APPENDIX A

TABLES AND REFERENCE DATA

This appendix contains those tables and reference data considered to be of continuing interest and value to the installation planner in planning for and carrying out the installation of electronic equipments and systems.

Other tables and engineering data required by the technician can be obtained from the many excellent engineering handbooks published by commercial organizations, technical societies, and government agencies, for example:

o Basic Electronics - Navy Training Course, Bureau of Naval Personnel, NAVPERS 10087-B.

o Digital Computer Systems, Naval Electronics System Command, NAVELEX 0101,111 and NAVELEX 0101,115.

o Electromagnetic Compatibility and Electromagnetic Radiation Hazards, NAVELEX 0101,106.

Table A-1. Television Channels and Frequencies

CHANNEL	BAND (MHZ)	CHANNEL	BAND (MHZ)	CHANNEL	BAND (MHZ)
VHF		26	542-548	55	716-722
		27	548-554	56	722-728
2	54-60	28	554-560	57	728-734
3	60-66	29	560-566	58	734-740
4	66-72	30	566-572	59	740-746
5	76-82	31	572-578	60	746-752
6	82-88	32	578-584	61	752-758
7	174-180	33	584-590	62	758-764
8	180-186	34	590-596	63	764-770
9	186-192	35	596-602	64	770-776
10	192-198	36	602-608	65	776-782
11	198-204	37	608-614	66	782-788
12	204-210	38	614-620	67	788-794
13	210-216	39	620-626	68	794-800
UHF		40	626-632	69	800-806
		41	632-638	70	806-812
14	470-476	42	638-644	71	812-818
15	476-482	43	644-650	72	818-824
16	482-488	44	650-656	73	824-830
17	488-494	45	656-662	74	830-836
18	494-500	46	662-668	75	836-842
19	500-506	47	668-674	76	842-848
20	506-512	48	674-680	77	848-854
21	512-518	49	680-686	78	854-860
22	518-524	50	686-692	79	860-866
23	524-530	51	692-698	80	866-872
24	530-536	52	698-704	81	872-878
25	536-542	53	704-710	82	878-884
		54	710-716	83	884-890

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Table A-2. Nomenclature of Frequency Bands

Band Number*	Frequency Range	Metric Subdivision	Adjectival Designation
2	30 to 300 hertz	Megametric waves	ELF Extremely low frequency
3	300 to 3000 hertz	———	VF Voice frequency
4	3 to 30 kilohertz	Myriametric waves	VLF Very-low frequency
5	30 to 300 kilohertz	Kilometric waves	LF Low frequency
6	300 to 3000 kilohertz	Hectometric waves	MF Medium frequency
7	3 to 30 megahertz	Decametric waves	HF High frequency
8	30 to 300 megahertz	Metric waves	VHF Very-high frequency
9	300 to 3000 megahertz	Decimetric waves	UHF Ultra-high frequency
10	3 to 30 gigahertz	Centimetric waves	SHF Super-high frequency
11	30 to 300 gigahertz	Millimetric waves	EHF Extremely high frequency
12	300 to 3000 gigahertz or 3 terahertz	Decimillimetric waves	— —

* "Band Number N" extends from 0.3×10^{N} to 3×10^{N} hertz. The upper limit is included in each band; the lower limit is excluded.

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Table A-3. Frequency Allocations (Generalized) (Sheet 1 of 2)

FREQUENCY kHz	ALLOCATED
10-14	Radio navigation*
14-70	Fixed, maritime mobile
70-90	Fixed,* maritime mobile*
90-110	Fixed,* maritime mobile,* Radio navigation *
110-130	Fixed, maritime mobile
130-150	Fixed, maritime mobile
150-160	Fixed, maritime mobile
160-200	Fixed
200-285	Aeronautical mobile, Aeronautical navigation
285-325	Maritime radio navigation (radio beacons)
325-405	Aeronautical mobile*, Aeronautical navigation*
405-415	Aeronautical mobile, aeronautical navigation, maritime navigation (radio direction finding)
415-490	Maritime mobile*
490-510	Mobile (distress and calling)*
510-525	Mobile
525-535	Mobile
535-1605	Broadcasting*
1605-1800	Aeronautical radio navigation, fixed, mobile
1800-2000	Amateur; fixed, mobile except aeronautical mobile radio navigation
2000-2065	Fixed, mobile
2065-2105	Maritime mobile
2105-2300	Fixed, mobile
2300-2495	Broadcasting, fixed, mobile
2495-2505	Standard Frequency
2505-2850	Fixed, mobile
2850-3025	Aeronautical mobile*
3025-3155	Aeronautical mobile*
3155-3200	Fixed,* mobile except aeronautical mobile*
3200-3230	Broadcasting,* fixed,* mobile except aeronautical mobile*
3230-3400	Broadcasting,* fixed,* mobile, except aeronautical mobile*
3400-3500	Aeronautical mobile*
3500-4000	Amateur, fixed, mobile except aeronautical mobile
4000-4063	Fixed*
4063-4438	Maritime mobile*
4438-4650	Fixed, mobile except aeronautical mobile
4650-4700	Aeronautical mobile*
4700-4750	Aeronautical mobile*
4750-4850	Broadcasting, fixed
4850-4995	Broadcasting,* fixed,* land, mobile*
4995-5005	Standard, frequency
5005-5060	Broadcasting,* fixed*
5060-5250	Fixed*
5250-5450	Fixed, land mobile
5450-5480	Aeronautical mobile
5480-5680	Aeronautical mobile*
5680-5730	Aeronautical mobile*
5730-5950	Fixed*
5950-6200	Broadcasting*
6200-6525	Maritime mobile*
6525-6685	Aeronautical mobile*
6685-6765	Aeronautical mobile*
6765-7000	Fixed*
7000-7100	Amateur*
7100-7300	Amateur
7300-8195	Fixed*
8195-8815	Maritime mobile*
8815-8965	Aeronautical mobile*
8965-9040	Aeronautical mobile
9040-9500	Fixed*
9500-9775	Broadcasting*
9775-9995	Fixed*
9995-10005	Standard frequency*
10005-10100	Aeronautical mobile*
10100-11175	Fixed*
11175-11275	Aeronautical mobile*
11275-11400	Aeronautical mobile*
11400-11700	Fixed*
11700-11975	Broadcasting*
11975-12330	Fixed*
12330-13200	Maritime
13200-13260	Aeronautical mobile*
13360-14000	Fixed*
14000-14350	Amateur*
14350-14990	Fixed*
14990-15010	Standard frequency*
15010-15100	Aeronautical mobile*
15100-15450	Broadcasting*
15450-16460	Fixed*
16460-17360	Maritime mobile*
17360-17700	Fixed*
17700-17900	Broadcasting*
17900-17970	Aeronautical mobile*
17970-18030	Aeronautical mobile*
18030-19990	Fixed*
19990-20010	Standard frequency*
20010-21000	Fixed*
21000-21450	Amateur
21450-21750	Broadcasting
21750-21850	Fixed*
21850-22000	Aeronautical fixed, aeronautical mobile*
22000-22720	Maritime mobile*
22720-23200	Fixed*
23200-23350	Aeronautical fixed,* aeronautical mobile*

*World-Wide Allocation

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Table A-3. Frequency Allocations (Generalized) (Sheet 2 of 2)

FREQUENCY kHz	ALLOCATED
23350-24990	Fixed*, land mobile*
24990-25010	Standard Frequency*
25010-25600	Fixed*, mobile except Aeronautical mobile
25600-26100	Broadcasting*
26100-27500	Fixed*, mobile except aeronautical mobile*
27500-28000	Fixed, mobile
28000-29700	Amateur*

FREQUENCY MHz	ALLOCATED
29.7-44	Fixed, mobile
44-50	Broadcasting, fixed, mobile
50-54	Amateur
54-72	Broadcasting, fixed mobile
72-76	Fixed, mobile
76-88	Broadcasting, fixed, mobile
88-100	Broadcasting*
100-108	Broadcasting
108-118	Aeronautical radio navigation*
118-132	Aeronautical mobile
132-144	Fixed, mobile
144-146	Amateur*
146-148	Amateur
148-174	Fixed, mobile
174-216	Broadcasting, fixed, mobile
216-220	Fixed, mobile
220-225	Amateur
225-235	Fixed, mobile
235-328.6	Fixed*, mobile*
328.6-335.4	Aeronautical radio navigation*
335.4-420	Fixed*, mobile*
420-450	Aeronautical radio navigation*, amateur*
450-460	Aeronautical radio navigation, fixed, mobile
460-470	Fixed*, mobile*
470-585	Broadcasting*
585-610	Broadcasting
610-940	Broadcasting*
940-960	Fixed
960-1215	Aeronautical radio navigation*
1215-1300	Amateur*
1300-1660	Aeronautical radio navigation
1660-1700	Meteorological aids (radiosonde)
1700-2300	Fixed*, mobile*
2300-2450	Amateur*
2450-2700	Fixed*, mobile*
2700-2900	Aeronautical radio navigation*
2900-3300	Radio navigation
3300-3500	Fixed, mobile
3500-3700	Amateur
3700-4200	Fixed*, mobile*
4200-4400	Aeronautical radio navigation*
4400-5000	Fixed*, mobile*
5000-5250	Aeronautical radio navigation*
5250-5650	Radio navigation*
5650-5850	Amateur*
5850-5925	Amateur
5925-8500	Fixed*, mobile*
8500-9800	Radio navigation
9800-10000	Fixed*, radio navigation
10000-10500	Amateur*
10500-10555	Radio Location
10500-10700	Fixed mobile
10700-13200	Fixed and mobile
13200-13250	Fixed and mobile
13250-13400	Aeronautical Radio navigation
13400-16000	Fixed, mobile and radio navigation
16000-18000	Fixed mobile
18000-21000	Industrial, Scientific and Medical Equipment
21000-22000	Amateur
22000-26000	Fixed, mobile and radio navigation
26000-30000	Fixed and mobile
30000 and above	Amateur and experimental

*World-Wide Allocation

Note: Amateur bands 220 through 10,500 MHz are shared with the Government Radio Positioning Service, which has priority.

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Table A-4. Letter Designations for Microwave Bands

Subband	Frequency in Gigahertz	Wavelength in Centimeters
	***P* Band**	
	0.225	133.3
	0.390	76.9
	***L* Band**	
	0.390	76.9
p	0.465	64.5
c	0.510	58.8
l	0.725	41.4
y	0.780	38.4
t	0.900	33.3
s	0.950	31.6
x	1.150	26.1
k	1.350	22.2
f	1.450	20.7
z	1.550	19.3
	***S* Band**	
	1.55	19.3
e	1.65	18.3
f	1.85	16.2
t	2.00	15.0
c	2.40	12.5
q	2.60	11.5
y	2.70	11.1
g	2.90	10.3
s	3.10	9.67
a	3.40	8.32
w	3.70	8.10
h	3.90	7.69
z[b]	4.20	7.14
d	5.20	5.77
	***X* Band**	
	5.20	5.77
a	5.50	5.45
q	5.75	5.22
*y**	6.20	4.84
d	6.25	4.80
b	6.90	4.35
r	7.00	4.29
c	8.50	3.53
l	9.00	3.33
s	9.60	3.13
x	10.00	3.00
f	10.25	2.93
k	10.90	2.75
	***K* Band**	
	10.90	2.75
p	12.25	2.45
s	13.25	2.26
e	14.25	2.10
c	15.35	1.95
u†	17.25	1.74
t	20.50	1.46
q†	24.50	1.22
r	26.50	1.13
m	28.50	1.05
n	30.70	0.977
l	33.00	0.909
a	36.00	0.834
	***Q* Band**	
	36.0	0.834
a	38.0	0.790
b	40.0	0.750
c	42.0	0.715
d	44.0	0.682
e	46.0	0.652
	***V* Band**	
	46.0	0.652
a	48.0	0.625
b	50.0	0.600
c	52.0	0.577
d	54.0	0.556
e	56.0	0.536
	***W* Band**	
	56.0	0.536
	100.0	0.300

* *C* Band includes S_s through X_y (3.90–6.20 gigahertz).
† K_t Band includes K_u through K_q (15.35–24.50 gigahertz).

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Table A-5. Units of Measure

LINEAR MEASURE

12 inches = 1 foot
3 feet = 1 yard = 36 inches
5-1/2 yards = 1 rod or pole = 16-1/2 feet
40 rods = 1 furlong = 220 yards = 660 feet = 1/8 mile
8 furlongs = 1 statute mile = 1760 yards - 5280 feet
3 miles = 1 league = 5280 yards = 15,840 feet

SQUARE MEASURE

144 square inches = 1 square foot
9 square feet = 1 square yard = 1296 square inches
30-1/4 square yards = 1 square rod = 272-1/4 square feet
160 square rods = 1 acre = 4840 square yards
640 acres = 1 square mile = 3,097,600 square yards

CUBIC MEASURE

1728 cubic inches = 1 cubic foot
27 cubic feet = 1 cubic yard
144 cubic inches = 1 board foot
128 cubic feet = 1 cord

LIQUID MEASURE

4 gills = 1 pint
2 pints = 1 quart = 8 gills
4 quarts = 1 gallon = 8 pints = 32 gills
31-1/2 gallons = 1 barrel = 126 quarts
2 barrels = 1 hogshead = 63 gallons = 252 quarts

DRY MEASURE

2 pints = 1 quart
8 quarts = 1 peck = 16 pints

DRY MEASURE (cont)

4 pecks = 1 bushel = 32 quarts = 64 pints
105 quarts = 1 barrel (for fruits, vegetables, and other dry commodities) = 7056 cubic inches

CIRCULAR MEASURE

60 seconds (") = 1 minute (')
60 minutes = 1 degree (°)
90 degrees = 1 quadrant
4 quadrants = 1 circle of circumference

NAUTICAL MEASURE

6 feet = 1 fathom
100 fathoms = 1 cable's length (ordinary) = 608 ft (Br.) = 607.61 ft. (U.S.)
120 fathoms = 1 cable's length (U.S. Navy)
10 cable's lengths = 1 nautical mile = 6080 ft (Br.) = 6076.1033 ft (U.S.)
1 nautical mile = 1.1508 statute miles
3 nautical miles = 1 league (marine)
60 nautical miles = 1 degree (of a terrestial great circle)

AVOIRDUPOIS WEIGHT

27-11/32 grains = 1 dram
16 drams = 1 ounce = 437-1/2 grains
16 ounces = 1 pound = 256 drams = 7000 grains
100 pounds = 1 hundredweight = 1600 ounces
20 hundredweight = 1 ton = 2000 pounds
112 pounds = 1 long hundredweight
20 long hundredweight = 1 long ton = 2240 pounds

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Table A-6. Conversion Factors (Sheet 1 of 6)

TO CONVERT	INTO	MULTIPLY BY
	A	
acres	sq feet	43,560.0
"	sq meters	4,047.
"	sq miles	1.562×10^{-3}
"	sq yards	4,840.
acre-feet	cu feet	43,560.0
" "	gallons	3.259×10^{5}
amperes/sq cm	amps/sq in.	6.452
" " "	amps/sq meter	10^{4}
amperes/sq in.	amps/sq cm	0.1550
" " "	amps/sq meter	1,550.0
amperes/sq meter	amps/sq cm	10^{-4}
" " "	amps/sq in.	6.452×10^{-4}
ampere-hours	coulombs	3,600.0
" "	faradays	0.03731
ampere-turns	gilberts	1.257
ampere-turns/cm	amp-turns/in.	2.540
" " "	amp-turns/meter	100.0
" " "	gilberts/cm	1.257
ampere-turns/in.	amp-turns/cm	0.3937
" " "	amp-turns/meter	39.37
" " "	gilberts/cm	0.4950
ampere-turns/meter	amp-turns/cm	0.01
" " "	amp-turns/in.	0.0254
" " "	gilberts/cm	0.01257
ares	acres	0.02471
"	sq meters	100.0
atmospheres	cms of mercury	76.0
"	ft of water (at 4°C)	33.90
"	in. of mercury (at 0°C)	29.92
"	kgs/sq cm	1.0333
"	kgs/sq meter	10,332.
"	pounds/sq in.	14.70
"	tons/sq ft	1.058
	B	
barrels (oil)	gallons (oil)	42.0
bars	atmospheres	0.9869
"	dynes/sq cm	10^{6}
"	kgs/sq meter	1.020×10^{4}
"	pounds/sq ft	2,089.
"	pounds/sq in.	14.50
Btu	ergs	1.0550×10^{10}
"	foot-lbs	778.3
"	gram-calories	252.0
"	horsepower-hrs	3.931×10^{-4}
"	joules	1,054.8
"	kilogram-calories	0.2520
"	kilogram-meters	107.5
"	kilowatt-hrs	2.928×10^{-4}
Btu/hr	foot-pounds/sec	0.2162
" "	gram-cal/sec	0.0700
" "	horsepower-hrs	3.929×10^{-4}
" "	watts	0.2931
Btu/min	foot-lbs/sec	12.96
" "	horsepower	0.02356
" "	kilowatts	0.01757
" "	watts	17.57
Btu/sq ft/min	watts/sq in.	0.1221
bushels	cu ft	1.2445
"	cu in.	2,150.4
"	cu meters	0.03524
"	liters	35.24
"	pecks	4.0
"	pints (dry)	64.0
"	quarts (dry)	32.0
	C	
centares (centaires)	sq meters	1.0
Centigrade	Fahrenheit	(C° x 9/5) + 32
centigrams	grams	0.01
centiliters	liters	0.01
centimeters	feet	3.281×10^{-2}
"	inches	0.3937
"	kilometers	10^{-5}
"	meters	0.01
"	miles	6.214×10^{-6}
"	millimeters	10.0
"	mils	393.7

