





U.S. ARMY COMBAT CAPABILITIES DEVELOPMENT COMMAND – AVIATION & MISSILE CENTER

Cranes and Space Stations

Name of Presenter

Rank/Title of Presenter

Organization of Presenter

DISTRIBUTION STATEMENT GOES HERE







Functional FMEA

Design FMEA

CIL

System FMECA

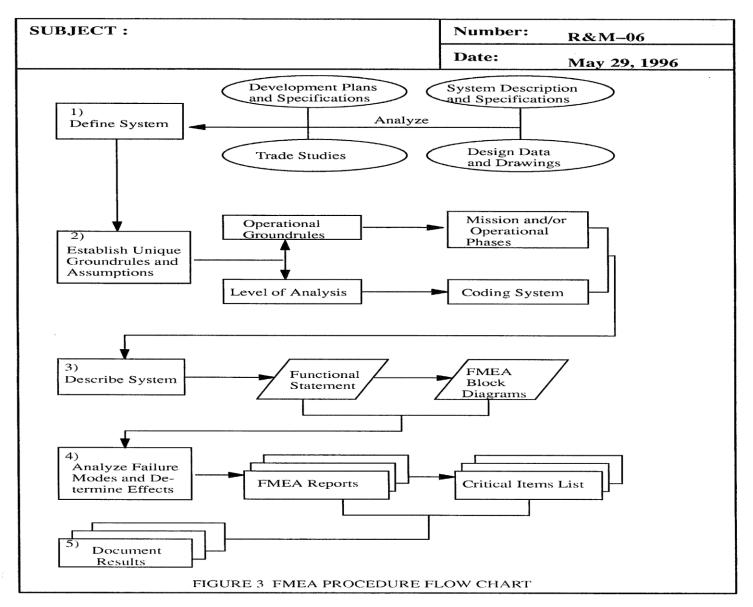
Piece Part FMECA





FMEA CIL

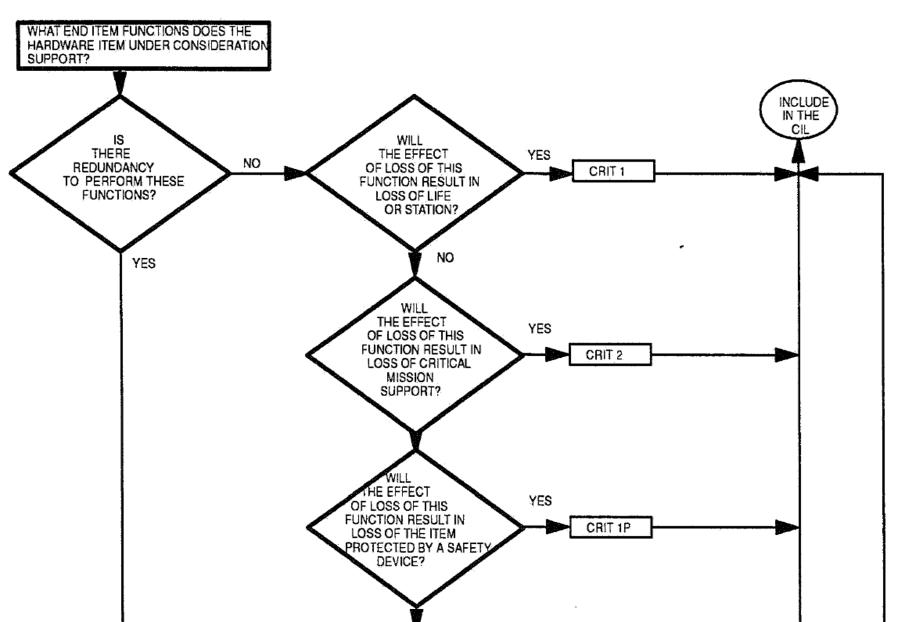


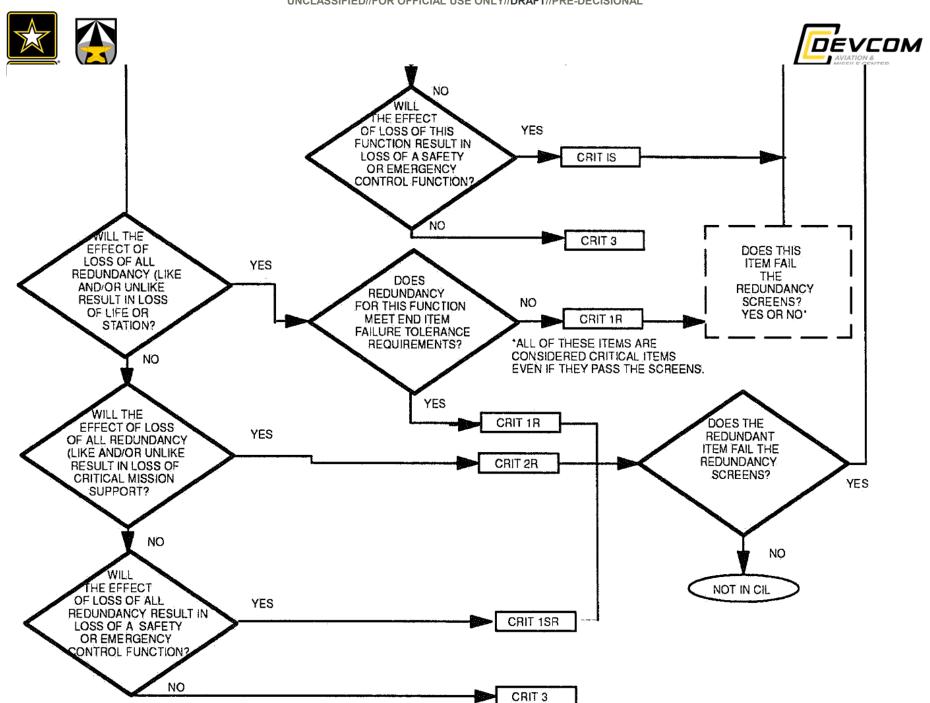


















BOEING SPACE STATION

CIL DATE: 08/30/1993

CRITICAL ITEMS LIST

PREPARED BY DESIGN AKINS, T.

PREPARED BY RELIABILITY

FUERST, R.

CRITICALITY: 1S

CIL RANKING:

FMEA DOCUMENT NO.: D683-10166-1 FMEA DOCUMENT REVISION:

FMEA WORKSHEET NO.: 9/SAE4/9

WP/SSFP IDENTIFIER: WP01

FLIGHT/GSE: F

MISSION PHASE:

CD

ELEMENT:

LAB A

SYSTEM:

EPS

SUBSYSTEM:

ORU NAME:

WIRE HARNESS

ORU NO:

683-22102-1

CRITICALITY 1 DURING MAINTENANCE:

Y

SUCCESS PATHS:

SUCCESS PATHS REMAINING:

PART NAME/NUMBER

LCN/REF.DES

OTY

WIRE HARNESS

SAE4

001

683-22102-1

SK2H8RD-CID-LA01, W105

