

INCH-POUND

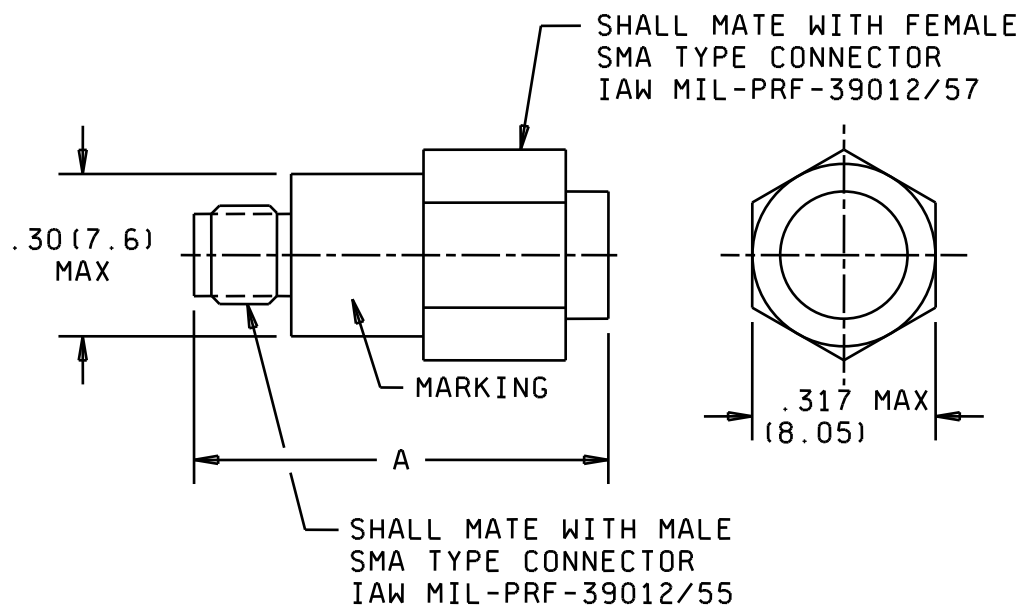
MIL-DTL-3933/25D
12 February 2014
SUPERSEDING
MIL-DTL-3933/25C
7 April 2011

DETAIL SPECIFICATION SHEET

ATTENUATORS, FIXED, MINIATURE, SPACE LEVEL,
NON SPACE LEVEL, COAXIAL LINE (SMA CONNECTORS),
FREQUENCY RANGE: DC TO 18 GHz, CLASS IV, LOW POWER

This specification is approved for use by all Departments
and Agencies of the Department of Defense.

The requirements for acquiring the product described herein
shall consist of this specification sheet and MIL-DTL-3933.



NOTES:

1. Dimensions are in inches.
2. Metric equivalents (in millimeters) are given for general information only.
3. Metric equivalents (in millimeters) are in parentheses.

FIGURE 1. Dimensions and configuration.

ENGINEERING DATA:

Operating frequency range: DC to 18 GHz (see table I).

Test frequency ranges for SWR and attenuation measurements, measured or recorded, when using an Automatic Network Analyzer (ANA) or equivalent test equipment:

- 100 MHz (or lower) to 2.0 GHz for dash numbers 01 through 26.
- 100 MHz (or lower) to 12.4 GHz for dash numbers 27 through 57.
- 100 MHz (or lower) to 18 GHz for dash numbers 58 through 95.

Basic test frequencies for sensitive measurements like connector repeatability, temperature sensitivity, power sensitivity and any other measurements where a 'delta' spec is imposed:

- 1.0 GHz for dash numbers 01 through 26.
- 6.0 GHz for dash numbers 27 through 57.
- 8.0 GHz for dash numbers 58 through 95.

Operating temperature range: -55°C to +125°C. Power input is derated linearly to 0.5 watt at +125°C.

Maximum weight: 0.45 ounce.

REQUIREMENTS:

Dimensions and configuration: See figure 1 and table I.

Nominal impedance: 50 ohms.

Attenuation: See table I.

Stability and sensitivity:

Maximum change in attenuation after:	up to 10 dB, inclusive (dB)	over 10 dB (dB/dB)
temperature change or thermal shock	0.5	0.05
vibration or shock	0.5	0.05
moisture resistance or salt spray	0.5	0.05
peak power	0.5	0.05

Frequency sensitivity, maximum: 0.4 dB/dB/GHz.

Temperature sensitivity of attenuation, maximum: 0.0006 dB/dB/°C.

Input power: See table I.

Power sensitivity for full input power, maximum: 0.005 dB/dB/Watt.

VSWR: See table I.

