

INCH-POUND

MIL-PRF-87819/1B

30 September 2009

SUPERSEDING

MIL-PRF-87819/1A(USAF)

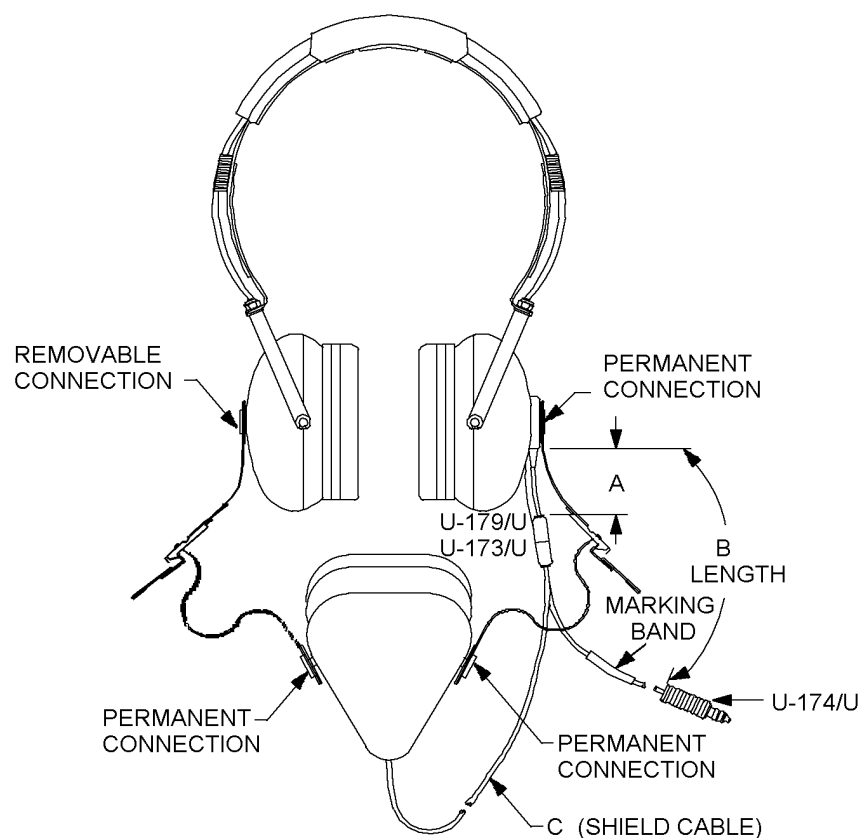
30 January 1997

PERFORMANCE SPECIFICATIONS SHEET

HEADSET-MICROPHONE, HEARING PROTECTIVE TYPE
HIGH AMBIENT NOISE LEVELS, 105-125 dB,
M87819/1-O1

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-PRF-87819.



