

PERFORMANCE SPECIFICATION SHEET

SWITCHES, PUSH BUTTON, ILLUMINATED, 4-LAMP, 0.75 SQUARE, 7 AMPERES,
AND LOW LEVEL ELECTROMAGNETIC INTERFERENCE SHIELDED, SUNLIGHT READABLE

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

The requirements for acquiring the switches described herein shall consist of this specification and [MIL-PRF-22885](#).

MIL-PRF-22885/67 is inactive for new design and is no longer used, except for replacement purposes.

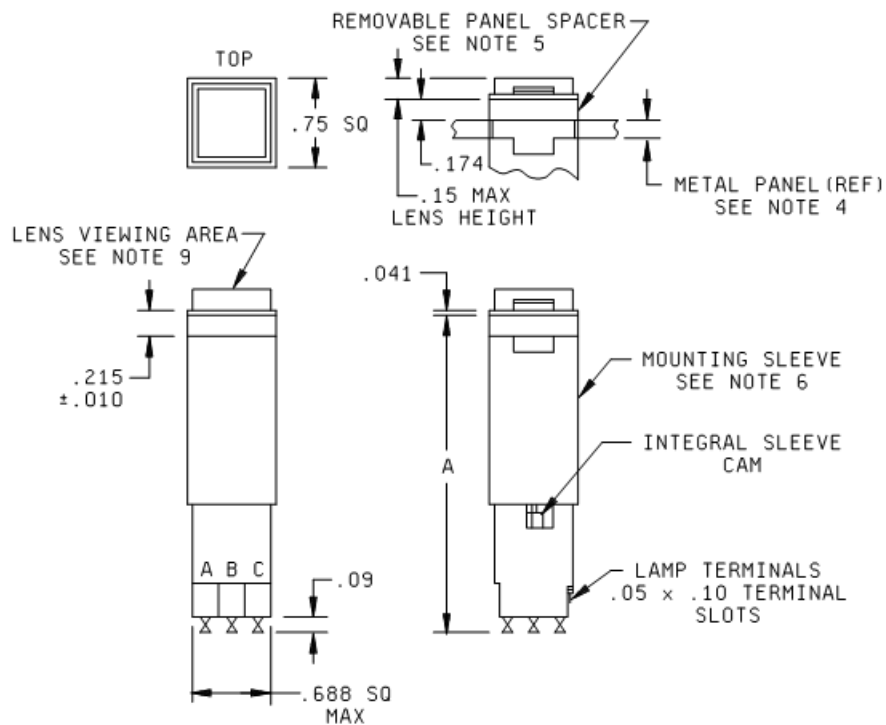
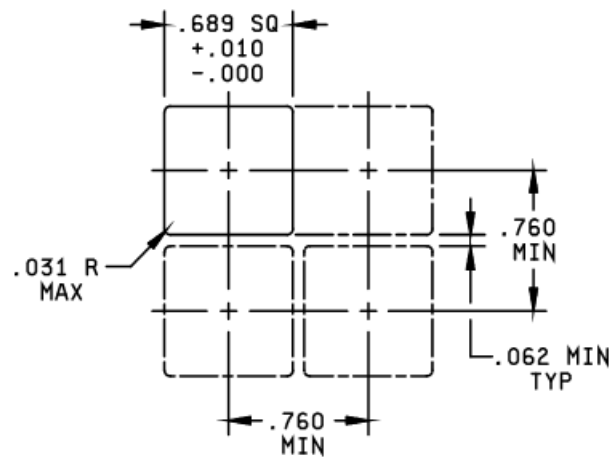
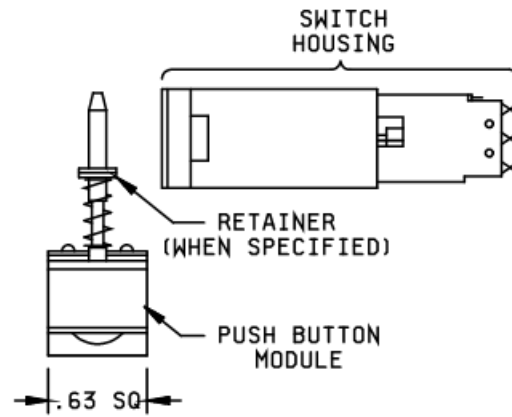
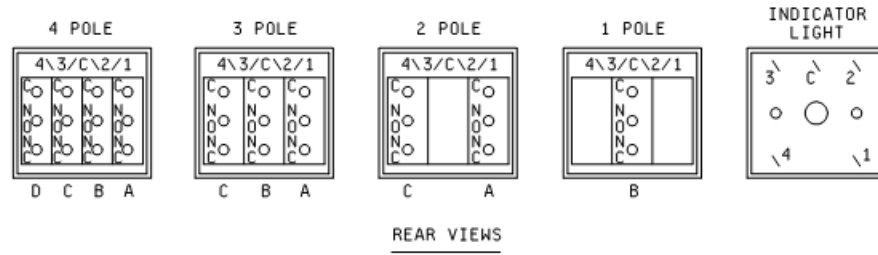


