EMT – Electrical Conduit Data

Table A9.1.1-1; EMT Conduit – 40% Copper Fill.

Conduit Size (in)	Conduit O.D. (in)	Conduit I.D. (in)	Conduit Weight Empty (lb/ft)	Copper Weight (lb/ft)	Conduit + Copper (lb/ft)
1/2	0.706	0.622	0.30	0.47	0.77
3/4	0.922	0.824	0.46	0.82	1.28
1	1.163	1.049	0.67	1.34	2.01
1-1/4	1.510	1.380	1.00	2.31	3.31
1-1/2	1.740	1.610	1.16	3.15	4.31
2	2.197	2.067	1.48	5.19	6.67
2-1/2	2.875	2.731	2.15	9.05	11.20
3	3.500	3.356	2.63	13.67	16.30
3-1/2	4.000	3.834	3.47	17.84	21.31
4	4.500	4.334	3.91	22.80	26.71

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Table A9.1.1-2; EMT Conduit Maximum Support Spacing - Bending.

Conduit Size (in)	O.D. (in)	I.D. (in)	I (in^4)	Conduit + Copper (lb/ft)	Maximum Support Spacing (ft)[1]
1/2	0.706	0.622	0.0048	0.77	8.91
3/4	0.922	0.824	0.0128	1.28	9.88
1	1.163	1.049	0.0672	2.01	16.08
1-1/4	1.510	1.380	0.0772	3.31	11.12
1-1/2	1.740	1.610	0.1201	4.31	11.32
2	2.197	2.067	0.2476	6.67	11.63
2-1/2	2.875	2.731	0.6231	11.20	13.91
3	3.500	3.356	1.1395	16.30	14.13
3-1/2	4.000	3.834	1.9597	21.31	14.38
4	4.500	4.334	2.8098	26.71	14.50

1) Determined by assuming that the conduit was a beam with fixed ends and an evenly distributed load equal to the weight of the conduit and a 40% fill of copper. The conduit material was assumed to be equal to low carbon commercial quality steel sheet with a yield stress of 40,000 psi – 50,000 psi.

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Table A9.1.1-3; EMT Conduit Maximum Support Spacing – Buckling[1].

Conduit Size (in)	I (in^4)	Force Class I[2, 8]	Force Class II[3, 8]	Force Class III[4, 8]	Force Class IV[5, 8]	Force Class V[6, 8]	Force Class VI[7, 8]
1/2	0.0048	4.44	3.14	2.22	1.57	0.99	0.70
3/4	0.0128	7.26	5.13	3.63	2.57	1.62	1.15
1	0.0672	16.62	11.75	8.31	5.88	3.72	2.63
1-1/4	0.0772	17.82	12.60	8.91	6.30	3.98	2.82
1-1/2	0.1201	22.22	15.71	11.11	7.86	4.97	3.51
2	0.2476	31.91	22.56	15.95	11.28	7.14	5.05
2-1/2	0.6231	50.62	35.79	25.31	17.90	11.32	8.00
3	1.1395	68.45	48.40	34.23	24.20	15.31	10.82
3-1/2	1.9597	89.77	63.48	44.89	31.74	20.07	14.19
4	2.8098	107.49	76.01	53.75	38.00	24.04	17.00

1) The Maximum Support Spacing based on Buckling relies on Euler's Theory of Column Buckling. There is a Factor of Safety of 2:1 with respect to the applied Horizontal Seismic Load. Both ends of the conduit are assumed to be fixed, and the conservative end condition factor of 1.00 was used.
2) Horizontal Force Class I: 0 lbs. ≤ Horizontal Seismic Force ≤ 250 lbs.
3) Horizontal Force Class II: 251 lbs. ≤ Horizontal Seismic Force ≤ 500 lbs.
4) Horizontal Force Class III: 501 lbs. ≤ Horizontal Seismic Force ≤ 1,000 lbs.
5) Horizontal Force Class IV: 1,001 lbs. ≤ Horizontal Seismic Force ≤ 2,000 lbs.
6) Horizontal Force Class V: 2,001 lbs. ≤ Horizontal Seismic Force ≤ 5,000 lbs.
7) Horizontal Force Class VI: 5,001 lbs. ≤ Horizontal Seismic Force ≤ 10,000 lbs.
8) For Actual Horizontal Forces that fall between the minimum and maximum values for a given Horizontal Force Class, the Maximum Support Spacing for Buckling may be determined by multiplying the appropriate value from Table A9.1.1-3 by the following factor.

$$K_S = [\text{ Upper Horizontal Force Class Limit / Actual Horizontal Seismic Force }]^{1/2}$$

Example: 1/2″ EMT with and Actual Horizontal Seismic Force of 50 lbs (Force Class I Range).

$$K_S = [\text{ 250 lbs. / 50lbs. }]^{1/2} = \underline{2.24}$$

The Actual Maximum Support Spacing = 2.24 x 4.44 ft. = <u>9.95 ft.</u>

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