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Critical Item: Check Valve (2 Items 1/Pad) (2 Items Total)  
Find Number: A144549  
Criticality Category: 1S

SAA No:	09PPAB12-002	System/Area:	L02/G02 FCSS/Pads A & B
NASA Part No:	79K80130-7	PMN/Name:	S72-0697-03 OMBUU FCSS GN2/G11e Service Panel
Mfg/Part No:	Circle Seal Controls, Brunswick Corp./ 11P220T-4BB-1	Drawing/Sheet No:	79K06004 & 79K10034

Function: Prevents venting of GN2 purge through valve A144554.

Critical Failure Mode/Failure Mode No: Fails Open/FM No. 09PPAB12-002.003

Failure Cause: Structural failure, broken spring

Failure Effect: GN2 would vent through valve A144554. Complete loss of GN2 would render the O-3 Mid-Body Umbilical Carrier Plate Compartment purge inoperative, detectable by pressure transducer A105244. There is a potential fire/explosion hazard if this failure is coupled with a hazardous leak. Could cause loss of life or vehicle.

Time To Effect: Immediately.

### ACCEPTANCE RATIONALE

**Design:**

- Max operating pressure: 8000 psig
- Actual operating pressure: 750 psig
- Proof pressure: 1-1/2 x max operating pressure
- Burst pressure: 4 x max operating pressure
- Service: Nitrogen
- Operating temperature: -100°F to +400°F
- Materials:

Body, trim and spring - 300 series stainless steel

O-ring - Teflon

WORKSHEET 5312-013  
921211mjPS0118

5050234BD  
Attachment  
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**Test:**

Manufacturer's certification test requirements include the following tests:

- Proof
- Leak
- Operational

**Inspection:**

- OMRSD, File VI

Verify purge pressure of  $750 \pm 30$  psig is present on transducer A105244, and verify there is audible flow at carrier plate.

Frequency: Prior to cryo loading.

- OMI V1040 validates the PRSD servicing system.

**Failure History:**

- The PRACA database was researched and no failure data was found on this component in the critical failure mode.
- The GIDEP failure data Interchange system was researched and no failure data was found on this component in the critical failure mode.

**Operational Use:**

- Correcting Action:

Loss of GN2 purge pressure is detectable by pressure transducer A105244.

Upon loss of the purge pressure, the L02 flow is automatically terminated, by closure of the normally closed L02 high pressure block valve A102112, which receives its actuation pressure from the same source as the GN2 purge. The FCSS L02 fill, vent and drain lines may be drained and inerted by manual action. These actions mitigate the effect of the loss of purge by removing system pressure and draining L02/G02 from the umbilical carrier plate.

- Timeframe:  
Immediately.