

III
Critical Items List

Assembly Name/Part Number: Torque Multiplier/TM159-20159-03
 Reference: CIL FROM I
 Prepared By: C. Marlean
 Approved By: M. Wilkey
 Superseding Date: 4/89
 Date: 1/89 Rev: A

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
Imob :16156- :20194-01 :Item 5.4 :One	1/1	S. 494115 Fails to interface with torque wrench. CAUSE: Defective material or thread adhesive. Damage, Impact, Broken retaining ring. Loose captive screw.	ERG IICH: Unable to use torque wrench. GFE INTERFACE: Unable to loosen latch bolts. MISDN: Terminate EVA. Unable to Jettison Payload CREW/VEHICLE: Loss of crew & Vehicle.	A. DESIGN: The Torque Multiplier Bush and Knob Captive Screw are fabricated from 316 PH stainless steel, heat treated to H9000 condition and passivated per QQ-P-35 specifications. The retaining ring is an off-the-shelf steel fabricated from Beryllium copper. The possibility of loose captive screw is precluded in design by adherence to standard engineering torque requirements for screw installation and the use of thread lock adhesive. The screw is installed using Loctite D247, medium strength, and torqued to 9.4 inlbs to ensure that it remains in place. The shell life of Loctite is carefully monitored to eliminate unacceptable deterioration. The Torque Multiplier is stored in a foam cushion in the Payload Bay PSA to protect it from the possibility of damage due to impact. B. TEST: Component Acceptance Test - None

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FIL
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Assembly Made/Part Number: Torque Multiplier/10159 20359-01
 Reference: FIL 16081
 Prepared By: I. Hamilton Approved By: M. Matheny
 Superseding Dates: 9/90 Date: 1/89 Rev: A

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
Knob 10159- 124299-01 1ken 5,4 1000	11)	5.4THMS Fails to interface with torque crunch.		<p>PSA Test - The following tests are conducted at the Torque Multiplier Assembly level in accordance with IIC Document 10141-106401:</p> <ol style="list-style-type: none"> 1. Functional test to verify proper operation of knob. 2. Interface with 3/8" drive Go/No Go Gage. <p>Certification Test - The Torque Multiplier was tested to S/AS require- ments of eight cycles and exhibited no damage. It was certified for the worst case PSA Simuage temperature range of -200 degrees F to + 350 degrees F.</p> <p>D. INSPECTION: Components and material manufactured to IIC requirements at an approved supplier are documented from procurement through shipping by the supplier. IIC incoming receiving inspection verifies that the materials received are as identified in the procurement documents, that no damage has occurred during shipment and that supplier certification has been received which provides traceability information.</p> <p>The following RIP's are performed during the Torque Multiplier Assembly manufacturing process to assure the failure causes are precluded from the fabricated items:</p>

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CPL
Critical Items List

Assembly Name/Part Number: Torque Multiplier/10359-20250-06
 Reference: CIL TRUMET
 Prepared By: E. Harlan Approved By: N. Wilkey
 Superseding Data: 9/88 Date: 1/89 Rev: A

NAME P/N OFF	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
Item 10150 20250-06 Item 5.4 Doc	1.1	S.47M45 Fails to interface with Torque wrench.		<ol style="list-style-type: none"> 1. Inspection of all components for damage or material degradation. 2. The assurance of lockite is controlled by inspection. 3. Verification that lockite shall (ide) is within specification. 4. Witness of lockite application and torque of captive screw. <p>During PDA, the following inspection points are performed at the Torque Multiplier Assembly level in accordance with ILC Document 10307-70690:</p> <ol style="list-style-type: none"> 1. Verify conformance to drawing. 2. Inspection for damage or material degradation. 3. Verification of successful completion of functional and interface test. <p>B. FAILURE HISTORY None</p> <p>C. GROUND TURNAROUND During ground turnaround, in accordance with ILC Document 10307-70762, the Torque Multiplier Assembly is inspected for damage and functionality tested for proper operation.</p>

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Assembly Name/Part Number: Torque Multiplier (10159 20250-01)
 Reference: CIB_10001
 Prepared By: E. Hartman
 Superseding Date: 9/00
 Approved By: M. Mithay
 Date: 1/89 Rev: A

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
11nob 10159- 10200-01 11100 2.0 10no	1/1	S. MEMS Fail to interface with torque member.		<ol style="list-style-type: none"> 1. OPERATIONAL USE: Crew Response Pre/Eval EVA - N/A EVA - Transport Torque Multiplier to crew compartment and attempt to repair. 2. Training Crew briefing. 3. Operational Considerations Catastrophic failure. Possible loss of crew/vehicle.

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