

INCH-POUND

MIL-S-24317/8C
28 February 2006
SUPERSEDING
MIL-S-24317/8B
21 May 1990

MILITARY SPECIFICATION SHEET

SWITCHES, MULTISTATION, PUSH BUTTON, (ILLUMINATED MATRIX ARRANGEMENT), RFI
SHIELDED, MOISTURE SEALED, HIGH IMPACT SHOCK, STYLE SM08

INACTIVE FOR NEW DESIGN AFTER 08 MARCH 1999.

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

The complete requirements for acquiring the switch described herein shall consist of this specification and
the latest issue of MIL-DTL-24317.

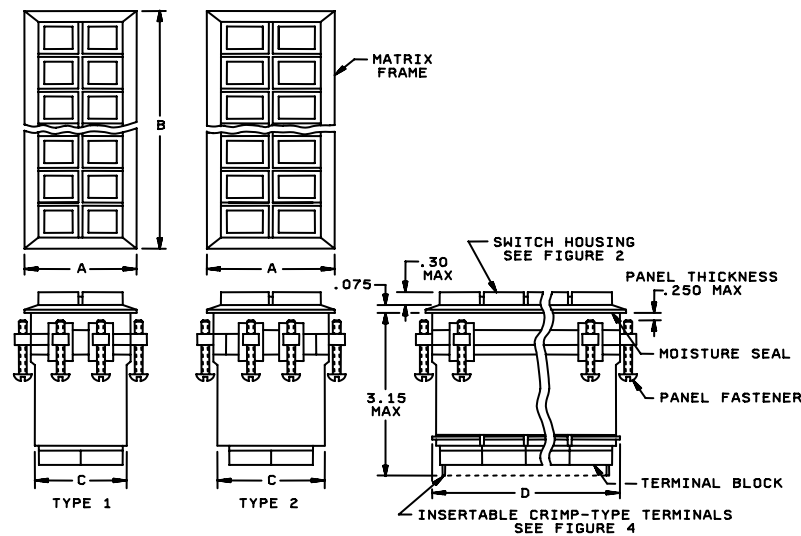


FIGURE 1. Complete matrix

NOTES:

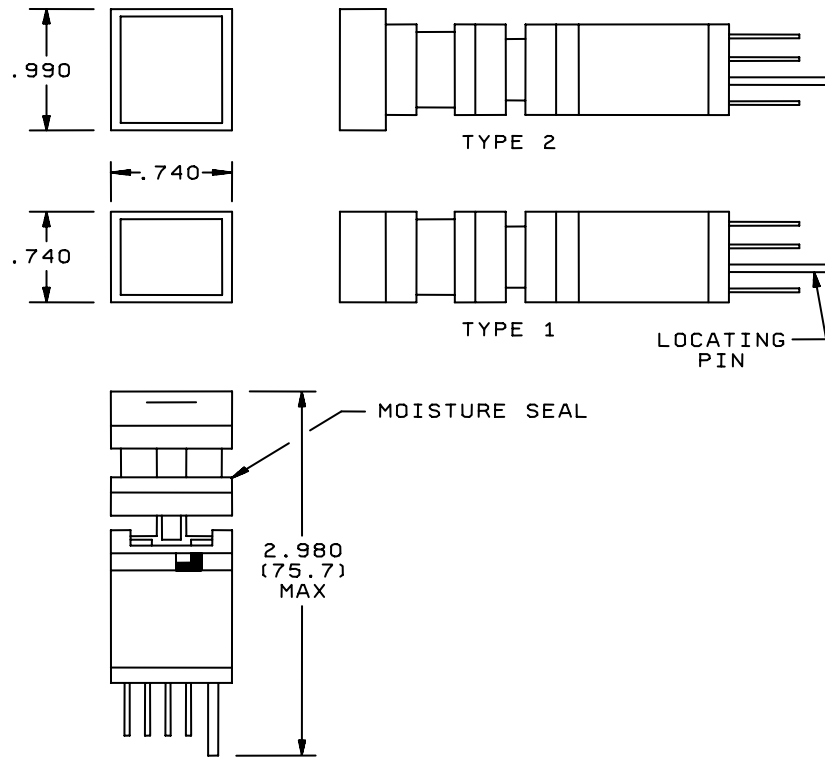
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerances are $\pm .016$ (0.41 mm) for three place decimals.
4. Design configuration is optional within envelope dimensions shown.