FIGURE 1. Design and construction.



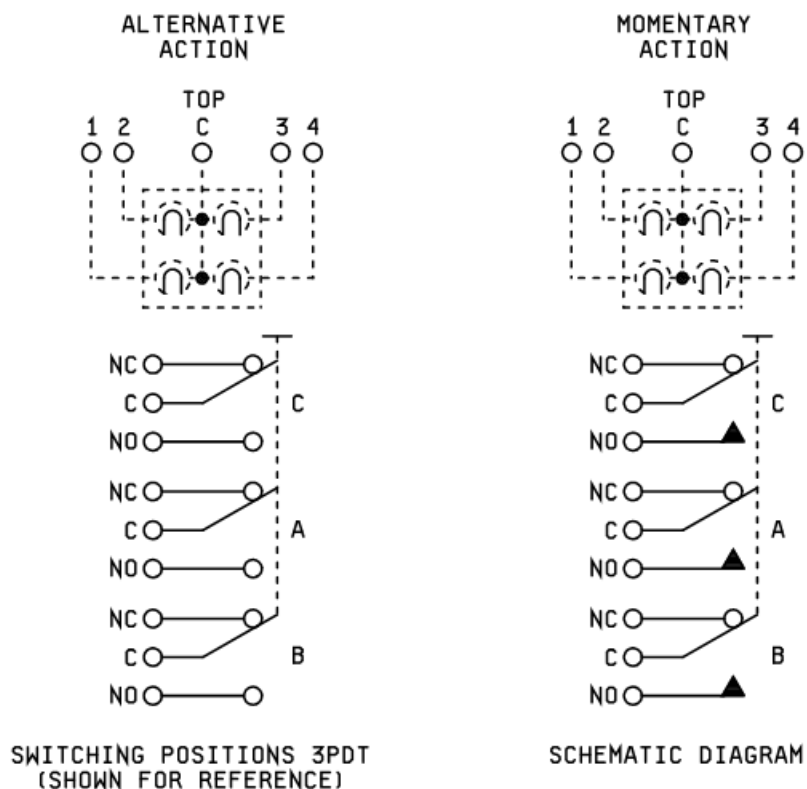
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Dimension A	
Momentary	2.620 max
Alternate	2.620 max
Indicator light	1.97 max



RECOMMENDED PANEL CUTOUT
FOR SINGLE UNIT WHEN MATRIX MOUNTING

FIGURE 1. Design and construction - Continued.



NOTES:

1. Dimensions are in inches.
2. Unless otherwise specified, tolerances are ± 0.005 for three place decimals and ± 0.03 for two place decimals.
3. Intentionally deleted.
4. Unit mounts in panels from .031 to .19 thick.
5. A .174 thick spacer is supplied with each switch unit. Spacer places switch mounting flange flush with top of overlay panel. Spacer to be used only for edge-light panels, discard otherwise.
6. Mounting sleeve shall not exceed .760 square and shall be reversible to accommodate edge-light panel requirements.
7. Pushbutton designed to prevent incorrect insertion into switch housing.
8. Exact shape of switch optional provided dimensions specified are not exceeded.
9. Available area for legend illumination is .53 square for display type W and .48 square for display type S.

FIGURE 1. Design and construction - Continued.

REQUIREMENTS

Design and construction. See figure 1. Basic switches shall be [MIL-PRF-8805/4](#) (MS24547-1 or -6) or [MIL-PRF-8805/109](#) (M8805/109 (M8805/109-01 or -03) listed in QPL-8805.