Connector repeatability, maximum variation in attenuation: 0.04 dB.

Part or Identifying Number (PIN): M3933/25- (and dash number from table I with three device level designators are space level (T), screened (S) and non-screened (N) options).

TABLE I. Electrical characteristics.

TABLE 1. Electrical characteristics.														
Dash number	Attenuation dB						Maximum power input		VSWR maximum <u>3/</u>					Dimension A (inches) maximum
	Nominal	Deviation (±)					AV (W) <u>1/</u> (continuously) at 25°C	Peak (W) <u>2/</u>	DC to 2.0 GHz	2.0 to 4.0 GHz	4.0 to 8.0 GHz	8.0 to 12.4 GHz	12.4 to 18.0 GHz	
		DC to 2.0 GHz	DC to 4.0 GHz	DC to 8.0 GHz	DC to 12.4 GHz	DC to 18.0 GHz								
01 N S T	1	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	0.87 (22.10)
02 N S T	2	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	0.87 (22.10)
03 N S T	3	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	0.87 (22.10)
04 N S T	4	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	0.87 (22.10)
05 N S T	5	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	0.87 (22.10)
06 N S T	6	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	0.87 (22.10)
07 N S T	7	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	0.87 (22.10)
08 N S T	8	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	0.87 (22.10)
09 N S T	9	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	0.87 (22.10)
10 N S T	10	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	0.87 (22.10)
11 N S T	11	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	0.87 (22.10)
12 N S T	12	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	0.87 (22.10)

See footnotes at end of table I.

TABLE I. Electrical characteristics - Continued.

Dash number	Attenuation dB						Maximum power input		VSWR maximum <u>3/</u>					Dimension A (inches) maximum
	Nominal	Deviation (±)					AV (W) <u>1/</u> (continuously) at 25°C	Peak (W) <u>2/</u>	DC to 2.0 GHz	2.0 to 4.0 GHz	4.0 to 8.0 GHz	8.0 to 12.4 GHz	12.4 to 18.0 GHz	
		DC to 2.0 GHz	DC to 4.0 GHz	DC to 8.0 GHz	DC to 12.4 GHz	DC to 18.0 GHz								
13 N S T	13	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	1.03 (26.16)
14 N S T	14	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	1.03 (26.16)
15 N S T	15	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	1.03 (26.16)
16 N S T	16	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	1.03 (26.16)
17 N S T	17	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	1.03 (26.16)
18 N S T	18	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	1.03 (26.16)
19 N S T	19	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	1.03 (26.16)
20 N S T	20	0.3	---	---	---	---	2	500	1.15:1	---	---	---	---	1.03 (26.16)
21 N S T	21	0.5	---	---	---	---	2	500	1.15:1	---	---	---	---	1.03 (26.16)
22 4/ N S	22	0.5	---	---	---	---	2	500	1.15:1	---	---	---	---	1.03 (26.16)
23 N S T	23	0.5	---	---	---	---	2	500	1.15:1	---	---	---	---	1.03 (26.16)
24 4/ N S	24	0.5	---	---	---	---	2	500	1.15:1	---	---	---	---	1.03 (26.16)

See footnotes at end of table I.

TABLE I. Electrical characteristics - Continued.

Dash Number	Attenuation dB						Maximum power input		VSWR maximum <u>3/</u>					Dimension A (inches) maximum
	Nominal	Deviation (±)					AV (W) <u>1/</u> (continuously) at 25°C	Peak (W) <u>2/</u>	DC to 2.0 GHz	2.0 to 4.0 GHz	4.0 to 8.0 GHz	8.0 to 12.4 GHz	12.4 to 18.0 GHz	
		DC to 2.0 GHz	DC to 4.0 GHz	DC to 8.0 GHz	DC to 12.4 GHz	DC to 18.0 GHz								
25 N S T	25	0.5	---	---	---	---	2	500	1.15:1	---	---	---	---	1.03 (26.16)
26 4/ N S	30	0.5	---	---	---	---	2	500	1.15:1	---	---	---	---	1.03 (26.16)
27 N S T	1	---	---	---	0.3	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	0.87 (22.10)
28 N S T	2	---	---	---	0.3	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	0.87 (22.10)
29 N S T	3	---	---	---	0.3	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	0.87 (22.10)
30 N S T	4	---	---	---	0.3	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	0.87 (22.10)
31 N S T	5	---	---	---	0.3	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	0.87 (22.10)
32 N S T	6	---	---	---	0.3	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	0.87 (22.10)
33 N S T	7	---	---	---	0.4	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	0.87 (22.10)
34 N S T	8	---	---	---	0.4	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	0.87 (22.10)
35 N S T	9	---	---	---	0.4	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	0.87 (22.10)
36 N S T	10	---	---	---	0.4	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	0.87 (22.10)

See footnotes at end of table I.

