

APPENDIX

The values of magnetic forces of orthodontic and commercial magnets in various sizes at various distances from magnet to orthodontic bracket: initial, 0.25, 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 4.0, 5.0 millimeters were shown in Table A-E.

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Table A.1 The data of magnetic forces of commercial magnets (3.7mm.Øx2.0 mm.) attracting to orthodontic bracket in various distances: initial, 0.25, 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 4.0, 5.0 millimeters.

n	Magnetic forces (g.)									
	initial	0.25mm.	0.5 mm.	1.0 mm.	1.5 mm.	2 mm.	2.5 mm.	3 mm.	4 mm.	5 mm.
1	55.3	40.8	24.4	10.0	7.2	4.4	4.0	4.0	4.0	3.6
2	49.4	31.6	21.3	8.8	5.2	2.0	0.8	1.2	2.4	2.4
3	68.2	38.6	22.5	9.6	7.2	3.7	3.3	3.3	3.7	4.1
4	48.0	29.2	21.2	10.8	6.0	4.4	2.8	2.4	1.6	2.8
5	44.0	31.2	22.8	11.6	8.4	6.8	6.8	6.4	5.6	2.4
6	62.6	39.5	24.1	12.2	6.9	4.5	2.4	2.4	2.8	1.1
7	71.7	42.0	24.4	13.6	9.6	8.4	7.6	6.8	5.6	5.6
8	41.7	29.6	17.6	4.8	2.4	7.6	7.2	6.0	6.0	5.2
9	44.8	28.9	19.7	10.4	8.4	6.4	2.4	2.4	2.4	1.6
10	40.8	26.8	17.2	10.0	5.2	5.2	4.4	3.6	4.0	5.2
11	68.1	38.0	23.2	11.2	5.6	4.0	2.4	1.6	5.2	4.8
12	48.0	28.8	23.6	14.0	7.2	5.6	4.4	4.0	6.8	4.0

Table A.2 The data of magnetic forces of commercial magnets (3.28 x3.28x2.0 mm.) attracting to orthodontic bracket in various distances: initial, 0.25, 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 4.0, 5.0 millimeters.

n	Magnetic forces (g.)									
	initial	0.25mm.	0.5 mm.	1.0 mm.	1.5 mm.	2 mm.	2.5 mm.	3 mm.	4 mm.	5 mm.
1	72.1	43.7	27.2	13.2	7.2	7.6	5.6	5.6	5.2	5.2
2	34.1	26.1	20.1	14.0	9.6	9.2	8.4	8.0	7.6	6.8
3	95.3	55.9	35.0	17.3	11.7	8.5	8.1	8.1	8.1	8.1
4	22.0	18.0	15.2	9.6	6.8	5.2	4.8	4.0	4.0	3.6
5	97.3	54.1	33.3	16.0	11.2	8.8	8.8	8.8	8.4	7.6
6	89.7	53.7	33.6	18.0	12.4	10.0	8.8	11.6	10.8	11.2
7	81.3	46.5	30.9	15.7	10.8	7.2	4.8	4.8	4.4	4.4
8	46.0	30.4	22.0	13.6	9.2	7.6	5.6	5.6	5.2	4.8
9	22.5	16.8	11.2	8.4	6.0	6.0	6.0	6.0	6.0	6.0
10	100.0	53.4	31.9	15.9	10.1	7.5	8.4	9.2	9.6	9.2
11	86.1	50.0	34.1	19.3	14.0	11.2	9.6	10.0	8.0	7.6
12	82.9	47.7	33.3	18.1	12.5	10.0	8.0	10.8	8.8	8.0
13	95.7	57.3	34.8	17.6	12.0	10.0	9.2	8.0	10.8	7.6
14	92.9	61.7	32.9	15.7	8.4	6.8	4.0	4.0	4.0	4.0
15	81.3	48.4	32.1	15.3	9.2	6.8	4.8	6.4	4.0	4.8
16	83.0	47.4	30.1	14.5	8.4	6.4	4.0	1.6	1.2	0.8
17	91.8	51.7	33.8	15.7	9.7	7.7	6.4	1.6	1.6	1.6
18	91.7	48.1	27.3	11.2	4.8	3.6	1.2	3.6	4.0	5.2
19	88.1	50.0	29.6	12.8	6.0	3.6	2.8	4.0	3.6	3.2
20	84.1	47.3	26.0	12.0	8.4	5.2	3.2	4.8	4.0	3.6

