FEDERAL SUPPLY CLASS
5925

RATIONALE

REVISE TO IMPROVE DRAWING/DIMENSION QUALITY, UPDATE REFERENCES, ALIGN SPECIFICATION WITH SAE GUIDELINES, AND REVIEW SPECIFICATION FOR KNOWN TECHNICAL PROBLEMS.

NOTICE

THE COMPLETE REQUIREMENTS FOR PROCURING THE PRODUCT DESCRIBED HEREIN SHALL CONSIST OF THIS DOCUMENT AND THE LATEST ISSUE OF AS58091.

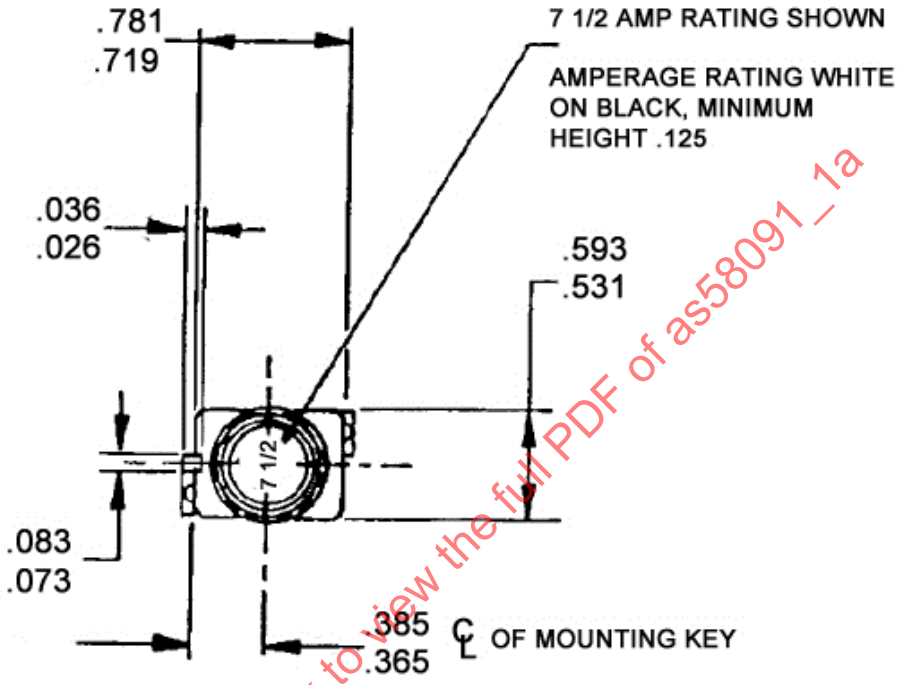
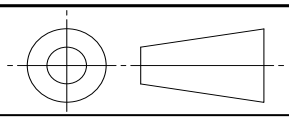


