

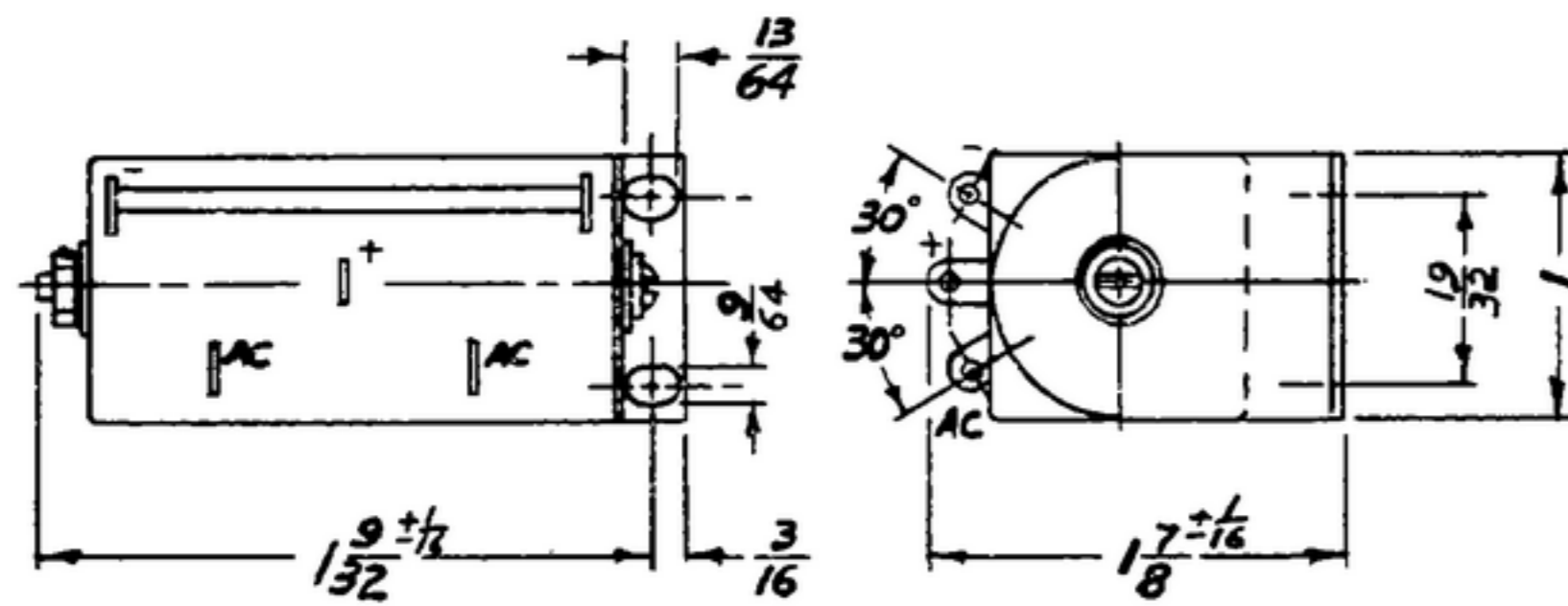
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\*FOR INFORMATION ONLY. CONTRACTOR MAY AT HIS OPTION DEVIATE FROM THESE PROCESS DETAILS.

\*SWE APPROVAL  
SYN PR 10042-6

REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A <sub>2</sub>	A <sub>1</sub> -106-1 WAS 106 A <sub>2</sub> - ADDED APPL SM-D-343623.	15 OCT 59	4242B-PC-59-A1-B1 REV'D. PME



NOTES:

1. PART MAY BE TYPE EW 1023 AS SUPPLIED BY FANSTEEL METALLURGICAL CORP., CHICAGO, ILL., OR EQUAL, PROVIDING IT MEETS THE FOLLOWING REQUIREMENTS AND DIMENSIONS SHOWN.