Table A.3 The data of magnetic forces of commercial magnets (6.0x6.0x2.0 mm.) attracting to orthodontic bracket in various distances: initial, 0.25, 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 4.0, 5.0 millimeters.

n	Magnetic forces (g.)									
	initial	0.25mm.	0.5 mm.	1.0 mm.	1.5 mm.	2 mm.	2.5 mm.	3 mm.	4 mm.	5 mm.
1	43.7	37.6	30.0	20.4	14.0	10.8	7.6	6.4	4.8	4.4
2	49.7	37.7	31.3	18.8	13.6	9.2	7.2	5.6	4.0	6.4
3	40.4	32.8	25.3	16.9	10.5	10.1	8.5	6.9	4.8	4.4
4	43.7	35.2	27.6	19.2	12.4	9.2	6.4	5.6	4.0	3.6
5	42.9	35.7	28.9	18.9	12.5	8.8	6.4	5.2	4.4	4.4
6	43.7	36.0	28.8	18.8	13.6	9.2	7.2	5.2	4.0	3.6
7	45.3	38.9	31.7	20.9	13.6	9.6	6.4	5.2	3.6	4.0
8	46.9	40.8	34.1	20.9	14.4	9.6	8.0	6.4	4.8	4.8
9	34.0	31.7	26.9	15.7	10.4	6.0	4.8	3.6	5.6	6.4
10	46.9	41.4	34.2	20.9	14.9	10.9	7.6	6.0	4.0	3.2
11	37.6	32.8	27.2	17.6	11.6	7.6	4.8	4.4	5.2	5.6
12	40.8	35.2	28.4	17.2	12.4	7.6	5.6	5.2	3.2	1.2
13	58.9	43.7	32.8	16.8	9.6	6.4	4.8	4.0	2.4	2.4
14	47.7	37.2	29.3	19.2	12.4	8.4	6.8	4.8	3.9	2.8
15	50.0	39.6	29.2	18.0	12.4	8.0	6.0	4.8	4.0	3.6
16	56.5	37.6	30.0	16.8	11.2	6.8	4.8	2.8	2.6	4.0
17	44.4	37.2	30.8	22.0	15.2	10.4	8.0	6.0	4.8	1.2
18	35.2	30.4	39.6	18.8	13.2	9.6	7.2	6.0	2.8	2.8
19	42.0	36.9	30.9	18.5	12.9	8.8	6.4	4.8	3.6	2.4
20	38.1	32.1	25.3	16.5	11.3	7.3	5.3	5.7	3.7	2.9

Table A.4 The data of magnetic forces of commercial magnets (8.0 x8.0x2.0 mm.) attracting to orthodontic bracket in various distances: initial, 0.25, 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 4.0, 5.0 millimeters.

