

Conduit Capacity Chart

How to Use Selector

The maximum number of cables that each conduit size may contain to conform with National Electric Code Standards are given below. To find the conduit size required for cables of O.D.s not shown and combinations of different size cables, follow these steps:

1. Square the O.D. of each cable and total the results.
2. Multiply the total by .7854. This is the total area of the cables in square inches. (See note.)
3. From Actual Area (*), select a conduit size with area equal to or greater than the total area.

NOTE: Actual area to be occupied (sq. in.) National Electric Code Standard based on 40% fill applies to installation of 3 or more cables in a conduit. A single cable is permitted to occupy 53% and two cables are limited to 31% conduit fill. For a single cable, use .5927 in step 2; for two cables, use 1.0134; for three or more cables, use .7854.

Installation Suggestions

This chart is based on the maximum number of cables permitted in conduit under the National Electric Code, and is calculated on the area of the cables with 40% of the conduit filled. *For conduit runs of 50 to 100 feet, the installed number should be reduced by 15%, or use the next size larger conduit. Each 90° conduit bend may be estimated as equal to the friction of 30 feet of straight level conduit. If more than two 90° bends are to be used in the conduit run, or if the run is to be over 100 feet in length, insert a pull box. The use of anti-friction agents is recommended during pulling operations.

Caution: Be sure the anti-friction agent selected is compatible with the cable jacket material. (Check the label.)

Installation Tips

In general, high and low level signals (micro and speaker wire, telephone and speaker wire) should never be run in the same conduit without obtaining engineering advice. Unshielded 300 ohm antenna lead-in wire should not be run in metallic conduits. The national Electric Code forbids the installation of communication cables in the same conduit with power cables.

Pulling Tensions

Annealed copper will begin to permanently elongate (stretch) under a stress of approximately 15,000 lbs./sq. in. The following table lists the absolute maximum recommended pulling tensions for specific conductor sizes. For multi-conductor cables, multiply the appropriate value by the total number of conductors. During installation the total pulling tension must be equally distributed among all conductors.

24 AWG - 4 lbs.
22 AWG - 7 lbs.
20 AWG - 12 lbs.
18 AWG - 19 lbs.
16 AWG - 30 lbs.
14 AWG - 48 lbs.
12 AWG - 77 lbs.

These limits must not be exceeded even momentarily. (Don't jerk cable.)

This table calculates the number of cables one can put into an EMT conduit exactly like the Dynamic Conduit Capacity Chart.

Calculations are not rounded until the "number of cables" is to be determined.

All values with fractional portions greater than or equal to 0.80 are rounded up.

All values with fractional portions less than 0.80 are rounded down (including 0.799999).