FIGURE 1 - CIRCUIT BREAKER DIMENSIONS

ISSUED 1999-07 REVISED 2013-10

THIRD ANGLE PROJECTION



CUSTODIAN: AE-8/AE-8B1

PROCUREMENT SPECIFICATION: AS58091

SAE INTERNATIONAL

AEROSPACE STANDARD

(R) CIRCUIT BREAKER, AIRCRAFT, TRIP-FREE
PUSH PULL, TYPE I, DUAL SAFETY,
-55 THRU +121 °C

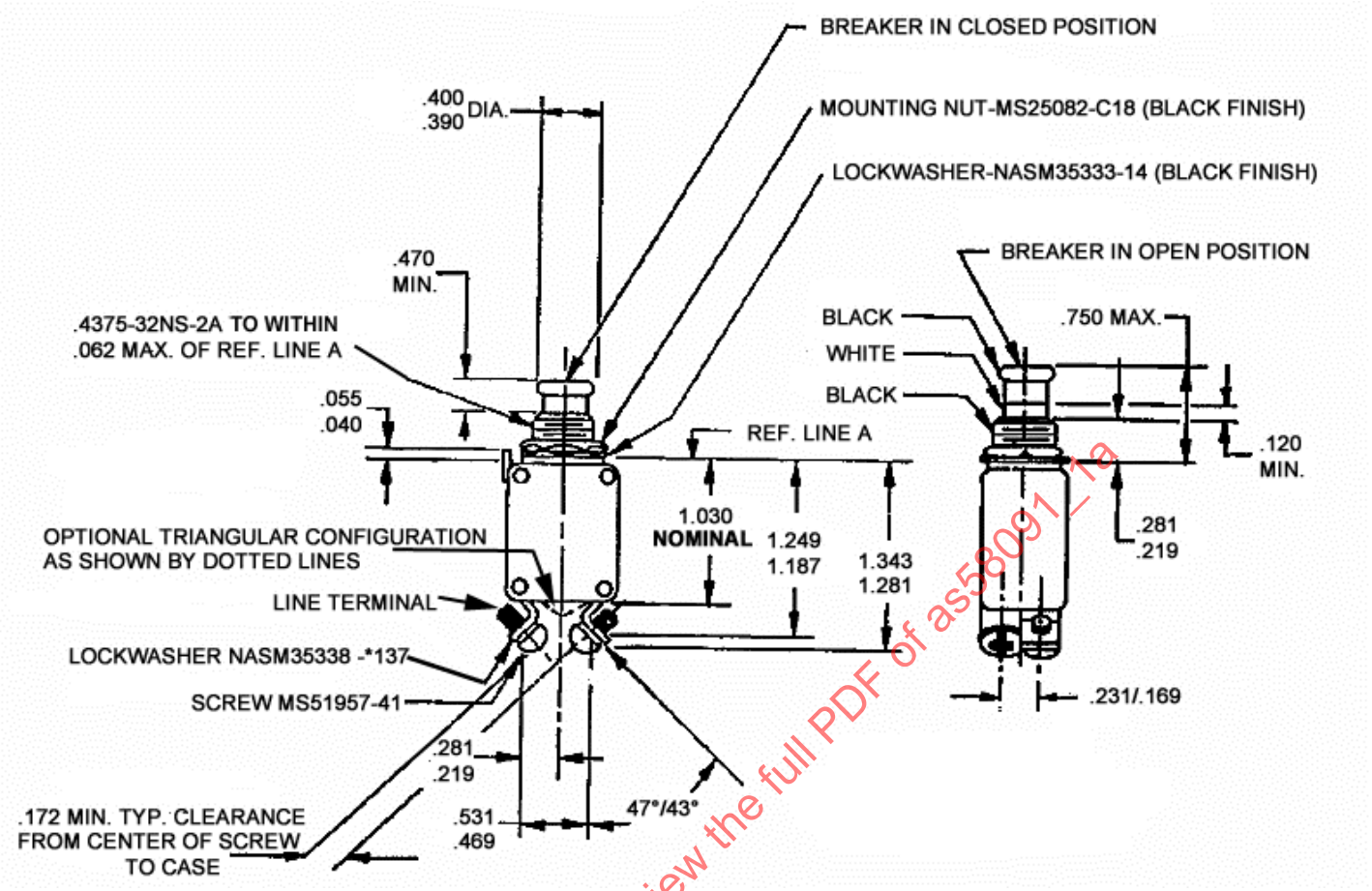


FIGURE 2 - CIRCUIT BREAKER DIMENSIONS

TABLE 1 - DETAIL CALIBRATION REQUIREMENTS

DASH # SEE REQ 5	NOMINAL AMPERAGE RATING (A)	MAX. VOLT DROP	WEIGHT MAX. (POUNDS)	DETAIL CALIBRATION PERFORMANCE								
				ULTIMATE TRIP		OVERLOAD CAL. TIME IN SECONDS			AMBIENT EFFECT ON CALIBRATION AT PERCENT RATED CURRENT			
				25 °C		-55 TO +121 °C			+121 °C		-55 °C	
				MIN. 1/	MAX. 1/	200% 2/	500% 2/	1000% 2/	ULT. TRIP MIN 1/	ULT. TRIP MAX. 1/	ULT. TRIP MIN. 1/	ULT. TRIP MAX. 1/
2-1/2	2-1/2	.70	.055	115	138	1.5 TO 40	.15 TO 3.0	.38 TO .8	90	138	115	165
3	3	.55										
5	5	.350										
7-1/2	7-1/2	.300										
10	10	.280										

1/ MIN. AND MAX. ULTIMATE TRIP EXPRESSED IN PERCENT OF RATED CURRENT TESTING. TIME 1 HOUR.
2/ PERCENT OF RATED CURRENT FOR EACH AMPERAGE RATING.