AMSC N/A

Inches	mm
.075	1.91
.250	6.35
.30	7.62
3.15	80.01

FSC 5930

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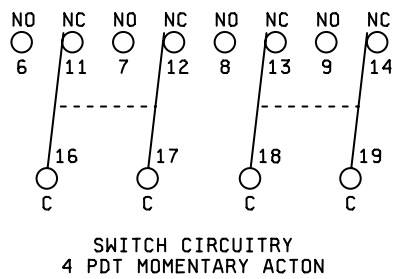
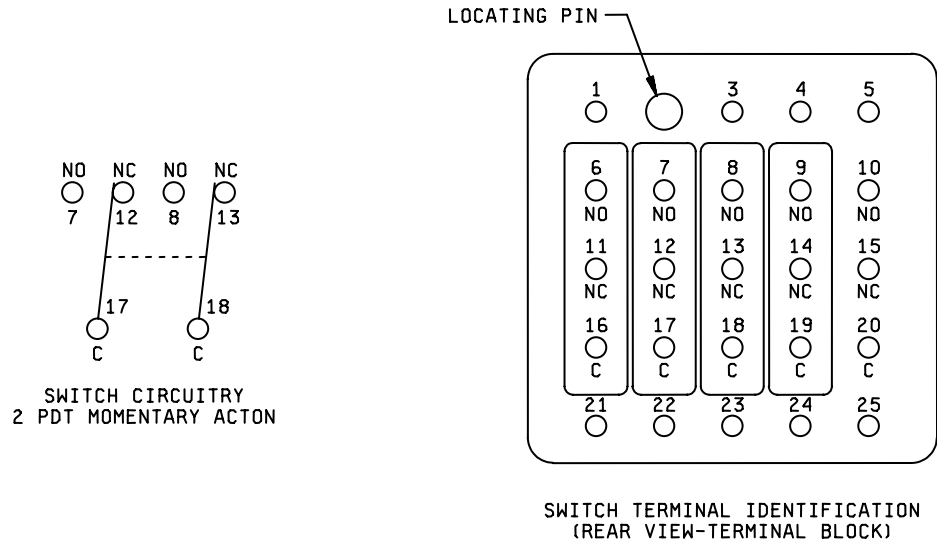


Inches	Mm
.740	18.80
.990	25.15
2.960	75.18

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerances are $\pm .010$ (0.25 mm).
4. RFI ground shall be provided. (Either on switch module or on lens module).

FIGURE 2. Plug-in switch/indicator module per MIL-PRF-22885/80.



CODE	LAMP CIRCUITRY
1	The diagram shows a lamp circuitry for code 1. It has terminals 1, 3, 5, 21, and 25. Terminals 1 and 21 are connected to a common point. Terminals 3 and 5 are connected to a common point. Terminals 21 and 25 are connected to a common point. The circuitry shows a momentary action switch connecting the common terminals to the NO and NC terminals.
2	The diagram shows a lamp circuitry for code 2. It has terminals 1, 3, 5, 21, and 25. Terminals 1 and 21 are connected to a common point. Terminals 3 and 5 are connected to a common point. Terminals 21 and 25 are connected to a common point. The circuitry shows a momentary action switch connecting the common terminals to the NO and NC terminals.
3	The diagram shows a lamp circuitry for code 3. It has terminals 1, 3, 5, 21, and 25. Terminals 1 and 21 are connected to a common point. Terminals 3 and 5 are connected to a common point. Terminals 21 and 25 are connected to a common point. The circuitry shows a momentary action switch connecting the common terminals to the NO and NC terminals.

FIGURE 3. Switch and lamp circuitry schematics.

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REQUIREMENTS:

Dimensions and configuration: See figures and tables.

Complete multistation switch assembly shall consist of:

1. Multistation matrix frame (Figure 1 and table IV).
2. Plug-in switch/indicator module in accordance with MIL-PRF-22885/80, when specified in contract or purchase order.
3. Insertable crimp type terminals (figure 4), when specified in contract or purchase order.
4. 4 lamps per station (T-1-3/4 midget flange base incandescent) when specified in contract or purchase order.

Matrix frame: Include terminal block and fasteners.

EMI/RFI shielding: Grounded lens screen shall be provided. Screen to mounting surface resistance shall not exceed 3 ohms. EMI screen is not grounded during switch travel or in the depressed position.