Trade Size	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4	Calc Cable Area	Cable OD		
Internal Dia.	0.622	0.824	1.049	1.38	1.61	2.067	2.731	3.356	3.834	4.334				
Calc area 40%	0.12154	0.21331	0.34570	0.59828	0.81433	1.34224	2.34311	3.53829	4.61800	5.90102				
Calc area 31%	0.09420	0.16531	0.26792	0.46367	0.63111	1.04024	1.81591	2.74217	3.57895	4.57329				
Calc area 53%	0.16104	0.28263	0.45805	0.79273	1.07899	1.77847	3.10462	4.68823	6.11885	7.81886				
Max. # Cables	15	27	44	76	103	171	298	450	588	751	0.00785	0.100		
	14	24	40	69	94	155	270	408	533	681	0.00866	0.105		
	12	22	36	63	85	141	246	372	486	621	0.00950	0.110		
	11	20	33	57	78	129	225	340	444	568	0.01039	0.115		
	10	19	30	53	72	118	207	313	408	521	0.01131	0.120		
	10	17	28	48	66	109	191	288	376	481	0.01227	0.125		
	9	16	26	45	61	101	176	266	348	444	0.01327	0.130		
	8	15	24	41	57	93	163	247	322	412	0.01431	0.135		
	8	14	22	39	53	87	152	230	300	383	0.01539	0.140		
	7	13	21	36	49	81	142	214	279	357	0.01651	0.145		
	7	12	19	34	46	76	132	200	261	334	0.01767	0.150		
	6	11	18	31	43	71	124	187	244	312	0.01887	0.155		
	6	10	17	29	40	66	116	176	229	293	0.02011	0.160		
	5	10	16	28	38	62	109	165	216	276	0.02138	0.165		
	5	9	15	26	36	59	103	156	203	260	0.02270	0.170		
	5	9	14	25	34	56	97	147	192	245	0.02405	0.175		
	4	8	13	23	32	52	92	139	181	232	0.02545	0.180		
	4	8	13	22	30	50	87	131	171	219	0.02688	0.185		
	4	7	12	21	28	47	82	124	163	208	0.02835	0.190		
	4	7	11	20	27	45	78	118	154	197	0.02986	0.195		
	4	6	11	19	26	42	74	112	147	188	0.03142	0.200		
	3	6	10	18	24	40	71	107	140	178	0.03301	0.205		
	3	6	10	17	23	38	67	102	133	170	0.03464	0.210		
	3	6	9	16	22	37	64	97	127	162	0.03630	0.215		
	3	5	9	15	21	35	61	93	121	155	0.03801	0.220		
	3	5	8	15	20	33	59	89	116	148	0.03976	0.225		
	3	5	8	14	19	32	56	85	111	142	0.04155	0.230		
	3	5	8	13	18	31	54	81	106	136	0.04337	0.235		
	2	4	7	13	18	29	51	78	102	130	0.04524	0.240		
	2	4	7	12	17	28	49	75	98	125	0.04714	0.245		
2	4	7	12	16	27	47	72	94	120	0.04909	0.250			
2	4	6	11	16	26	46	69	90	115	0.05107	0.255			
1	4	6	11	15	25	44	66	87	111	0.05309	0.260			
1	4	6	11	14	24	42	64	83	107	0.05515	0.265			
1	3	6	10	14	23	41	61	80	103	0.05726	0.270			
1	3	6	10	13	22	39	59	77	99	0.05940	0.275			

1	3	5	9	13	21	38	57	75	96	0.06158	0.280
1	3	5	9	12	21	36	55	72	92	0.06379	0.285
1	3	5	9	12	20	35	53	70	89	0.06605	0.290
1	3	5	8	12	19	34	51	67	86	0.06835	0.295
1	3	5	8	11	19	33	50	65	83	0.07069	0.300
1	3	4	8	11	18	32	48	63	80	0.07306	0.305
1	3	4	8	10	17	31	47	61	78	0.07548	0.310
1	2	4	7	10	17	30	45	59	75	0.07793	0.315
1	2	4	7	10	16	29	44	57	73	0.08042	0.320
1	2	4	7	10	16	28	42	55	71	0.08296	0.325
1	2	4	7	9	15	27	41	54	69	0.08553	0.330
1	2	4	6	9	15	26	40	52	67	0.08814	0.335
1	2	4	6	9	14	26	39	51	65	0.09079	0.340
1	1	3	6	8	14	25	38	49	63	0.09348	0.345
1	1	3	6	8	14	24	36	48	61	0.09621	0.350
1	1	3	6	8	13	23	35	46	59	0.09898	0.355
1	1	3	6	8	13	23	34	45	58	0.10179	0.360
1	1	3	5	7	13	22	34	44	56	0.10463	0.365
1	1	3	5	7	12	21	33	43	55	0.10752	0.370
1	1	3	5	7	12	21	32	42	53	0.11045	0.375
1	1	3	5	7	12	20	31	40	52	0.11341	0.380
1	1	3	5	7	11	20	30	39	50	0.11642	0.385
1	1	3	5	7	11	19	29	38	49	0.11946	0.390
1	1	3	5	6	11	19	29	37	48	0.12254	0.395
1	1	2	4	6	10	18	28	36	47	0.12566	0.400
1	1	2	4	6	10	18	27	36	46	0.12882	0.405
1	1	2	4	6	10	17	27	35	44	0.13203	0.410
1	1	2	4	6	10	17	26	34	43	0.13527	0.415
1	1	2	4	6	9	17	25	33	42	0.13854	0.420
1	1	2	4	5	9	16	25	32	41	0.14186	0.425
1	1	2	4	5	9	16	24	32	40	0.14522	0.430
1	1	2	4	5	9	15	24	31	39	0.14862	0.435
1	1	1	4	5	9	15	23	30	39	0.15205	0.440
1	1	1	4	5	8	15	22	29	38	0.15553	0.445
1	1	1	3	5	8	14	22	29	37	0.15904	0.450
1	1	1	3	5	8	14	21	28	36	0.16260	0.455
1	1	1	3	5	8	14	21	27	35	0.16619	0.460
1	1	1	3	4	8	13	21	27	34	0.16982	0.465
1	1	1	3	4	7	13	20	26	34	0.17349	0.470
1	1	1	3	4	7	13	20	26	33	0.17721	0.475
1	1	1	3	4	7	13	19	25	32	0.18096	0.480
1	1	1	3	4	7	12	19	25	32	0.18475	0.485
1	1	1	3	4	7	12	18	24	31	0.18857	0.490
1	1	1	3	4	7	12	18	24	30	0.19244	0.495
1	1	1	3	4	7	12	18	23	30	0.19635	0.500
1	1	1	3	4	6	11	17	23	29	0.20030	0.505
0	1	1	3	4	6	11	17	22	29	0.20428	0.510
0	1	1	3	4	6	11	17	22	28	0.20831	0.515
0	1	1	3	4	6	11	16	21	27	0.21237	0.520
0	1	1	2	3	6	11	16	21	27	0.21648	0.525