ITEM FUNCTION: PARALLEL OUTPUT OF DDCUS 1A AND 4B TO PROVIDE 12.5 KW

SECONDARY ELECTRICAL POWER TO SPDA 1.







BOEING SPACE STATION CRITICAL ITEMS LIST (CIL)

RATIONALE FOR RETENTION

DESIGN:

THIS CRITICAL ITEM RESULTS FROM EPS SUPPORT TO THE FDS FLAME DETECTOR IN THE USL-A FORWARD ENDCONE. THE FLAME DETECTOR HAS BEEN IDENTIFIED AS A SINGLE FAILURE POINT SINCE THERE ARE AREAS IN THE OPEN CABIN OUTSIDE THE FIELD OF VIEW OF THE REMAINING FLAME DETECTOR. THE FLAME DETECTOR IN THE FORWARD ENDCONE IS POWERED FROM BUS 1A/4B. THE FLAME DETECTOR IN THE AFT ENDCONE IS POWERED FROM BUS 2A/3B. IF ANOTHER FAILURE OCCURS THAT RESULTS IN LOSS OF THE FLAME DETECTOR IN THE AFT ENDCONE, THE ONLY MEANS OF FIRE DETECTION IN THE OPEN CABIN AREA WILL BE VISUAL DETECTION BY THE FLIGHT AND/OR GROUND CREW. THIS FAILURE IS DETECTABLE BY ACTIVE BIT OF THE FLAME DETECTOR AND SPDA RPCM TRIP INDICATION. THIS DESIGN IS IN ACCORDANCE WITH THE FDS ARCHITECTURE IMPLEMENTED BY LEVEL II VIA SSCBD BB003444R1, WHICH PROVIDES FOR ZERO FAILURE TOLERANT FIRE DETECTION IN THE MODULE OPEN CABIN AREAS.