Plug-in switch/indicator module: Includes Switch (except indicator modules), lamp housing, lens assembly (in accordance with MIL-PRF-22885/82) and RFI screen.

Electrical: See table I

TABLE I: Electrical ratings.

Load	Sea level	
	28 V dc (amperes)	115 V ac (amperes)
Resistive	5.0	5.0
Inductive	2.5	2.5

Operating force: 4 pounds maximum.

Lens face: Shall appear white in the unlighted condition. In the lighted condition, it shall appear in a color determined by the color filter.

Lens and color filter material: In accordance with MIL-PRF-22885/82.

Colors and photometric brightness: In accordance with table III and MIL-PRF-22885.

Solderability: Not applicable.

Lamp retention: Applicable.

Shock: Method II (high impact).

Torque strength of plunger: Not applicable.

Seal: Dripproof.

Contact resistance: Not applicable after electrical endurance, inductive load dc.

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QUALIFICATION:

Qualification and group C inspection: Qualification and group C inspection of the multistation switch shall be in accordance with table II.

Extent of qualification: The multistation switch/indicator assembly to be used for qualification inspection shall be the 3-station unit (1 x 3 matrix). Qualification of the 3-station unit shall qualify all multistation units up to and including the 20-station unit. The qualification 3-station units shall contain one each of the following items. Location of each item in the matrix will be determined by the testing activity.

Item	Part number	Description	Quantity
1	M24317/8-03	1 X 3 matrix frame, type 1	1
2	M22885/80-CAC(X)	2PDT momentary switch module	1
3	M22885/80-CBC(X)	4PDT momentary switch module	1
4	M22885/80-CEC(X)	Indicator module	1
1	M24317/8-39	1 X 3 matrix frame, type 2	1
2	M22885/80-HAC(X)	2PDT momentary switch module	1
3	M22885/80-HBC(X)	4PDT momentary switch module	1
4	M22885/80-HEC(X)	Indicator module	1

Group submission: The following applies when the 3-station units (1 X 3 matrix), type 1 and type 2, are submitted for qualification at the same time.

TABLE II. Qualification inspection (group submission). 1/ 2/

Assembly	Qualification inspection table V of MIL-DTL-24317		Extent of approval
	Group	Number of sample units	
Schedule I type 1 (1 x 3 matrix) M24317/8-03	I II III	8 4 3/ 2	All
Schedule II type 2 (1 x 3 matrix) M24317/8-39	I II	4 4 3/	All

1/ Simultaneity not applicable.

2/ Basic switch is M22885/80.

3/ Two sample units are required for qualification for shock (high-impact), method II and shall be subjected to group I and II only.

Qualification and group C inspection:

At the request of the manufacturer, group C testing may be suspended with the qualifying activity's approval if it can be demonstrated that these test have been performed three consecutive times with zero failures. If the design, material, construction, or processing is changed or if there are any quality problems or failures, or at their discretion the qualifying activity may require resumption of the original testing requirement. Suspension of testing does not relieve the manufacturer from meeting the Group C test requirements.

Group C inspection shall be in accordance with MIL-DTL-24317, except that the inspection shall be as in table II, herein, and shall; be performed at 36-month intervals.

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Group A inspection: Group A inspection of the matrix frames shall be in accordance with table III. Group A inspection summary shall be submitted at 12-month intervals.

Group B inspection: Not applicable for matrix frames.

TABLE III. Group A inspection for matrix frames.

Examination or test	AQL (percent defective)	
	Major	Minor
Visual and mechanical examination	1.0 <u>1/</u>	4.0
Dielectric withstanding voltage	.65	---

1/ At the option of the contractor, in-process inspection may be used to meet the materials, design and construction requirements, provided they meet the acceptable quality level and all of the contractors in-process control data on these tests are made available to the Government on request. Only two samples per lot need be inspected for compliance to physical dimensions.

Matrix frame part number: M24317/8- (dash number from table V).

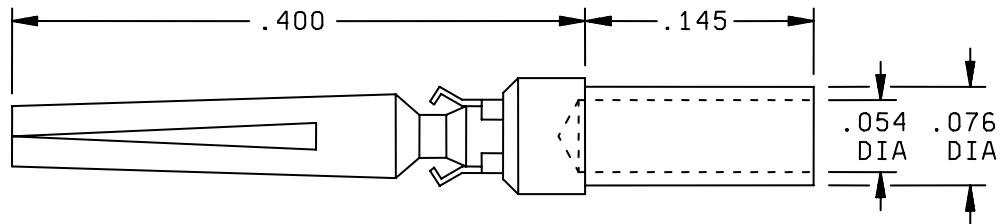
TABLE IV. Chromaticity limits and photometric brightness.

