MILITARY SPECIFICATION SHEET

LIGHT SYSTEMS, SMALL SUPERSONIC AND SMALL SUBSONIC AIRCRAFT, ANTI-COLLISION, STROBE, RED AND WHITE MODE, WING, FUSELAGE, VERTICAL STABILIZER MOUNTED

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

The complete requirements for acquiring the light systems described herein shall consist of this document and the latest issue of Specification MIL-L-85314.

1. SCOPE

1.1 Scope. This detail specification together with the general specification cover the requirements for wing, fuselage, vertical stabilizer mounted, red and white mode, strobe, anti-collision light systems for supersonic and subsonic aircraft.

1.2 Classification. The classification (types) of the light systems shall be as specified in the general specification.

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standards, and handbooks. Unless otherwise specified, the following specifications, standards, and handbooks of the issue listed in that issue of the Department of Defense Index of Specifications and Standards (DoDISS) specified in the solicitation, form a part of this specification to the extent specified herein.

SPECIFICATIONS

Military

DOD-C-38999/40	Connectors, Electrical, Circular, Miniature, High Density, Quick Disconnect (Bayonet, Threaded, and Breech Coupling), Environment Resistant, Removable Crimp and Hermetic Solder Contacts, Receptacle, Wall Mounting Flange, Breech Coupling, Removable Crimp Contacts, Series IV, Metric

SPECIFICATIONS (Continued)

Military (Continued)

DOD-C-38999/42	Connectors, Electrical, Circular, Miniature, High Density, Quick Disconnect (Bayonet, Threaded, and Breech Coupling), Environment Resistant, Removable Crimp and Hermetic Solder Contacts, Receptacle, Box Mounting Flange, Breech Coupling, Removable Crimp Contacts, Series IV, Metric
DOD-C-38999/46	Connectors, Electrical, Circular, Miniature, High Density, Quick Disconnect (Bayonet, Threaded and Breech Coupling), Environment Resistant, Removable Crimp and Hermetic Solder Contacts, Plug, Breech Coupling, EMI Grounding, Removable Crimp Contacts, Series IV, Metric
MIL-L-85314	Light Systems, Aircraft, Anti-Collision, Strobe, General Specification for

(Copies of specifications, standards, handbooks, drawings, and publications required by manufacturers in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting officer.)

3. REQUIREMENTS

3.1 First article. The strobe, anti-collision, aircraft light systems furnished under this specification shall be products which have been inspected and passed first article inspection.

3.2 Materials and components. Materials and components shall conform to applicable specifications, standards and figures as listed or required herein and unless modified herein to the general specification for the strobe, anti-collision, aircraft light systems, MIL-L-85314.

3.3 Design and construction. The design and construction of the supersonic and subsonic aircraft light systems shall conform to that specified in the general specification, except as otherwise specified herein.

3.3.1 Operation. The operation of the light systems shall be as specified in the general specification and as specified herein.

3.3.2 System configuration. The system configuration shall consist of one specified in Table 1. Switches, mating connectors and interconnecting cables shall not be furnished as components of the system.

3.3.3 Power supply.

3.3.3.1 Input power. The power supply shall conform to the general specification and shall be Type II.

3.3.3.2 Power consumption. Type II system either configuration A or B shall require a maximum of 200 watts of electrical power from an aircraft source, averaged over each flash cycle.

3.3.3.3 Dimensions. Typical length, width and height of the power supply assembly, including mounting provisions and connectors inherent in the design of either configuration A or B are depicted in Figures 7 and 8.

3.3.3.4 Mounting. A typical mounting configuration for A or B power supplies is shown in Figures 7 and 8.

3.3.3.5 Interface connectors.

3.3.3.5.1 Output. The power supply shall provide interface to each light source assembly through separate D38999/40-W-D-5-S-N connectors.

3.3.3.5.2 Input.

3.3.3.5.2.1 Type II. The Type II system power supplies shall provide a D38999/40-W-D-5-P-W connector to interface input power and cockpit control signals.

3.3.4 Light source.

3.3.4.1 Mode. Each light source shall either be red or white. See Table III for light intensity distibution for red or white light sources. Two styles of light sources are provided depending on lighting scheme chosen for the supersonic or subsonic aircraft. Figures 3 and 5 depict a light source providing 360° or 180° respectively in the horizontal plane of the aircraft. White light sources shall be utilized for wingtip, fuselage or vertical stabilizer mounting. Red light sources shall be utilized for fuselage or vertical stabilizer mounting on aircraft.

3.3.4.2 Dimensions. The dimensions of each light source are typically depicted in Figures 3 and 5 for either 360° light coverage or 180° light coverage, respectively.

3.3.4.3 Mounting. Typical mounting configuration for each light source is depicted in Figures 4 and 6.

3.3.4.4 Flash rate for alternating light systems. Alternating light systems as specified in Table II shall emit 100 to 120 flashes per minute with each flash alternating between light sources such that they shall flash $180^{\circ} \pm 30^{\circ}$ out of phase. Sources in either mode shall be

synchronized to flash 180 ± 30° out of phase. When either light source is deactivated, the flash rate from the remaining single source shall be 50 to 60 flashes per minute. These flash rates shall be maintained throughout the bands of power input specified herein and the general specification.

3.4 Performance characteristics. The light systems shall conform to all the performance characteristic requirements specified in the general specification and as specified herein.

3.4.1 Flash rate for synchronous light systems. Synchronous light systems as specified in Table II shall emit synchronous flashes from both light sources of 50 to 60 flashes per minute.