TO CONVERT	INTO	MULTIPLY BY
centimeters	yards	1.094×10^{-2}
centimeter-dynes	cm-grams	1.020×10^{-3}
" "	meter-kgs	1.020×10^{-8}
" "	pound-feet	7.376×10^{-8}
centimeter-grams	cm-dynes	980.7
" "	meter-kegs	10^{-5}
" "	pound-feet	7.233×10^{-5}
centimeters of mercury	atmospheres	0.01316
" " "	feet of water	0.4461
" " "	kgs/sq meter	136.0
" " "	pounds/sq ft	27.85
" " "	pounds/sq in.	0.1934
centimeters/sec	feet/min	1.1969
" "	feet/sec	0.03281
" "	kilometers/hr	0.036
" "	knots	0.1943
" "	meters/min	0.6
" "	miles/hr	0.02237
" "	miles/min	3.728×10^{-4}
centimeters/sec/sec	feet/sec/sec	0.03281
" " "	kms/hr/sec	0.036
" " "	meters/sec/sec	0.01
" " "	miles/hr/sec	0.02237
circular mils	sq cms	5.067×10^{-6}
" "	sq mils	0.7854
" "	sq inches	7.854×10^{-7}
coulombs	faradays	1.036×10^{-5}
coulombs/sq cm	coulombs/sq in.	64.52
" " "	coulombs/sq meter	10^{4}
coulombs/sq in.	coulombs/sq cm	0.1550
" " "	coulombs/sq meter	1,550.
coulombs/sq meter	coulombs/sq cm	10^{-4}
" " "	coulombs/sq in.	6.452×10^{-4}
cubic centimeters	cu feet	3.531×10^{-5}
" "	cu inches	0.06102
" "	cu meters	10^{-6}
" "	cu yards	1.308×10^{-6}
" "	gallons (U.S. liq.)	2.642×10^{-4}
" "	liters	0.001
" "	pints (U.S. liq.)	2.113×10^{-3}
" "	quarts (U.S. liq.)	1.057×10^{-3}
cubic feet	bushels (dry)	0.8036
" "	cu cms	28,320.0
" "	cu inches	1,728.0
" "	cu meters	0.02832
" "	cu yards	0.03704
" "	gallons (U.S. liq.)	7.48052
" "	liters	28.32
" "	pints (U.S. liq.)	59.84
" "	quarts (U.S. liq.)	29.92
cubic feet/min	cu cms/sec	472.0
" " "	gallons/sec	0.1247
" " "	liters/sec	0.4720
" " "	pounds of water/min	62.43
cubic feet/sec	million gals/day	0.646317
" " "	gallons/min	448.831
cubic inches	cu cms	16.39
" "	cu feet	5.787×10^{-4}
" "	cu meters	1.639×10^{-5}
" "	cu yards	2.143×10^{-5}
" "	gallons	4.329×10^{-3}
" "	liters	0.01639
" "	mil-feet	1.061×10^{5}
" "	pints (U.S. liq.)	0.03463
" "	quarts (U.S. liq.)	0.01732
cubic meters	bushels (dry)	28.38
" "	cu cms	10^{6}
" "	cu feet	35.31
" "	cu inches	61,023.0
" "	cu yards	1.308
" "	gallons (U.S. liq.)	264.2
" "	liters	1,000.0
" "	pints (U.S. liq.)	2,113.0
" "	quarts (U.S. liq.)	1,057.
cubic yards	cu cms	7.646×10^{5}
" "	cu feet	27.0
" "	cu inches	46,656.0
" "	cu meters	0.7646
" "	gallons (U.S. liq.)	202.0
" "	liters	764.6
" "	pints (U.L. liq.)	1,615.9
" "	quarts (U.S. liq.)	807.9

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Table A-6. Conversion Factors (Sheet 2 of 6)

TO CONVERT	INTO	MULTIPLY BY
cubic yards/min	cubic ft/sec	0.45
" " "	gallons/sec	3.367
" " "	liters/sec	12.74
	D	
days	hours	24.0
"	minutes	1,440.0
"	seconds	86,400.0
decigrams	grams	0.1
deciliters	liters	0.1
decimeters	meters	0.1
degrees (angle)	minutes	60.0
" "	quadrants	0.01111
" "	radians	0.01745
" "	seconds	3,600.0
degrees/sec	radians/sec	0.01745
" "	revolutions/min	0.1667
" "	revolutions/sec	2.778×10^{-3}
dekagrams	grams	10.0
dekaliters	liters	10.0
dekameters	meters	10.0
drams	grams	1.7718
"	grains	27.3437
"	ounces	0.0625
dynes	grams	1.020×10^{-3}
"	joules/cm	10^{-7}
"	joules/meter (newtons)	10^{-5}
"	kilograms	1.020×10^{-6}
"	poundals	7.233×10^{-5}
"	pounds	2.248×10^{-6}
dynes/sq cm	bars	10^{-6}
	E	
ergs	Btu	9.480×10^{-11}
"	dyne-centimeters	1.0
"	foot-pounds	7.367×10^{-8}
"	gram-calories	0.2389×10^{-7}
"	gram-cms	1.020×10^{-3}
"	horsepower-hrs	3.7250×10^{-14}
"	joules	10^{-7}
"	kg-calories	2.389×10^{-11}
"	kg-meters	1.020×10^{-8}
"	kilowatt-hrs	0.2778×10^{-13}
"	watt-hours	0.2778×10^{-10}
ergs/sec	Btu/min	$5,688 \times 10^{-9}$
" "	ft-lbs/min	4.427×10^{-6}
" "	ft-lbs/sec	7.3756×10^{-8}
" "	horsepower	1.341×10^{-10}
" "	kg-calories/min	1.433×10^{-9}
" "	kilowatts	10^{-10}
	F	
farads	microfarads	10^{6}
faradays	ampere-hours	26.80
"	coulombs	9.649×10^{4}
fathoms	feet	6.0
feet	centimeters	30.48
"	kilometers	3.048×10^{-4}
"	meters	0.3048
"	miles (naut.)	1.645×10^{-4}
"	miles (stat.)	1.894×10^{-4}
"	millimeters	304.8
"	mils	1.2×10^{4}
feet of water	atmospheres	0.02950
" " "	in. of mercury	0.8826
" " "	kgs/sq cm	0.03048
" " "	kgs/sq meter	304.8
" " "	pounds/sq ft	62.43
" " "	pounds/sq in.	0.4335
feet/min	cms/sec	0.5080
" "	feet/sec	0.01667
" "	kms/hr	0.01829
" "	meters/min	0.3048
" "	miles/hr	0.01136
feet/sec	cms/sec	30.48
" "	kms/hr	1.097
" "	knots	0.5921
" "	meters/min	18.29
" "	miles/hr	0.6818

TO CONVERT	INTO	MULTIPLY BY
feet/sec	miles/min	0.01136
feet/sec/sec	cms/sec/sec	30.48
" " "	kms/hr/sec	1.097
" " "	meters/sec/sec	0.3048
" " "	miles/hr/sec	0.6818
feet/100 feet	per cent grade	1.0
foot-pounds	Btu	1.286×10^{-3}
" "	ergs	1.356×10^{7}
" "	gram-calories	0.3238
" "	hp-hrs	5.050×10^{-7}
" "	joules	1.356
" "	kg-calories	3.24×10^{-4}
" "	kg-meters	0.1383
" "	kilowatt-hrs	3.766×10^{-7}
foot-pounds/min	Btu/min	1.286×10^{-3}
" " "	foot-pounds/sec	0.01667
" " "	horsepower	3.030×10^{-5}
" " "	kg-calories/min	3.24×10^{-4}
" " "	kilowatts	2.260×10^{-5}
foot-pounds/sec	Btu-hr	4.6263
" " "	Btu/min	0.07717
" " "	horsepower	1.818×10^{-3}
" " "	kg-calories/min	0.01945
" " "	kilowatts	1.356×10^{-3}
furlongs	rods	40.0
"	feet	660.0
	G	
gallons	cu cms	3,785.0
"	cu feet	0.1337
"	cu inches	231.0
"	cu meters	3.785×10^{-3}
"	cu yards	4.951×10^{-3}
"	liters	3.785
"	pints	8.0
"	quarts	4.0
gallons (liq. Br. Imp.)	gallons (U.S. liq.)	1.20095
gallons (U.S.)	gallons (Imp.)	0.83267
gallons of water	pounds of water	8.3453
gallons/min	cu ft/sec	2.228×10^{-3}
" "	liters/sec	0.06308
" "	cu ft/hr	8.0208
gausses	lines/sq in.	6.452
"	webers/sq cm	10^{-8}
"	webers/sq in.	6.452×10^{-8}
"	webers/sq meter	10^{-4}
gilberts	ampere-turns	0.7958
gilberts/cm	amp-turns/cm	0.7958
" "	amp-turns/in	2.021
" "	amp-turns/meter	79.58
gills	liters	0.1183
"	pints (liq.)	0.25
gin	martinis (dry)	20g + 1v
grains (troy)	grains (avdp)	1.0
" "	grams	0.06480
" "	ounces (avdp)	2.0833×10^{-3}
" "	pennyweight (troy)	0.04167
grains/U.S. gal	parts/million	17.118
" " "	pounds/million gal	142.86
grains/Imp. gal	parts/million	14.286
grams	dynes	980.7
"	grains	15.43
"	joules/cm	9.807×10^{-5}
"	joules/meter (newtons)	9.807×10^{-3}
"	kilograms	0.001
"	milligrams	1,000.
"	ounces (avdp)	0.03527
"	ounces (troy)	0.03215
"	poundals	0.07093
"	pounds	2.205×10^{-3}
grams/cm	pounds/inch	5.600×10^{-3}
grams/cu cm	pounds/cu ft	62.43
" " "	pounds/cu in	0.03613
" " "	pounds/mil-foot	3.405×10^{-7}
grams/liter	grains/gal	58.417
" "	pounds/1,000 gal	8.345
" "	pounds/cu ft	0.062427
" "	parts/million	1,000.0
grams/sq cm	pounds/sq ft	2.0481
gram-calories	Btu	3.9683×10^{-3}

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Table A-6. Conversion Factors (Sheet 3 of 6)

TO CONVERT	INTO	MULTIPLY BY
gram-calories	ergs	4.1868×10^{7}
" "	foot-pounds	3.0880
" "	horsepower-hrs	1.5596×10^{-6}
" "	kilowatt-hrs	1.1630×10^{-6}
" "	watt-hrs	1.1630×10^{-3}
gram-calories/sec	Btu-hr	14.286
gram-centimeters	Btu	9.297×10^{-8}
" "	ergs	980.7
" "	joules	9.807×10^{-5}
" "	kg-cal	2.343×10^{-8}
" "	kg-meters	10^{-5}
	H	
hectares	acres	2.471
"	sq feet	1.076×10^{5}
hectograms	grams	100.0
hectoliters	liters	100.0
hectometers	meters	100.0
hectowatts	watts	100.0
henries	millihenries	1,000.0
horsepower	Btu/min	42.44
"	foot-lbs/min	33,000.
"	foot-lbs/sec	550.0
horsepower (metric) (542.5 ft lb/sec)	horsepower (550 ft lb/sec)	0.9863
horsepower (550 ft lb/sec)	horsepower (metric) (542.5 ft lb/sec)	1.014
horsepower	kg-calories/min	10.68
"	kilowatts	0.7457
"	watts	745.7
horsepower (boiler)	Btu-hr	33.479
" "	kilowatts	9.803
horsepower-hrs	Btu	2,547.
" "	ergs	2.6845×10^{13}
" "	foot-lbs	1.98×10^{6}
" "	gram-calories	641,190.
" "	joules	2.684×10^{6}
" "	kg-calories	641.1
" "	kg-meters	2.737×10^{5}
" "	kilowatt-hrs	0.7457
hours	days	4.167×10^{-2}
"	minutes	60.0
"	seconds	3,600.0
"	weeks	5.952×10^{-3}
	I	
inches	centimeters	2.540
"	feet	8.333×10^{-2}
"	meters	2.540×10^{-2}
"	miles	1.578×10^{-5}
"	millimeters	25.40
"	mils	1,000.0
"	yards	2.778×10^{-2}
inches of mercury	atmospheres	0.03342
" " "	feet of water	1.133
" " "	kgs/sq cm	0.03453
" " "	kgs/sq meter	345.3
" " "	pounds/sq ft	70.73
" " "	pounds/sq in.	0.4912
inches of water (at 4°C)	atmospheres	2.458×10^{-3}
" " " "	inches of mercury	0.07355
" " " "	kgs/sq cm	2.540×10^{-3}
" " " "	ounces/sq in.	0.5781
" " " "	pounds/sq ft	5.204
" " " "	pounds/sq in.	0.03613
	J	
joules	Btu	9.480×10^{-4}
"	ergs	10^{7}
"	foot-pounds	0.7376
"	kg-calories	2.389×10^{-4}
"	kg-meters	0.1020
"	watt-hrs	2.778×10^{-4}
joules/cm	grams	1.020×10^{4}
" "	dynes	10^{7}
" "	joules/meter (newtons)	100.0
" "	poundals	723.3
" "	pounds	22.48

TO CONVERT	INTO	MULTIPLY BY
	K	
kilograms	dynes	980,665.
"	grams	1,000.0
"	joules/cm	0.09807
"	joules/meter (newtons)	9.807
"	poundals	70.93
"	pounds	2.205
"	tons (long)	9.842×10^{-4}
"	tons (short)	1.102×10^{-3}
kilograms/cu meter	grams/cu cm	0.001
" " "	pounds/cu ft	0.06243
" " "	pounds/cu in.	3.613×10^{-5}
" " "	pounds/mil-foot	3.405×10^{-10}
kilograms/meter	pounds/ft	0.6720
kilograms/sq cm	atmospheres	0.9678
" " "	feet of water	32.81
" " "	inches of mercury	28.96
" " "	pounds/sq ft	2,048.
" " "	pounds/sq in.	14.22
kilograms/sq meter	atmospheres	9.678×10^{-5}
" " "	bars	98.07×10^{-6}
" " "	feet of water	3.281×10^{-3}
" " "	inches of mercury	2.896×10^{-3}
" " "	pounds/sq ft	0.2048
" " "	pounds/sq in.	1.422×10^{-3}
kilograms/sq mm	kgs/sq meter	10^{6}
kilogram-calories	Btu	3.968
" "	foot-pounds	3,088.
" "	hp-hrs	1.560×10^{-3}
" "	joules	4,186.
" "	kg-meters	426.9
" "	kilojoules	4.186
" "	kilowatt-hrs	1.163×10^{-3}
kilogram meters	Btu	9.294×10^{-3}
" "	ergs	9.804×10^{7}
" "	foot-pounds	7.233
" "	joules	9.804
" "	kg-calories	2.342×10^{-3}
" "	kilowatt-hrs	2.723×10^{-6}
kilolines	maxwells	1,000.0
kiloliters	liters	1,000.0
kilometers	centimeters	10^{5}
"	feet	3,281.
"	inches	3.937×10^{4}
"	meters	1,000.0
"	miles	0.6214
"	millimeters	10^{6}
"	yards	1,094.
kilometers/hr	cms/sec	27.78
" "	feet/min	54.68
" "	feet/sec	0.9113
" "	knots	0.5396
" "	meters/min	16.67
" "	miles/hr	0.6214
kilometers/hr/sec	cms/sec/sec	27.78
" " "	ft/sec/sec	0.9113
" " "	meters/sec/sec	0.2778
" " "	miles/hr/sec	0.6214
kilowatts	Btu/min	56.92
"	foot-lbs/min	4.426×10^{4}
"	foot-lbs/sec	737.6
"	horsepower	1.341
"	kg-calories/min	14.34
"	watts	1,000.0
kilowatt-hrs	Btu	3,413.
" "	ergs	3.600×10^{13}
" "	foot-lbs	2.655×10^{6}
" "	gram-calories	859,850.
" "	horsepower-hrs	1.341
" "	joules	3.6×10^{6}
" "	kg-calories	860.5
" "	kg-meters	3.671×10^{5}
" "	pounds of water evaporated from and at 212°F.	3.53
" "	pounds of water raised from 62° to 212°F.	22.75
knots	feet/hr	6,080.
"	kilometers/hr	1.8532
"	nautical miles/hr	1.0

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Table A-6. Conversion Factors (Sheet 4 of 6)