**DESCRIPTION:** SINGLE PHASE FULL WAVE BRIDGE CONNECTED SELENIUM RECTIFIER.

**DESIGN LIMITS:** (CONTINUOUS DUTY):

**MAXIMUM INPUT VOLTAGE:** 33 VOLTS RMS AT 85°C.

**MAXIMUM OUTPUT CURRENT:** 260 MA DC AT 85°C TO A RESISTIVE LOAD;

208 MA DC AT 85°C TO A CAPACITIVE LOAD.

**MINIMUM OUTPUT VOLTAGE:** 25.2 VDC TO A 260 MA DC RESISTIVE LOAD AT 25°C WITH 33 V RMS 60 CYCLES APPLIED.

**APPLICATION:**

**NOMINAL INPUT VOLTAGE:** 26.0 VAC 60 CPS OVER THE SPECIFIED TEMPERATURE RANGE.

**MINIMUM OUTPUT VOLTAGE:** 19.6 VDC AT 225 MA DC TO A RESISTIVE LOAD AT 85°C WITH 26 V RMS 60 CYCLES APPLIED

**DUTY CYCLE:** 30 SECONDS "ON"; 30 SECONDS "OFF", AND REPEAT.

**DIELECTRIC STRENGTH:** THE RECTIFIER SHALL BE CAPABLE OF WITHSTANDING A TEST POTENTIAL OF 500 VOLTS RMS FOR A DURATION OF ONE MINUTE APPLIED BETWEEN ALL CURRENT CARRYING PARTS CONNECTED TOGETHER AND MOUNTING HARDWARE WITHOUT DAMAGE, ARCING OR BREAKDOWN.

**LIFE EXPECTANCE:** 10,000 HOURS OPERATION OF WHICH THE FIRST 1000 HOURS SHALL BE AT THE MAXIMUM AMBIENT TEMPERATURE. UNITS SHALL BE OPERATED AT SPECIFIED DUTY CYCLE AND AT THE INPUT VOLTAGE AND OUTPUT LOAD SPECIFIED UNDER MINIMUM OUTPUT VOLTAGE. OPERATIONAL HOURS SHALL BE DEFINED AS THE TOTAL OPERATING HOURS AVAILABLE BEFORE THE OUTPUT VOLTAGE DECREASES BY TEN PERCENT FROM THE ORIGINAL VALUE.

**ENVIRONMENTAL CONDITIONS:**

**AMBIENT TEMPERATURE RANGE:** -40°C TO +85°C.

**COOLING:** NORMAL CONVECTION.

**MOISTURE RESISTANCE:** THE UNIT SHALL BE CAPABLE OF WITHSTANDING THE MOISTURE RESISTANCE TEST OUTLINED IN MIL-STD-202, METHOD 106-1. THE INSULATION RESISTANCE MEASURED BETWEEN ALL CURRENT CARRYING PARTS AND THE MOUNTING MEMBERS SHALL BE 100 MEGOHMS OR GREATER BEFORE TEST; 20 MEGOHMS MINIMUM AFTER TEST. MOUNTING OF UNITS FOR TEST IS OPTIONAL. THERE SHALL BE NO POLARIZING OR OPERATING VOLTAGE APPLIED DURING TEST. UPON COMPLETION OF CYCLING THE FORWARD VOLTAGE DROP SHALL NOT HAVE INCREASED BY MORE THAN 10% OF ITS ORIGINAL VALUE. THE REVERSE LEAKAGE CURRENT SHALL NOT BE GREATER THAN 10% OF THE RATED FORWARD CURRENT. PRIOR TO SUBJECTION TO MOISTURE RESISTANCE TEST THE UNITS SHALL BE VISUALLY INSPECTED TO ASCERTAIN THAT DAMAGE TO THE CELL FINISH HAS NOT OCCURRED AS A RESULT OF SHIPPING OR HANDLING.