Colors	Chromaticity limits <u>1/</u> 2,360 Kelvin		Switch photometric brightness(foot-lamberts) <u>2/</u>
	X	Y	
Green	.260	.570	8 ft. lamberts minimum
	.300	.630	
	.160	.660	
	.200	.720	
Yellow	.562	.415	150 ft. lamberts minimum
	.570	SL <u>3/</u>	
	.596	.382	
	.605	SL <u>3/</u>	
Red	.695	.285	40 ft. lamberts minimum
	.703	SL <u>3/</u>	
	.655	.325	
	.660	SL <u>3/</u>	
Blue	.150	.260	3 ft. lamberts minimum
	.220	.260	
	.220	.320	
	.150	.320	
White	.400	.420	55 ft. lamberts minimum
	.460	.420	
	.460	.380	
	.400	.380	

1/ The chromaticities of the diffusing lenses or colored filters expressed as X and Y coordinates on the CIE chromaticity diagram shall lie within areas bounded by the coordinates listed for each color, using a source illuminate of 2,360 °K.

2/ Switch photometric brightness, when viewed from the front of the applicable light housing.

3/ SL: Spectrum locus (where intersected by other coordinate pair).



Inches	mm
.054	1.37
.076	1.93
.145	3.68
.400	10.16

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerances are $\pm .010$ (0.25 mm).
4. Design configuration is optional within envelope dimensions shown.
5. Terminal will accept one NO. 18 AWG or smaller stranded wire size and are supplied 25 each in a bag under part number M22885/80-50.

FIGURE 4. Terminal, crimp-type.

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TABLE V. Part number, matrix housings, number of stations and dimensions for fabricated matrix configurations, to accept type I and type II switches.