Enclosure design: 1 (unsealed).

Temperature characteristic: 1 (-55°C to +85°C).

Vibration grade: 2 (10-500 Hz).

Operation: A (Momentary action), B (Alternate action), H (Indicator light).

Illuminated color.

Display type W (White background) - See table I.

Display type S (Sunlight readable) - See table II.

TABLE I. Illuminated color - display type W.

Chromatically coordinates ^{1/} 2200° kelvin		
Colors	X	Y
Green	.312	.685
	.312	.630
	.185	.630
	.265	.720
Yellow	.530	.442
	.544	SL ^{2/}
	.571	.402
	.584	SL ^{2/}
Red	.680	.300
	.690	.310
	.715	.265
	.725	.275
Blue	.200	.260
	.120	.220
	.085	.280
	.175	.315
White	.484 Ref.	.415 Ref.
X is not less than .350. Y is not greater than .470. Y - Y ₀ or Y ₀ - Y is not numerically greater than 0.03X. (Y ₀ is the Y coordinate of the Planckian radiator for a given X).		

^{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 2200° K.

^{2/} SL = spectrum locus (where intersected by other of coordinate pair).

TABLE II. Illuminated color - display type S. ^{1/}

Colors	X	Y
Red	.695	.285
	.710	SL ^{2/}
	.665	.325
	.660	SL ^{2/}
Green	.300	SL ^{2/}
	.300	.600
	.380	.600
	.380	SL ^{2/}
Yellow	.562	.415
	.570	SL ^{2/}
	.596	.382
	.605	SL ^{2/}
Blue	.230	.420
	.230	.420
	.320	.350
	.320	.420
White	.400	.420
	.460	.420
	.400	.380
	.460	.380

^{1/} The chromaticities of the colors are expressed as "X" and "Y" coordinates of the CIE chromaticity diagram and are within the limits bound by the coordinates listed for each color.

^{2/} SL - spectrum locus (where intersected by other coordinate pair).

Display type:

W (White until illuminated, then background appears in color).

S (Sunlight readable).

Material:

Housing: Corrosion resistant steel or aluminum alloy.

Weight: 1.6 ounces maximum.

Lamps:

Display type W pushbutton shall accommodate four lamps (T-1 ¾ midget flange base) except lens configuration 0 (see figure 2) shall accommodate only two lamps.

Display type S (sunlight readable) illumination is by four 5-volt, T-1, .15 MSCP lamps. Other T-1 lamps are available, with different illumination results. Lamps shall be acquired separately.

Operating characteristics:

Actuation force: 2 to 5 pounds.

Actuation travel: .160 ±.031 inch.

Lens extraction force: 1 to 4 pounds.

Shock: 75 G sawtooth ([MIL-STD-202-213](#), test condition H).

Moisture resistance. Following step 6 of the final cycle of the moisture resistance test, while switches are still wet, the insulation resistance measurement shall be not less than 5 megohms.

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Electrical endurance: See tables III and IV for electrical load conditions.

TABLE III. Electrical ratings - silver contacts.

Load	Sea level		50,000 feet 28 V dc
	28 V dc	115 V ac, 60 Hz	
	(Amperes)	(Amperes)	(Amperes)
Resistive	7	7	4
Inductive	4	7	2.5
Lamp	2.5	2	2.5

TABLE IV. Electrical ratings - gold contacts.

Load	Sea level		50,000 feet	
	Power circuit 28 V dc	Electronic logic 5 V dc	Power circuit 28 V dc	Electronic logic 5 V dc
	(Amperes)	(Amperes)	(Amperes)	(Amperes)
Resistive	1.0	0.1	1.0	0.01
Inductive	0.5	---	0.5	---

EMI/RFI shielding: Shielding efficiency test applicable, except the shielding attenuation shall be not less than 47 dB at 100 MHz, 39 dB at 400 MHz and 33 dB at 1,000 mHz.

Luminance:

Display type W: See table V.

Display type S: Sunlight readability contrast requirements apply.

