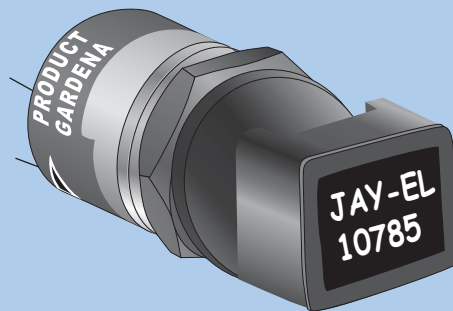


MARK 20  
P/N 10785



**JAY-EL**

**PRODUCTS**



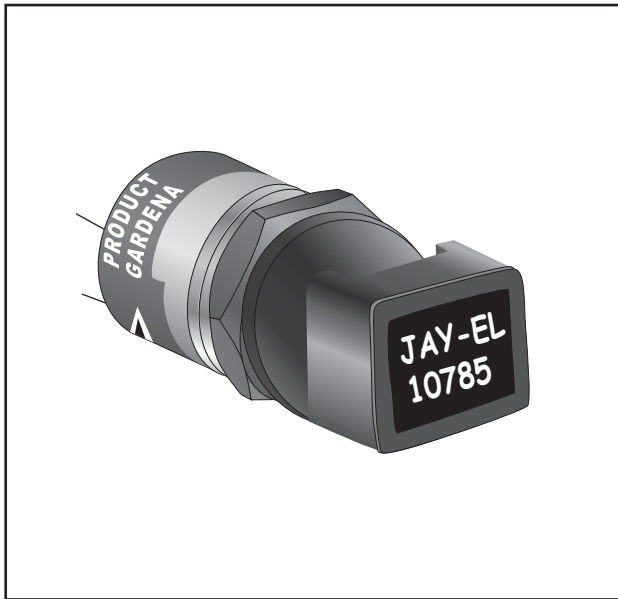
JAY-EL MARK 20 P/N 10785  
ILLUMINATED PUSHBUTTON SWITCH  
MEETS REQUIREMENTS OF  
MIL-S-22885

 **Ducommun**  
**Technologies**



**MINIATURE KEYBOARD SWITCH**

Meets requirements of Mil-S-22885



Shown Approximately Actual Size.

**DESIGN FEATURES**

Uniform lighting from low level to Sunlight Readable.

Four Pushbutton sizes.

.030 diameter terminals for P/C board or flex circuit.

All legend and color combinations available.

Compact size

Will mount on 1/2 inch centers minimum.

T-1 lamp provides low temperature

Front Re-lampable

Unit supplied with drip proof seal.

**ELECTRICAL**

Contact rating: 100 mAmps @ 28VDC

Contact bounce: 4 milliseconds max.

Lamp: Utilize 5, 12 or 28 volt T-1 lamp

Life: 100,000 cycles minimum

Dielectric Strength: 100VRMS minimum between terminals and between terminals and housing.

**MECHANICAL**

Total travel: .115 ± .010 inches

Pre-Travel: .06 inches to .09 inches

Actuation force: 26 ± 5 oz.

Weight: 7 grams max.

Mounting torque: 5 ± .5 inch lbs.

Pushbutton removal force: 1 to 3 lbs.

Installation note: Solder per Mil-Std 202, Method 210 except limit hi-temp to 450 F for 7 seconds max. Do not exert force on terminals during soldering operation.

**ENVIRONMENTAL**

Shock and Vibration:

In accordance with Mil-S-22885.

Operation temperature: -55°C to + 85°C

Seal: Drip proof per Mil-Std-108

ALL INFORMATION PUBLISHED IN THIS CATALOGUE IS EFFECTIVE AT TIME OF PUBLICATION AND IS SUBJECT TO CHANGE WITHOUT NOTICE.

**ORDERING PROCEDURE** - Fill out Preliminary Product Specification using Tables below and submit to Jay-El for Customer Code assignment.

TABLE 1 BASIC P/N	TABLE 2 MOUNTING TYPE	TABLE 3 BEZEL COLOR	TABLE 4 SPLIT GROUND	TABLE 5 EMI	TABLE 6 DRIP PROOF SEAL	TABLE 7 RETAINED PUSHBUTTON	TABLE 8 PUSHBUTTON STYLE	TABLE 9 SWITCH POLES	TABLE 10 CONTACTS	TABLE 11 SWITCH ACTION
10785	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE	YES NO	NOT APPLICABLE	NOT APPLICABLE	A C B D	0 INDICATOR 1 1 SPDT	(BELOW 1 AMP) G GOLD CONTACTS	0 INDICATOR M MOMENTARY