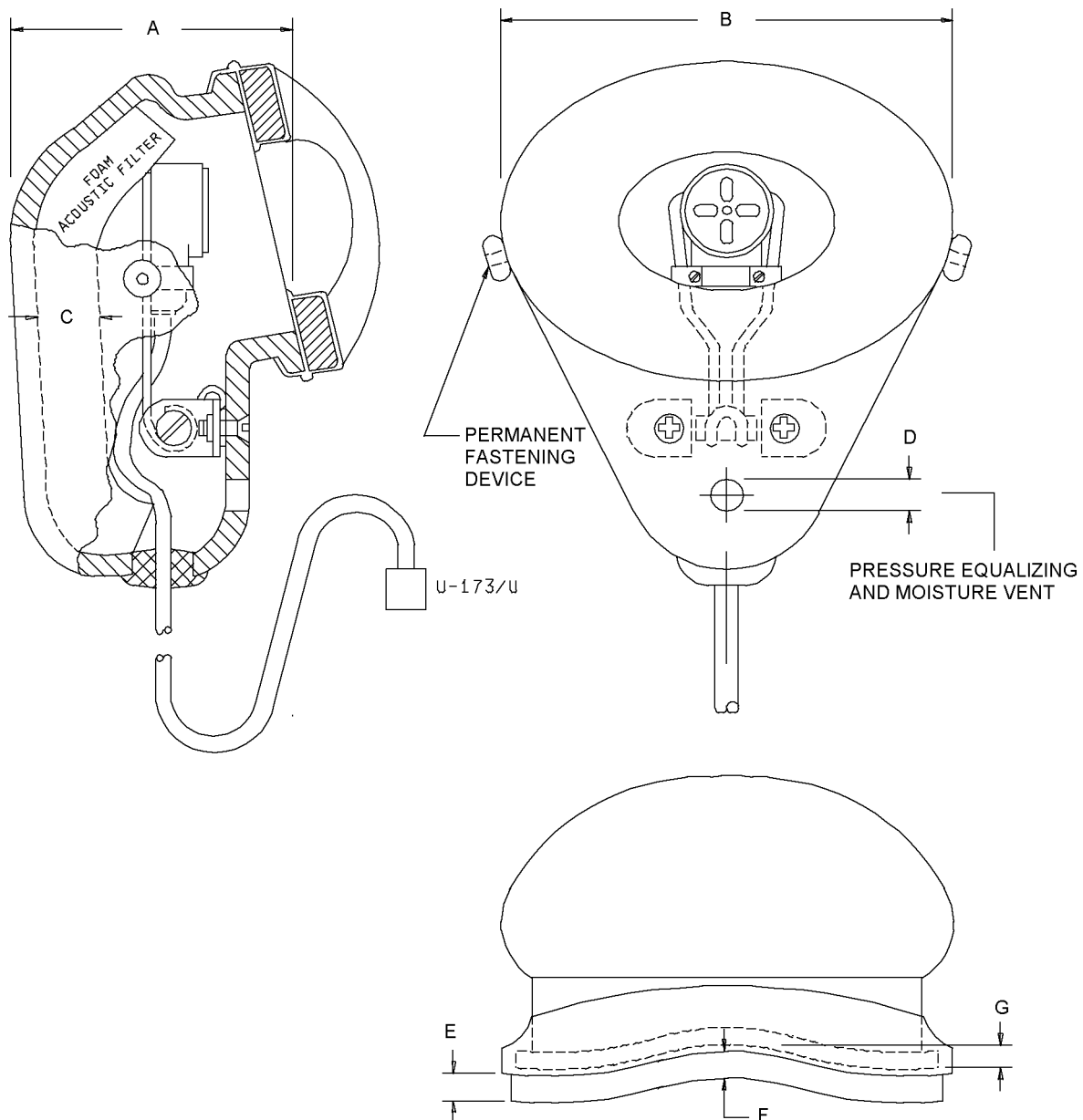
Letter	Inches		mm	
	Design dimension	Tolerances	Design dimension	Tolerances
A	1.50	+ 0.5 – 0.00	38.1	+ 12.7 – 0.0
B	28.5	± 2.0	732.9	± 50.8
C	12.0	± 0.5	304.8	± 12.7

FIGURE 1. Headset-microphone assembly M87819/1-O1.

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NOTES:

1. The "A" cord, and Part or Identifying Number (PIN) U-179A/U plug shall provide interface to emergency oxygen mask connectors.
2. The "B" cord shall provide walk-around freedom, when used with flightline or shop extender cables.
3. The "C" (shield) cord shall allow the shield to dangle at an accessible, yet unencumbering, position.
4. Dimensions are in inches. Unless otherwise specified, tolerance is ± 0.015 inch. Metric equivalents are given for information only.