INSPECTION:

CAUSE 1,2: FLIGHT WIRE HARNESS ASSEMBLY/INSTALLATION DRAWINGS ARE NOT YET AVAILABLE, HOWEVER, ALL WIRE HARNESSES WILL BE SUBJECTED TO VISUAL EXAMINATION AS FOLLOWS:

- 1. ALL ASSEMBLIES AND INSTALLATIONS WILL BE INSPECTED FOR COMPLIANCE TO WORKMANSHIP PRACTICES AND CONFORMANCE TO THE APPLICABLE DRAWING.
- 2. ALL WIRING WILL BE CHECKED FOR SUFFICIENT SLACK TO ENSURE FREEDOM FROM MECHANICAL STRESS DUE TO INSTALLATION.
- 3. ALL WIRING WITH VISUAL FLAWS IN INSULATION, SUCH AS CUTS, CRACKS, OR BURNS WILL BE REJECTED.
- 4. CABLE TIES WILL BE EXAMINED TO ENSURE SUFFICIENT TIGHTNESS WITHOUT WIRE DAMAGE OR PINCHING.
- 5. CONNECTORS WILL BE CLEANED AND INSPECTED PRIOR TO EACH MATING TO EQUIPMENT.







FAILURE HISTORY:

QUALIFICATION AND ACCEPTANCE TESTS WILL BE MONITORED FOR FAILURES RELATED TO THIS FAILURE MODE.

OPERATIONAL USE:

THERE IS NO OPERATIONAL RESPONSE IDENTIFIED FOR THIS FAILURE MODE.

MAINTAINABILITY:

THE FLAME DETECTOR FUNCTIONALITY CANNOT BE RESTORED UNTIL THE FAILED WIRE HARNESS IS REPAIRED OR REPLACED. MANUAL TROUBLESHOOTING MAY BE REQUIRED TO ISOLATE TO THE FAILED WIRE HARNESS. THE ON-ORBIT MAINTENANCE CONCEPT FOR WIRE HARNESSES HAS NOT BEEN DEFINITIZED, ALTHOUGH IT IS PLANNED THAT A LIMITED ON-ORBIT REPAIR CAPABILITY WILL BE AVAILABLE. THIS CAPABILITY WILL INVOLVE SPLICING OF DAMAGED CONDUCTORS OR ROUTING OF NEW CONDUCTORS DEPENDING UPON THE SEVERITY AND ACCESSIBILITY OF THE DAMAGE. REPAIR OF WIRE HARNESS CONNECTORS







System Functional FMECA

- SCAMP already designed
- Not help logistics

Piece Part Single Point Failure FMECA

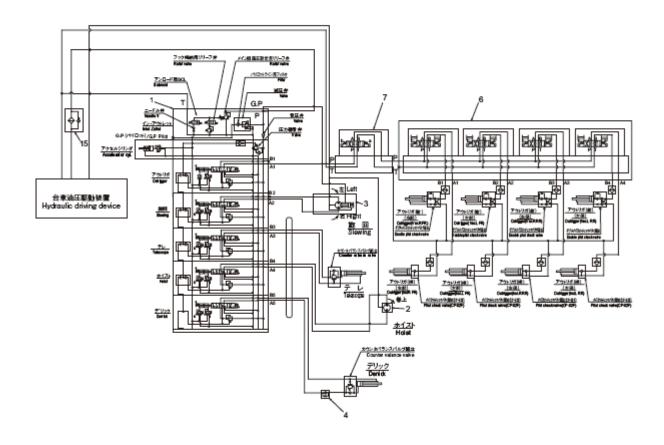
- Too expensive
- Not meet Schedule
- Overkill
- ✓ LRU Functional FMECA
 - 782 lines