TO CONVERT	INTO	MULTIPLY BY
knots	statute miles/hr	1.151
"	yards/hr	2,027.
"	feet/sec	1.689
	L	
league	miles (approx.)	3.0
lines/sq cm	gausses	1.0
lines/sq in.	gausses	0.1550
lines/sq in.	webers/sq cm	1.550×10^{-9}
" "	webers/sq in.	10^{-8}
" " "	webers/sq meter	1.550×10^{-5}
links (engineer's)	inches	12.0
links (surveyor's)	inches	7.92
liters	bushels (U.S. dry)	0.02838
"	cu cm	1,000.0
"	cu feet	0.03531
"	cu inches	61.02
"	cu meters	0.001
"	cu yards	1.308×10^{-3}
"	gallons (U.S. liq.)	0.2642
"	pints (U.S. liq.)	2.113
"	quarts (U.S. liq.)	1.057
liters/min	cu ft/sec	5.886×10^{-4}
" "	gals/sec	4.403×10^{-3}
lumens/sq ft	foot-candles	1.0
lux	foot-candles	0.0929
	M	
maxwells	kilolines	0.001
"	webers	10^{-8}
megalines	maxwells	10^{6}
megohms	microhms	10^{12}
"	ohms	10^{6}
meters	centimeters	100.0
"	feet	3.281
"	inches	39.37
"	kilometers	0.001
"	miles (naut.)	5.396×10^{-4}
"	miles (stat.)	6.214×10^{-4}
"	millimeters	1,000.0
"	yards	1.094
"	varas	1.179
meters/min	cms/sec	1.667
" "	feet/min	3.281
" "	feet/sec	0.05468
" "	kms/hr	0.06
" "	knots	0.03238
" "	miles/hr	0.03728
meters/sec	feet/min	196.8
" "	feet/sec	3.281
" "	kilometers/hr	3.6
" "	kilometers/min	0.06
" "	miles/hr	2.237
" "	miles/min	0.03728
meters/sec/sec	cms/sec/sec	100.0
" " "	ft/sec/sec	3.281
" " "	kms/hr/sec	3.6
" " "	miles/hr/sec	2.237
meter-kilograms	cm-dynes	9.807×10^{7}
" "	cm-grams	10^{5}
" "	pound-feet	7.233
microfarad	farads	10^{-6}
micrograms	grams	10^{-6}
microhms	megohms	10^{-12}
"	ohms	10^{-6}
microliters	liters	10^{-6}
miles (naut.)	feet	6,080.27
" "	kilometers	1.853
" "	meters	1,853.
" "	miles (statute)	1.1516
" "	yards	2,027.
miles (statute)	centimeters	1.609×10^{5}
" "	feet	5,280.
" "	inches	6.336×10^{4}
" "	kilometers	1.609
" "	meters	1,609.
" "	miles (naut.)	0.8684
" "	yards	1,760.
miles/hr	cms/sec	44.70

TO CONVERT	INTO	MULTIPLY BY
miles/hr	feet/min	88.
" "	feet/sec	1.467
" "	kms/hr	1.609
" "	kms/min	0.02682
" "	knots	0.8684
" "	meters/min	26.82
" "	miles/min	0.01667
miles/hr/sec	cms/sec/sec	44.70
" " "	feet/sec/sec	1.467
" " "	kms/hr/sec	1.609
" " "	meters/sec/sec	0.4470
miles/min	cms/sec	2,682.
" "	feet/sec	88.
" "	kms/min	1.609
" "	knots/min	0.8684
" "	miles/hr	60.0
mil-feet	cu inches	9.425×10^{-6}
milliers	kilograms	1,000.
milligrams	grams	0.001
milligrams/liter	parts/million	1.0
millihenries	henries	0.001
milliliters	liters	0.001
millimeters	centimeters	0.1
"	feet	3.281×10^{-3}
"	inches	0.03937
"	kilometers	10^{-6}
"	meters	0.001
"	miles	6.214×10^{-7}
"	mils	39.37
"	yards	1.094×10^{-3}
million gals/day	cu ft/sec	1.54723
mils	centimeters	2.540×10^{-3}
"	feet	8.333×10^{-5}
"	inches	0.001
"	kilometers	2.540×10^{-8}
"	yards	2.778×10^{-5}
miner's inches	cu ft/min	1.5
minutes (angles)	degrees	0.01667
" "	quadrants	1.852×10^{-4}
" "	radians	2.909×10^{-4}
" "	seconds	60.0
myriagrams	kilograms	10.0
myriameters	kilometers	10.0
myriawatts	kilowatts	10.0
	N	
nepers	decibels	8.686
	O	
ohms	megohms	10^{-6}
ohms	microhms	10^{6}
ounces	drams	16.0
"	grains	437.5
"	grams	28.349527
"	pounds	0.0625
"	ounces (troy)	0.9115
"	tons (long)	2.790×10^{-5}
"	tons (metric)	2.835×10^{-5}
ounces (fluid)	cu inches	1.805
" "	liters	0.02957
ounces (troy)	grains	480.0
" "	grams	31.103481
" "	ounces (avdp.)	1.09714
" "	pennyweights (troy)	20.0
" "	pounds (troy)	0.08333
ounces/sq in.	pounds/sq in.	0.0625
	P	
parts/million	grains/U.S. gal	0.0584
" "	grains/Imp. gal	0.07016
" "	pounds/million gal	8.345
pennyweights (troy)	grains	24.0
" "	ounces (troy)	0.05
" "	grams	1.55517
" "	pounds (troy)	4.1667×10^{-3}
pints (dry)	cu inches	33.60
pints (liq.)	cu cms.	473.2
" "	cu feet	0.01671

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Table A-6. Conversion Factors (Sheet 5 of 6)

TO CONVERT	INTO	MULTIPLY BY
pints (liq.)	cu inches	28.87
" "	cu meters	4.732×10^{-4}
" "	cu yards	6.189×10^{-4}
" "	gallons	0.125
" "	liters	0.4732
" "	quarts (liq.)	0.5
poundals	dynes	13,826.
"	grams	14.10
"	joules/cm	1.383×10^{-3}
"	joules/meter (newtons)	0.1383
"	kilograms	0.01410
"	pounds	0.03108
pounds	drams	256.
"	dynes	44.4823×10^{4}
"	grains	7,000.
"	grams	453.5924
"	joules/cm	0.04448
"	joules/meter (newtons)	4.448
"	kilograms	0.4536
"	ounces	16.0
"	ounces (troy)	14.5833
"	poundals	32.17
"	pounds (troy)	1.21528
"	tons (short)	0.0005
pounds (troy)	grains	5,760.
" "	grams	373.24177
" "	ounces (avdp.)	13.1657
" "	ounces (troy)	12.0
" "	pennyweights (troy)	240.0
" "	pounds (avdp.)	0.822857
" "	tons (long)	3.6735×10^{-4}
" "	tons (metric)	3.7324×10^{-4}
" "	tons (short)	4.1143×10^{-4}
pounds of water	cu feet	0.01602
" " "	cu inches	27.68
" " "	gallons	0.1198
pounds of water/min	cu ft/sec	2.670×10^{-4}
pound-feet	cm-dynes	1.356×10^{7}
" "	cm-grams	13,825.
" "	meter-kgs	0.1383
pounds/cu ft	grams/cu cm	0.01602
" " "	kgs/cu meter	16.02
" " "	pounds/cu in.	5.787×10^{-4}
" " "	pounds/mil-foot	5.456×10^{-9}
pounds/cu in.	gms/cu cm	27.68
" " "	kgs/cu meter	2.768×10^{4}
" " "	pounds/cu ft	1,728.
" " "	pounds/mil-foot	9.425×10^{-6}
pounds/ft	kgs/meter	1.488
pounds/in.	gms/cm	178.6
pounds/mil-foot	gms/cu cm	2.306×10^{6}
pounds/sq ft	atmospheres	4.725×10^{-4}
" " "	feet of water	0.01602
" " "	inches of mercury	0.01414
" " "	kgs/sq meter	4.882
" " "	pounds/sq in.	6.944×10^{-3}
pounds/sq in.	atmospheres	0.06804
" " "	feet of water	2.307
" " "	inches of mercury	2.036
" " "	kgs/sq meter	703.1
" " "	pounds/sq ft	144.0

Q

quadrants (angle)	degrees	90.0
" "	minutes	5,400.0
" "	radians	1.571
" "	seconds	3.24×10^{5}
quarts (dry)	cu inches	67.20
quarts (liq.)	cu cms	946.4
" "	cu feet	0.03342
" "	cu inches	57.75
" "	cu meters	9.464×10^{-4}
" "	cu yards	1.238×10^{-3}
" "	gallons	0.25
" "	liters	0.9463

R

radians	degrees	57.30
radians	minutes	3,438.
radians	quadrants	0.6366
"	seconds	2.063×10^{5}
radians/sec	degrees/sec	57.30
" "	revolutions/min	9.549
" "	revolutions/sec	0.1592
radians/sec/sec	revs/min/min	573.0
" " "	revs/min/sec	9.549
" " "	revs/sec/sec	0.1592
revolutions	degrees	360.0
"	quadrants	4.0
"	radians	6.283
revolutions/min	degrees/sec	6.0
" "	radians/sec	0.1047
" "	revs/sec	0.01667
revolutions/min/min	radians/sec/sec	1.745×10^{-3}
" " "	revs/min/sec	0.01667
" " "	revs/sec/sec	2.778×10^{-4}
revolutions/sec	degrees/sec	360.0
" "	radians/sec	6.283
" "	revs/min	60.0
revolutions/sec/sec	radians/sec/sec	6.283
" " "	revs/min/min	3,600.0
" " "	revs/min/sec	60.0
rods	feet	16.5

S

seconds (angle)	degrees	2.778×10^{-4}
" "	minutes	0.01667
" "	quadrants	3.087×10^{-6}
" "	radians	4.848×10^{-6}
square centimeters	circular mils	1.973×10^{5}
" "	sq feet	1.076×10^{-3}
" "	sq inches	0.1550
" "	sq meters	0.0001
" "	sq miles	3.861×10^{-11}
" "	sq millimeters	100.0
" "	sq yards	1.196×10^{-4}
square feet	acres	2.296×10^{-5}
" "	circular mils	1.833×10^{8}
" "	sq cms	929.0
" "	sq inches	144.0
" "	sq meters	0.09290
" "	sq miles	3.587×10^{-8}
" "	sq millimeters	9.290×10^{4}
" "	sq yards	0.1111
square inches	circular mils	1.273×10^{6}
" "	sq cms	6.452
" "	sq feet	6.944×10^{-3}
" "	sq millimeters	645.2
" "	sq mils	10^{6}
" "	sq yards	7.716×10^{-4}
square kilometers	acres	247.1
" "	sq cms	10^{10}
" "	sq ft	10.76×10^{6}
" "	sq inches	1.550×10^{9}
" "	sq meters	10^{6}
" "	sq miles	0.3861
" "	sq yards	1.196×10^{6}
square meters	acres	2.471×10^{-4}
" "	sq cms	10^{4}
" "	sq feet	10.76
" "	sq inches	1,550.
" "	sq miles	3.861×10^{-7}
" "	sq millimeters	10^{6}
" "	sq yards	1.106
square miles	acres	640.0
" "	sq feet	27.88×10^{6}
" "	sq kms	2.590
" "	sq meters	2.590×10^{6}
" "	sq yards	3.098×10^{6}
square millimeters	circular mils	1,973.
" "	sq cms	0.01
" "	sq feet	1.076×10^{-5}
" "	sq inches	1.550×10^{-3}
square mils	circular mils	1.273
" "	sq cms	6.452×10^{-6}
" "	sq inches	10^{-6}
square yards	acres	2.066×10^{-4}
" "	sq cms	8,361.
" "	sq feet	9.0

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Table A-6. Conversion Factors (Sheet 6 of 6)

TO CONVERT	INTO	MULTIPLY BY
square yards	sq inches	1,296.
" "	sq meters	0.8361
" "	sq miles	3.228×10^{-7}
" "	sq millimeters	8.361×10^{5}
	T	
temperature (°C) +273	absolute temperature (°C)	1.0
temperature (°C) +17.78	temperature (°F)	1.8
temperature (°F) +460	absolute temperature (°F)	1.0
temperature (°F) -32	temperature (°C)	5/9
tons (long)	kilograms	1,016.
" "	pounds	2,240.
" "	tons (short)	1.120
tons (metric)	kilograms	1,000.
" "	pounds	2,205.
tons (short)	kilograms	907.1848
" "	ounces	32,000.
" "	ounces (troy)	29,166.66
" "	pounds	2,000.
" "	pounds (troy)	2,430.56
" "	tons (long)	0.89287
" "	tons (metric)	0.9078
tons (short)/sq ft	kgs/sq meter	9,765.
" " " "	pounds/sq in.	2,000.
tons of water/24 hrs	pounds of water/hr	83.333
" " " " "	gallons/min	0.16643
" " " " "	cu ft/hr	1.3349
	W	
watts	Btu/hr	3.4192
"	Btu/min	0.05688
"	ergs/sec	107.
"	foot-lbs/min	44.27
"	foot-lbs/sec	0.7378
"	horsepower	1.341×10^{-3}
"	horsepower (metric)	1.360×10^{-3}
"	kg-calories/min	0.01433
"	kilowatts	0.001
watt-hours	Btu	3.413
" "	ergs	3.60×10^{10}
" "	foot-pounds	2,656.
" "	gram-calories	859.85
" "	horsepower-hrs	1.341×10^{-3}
" "	kilogram-calories	0.8605
" "	kilogram-meters	367.2
" "	kilowatt-hrs	0.001
webers	maxwells	10^{8}
"	kilolines	10^{5}
webers/sq in.	gausses	1.550×10^{7}
" " "	lines/sq in.	10^{8}
" " "	webers/sq cm	0.1550
" " "	webers/sq meter	1.550.
webers/sq meter	gausses	10^{4}
" " "	lines/sq in.	6.452×10^{4}
" " "	webers/sq cm	10^{-4}
" " "	webers/sq in.	6.452×10^{-4}
	Y	
yards	centimeters	91.44
"	feet	3.0
"	inches	36.0
"	kilometers	9.144×10^{-4}
"	meters	0.9144
"	miles (naut.)	4.934×10^{-4}
"	miles (stat.)	5.682×10^{-4}
"	millimeters	914.4

AIAG697B

Table A-7. Temperature Conversion Table

To use the tabl , look for the temperature reading you have in the middle column. If the r ading you have is in degrees Centigrade, read the Fahrenheit equivalent in the right-hand column. If the reading you have is in degrees Fahrenheit, read the Centigrade equivalent in the left-hand column.

-80 to 34			35 to 77			78 to 290		
C		F	C		F	C		F
-62	-80	-112	1.7	35	95.0	25.6	78	172.4
-57	-70	- 94	2.2	36	96.8	26.1	79	174.2
-51	-60	- 76	2.8	37	98.6	26.7	80	176.0
-46	-50	- 58	3.3	38	100.4	27.2	81	177.8
-40	-40	- 40	3.9	39	102.2	27.8	82	179.6
-34	-30	- 22	4.4	40	104.0	28.3	83	181.4
-29	-20	- 4	5.0	41	105.8	28.9	84	183.2
-23	-10	14	5.6	42	107.6	29.4	85	185.0
-17.8	0	32	6.1	43	109.4	30.0	86	186.8
-17.2	1	33.8	6.7	44	111.2	30.6	87	188.6
-16.7	2	35.6	7.2	45	113.0	31.1	88	190.4
-16.1	3	37.4	7.8	46	114.8	31.7	89	192.2
-15.6	4	39.2	8.3	47	116.6	32.2	90	194.0
-15.0	5	41.0	8.9	48	118.4	32.8	91	195.8
-14.4	6	42.8	9.4	49	120.2	33.3	92	197.6
-13.9	7	44.6	10.0	50	122.0	33.9	93	199.4
-13.3	8	46.4	10.6	51	123.8	34.4	94	201.2
-12.8	9	48.2	11.1	52	125.6	35.0	95	203.0
-12.2	10	50.0	11.7	53	127.4	35.6	96	204.8
-11.7	11	51.8	12.2	54	129.2	36.1	97	206.6
-11.1	12	53.6	12.8	55	131.0	36.7	98	208.4
-10.6	13	55.4	13.3	56	132.8	37.2	99	210.2
-10.0	14	57.2	13.9	57	134.6	37.8	100	212.0
- 9.4	15	59.0	14.4	58	136.4	43	110	230
- 8.9	16	60.8	15.0	59	138.2	49	120	248
- 8.3	17	62.6	15.6	60	140.0	54	130	266
- 7.8	18	64.4	16.1	61	141.8	60	140	284
- 7.2	19	66.2	16.7	62	143.6	66	150	302
- 6.7	20	68.0	17.2	63	145.4	71	160	320
- 6.1	21	69.8	17.8	64	147.2	77	170	338
- 5.6	22	71.6	18.3	65	149.0	82	180	356
- 5.0	23	73.4	18.9	66	150.8	88	190	374
- 4.4	24	75.2	19.4	67	152.6	93	200	392
- 3.9	25	77.0	20.0	68	154.4	99	210	410
- 3.3	26	78.8	20.6	69	156.2	100	212	414
- 2.8	27	80.6	21.1	70	158.0	104	220	428
- 2.2	28	82.4	21.7	71	159.8	110	230	446
- 1.7	29	84.2	22.2	72	161.6	116	240	464
- 1.1	30	86.0	22.8	73	163.4	121	250	482
- 0.6	31	87.8	23.3	74	165.2	127	260	500
0.0	32	89.6	23.9	75	167.0	132	270	518
0.6	33	91.4	24.4	76	168.8	138	280	536
1.1	34	93.2	25.0	77	170.6	143	290	554

Formulas - C = 5/9 (F-32) or F = 9/5 C +32

AIAG698

Table A-8. Binary Numbers

	16	8	4	2	1		16	8	4	2	1		16	8	4	2	1
0					0	11		1	0	1	1	22	1	0	1	1	0
1					1	12		1	1	0	0	23	1	0	1	1	1
2				1	0	13		1	1	0	1	24	1	1	0	0	0
3				1	1	14		1	1	1	0	25	1	1	0	0	1
4			1	0	0	15		1	1	1	1	26	1	1	0	1	0
5			1	0	1	16	1	0	0	0	0	27	1	1	0	1	1
6			1	1	0	17	1	0	0	0	1	28	1	1	1	0	0
7			1	1	1	18	1	0	0	1	0	29	1	1	1	0	1
8		1	0	0	0	19	1	0	0	1	1	30	1	1	1	1	0
9		1	0	0	1	20	1	0	1	0	0	31	1	1	1	1	1
10		1	0	1	0	21	1	0	1	0	1						

DECIMAL-TO-BINARY CONVERSION RULES

(a) Write number n + 0 if even or (n-1) + 1 if odd.
(b) Divide even number obtained in (a) by 2.
Write answer (m) below in same form:
m + 0 if even, (m-1) + 1 if odd.
(c) Continue until m or (m-1) becomes zero.
(d) Column of ones and zeros so obtained is binary equivalent of n with least significant digit at the top.