3.4.2 Light intensity. The luminous intensity emitted by both the red and white modes shall have, in the vertical field, the hemispherical coverage above and below the horizontal plane of the light source specified in Table III. The minimum light intensity requirement specified in Table III, may be diminished by 15 percent for a 60 degree (maximum) sector or the 360 degree horizontal plane.

3.4.3 Electromagnetic interference. The system shall conform to the electromagnetic interference requirements of the general specification.

3.5 Weight. System configurations A or B (Figures 1 and 2) (Type II) shall weigh a maximum 15 pounds (6804 grams). Maximum weights are exclusive of assembly interconnecting wiring and remote switches.

NOTE: Revision letters are not used to denote changes due to the extensiveness of the changes.

Custodians:
Army - AV
Air Force - 11

Preparing Activity:
Navy - AS
(Project No. 6220-0317-3)

TABLE I. System configuration.

Applicable figure	Configuration	Quantity	
		Power supply	Light source
1	A	1	2
2	B	2	2

TABLE II. Applicable light system combinations.

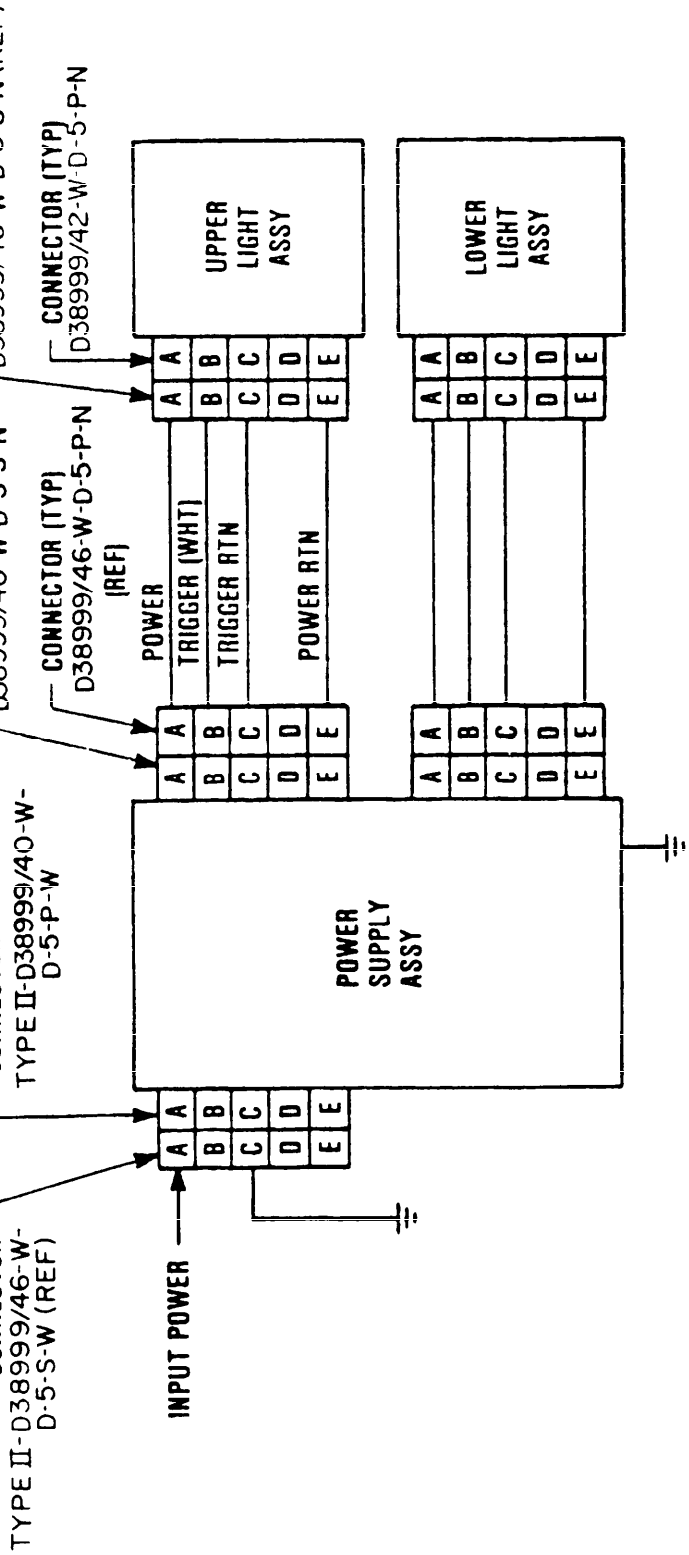
System type	Config-uration	Figure	Flash rate		Quantity		
			Syn	Alternate	Power supply Type I	Power supply Type II	Light source
II	A	1	-	X	-	1	2
II	B	2	Optional		-	2	2

TABLE III. Light intensity distribution per light assembly.