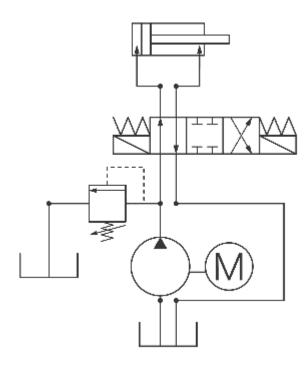
由圧駆動装置 (全機種共通) -YDRAULIC DRIVING DEVICE(ALL MODELS)











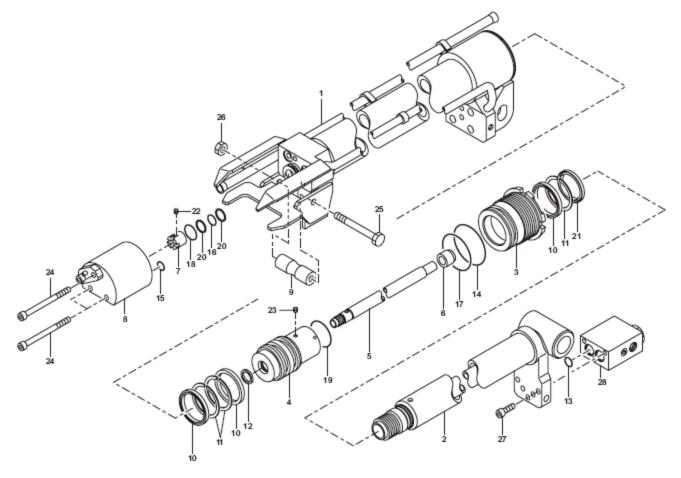






テレシリンダ (1) 組立 (URW375C2UR) Fig. 2-1 TELESCOPE CYLINDER(1) ASS'Y(URW375C2UR)



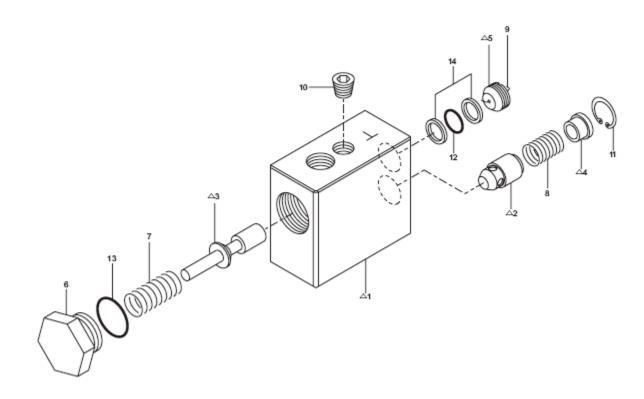








カウンタバランスパルブ組立 (全機種共通) COUNTER BALANCE VALVE ASS'Y(ALL MODELS)

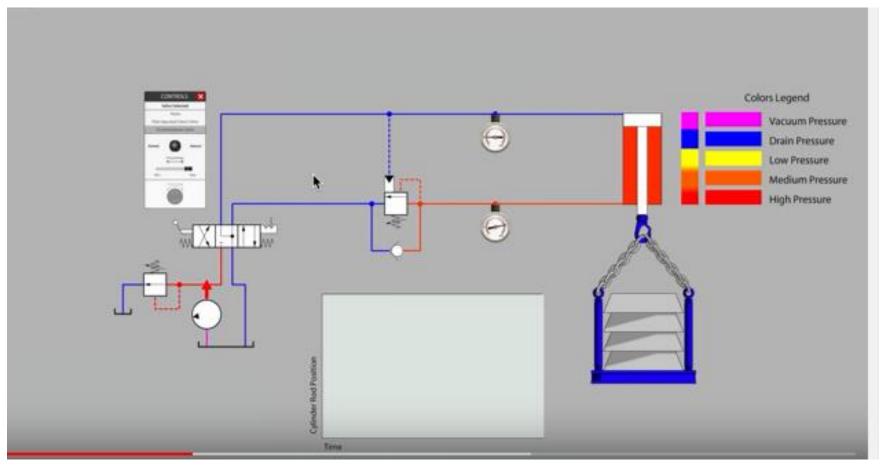


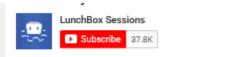




YEA YOUTUBE!