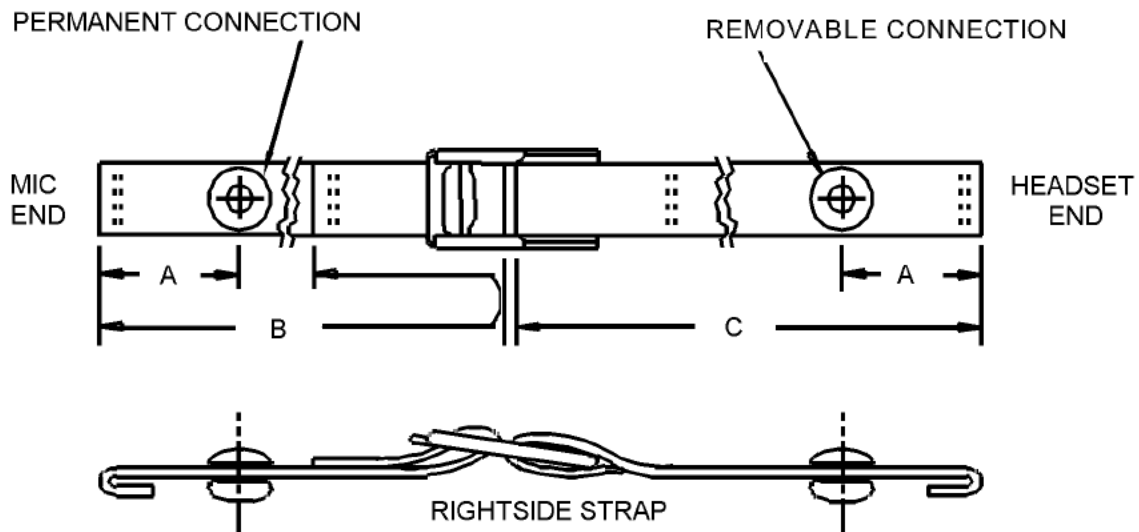
FIGURE 1. Headset-microphone assembly M87819/1-01 - Continued.FIGURE 2. Microphone protective shield assembly.

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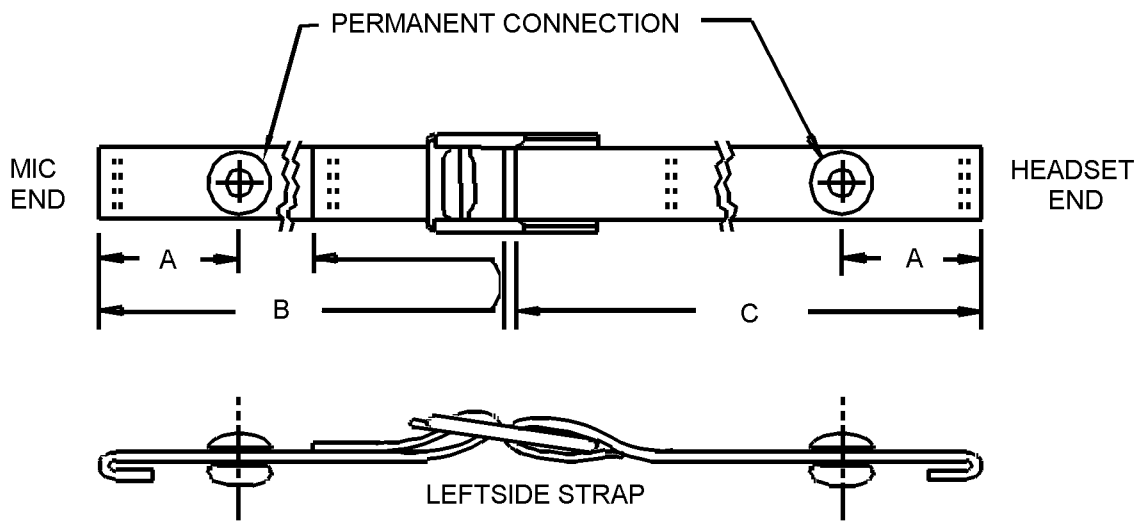
Letter	Inches		mm	
	Design dimension	Tolerances	Design dimension	Tolerances
A	2.300	± 0.015	58.42	$+ 12.7 - 0.0$
B	3.700	± 0.015	93.98	± 0.381
C	0.500	± 0.015	12.7	± 0.381
D	0.250	± 0.015	6.35	± 0.381
E	0.600	± 0.015	15.24	± 0.381

NOTES:

1. Dimensions are in inches. Unless otherwise specified, tolerance is ± 0.015 inch. Metric equivalents are given for information only.
2. All shield and shield-cushion dimensions shall enable the part to provide comfortable wear and acoustic noise-protection under the temperature, work-shift, and noise-conditions encountered, and when used by a user with a standard jaw size (50th percentile, male aviator).
3. Foam acoustic filler shall be provided as specified (see Requirements).
4. Mounting method for microphone shall conform to Requirements; mounting shown optional.