Angle above (+) and below (-) horizontal plane (degrees)	Fuselage (360° light coverage)				Wingtip or Vertical Stabilizer (180° light coverage)			
	Intensity (effective candelas)				Intensity (effective candelas)			
	(white)		(aviation red)		(white)*		(aviation red)*	
	min	max	min	max	min	max	min	max
+75	90	-	15	-	-	-	-	-
+30	330	-	55	-	330	-	55	-
+20	660	-	110	-	660	-	110	-
+10	1320		220	-	1330	-	220	-
+ 5	2000	-	350 1/	-	2000	-	350 1/	-
0	2000	-	350 1/	-	2000	-	350 1/	-
- 5		-		-	2000	-	350 1/	-
-10		-		-	1330	-	220	-
-20		-		-	660	-	110	-
-30		-		-	330	-	55	-

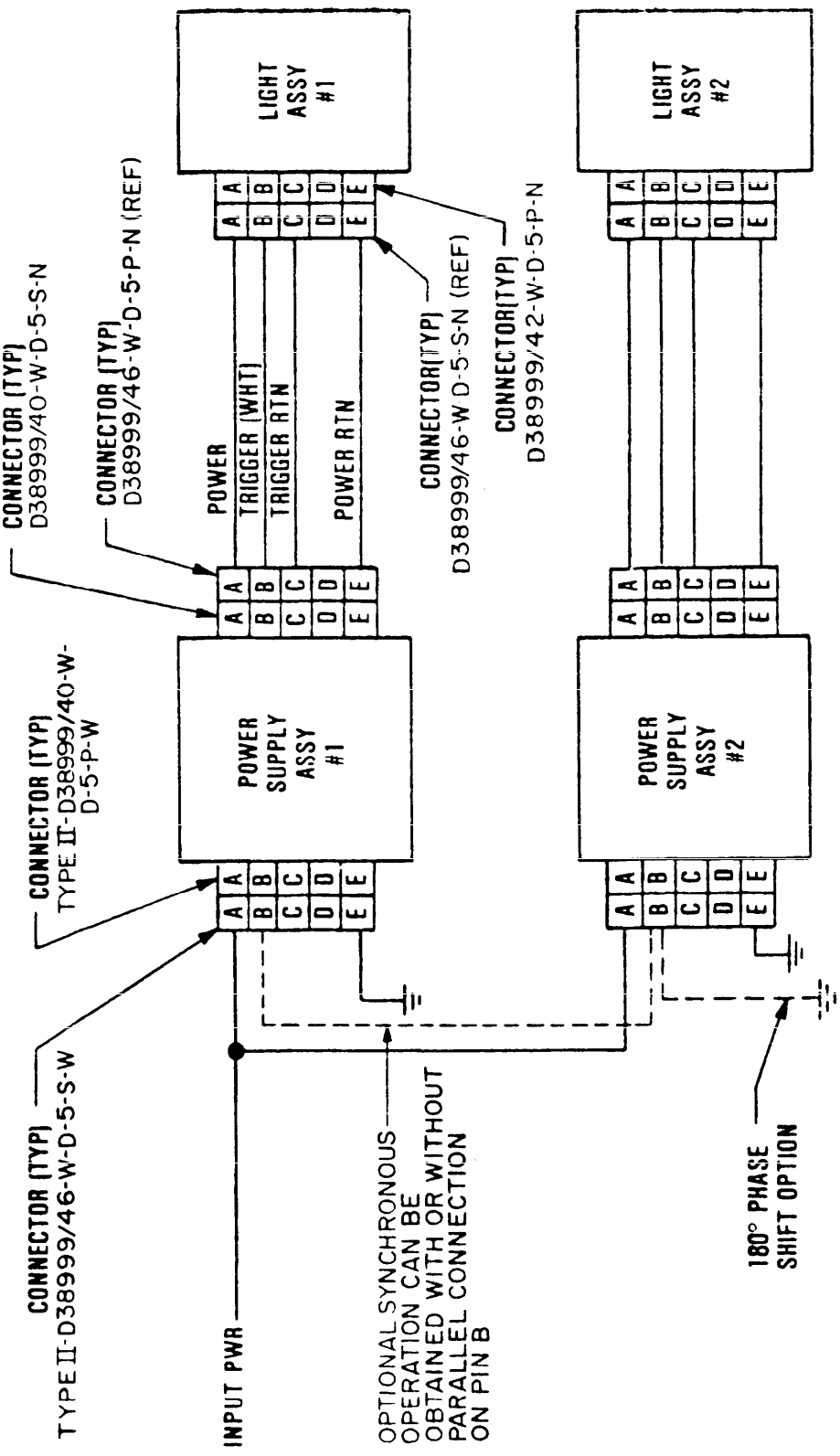
*The vertical coverage (minimum) for each strobe light shall provide the following listed (Table II) except for 0° to 20° and 160° to 180° outboard. In these areas the light intensity levels shall be reduced by twenty percent (20%).

1/ For Air Force use only the minimum shall be 400 candelas.