n	Magnetic forces (g.)									
	initial	0.25mm.	0.5 mm.	1.0 mm.	1.5 mm.	2 mm.	2.5 mm.	3 mm.	4 mm.	5 mm.
1	22.8	21.0	20.2	17.4	15.0	11.8	4.5	3.3	3.3	2.9
2	24.2	19.4	18.7	15.1	11.9	9.1	5.2	4.0	1.4	3.0
3	19.9	17.5	16.4	14.3	12.7	10.8	10.2	10.0	7.0	6.0
4	20.8	19.4	17.8	15.0	12.0	9.8	8.2	6.8	6.8	6.0
5	22.4	20.8	19.4	16.4	13.6	11.0	9.2	8.6	7.0	4.4
6	19.6	19.0	17.5	15.3	12.7	11.3	7.5	6.5	5.6	4.0
7	20.6	19.4	17.9	15.0	12.0	9.0	7.6	6.9	6.5	2.5
8	32.4	29.4	26.4	18.0	14.4	11.1	10.1	8.5	6.7	1.8
9	17.2	15.9	17.1	12.9	6.1	5.1	5.1	3.1	3.9	4.1
10	21.6	19.9	17.4	15.4	13.0	10.6	9.2	11.0	9.6	8.2
11	19.1	18.1	16.5	13.5	10.7	8.1	7.5	8.2	7.0	4.1
12	17.0	15.9	14.9	13.4	11.4	9.3	7.7	8.5	7.3	6.2
13	18.6	17.7	16.1	13.3	10.6	11.9	9.8	9.8	9.8	1.0
14	23.9	22.0	20.2	17.4	14.2	13.8	12.2	8.7	7.6	6.2
15	21.1	20.1	18.7	15.3	12.1	11.9	10.0	8.2	5.9	5.3
16	23.1	21.5	20.3	18.1	15.4	13.4	11.2	9.5	6.9	6.7
17	17.6	16.2	15.2	13.0	11.0	9.0	9.8	9.5	8.9	7.8
18	25.0	23.0	22.0	17.0	14.0	13.0	10.0	10.0	10.0	7.0
19	23.2	21.4	19.4	15.2	11.8	9.6	7.6	5.6	5.8	4.2
20	22.2	21.0	19.6	16.6	13.6	10.8	8.8	8.4	4.6	3.4

Table A.5 The data of magnetic forces of commercial magnets (10.0x10.0x2.0 mm.) attracting to orthodontic bracket in various distances: initial, 0.25, 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 4.0, 5.0 millimeters.

n	Magnetic forces (g.)									
	initial	0.25mm.	0.5 mm.	1.0 mm.	1.5 mm.	2 mm.	2.5 mm.	3 mm.	4 mm.	5 mm.
1	13.9	14.2	13.7	12.7	11.8	10.8	10.0	8.9	6.2	4.6
2	15.5	10.9	10.7	10.1	9.5	8.9	8.3	7.9	2.8	2.5
3	13.7	13.2	12.9	12.1	11.3	10.6	9.7	8.9	5.8	6.5
4	17.1	12.4	11.1	9.5	9.4	8.8	8.4	7.7	6.6	5.9
5	14.3	14.1	13.7	13.3	12.7	12.3	7.0	6.3	5.2	4.3
6	11.7	11.1	10.7	9.5	8.4	5.8	4.6	3.2	7.0	1.7
7	12.4	9.0	8.6	7.8	6.9	6.1	5.3	4.4	2.9	4.3
8	16.0	15.4	14.9	13.7	12.6	11.4	10.6	9.4	7.7	6.0
9	13.1	12.9	12.5	11.7	10.8	10.1	9.6	9.2	7.8	2.4
10	13.1	12.7	12.1	11.2	10.2	9.2	8.4	7.3	5.5	5.9
11	11.2	12.4	11.9	11.1	10.9	10.0	9.0	8.3	4.3	4.4
12	10.7	10.2	9.9	8.8	7.9	7.1	6.0	5.0	1.2	1.4
13	12.0	11.7	11.1	10.3	9.2	8.4	7.4	6.4	5.2	7.4
14	12.3	11.9	11.4	10.7	9.9	9.3	8.4	7.8	6.1	5.0
15	14.8	12.5	12.1	11.1	10.1	9.1	8.0	7.2	5.4	5.5
16	15.9	15.3	14.7	13.5	12.1	10.9	9.6	8.4	6.9	8.1
17	11.4	13.0	14.4	11.4	10.7	9.7	8.9	8.1	6.5	3.2
18	17.2	16.4	15.6	14.3	12.9	12.0	10.9	10.1	8.3	7.3
19	11.4	10.9	10.3	9.1	7.9	6.5	5.5	4.9	5.2	3.9
20	10.3	10.0	9.5	8.6	7.6	6.7	6.0	5.2	7.6	5.3

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