TABLE 12 UNLIGHTED BACKGROUND COLOR	TABLE 13 DISPLAY DATA	TABLE 14 * LIGHTED COLOR	TABLE 15 ** DISPLAY TYPE	TABLE 16 CHARACTER SIZE AND PLACEMENT
BLK BLACK DW DIFFUSED WHITE NG NUETRAL GRAY R RED A AMBER Y YELLOW G GREEN B BLUE	TO BE SPECIFIED ON PRELIMINARY FORM	C CLEAR R RED A AMBER Y YELLOW G GREEN B BLUE DW DIFFUSED WHITE DW WHITE LIGHT	NG NUETRAL GRAY AG AVIATION GREEN AY AVIATION YELLOW AG1 AVIATION GREEN 1 B1 BLUE 1	SEE CHARACTER INFORMATION CHART
1. BLACK CHARATERS ON DIFFUSED WHITE BACKGROUND. BACKGROUND ILLUMINATES IN COLOR. 2. REPLACED BY DISPLAY TYPE 7. 3. NOT READILY DISCERNIBLE BEFORE LIGHTED. OPAQUE CHARACTERS ON NEUTRAL GRAY ILLUMINATING BACKGROUND. 4. ILLUMINATING CHARACTERS ON BLACK BACKGROUND. CHARACTERS SHALL NOT APPEAR ILLUMINATED IN UNLIT CONDITION. 5. CONTRASTING OPAQUE CHARACTERS ON ILLUMINATING COLORED BACKGROUND. BLACK CHARACTERS ON YELLOW OR AMBER BACKGROUND. WHITE CHARACTERS ON ALL OTHER COLORS. 6. DISPLAY TYPES NOT COVERED BY THIS TABLE SHOULD BE SPECIFIED BY A NOTE ON PURCHASE ORDER OR MAY BE SPECIFIED ON JAY-EL CUSTOMER SPECIFICATION. 7. WHITE CHARACTERS ILLUMINATE IN COLOR ON BLACK BACKGROUND. 8. SUNLIGHT READABLE ILLUMINATING CHARACTERS ARE HIDDEN BEFORE LIGHTED. BLACK BACKGROUND. CHARACTERS ARE VISIBLE IN DIRECT SUNLIGHT. (10,000FC) WHEN LIGHTED.				<b>TABLE 17 LAMPS</b>  T1 NUMBER 6180 5V 718 12V 6839 28V

**NOTES**

- \* AG OR AY SHOULD BE SPECIFIED WHEN GREEN OR YELLOW IS TO MEET MIL - C - 25050 AY APPEARS AMBER WHEN ILLUMINATED.
- \* B1 AND AG1 SPECIAL HIGH BRIGHT BLUE & GREEN RECOMMENDED FOR DISPLAY TYPE 8.
- \*\* DISPLAY TYPE 8 A .125 DIAMETER AREA IS AVAILABLE FOR HIGH CONTRAST. SUNLIGHT READABLE MESSAGE. (i.e. A SYMBOL OR SINGLE CHARACTER OF .012 STROKE WIDTH ONLY)
- \*\*\* ALL STANDARD UNITS HAVE RETAINED PUSHBUTTONS AND A BLACK AT THE FRONT OF THE SWITCH HOUSING.
- \*\*\*\* IF ADDITIONAL CHARACTERS PER LINE ARE REQUIRED. SPECIFY FUTURA MEDIUM CONDENSED.

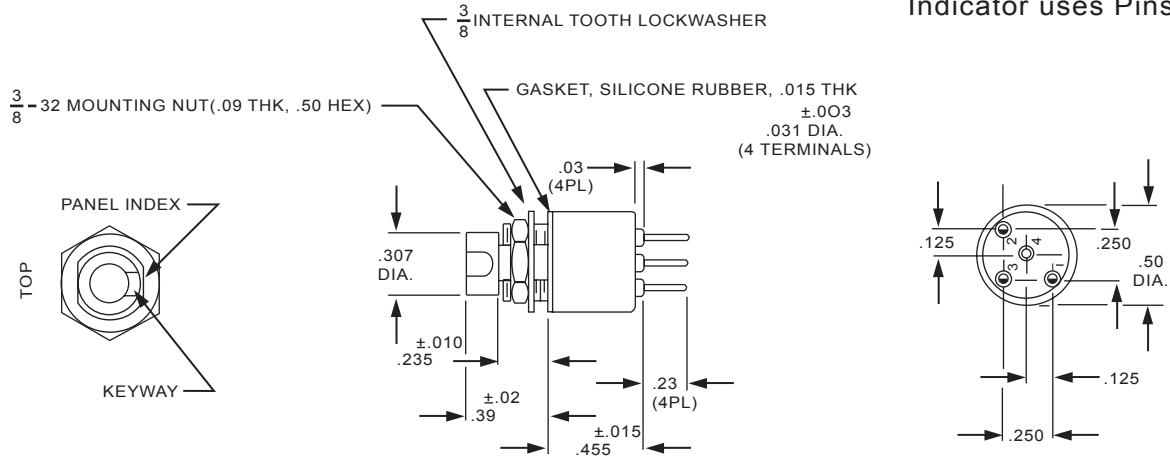
**CHARACTER INFORMATION**

(HORIZONTAL DIRECTION ONLY)