MIL-DTL-3933/25D

TABLE I. Electrical characteristics - Continued.

Dash number	Attenuation dB						Maximum power input		VSWR maximum <u>3/</u>					Dimension A (inches) maximum
	Nominal	Deviation (±)					AV (W) <u>1/</u> (continuously) at 25°C	Peak (W) <u>2/</u>	DC to 2.0 GHz	2.0 to 4.0 GHz	4.0 to 8.0 GHz	8.0 to 12.4 GHz	12.4 to 18.0 GHz	
		DC to 2.0 GHz	DC to 4.0 GHz	DC to 8.0 GHz	DC to 12.4 GHz	DC to 18.0 GHz								
37 N S T	11	---	---	---	0.4	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	0.87 (22.10)
38 N S T	12	---	---	---	0.4	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	0.87 (22.10)
39 N S T	13	---	---	---	0.4	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	0.94 (23.88)
40 N S T	14	---	---	---	0.4	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	0.94 (23.88)
41 N S T	15	---	---	---	0.4	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	0.94 (23.88)
42 N S T	16	---	---	---	0.4	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	0.94 (23.88)
43 N S T	17	---	---	---	0.4	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	0.94 (23.88)
44 N S T	18	---	---	---	0.4	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	0.94 (23.88)
45 N S T	19	---	---	---	0.4	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	0.94 (23.88)
46 N S T	20	---	---	---	0.7	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	1.04 (26.42)
47 N S T	21	---	---	---	0.7	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	1.04 (26.42)
48 N S T	22	---	---	---	0.7	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	1.04 (26.42)
49 N S T	23	---	---	---	0.7	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	1.04 (26.42)

See footnotes at end of table I.

TABLE I. Electrical characteristics - Continued.

Dash number	Attenuation dB						Maximum power input		VSWR maximum <u>3/</u>					Dimension A (inches) maximum
	Nominal	Deviation (±)					AV (W) <u>1/</u> (continuously) at 25°C	Peak (W) <u>2/</u>	DC to 2.0 GHz	2.0 to 4.0 GHz	4.0 to 8.0 GHz	8.0 to 12.4 GHz	12.4 to 18.0 GHz	
		DC to 2.0 GHz	DC to 4.0 GHz	DC to 8.0 GHz	DC to 12.4 GHz	DC to 18.0 GHz								
50 N S T	24	---	---	---	0.7	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	1.04 (26.42)
51 N S T	25	---	---	---	0.7	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	1.04 (26.42)
52 N S T	30	---	---	---	1.0	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	1.04 (26.42)
53 N S T	35	---	---	---	1.0	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	1.35 (34.29)
54 N S T	40	---	---	---	1.0	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	1.35 (34.29)
55 N S T	45	---	---	---	1.5	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	1.35 (34.29)
56 N S T	50	---	---	---	2.0	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	1.35 (34.29)
57 N S T	60	---	---	---	2.0	---	2	500	1.10:1	1.15:1	1.20:1	1.25:1	---	1.35 (34.29)
58 N S T	0	---	---	---	---	0.3	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)
59 N S T	0.5	---	---	---	---	0.3	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)
60 N S T	1.0	---	---	---	---	0.3	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)
61 N S T	1.5	---	---	---	---	0.3	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)

See footnotes at end of table I.

TABLE I. Electrical characteristics - Continued.

Dash number	Attenuation dB						Maximum power input		VSWR maximum <u>3/</u>					Dimension A (inches) maximum
	Nominal	Deviation (±)					AV (W) <u>1/</u> (continuously) at 25°C	Peak (W) <u>2/</u>	DC to 2.0 GHz	2.0 to 4.0 GHz	4.0 to 8.0 GHz	8.0 to 12.4 GHz	12.4 to 18.0 GHz	
		DC to 2.0 GHz	DC to 4.0 GHz	DC to 8.0 GHz	DC to 12.4 GHz	DC to 18.0 GHz								
62 N S T	2.0	---	---	---	---	0.3	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)
63 N S T	2.5	---	---	---	---	0.3	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)
64 N S T	3.0	---	---	---	---	0.3	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)
65 N S T	3.5	---	---	---	---	0.3	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)
66 N S T	4.0	---	---	---	---	0.3	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)
67 N S T	4.5	---	---	---	---	0.3	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)
68 N S T	5.0	---	---	---	---	0.3	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)
69 N S T	5.5	---	---	---	---	0.3	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)
70 N S T	6.0	---	---	---	---	0.3	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)
71 N S T	6.5	---	---	---	---	0.3	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)
72 N S T	7.0	---	---	---	---	0.4	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)

See footnotes at end of table I.