EXAMPLE: n = 327

326 + 1
162 + 1
80 + 1
40 + 0
20 + 0
10 + 0
4 + 1
2 + 0
0 + 1

Therefore the binary equivalent of 327 is 101000111

BINARY-TO-DECIMAL CONVERSION RULES

(a) Start at left with first significant digit - double it if the next digit is a zero or "dibble" it (double and add one) if the next digit is a one.
(b) If the 3rd digit is a zero, double value obtained in (a), if it is a one dibble value obtained in (a).
(c) Continue until operation indicated by least significant digit has been performed.
(d) Result is the decimal equivalent of the binary number.

EXAMPLE: 101101

The sequence of numbers obtained in following the above procedure is:

1	5	22
2	11	45

So 45 is the decimal equivalent of 101101

AIAG699

Table A-9. Mathematical Constants

$\pi = 3.14$	$\frac{1}{\pi} = 0.318$	$\sqrt{\pi} = 1.77$	$\frac{1}{\sqrt{3}} = 0.577$
$2\pi = 6.28$	$\frac{1}{2\pi} = 0.159$	$\sqrt{\frac{\pi}{2}} = 1.25$	$\log \pi = 0.497$
$(2\pi)^2 = 39.5$			$\log \frac{\pi}{2} = 0.196$
$4\pi = 12.6$	$\frac{1}{\pi^2} = 0.101$	$\sqrt{2} = 1.41$	
$\pi^2 = 9.87$		$\sqrt{3} = 1.73$	$\log \pi^2 = 0.994$
$\frac{\pi}{2} = 1.57$	$\frac{1}{\sqrt{\pi}} = 0.564$	$\frac{1}{\sqrt{2}} = 0.707$	$\log \sqrt{\pi} = 0.248$

AIAG701

Table A-10. Mathematical Symbols

X or ·	Multiplied by	$\approx$	Is approximately equal to	$\leq$	Less than or equal to
÷ or :	Divided by	$\neq$	Does not equal	$\therefore$	Therefore
+	Positive, Plus, Add	$>$	Greater than	$\angle$	Angle
-	Negative, Minus, Subtract	$\gg$	Is much greater than	Δ	Increment or Decrement
±	Positive or negative, Plus or minus	$<$	Less than	$\perp$	Perpendicular to
∓	Negative or positive, Minus or plus	$\ll$	Is much less than	$\parallel$	Parallel to
= or ::	Equals	$\geq$	Greater than or equal to	$\lvert n \rvert$	Absolute value of n
≡	Identity				

a, b, c used for known quantities
x, y, z used for unknown quantities

AIAG704

Table A-11. Shop Arithmetic Reference Rules

TO FIND CIRCUMFERENCE-
Multiply diameter by 3.1416

TO FIND DIAMETER-
Multiply circumference by 0.3183

TO FIND RADIUS-
Multiply circumference by 0.15915

TO FIND SIDE OF AN INSCRIBED SQUARE-
Multiply diameter by 0.7071
Or multiply circumference by 0.2251

TO FIND SIDE OF AN EQUAL SQUARE-
Multiply diameter by 0.8862
Or circumference by 0.2821

SQUARE-
A side multiplied by 1.4142 equals diameter of its circumscribing circle.
A side multiplied by 4.443 equals circumference of its circumscribing circle.
A side multiplied by 1.128 equals diameter of an equal circle.
A side multiplied by 3.547 equals circumference of an equal circle.

TO FIND THE AREA OF A CIRCLE-
Multiply circumference by one quarter of the diameter.
Or multiply the diameter by the diameter by 0.7854.
Or multiply the circumference by the circumference by 0.7958.
Or multiply the radius by the radius by 3.1416.

TO FIND THE SURFACE OF A SPHERE OR GLOBE-
Multiply the diameter by the circumference.
Or multiply the square of diameter by 3.1416.
Or multiply four times the square of radius by 3.1416.

TO FIND THE VOLUME OF A SPHERE-
Multiply the cube of diameter by 0.5236.

TO FIND THE CUBIC CONTENT OF A CONE-
Multiply the area of the base by 1/3 the altitude.

TO FIND THE AREA OF A TRIANGLE-
Multiply the base by 1/2 the perpendicular height.

TO FIND THE AREA OF A RECTANGLE-
Multiply the length by the width.

REFERENCE EQUIVALENTS-
Doubling the diameter of a circle increases its area four times.
Doubling the diameter of a pipe increases its capacity four times.
Tripling the diameter of a circle increases its area nine times.
A gallon of water (U.S. Standard) weighs 8-1/3 lbs and contains 231 cubic inches.
A cubic foot of water contains 7-1/2 gallons, 1728 cubic inches, and weighs 62-1/2 lbs

To find the pressure in pounds per square inch of a column of water multiply the height of the column in feet by 0.434.
The drag on a flat plate normal to the wind is equal to 32 lbs per square foot at 100 mph.
The drag and the lift due to the air forces on a body increase as the square of the speed.
The measurements made in a machine shop are usually taken in inches or fractional parts of an inch. Most of the precision tools in the shop read in thousandths of an inch. The usual graduations on a scale are in 64ths, 32nds, 16ths, and 8ths of an inch.

To change a fraction to a decimal, divide the numerator by the denominator. For example, in changing 3/16 to a decimal, 3.0000 ÷ 16 = .1875.

AIAG702

Table A-12. Conversion of Fractional Inches to Decimals and Millimeters

INCH	DECIMAL INCH	MILLIMETER	INCH	DECIMAL INCH	MILLIMETER
1/64	0.015625	0.396785	33/64	0.515625	13.096875
1/32	0.03125	0.79375	17/32	0.53125	13.49375
3/64	0.046875	1.190625	35/64	0.546875	13.890625
1/16	0.0625	1.5875	9/16	0.5625	14.2875
5/64	0.078125	1.984375	37/64	0.578125	14.684375
3/32	0.09375	2.38125	19/32	0.59375	15.08125
7/64	0.109375	2.778125	39/64	0.609375	15.478125
1/8	0.125	3.175	5/8	0.625	15.875
9/64	0.140625	3.571875	41/64	0.640625	16.271875
5/32	0.15625	3.96875	21/32	0.65625	16.66875
11/64	0.171875	4.365625	43/64	0.671875	17.065625
3/16	0.1875	4.7625	11/16	0.6875	17.4625
13/64	0.203125	5.159375	45/64	0.703125	17.859375
7/32	0.21875	5.55625	23/32	0.71875	18.25625
15/64	0.234375	5.953125	47/64	0.734375	18.653125
1/4	0.25	6.35001	3/4	0.75	19.05
17/64	0.265625	6.746875	49/64	0.765625	19.446875
9/32	0.28125	7.14375	25/32	0.78125	19.84375
19/64	0.296875	7.540625	51/64	0.796875	20.240625
5/16	0.3125	7.9375	13/16	0.8125	20.6375
21/64	0.328125	8.334375	53/64	0.828125	21.034375
11/32	0.34375	8.73125	27/32	0.84375	21.43125
23/64	0.359375	9.128125	55/64	0.859375	21.828125
3/8	0.375	9.525	7/8	0.875	22.225
25/64	0.390625	9.921875	57/64	0.890625	22.621875
13/32	0.40625	10.31875	29/32	0.90625	23.01875
27/64	0.421875	10.715625	59/64	0.921875	23.415625
7/16	0.4375	11.1125	15/16	0.9375	23.8125
29/64	0.453125	11.509375	61/64	0.953125	24.209375
15/32	0.46875	11.90625	31/32	0.96875	24.60625
31/64	0.484375	12.303125	63/64	0.984375	25.003125
1/2	0.50	12.7	1	1.00000	25.4

AIAG703

Table A-13. Conversion of Inches to Millimeters

INCHES	MILLI-METERS	INCHES	MILLI-METERS	INCHES	MILLI-METERS
0.001	0.025	0.290	7.37	0.660	16.76
0.002	0.051	0.300	7.62	0.670	17.02
0.003	0.076	0.310	7.87	0.680	17.27
0.004	0.102	0.320	8.13	0.690	17.53
0.005	0.127	0.330	8.38	0.700	17.78
0.006	0.152	0.340	8.64	0.710	18.03
0.007	0.178	0.350	8.89	0.720	18.29
0.008	0.203	0.360	9.14	0.730	18.54
0.009	0.229	0.370	9.40	0.740	18.80
0.010	0.254	0.380	9.65	0.750	19.05
0.020	0.508	0.390	9.91	0.760	19.30
0.030	0.762	0.400	10.16	0.770	19.56
0.040	1.016	0.410	10.41	0.780	19.81
0.050	1.270	0.420	10.67	0.790	20.07
0.060	1.524	0.430	10.92	0.800	20.32
0.070	1.778	0.440	11.18	0.810	20.57
0.080	2.032	0.450	11.43	0.820	20.83
0.090	2.286	0.460	11.68	0.830	21.08
0.100	2.540	0.470	11.94	0.840	21.34
0.110	2.794	0.480	12.19	0.850	21.59
0.120	3.048	0.490	12.45	0.860	21.84
0.130	3.302	0.500	12.70	0.870	22.10
0.140	3.56	0.510	12.95	0.880	22.35
0.150	3.81	0.520	13.21	0.890	22.61
0.160	4.06	0.530	13.46	0.900	22.86
0.170	4.32	0.540	13.72	0.910	23.11
0.180	4.57	0.550	13.97	0.920	23.37
0.190	4.83	0.560	14.22	0.930	23.62
0.200	5.08	0.570	14.48	0.940	23.88
0.210	5.33	0.580	14.73	0.950	24.13
0.220	5.59	0.590	14.99	0.960	24.38
0.230	5.84	0.600	15.24	0.970	24.64
0.240	6.10	0.610	15.49	0.980	24.89
0.250	6.35	0.620	15.75	0.990	25.15
0.260	6.60	0.630	16.00	1.000	25.40
0.270	6.86	0.640	16.26	.....	.....
0.280	7.11	0.650	16.51	.....	.....

MILLI-METERS	INCHES	MILLI-METERS	INCHES	MILLI-METERS	INCHES
0.01	0.0004	0.35	0.0138	0.68	0.0268
0.02	0.0008	0.36	0.0142	0.69	0.0272
0.03	0.0012	0.37	0.0146	0.70	0.0276
0.04	0.0016	0.38	0.0150	0.71	0.0280
0.05	0.0020	0.39	0.0154	0.72	0.0283
0.06	0.0024	0.40	0.0157	0.73	0.0287
0.07	0.0028	0.41	0.0161	0.74	0.0291
0.08	0.0031	0.42	0.0165	0.75	0.0295
0.09	0.0035	0.43	0.0169	0.76	0.0299
0.10	0.0039	0.44	0.0173	0.77	0.0303
0.11	0.0043	0.45	0.0177	0.78	0.0307
0.12	0.0047	0.46	0.0181	0.79	0.0311
0.13	0.0051	0.47	0.0185	0.80	0.0315
0.14	0.0055	0.48	0.0189	0.81	0.0319
0.15	0.0059	0.49	0.0193	0.82	0.0323
0.16	0.0063	0.50	0.0197	0.83	0.0327
0.17	0.0067	0.51	0.0201	0.84	0.0331
0.18	0.0071	0.52	0.0205	0.85	0.0335
0.19	0.0075	0.53	0.0209	0.86	0.0339
0.20	0.0079	0.54	0.0213	0.87	0.0343
0.21	0.0083	0.55	0.0217	0.88	0.0346
0.22	0.0087	0.56	0.0220	0.89	0.0350
0.23	0.0091	0.57	0.0224	0.90	0.0354
0.24	0.0094	0.58	0.0228	0.91	0.0358
0.25	0.0098	0.59	0.0232	0.92	0.0362
0.26	0.0102	0.60	0.0236	0.93	0.0366
0.27	0.0106	0.61	0.0240	0.94	0.0370
0.28	0.0110	0.62	0.0244	0.95	0.0374
0.29	0.0114	0.63	0.0248	0.96	0.0378
0.30	0.0118	0.64	0.0252	0.97	0.0382
0.31	0.0122	0.65	0.0256	0.98	0.0386
0.32	0.0126	0.66	0.0260	0.99	0.0390
0.33	0.0130	0.67	0.0264	1.00	0.0394
0.34	0.0134	....	.....	....	.....

AIAG705

Table A-14. Pilot and Indicator Lamp Data (Sheet 1 of 2)

FILAMENT-TYPE LAMPS

NO.	BEAD	VOLTS	AMP	BASE	BULB	FIG
12		6.3	0.15	Min 2-Pin	G-3 1/2	P
13	Clear	3.70	0.3	Min Screw	G-3 1/2	L
14	Clear	2.50	0.3	Min Screw	G-3 1/2	L
40	Brown	6-8	0.15	Min Screw	T-3 1/4	B
41	White	2.50	0.5	Min Screw	T-3 1/4	B
42	Green	3.20	0.35	Min Screw	T-3 1/4	B
43	White	2.50	0.5	Min Bayonet	T-3 1/4	F
44	Blue	6-8	0.25	Min Bayonet	T-3 1/4	F
45	White	3.20	0.35	Min Bayonet	T-3 1/4	F
46	Blue	6-8	0.25	Min Screw	T-3 1/4	B
47	Brown	6-8	0.15	Min Bayonet	T-3 1/4	F
48	Pink	2.0	0.06	Min Screw	T-3 1/4	B
49	Pink	2.0	0.06	Min Bayonet	T-3 1/2	F
50	White	6-8	0.2	Min Screw	G-3 1/2	L
51	White	6-8	0.2	Min Bayonet	G-3 1/2	K
55	White	6-8	0.4	Min Bayonet	G-4 1/2	H
112	Clear	1.20	0.22	Min Screw	TL-3	M
123	Pink	1.25	0.3	Min Bayonet	G-3 1/2	K
222	Clear	2.20	0.25	Min Screw	TL-3	M
313	"	28.0	0.17	Min Bayonet	T-3 1/4	E
327	"	28.0	0.04	SM Flanged	T-1 3/4	O
328	"	6.0	0.20	SM Flanged	T-1 3/4	O
330	"	14.0	0.08	SM Flanged	T-1 3/4	O
331 *	"	1.3	0.06	SM Flanged	T-1 3/4	O
338 *	"	2.7	0.06	SM Flanged	T-1 3/4	O
344 *	"	10.0	0.015	SM Flanged	T-1 3/4	O
345	"	6.0	0.04	SM Flanged	T-1 3/4	O
1488	"	14.0	0.15	Min Bayonet	T-3 1/4	F
1490	"	3.20	0.16	Min Bayonet	T-3 1/4	F
PR-2	"	2.40	0.5	Min Flanged	B-3 1/2	J
PR-3	"	3.60	0.5	Min Flanged	B-3 1/2	J
PR-4	"	2.30	0.27	Min Flanged	B-3 1/2	J
PR-6	"	2.50	0.3	Min Flanged	B-3 1/2	J
PR-8	"	1.90	0.6	Min Flanged	B-3 1/2	J
PR-9	"	1.70	0.15	Min Flanged	B-3 1/2	J

*For Use With Transparent Lens Only.