Part number M2431 7/8- <u>1</u> / <u></u>	Matrix arrangem ents H V	Number of stations	Dimensions <u>2</u> / <u> 3</u> / <u></u>				Number of fasteners per side	
			A Horizontal	B Vertical	Recommended panel cutout			
					C +.020 - .000	D +.020 -.000	Horizontal side	Vertical side
TYPE I								
01	1 X 1	1	1.150 (29.21)	1.150 (29.21)	.990 (25.15)	.990 (25.15)	1	1
02	1 X 2	2	1.150 (29.21)	1.950 (49.53)	.990 (25.15)	1.790(45.46)	1	2
03	1 X 3	3	1.150 (29.21)	2.750 (69.85)	.990 (25.15)	2.590(65.79)	1	3
04	1 X 4	4	1.150 (29.21)	3.550 (90.17)	.990 (25.15)	3.390(86.11)	1	4
05	1 X 5	5	1.150 (29.21)	4.350 (110.49)	.990 (25.15)	4.190(106.43)	1	5
06	1 X 6	6	1.150 (29.21)	5.150 (130.81)	.990 (25.15)	4.990(126.75)	1	6
07	1 X 7	7	1.150 (29.21)	5.950 (150.13)	.990 (25.15)	5.790(147.07)	1	7
08	1 X 8	8	1.150 (29.21)	6.750 (170.45)	.990 (25.15)	6.590(167.39)	1	8
09	1 X 9	9	1.150 (29.21)	7.550 (190.77)	.990 (25.15)	7.390(187.71)	1	9
10	1 X 10	10	1.150 (29.21)	8.350 (211.09)	.990 (25.15)	8.190(208.03)	1	10
11	2X 1	2	1.950 (49.53)	1.150 (29.21)	1.790(45.46)	.990 (25.15)	2	1
12	2X 2	4	1.950 (49.53)	1.950 (49.53)	1.790(45.46)	1.790(45.46)	2	2
13	2X 3	6	1.950 (49.53)	2.750 (68.85)	1.790(45.46)	2.590(65.79)	2	3
14	2X 4	8	1.950 (49.53)	3.550 (90.17)	1.790(45.46)	3.390(86.11)	2	4
15	2X 5	10	1.950 (49.53)	4.350 (110.49)	1.790(45.46)	4.190(106.43)	2	5
16	2X 6	12	1.950 (49.53)	5.150 (130.81)	1.790(45.46)	4.990(126.75)	2	6
17	2X 7	14	1.950 (49.53)	5.950 (150.13)	1.790(45.46)	5.790(147.07)	2	7
18	2X 8	16	1.950 (49.53)	6.750 (170.45)	1.790(45.46)	6.590(167.39)	2	8
19	2X 9	18	1.950 (49.53)	7.550 (190.77)	1.790(45.46)	7.390(187.71)	2	9
20	2X 10	20	1.950 (49.53)	8.350 (211.09)	1.790(45.46)	8.190(208.03)	2	10
21	3 X 1	3	2.750 (69.85)	1.150 (29.21)	2.590(65.79)	.990 (25.15)	3	1
22	3 X 2	6	2.750 (69.85)	1.950 (49.53)	2.590(65.79)	1.790(45.46)	3	2
23	4 X 1	4	3.550 (90.17)	1.150 (29.21)	3.390(86.11)	.990 (25.15)	4	1
24	4 X 2	8	3.550 (90.17)	1.950 (49.53)	3.390(86.11)	1.790(45.46)	4	2
25	5 X 1	5	4.350 (110.49)	1.150 (29.21)	4.190(106.43)	.990 (25.15)	5	1
26	5 X 2	10	4.350 (110.49)	1.950 (49.53)	4.190(106.43)	1.790(45.46)	5	2
27	6 X 1	6	5.150 (130.81)	1.150 (29.21)	4.990(126.75)	.990 (25.15)	6	1
28	6 X 2	12	5.150 (130.81)	1.950 (49.53)	4.990(126.75)	1.790(45.46)	6	2
29	7 X 1	7	5.950 (150.13)	1.150 (29.21)	5.790(147.07)	.990 (25.15)	7	1
30	7 X 2	14	5.950 (150.13)	1.950 (49.53)	5.790(147.07)	1.790(45.46)	7	2
31	8 X 1	8	6.750 (170.45)	1.150 (29.21)	6.590(167.39)	.990 (25.15)	8	1
32	8 X 2	16	6.750 (170.45)	1.950 (49.53)	6.590(167.39)	1.790(45.46)	8	2
33	9 X 1	9	7.550 (190.77)	1.150 (29.21)	7.390(187.71)	.990 (25.15)	9	1
34	9 X 2	18	7.550 (190.77)	1.950 (49.53)	7.390(187.71)	1.790(45.46)	9	2
35	10 X 1	10	8.350 (211.09)	1.150 (29.21)	8.190(208.03)	.990 (25.15)	10	1
36	10 X 2	20	8.350 (211.09)	1.950 (49.53)	8.190(208.03)	1.790(45.46)	10	2
TYPE II								
37	1 X 1	1	1.410(35.81)	1.150(29.21)	1.250(31.75)	.990 (25.15)	1	1
38	1 X 2	2	1.410(35.81)	1.950(49.53)	1.250(31.75)	1.790(45.46)	1	2
39	1 X 3	3	1.410(35.81)	2.750(69.85)	1.250(31.75)	2.590(65.79)	1	3
40	1 X 4	4	1.410(35.81)	3.550(90.17)	1.250(31.75)	3.390(86.11)	1	4

1/ Dash numbers shown are for matrix frame with fasteners only, does not include plug-in switch/indicator module or crimp type terminals.

2/ Metric dimensions in parentheses are given for general information only and are based upon 1 inch = 25.4mm.

3/ Unless otherwise specified, tolerances are $\pm .016$ (0.41 mm)

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TABLE V Part number, matrix housings, number of stations and dimensions for fabricated matrix configurations, to accept type I and type II switches-Continued.

