

REV. A

DATE March 25, 1988
(Revised May 31, 1988)

FMEA #: 60-S70-0790-02-MDS, MD6, MD101,
MD102, MD103, MD179, MD180-01

END ITEM EFFECTIVITY:
X X X
OV102 OV103 OV104

MODEL NO: S70-0790-02

SUBSYSTEM: ECLSS

PART NUMBER:	PART NAME:	REFERENCE DESIGNATION:
MC276-0035	Quick Disconnect Non-latching (LEAR SIEGLER)	MD5, MD6, MD101, MD102, MD103, MD179, MD180

CRITICALITY NUMBER: 2

FUNCTION: Provide ground-to-orbiter Freon system separation interface.

CRITICAL FAILURE MODE: Structural failure.

CAUSE: Material Fatigue.

FAILURE EFFECT ON:

- (A) END ITEM: Loss of structural integrity would preclude use of GSE coolant assemblies.
- (B) INTERFACING SUBSYSTEM(S): GSE coolant assemblies would be rendered inoperative.
- (C) ORBITER: Possible damage to flight half of QD with subsequent discharge of Freon. Loss of coolant will cause overheating of ECLSS dependant components.
- (D) PERSONNEL: Exposure of personnel to Freon 114.

HAZARDS: Possible exposure of personnel to freon 114 discharge.
Possible damage to flight hardware.
Possible contamination of flight hardware.

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ACCEPTANCE RATIONALE

DESIGN: Review of assembly documents and Specification Material Document (SMD) MC276-0035 has provided design data points to be complied with for acceptance rationale.

Design data points:

Operational envelope is to exceed the expected use envelope of 0 to 265 psig at 10,000 lbs/hr flow of freon 114. Manual engagement and closure of disconnects with assurances of positive locking feature. Internal pressure design point of 0 to 265 psig @ 10,000 lbs/hr flow for the operational life of 10 years or 1000 cycles. Structural safety factor of better than 2:1 above design loads.

TEST:

PRE-OPERATIONAL: Per OMI V3537
Pressure test to system operating pressures with GHe, 110 ± 5 psig, are conducted prior to Freon 114 recirculation servicing. Physical inspection of interface.

INSPECTION:

PRE-INSTALLATION: Per MC276-0035 (5.1 - 5.1.5)
Acceptance Test: Examination of product, The AHC, the AHC cap the GHC, and the GHC cap shall each be carefully examined to determine conformance to the requirements of this specification. Particular attention shall be given to weight, workmanship, finish, dimensions, construction, identification, marking, traceability level, and to the use of certified materials and processes.

AGE LIFE: Per OMI S6013, the assembly is inspected annually for compliance to the material and assembly specifications.

PRE-OPERATIONAL: Per OMI V3537
Components are inspected for cleanliness per MA0110-311, level 300 by visual inspection of bagging and sealing of interface ports and/or research of applicable TAIR books prior to each use.

OPERATION:

Manual attachment and monitored filling insure a secure connection by personnel.

DETECTION: Visual detection of freon 21 discharge.

CORRECTION: Isolation and replacement.

FAILURE HISTORY:

Review of FRACA Data Base has provided no structural fatigue failure history on item MC276-0035.