FIGURE 2. Microphone protective shield assembly – Continued.FIGURE 3. Microphone strap assembly, typical configuration.

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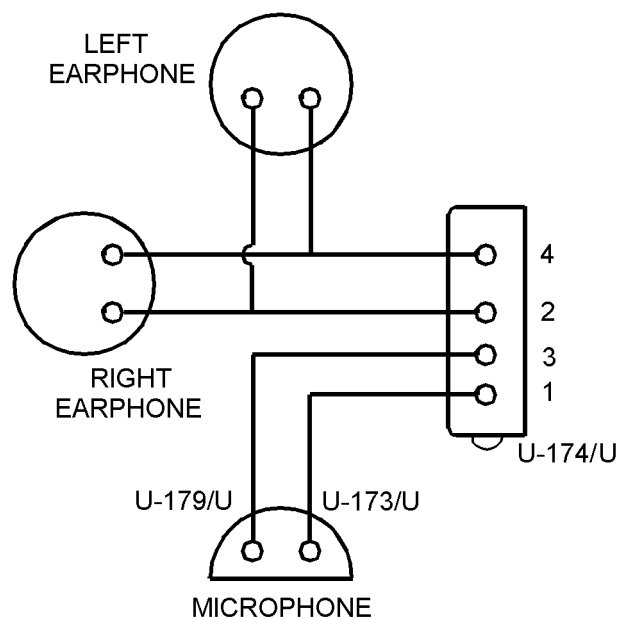
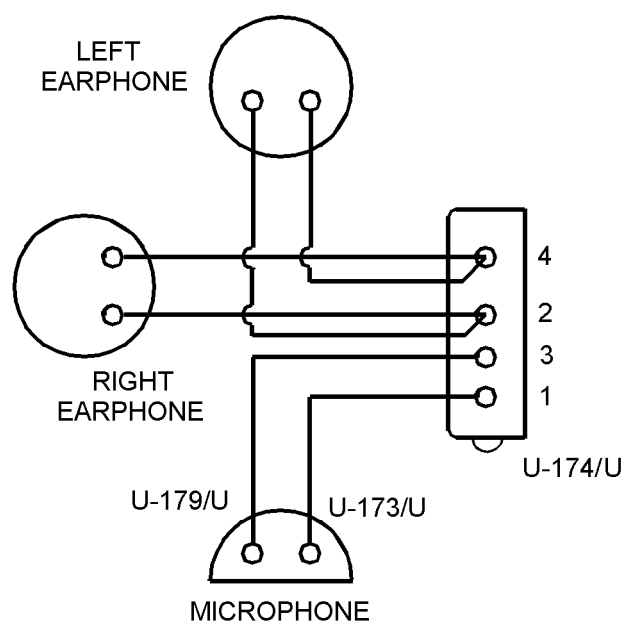
Letter	Inches		mm	
	Design dimension	Tolerances	Design dimension	Tolerances
A	1.0	± 0.125	25.4	± 0.381
B	7.3	± 0.25	185.42	± 12.7
C	3.5	± 0.25	88.9	± 6.35

NOTES:

1. Dimensions are in inches. Unless otherwise specified, tolerance is ± 0.125 inch. Metric equivalents are given for information only.
2. Strap dimensions "A". (1.0 inch) shall enable the strap to retain the adjacent connectors under the stress-and-pull conditions encountered, without adding material, which may entangle during use.
3. Major strap dimensions "B" and "C" (7.3 inches, 3.5 inches) shall allow the straps to support the weight of the protective shield when fully extended, while providing sufficient material to allow adjustment of the shield tightly against the standard user head and jaw size when fully tightened.
4. Strap color, material, and connector types shall conform to the requirements of this specification.