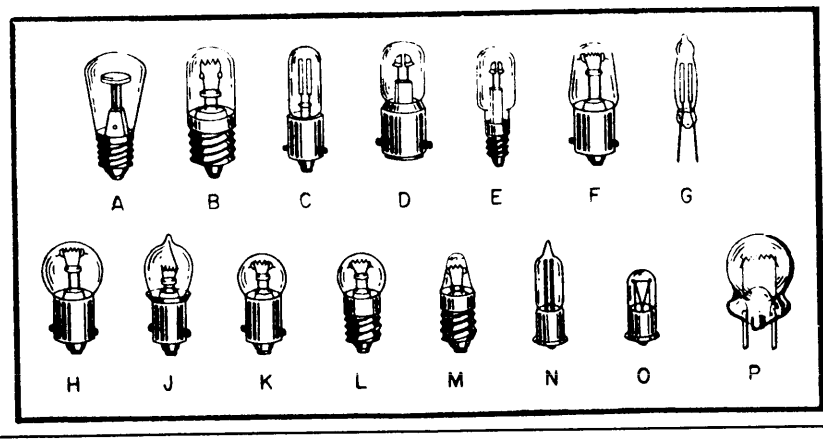

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Table A-14. Pilot and Indicator Lamp Data (Sheet 2 of 2)

NEON LAMPS

NO.	AC STARTING VOLTS	WATTS	BASE	BULB	FIG
NE-2	65.0	1/25	Wire Term	T-2	G
NE-2D	65.0	1/25	SM Flanged	T-1 3/4	N
NE-2J*	75.0	1/25	SM Flanged	T-1 3/4	N
NE-14	75.0	1/4	Cand Screw	T-4 1/2	E
NE-16	67.0	1/4	Cand Bayonet	T-4 1/2	D
NE-17	55.0	1/4	Cand Bayonet	T-4 1/2	D
NE-34	60.0	2	Edison	S-14	A
NE-40	60.0	3	Edison	S-14	A
NE-45	65.0	1/4	Cand Screw	T-4 1/2	E
NE-48	65.0	1/4	Cand Bayonet	T-4 1/2	D
NE-51	65.0	1/3	Min Bayonet	T-3 1/4	C
NE-51H*	65.0	1/3	Min. Bayonet	T-3 1/4	C
NE-57	55.0	1/4	Cand Screw	T-4 1/2	E
NE-58	65.0	1/2	Cand Screw	T-4 1/2	E

*High-Light Output Types

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Table A-15. Common Fuses Used in Electronics Equipment (Sheet 1 of 3)

FUSE SIZE AND DATA	RATING IN AMPERES	MAXIMUM VOLTAGE
Type AGU (Formerly 5AG) 1-1/2" x 13/32" glass body Percent of Rating — Blow Time 110 — Life 135 — 0-1 hr 200 — 0-2 min	1	250
	2	250
	3	250
	4	32
	5	32
	10	32
	15	32
	20	32
	25	32
	30	32
	35	32
	40	32
	50	32
	60	32
Type AGU (Formerly 5AG) 1-1/2" x 13/32" glass body Long Time Delay Percent of Rating — Blow Time 110 — Life 135 — 0-1 hr 200 — 60 sec max, 5 sec min	1	250
	2	250
	3	250
	5	32
	10	32
	15	32
	20	32
	25	32
	30	32
	40	32
	50	32
	60	32

FUSE SIZE AND DATA	RATING IN AMPERES	MAXIMUM VOLTAGE
Type 5AB 1-1/2" x 13/32" Bakelite body Arc-quenching type Percent of Rating — Blow Time 110 — Life 135 — 0-1 hr 200 — 0-2 min	1	250
	2	250
	3	250
	5	32
	10	32
	15	32
	20	32
	25	32
	30	32
	40	32
	50	32
	60	32
Type FNM or FNA (Indicating) 1-1/2" x 13/32" fibre body With or without indicating Percent of Rating — Blow Time 110 — Life 135 — 0-1 hr 200 — 0-25 sec 300 — 0-8 sec 500 — 0-5 sec	0.10	250
	0.15	250
	0.20	250
	0.30	250
	0.40	250
	0.50	250
	0.60	250
	0.80	250
	1.0	250
	1.125	250
	1.250	250
	1.40	250
	1.60	250
	1.80	250

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Table A-15. Common Fuses Used in Electronics Equipment (Sheet 2 of 3)

FUSE SIZE AND DATA	RATING IN AMPERES	MAXIMUM VOLTAGE
1-1/2" x 13/32" fibre body (cont)	2.00	250
	2.25	250
	2.50	250
	2.80	250
	3.2	250
	3.5	250
	4.0	250
	4.5	250
	5.0	250
	5.6	250
	6.25	250
	7	250
	8	250
	9	250
	10	250
	12	125
	15	125
	20	32
	25	32
	30	32
Type AGS (Formerly 4AG)	0.0625	250
	0.125	250
	0.25	250
1-1/4" x 9/32" glass body	0.50	250
	1	250
Percent of Rating / Blow Time	2	250
	2.5	250
	3	250
110 Life	5	32
135 0-1 hr	10	32
200 0-2 min	15	32
	20	32
	25	32
	30	32
	35	32
	40	32
	45	32
	50	32
Type 4AB	1	250
1-1/4" x 9/32" Steatite body	2	250
Arc-quenching type	3	250
	5	125
Percent of Rating / Blow Time	8	125
	10	125
110 Life	15	125
135 0-1 hr	20	125
200 0-2 min	25	32
	30	32
	35	32
	40	32
Type AGS (Formerly 4AG)	0.10	250
	0.125	250
	0.150	250
1-1/4" x 9/32" glass body	0.20	250
Long time delay	0.25	250
	0.30	250
	0.40	250
	0.50	250

FUSE SIZE AND DATA	RATING IN AMPERES	MAXIMUM VOLTAGE
1-1/4" x 9/32" glass body Long time delay (cont)	0.60	250
	0.79	250
	0.80	250
	1.0	250
	1.25	250
	1.60	250
	2.0	250
Percent of Rating / Blow Time	2.5	250
	3.0	250
	3.2	250
110 Life	4.0	32
135 0-1 hr	5.0	32
200 60 sec max 5 sec min	6.25	32
	8	32
	10	32
	15	32
	20	32
	25	32
	30	32
	35	32
	40	32
Type AGC (Formerly 3AG)	0.002	250
	0.005	250
	0.010	250
	0.312	250
1-1/4" x 1/4" glass body	0.0625	250
	0.125	250
Percent of Rating / Blow Time	0.150	250
	0.175	250
	0.188	250
110 Life	0.200	250
135 0-1 hr	0.250	250
200 0-2 min	0.300	250
	0.375	250
Available in pigtail type from 0.0625 to 6.0 amperes	0.45	250
	0.50	250
	0.75	250
	1.0	250
	1.5	250
	2.0	250
	3.0	250
	4.0	250/32
	5.0	250/32
	6.0	250/32
	7.5	32
	8	125/32
	10	125/32
	15	32
	25	32
	30	32
Type AGC (Formerly 3AG)	0.01	250/125
	0.031	250/125
	0.062	250/125
	0.10	250/125
1-1/4" x 1/4" glass body	0.125	250/125
long time delay	0.150	250/125
	0.175	250/125
	0.188	250/125
	0.20	250/125

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Table A-15. Common Fuses Used in Electronics Equipment (Sheet 3 of 3)

FUSE SIZE AND DATA	RATING IN AMPERES	MAXIMUM VOLTAGE
1-1/4" x 1/4" glass body long time delay (cont)	0.25	250/125
	0.30	250/125
	0.38	250/125
	0.40	250/125
	0.50	250/125
	0.60	250/125
	0.70	250
Percent of Rating / Blow Time	0.75	250/125
	0.80	250/125
	1.00	250/125
110 Life	1.20	125
135 0-1 hr	1.25	250/125
200 60 sec max, 5 sec min	1.50	250/125
	1.60	250/125
	2.0	250/125
Available in pigtail types up to 1 amp in 250 volt rating up to 7 amp in 125 volt rating	2.5	125
	2.8	125
	3.0	125/32
	3.2	125/32
	4.0	125/32
	5.0	125/32
	6.25	125/32
	7	125
	8	125/32
	10	125/32
	15	125/32
	20	125/32
	25	32
	30	32
Type 3AB 1-1/4" x 1/4" Steatite body arc-quenching type	1.0	250
	2.0	250
	3.0	250
	4.0	250
Percent of Rating / Blow Time	5.0	250
	6.0	250
	8.0	250
110 Life	10.0	250
135 0-1 hr	12.0	250
200 0-2 min	15.0	250
	20.0	250
	30.0	250
Type GLD 1-1/4" x 1/4" fibre body indicating type	0.75	125
	1.0	125

FUSE SIZE AND DATA	RATING IN AMPERES	MAXIMUM VOLTAGE
1-1/4" x 1/4" fibre body indicating type (cont)	2	125
	3	125
	5	125
	8	32
Percent of Rating / Blow Time	10	32
	12	32
	15	32
110 Life		
135 0-1 hr		
Type AGX (Formerly 8AG)	0.002	250
	0.005	250
	0.010	250
	0.312	250
	0.062	250
	0.100	250
1" x 1/4" glass body High Speed Instrument	0.125	250
	0.188	250
	0.200	250
Percent of Rating / Blow Time	0.250	250
	0.375	250
	0.40	250
100 Life	0.50	250
150 0-10 sec	0.75	250
	1.00	250
	1.50	250/125
	2.00	250/125
	3.00	250/125
	4.00	250/125
	5.00	125/32
	8	32
	10	32
	15	32
	20	32
	25	32
	30	32
Type AGX (Formerly 8AG) 1" x 1/4" glass body	0.125	250
	0.250	250
	0.375	250
Percent of Rating / Blow Time	0.500	250
	0.75	250
	1.00	250
110 Life	1.50	125
135 0-1 hr	2.0	125
200 0-2 min	3.0	125
	5.0	125

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Table A-16. JAN Nomenclature Component Designations (Sheet 1 of 3)

COMPONENT DESIGNATION	TYPE	DESCRIPTION
AB	Supports, Antenna	Antenna mounts, mast bases, mast sections, towers, etc.
AM	Amplifiers	Power, audio, interphone, radio frequency, video, servo (nonrotating), etc.
AS	Antenna Assemblies	Complex: Arrays, parabolic type, masthead, etc.
AT	Antennas	Simple: Whip or telescopic, loop, dipole, reflector, also transducer, etc. (see H).
BA	Battery, primary type	B-batteries, battery packs, etc.
BB	Battery, secondary type	Storage batteries, battery packs, etc.
BZ	Signal Devices, Audible	Buzzers, gongs, horns, etc.
C	Control Articles	Control box, remote tuning control, etc.
CA	Commutator Assemblies, Sonar	Peculiar to Sonar equipment.
CB	Capacitor Bank	Used as a power supply.
CG	Cables and Transmission Line, RF	RF cables, wave guides, etc., with terminals.
CK	Crystal Kits	A kit of crystals with holders.
CM	Comparators	Analyzes or compares two or more input signals
CN	Compensators	Electrical and/or mechanical compensating, regulating, or attentuating apparatus.
CP	Computers	A mechanical and/or electronic mathematical calculating device.
CR	Crystals	Crystal in crystal holder.
CU	Coupling Devices	Impedance-coupling devices, directional couplers, etc.
CV	Converters (electronic)	Electronic apparatus for changing the phase, frequency, or from one medium to another.
CW	Covers	Cover, bag, roll, cap, radome, nacelle, etc.
CX	Cords	Cord with terminals, also composite cables of RF and non-rf conductors.
CY	Cases	Rigid and semirigid structure for housing or carrying equipment.
DA	Antenna, Dummy	RF test loads.
DT	Detecting Heads	Magnetic pick-up device, search coil, hydrophone, etc.
DY	Dynamotors	Dynamotor power supply.
E	Hoist Assembly	Sonar hoist assembly, etc.
F	Filters	Band-pass, noise, telephone, wave traps, etc.
FN	Furniture	Chairs, desks, tables, etc.
FR	Frequency Measuring Devices	Frequency meters, echo boxes, etc.
G	Generators	Electrical power generators without prime movers. (See PU & PD).
GO	Goniometers	Goniometers of all types.
GP	Ground Rods	Ground Rods, stakes, etc.
H	Head, Hand, and Chest Sets	Includes earphone.
HC	Crystal Holder	Crystal holder less crystal.
HD	Air Conditioning Apparatus	Heating, cooling, dehumidifying, pressure, vacuum devices, etc.
ID	Indicating Devices	Calibrated dials and meters, indicating lights, etc. (See IP).
IL	Insulators	Strain, stand-off, feedthrough, etc.
IM	Intensity Measuring Devices	Includes SWR gear, field intensity and noise meters, etc.
IP	Indicator, Cathode Ray Tube	Azimuth, Elevation, PPI, panoramic, etc.
J	Junction Devices	Junction, jack, and terminal boxes; connector panels. etc.
KY	Keying Devices	Mechanical, electrical, and electronic keyers, coders, interrupters.
LC	Tools, Line Construction	Includes special apparatus such as cable plows, etc.
LS	Loudspeakers	Separately housed loudspeakers.
M	Microphones	Radio, telephone, throat, hand, etc.
MD	Modulators	Device for varying amplitude, frequency, or phase.

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Table A-16. JAN Nomenclature Component Designations (Sheet 2 of 3)

COMPONENT DESIGNATION	TYPE	DESCRIPTION
ME	Meters, Portable	Multimeters, volt-ohm-milliammeters, vacuum tube voltmeters, power meters, etc.
MK	Maintenance Kits or Equipments	Radio, telephone, general utility, etc.
ML	Meterological Devices	Barometer, hygrometer, thermometer, scales, etc.
MT	Mountings	Mountings, racks, frames, stands, etc.
MX	Miscellaneous	Equipment not otherwise classified. Do not use if better indicator is available.
O	Oscillators	Master frequency, blocking, multivibrators, etc. For test oscillators, see SG.
OA	Operating Assemblies	Assembly of operating units not otherwise covered.
OC	Oceanographic Devices	Bathythermographs, etc.
OS	Oscilloscope, Test	Test Oscilloscope for general test purposes.
PD	Prime Drivers	Gasoline engines, electric motors, diesel motors, etc.
PF	Fittings, Pole	Cable hangar, clamp, protectors, etc.
PG	Pigeon Articles	Container, loft, vest, etc.
PH	Photographic Articles	Camera, projector, sensitometer, etc.
PP	Power Supplies	Nonrotating machine type such as vibrator pack, rectifier, thermoelectric, etc.
PT	Plotting Equipments	Except meteorlogical. Boards, maps, plotting table, etc.
PU	Power Equipments	Rotating power equipment except dynamotors. Motor-generator, etc.
R	Receivers	Receivers; all types except telephone.
RD	Recorders and Reproducers	Tape, facsimile, disc, magnetic, etc.
RE	Relay Assemblies	Electrical, electronic, etc.
RF	Radio Frequency Component	Composite component of RF circuits. Do not use if better indicator is available.
RG	Cables and Transmission Line, Bulk RF	RF cable, wave guides, etc, without terminals.
RL	Reel Assemblies	Antenna, field wire, etc.
RP	Rope and Twine	Nonelectrical cord, etc.
RR	Reflectors	Target, confusion, etc. Except antenna reflectors. (See AT.)
RT	Receiver and Transmitter	Radio and radar transceivers, composite transmitter and receiver, etc.
S	Shelters	House, tent, protective, shelter, etc.
SA	Switching Devices	Manual, impact, motor driven, pressure operated, etc.
SB	Switchboards	Telephone, fire control, power, panel, etc.
SG	Generators, Signal	Includes test oscillators and noise generators. (See O.)
SM	Simulators	Flight, aircraft, target, signal, etc.
SN	Synchronizers	Equipment to coordinate two or more functions.
ST	Straps	Harness, straps, etc.
T	Transmitters	Transmitters, all types except telephone.
TA	Telephone Apparatus	Miscellaneous telephone equipment.
TD	Timing Devices	Mechanical and electronic timing devices, range device, multiplexers, electronic gates, etc.
TF	Transformers	Transformers when used as separate items.
TG	Positioning Devices	Tilt and/or Train Assemblies.
TH	Telegraph Apparatus	Miscellaneous telegraph apparatus.
TK	Tool Kits or Equipments	Miscellaneous tool assemblies.
TL	Tools	All types except line construction. (See LC.)
TN	Tuning Units	Receiver, transmitter, antenna, etc.
TS	Test Equipment	Test and measuring equipment not otherwise included.
TT	Teletypewriter and Facsimile Apparatus	Miscellaneous tape, teletype, facsimile equipment, etc.
TV	Tester, Tube	Vacuum tube tester.
U	Connectors, Audio and Power	Unions, plugs, sockets, adapters, etc.
UG	Connectors, RF	Unions, plugs, sockets, choke couplings, adapters, elbows, flanges, etc.

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Table A-16. JAN Nomenclature Component Designations (Sheet 3 of 3)

COMPONENT DESIGNATION	TYPE	DESCRIPTION
V	Vehicles	Carts, dollies, trucks, trailers, etc.
VS	Signaling Equipment, Visual	Flag sets, aerial panels, signal lamp equipment, etc.
WD	Cables, Two Conductor	Includes non-rf wire, cable and cordage in bulk.
WF	Cables, Four Conductor	Includes non-rf wire, cable and cordage in bulk.
WM	Cables, Multiple Conductor	Includes non-rf wire, cable and cordage in bulk.
WS	Cables, Single Conductor	Includes non-rf wire, cable and cordage in bulk.
WT	Cables, Three Conductor	Includes non-rf wire, cable and cordage in bulk.
ZM	Impedance Measuring Devices	Used for measuring Q, C, L, R or PF, etc.