TABLE V. Luminance for display type W. 1/

Color	Color code	Brightness (foot-lamberts)	
		Without EMI screen 2/	With EMI screen 3/
Blue	B	8.0	4.0
Green	G	50.0	25.0
Red	R	30.0	15.0
White	W	180.0	90.0
Yellow	Y	300.0	150.0

1/ When illuminated by two MIL-DTL-6363/8 lamps of .30 ±.05 mean spherical candlepower at 28 volts dc. Readings are for lens configuration 0.

2/ Minimum average.

3/ For information only.

Sunlight readability: Applicable to display type S switches, see table VII. Units shall be tested for $\theta_1 = 45^\circ$ and $\theta_2 = 0^\circ$ only. This procedure does not test readability under specularly reflective (glare) condition. The average contrast ratio of each legend character to the background shall be 0.6 minimum in the lighted legend condition. In the unlighted legend condition, the average contrast ratio of each legend character to the background shall have an absolute value less than or equal to 0.1.

Marking: Terminals and basic switch identification shall be marked as shown on figure 1.

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Qualification inspection:

Group submission: All part numbers will be approved for inclusion in the qualified products list upon successful completion of testing specified in table VI. Table VI is based on use of qualified [MIL-PRF-8805/4](#) or [MIL-PRF-8805/109](#) basic switches in the assembly.

TABLE VI. Qualification inspection - group submission.

Inspection <u>1/</u>	Sample
Group I	All samples
Group II	M22885/67-490RG <u>3/</u> (4 samples)
Group III	M22885/67-114RG (2 samples)
Group VI <u>2/</u>	M22885/67-114RG (2 samples) M22885/67-442RG <u>3/</u> (2 samples)
Group VII <u>4/</u>	M22885/67-490RG <u>3/</u> (2 samples)
Group VIII	Type S display: 2 pushbuttons of each color (10 samples), of lens configuration 0, and with EMI/RFI shielding. <u>3/</u> <u>5/</u> Type W display: 2 pushbuttons of each color (10 samples), of lens configuration 0, and without EMI/RFI shielding. <u>5/</u>

1/ Inspection groups in accordance with qualification inspection table of MIL-PRF-22885.

2/ Electrical endurance:

Silver contacts - test resistive load, ac, only.

Gold contacts - test sea level resistive, 28 V dc only.

Lamps used during electrical endurance test shall be MIL-DTL-6363/8 for type W display and [MIL-DTL-6363/6](#) for type S display.

3/ Legend shall be in accordance with [MIL-PRF-22885](#) sunlight readability test paragraph.

4/ Low level life test not required.

5/ Pushbuttons shall be assembled to any representative switch body.

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Part numbers: Part numbers are assigned as illustrated below. Part numbers do not include legend description. Acquire switches with legends as category II items in accordance with [MIL-PRF-22885](#).

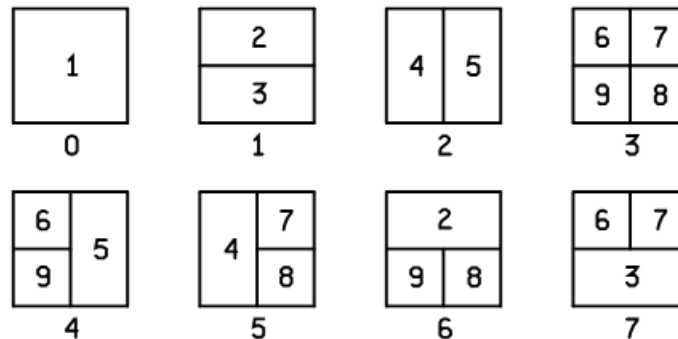
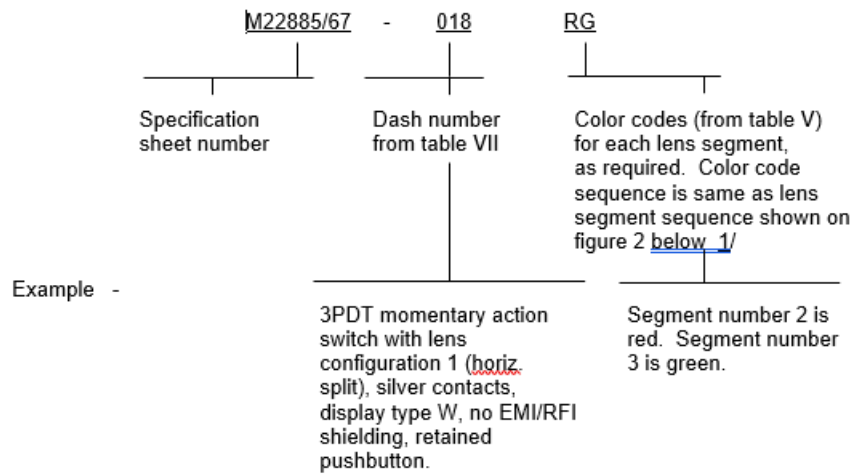


FIGURE 2. Lens configuration and segment numbers.