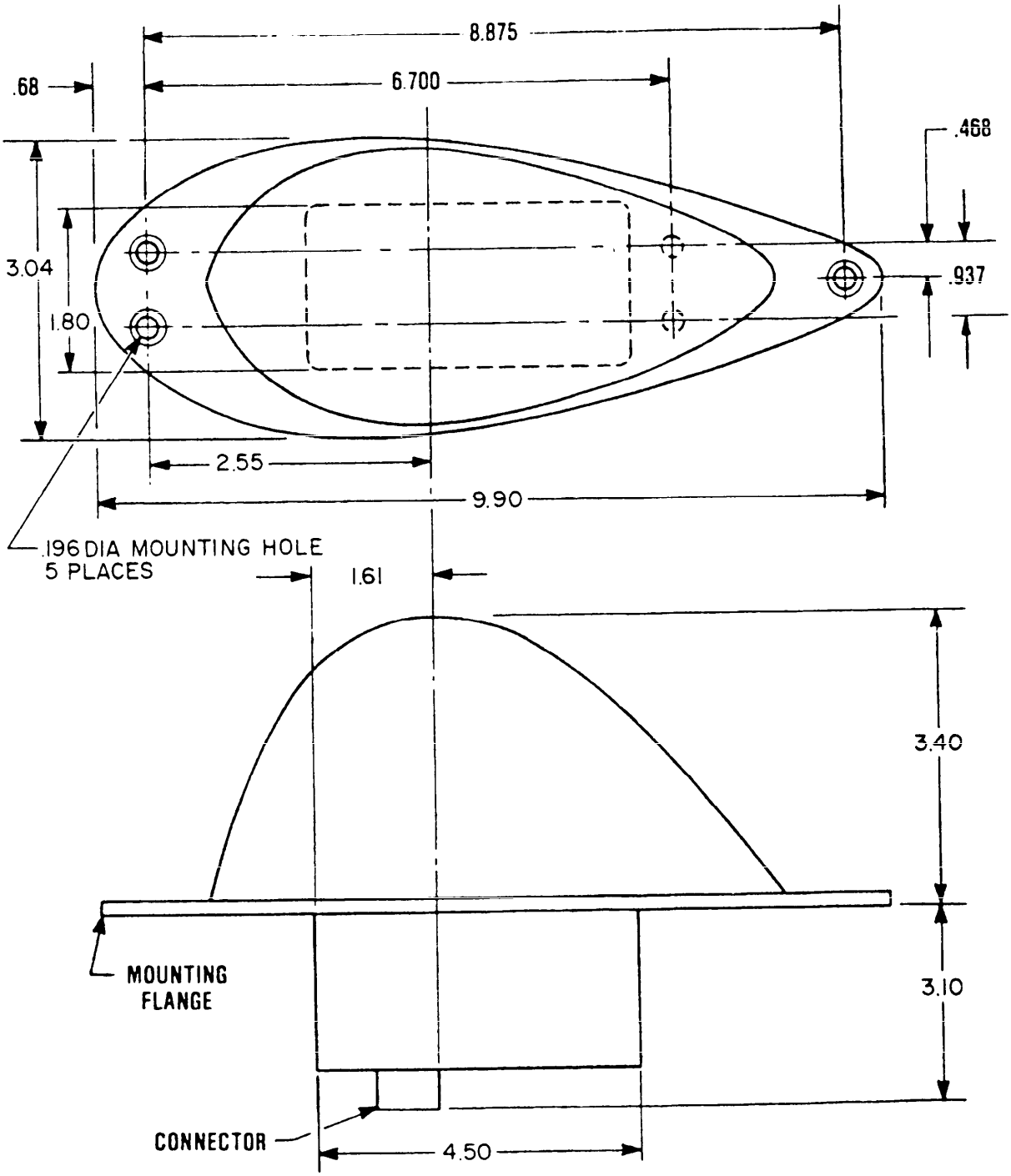
NOTE: MATING CABLE CONNECTORS, CABLES AND SWITCHES SHALL NOT BE FURNISHED AS COMPONENTS OF THE SYSTEM.

FIGURE 1. System configuration A.



NOTE: MATING CABLE CONNECTORS, CABLES AND SWITCHES SHALL NOT BE FURNISHED AS COMPONENTS OF THE SYSTEM.

FIGURE 2. System configuration B.