FIGURE 3. Microphone strap assembly, typical configuration – Continued.

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NOTE: Both 4 wire and 6 wire configurations are acceptable provided EMI requirements are met.

FIGURE 4. Wiring diagram.

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REQUIREMENTS:

Design and construction:

Configurations: See figures 1, 2, 3, and 4.

Headband pressure: Headband pressure shall be sufficient to meet the noise attenuation requirements of this specification, without compromising comfort, not to exceed 3.5 pounds.

Microphone protective shield assembly:

Microphone: Microphone shall be PIN M-101/AIC, as specified in MIL-PRF-26542/4 (1 required), or a microphone providing equal or superior acoustic, environmental, altitude-capable and noise-canceling performance. The microphone shall be securely attached to the protective shield in a manner which prevents motion during use, as well as removal during routine headset maintenance (see figure 2).

Protective shield: The microphone protective shield shall be provided, as specified on figure 2. Dimensions related to interface with the shield cushion shall be provided as shown (see Cushion). Other dimensions may vary to the extent that they provide superior performance with respect to human interface (hand grasp, 50th percentile male aviator), shock (drop), noise exclusion, and acoustical compatibility with the microphone element. Cord dimension shall be as shown.

Color: Color of the shield shall be the same as the earcups, for consistency.

Filler: The shield shall be designed to reduce acoustic echoes within the shell. If this requirement is satisfied using an acoustic-damping foam material, the material shall be flame-retardant, and meet or exceed the performance requirements of MIL-PRF-87819.

Cushion: The microphone protective shield cushion shall be in accordance with U.S. Air Force drawing 66B853, for human interface (comfort) under the temperature, work-shift, and noise-conditions encountered in flight-line and shop (engine-test) applications. The color shall be black.

Microphone strap assembly:

The microphone shield shall be secured to the earcups by two different strap assemblies, as specified on figure 1 and figure 3.

Straps: The straps shall conform to the dimensions on figure 3, to enable it to support the dangling microphone shield (when fully extended), as well as enable full adjustment of the microphone shield to the user (when fully tightened). The strap material shall provide high-strength, flame-retardant, fungus-resistant, and slip-resistant performance under the environmental conditions specified. Color shall provide low-contrast with operational clothing and gear.

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Buckles:	The strap assembly sections shall be joined by a mechanism, which allows the protective shield to be easily adjusted without allowing slippage during use. It shall not damage the strap material. Color shall provide low-contrast with operational clothing and gear.
Removable connection:	The 1 (one) removable connection shall prevent inadvertent detachment during use.
Permanent connection:	The 3 (three) permanent connections shall prevent inadvertent detachment of the microphone shield assembly, when not in use.
Earphone element:	The earphone element shall be PIN H-143/AIC, as specified in MIL-PRF-25670/2, (2 required), or an electrically compatible part having equivalent or superior noise-canceling, environmental, and voice-band frequency response at ground level and altitude, meeting established United States Air Force hazardous noise exposure standards.
Earcup filler clearance:	Fillers shall allow clearance of at least 0.500 inch from the uncompressed face of the earcushion.
Wiring diagram:	Wiring shall be as specified on figure 4, for consistency with repair procedures.
Connectors:	Connectors shall be a PIN U-179A/U type or equivalent as approved by qualifying activity; PIN U-174/U as specified on MIL-DTL-9177/2, and PIN U-173/U as specified on U.S. Air Force drawing 57B12662, or electrically and mechanically compatible parts, as approved by the qualifying activity. See figure 1.
Weight:	The weight shall be sufficient to meet the attenuation requirements of this specification, without compromising comfort, not to exceed 1.75 pounds.
PIN:	M87819/1-01
Performance characteristics:	See table I, table II, and MIL-PRF-87819.
Attenuation:	Testing for attenuation shall be as specified in MIL-PRF-87819, with the exception that table I (specified herein) shall be used for attenuation values.

