

NEC Table 310.78 {Detail 1 - One Circuit, 3-1/c in Single Duct}

Ambient Earth Temperature = 20 Deg C, Earth Thermal resistivity (RHO) = 90, Concrete Thermal resistivity (RHO) = 85,
Load Factor = 100%, Aluminum Conductors.

1 Circuit, 3-1/c Aluminum Cables in Single Duct (Fig. B-310-60, Detail 1)												
ALUMINUM						ALUMINUM						
Size (AWG or kcmil)	2001-5000 Volts Ampacity						5001-35,000 Volts Ampacity					
	90C (194F) Type MV-90	105C (221F) Type MV-105		90C (194F) Type MV-90	105C (221F) Type MV-105		90C (194F) Type MV-90	105C (221F) Type MV-105		90C (194F) Type MV-90	105C (221F) Type MV-105	
	NEC			AmpCalc			%Deviation			NEC		
8	50	54		49.9	53.8		-0.2%	-0.4%		-	-	
6	66	71		65.8	70.9		-0.3%	-0.1%		70	75	
4	86	93		85.8	92.4		-0.2%	-0.6%		91	98	
2	115	125		113.2	121.9		-1.6%	-2.5%		120	130	
1	130	140		130.6	140.6		0.5%	0.4%		135	145	
1/0	150	160		149.4	160.9		-0.4%	0.6%		155	165	
2/0	170	185		170.9	184.0		0.5%	-0.5%		175	190	
3/0	195	210		195.5	210.6		0.3%	0.3%		200	215	
4/0	225	245		224.8	242.2		-0.1%	-1.1%		230	245	
250	250	270		248.5	267.7		-0.6%	-0.9%		250	270	
350	305	325		301.8	325.1		-1.0%	0.0%		305	330	
500	370	400		370.0	398.7		0.0%	-0.3%		370	400	
750	470	505		465.4	502.0		-1.0%	-0.6%		455	490	
1000	545	590		541.7	584.9		-0.6%	-0.9%		525	565	
Average Deviation =							-0.3%	-0.5%				
Average Deviation =							0.4%	0.6%				

AmpCalc References:

AmpCalc Library = IEERUB_2, Duct library = NEC_PVC, 5" duct.
AmpCalc Volume = IEERUB1
1 kV non-shielded

AmpCalc Library = IEERUB_2, Duct library = NEC_PVC, 5" duct.
AmpCalc Volume = IEERUB8 for #6, 4, IEERUB15 for all others
8 or 15 kV shielded with both ends grounded

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NEC Table 310.78 {Detail 2 - Three Circuits, 3-1/c in Each Duct}

Ambient Earth Temperature = 20 Deg C, Earth Thermal resistivity (RHO) = 90, Concrete Thermal resistivity (RHO) = 85,
Load Factor = 100%, Aluminum Conductors.

3 Circuits, 3-1/c Aluminum Cables in each Duct (Fig. B-310-60, Detail 2)																	
ALUMINUM						ALUMINUM											
Size (AWG or kcmil)	2001-5000 Volts Ampacity						5001-35,000 Volts Ampacity										
	90C (194F) Type	105C (221F) Type		90C (194F) Type	105C (221F) Type		90C (194F) Type	105C (221F) Type		90C (194F) Type	105C (221F) Type						
	MV-90	MV-105		MV-90	MV-105		MV-90	MV-105		MV-90	MV-105						
	NEC			AmpCalc			%Deviation			NEC			AmpCalc			%Deviation	
8	44	47		43.7	47.0		-0.7%	0.0%		-	-		-	-		-	-
6	57	61		57.0	61.3		0.0%	0.5%		60	65		59.6	64.2		-0.7%	-1.2%
4	74	80		73.6	79.3		-0.5%	-0.9%		77	83		76.5	82.4		-0.6%	-0.7%
2	96	105		95.9	103.3		-0.1%	-1.6%		100	105		99.5	107.4		-0.5%	2.3%
1	110	120		109.8	118.2		-0.2%	-1.5%		110	120		112.8	121.7		2.5%	1.4%
1/0	125	135		124.9	134.5		-0.1%	-0.4%		125	140		127.8	137.8		2.2%	-1.6%
2/0	145	155		142.0	153.0		-2.1%	-1.3%		145	155		144.6	156.1		-0.3%	0.7%
3/0	160	175		161.5	174.0		0.9%	-0.6%		165	175		163.8	176.8		-0.7%	1.0%
4/0	185	200		184.3	198.5		-0.4%	-0.8%		185	200		185.4	200.1		0.2%	0.0%
250	205	220		202.6	218.2		-1.2%	-0.8%		200	220		202.5	218.7		1.3%	-0.6%
350	245	265		243.6	262.5		-0.6%	-0.9%		245	260		241.7	261.1		-1.3%	0.4%
500	295	320		295.5	318.5		0.2%	-0.5%		290	315		290.5	314.1		0.2%	-0.3%
750	370	395		366.7	395.5		-0.9%	0.1%		355	385		355.1	384.5		0.0%	-0.1%
1000	425	460		423.0	456.7		-0.5%	-0.7%		405	440		405.4	439.7		0.1%	-0.1%
				Average Deviation =			-0.4%	-0.7%					Average Deviation =			0.2%	0.1%

