

# FAILURE MODES AND EFFECTS ANALYSIS

ASSY NOMENCLATURE: RMS IFM DC KIT  
ASSY PIN: SE033103306-308

SYSTEM: REMOTE MANIPULATOR SYSTEM  
SUBSYSTEM: RMS IN-FLIGHT MAINTENANCE DC KIT

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NAME AND DRAWING	FUNCTION	FAILURE MODE AND CAUSE	MISSION PHASE	FAILURE EFFECT ON			FAILURE DETECTION		CORRECTIVE ACTION TIME AVAILABLE/ TIME REQUIRED	CRIT. H/F	HAZARDS/REMARKS
				END ITEM	MISSION	CREW/VEHICLE	FLIGHT	GROUND			
DIRECT DRIVE COMMAND SIGNAL CIRCUIT QTY. 1 (SET OF RESISTORS (R1, R3), ZENER DIODES (D1, D2), AND CAPACITOR (C1)) SIC 33103307	Provides 6.2V and 12.4V ref signal for direct drive commands	<b>9060</b> Mode: Short circuit of zener diode D1 Cause: • structural failure • mechanical stress • vibration • electrical stress • resistor R1 fails short	Orbit	Joint will drive in "neg" direction for both "pos" and "neg" direction commands  <u>Worst Case</u> Unexpected motion. Wrong joint direction. Crew action required		Loss of crew or vehicle due to unexpected RMS motion	Operator detects incorrect joint motion	Remove command. Select backup mode or jettison RMS  immediate/ immediate	1/1	Redundancy Screens: A - N/A B - N/A C - N/A	
		<b>5030</b> Mode: Zener diode, D1, fails open, fails to conduct  Cause: • structural failure • mechanical stress • vibration • electrical stress • resistor R1 fails short	Orbit	Loss of "neg" drive command. Joint will not drive when "neg" direction commanded. Joint will drive in "pos" direction when "pos" direction commanded  <u>Worst Case</u> Subsequent failures may result in inability to cradle arm  Redundant Paths Remaining Backup mode RMS Jettison		Subsequent failures may result in inability to cradle arm or jettison arm resulting in loss of crew/vehicle	Operator detects arm does not respond to drive command	Select backup mode or jettison RMS  second/4hours	3/1R	Redundancy Screens: A - Pass B - Pass C - Pass	

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ATTACHMENT  
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