1/ Part number constructed as shown replace and are interchangeable with previous part numbers which included segment numbers in addition to color codes (example: M22885/67-018-2R3G).

TABLE VII. Dash numbers.

Dash number	Circuit	Operation	Lens configuration (see figure 2)	Contact material	Display type	EMI/RFI shielding	Retained pushbutton ^{1/}
009 010 011 012 013 014 015 016	2PDT	Momentary	0 1 2 3 4 5 6 7	Silver	W	No	Yes
017 018 019 020 021 022 023 024	3PDT	Momentary	0 1 2 3 4 5 6 7	Silver	W	No	Yes
113 114 115 116 117 118 119 120	4PDT	Momentary	0 1 2 3 4 5 6 7	Silver	W	No	Yes
033 034 035 036 037 038 039 040	2PDT	Alternate	0 1 2 3 4 5 6 7	Silver	W	No	Yes
041 042 043 044 045 046 047 048	3PDT	Alternate	0 1 2 3 4 5 6 7	Silver	W	No	Yes
121 122 123 124 125 126 127 128	4PDT	Alternate	0 1 2 3 4 5 6 7	Silver	W	No	Yes

See footnotes at end of table.

TABLE VII. Dash numbers - Continued.

Dash number	Circuit	Operation	Lens configuration (see figure 2)	Contact material	Display type	EMI/RFI shielding	Retained pushbutton 1/
129 130 131 132 133 134 135 136	Lamp circuit only	Light indicator	0 1 2 3 4 5 6 7	N/A	W	No	Yes
137 138 139 140 141 142 143 144	2PDT	Momentary	0 1 2 3 4 5 6 7	Silver	W	Yes	Yes
145 146 147 148 149 150 151 152	3PDT	Momentary	0 1 2 3 4 5 6 7	Silver	W	Yes	Yes
153 154 155 156 157 158 159 160	4PDT	Momentary	0 1 2 3 4 5 6 7	Silver	W	Yes	Yes
161 162 163 164 165 166 167 168	2PDT	Alternate	0 1 2 3 4 5 6 7	Silver	W	Yes	Yes
169 170 171 172 173 174 175 176	3PDT	Alternate	0 1 2 3 4 5 6 7	Silver	W	Yes	Yes

See footnotes at end of table.

TABLE VII. Dash numbers - Continued.

Dash number	Circuit	Operation	Lens configuration (see figure 2)	Contact material	Display type	EMI/RFI shielding	Retained pushbutton 1/
177 178 179 180 181 182 183 184	4PDT	Alternate	0 1 2 3 4 5 6 7	Silver	W	Yes	Yes
185 186 187 188 189 190 191 192	Lamp circuit only	Light, indicator	0 1 2 3 4 5 6 7	N/A	W	Yes	Yes
193 194 195 196 197 198 199 200	2PDT	Momentary	0 1 2 3 4 5 6 7	Gold	W	No	Yes
201 202 203 204 205 206 207 208	3PDT	Momentary	0 1 2 3 4 5 6 7	Gold	W	No	Yes
209 210 211 212 213 214 215 216	4PDT	Momentary	0 1 2 3 4 5 6 7	Gold	W	No	Yes
217 218 219 220 221 222 223 224	2PDT	Alternate	0 1 2 3 4 5 6 7	Gold	W	No	Yes

See footnotes at end of table.

TABLE VII. Dash numbers - Continued.