TABLE I. Electrical characteristics - Continued.

Dash number	Attenuation dB						Maximum power input		VSWR maximum <u>3/</u>					Dimension A (inches) maximum
	Nominal	Deviation (±)					AV (W) <u>1/</u> (continuously) at 25°C	Peak (W) <u>2/</u>	DC to 2.0 GHz	2.0 to 4.0 GHz	4.0 to 8.0 GHz	8.0 to 12.4 GHz	12.4 to 18.0 GHz	
		DC to 2.0 GHz	DC to 4.0 GHz	DC to 8.0 GHz	DC to 12.4 GHz	DC to 18.0 GHz								
73 N S T	7.5	---	---	---	---	0.4	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)
74 N S T	8.0	---	---	---	---	0.4	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)
75 N S T	8.5	---	---	---	---	0.4	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)
76 N S T	9.0	---	---	---	---	0.5	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)
77 N S T	9.5	---	---	---	---	0.5	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)
78 N S T	10.0	---	---	---	---	0.5	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)
79 N S T	11.0	---	---	---	---	0.5	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)
80 N S T	12.0	---	---	---	---	0.5	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.87 (22.10)
81 N S T	13.0	---	---	---	---	0.5	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.94 (23.88)
82 N S T	14.0	---	---	---	---	0.5	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	0.94 (23.88)
83 N S T	15.0	---	---	---	---	0.6	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	1.04 (26.42)
84 N S T	16.0	---	---	---	---	0.6	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	1.04 (26.42)

See footnotes at end of table I.

TABLE I. Electrical characteristics - Continued

Dash number	Attenuation dB						Maximum power input		VSWR maximum <u>3/</u>					Dimension A (inches) maximum
	Nominal	Deviation (±)					AV (W) <u>1/</u> (continuously) at 25°C	Peak (W) <u>2/</u>	DC to 2.0 GHz	2.0 to 4.0 GHz	4.0 to 8.0 GHz	8.0 to 12.4 GHz	12.4 to 18.0 GHz	
		DC to 2.0 GHz	DC to 4.0 GHz	DC to 8.0 GHz	DC to 12.4 GHz	DC to 18.0 GHz								
85 N S T	17.0	---	---	---	---	0.6	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	1.04 (26.42)
86 N S T	18.0	---	---	---	---	0.6	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	1.04 (26.42)
87 N S T	19.0	---	---	---	---	0.6	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	1.04 (26.42)
88 N S T	20.0	---	---	---	---	0.6	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	1.04 (26.42)
89 <u>4/</u> N S	25.0	---	---	---	---	1.0	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	1.04 (26.42)
90 <u>4/</u> N S	30.0	---	---	---	---	1.0	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	1.04 (26.42)
91 N S T	35.0	---	---	---	---	1.0	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	1.35 (34.29)
92 N S T	40.0	---	---	---	---	1.0	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	1.35 (34.29)
93 N S T	45.0	---	---	---	---	1.0	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	1.35 (34.29)
94 N S T	50.0	---	---	---	---	2.0	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	1.35 (34.29)
95 N S T	60.0	---	---	---	---	2.0	2	500	1.10:1	1.15:1	1.20:1	1.25:1	1.35:1	1.35 (34.29)

^{1/} Power input is derated linearly from +25°C to 0.5 watts at +125°C.

^{2/} Peak power for a duty cycle of 5×10^{-4} ; maximum pulse duration of 5 microseconds.

^{3/} VSWR value is both ends.

^{4/} Canceled and replaced with DLA Land and Maritime drawing 13016. (M3933/25-22 is replaced by 13016-22, M3933/25-24 is replaced by 13016-24, M3933/25-26 is replaced by 13016-26, M3933/25-89 is replaced by 13016-89, and M3933/25-90 is replaced 13016-90.)

MIL-DTL-3933/25D

Referenced documents: In addition to MIL-DTL-3933, this document references

MIL-PRF-39012/55

MIL-PRF-39012/57

DLA Land and Maritime drawing 13016

The margins of this specification sheet are marked with vertical lines to indicate where modifications from this revision were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations.

Custodians:

Army - CR

Navy - EC

Air Force - 85

DLA - CC

Preparing activity.

DLA - CC

(Project 5985-2014-003)

Review activities:

Army - MI

Navy - AS, MC, SH

Air Force - 99

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <https://assist.dla.mil/>.