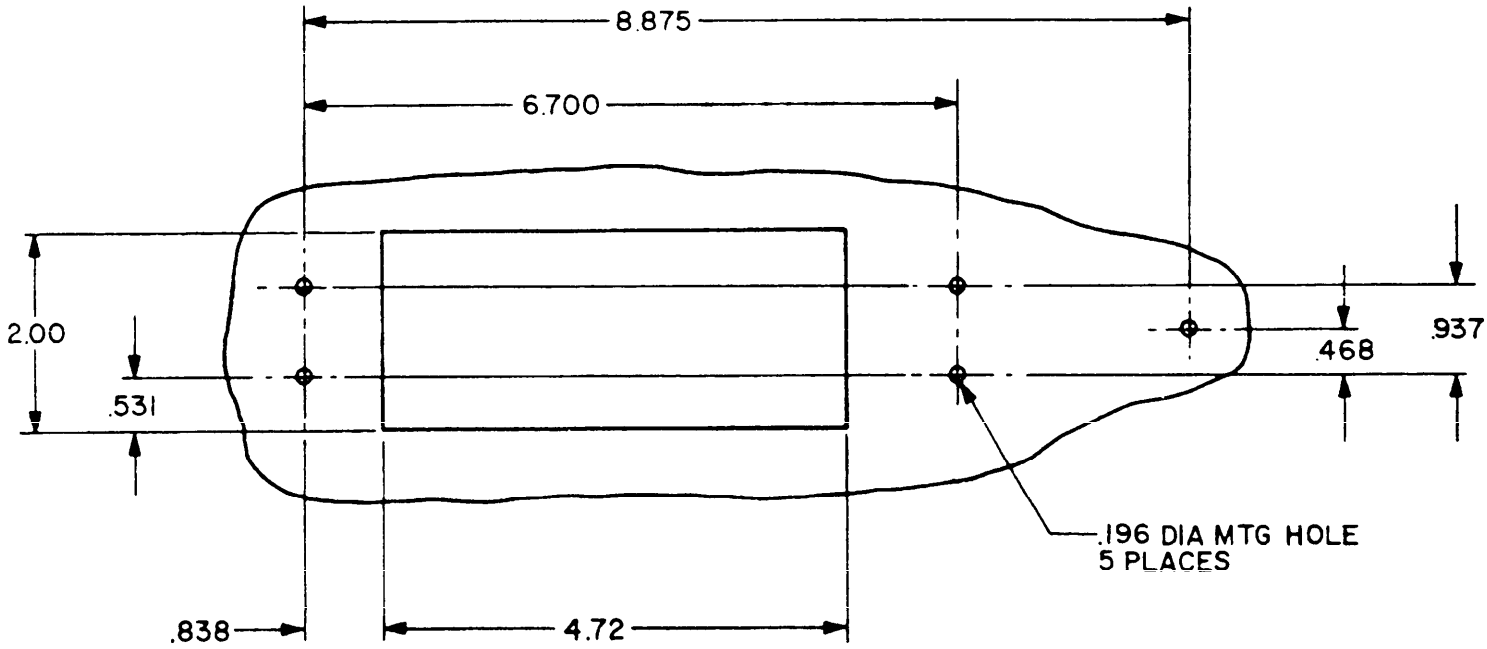


NOTES:

1. DIMENSIONS ARE IN INCHES.
2. TOLERANCES: .XX ± .03, .XXX ± .010
3. METRIC EQUIVALENTS GIVEN FOR INFORMATION ONLY AND ARE BASED UPON 1 INCH = 25.4MM.

INCHES	MM	INCHES	MM
9.90	251.46	1.61	40.894
8.875	225.425	.937	23.800
6.700	170.180	.68	17.27
3.40	86.36	.468	11.887
3.10	78.74	.196	4.978
3.04	77.216	.03	.762
1.80	45.72	.010	.254

FIGURE 3. Typical light source envelope dimensions (For 360° light coverage).



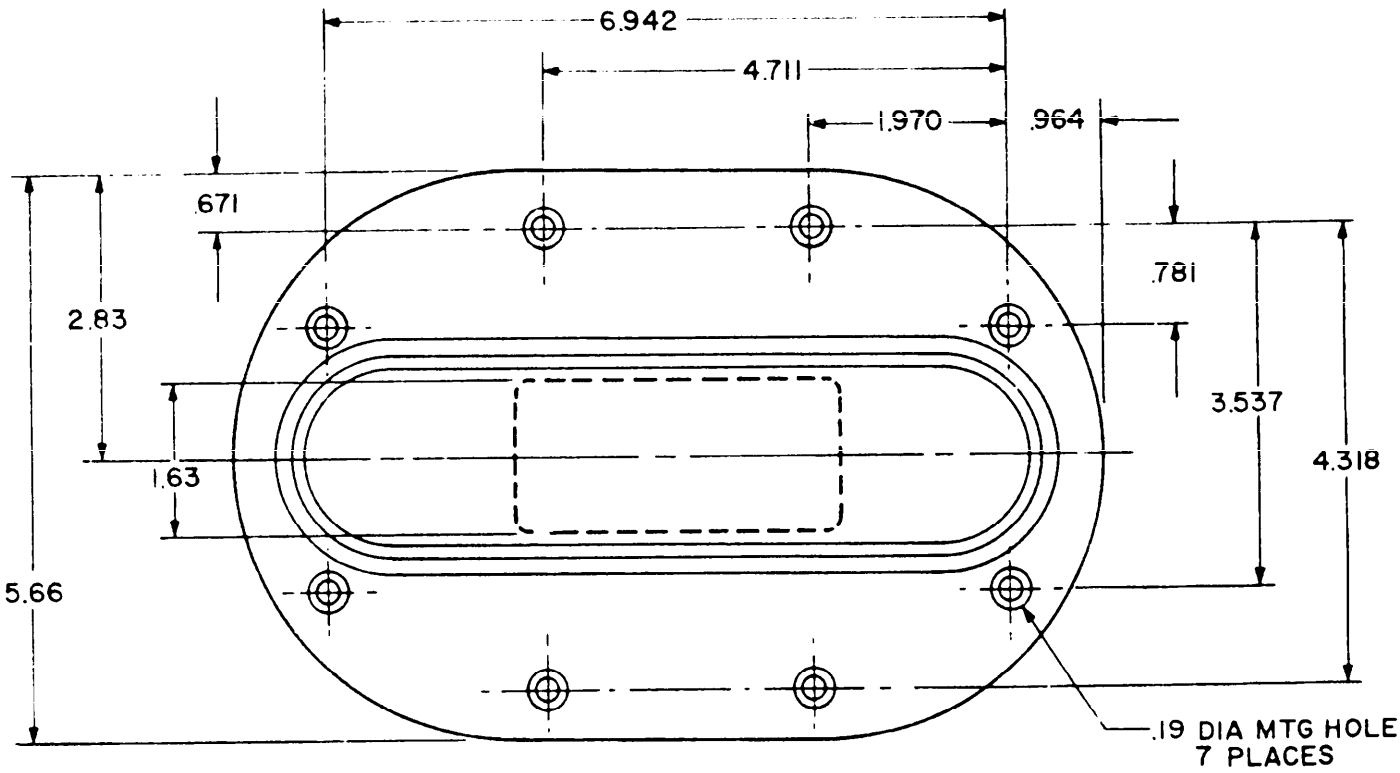
NOTES:

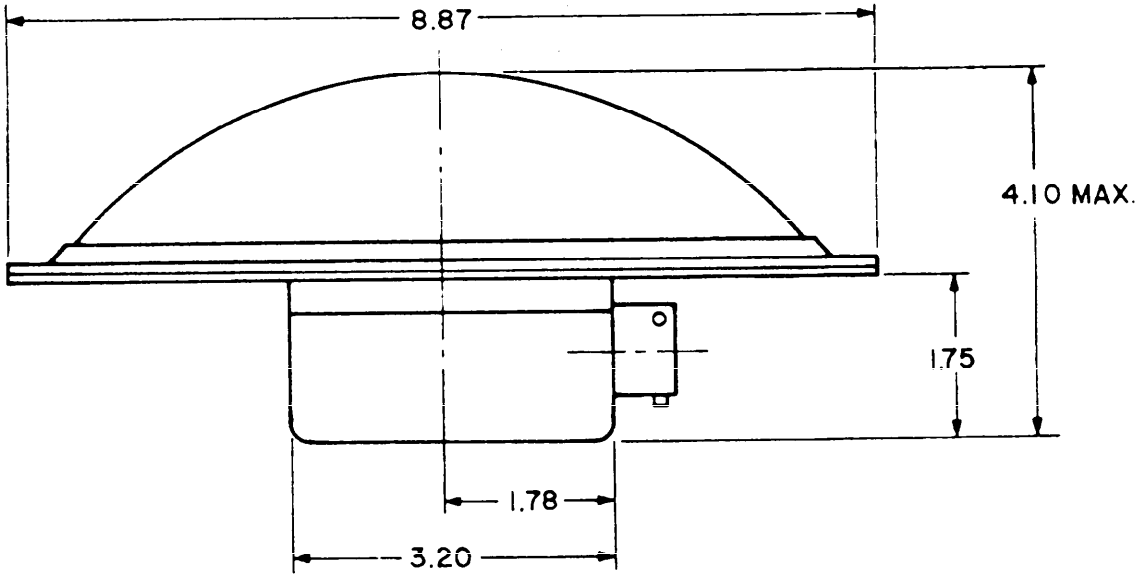
1. DIMENSIONS ARE IN INCHES.
   TOLERANCE: .XXX ± .010
   .XX ± .03

2. METRIC EQUIVALENTS ARE GIVEN FOR INFORMATION ONLY AND ARE BASED ON 1 INCH = 25.4MM.

INCHES	MM
8.875	225.43
6.700	170.18
4.72	119.89
2.00	50.80
.937	23.80
.838	21.29
.531	13.49
.468	11.89
.196	4.98
.010	.25

FIGURE 4. Typical mounting configuration (For 360° light coverage)





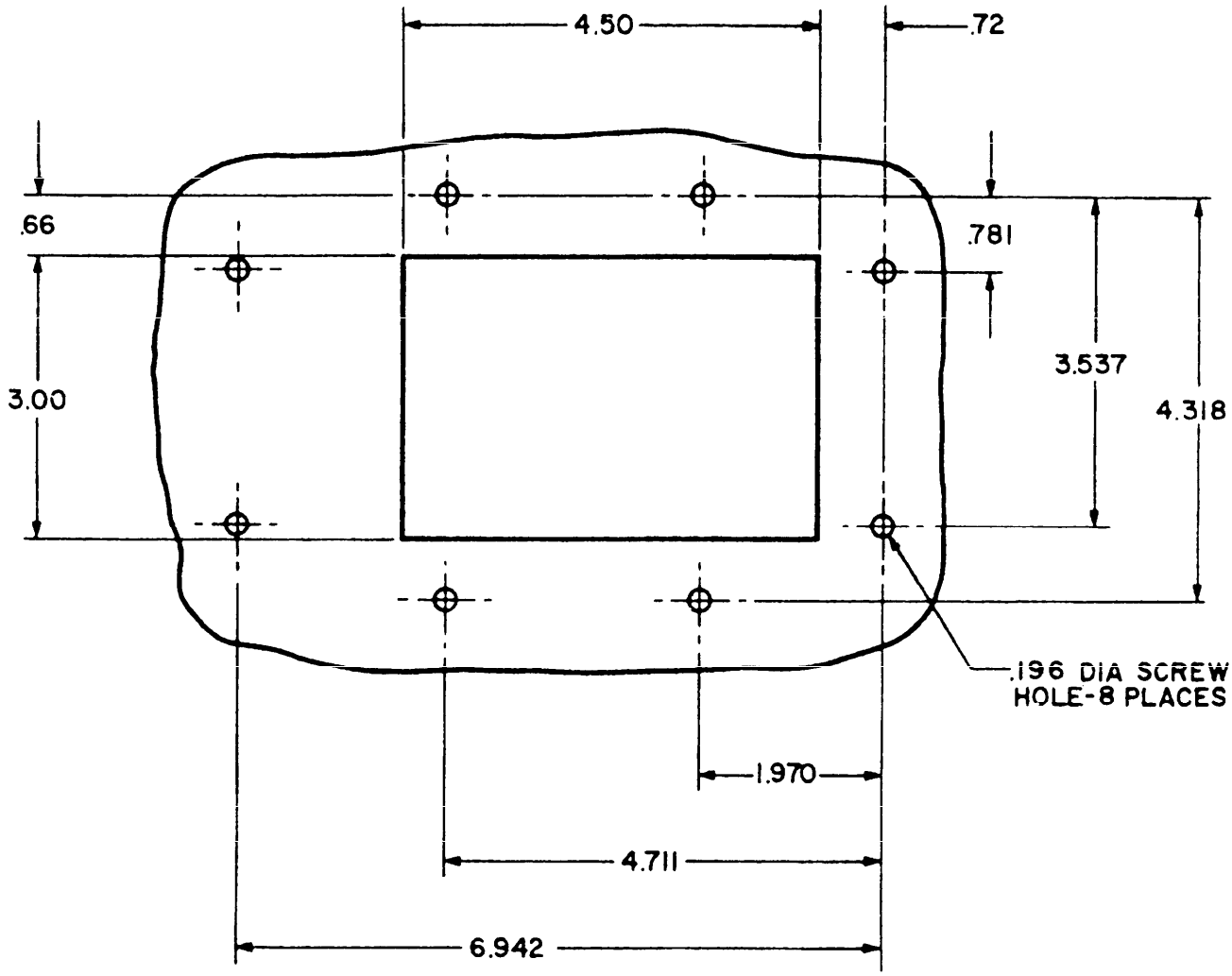
NOTES:

1. DIMENSIONS ARE IN INCHES.
   TOLERANCE: .XXX ± .010
   .XX ± .03

2. METRIC EQUIVALENTS ARE GIVEN FOR INFORMATION ONLY AND ARE BASED ON 1 INCH = 25.4MM.

INCHES	MM	INCHES	MM
.196	4.98	2.83	71.88
.671	17.04	3.20	81.28
.781	19.84	3.537	89.84
.964	24.49	4.10	104.14
1.63	41.40	4.318	109.68
1.75	44.45	4.711	119.66
1.78	45.21	5.66	143.76
1.970	50.04	6.942	176.33
		8.87	225.30

FIGURE 5. Typical light source envelope dimensions (for 180° light coverage).



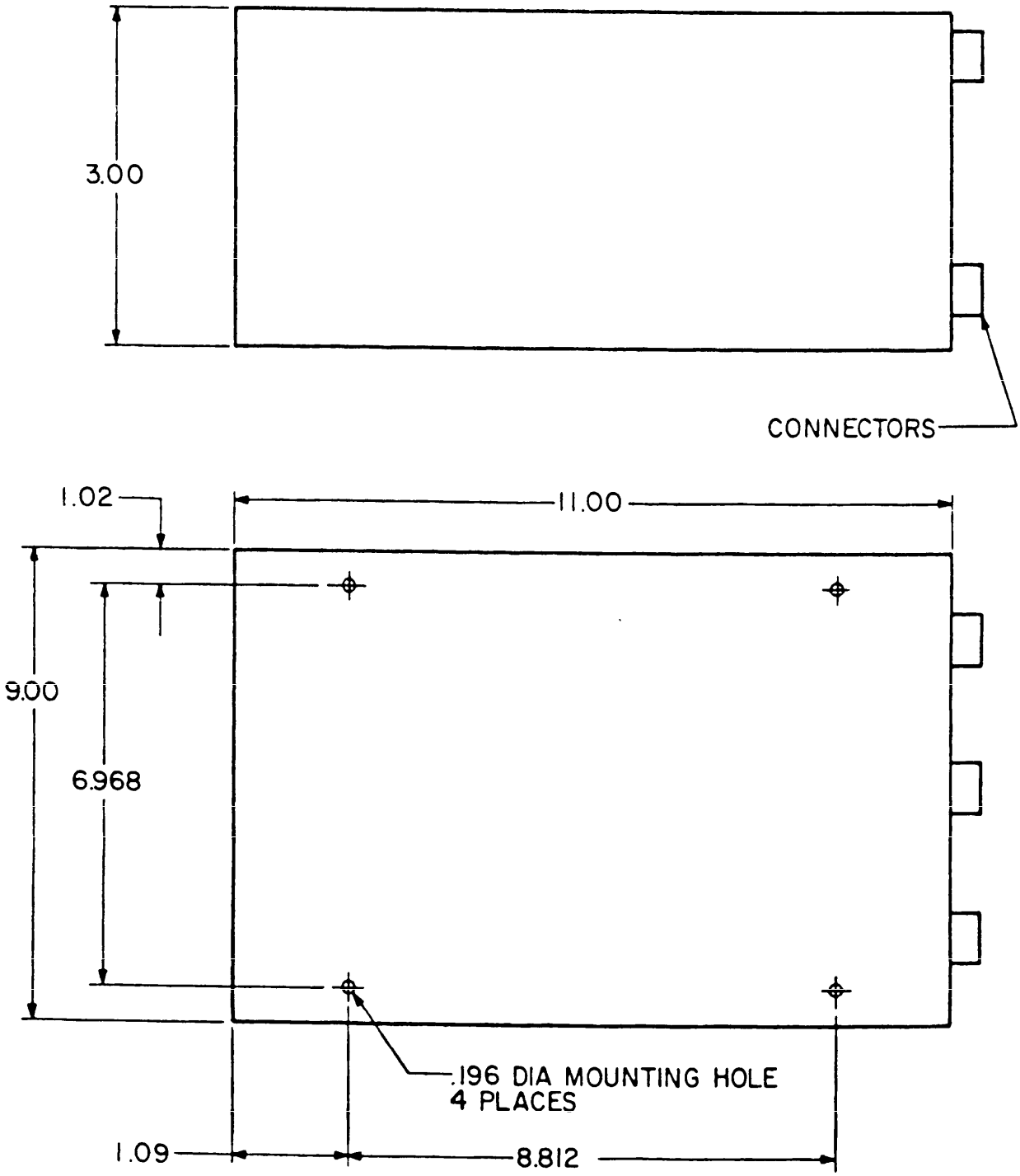
NOTES:

1. DIMENSIONS ARE IN INCHES.
   TOLERANCE: .XX ± .03
   .XXX ± .010

2. METRIC EQUIVALENTS ARE GIVEN FOR INFORMATION ONLY AND ARE BASED ON 1 INCH = 25.4MM.

INCHES	MM
.196	4.98
.66	16.76
.72	18.29
.781	19.84
1.970	50.04
3.00	76.20
3.537	89.84
4.318	109.68
4.50	114.30
4.711	119.66
6.942	176.33

FIGURE 6. Typical mounting configuration (For 180° light coverage).