TABLE 2 - ELECTRICAL AND MECHANICAL CHARACTERISTICS

NOMINAL AMPERAGE RATING (A)	INTERRUPTING CAPACITY - AMPERES						ENDURANCE CYCLES				
							RESISTIVE		INDUCTIVE		MECH NO. LOAD
	A	B	C	D	E	F	AC	DC	AC	DC	
2-1/2	2800	2800	6000	6000	(A) 1500 (B) 750	(A)1500 (B) 1000	5000	5000	2500	2500	10,000
3	2500	2500									
5											
7-1/2											
10											

TABLE 3 - OPERATING FORCE

NOMINAL AMPERAGE RATING (A)	OPERATING FORCE	
	PULLOUT	RESET
2-1/2	.75 TO 5	1.2 TO 8
3		
5		
7-1/2		
10		

TABLE 4 - MAXIMUM CIRCUIT BREAKER LINK SEPARATION TIMES

NOMINAL AMPERAGE RATING (A)	MAXIMUM CIRCUIT BREAKER LINK SEPARATION TIMES IN SECONDS AS A FUNCTION OF THE CURRENT OVERLOAD						
	400% 1/	500% 1/	600% 1/	700% 1/	800% 1/	900% 1/	1000% 1/
2-1/2	N/A	N/A	34.0	20.0	13.0	9.0	6.0
3	N/A	N/A	34.0	20.0	13.0	9.0	6.0
5	N/A	95.0	36.0	18.0	10.0	6.0	3.5
7-1/2	69.0	28.0	14.0	8.0	4.0	3.5	2.0
10	69.0	35.0	20.0	12.0	7.0	4.0	2.5

1/ PERCENT OF RATED CURRENT FOR EACH AMPERAGE RATING

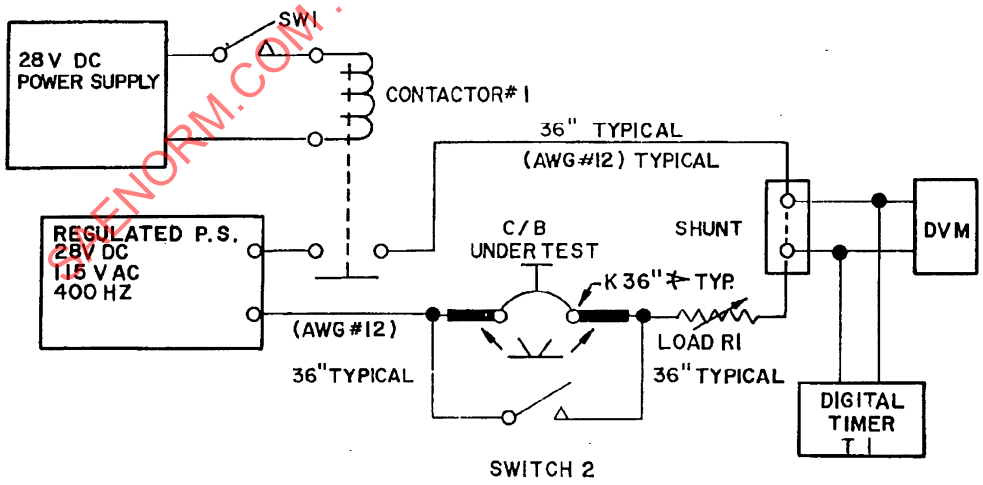


FIGURE 3 - FUSING CHARACTERISTICS TEST CIRCUIT

REQUIREMENTS: ALL REQUIREMENTS SHALL CONSIST OF THIS SPECIFICATION AND THE LATEST ISSUE OF AS58091.

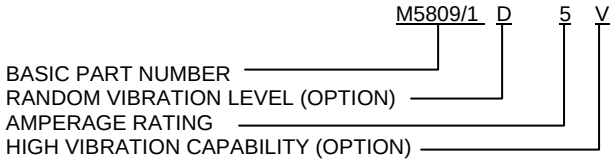
1. DESIGN: DIMENSIONS ARE IN INCHES. UNLESS OTHERWISE SPECIFIED, TOLERANCES: DECIMALS ±.031. IN THE EVENT OF A CONFLICT BETWEEN THE TEXT OF THIS STANDARD AND THE REFERENCES CITED HEREIN, THE TEXT OF THE STANDARD SHALL TAKE PRECEDENCE. NOMINAL VOLTAGE RATINGS -28 VOLTS DC OR 115 VOLTS AC 400 HERTZ.

