

12/24/94 SUPERSEDES 12/24/92

ANALYST:

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
COMMON MULTIPLE CONNECTOR, ITEM 410 ----- 5V778872-18 (1)	2/2	410FN08: Fails latch open, SCU "Y" handle. CAUSE: Failure, binding of locking mechanism, jamming of one or more couplings.	ERD ITEM: Unable to mate SCU/DCM. GPE INTERFACE: Unable to recharge EMU. MISSION: Ferminate mission. Unable to use one EMU during airlock activity. CREW/VEHICLE: None.	A. Design - Positive camming action by the SCU lever insures the axial engagement of the connector halves. The electrical connector, although rectangular, has a sufficiently flexible and floating part at the SCM half to allow easy connection. Moment balance around the DCM latch shaft at the start of closing aids smooth mating. B. Test - Component Acceptance: Airlock ATP 9902-03 requires that 1085 + 30 psig (N2) oxygen ports, 22.5 + .5 psig (N2O), 22.5 + .5 psig (N2O) Potable Water Port, the maximum allowable connect/disconnect force is 90 lbs. The required handle detent force out is 0.5 to 5 lb. The required detent force in is 0.5 to 3 lb. IPTs: An in process test is performed at Hamilton Standard to check that the "Y" handle is operative under a minimum force while the assembly is pressurized at working conditions. PDA: An SCU "Y" handle latch test is performed per SEMU-60-085. The force required to actuate the handle latch must be 2-6 lbs. Certification: Item completed 3,600 mate/demate cycles to the 1-330 multiple connector during 8/85 which fulfills the cycle certification requirement of 1,493. Class I Engineering Change 42806-691 (elimination of the possibility of SCU loosening by increasing preload torque and utilizing Loctite) has been incorporated and certified by analysis/similarity since this configuration was certified. C. Inspection - Binding, failure of locking mechanism, jamming of one or more of the couplings. An in process test is performed at H.S./M.L. to cycle the engagement and pressurizing of the item 10 times. An in process test is also performed to check that the item engages properly under a maximum force of ten pounds while it is pressurized at working conditions.

12/24/94 SUPERSEDES 12/24/92

ANALYST:

NAME P/N QTY	CNTR	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
	2/2	410FN08:		N.S. source inspection visually inspects SCU connector, in addition to, Alelok final inspection.

D. Failure History -

Three RDB's have been written which document difficulty with mating the SCU multiple connector to the DCM multiple connector. J-EMU-410-001 (4/10/81) for a damaged electrical connector caused by connector misalignment. EC 42806-625 incorporated a redesign to improve the piloting features of the connectors and to float the DCM electrical connector. J-EMU-400-003 (1/26/85) for failure to latch closed, caused by tolerance stack-up. EC 42806-13 revised dimensions. F-EMU-410-5A01 (11/03/84) for difficulty with latch closure caused by the loosening of the set screws which attach the cam handle to the cam shaft. EC 42806-691 incorporated an increase in pre-load torque and the use of Loctite for setscrew installation.

E. Ground Turnaround -

Tested per FEMU-R-007, EMU Checkout in Orbiter, (V1103-02), SCU/DCM interface verification.

F. Operational Use -

Crew Response -

Pre/EVA: Troubleshoot problem. If no success, discontinue use of SCU and EMU.

Special Training - Standard EMU training covers this failure mode.

Operational Considerations - EVA Checklist procedures verify hardware integrity and systems operational status prior to EVA.