0	1	1	2	3	6	10	16	21	26	0.22062	0.530
0	1	1	2	3	6	10	15	20	26	0.22480	0.535
0	1	1	2	3	6	10	15	20	25	0.22902	0.540
0	1	1	2	3	5	10	15	19	25	0.23328	0.545
0	1	1	2	3	5	10	15	19	25	0.23758	0.550
0	1	1	2	3	5	9	14	19	24	0.24192	0.555
0	1	1	2	3	5	9	14	18	24	0.24630	0.560
0	1	1	2	3	5	9	14	18	23	0.25072	0.565
0	1	1	2	3	5	9	14	18	23	0.25518	0.570
0	1	1	1	3	5	9	13	17	22	0.25967	0.575
0	1	1	1	3	5	9	13	17	22	0.26421	0.580
0	1	1	1	3	5	8	13	17	22	0.26878	0.585
0	1	1	1	3	5	8	13	17	21	0.27340	0.590
0	1	1	1	3	5	8	12	16	21	0.27805	0.595
0	1	1	1	3	4	8	12	16	21	0.28274	0.600
0	1	1	1	3	4	8	12	16	20	0.28748	0.605
0	1	1	1	2	4	8	12	16	20	0.29225	0.610
0	1	1	1	2	4	8	12	15	20	0.29706	0.615
0	1	1	1	2	4	7	11	15	19	0.30191	0.620
0	1	1	1	2	4	7	11	15	19	0.30680	0.625
0	1	1	1	2	4	7	11	15	19	0.31172	0.630
0	1	1	1	2	4	7	11	14	18	0.31669	0.635
0	1	1	1	2	4	7	11	14	18	0.32170	0.640
0	1	1	1	2	4	7	11	14	18	0.32674	0.645
0	1	1	1	2	4	7	10	14	17	0.33183	0.650
0	1	1	1	2	4	7	10	13	17	0.33696	0.655
0	1	1	1	2	4	7	10	13	17	0.34212	0.660
0	1	1	1	2	4	6	10	13	17	0.34732	0.665
0	1	1	1	1	4	6	10	13	16	0.35256	0.670
0	0	1	1	1	3	6	10	13	16	0.35785	0.675
0	0	1	1	1	3	6	9	12	16	0.36317	0.680
0	0	1	1	1	3	6	9	12	16	0.36853	0.685
0	0	1	1	1	3	6	9	12	15	0.37393	0.690
0	0	1	1	1	3	6	9	12	15	0.37937	0.695
0	0	1	1	1	3	6	9	12	15	0.38484	0.700
0	0	1	1	1	3	6	9	12	15	0.39036	0.705
0	0	1	1	1	3	6	9	11	15	0.39592	0.710
0	0	1	1	1	3	6	9	11	14	0.40151	0.715
0	0	1	1	1	3	5	8	11	14	0.40715	0.720
0	0	1	1	1	3	5	8	11	14	0.41282	0.725
0	0	1	1	1	3	5	8	11	14	0.41854	0.730
0	0	1	1	1	3	5	8	11	14	0.42429	0.735
0	0	1	1	1	3	5	8	10	13	0.43008	0.740
0	0	1	1	1	3	5	8	10	13	0.43592	0.745
0	0	1	1	1	3	5	8	10	13	0.44179	0.750
0	0	1	1	1	3	5	8	10	13	0.44770	0.755
0	0	1	1	1	3	5	7	10	13	0.45365	0.760
0	0	1	1	1	3	5	7	10	13	0.45963	0.765
0	0	1	1	1	3	5	7	10	12	0.46566	0.770
0	0	1	1	1	3	5	7	9	12	0.47173	0.775