2. MAXIMUM OPERATING ALTITUDE – 70 000 FEET. OPERATING AMBIENT TEMPERATURE RANGE -55 TO +121 °C.

3. SINE VIBRATION AS REQUIRED BY AS58091, HIGH LEVEL SINE VIBRATION AND RANDOM VIBRATION ARE OPTIONAL, SEE PART NUMBER EXAMPLE.

4. SHOCK TESTING SHALL BE IN ACCORDANCE WITH MIL-STD-202, METHOD 213, CONDITION A, 50 G, ACCELERATION-10 G

5. THE PART NUMBERS FOR CIRCUIT BREAKERS IN ACCORDANCE WITH THIS SPECIFICATION SHALL CONFORM TO THE FOLLOWING EXAMPLE:



WHEN A DESIGNATOR IS NOT APPLICABLE IT SHALL BE OMITTED FROM THE PART NUMBER.

6. CIRCUIT BREAKER LINK SEPARATION CHARACTERISTICS: WHEN TESTED IN ACCORDANCE WITH REQUIREMENT 7, THE CIRCUIT BREAKER SEPARABLE LINK SHALL OPEN IN THE TIMES SHOWN IN TABLE 4. THE LEAKAGE CURRENT BETWEEN THE LINE AND LOAD TERMINALS SHALL BE LESS THAN 1 MILLIAMP AT 900 VOLTS AC WITH THE BREAKER IN THE CLOSED OR RESET POSITION.

7. CIRCUIT BREAKERS SHALL BE SUBJECTED TO THE SEPARABLE LINK CHARACTERISTIC TEST CURRENTS OF TABLE 2. THE NORMAL TRIP MECHANISM SHALL BE HELD CLOSED TO PREVENT TRIPPING ELECTRICALLY WITHOUT APPLYING UNDUE STRESS ON THE CURRENT SENSING MECHANISM OR ALTERING THE CIRCUIT BREAKERS THERMAL DISSIPATION CHARACTERISTICS. THE TECHNIQUE MAY BE VENDOR SPECIFIC. CIRCUIT BREAKERS SHALL BE MOUNTED ON 1/8 INCH THICK ALUMINUM PANELS AND TESTED USING THE CIRCUIT FROM FIGURE 3 AS FOLLOWS:

   1. SHUT CONTACTORS 1 AND 2 WITH CIRCUIT BREAKER OPEN.
   2. ADJUST CURRENT AND VOLTAGE TO TEST LEVELS WITH THE REGULATED POWER SUPPLY AND LOAD RESISTOR R1.
   3. OPEN CIRCUIT BY OPENING CONTACTORS 1 AND 2.
   4. CLOSE CIRCUIT BREAKER UNDER TEST AND SHUT CONTACTOR 1.
   5. FINE ADJUST CURRENT WITH R1 AND RECORD LINK SEPARATION TIME.
   6. OPEN CONTACTOR 1.

   ONE SEPARABLE LINK TEST WILL BE PERFORMED ON EACH OF THE FOLLOWING CIRCUIT BREAKER SAMPLES. FAILURE OF THE BREAKER TO OPEN WITHIN THE MAXIMUM TIME SPECIFIED SHALL CONSTITUTE FAILURE OF THE BREAKER TO PASS THE TEST.

TABLE 6 - FUSING CHARACTERISTIC TEST (SAMPLE SIZE VERSUS OVERLOAD)

NOMINAL AMPERAGE RATING (A)	NUMBER OF BREAKERS TO BE SUBJECTED TO GIVEN CURRENT OVERLOAD							TOTAL SAMPLES REQUIRED
	400%	500%	600%	700%	800%	900%	1000%	
2-1/2	N/A	N/A	7	7	5	3	3	26
3	N/A	N/A	7	7	5	3	3	26
5	N/A	7	7	7	3	3	3	30
7-1/2	6	6	6	6	5	3	3	35
10	6	6	6	6	5	3	3	35