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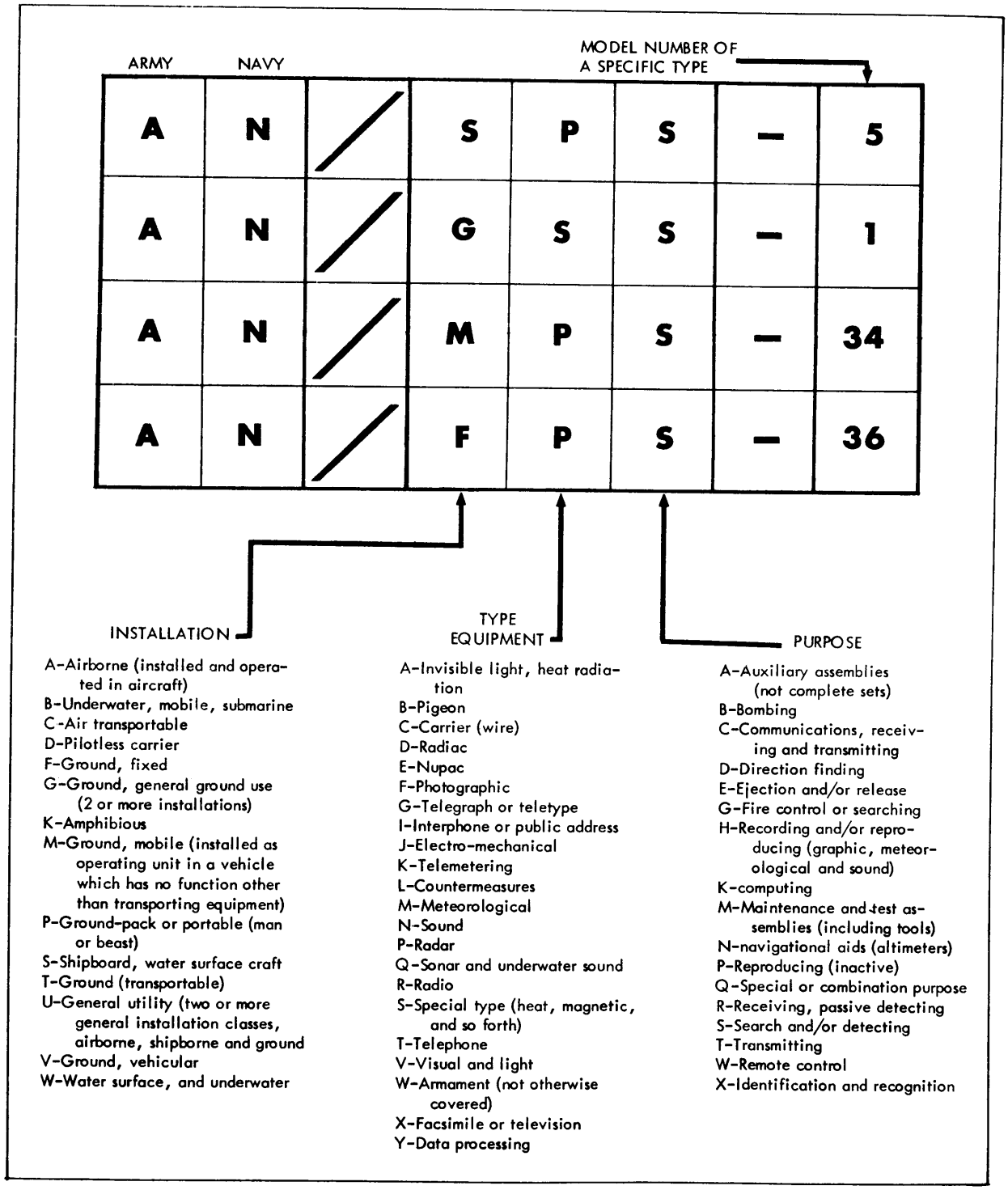
Table A-17. Military Electronics Equipment Nomenclature



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APPENDIX B

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GLOSSARY

The following are some of the more commonly used Industrial Cable Wire Connector Terms.

A. Denotes general family of asbestos-insulated wire.

AA. Felted asbestos, asbestos-braid, 300-volt motion picture cable. Extra-flexible stranding.

ABC. BX armored bushing 600-volt building wire; PVC insulation.

ACA. Asbestos avionics wire per MIL SPEC ANJC-48A. 1000-volt; rated with cotton braid at 90° C (194°F), with glass braid at 125°C (280°F).

ACR. Cable with corona-resisting insulation.

ACSR. Aluminum Conductor, Steel Reinforced aluminum wires stranded around steel core; for high-voltage cross-country transmission lines. (See also ALUMOWELD.)

Aircraft Wire. Avionics wire for extreme conditions (temperature, altitude, solvents, fuels, etc.)

AL. Aluminum.

Alumel. Hoskins Mfg. Co. trademark for a highly magnetic alloy of nickel manganese, aluminum, silicon, and nine other elements. Used as the negative lead for thermocouple extension wire. (See also CHROMEL.)

Alumoweld. Copperweld Steel Co. trademark for wire composed of a thick aluminum covering welded to a steel core. (See also ACSR).

Ambient. Encompassing on all sides; used most frequently with reference to temperature. Ambient temperature in a compartment is the temperature in the compartment, not the temperature of the piece of equipment itself.

Ampacity. Current-carrying capacity in amperes.

Armor. A metallic sheath enclosing an electrical cable (used primarily for mechanical protection).

ASESA. Armed Services Electro Standards Agency.

Askarel. Synthetic nonflammable insulating liquid which, when decomposed by an electric arc emits only nonflammable gases.

ASTM. American Society for Testing Materials (tests materials and attempts to set standards on various materials for industry).

AVA. Asbestos, Varnished cambric, Asbestos-braided.

AVB. Asbestos, Varnished cambric, cotton-braided.

AVL. Asbestos, Varnished, cambric, and Lead.

AWAC. Copperweld Steel Co. trademark for cable composed of strands of EC-grade aluminum wire. Used primarily for power transmission lines.

AWG. American Wire Gauge (formerly B&S Gauge). The system most commonly used in the U.S. to describe copper wire sizes, based on the circular mil (one mil equals 0.001-inch). Gauge sizes are each 20.6% apart based on cross-sectional area.

AWM. Appliance Wiring Material (various types).

Balco. Wilbur Driver Co. trademark for resistance-wire nickel-iron alloy used in devices where temperature self-regulation is required.

Banded Cable. Two or more cables banded together by stainless steel strapping.

Barrel. The tubular portion of the lug terminal in which the conductor is soldered or crimped.

B.C. or BC. Bare Copper.

Belt (Belted Type Cable). Refers to number of layers of insulation on a conductor or number of layers of jacket on a cable.

Benchmarks. Preferred packaging designs which serve as a reference base against which the effectiveness of all designs are compared.

B & S Gauge. See AWG.

Bolts and Screws. Bolts and screws, as used herein, refer to the general classification of externally threaded headed fasteners.

Bondable Wire. Wire whose insulated surface has been etched to permit adherence to other material such as potting compounds. Usually refers to extruded TFE insulated wires.

Bonded Construction. Insulation in which glass braid and nylon jacket are bonded together as in certain wire sizes of MIL-W-5086 Type II.

Branch-Off. Two or more wires of a group which are separated and routed in a different direction from the remainder of the group.

Break-Out. A single wire separated from a branch-off, or group, to connect to a designated terminal.

Building Wire. Commercial wire such as types RR, RH, RL, and TW used in building trades.

Buna Rubber. A synthetic replacement for natural rubber.

Bunch Strand. A conductor in which all individual wires are twisted in the same direction with no regard for geometrical arrangement.

BX. Common 600-volt armored building-wire.

C. A pair twisted together, using stranded conductor and cotton braid, commonly known as lamp cord, for pendant or portable use in dry locations, rated at 300 or 600 volts, depending on insulation thickness; 60° C (140°F).

Cable. One or more wires encased in an impervious insulating jacket or sheath.

Cable Clip. A small device, usually plastic, used to physically secure wires or cables.

Cable Radiation. Radiation by high-level active cables which may cause interference in nearby susceptible cables.

Cable Tray. A rack-like assembly that is suspended from the ceiling or installed under the main flooring and is used to support cable runs between equipments.

Cadweld. Erico Products, Inc. trade name for a low-cost alternative to brazing to effect low-impedance electrical joints. Measured amounts of copper oxide and powdered aluminum are placed in a preformed graphite mold. The mold is clamped around the pieces to be connected, and the powder ignited. The high temperature generated can join two 1/4-inch by 2-inch bus bars within two minutes.

Caged Armor. Armor-wires within a polyethylene jacket; often used in submarine cables.

Ceroc Magnet Wire. Sprague Electric Co. trade name for copper wire coated with ceramic for high-temperature use.

Ceroc T. Sprague Electric Co. trade name for Ceroc magnet wire coated with TFE.

CF. Cotton - cotton insulated wire impregnated with moisture-resisting, flame-retarding compound; used in lighting fixtures up to 90°C (194°F).

CFPO. Parallel CF wires with overall braid, 300-volt, 90°C (194°F).

Chassis. The physical structure which retains and electrically interconnects a group of modules which perform higher level functions.

Chromax. Driver Harris Co. trade name for resistance-wire alloy of nickel, chromium, and iron. A less expensive substitute for nichrome.

Chromel. Hoskins Mfg. Co. trademark for a non-magnetic alloy of nickel, chromium, and nine other elements used as the positive lead for thermocouple and thermocouple-extension wire. (See also ALUMEL.)

Cigarette Wrap Tape. TFE insulation wrapped longitudinally rather than spirally over a conductor.

Circular MIL (CM). Defines cross-sectional areas of conductors. An area equal to the area of a 0.001-inch diameter circle.

CM. See Circular MIL.

Comet C. Driver Harris Co. trade name of a resistance-wire alloy of nickel, chromium, and iron; used for low to medium temperatures.

Compact Conductor. Stranded conductor which is rolled to deform the round wires to fill the normal space between the wires in a strand.

Concentric Lay Conductor. A single conductor composed of a central core surrounded by one or more sets of six helically laid wires. Each succeeding layer consists of six additional wires applied with an opposite direction of twist.

Concentric Strand. A central wire or core surrounded by one or more layers of spirally laid wires. Each layer after the first has six more strands than the preceding layer, and is applied in a direction opposite to that of the layer under it.

Conducted Interference. Interference in the form of radio frequency energy that is transferred from its source along a conductor into the equipment output.

Conductor. The basic metallic current carrying material used for the transfer of electrical energy. This conductor may be of solid or stranded construction.

Conduit. A protective cable routing device similar to pipe. Conduit may be metallic or plastic, rigid or flexible.

Constantan. An alloy of mainly copper and nickel used in making thermocouple wires. Iron or pure copper is the positive wire and constantan is the negative wire.

Continuous Duty. In some portable cords there are two standard number of strands of a given wire size. The one with the greater number (more flexible) is called continuous duty and the other is called stationary duty.

COPO. Copolene.

Copolene. An obsolete coax-cable dielectric material. Developed as a substitute for polystyrene, but due to undesirable characteristics it has been replaced by Polyethylene.

Copperweld. Copperweld Steel Co. trademark for wire composed of a thick copper covering welded to a steel core. Hot rolling, cold drawing, pounding, or temperature changes do not adversely affect it.

Cord. Small, flexible insulated conductor or conductors, usually 10 AWG or smaller. Jacketed to protect the conductors. Most often used for portable applications.

C Poly. Conductive polyethylene.

Crimping. The application of a deforming pressure on the barrel of a lug terminal and conductor into a good mechanical and electrical connection.

Crimp Lug Terminal. A conductor terminating device constructed of soft copper. The installation of the crimp lug terminal is effected, without the use of solder, by application of pressure with the crimping tool.

Cross-Linked Polyethylene. A dielectric material used for insulating and jacketing.

Cufil. Phelps Dodge trademark for Spirafil coax cable with a corrugated-copper outer conductor.

Cuflex. Phelps Dodge trademark for Foamflex coax cable with a corrugated-copper outer conductor.

Curbside. The wall to the right, when facing forward.

CV. Continuous Vulcanization. Mass-production process for applying and curing rubber and rubber-like material.

CW. Copperweld conductor.

CX. Christmas-tree wire.

CXT. Christmas-tree wire.

Destructive Corrosion. Destructive corrosion shall be construed as being any type of corrosion that in any way interferes with mechanical or electrical performance.

DHOF. Two-conductor, heat-, oil-, and flame-resistant Navy-type small boat cable per MIL-C-915A.

Direction of Lay. The lateral direction in which strands run over the top of a cable as they recede from you looking along the cable axis.

Double Shield. Two shields, one over the other (maximum coverage 98%).

Drain Wire. Uninsulated, solid or stranded, TC wire directly under and touching the shield throughout a cable. May be used in terminating the shield to ground. A labor-saver in terminating shielded cables, it is necessary only on spiral-shielded cables to eliminate the possibility of induction in the shield.

Duct. A cable routing device. Electrical duct is available in a wide variety of materials and configurations.

Duplex. Two conductors twisted together, usually with no outer covering. This word has a double meaning and it is possible to have parallel wires and jacketed parallel wires, and still refer to them as duplex.

Duracord. Anaconda trade name for a thinner-than-normal rubber jacket and a fire-hose type knitted-cotton jacket overall.

E. Elevator control cable, rubber insulation and braid on conductors, with or without steel supporting strand, 300-volt, braided jacket.

EDS. Everyday Stress; refers to sag and tension factors for exterior horizontal-line spans.

E.H.S. or EHS. Extra High Strength.

EIA. Electronics Industries Association. Formerly RETMA (Radio-Electronic-Television Manufacturers Assoc.).

Enameled Wire. Conductor with baked-on varnish enamel; may be 7 through 50 AWG. For winding motors, coils, transformers, etc.

Enclosure. A combination of the external housing and the racks.

Environment. The sum of all external conditions and influences affecting life and operation of equipment.

EO. Same as E, but with neoprene jacket.

Etched Wire. See Bondable Wire.

Fastener. A fastener is a mechanical device for holding two or more items or pieces of material together.

Fatigue Resistance. Resistance to metal-crystalization that causes conductors or wires to break from flexing.

FEP or F.E.P. DuPont trademark for extruded Fluorinated Ethylene Propylene (formerly called X-100 or FED-100).

Ferrite. Compound of bivalent iron and carbon used in computer memory cores, transformers, etc.

FF. Two types, commercial and military:

o Commercial - UL-approved fixture-wire with stranded copper conductor, rubber insulation, cotton braid.

o Military - (MIL-W-16878D) - Voltage 1000. Temperature 200°C (392°F). Sizes 24 to 4/0 AWG. Construction: stranded T/C conductor, SR insulation with or without outer glass braid.

FHOF. Shipboard cable per MIL-C-915A. A 4-conductor, heat and oil resistant flexible cable. 600-volt, 16 AWG to 250 MCM. Rubber insulation, impervious sheath overall.

Flexopreme. Standard Wire & Cable Co. trade name for neoprene-jacketed portable cord and cable.

Fifth Wheel. Point at which a semitrailer attaches to its tractor and around which the semitrailer pivots.

FL POL. Fluorocarbon/Polyimide.

Flux. Flux is a chemically active compound that is capable of promoting the wetting of metals with solder.

Foamflex. Phelps Dodge trademark for lightweight low-loss coax cable consisting of a copper clad aluminum, or a hollow copper, inner conductor, foamed polyethylene dielectric, and tubular outer conductor.

Form. A combination of groups shaped and fastened together to make up a complete wire terminating system in an equipment unit or junction box.

Fused Spiral Tape. TFE-insulated hookup wire run through a taping head so that each successive wrap overlaps the previous wrap. The spiral-wrapped conductor is passed through an oven where the overlaps are fused together. The wire is then sized and polished.

FX. Christmas-tree wire.

FXT. Christmas-tree wire.

G. Cable. Type W cable with ground wires. The total CM area of the ground wires is approximately 50-75% of the CM area of one conductor.

Gas Filled Cable. Paper-insulated lead-sheath cable filled with gas which provides a self-supervised alarm system. There are three pressure types: low, medium, and high. May be installed in ducts, in air, or buried directly.

Gas Pressure Compensated. Saturated-paper insulated cable containing tubes for the transmission of gas pressure along a cable, and with external gas feed to the tubes.

Glass Braid. Provides thermal and/or mechanical protection to underlying insulation of certain types of conductors.

Glyptal. Trade name for an insulating varnish, such as coil-coating. Resistant to heat, oil, and corrosive conditions.

Group. Two or more wires from one cable after the insulating jacket has been removed.

GRS. Government Rubber Synthetic. Government standard for BUNA-S Rubber for jacketing and insulating compounds for military wires and cables.

GTO. Gas tube, sign, and oil-burner ignition cable. Stranded TC conductor, Pole E insulation, PVC jacket overall. Available in 14 AWG for 10 KV and 15 KV service.

H Film. DuPont trademark for high-temperature polyimide resin film.

Hard Drawn. Refers to the temper of conductors drawn without annealing or that may harden in the drawing process.

HDP. High Density Polyethylene.

Heliax. Andrew Corp. trademark for low-loss pressurized-air and polyethylene-foam dielectric coax cable with convoluted copper or aluminum outer conductors. Air dielectric cables use a polyethylene-strip helically-wound insulator.

HF. Heavy Formvar magnet wire. Soft B. C. wire with baked synthetic insulation overall.

Hickey. A hand lever for bending rigid or thin wall conduit.

High-Level Interference Cables. Cables normally carrying audio, pulse, and RF signals of 10 watts power or more. Typical examples are modulator pulse cables and transmitter output cables.

Hi-Voltage. Operating voltage over 600 volts.

Hosing. An undesirable quantity of some cables which permits water to seep along the interior of the cable around or between conductors.

HPD. Heater cord, rubber and asbestos insulated, with overall braid.

HPN. Heater cord, neoprene, parallel, two-conductor.

H. S. or HS. High Strength

HSJ. Rubber jacketed heater cord; 300-volt 18 and 16 AWG 2 and 3 conductor, B. C. conductor, rubber insulation, asbestos cotton braid, rubber jacket overall.

HSJO. HSJ with neoprene jacket.

HT. High Temperature

HW. Heavy-Wall, 2500-volt hookup wire per MIL-W-76.

Hypalon. A DuPont product resistant to oxidation by ozone, sun, weather, heat, and chemicals.

I. M. S. A. or IMSA. International Municipal Signal Association (fire-alarm cable specifications).

Intercalated Tapes. Two or more tapes, generally of different composition, applied simultaneously so that a portion of each tape overlays a portion of the other tape.

Interface. The common boundary at which two elements must meet and be compatible in order to function properly. The elements may be anything from complete systems to components and the boundary may be mechanical or electrical.

Interstices. Space between things closely set, as between round wires in a strand of a conductor.

IPCEA. Insulated Power Cable Engineers Association. (Association of power-cable engineers from many companies.) Their object is to establish standards in the insulated power cable industry.

I Poly. Irradiated Polyethylene.

Irradiated Polyolefin. A dielectric compound which has been exposed to electron-beam radiation.