Part number M24317 /8- <u>1</u> /	Matrix arrangements H V	Number of stations	Dimensions <u>2</u> / <u>3</u> /				Number of fasteners per side	
			A Horizontal	B Vertical	Recommended panel cutout		Horizontal side	Vertical side
					C +.020 -.000	D +.020 -.000		
TYPE II								
41	1 X 5	5	1.410 (35.81)	4.350(110.49)	1.250(31.75)	4.190 (106.43)	1	5
42	1 X 6	6	1.410 (35.81)	5.150(130.81)	1.250(31.75)	4.990(126.75)	1	6
43	1 X 7	7	1.410 (35.81)	5.950(150.13)	1.250(31.75)	5.790(147.07)	1	7
44	1 X 8	8	1.410 (35.81)	6.750(170.45)	1.250(31.75)	6.590(167.39)	1	8
45	1 X 9	9	1.410 (35.81)	7.550(190.77)	1.250(31.75)	7.390(187.71)	1	9
46	1 X 10	10	1.410 (35.81)	8.350(211.09)	1.250(31.75)	8.190(208.03)	1	10
47	2 X 1	2	2.460(62.48)	1.150(29.21)	2.300(58.42)	.990(25.15)	2	1
48	2 X 2	4	2.460(62.48)	1.950(49.53)	2.300(58.42)	1.790(45.46)	2	2
49	2 X 3	6	2.460(62.48)	2.750(68.85)	2.300(58.42)	2.590(65.79)	2	3
50	2 X 4	8	2.460(62.48)	3.550(90.17)	2.300(58.42)	3.390(86.11)	2	4
51	2X 5	10	2.460(62.48)	4.350(110.49)	2.300(58.42)	4.190(106.43)	2	5
52	2X 6	12	2.460(62.48)	5.150(130.81)	2.300(58.42)	4.990(126.75)	2	6
53	2X 7	14	2.460(62.48)	5.950(150.13)	2.300(58.42)	5.790(147.07)	2	7
54	2X 8	16	2.460(62.48)	6.750(170.45)	2.300(58.42)	6.590(167.39)	2	8
55	2X 9	18	2.460(62.48)	7.500(190.77)	2.300(58.42)	7.390(187.71)	2	9
56	2X 10	20	2.460(62.48)	8.350(211.09)	2.300(58.42)	8.190(208.03)	2	10
57	3X 1	3	3.510 (89.15)	1.150(29.21)	3.350(85.09)	.990(25.15)	3	1
58	3X 2	6	3.510 (89.15)	1.950(49.53)	3.350(85.09)	1.790(45.46)	3	2
59	4X 1	4	4.560(115.82)	1.150(29.21)	4.400(111.76)	.990(25.15)	4	1
60	4X 2	8	4.560(115.82)	1.950(49.53)	4.400(111.76)	1.790(45.46)	4	2
TYPE II								
61	5 X 1	5	5.610(142.49)	1.150 (29.21)	5.450 (138.43)	.990(25.15)	5	1
62	5 X 2	10	5.610(142.49)	1.950(49.53)	5.450(138.43)	1.790(45.46)	5	2
63	6 X 1	6	6.660(169.16)	1.150 (29.21)	6.500(165.10)	.990(25.15)	6	1
64	6 X 2	12	6.660(169.16)	1.950(49.53)	6.500(165.10)	1.790(45.46)	6	2
65	7 X 1	7	7.710(195.83)	1.150 (29.21)	7.550(191.77)	.990(25.15)	7	1
66	7 X 2	14	7.710(195.83)	1.950(49.53)	7.550(191.77)	1.790(45.46)	7	2
67	8 X 1	8	8.760(222.50)	1.150 (29.21)	8.600(218.44)	.990(25.15)	8	1
68	8 X 2	16	8.760(222.50)	1.950(49.53)	8.600(218.44)	1.790(45.46)	8	2
69	9 X 1	9	9.810(249.17)	1.150 (29.21)	9.650(245.11)	.990(25.15)	9	1
70	9 X 2	18	9.810(249.17)	1.950(49.53)	9.650(245.11)	1.790(45.46)	9	2
71	10 X 1	10	10.860 (275.84)	1.150 (29.21)	10.700(271.78)	.990(25.15)	10	1
72	10 X 2	20	10.860 (275.84)	1.950(49.53)	10.700(271.78)	1.790(45.46)	10	2

1/ Dash numbers shown are for matrix frame with fasteners only, does not include plug-in switch/indicator module or crimp type terminals.

2/ Metric dimensions in parentheses are given for general information only and are based upon 1 inch = 25.4mm.

3/ Unless otherwise specified, tolerances are $\pm .016$ (0.41 mm)

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Referenced documents. In addition to MIL-DTL-24317, this document references the following:

MIL-PRF-22885

MIL-PRF-22885/80

MIL-PRF-22885/82

Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

Custodians:

Navy – EC

Air Force – 11

DLA – CC

Preparing activity:

DLA – CC

Project (5930-2006-010)

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/>.