 - 9.59%	2.50 + 12.49%	3.00 + 10.48%	3.50 + 9.03%	4.00 + 7.92%
1,2	1.25 - 5.0%	1.25 + 5.0%	1.50 + 6.2%	2.00 - 7.91%	2.25 + 8.24%	2.75 + 2.31%	3.25 - 1.89%	3.75 - 5.0%	4.25 - 7.39%
1,6	1.50 + 10.0%	1.75 - 7.37%	2.00 - 11.32%	2.25 - 5.68%	2.50 + 6.12%	3.00 - 3.18%	3.50 - 10.0%	3.75 + 9.84%	4.25 + 5.81%
2	2.00 + 0.0%	2.00 + 6.16%	2.25 - 1.39%	2.50 + 0.0%	2.75 + 7.84%	3.25 - 4.84%	3.50 + 10.56%	4.00 + 3.11%	4.50 - 2.79%
2,4	2.50 - 10.0%	2.50 - 4.85%	2.50 + 10.0%	2.75 + 8.02%	3.00 + 12.41%	3.50 - 3.45%	3.75 + 9.19%	4.25 - 0.62%	4.75 - 8.52%
2,8	2.75 + 5.0%	2.75 + 9.43%	3.00 - 2.68%	3.25 - 7.35%	3.50 - 5.91%	3.75 + 0.37%	4.00 + 10.37%	4.50 - 1.78%	5.00 - 11.74%
3,2	3.25 - 5.0%	3.25 - 1.12%	3.25 + 10.26%	3.50 + 3.41%	3.75 + 2.36%	4.00 + 6.08%	4.50 - 11.37%	4.75 - 0.76%	5.00 + 12.25%
3,6	3.50 + 10.0%	3.75 - 11.54%	3.75 - 1.37%	4.00 - 10.0%	4.00 + 11.83%	4.50 - 11.71%	4.75 - 6.39%	5.00 + 2.1%	5.50 - 11.86%
4	4.00 - 0.0%	4.00 + 3.11%	4.00 + 12.31%	4.25 + 2.2%	4.50 - 2.79%	4.75 - 3.3%	5.00 + 0.0%	5.50 - 18.49%	5.50 + 15.69%
4,4	4.50 - 10.0%	4.50 - 7.17%	4.50 + 1.22%	4.75 - 10.13%	4.75 + 8.32%	5.00 + 6.06%	5.50 - 17.46%	5.50 + 12.23%	6.00 - 5.36%
4,8	4.75 + 5.0%	4.75 + 7.6%	5.00 - 9.69%	5.00 + 2.89%	5.00 + 20.0%	5.50 - 8.8%	5.50 + 16.04%	6.00 - 5.95%	6.00 + 24.82%
5,2	5.00 + 20.0%	5.00 + 22.4%	5.50 - 20.47%	5.50 - 8.8%	5.50 + 7.14%	6.00 - 23.03%	6.00 + 0.33%	6.50 - 23.18%	6.50 + 6.05%
5,6	5.50 + 10.0%	5.50 + 12.23%	5.50 + 18.86%	6.00 - 20.26%	6.00 - 5.36%	6.00 + 13.27%	6.50 - 14.7%	6.50 + 10.38%	7.00 - 11.81%
6	6.00 + 0.0%	6.00 + 2.08%	6.00 + 8.28%	6.00 + 18.47%	6.50 - 17.54%	6.50 + 0.0%	6.50 + 20.82%	7.00 - 5.38%	7.00 + 21.11%