Jacket. An impervious insulating sheath enclosing the wire or group of wires in an electrical cable.

K. KARMA.

KAPTON. DuPont trademark for polyimide resin.

KARMA. Driver Harris Co. trade name for a resistance-wire alloy of nickel, chromium, aluminum, and copper.

Kel F. Polymonochlorotrifluoroethylene per MIL-W-12340. High temperature insulation -55° to +135°C (-68° to +275°F) used on hookup wire and for tubing where temperatures are beyond the range of PVC, and where resistance to solvents is needed.

Kovar. Alloy of iron, nickel, and cobalt.

Kynar. Pennwalt Corp. trademark for VF_2 Vinylidene fluoride resin. Has high dielectric strength and abrasion-resistant characteristics.

Laminates. A build-up of layers of material to increase thickness as in VCB.

Lamp Cord. Flexible stranded-conductor cord, rubber or plastic insulated, used in wiring lamps, household fans, and similar appliances not subject to hard usage. UL approved.

Landing Gear. A retractable, adjustable mechanism which supports the van when the towing vehicle is uncoupled.

Leaching and Non-Leaching. In a leaching wire the plasticizer will migrate (leave the vinyl compound) when exposed to the heat of baking. Wire so treated becomes brittle and hard. Non-leaching wire is desirable for use as motor lead wire.

Lead Cured. Cured or vulcanized in a lead mold.

Lead Extension. A lead extension is that part of a lead or wire that extends beyond the soldered connection.

Leveling Jack. A retractable, adjustable jack with adequate foot pads, capable of lifting the loaded van off the ground and supporting it for extended periods of time. The jacks (generally four) have longitudinal and lateral braces and a hand-cranked screw mechanism.

Litz Wire. Fine individually-insulated strands specially woven or braided together to reduce skin effect.

Low-Level Interference Cables. Cables normally carrying low-voltage signals of 100 microvolts or less. Transducer leads, antenna lead-ins, and instrumentation leads fall into this category.

L. T. Low Temperature non-contaminating jacket.

Lug Terminals. A lug terminal is a tie-point or terminating device used for convenience in making electrical connections. A solder lug terminal consists of a barrel, to which the soldered connection is made and a tongue end used for mechanical and electrical connection to the terminal stud or screw.

LW. Light Wall, 300-volt hookup wire per MIL-W-76.

Magnet Wire. Insulated copper wire for winding coils, motors, and transformers.

Mag. Ox. Magnesium Oxide.

Main External Housing. The structure which mechanically supports the racks, and together with the racks, forms the enclosure.

Marker Tape. Tape laid parallel to the conductors under the cable sheath, imprinted with manufacturer's name and specification to which cable is made.

Marker Thread. Colored thread laid parallel and adjacent to the strand in an insulated conductor which identifies the manufacturer and sometimes the specification to which the wire is made.

MCM. One thousand circular mils, e.g., 500 MCM = 500,000 CM.

MCOP. Multiple conductor (16 AWG) oil resistant, portable, synthetic-insulation cable with fillers, binder, and impervious sheath overall per MIL-C-915A.

Medium-Level Interference Cables. Well-filtered high-voltage power supply, video, trigger, synchro, intercommunications, and control cables that are not classified as high-level.

Melamine. A thermosetting resin (melamin formaldehyde) with excellent resistance to acids and alkalies, good resistance to water and solvents, high strength, and high insulation resistance relative to plastics.

MFT. Abbreviation for 1000 feet.

MHD. Medium Hard Drawn.

MHFF. Multiple conductor (16 AWG) heat and flame resistant, flexible synthetic-resin and felted-asbestos insulation- rayon braid, cabled with fillers, binder, and impervious sheath overall per MIL-C-915A.

MI. Cable of one or more conductors using mineral for insulation and overall solid-metal tube sheath.

Migrating or Migration. Movement of non-resinous plasticizer in PVC which takes place at extreme temperatures. Jacket plasticizer will contaminate the polyethylene core of a coax cable and thus change its electrical characteristics.

Mil. One one-thousandth of an inch. The unit used in measuring wire diameter and insulation thickness. (See Circular Mil.)

Miniature Wire. Insulated conductors of about 20 to 34 AWG with smaller than usual overall diameter.

ML. Two types:

- Type A-600-volt, UL-approved AVC mine locomotive cable. Will not carry flame or support combustion.

- Type B - Used as lead-wire in electric motors. Stranded-copper conductor; PVC, rubber, or rubber and braid insulation.

MT. Machine-Tool wire used for internal wiring of appliances or tools. Solid or stranded conductor, thermoplastic insulation.

MTW. Machine-Tool Wire, plastic insulated, 600-volt; varies 90°C (194°F) to 105°C (219°F).

MW. 1000-volt plastic-insulated wire per MIL-W-76.

Mylar. A DuPont synthetic compound with high dielectric qualities.

N. Nichrome.

NCC. Nickel Clad Copper.

N.E.C. or NEC. National Electric Code, which stipulates the use of wire and cable in building and factories. Most city electrical codes are derived from it. Compiled by fire underwriters and wire and cable manufacturers.

N.E.M.A. or NEMA. National Electric Manufacturers Association. Known for standardization of electrical motors and gear reducers and for wire and cable specifications.

Neoprene. DuPont trade name for polychloroprene, a rubber-like compound notable for resistance to the affects of oil and solvents.

N.E.S.C. or NESC. National Electrical Safety Code.

Nichrome. Driver Harris Co. trade name for a nickel, chromium, and steel resistance-wire alloy.

Nickel Clad Copper Wire. Wire with a layer of nickel rolled and fused to a copper core before drawing, with the nickel area about 30% of the conductor area.

Non-Contaminating. Refers to PVC jacketing material whose plasticizer will not migrate.

Non-Leaching. See Leaching.

Non-Migrating. Same as Non-Contaminating.

NPC. Nickel Plated Copper.

Nut. A nut is a fastening device having an internal thread or an aperture of lugs or prongs designed to mate with an external thread for the purpose of holding threaded member with which it is engaged.

Oil Filled Cable. Paper-insulated, lead-sheathed cable, into which high grade mineral oil is forced under pressure, saturating the insulation to prevent moisture and gases from entering. Easier to detect flaws due to leakage, as the oil is kept under constant pressure.

Oil Filled Pipe Cable. Oil filled cable is rigid pipe instead of lead sheath; sometimes a standard oil filled cable inserted into rigid pipe, under pressure, both units being oil-filled. (Usually for much higher voltage; kept under constant pressure.)

Okocord. Okonite Co. trade name for portable power cable.

Okoprene. Okonite Co. trade name for neoprene-covered wire and cable.

Outgassing. Dissipation of gas from a dielectric, evidencing decomposition.

P. Reinforced portable cord. Stranded-copper conductor. Separator, rubber insulation, cotton braid, twisted conductor, and rubber jacket cotton braid overall. For drop-cords and portable lines in dry places.

Pan Cured. Method of vulcanizing in which insulated wires are coiled in pans and vulcanized under pressure with live steam.

Paper Insulation. Used for telephone cable, hi-voltage cable, and magnet wire. Has high dielectric strength. Widely used in telephone cable, but generally being replaced because of new developments.

Part Lead. A part lead is a solid or stranded wire that serves as a connection and, in some cases as mechanical support, for small electronic parts or assemblies.

PBM-109. Trailing mine cable with outer sheath of flame-resistant neoprene. Conforms to requirements of Pa. Bureau of Mines and Federal Bureau of Mines.

Petrol Wire. Wire insulated to withstand immersion in gas and oil. Usually thermoplastic, with or without nylon jacket.

Pipe Type Cable. Pressure cable. Pressure-medium is a loose rigid metal pipe.

Plain Enamel. Type of magnet wire; dip-coated with varnish and then baked.

PLSJ. Light duty, all rubber, parallel, two-conductor, 300-volt cord.

PLT. Same as PLSJ except plastic.

PNR. Control cable using Polyethylene and Nylon on the conductors and PVC jacket.

PO. Rayon parallel lamp-cord with stranded copper conductor, separator, rubber insulation, cotton braid, rayon braid overall. Used in dry places, on small appliances.

PO. Lamp cord insulated with rubber and braid, parallel laid and overall cotton braid.

PLOY. Polyethylene.

Polyamide. Same as Nylon.

Polychloroprene. Chemical name for Neoprene. Used for jacketing wire and cable subject to rough usage, moisture, oil, grease, solvents and/or chemicals. Also used as low-voltage insulating material.

Polyethylene. Family of basically pure hydrocarbon-resin insulating materials, often with small amounts of additives to impart special properties. All members are electrically superior to any other extrudable solid dielectric in use. All have high insulation resistance, high dielectric strength, low dielectric constant, low dielectric loss at all frequencies, excellent resistance to cold flow, and good abrasion-resistance. Some are resistant to sunlight, weathering, chemicals, and flame. Widely used on telephone, signal, and control cables, high-frequency cables, coaxial cables, transmission lines, high-and-low-voltage power cables, line wire, neutral supported secondary and service drop cables. Suitable for direct earth burial. Ratings vary from 75°C (167°F) up.

Poly F. Polyethylene Foam.

Poly FC. Polyethylene Flooding Compound.

Polyimide. A relatively high-temperature plastic dielectric or jacketing material.

Polyolefins. Family of plastics including cross-linked polyethylene and various ethylene copolymers.

Polypropylene. A thermoplastic with good electric characteristics, high tensile strength, and heat-resistance.

Polysulfone. A polymer highly resistant to mineral acid, alkali, and salt solutions. Good dielectric properties up to 178°C (350°F).

Poly U. Polyurethane.

Polyurathane. Enamel that has excellent moisture resistance, easily soldered, also has excellent winding properties. Used as a magnet-wire dielectric.

Polyvinylchloride. Also known as PVC or Vinyl. A family of insulating compounds. Can be compounded to provide resistance to moisture, cold, heat, flame, oils, chemicals, ozone for low-voltage applications. Temperature ratings up to 105°C (219°F) recognized by UL for certain applications. Widely used for T and TW wire, series street-lighting cable, MTW, hookup and appliance wiring, overhead line wire, control and signal cables.

Positive Holding Device. A positive holding device is one that requires unlocking or destruction in order to remove the part it holds.

POSJ. Also known as Type SP. Rubber parallel lamp cord. Stranded copper conductor, cotton separator, rubber insulation. Mid-Rip (Ripcord) used on small appliances not subject to hard usage.

Pot. Also known as Type SPT. Plastic parallel lamp cord made of stranded-copper conductor, plastic insulation with Mid-Rip (Ripcord) used on small appliances.

Potted. Cemented with special compound to make moistureproof or air tight.

Pressure Cable. Oil-impregnated, paper-insulated conductors. Lead or steel pipe outer covering, in which positive pressure is maintained constantly. Has higher dielectric strength, greater insulation stability, and increased current-carrying capacity. Saves space.

PS. Polystyrene.

PSH. Three-conductor cable. Each conductor has PS tape over the insulation and contains ground wires. Extra-heavy insulation. Recommended for intermediate voltage where extra safety factor is needed.

PS Tape. Non-metallic shielding, very flexible. Remains in positive contact with insulation. Prevents formation of air gaps between conductor and insulation.

PVC. See Polyvinylchloride.

PVC-105°C. High-temperature Vinyl.

PW. Moistureproof, reinforced portable cord (formerly PWP). Stranded-copper conductor, separator, rubber insulation, cotton braid, twisted conductors, rubber drop cords. Jacket is cotton braid overall with moistureproof finish. Used in damp places for drop-cords, portable lines.

PWP. See PW.

R. 600-volt stranded or solid copper conductor, rubber-insulated, cotton braid (rubber filled tape, 6 AWG and larger). Cotton braid saturated with moisture-resisting, flame-retarding compound smoothly finished. Used for power wiring.

Raceway. A channel designed and used expressly for holding wires or cables.

Rack. The mechanical support for the chassis, interconnecting cables, modules, front panel performance monitoring devices, and adjustment controls.

Resin. A solid or semi-solid organic substance, originally of plant origin but usually synthesized now. Non-conductor of electricity, soluble in organic solvents, but not in water. Used in insulating, potting, encapsulating, etc.

Retma. See EIA.

RF. TC conductors, rubber insulation, cotton braid saturated with moisture-resisting flame-retarding compound, smoothly finished in white, black, red, green, blue, and yellow. Lubricated-surface finish permits easy pulling through conduit.

RHRW. TC conductors, rubber insulation, saturated braid, flame and moisture resistant finish for moist locations.

RHW. 75°C(167 F), rubber insulated, heat and mositure resistant insulation with moisture-resistant, flame-retardant non-metallic outer covering. Generally used in wet locations.

Ridge-Marker. One or more ridges running laterally along outer surface of plastic wire for identification.

R.I.M. Resin-Insulated Magnet Wire.

Rivet. A rivet is a headed fastening device of malleable material with the shank end designed to be expanded, upset, or spread.

RL. 600-volt TC conductors, solid or stranded, rubber insulation, rubber-filled tape (cotton braid on small sizes only) with lead sheath. Used in moist locations.

RLJFJ. Denotes Rubber-Lead-Jute-Flat-Armor-Jute. Metallic parkway cable for earth burial without additional protection, except at points of extreme mechanical hazard. Provides economical, easy to install, dependable underground system, well protected from mechanical injury. Used for underground street lighting circuits, railroad yard lighting and signal systems, airport power and lighting circuits, and in industrial plants and mines.

Roadside. The wall to the left; when facing forward.

Romex. Trade name for non-metallic sheathed cable (N) Romex UF multi-conductor non-metallic sheathed cable.

Rope Lay Strand. A conductor made of multiple groups of filaments. A 7 x 9 rope lay strand has 19 wires laid into a group and then 7 such groups laid cabled into a conductor.

RR. All-rubber non-metallic underground cable for direct burial in the earth or in conduit. Has heat and moisture resistant insulation and outer neoprene jacket.

Rub. Rubber.

S. 600-volt senior-service rubber-insulated portable cord available in 18 AWG 2-conductor through 6 AWG 4-conductor.

SA. SR insulation with asbestos or glass braid overall for use up to 125°C (258°F).

SCB. Silver-plated Cadmium Bronze.

SCC. Silver-Coated Copper.

Screw, Drive. A drive screw is a hardened cylindrical fastener with multiple spiral flutes on its shank. It also has an end smaller in diameter than the outside diameter of the spiral flutes which acts as a pilot when driven into a drilled hole.

Screw, Tapping.

(a) Thread-cutting screw. An externally threaded fastener whose thread is interrupted by flutes or slots for the purpose of cutting its own mating thread.

(b) Thread-forming screw. An externally threaded fastener whose thread is designed to form its own mating thread.

SCW. Silver-plated copperweld conductor.

Sector Strand. A group of wires laid in triangular shape with rounded corners, for use as one conductor or 3-conductor cable with a 120-degree angle between faces, and with a 90-degree angle for 4-conductor cable.

Segmental Conductor. In single-conductor cables 1,000 MCM or more, the conductors are divided into three or four segments insulated from each other by paper tape to reduce impedance in ac circuits.

Segregation (Cable). The process of physically separating active and passive cables or conductors to prevent transmission or conduction of noise or interference.

Selenium Cure. Process used on neoprene and rubber jacketed wires and cables to make a dense, tough, durable jacket.

Self-Supporting Aerial Cable. Cable with a steel support-strand capable of supporting its own weight across spans.

Semi-Conducting Jacket. Jacket having sufficiently low resistance so that its outer surface can be kept at substantially ground potential by a grounded conductor in contact with it at frequent intervals.

Serve. A separator applied directly over a conductor; consists of one or a combination of materials such as paper, cotton, silk, nylon, or rayon applied spirally or laterally.

Serviceable Main Chassis. NEL designation equivalent to rack as used in this manual.

SF. Solid or stranded SR-insulated fixture wire.

SFF. Flexible grade SF.

SH-A. Portable power cable rated 5kV, commonly known as shovel cable; neoprene jacket, usually three or four conductors individually shielded.

SH-B. Similar to SH-A except shield over all conductors.

SH-C. Similar to SH-B except with ground.

SH-D. Similar to SH-A except with ground.

SHFS. Nomenclature for 600-volt switchboard wire per MIL-C-915A, insulated with PVC and felted asbestos, overall flameproof cotton braid.

Shield. A braided metallic sheath enclosing a wire or wires to provide electrical insulation from circuits in other wires.

SHOF. Navy-type single conductor, heat and oil resistant, flexible shipboard cable.

Shovel Cable. See SH-A.

Silicone Impregnated. Saturation of insulating tapes or braids with a silicone varnish compound (process may be performed under a vacuum). The compound serves as a heat and flame retardant and as a binder.

Sintered. Usually refers to curing of TFE.

SJ. 300-volt junior-service rubber-insulated UL-approved portable cord, rubber jacket in 18 AWG 2-conductor through 16 AWG 4-conductor.

SJO. 300-volt junior-service rubber-insulated UL-approved portable cord, neoprene jacket.

SJT. 300-volt junior-service PVC-insulated UL-approved portable cord, PVC jacket. (See also ST.)

SK. Dielectric constant of insulation material.

Skeleton Braid. Widely separated braid of fiber, copper, or steel used to hold core together, for reinforcing jacket, or for shielding.

Skin Effect. The natural tendancy for alternating-current to concentrate near the surface of a conductor.

Sleeving. Flexible composition tubing used for electrical insulation.

SO. 600-volt senior-service neoprene-jacket UL-approved cord. Available in 18 AWG 2-conductor through 10 AWG 4-conductor.