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Cold-environment
shock test:

The microphone protective shield shall resist damage and separation of components, when exposed to typical bumping and dropping in arctic environments. After cooling the headset to – 70 degrees F for 30 minutes, it shall be transferred within 2 (two) minutes to an ambient room temperature location and immediately dropped 3 (three) times onto a hard surface (concrete or tile) from a height of 4 (four) feet, striking first on the microphone shield. Measure distance up to the bottom of the microphone shield. This procedure shall be repeated for a total of 2 (two) cooling/dropping cycles. Following the test, the product shall meet the visual and mechanical inspection, and acoustic quality requirements of MIL-PRF-87819, as well as the following talk-out test in Subgroup 1 of table II. Connect the headset to equipment necessary to allow the microphone to transmit through the earphone elements. Verify that voice input to the microphone transmits clearly through the earphone elements, free of degradation due to the dropping.

Supersession data:

Headset-microphone PIN M87819/1-01 supersedes headset-microphone PIN H-133/AIC.

TABLE I. Attenuation values.

Frequency (Hz.)	63	80	100	125	160	200	250	315
Minimum mean attenuation (dB)	8	9	10	12	13	15	17	20
Minimum mean attenuation (dB) with Eyeglasses ^{1/}	4	5	6	8	10	12	14	17
Frequency (Hz.)	400	500	630	800	1,000	1,250	1,600	
Minimum mean attenuation (dB)	23	26	28	30	31	32	32	
Minimum mean attenuation (dB) with Eyeglasses ^{1/}	20	23	25	27	29	30	30	
Frequency (Hz.)	2,000	2,500	3,150	4,000	5,000	6,300	8,000	
Minimum mean attenuation (dB)	32	32	32	32	32	- 31	30	
Minimum mean attenuation (dB) with Eyeglasses ^{1/}	32	32	32	31	30	- -28 - -	24	

^{1/} Eyeglasses PIN HGU-4/P shall be as specified in MIL-PRF-87819.

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TABLE II. Performance characteristics.

Inspection ^{1/}	Qualification test	Group A	Group B	Group C
Subgroup 1				
Visual and mechanical	X	X		X
Acoustic quality	X	X		X
Attenuation (Qualification)	X			
Attenuation (Conformance)				X
Speech intelligibility	X			
Headset system sensitivity	X			X
Subgroup 2				
Headband pressure	X		X	
Headband flexing	X			X
Twist and pull	X			X
Shock (drop)	X			X
Fungus	X			
Vibration	X			X
Temperature	X			X
Subgroup 3				
Temperature shock	X			X
Humidity	X			X
Salt fog	X			X
Cold-environment shock ^{2/}	X			X
Subgroup 4				
Cable isolation	X			X

^{1/} See MIL-PRF-87819, for inspection details.

^{2/} The Cold-environment shock test appears only in MIL-PRF-87819/1 (see Requirements).

Intended use. Headset-microphone PIN M87819/1-01 is a high ambient noise level headset-microphone designed for use by ground personnel to provide communication under the extreme noise conditions encountered in close proximity to fighter, transport, and tanker aircraft engines, both on the flight-line and in engine-test shops, for periods of time required by normal duty work-shifts. The noise-attenuation requirements in this document were developed by the Acoustics / Noise Control (Air Force Research Laboratory) Wright-Patterson AFB, OH. It is strongly recommended that earplugs be worn in conjunction with these headsets.

Changes from previous issue. The margins of this specification sheet are marked with vertical lines to indicate where changes from the previous issue 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 and relationship to the last previous issue.

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Referenced documents. In addition to MIL-PRF-87819, this document references the following:

MIL-DTL-9177/2
MIL-PRF-25670/2
MIL-PRF-26542/4
57B12662
66B853

CONCLUDING MATERIAL

Custodians:
Air Force - 85
DLA – CC

Preparing activity:
DLA – CC

(Project 5965-2009-005)

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 <http://assist.daps.dla.mil>.