0	0	1	1	1	3	5	7	9	12	0.47784	0.780
0	0	1	1	1	2	5	7	9	12	0.48398	0.785
0	0	1	1	1	2	4	7	9	12	0.49017	0.790
0	0	1	1	1	2	4	7	9	12	0.49639	0.795
0	0	1	1	1	2	4	7	9	11	0.50265	0.800
0	0	1	1	1	2	4	7	9	11	0.50896	0.805
0	0	1	1	1	2	4	7	9	11	0.51530	0.810
0	0	1	1	1	2	4	6	9	11	0.52168	0.815
0	0	1	1	1	2	4	6	8	11	0.52810	0.820
0	0	1	1	1	2	4	6	8	11	0.53456	0.825
0	0	1	1	1	2	4	6	8	11	0.54106	0.830
0	0	1	1	1	2	4	6	8	10	0.54760	0.835
0	0	1	1	1	2	4	6	8	10	0.55418	0.840
0	0	1	1	1	2	4	6	8	10	0.56079	0.845
0	0	1	1	1	2	4	6	8	10	0.56745	0.850
0	0	0	1	1	2	4	6	8	10	0.57415	0.855
0	0	0	1	1	1	4	6	8	10	0.58088	0.860
0	0	0	1	1	1	4	6	8	10	0.58765	0.865
0	0	0	1	1	1	4	6	7	10	0.59447	0.870
0	0	0	1	1	1	4	6	7	10	0.60132	0.875
0	0	0	1	1	1	4	6	7	9	0.60821	0.880
0	0	0	1	1	1	4	5	7	9	0.61514	0.885
0	0	0	1	1	1	3	5	7	9	0.62211	0.890
0	0	0	1	1	1	3	5	7	9	0.62912	0.895
0	0	0	1	1	1	3	5	7	9	0.63617	0.900
0	0	0	1	1	1	3	5	7	9	0.64326	0.905
0	0	0	1	1	1	3	5	7	9	0.65039	0.910
0	0	0	1	1	1	3	5	7	9	0.65755	0.915
0	0	0	1	1	1	3	5	7	9	0.66476	0.920
0	0	0	1	1	1	3	5	7	8	0.67201	0.925
0	0	0	1	1	1	3	5	6	8	0.67929	0.930
0	0	0	1	1	1	3	5	6	8	0.68661	0.935
0	0	0	1	1	1	3	5	6	8	0.69398	0.940
0	0	0	1	1	1	3	5	6	8	0.70138	0.945
0	0	0	1	1	1	3	5	6	8	0.70882	0.950
0	0	0	1	1	1	3	5	6	8	0.71630	0.955
0	0	0	1	1	1	3	5	6	8	0.72382	0.960
0	0	0	1	1	1	3	5	6	8	0.73138	0.965
0	0	0	1	1	1	3	4	6	8	0.73898	0.970
0	0	0	1	1	1	3	4	6	8	0.74662	0.975
0	0	0	1	1	1	3	4	6	8	0.75430	0.980
0	0	0	1	1	1	3	4	6	7	0.76201	0.985
0	0	0	1	1	1	3	4	6	7	0.76977	0.990
0	0	0	1	1	1	3	4	6	7	0.77756	0.995
0	0	0	1	1	1	3	4	6	7	0.78540	1.000