	4,5	5	5,5	6	6,5	7	7,5	8	8,5
0,4	4.50 + 1.77%	5.00 + 1.6%	5.50 + 1.45%	6.00 + 1.33%	6.50 + 1.23%	7.00 + 1.14%	7.50 + 1.07%	8.00 + 1.0%	8.50 + 0.94%
0,8	4.50 + 7.06%	5.00 + 6.36%	5.50 + 5.79%	6.00 + 5.31%	6.50 + 4.9%	7.00 + 4.56%	7.50 + 4.25%	8.00 + 3.99%	8.50 + 3.76%
1,2	4.75 - 9.27%	5.00 + 14.2%	5.50 + 12.94%	6.00 + 11.88%	6.50 + 10.98%	7.00 + 10.21%	7.50 + 9.54%	8.00 + 8.95%	8.50 + 8.43%
1,6	4.75 + 2.6%	5.00 + 24.98%	5.50 + 22.8%	6.00 + 20.97%	6.50 + 19.4%	7.00 + 18.05%	7.50 + 16.88%	8.00 + 15.84%	8.50 + 14.93%
2	5.00 - 7.56%	5.50 - 11.48%	6.00 - 14.77%	6.50 - 17.54%	7.00 - 19.93%	7.50 - 21.99%	8.00 - 23.79%	8.00 + 24.62%	8.50 + 23.21%
2,4	5.00 + 10.0%	5.50 + 4.62%	6.00 + 0.08%	6.50 - 3.78%	7.00 - 7.11%	7.50 - 10.0%	8.00 - 12.54%	8.50 - 14.78%	9.00 - 16.77%
2,8	5.50 - 20.0%	5.50 + 23.06%	6.00 + 17.17%	6.50 + 12.12%	7.00 + 7.74%	7.50 + 3.92%	8.00 + 0.56%	8.50 - 2.42%	9.00 - 5.07%
3,2	5.50 + 2.18%	6.00 - 6.37%	6.50 - 13.68%	7.00 - 20.0%	7.00 + 24.5%	7.50 + 19.68%	8.00 + 15.41%	8.50 + 11.63%	9.00 + 8.24%
3,6	6.00 - 23.72%	6.00 + 16.12%	6.50 + 7.34%	7.00 - 0.29%	7.50 - 6.97%	8.00 - 12.85%	8.50 - 18.07%	9.00 - 22.73%	9.00 + 23.09%
4	6.00 + 2.08%	6.50 - 9.69%	7.00 - 19.93%	7.00 + 21.11%	7.50 + 13.22%	8.00 + 6.23%	8.50 + 0.0%	9.00 - 5.57%	9.50 - 10.59%
4,4	6.50 - 20.64%	6.50 + 16.03%	7.00 + 4.34%	7.50 - 5.96%	8.00 - 15.08%	8.50 - 23.2%	8.50 + 19.54%	9.00 + 13.02%	9.50 + 7.13%
4,8	6.50 + 7.95%	7.00 - 6.89%	7.50 - 20.0%	7.50 + 18.37%	8.00 + 8.02%	8.50 - 1.24%	9.00 - 9.55%	9.50 - 17.05%	10.00 - 23.83%
5,2	7.00 - 12.32%	7.00 + 21.39%	7.50 + 6.9%	8.00 - 6.02%	8.50 - 17.59%	8.50 + 22.01%	9.00 + 12.63%	9.50 + 4.15%	10.00 - 3.56%
5,6	7.00 + 18.4%	7.50 + 0.73%	8.00 - 15.08%	8.00 + 20.73%	8.50 + 7.96%	9.00 - 3.56%	9.50 - 14.0%	10.00 - 23.48%	10.00 + 17.89%
6	7.50 + 0.0%	8.00 - 18.98%	8.00 + 13.94%	8.50 - 1.47%	9.00 - 15.41%	9.00 + 21.95%	9.50 + 10.47%	10.00 + 0.0%	10.50 - 9.57%

## Ideal Distance Between Axels for given Gear Combinations

	8	12	16	20	24	40
8	1	1,25	1,5	1,75	2	3
12	1,25	1,5	1,75	2	2,25	3,25
16	1,5	1,75	2	2,25	2,5	3,5
20	1,75	2	2,25	2,5	2,75	3,75
24	2	2,25	2,5	2,75	3	4
40	3	3,25	3,5	3,75	4	5

NOTE: All measurements are in LEGO Units. Percentages show the rounding error as a percent of one LEGO Unit. Diagonal measurements of less than 5 are rounded to nearest quarter of a unit while measurements greater than 5 are rounded to nearest half of a unit.