VOLTAGE DROP CALCULATION - COPPER CONDUCTORS

Line-to-Line Voltage Drop for 3 Phase,
60 Hz or Direct Current Circuits @ 60°C Conductor Temperature

"F" VALUES

WIRE AWG KCMIL	NON-MAGNETIC CONDUIT					MAGNETIC CONDUIT			
	LAGGING POWER FACTOR%					LAGGING POWER FACTOR%			
	70	80	90	100	DC	70	80	90	100
14	.380	.430	.480	.530	.594	.380	.430	.480	.530
12	.240	.270	.300	.330	.374	.240	.270	.300	.330
10	.150	.170	.190	.210	.236	.150	.170	.190	.210
8	.097	.110	.120	.130	.148	.099	.110	.120	.130
6	.064	.072	.079	.084	.093	.066	.073	.080	.084
4	.043	.047	.051	.053	.059	.044	.048	.052	.053
2	.028	.031	.033	.033	.037	.030	.032	.034	.034
1	.024	.025	.027	.026	.029	.025	.026	.028	.026
1/0	.020	.021	.022	.021	.023	.021	.023	.023	.021
2/0	.016	.017	.018	.016	.018	.018	.019	.019	.017
3/0	.014	.014	.015	.013	.015	.015	.016	.016	.014
4/0	.011	.011	.011	.010	.012	.013	.014	.013	.011
250	.011	.011	.011	.0088	.0098	.012	.012	.012	.0092
300	.0097	.0097	.0095	.0073	.0082	.011	.011	.011	.0078
350	.0088	.0088	.0085	.0062	.0070	.010	.010	.0095	.0068
400	.0083	.0081	.0076	.0055	.0061	.0097	.0095	.0088	.0060
500	.0074	.0073	.0068	.0045	.0049	.0088	.0085	.0078	.0050
600	.0069	.0066	.0059	.0038	.0041	.0083	.0080	.0071	.0042
700	.0066	.0062	.0055	.0033	.0035	.0080	.0074	.0066	.0037
750	.0064	.0059	.0054	.0029	.0033	.0078	.0073	.0064	.0035
1000	.0057	.0054	.0047	.0023	.0025	.0071	.0066	.0057	.0028

NOTES:
1. "F" Values are reasonably accurate up to a conductor temperature of 75°C and for multi-conductor cables.
2. Refer to NEC for voltage drop requirements.
3. For 90°C, 3 phase, line-to-line voltage drop, multiply "F" value by 1.102.
4. For single phase line-to-line voltage drop, multiply "F" value by 1.155.
5. For single or 3 phase line-to-neutral voltage drop, multiply "F" value by 0.577.

Applicable Formulas:

1. % Voltage Drop = $\frac{\text{"F" x Amp x Run Distance}}{\text{Line Voltage}}$

2. Run Distance = $\frac{\text{\% Voltage Drop x Line Voltage}}{\text{"F" x Amp}}$

3. "F" Factor = $\frac{\text{\% Voltage Drop x Line Voltage}}{\text{Run Distance x Amp}}$

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