Soft Material. Any of the plastic materials or any metal not in a work-hardened or case-hardened condition and having a Brinell hardness rating of less than 86 are soft materials.

Solder. Solder is a single metal, or an alloy of two or more metals which, when melted is used to join metallic surfaces through the phenomena of wetting. Usually the major constituents are tin and lead.

Solderable Nylon Litz. Litz wire made up of Soldereze strands with a nylon serve overall.

Soldered Connection. A soldered connection is an electrical connection which employs solder for bonding two or more metals with an alloy (solder).

Soldering. Soldering is a joining process wherein coalescense is produced by heating, generally below 800°F., and by using a non-ferrous filler metal that has a melting point below that of the base metal. The filler metal is usually distributed between the mating surfaces by capillary action.

Soldereze. Trade name for magnet wire insulated with Polyurethance base enamel.

SP. See POSJ.

Space Factor. Given values in coil-winding for amount of space available.

SPC. Silver Plated Copper.

Spirafil. Phelps Dodge trademark for low-loss pressurized air-dielectric coax cable consisting of a soild copper center conductor covered with a solid-polyethylene continuous helix and a tubular outer conductor.

Spiral Wrap. The trade name for a type of plastic material which may be wrapped around a wiring harness and is used in place of lacing.

Spiral Shield. A shield of fine stranded wires applied spirally rather than braided.

SP Shield. Silver-Plated shield.

SP-1. Lamp cord, parallel, all rubber, two-conductor, 300-volt, no ground.

SP-2. Similar to SP-1; heavier insulation.

SP-3. Similar to SP-2; heavier insulation, also may have ground.

Specific Inductance Capacity (SK). Dielectric constant of insulation material.

SPT. See Pot.

SPT-1. Same as SP-1 except in plastic.

SPT-2. Same as SP-2 except in plastic.

SPT-3. Same as SP-3 except in plastic.

SR. (1) Silicone rubber. (2) Silicone Rubber, 6001volt insulated cable.

SR-AW. Silicone rubber insulated, overall glass braid, with NPC conductor, flexible stranding, 600-volt.

SRHV. 2500-volt insulated hookup wire per JAN-C-76.

SRRF. 1000-volt rf-wire; polyethylene, glass braid per JAN-C-76.

SS. (1) Semi-soild. (2) Stainless Steel.

ST. Same as SJT, except 600-volt.

Stancote. Standard Wire & Cable Co. trade name for plastic-insulated wire.

Stanflex. Standard Wire & Cable Co. trade name for rubber-jacketed portable cords and cables.

Stanflex Twin. Standard Wire & Cable Co. trade name for duplex laid parallel cable, may have waxed-braid or PVC jacket. Used for trailer and truck electric brakes and in drive-in theaters to hook up speakers.

Stationary Duty. See Continuous Duty.

Stranded Conductor. Conductor made with a specified number of strands. Rope lay strand, for example, is a conductor made of multiple groups of stands (filaments). A 7 x 19 rope lay strand has 19 wires laid into a group and then 7 such groups cabled laid into a conductor.

Strip Insulations. Consist of one or more longitudinal strips of thermosetting material folded around a conductor and vulcanized after application.

Stud, Plain. A plain stud is a headless fastener which is continuously or partially threaded, with an external thread, and has no specific locking or wrenching provisions.

Styroflex. Phelps Dodge trademark for coax cable similar to Spirafil but with a polyethylene-tape helix and an aluminum sheath overall.

SV. Vacuum cleaner cord.

SVO. Same as SV except neoprene jacket.

SVT. Same as SV except non-marking plastic jacket.

Sweep Test. Oscilloscope-test given to check attenuation, as in coax cable.

Swept Coax. Coax cable which has been sweep-tested and certified.

Switchboard Wire. Asbestos-insulated wire such as TA or AVB, used to wire switchboards and control apparatus. Heat, flame, and corrosive vapor resistant.

Syn. Rub. Synthetic conductive rubber.

T. Old UL designation for switchboard wire insulated with thermoplastic lead wire.

TA. UL designation for switchboard wire insulated with thermoplastic felted asbestos.

Tag. A label bearing identification or data pertinent to the item to which it is attached.

T.C. or TC. Tinned copper.

TCW. Tinned copperweld.

Teflon. DuPont trademark for TFE.

Teflon Coaxial Cable. Coax cable with TFE dielectric.

Teflon Impregnated. Saturation of heat-resistant fibrous glass braid with TFE suspensoid. After saturation, the TFE is cured.

Telephone Wire. A general term, referring to communication wire. Refers to a class of wires and cables, rather than a specific type.

Tellurium Cure. A curing process similar to selenium cure, except tellurium is used.

Terminal. A terminal is a tie-point device used for the purpose of making electrical connections. Solder type terminals in common use include: Turret, bifurcated (slotted), hook, eye, tab, and solder cups.

TEW. Canadian Standards Association nomenclature for applicance-wire plastic insulated, solid or stranded conductor, 600-volt.

Textile Braid. Braid of cotton, silk, or synthetic-fiber threads.

TF. UL designation for fixture wire, solid soft-copper conductor, insulated with thermoplastic lead wire.

TFE. Polytetrafluoroethylene, a fluorocarbon resin (Teflon).

TFF. Same as TF, except stranded-copper conductor.

TG. TFE tape with overall glass braid, stranded NCC conductor.

Thermocouple Wire. Wire drawn from special metals or alloys and calibrated to U.S. Bureau of Standards or Instruments Society of American Standards specifications.

Thermostat Wire. Single or multi-conductor wire, soft solid B.C. conductor, usually PVC-insulated. May be twisted and/or jacketed. May have enameled or nylon-covered conductors and may have metal armor covering. May also have asbestos insulation. Used to transmit electrical signals between the thermostat and the heating or cooling unit.

THOF. Navy designation for triple conductor, heat, oil, and flame resistant, portable flexible cable per MIL-C-915A.

THW. Building wire, plastic insulated, heat, flame, and moisture resistant, 75 C(167 F).

ThWN. THW with overall nylon jacket.

Tinsel Cord. Cord made with tinsel conductors for maximum flexibility. Used mostly on headsets, handsets, etc., where repeated flexing is necessary.

Tinsel Wire. Low voltage, stranded wire where each strand is very thin copper ribbon spirally wrapped around textile yarn. Insulation is generally textile braid. Intended for severe flexing.

Tongue. The flat portion of the lug terminal which establishes mechanical and electrical connection to the equipment terminal.

TPA. A 125-volt, 204 C(400 F) wire. Stranded tinned conductor, glass braid or tape, impregnated felted asbestos, and asbestos braid.

Transite. Johns-Manville trade name for Asbestos-Cement in pipe and fitting form, for use in the building industry as electrical conduit.

Trap Wire. Low voltage wire used at hinge points, where severe flexing occurs, such as in burglar alarm systems. Made with tinsel conductor.

Triad. See Triplex.

Triaxial. Three-conductor cable with one conductor in the center, a second circular conductor concentric with the first and a third circular conductor insulated from and concentric with the first and second, usually with insulation, and a braid or impervious sheath overall.

Triplex. A group of three insulated conductors twisted and/or sheathed or held together mechanically. Usually color-coded or ridge-marked.

TRPA. A 125-volt, 342 C(650 F) wire. Stranded NCC conductor, glass braid or tape, impregnated felted asbestos, and asbestos braid.

TTOP. U.S. Navy designation for twisted-pair telephone, oil-resistant, portable, synthetic insulation, binder, jacked with an impervious sheath. A dash-number suffix indicates the number of pairs. Per MIL-C-915A.

TTRS. Navy designation for twisted-pair, telephone, radio, shielded, binder, jacketed with impervious sheath. A dash-number suffix indicates the number of pairs. Per MIL-C-915A.

TTRSA. Navy designation for twisted-pair, telephone, radio, each pair shielded; armored. A dash-number suffix indicates the number of pairs. Per MIL-C-915A.

TW. UL designation for thermoplastic-insulated wire for use in conduit and underground and wet locations. A common building wire have a soft, solid or stranded B.C. conductor.

Twin Cable. A pair of insulated conductors of 8 AWG or larger, twisted and/or sheathed or held together mechanically and not identifiable from each other.

Twin Wire. A pair of insulated conductors, 9 AWG or smaller, twisted or bonded together and not identifiable from each other.

Tying. The securing or binding together or wires by means of individual cord ties to complete the form.

UF. Single or multi-conductor, with or without ground, used for direct-burial. Underground Feeders and branch circuits between buildings, yard lights, and similar installations.

UL. Underwriters Laboratories, Inc. (Maintains and operates laboratories for the examination and testing of devices, systems and materials relative to life, fire and casualty, hazards, and crime prevention. Sponsored by the National Board of Fire Underwriters.)

Unilay Conductor. A central core surrounded by one or more concentric layers of helically wound strands in a fixed geometrical arrangement with the direction of lay the same for each layer (and the central core).

Unistrut. The trade name for an all-purpose adjustable metal framing system.

Unsintered. Uncured (usually to differentiate between cured and uncured TFE tape).

URC. Nomenclature for weatherproof wire.

USE. Underground-Service Entrance, neoprene-jacketed cable.

VCB. Varnished Cambric with flame and moisture resistant cotton Braided jacket.

VCL. Varnished-Cambric conductor-insulation, Lead-jacketed cable.

Vinyl. See Polyvinylchloride; also known as PVC.

Voltage. The greatest effective potential between any two conductors in a circuit.

W. Heavy-duty portable power cable, neoprene jacket, single or multiple conductors, 600-volt.

Watertight Compartment. A compartment or area which can be sealed to prevent the passage of water in or out.

Wave Soldering. Wave soldering is a machine technique for producing soldered joints by using a shaped orifice and a pumping system to produce a standing wave of liquid solder through which the work being soldered can be passed. Cascade soldering utilized two or more standing waves of liquid solder in sequence.

Weatherproof. Type of construction or protection such that exposure to weather does not interfere with successful operation.

Wetting. Wetting is the adhesion of a liquid to a solid surface.

Wicking. The conduction (caused by capillary action) of melted solder along the strands of a stranded conductor.

Wire. A slender rod or filament of drawn metal; a single conductor. If larger than 9 AWG, or multiple-conductor, it is usually called cable.

Wire Braid. Flexible wire of small-size strands woven together in tubular form. Used for shielding or connections where constant flexing is required.

Wire Gage AWG. See AWG.

Wireway. A class or type of duct with a hinged or otherwise removable cover for wire access.

X-100. See FEP.

Zipper Tubing. A vinyl plastic, zippered covering for protection of cables or harnesses.

2BC. Double bare copper shield.

2S. Silver plated copper double shield.

2TC. Tinned copper double shield.

3TC. Tinned copper triple shield.

4TC. Tinned copper quadruple shield.

(A) UTILIZATION

TYPE OF AGENT	WATER	FOAM	CARBON DIOXIDE	REGULAR DRY CHEMICAL & PURPLE	TRI-CLASS DRY CHEMICAL	REGULAR DRY CHEM. AND PURPLE	TRI-CLASS DRY CHEM.	CARBON DIOXIDE
Class A Fire — paper, wood, cl th etc., where quenching by water or insulating by Tri-Class general purpose dry chemical is effectiv .	yes EXCELLENT Water saturat s material and prevents rekindling.	y s EXCELLENT Foam has both smothering and wetting action.	Small surface fires only.	Small surface fires only.	yes EXCELLENT Fire-retardant blanket to prevent reflash.	Surface fires only.	yes EXCELLENT Provides fire retardant blanket to prevent reflash.	Small surface fires nly.
Class B Fir — gasoline, ils, paints Burning liquids, cooking fats, etc., where smothering action is required.	no Water will spread fire, not put it out.	yes EXCELLENT Smothering blanket does not dissipate, floats on top of spilled liquids.	yes EXCELLENT Carbon dioxide leaves no residue, does not affect equipment or food-stuffs.	yes EXCELLENT Chemical smothers fire.	yes EXCELLENT Provides smothering action.	yes EXCELLENT Chemical smothers fire.	yes EXCELLENT Provides smothering action.	yes EXCELLENT Carbon Di xid leaves no residue. Does not affect delicate equipment or foodstuffs.
Class C Fire — live electrical quip. Fire in motors, switches, appliances, etc., where a n n-c nducting extinguishing agent is required.	no Water, a conductor, should not be used on live electric equipment.	no Foam is a conductor and should not be used on live electrical equipment.	yes EXCELLENT Carbon dioxide is a non-conductor, leaves no residue, will not damage equipment.	yes EXCELLENT Chemical is a non-conductor; screen of dry chemical shields operated from heat.	yes EXCELLENT Chemical is a non-conductor; screen of dry chemical shields operator from heat.	yes EXCELLENT Chemical is a non-conductor. Screen of dry chemical shields operator from heat.	yes EXCELLENT Chemical is a non-conductor. Screen of dry chemical shields operator from heat.	yes EXCELLENT Carbon Dioxide is a non-c nduct r. Leav s no residu . Will n t damage equipm nt.

(B) OPERATION AND MAINTENANCE

CHARACTERISTICS	TYPE OF AGENT								
	SODA-ACID	WATER OR ANTI-FREEZE	FOAM	CARBON DIOXIDE	REGULAR AND DRY CHEMICAL AND PURPLE	TRI-CLASS DRY CHEMICAL	REGULAR DRY CHEMICAL AND PURPLE	TRI-CLASS DRY CHEMICAL	CARBON DIOXIDE
	PORTABLE		PORTABLE	PORTABLE	PORTABLE	PORTABLE	WHEELED	WHEELED	WHEELED
operation Always direct discharg at base f flam .†	**INVERSION TYPE** Turn over. Gas from soda-acid action forces water out 30 to 40 feet.	**PRESSURIZED** Pull locking pin, squeeze lever. Stored compressed air forces water out 30 to 40 feet.	Turn over. Mixing of two agents on inversion discharges foam 30 to 40 feet. †Note: Direct discharge so that foam gently covers burning surface.	Pull locking pin, and squeeze lever. Compressed CO_2 gas is discharged from 4 to 6 feet.	Pull locking pin, and squeeze lever. Models 2¾ DCK-6 and 2½ DCPK-8, lift handle, press lever. Either stored compressed air or nitrogen expels dry chemical or Purple K 10 to 20 feet. NOTE: Purple K is twice as effective as regular dry chemical in smothering fires.	Pull locking pin, and squeeze lever. Model 2½ ABC, lift handle, press lever. Special dry chemical, stored under pressure, discharges 10 to 20 feet.	Remove hose from hose rack. Be sure discharge nozzle at end of hose is closed. Pull safety pin from valve lever. Push valve lever all the way over to fully open the valve. Open nozzle valve lever fully and discharge the dry chemical with a sweeping motion at the base of the flames. Discharges a 40 foot stream.		Operati n is similar t unit at left. Valve is wheel perated.
model number	2½ SS	2½ WPPD	2½ FS	5 KS 10 KS 15 KS 20 KS	2¾ DCK-6 2½ DCPK-8 5 DCPS-1 10 DCPS-1 20 DCPS-1 30 DCPS-1 5 DCPK-1 10 DCPK-1 20 DCPK-1	2½ ABC 5 ABCS -2 10 ABCS -1 20 ABCS -1	200 DCP-1 200 DCPK-1	200 ABC (steel wheels) 200 ABCR (rubber wheels)	50 HS (steel wh els) 50 HR (rubber wh els)
capacity	2½ gallons	2½ gallons (9.5 liters)	2½ gallons (9.5 liters)	5 lbs. (2.3 kg) 10 lbs. (4.5 kg) 15 lbs. (6.8 kg) 20 lbs. (9.1 kg) (net weight of gas)	2¾ lbs. (1.25 kg) 2½ lbs. (1.1 kg) 5 lbs. (2.3 kg) 10 lbs. (4.5 kg) 20 lbs. (9.1 kg) 30 lbs. (13.6 kg) (net weight of powder)	2½ lbs. (1.1 kg) 4.5 lbs. (2.1 kg) 10 lbs. (4.5 kg) 20 lbs. (9.1 kg) (net weight of powder)	150 lbs. (68 kg) 150 lbs. (68 kg)	150 lbs. (68 kg)	50 lbs. (22.7 kg)
ul rating	2-A	2-A	2-A, 4-B	4-B:C 5-B:C 10-B:C 10-B:C	5-B:C 5-B:C 10-B:C 10-B:C 40-B:C 60-B:C 40-B:C 60-B:C	5-B:C 1-A, 10-B:C 3-A, 30-B:C 10-A, 40-B:C	120-B:C 160-B:C	40-A; 160-B:C	10-B:C
maintenance Inspect external physical conditi n. On tag sign and date each inspection and recharging.	Discharge and recharge annually. Hydrostatic test every 5 years. Protect from freezing.	Check pressure gauge semi-annually. Hydrostatic test every 5 years. Protect from freezing.	Discharge and recharge annually. Hydrostatic test every 5 years. Protect from freezing.	Weigh semi-annually. Hydrostatic test every 5 years.	Check pressure gauge semi-annually. Hydrostatic test every 12 years. Check total charged weight annually. Models 2¾ DCK-6 and 2½ DCPK-8. Check indicator semi-annually.	Check pressure gauge semi-annually. Hydrostatic test every 12 years. Check total charged weight annually. Model 2½ ABC. Check indicator semi-annually.	Check pressure gauge semi-annually. Hydrostatic test every 12 years. Check total charged weight annually.	Check pressure gauge semi-annually. Hydrostatic test every 12 years. Check total charged weight annually.	Weigh s mi-annually. Hydrostatic t st every 5 years.

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Foldout 1-1. Types of Fire Extinguishers