Dash number	Circuit	Operation	Lens configuration (see figure 2)	Contact material	Display type	EMI/RFI shielding	Retained pushbutton 1/
225 226 227 228 229 230 231 232	3PDT	Alternate	0 1 2 3 4 5 6 7	Gold	W	No	Yes
233 234 235 236 237 238 239 240	4PDT	Alternate	0 1 2 3 4 5 6 7	Gold	W	No	Yes
241 242 243 244 245 246 247 248	2PDT	Momentary	0 1 2 3 4 5 6 7	Gold	W	Yes	Yes
249 250 251 252 253 254 255 256	3PDT	Momentary	0 1 2 3 4 5 6 7	Gold	W	Yes	Yes
257 258 259 260 261 262 263 264	4PDT	Momentary	0 1 2 3 4 5 6 7	Gold	W	Yes	Yes
265 266 267 268 269 270 271 272	2PDT	Alternate	0 1 2 3 4 5 6 7	Gold	W	Yes	Yes

See footnotes at end of table.

TABLE VII. Dash numbers - Continued.

Dash number	Circuit	Operation	Lens configuration (see figure 2)	Contact material	Display type	EMI/RFI shielding	Retained pushbutton ^{1/}
273 274 275 276 277 278 279 280	3PDT	Alternate	0 1 2 3 4 5 6 7	Gold	W	Yes	Yes
281 282 283 284 285 286 287 288	4PDT	Alternate	0 1 2 3 4 5 6 7	Gold	W	Yes	Yes
289 290 291 292 293 294 295 296	2PDT	Momentary	0 1 2 3 4 5 6 7	Silver	S	No	Yes
297 298 299 300 301 302 303 304	3PDT	Momentary	0 1 2 3 4 5 6 7	Silver	S	No	Yes
305 306 307 308 309 310 311 312	4PDT	Momentary	0 1 2 3 4 5 6 7	Silver	S	No	Yes
313 314 315 316 317 318 319 320	2PDT	Alternate	0 1 2 3 4 5 6 7	Silver	S	No	Yes

See footnotes at end of table.

TABLE VII. Dash numbers - Continued.

Dash number	Circuit	Operation	Lens configuration (see figure 2)	Contact material	Display type	EMI/RFI shielding	Retained pushbutton 1/
321 322 323 324 325 326 327 328	3PDT	Alternate	0 1 2 3 4 5 6 7	Silver	S	No	Yes
329 330 331 332 333 334 335 336	4PDT	Alternate	0 1 2 3 4 5 6 7	Silver	S	No	Yes
337 338 339 340 341 342 343 344	Lamp circuit only	Light, indicator	0 1 2 3 4 5 6 7	N/A	S	No	Yes
345 346 347 348 349 350 351 352	2PDT	Momentary	0 1 2 3 4 5 6 7	Silver	S	Yes	Yes
353 354 355 356 357 358 359 360	3PDT	Momentary	0 1 2 3 4 5 6 7	Silver	S	Yes	Yes
361 362 363 364 365 366 367 368	4PDT	Momentary	0 1 2 3 4 5 6 7	Silver	S	Yes	Yes

See footnotes at end of table.

TABLE VII. Dash numbers - Continued.

Dash number	Circuit	Operation	Lens configuration (see figure 2)	Contact material	Display type	EMI/RFI shielding	Retained pushbutton ^{1/}
369 370 371 372 373 374 375 376	2PDT	Alternate	0 1 2 3 4 5 6 7	Silver	S	Yes	Yes
377 378 379 380 381 382 383 384	3PDT	Alternate	0 1 2 3 4 5 6 7	Silver	S	Yes	Yes
385 386 387 388 389 390 391 392	4PDT	Alternate	0 1 2 3 4 5 6 7	Silver	S	Yes	Yes
393 394 395 396 397 398 399 400	Lamp circuit only	Light, indicator	0 1 2 3 4 5 6 7	N/A	S	Yes	Yes
401 402 403 404 405 406 407 408	2PDT	Momentary	0 1 2 3 4 5 6 7	Gold	S	No	Yes
409 410 411 412 413 414 415 416	3PDT	Momentary	0 1 2 3 4 5 6 7	Gold	S	No	Yes

See footnotes at end of table.

TABLE VII. Dash numbers - Continued.

