

# CRITICAL ITEMS LIST

ASSY NOMENCLATURE ET DOOR LATCH TOOL

SYSTEM ORBITER

REVISED

ASSY P/N 5E039118691-001

SUBSYSTEM EVA EQUIPMENT

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FMEA		NAME, QTY & DRAWING REF DESIGNATION	QTY	FAILURE MODE AND CAUSE	FAILURE EFFECT ON	RATIONALE FOR ACCEPTANCE
REF	REV					
4A		SHAFT (1) SDD39118693-001	1/1	<p><b>Mode:</b> Shaft jams in barrel/will not engage door override mechanism</p> <p><b>Cause:</b> • Contamination • Defective allen head, stripped/galled</p>	<p><b>END ITEM</b> Cannot turn manual override mechanism to unlatch ET door</p> <p><b>CREW VEHICLE</b> Possible loss of crew vehicle door latches cannot be released, resulting in the inability to close ET doors</p>	<p><b>1. DESIGN FEATURES TO MINIMIZE FAILURE MODE</b></p> <ul style="list-style-type: none"> <li>a. Constructed of high strength, low temperature MP EN alloy</li> <li>b. Tolerances used on parts to minimize binding due to temperature extremes or contamination</li> <li>c. Designed with safety factor of at least 1.4</li> </ul> <p><b>2. TEST OR ANALYSIS TO DETECT FAILURE MODE</b></p> <ul style="list-style-type: none"> <li>a. <u>Acceptance</u>  Functional Test: Complete functional testing to verify handle and its assembly will operate freely, rotate smoothly, and release for stowage; barrel and shaft are locked together when in the full retracted position and the shaft extends and locks freely.</li> <li>b. <u>Certification</u> <ul style="list-style-type: none"> <li>(1) Qualification test consists of: interfacing with at least one Orbiter, including one complete cycle (full deployment and latch retraction) of both latch locations.</li> <li>(2) Cycle Life: Subjected to 15 complete cycles as defined below by the definition of one cycle:                             <ul style="list-style-type: none"> <li>(a) Allen Wrench: Fourteen complete revolutions resulting in maximum torque of 40 in-lb required</li> <li>(b) Extension/Retraction of shaft including latch engagement</li> <li>(c) Ten complete revolutions of quarter wrench</li> </ul> </li> <li>(3) Thermal qualification testing to verify this tool will function at temperature environment of 200 F to +350 F</li> </ul> </li> <li>c. <u>Inspection</u>  Complete functional testing will be performed once each year in after each EVA use to ensure that the tool functions properly.</li> </ul>

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# CRITICAL ITEMS LIST

ASSY NOMENCLATURE: ET DOOR LATCH TOOL

SYSTEM: ORBITER

REVISION:

ASSY P/N: SED39118693-001

SUBSYSTEM: EVA EQUIPMENT

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AREA		NAME, QTY & DRAWING REF DESIGNATION	CRITY	FAILURE MODE AND CAUSE	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
REF	REV					
4A		SHAFT (1) SOD39118693-001	1/1	<p><b>Mode:</b> Shaft joint in barrel will not engage door override mechanism</p> <p><b>Cause:</b> • Contamination • Defective allen head, stripped/galled</p>	<p><b>END ITEM</b> Cannot turn manual override mechanism to unlatch ET door</p> <p><b>CREW VEHICLE</b> Possible loss of crew vehicle Door latches cannot be released, resulting in the inability to close ET doors</p>	<p><b>7 INSPECTION</b></p> <p><b>a Manufacturing</b></p> <ul style="list-style-type: none"> <li>(1) Quality Assurance verification of compliance for material requirements</li> <li>(2) Verified conformance to drawings as built configuration</li> <li>(3) Visual inspection of tool for damage</li> <li>(4) Verified proper operation of tool</li> <li>(5) Functional test (FDA) performed</li> <li>(6) Verified initial clean</li> </ul> <p><b>b Turnaround</b></p> <ul style="list-style-type: none"> <li>(1) Inspect for visible damage, contamination, and debris according to PMA</li> <li>(2) Verify completion of functional test for reassembly</li> </ul> <p><b>8 FAILURE HISTORY</b></p> <p>None</p>

# CRITICAL ITEMS LIST

ASSY NOMENCLATURE: ET DOOR LATCH TOOL

SYSTEM: DRIVEN

REVISION:

ASSY P/N: 50039118691-301

SUBSYSTEM: EVA EQUIPMENT

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FMEA		NAME, QTY & DRAWING REF DESIGNATION	CRIT'Y	FAILURE MODE AND CAUSE	FAILURE EFFECT ON	RATIONALE FOR ACCEPTANCE
REF	REV					
4A		SHAFT (1) 50039118693-001	1/3	<p>Mode: Shaft jams in barrel/will not engage door override mechanism</p> <p>Cause: • Contamination • Defective allen head, stripped/galled</p>	<p><b>END ITEM</b> Cannot turn manual override mechanism to unlatch ET door</p> <p><b>CREW VEHICLE</b> Possible loss of crew/vehicle door latches cannot be released, resulting in the inability to close ET doors</p>	<p>5. OPERATIONAL USE</p> <ul style="list-style-type: none"> <li>a. <u>Operational Effect of Failure</u> - Tool cannot be used if the shaft will not engage the override mechanism</li> <li>b. <u>Crew Action</u> - Crew would attempt to free shaft with hammer or force tool into override mechanism with hammer</li> <li>c. <u>Crew Training</u> - None</li> <li>d. <u>Mission Constraint</u> - None identified</li> <li>e. <u>In Flight Checklist</u> - Verify proper operation of tool before translating to work site</li> </ul>