

SHUTTLE CRITICAL ITEMS LIST - ORBITER

SUBSYSTEM : FLIGHT CONTROL MECH FMEA NO 02-2B -A01-CV-16 REV: 12/04/87

ASSEMBLY : TVC ACTUATOR
P/N RI : MC621-0015
P/N VENDOR: MOOG
QUANTITY : 6
: ONE PER ACTUATOR

	VEHICLE	102	103	104
EFFECTIVITY:		X	X	X
PHASE(S):	PL	LO X CO	DO	LS

CRIT. FUNC: 1
CRIT. HDW: 1

PREPARED BY: DES N LEVERT
REL C NELSON
QE M SAVALA

REDUNDANCY SCREEN: A-N/A B-N/A C-N/A
APPROVED BY: DES N. Levert
REL C. Nelson
QE M. Savala

APPROVED BY (NASA):
SSM [Signature]
REL [Signature] 1/7/88
QE [Signature]

ITEM:
CHECK VALVE

FUNCTION:
PREVENTS MOVEMENT OF ACTUATOR PISTON DURING ACTUATOR HYDRAULIC SELECTION.

FAILURE MODE:
FAILS CLOSED

CAUSE(S):
CONTAMINATION, JAMMED

EFFECT(S) ON:
(A) SUBSYSTEM (B) INTERFACES (C) MISSION (D) CREW/VEHICLE

(A) LOSS OF ONE ACTUATOR FUNCTION.

(B) POSSIBLE LOSS OF ONE ENGINE POSITION CONTROL WHICH MAY CAUSE ENGINE COLLISION.

(C,D) POSSIBLE LOSS OF MISSION, CREW/VEHICLE. LOSS OF FUNCTION CAN RESULT IN LOSS OF VEHICLE CONTROL.

DISPOSITION & RATIONALE:
(A) DESIGN (B) TEST (C) INSPECTION (D) FAILURE HISTORY (E) OPERATIONAL USE

(A) DESIGN
COMPONENT IS PROTECTED BY SYSTEM FILTRATION OF 5 MICRON FILTER AND CLEARANCES WITHIN THE CHECK VALVE ARE IN EXCESS OF 100 MICRONS. INTERNAL PARTS OF THE CHECK VALVE ARE IDENTICAL IN MATERIALS, FORM, FIT AND FUNCTION TO THE SHUTTLE QUALIFIED ROCKWELL CHECK VALVES, ME284-0434, WHICH ARE USED THROUGHOUT THE HYDRAULIC SUBSYSTEM.

(B) TEST
QUALIFICATION-THE CHECK VALVE IS CYCLED 20,000 TIMES DURING ENDURANCE TESTING, IN CONJUNCTION WITH SWITCHING VALVE COMPONENT TEST.

ACCEPTANCE-SWITCHING VALVE/ACTUATOR PERFORMANCE TESTS VERIFY THAT THE CHECK VALVE MEETS OPERATIONAL REQUIREMENTS. FLUID FROM ACTUATOR IS VERIFIED TO MEET CLEANLINESS LEVEL 190 PER MA0110-301.

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OMRSD-MPS ENGINE POSITIONING TEST, PERFORMED PRIOR TO EACH MISSION.
HYDRAULIC FLUID SAMPLES ARE TAKEN AFTER EVERY FLIGHT AND VERIFIED TO BE
WITHIN SPECIFIED CLEANLINESS LEVELS.

(C) INSPECTION

RECEIVING INSPECTION
MATERIAL CERTIFICATIONS ARE VERIFIED BY INSPECTION.

CONTAMINATION CONTROL
LEVEL 190 PER MA0110-301 IS VERIFIED TO BE IN COMPLIANCE DURING ASSEMBLY
AND TEST. FLUID SAMPLE VERIFIED PRIOR TO SHIPMENT.

ASSEMBLY/INSTALLATION
CRITICAL CHARACTERISTICS/DIMENSIONS VERIFIED BY INSPECTION. INSTALLATION
PERFORMED IN CLEAN ROOM ENVIRONMENT. ENVIRONMENT IS VERIFIED PER MOCG
CONTAMINATION CONTROL PLAN.

TESTING

CHECK VALVE FLOW IS VERIFIED AT THE COMPONENT LEVEL PRIOR TO INSTALLATION
AND DURING ATP. ROCKWELL DESIGN AND QUALITY PERSONNEL, WITH NASA
PARTICIPATION, CONDUCT A DETAILED ACCEPTANCE REVIEW OF THE HARDWARE AT
THE VENDOR'S FACILITY, PRIOR TO THE SHIPMENT OF EACH END ITEM COVERED BY
CONTROL PLAN. ATP VERIFICATION IS MIP FOR RI QA REPRESENTATIVE.

(D) FAILURE HISTORY

THERE IS NO HISTORY OF FAILURE FOR THIS FAILURE MODE.

(E) OPERATIONAL USE

NONE