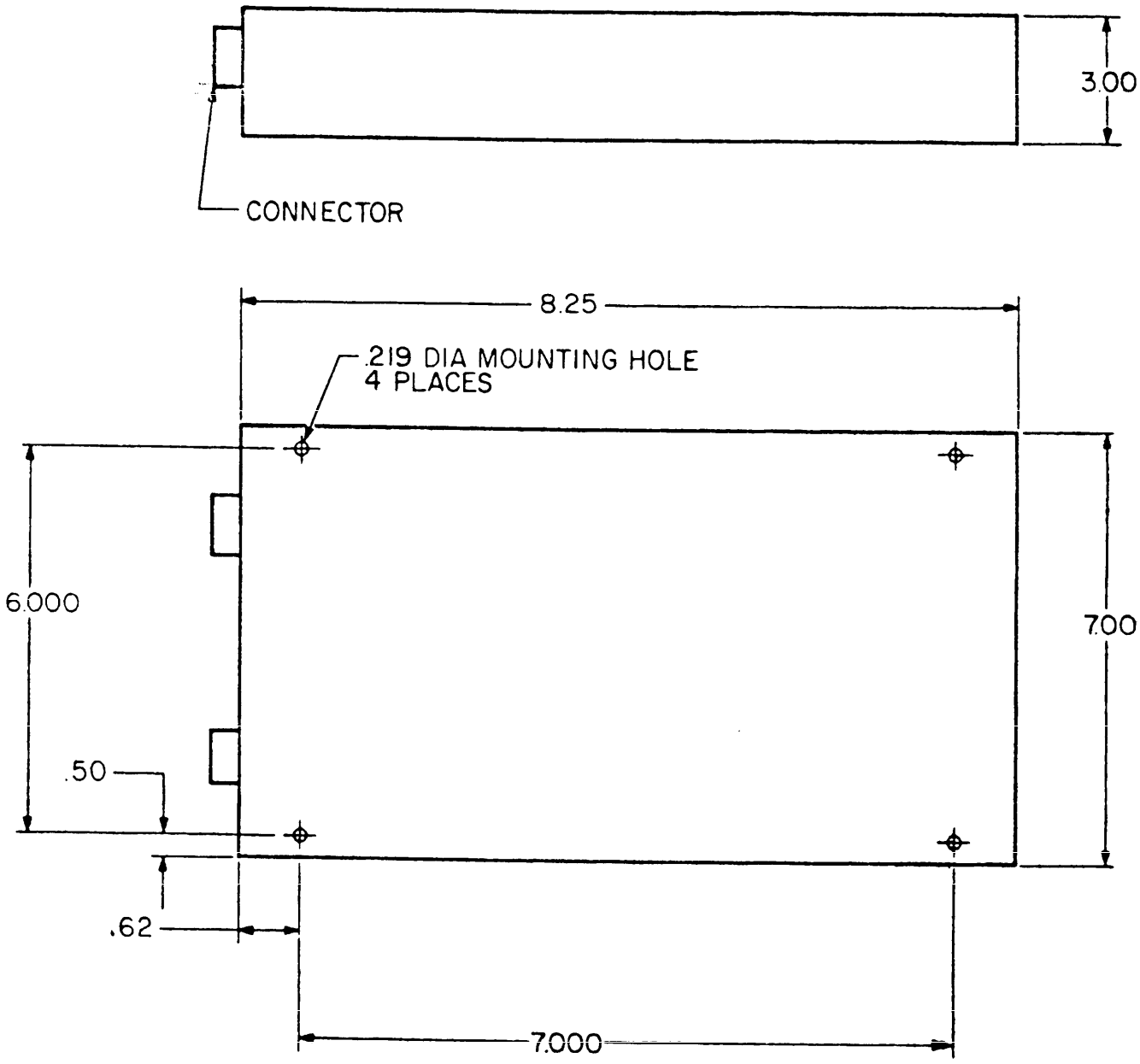
NOTES:

1. DIMENSIONS ARE IN INCHES.
   TOLERANCES: .XX ± .03
   .XXX ± .010

2. METRIC EQUIVALENTS ARE GIVEN FOR INFORMATION ONLY AND ARE BASED ON 1 INCH = 25.4MM.

INCHES	MM
11.00	279.40
9.00	228.60
8.812	223.82
6.968	176.99
3.00	76.20
1.09	27.69
1.02	25.91
.196	4.98

FIGURE 7. Typical power supply dimensions for configuration A.



NOTES:

1. DIMENSIONS ARE IN INCHES.
   TOLERANCES: .XX ± .03
   .XXX ± .010
2. METRIC EQUIVALENTS ARE GIVEN FOR INFORMATION ONLY AND ARE BASED ON 1 INCH = 25.4MM.

INCHES	MM
8.25	209.55
7.000	177.80
6.000	152.40
3.00	76.20
.62	15.75
.50	12.70
.219	5.56

FIGURE 8. Typical power supply dimensions for configuration B.