**VIBRATION:** THE UNITS SHALL BE CAPABLE OF WITHSTANDING THE VIBRATION TEST SPECIFIED IN METHOD 201 OF MIL-STD-202, WITH THE EXCEPTION THAT THE DURATION OF THE TEST SHALL BE LIMITED TO THREE HOURS. VIBRATION SHALL BE APPLIED FOR ONE HOUR IN EACH OF THE MUTUALLY PERPENDICULAR PLANES. UPON COMPLETION OF THE TEST THERE SHALL BE NO EVIDENCE OF MECHANICAL DAMAGE OF LOOSENING OF PARTS, THE UNIT SHALL WITHSTAND THE DIELECTRIC TEST SPECIFIED, AND THE FORWARD VOLTAGE DROP SHALL NOT HAVE INCREASED BY MORE THAN 5% OF ITS ORIGINAL VALUE UPON COMPLETION OF THE TEST.

**SALT SPRAY TEST:** AFTER SUBJECTION TO A SALT SPRAY TEST IN ACCORDANCE WITH MIL-STD-202, METHOD 101 FOR A DURATION OF 50 HOURS, THE UNIT SHALL WITHSTAND THE DIELECTRIC STRENGTH TEST AND THE FORWARD VOLTAGE DROP SHALL NOT HAVE INCREASED BY MORE THAN 8% OF ITS ORIGINAL VALUE. THERE SHALL BE NO EVIDENCE OF CORROSIVE ACTION ON THE MOUNTING HARDWARE OR RECTIFIER ELEMENTS. PRIOR TO SUBJECTION TO SALT SPRAY TEST THE UNITS SHALL BE VISUALLY INSPECTED TO ASCERTAIN THAT DAMAGE TO THE CELL FINISH HAS NOT OCCURRED AS A RESULT OF SHIPPING OR HANDLING.

**LOW TEMPERATURE EXPOSURE:** THE RECTIFIER ASSEMBLY SHALL BE SUBJECTED (NON-OPERATING) TO A TEMPERATURE EXTREME OF -55°C FOR 2 HOURS AFTER WHICH THE UNIT IS RETURNED TO THE ROOM AMBIENT AND STABILIZED FOR AT LEAST 4 HOURS BEFORE TESTING. THE MEASURED FORWARD VOLTAGE DROP AT RATED CURRENT SHALL NOT HAVE CHANGED BY MORE THAN 8% FOR THE UNIT TO BE CONSIDERED ACCEPTABLE.

**MECHANICAL REQUIREMENTS:**

**FINISH:** THE ASSEMBLY SHALL BE COATED WITH A MATERIAL TO BE FUNGI INERT AND RESISTANT TO HIGH HUMIDITY CONDITIONS. THERE SHALL BE NO EVIDENCE OF PEELING, CRACKING OR CORROSION UPON COMPLETION OF ALL TESTS SPECIFIED HEREIN.

**MARKINGS:** THE UNIT SHALL BE MARKED WITH THE MANUFACTURER'S TYPE NUMBER AND THE CONTRACTOR'S PART NUMBER. (\*RECTIFIER INPUT TERMINALS SHALL BE COLOR CODED YELLOW, POSITIVE OUTPUT TERMINAL RED, AND NEGATIVE OUTPUT TERMINAL BLACK.) ALL MARKINGS AND COLOR CODE MUST BE CLEARLY LEGIBLE AFTER COMPLETION OF ALL TESTS TO BE CONSIDERED ACCEPTABLE. MARKINGS SHALL MEET THE TEST REQUIREMENTS OF SPEC MIL-M-13831.

**TERMINALS:** SOLDER LUG TYPE WITH A HOLE OR MATCH OF SUFFICIENT AREA NEAR THE TIP TO CLEAR A WIRE SIZE CAPABLE OF HANDLING THE MAXIMUM LOAD CURRENT. THE END OF THE TERMINAL TO WHICH AN ELECTRICAL CONNECTION IS TO BE MADE SHALL BE COATED TO READILY ACCEPT SOLDER.