Dash number	Circuit	Operation	Lens configuration (see figure 2)	Contact material	Display type	EMI/RFI shielding	Retained pushbutton 1/
417 418 419 420 421 422 423 424	4PDT	Momentary	0 1 2 3 4 5 6 7	Gold	S	No	Yes
425 426 427 428 429 430 431 432	2PDT	Alternate	0 1 2 3 4 5 6 7	Gold	S	No	Yes
433 434 435 436 437 438 439 440	3PDT	Alternate	0 1 2 3 4 5 6 7	Gold	S	No	Yes
441 442 443 444 445 446 447 448	4PDT	Alternate	0 1 2 3 4 5 6 7	Gold	S	No	Yes
449 450 451 452 453 454 455 456	2PDT	Momentary	0 1 2 3 4 5 6 7	Gold	S	Yes	Yes
457 458 459 460 461 462 463 464	3PDT	Momentary	0 1 2 3 4 5 6 7	Gold	S	Yes	Yes

See footnotes at end of table.

TABLE VII. Dash numbers - Continued.

Dash number	Circuit	Operation	Lens configuration (see figure 2)	Contact material	Display type	EMI/RFI shielding	Retained pushbutton ^{1/}
465 466 467 468 469 470 471 472	4DT	Momentary	0 1 2 3 4 5 6 7	Gold	S	Yes	Yes
473 474 475 476 477 478 479 480	2DT	Alternate	0 1 2 3 4 5 6 7	Gold	S	Yes	Yes
481 482 483 484 485 486 487 488	3PDT	Alternate	0 1 2 3 4 5 6 7	Gold	S	Yes	Yes
489 490 491 492 493 494 495 496	4PDT	Alternate	0 1 2 3 4 5 6 7	Gold	S	Yes	Yes
^{2/} 001 002 003 004 005 006 007 008	1PDT	Momentary	0 1 2 3 4 5 6 7	Silver	W	No	Yes
^{2/} 025 026 027 028 029 030 031 032	1PDT	Alternate	0 1 2 3 4 5 6 7	Silver	W	No	Yes

See footnotes at end of table.

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TABLE VII. Dash numbers - Continued.

Dash number	Circuit	Operation	Lens configuration (see figure 2)	Contact material	Display type	EMI/RFI shielding	Retained pushbutton <u>1/</u>
<u>2/</u> 049 050 051 052 053 054 055 056	2PDT	Momentary	0 1 2 3 4 5 6 7	Silver	W	No	No
<u>2/</u> 057 058 059 060 061 062 063 064	3PDT	Momentary	0 1 2 3 4 5 6 7	Silver	W	No	No
<u>2/</u> 065 066 067 068 069 070 071 072	2PDT	Alternate	0 1 2 3 4 5 6 7	Silver	W	No	No
<u>2/</u> 073 074 075 076 077 078 079 080	3PDT	Alternate	0 1 2 3 4 5 6 7	Silver	W	No	No
<u>2/</u> 081 082 083 084 085 086 087 088	2PDT	Momentary	0 1 2 3 4 5 6 7	Silver	W	Yes	No
<u>2/</u> 089 090 091 092 093 094 095 096	3PDT	Momentary	0 1 2 3 4 5 6 7	Silver	W	Yes	No

See footnotes at end of table.

TABLE VII. Dash numbers - Continued.

Dash number	Circuit	Operation	Lens configuration (see figure 2)	Contact material	Display type	EMI/RFI shielding	Retained pushbutton ^{1/}
^{2/} 097 098 099 100 101 102 103 104	2PDT	Alternate	0 1 2 3 4 5 6 7	Silver	W	Yes	No
^{2/} 105 106 107 108 109 110 111 112	3PDT	Alternate	0 1 2 3 4 5 6 7	Silver	W	Yes	No

^{1/} Retained pushbutton shall be capable of having lamps replaced but is restricted in complete removal from switch housing.

^{2/} Inactive for new design

NOTE: 800 and 900 series dash numbers, for switch housing only and pushbutton only, have been canceled without replacement.

Changes from previous issue. The margins of this specification 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 previous issue.

Referenced Documents:

[MIL-PRF-8805/4](#)
[MIL-PRF-8805/109](#)

[MIL-DTL-6363/6](#)
[MIL-STD-202-213](#)

[MIL-DTL-6363/8](#)
[MIL-PRF-22885](#)

Custodians:

Army - CR
Navy - EC
Air Force - 85
DLA - CC

Preparing activity:
DLA - CC

(Project 5930-2023-016)

Review activities:

Army - AR, AV, MI
Navy - AS, MC, OS, SH
Air Force - 19

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