AmpCalc References:

AmpCalc Library = IEERUB_2, Duct library = NEC_PVC, 5" duct.
AmpCalc Volume = IEERUB1
1 kV non-shielded

AmpCalc Library = IEERUB_2, Duct library = NEC_PVC, 5" duct.
AmpCalc Volume = IEERUB8 for #6, 4, IEERUB15 for all others
8 or 15 kV shielded with both ends grounded

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NEC Table 310.78 {Detail 3 - Six Circuits, 3-1/c in Each Duct}

Ambient Earth Temperature = 20 Deg C, Earth Thermal resistivity (RHO) = 90, Concrete Thermal resistivity (RHO) = 85,
Load Factor = 100%, Copper Conductors.

6 Circuits, 3-1/c Copper Cables in each Duct (Fig. B-310-60, Detail 3)																	
ALUMINUM						ALUMINUM											
Size (AWG or kcmil)	2001-5000 Volts Ampacity					5001-35,000 Volts Ampacity											
	90C (194F) Type	105C (221F) Type		90C (194F) Type	105C (221F) Type		90C (194F) Type	105C (221F) Type		90C (194F) Type	105C (221F) Type						
	MV-90	MV-105		MV-90	MV-105		MV-90	MV-105		MV-90	MV-105						
	NEC			AmpCalc			%Deviation			NEC			AmpCalc			%Deviation	
8	38	41		37.4	40.3		-1.6%	-1.7%		-	-		-	-		-	-
6	48	52		48.3	52.0		0.6%	0.0%		50	54		49.8	53.6		-0.4%	-0.7%
4	62	67		62.0	66.8		0.0%	-0.3%		64	69		63.6	68.5		-0.6%	-0.7%
2	80	86		80.0	86.2		0.0%	0.2%		80	88		81.4	87.9		1.8%	-0.1%
1	91	98		91.1	98.1		0.1%	0.1%		90	99		91.9	99.3		2.1%	0.3%
1/0	105	110		103.2	111.1		-1.7%	1.0%		105	110		103.8	112.1		-1.1%	1.9%
2/0	115	125		116.9	125.8		1.7%	0.6%		115	125		117.0	126.4		1.7%	1.1%
3/0	135	145		132.3	142.5		-2.0%	-1.7%		130	145		132.0	142.6		1.5%	-1.7%
4/0	150	165		150.2	161.7		0.1%	-2.0%		150	160		148.8	160.8		-0.8%	0.5%
250	165	180		164.4	177.1		-0.4%	-1.6%		165	175		162.0	175.2		-1.8%	0.1%
350	195	210		196.5	211.7		0.8%	0.8%		195	210		192.2	207.9		-1.4%	-1.0%
500	240	255		236.7	255.1		-1.4%	0.0%		230	250		229.3	248.4		-0.3%	-0.6%
750	290	315		291.2	314.1		0.4%	-0.3%		280	305		277.8	301.5		-0.8%	-1.1%
1000	335	360		334.2	360.8		-0.2%	0.2%		320	345		315.2	342.8		-1.5%	-0.6%
				Average Deviation =			-0.3%	-0.3%					Average Deviation =			-0.1%	-0.2%

AmpCalc References:

AmpCalc Library = IEERUB_2, Duct library = NEC_PVC, 5" duct.
AmpCalc Volume = IEERUB1
1 kV non-shielded

AmpCalc Library = IEERUB_2, Duct library = NEC_PVC, 5" duct.
AmpCalc Volume = IEERUB8 for #6, 4 , IEERUB15 for all others
8 or 15 kV shielded with both ends grounded

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