**TESTING:**

\*SAMPLE APPROVAL: SAMPLE APPROVAL MUST BE OBTAINED FROM THE PRIME CONTRACTOR BEFORE PROCEEDING WITH PRODUCTION. ALL THE ELECTRICAL AND MECHANICAL REQUIREMENTS SPECIFIED WILL BE CHECKED BEFORE GRANTING APPROVAL.

\*PRODUCTION TESTING: QUANTITIES FROM PRODUCTION LOTS TO BE DETERMINED BY QUALITY CONTROL DEPARTMENT MAY BE TESTED BY THE CONTRACTOR FOR THE FOLLOWING:  
A-VISUAL INSPECTION OF WORKMANSHIP AND MATERIALS.  
B-OUTPUT AT 25°C.

\*PRODUCTION TYPE TESTING: A PERCENTAGE OF UNITS TO BE DETERMINED BY QUALITY CONTROL DEPARTMENT MAY BE SUBMITTED TO A COMPLETE TYPE TEST BY CONTRACTOR TO EVALUATE THE QUALITY OF THE COMPONENT. ALL UNITS.

VISUAL INSPECTION OF WORKMANSHIP AND MATERIAL.  
OUTPUT VOLTAGE AND CURRENT OVER THE TEMPERATURE RANGE.  
DIELECTRIC STRENGTH.  
FORWARD VOLTAGE DROP.

GROUP I  
LOW TEMPERATURE EXPOSURE.  
HUMIDITY.

GROUP II  
VIBRATION  
SALT SPRAY

GROUP III

LIFE--AS AN ACCELERATED LIFE TEST TO BE PERFORMED AT CONTRACTORS PLANT, THE UNIT WILL BE TESTED FOR 1000 HOURS AT THE MAXIMUM AMBIENT TEMPERATURE RATED LOAD AND SPECIFIED DUTY CYCLE. CELL AGING SHALL THEN BE NOTED AND USED AS A BASIS FOR GRANTING APPROVAL. (CONTRACTOR, HOWEVER, RESERVES THE RIGHT TO EXTEND LIFE TESTS AS REQUIRED TO EVALUATE THE QUALITY OF THE COMPONENT.)

\*WHEN PART NO. APPEARS AS 559-0278-9-3, MILITARY SOURCE INSPECTION IS REQUIRED.

COLLINS PART NO.	ITEM	REQD	PART NO.	DESCRIPTION	MATL	MATL QTY
LIST OF MATERIAL						
COLLINS PART NO. 559-0278-003						

DRAWN <i>Hamer</i>		CHECKED <i>EL</i>	APPROVED	COLLINS-RADIO-66 SIGNAL CORPS 14214-PH-51-93	RECTIFIER-METALLIC	DEPARTMENT OF THE ARMY SIGNAL CORPS ENGINEERING LABORATORIES FORT MONMOUTH NEW JERSEY
UNLESS OTHERWISE SPECIFIED: DECIMAL DIMENSIONS INCLUDING HOLE SIZES MAY VARY ±.005 FRACTIONAL DIMENSIONS INCLUDING HOLE SIZES MAY VARY ±1/64 MACHINED ANGLES MAY VARY ±.1° SHARP ANGLES MAY VARY ±.25° BROKEN ANGLES MAY VARY ±.1° ECCENTRICITY BETWEEN ANY DIAMETERS ON THE SAME CENTERLINE SHALL NOT EXCEED .010 TOTAL INDICATOR READING. ALL DIMENSIONS ARE FINISH DIMENSIONS INCLUDING APPLIED FINISH AND ARE GIVEN IN INCHES.		REVIEWED <i>PME</i>		APPROVED <i>HLV</i> <i>PME</i>		
APPLICATION		DATE <i>13 JAN 55</i>		SCALE <i>VI</i>	SM-C-283177	