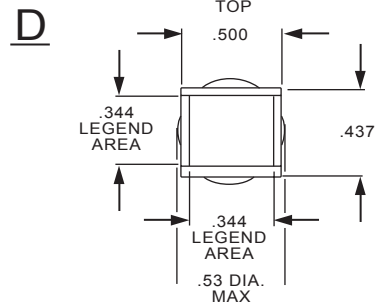
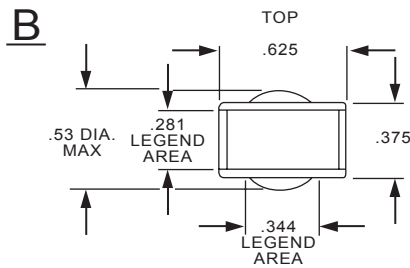
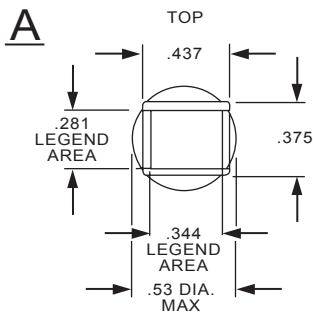
CONDENSED BLOCK CHARACTERS	CHARACTER SIZE NUMBER	STROKE WIDTH	CHARACTER HEIGHT (OVERALL)	CHARACTERS PER LINE *** PUSHBUTTON STYLES			
				A	B	C	D
JAY - EL PRODUCTS INC.	-1	.010	.072	5	6	4	5
JAY - EL PRODUCTS INC.	-2	.012	.087	4	5	3	4
JAY - EL PRODUCTS INC.	-3	.015	.109	3	4	0	3
JAY - EL PRODUCTS	-4	.018	.125	3	4	0	3
JAY - EL PRODUCTS	-5	.020	.145	2	3	0	2
JAY - EL PRODU	-6	.025	.175	2	3	0	2
JAY - EL PRO	-7	.035	.222	2	3	0	2

- Suggested Soldering Procedures
  - Position the assembly in a rigid fixture to prevent movement during the soldering operation.
  - The use of a temperature controlled soldering iron is recommended. Resistance to soldering heat per Mil-Std-202, Method 210 except temperature extreme shall be 235° C and duration shall be 7 seconds. **Do not exert force** on the terminals while being subjected to soldering temperatures.
  - Only rosin core solder should be used, terminals are plated for ease of soldering. The use of additional flux should be just avoided.
- Cleaning Operations
  - Position assembly to prevent flux removal solvents from entering and contaminating the switch.
  - A 50/50 solution of Freon and isopropyl alcohol applied with a cotton swab is suggested to remove the flux residue from terminals.

**SWITCH/INDICATOR BODY**

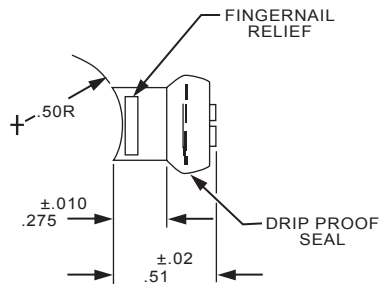


**PUSHBUTTON STYLES**

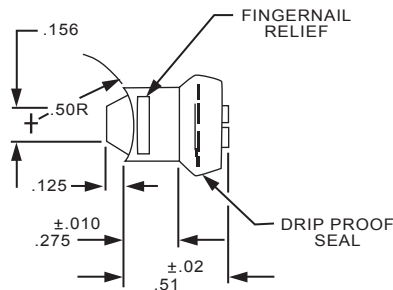
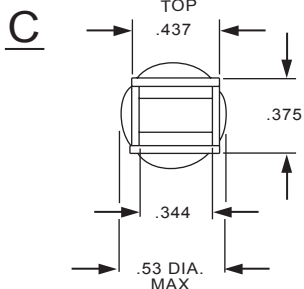
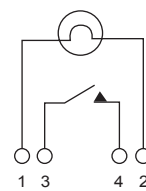


**SIDE VIEW**

Typical A, B, C & D pushbuttons.

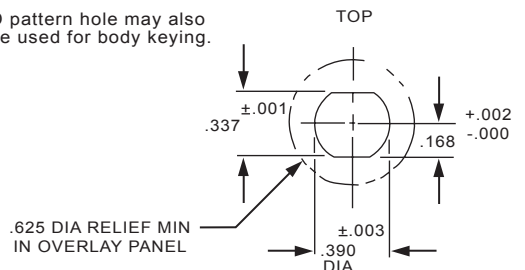


**SCHEMATIC**



**PANEL CUTOUT**

D pattern hole may also be used for body keying.



Tolerances: Unless otherwise specified - Fraction  $\pm 1/32$ ", .XX  $\pm .01$ , XXX  $\pm .005$