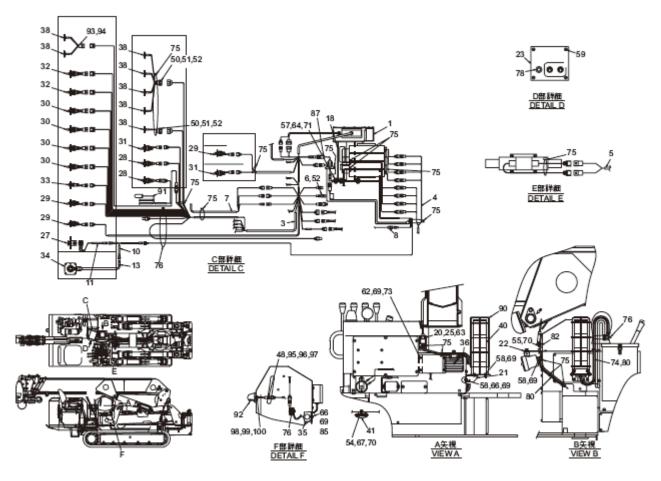




LINE 157-192



電気配線 (下部)組立 (1/2)(全機種共通) Fig. 4-3-1 ELECTRIC WIRINGS (LOWER) ASS'Y (1/2) (ALL MODELS)

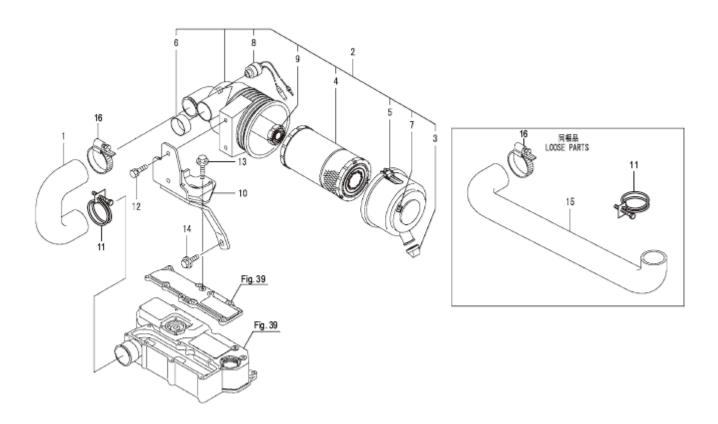


57







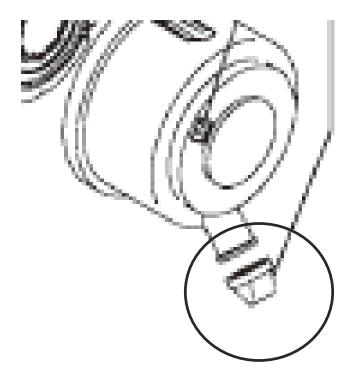








Valve, Bleeder



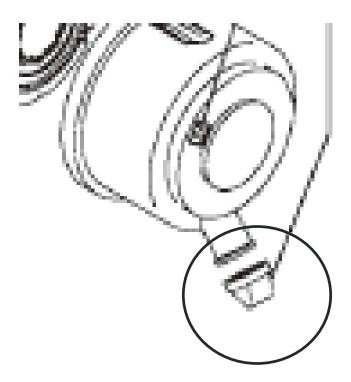






Valve, Bleeder

Valve-unloader





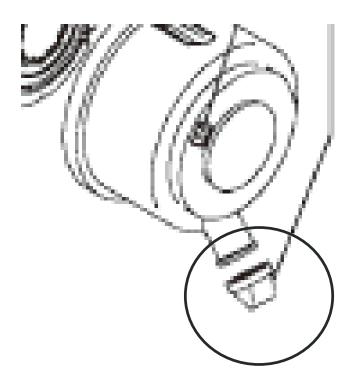




Valve, Bleeder

Valve-unloader

アンローダ バルブ







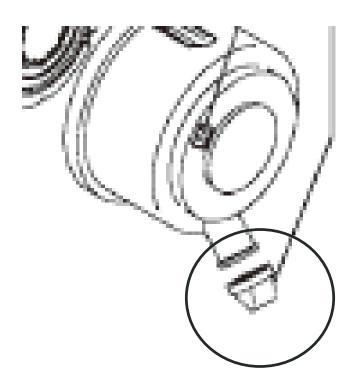


Valve, Bleeder

Valve-unloader

アンローダ バルブ

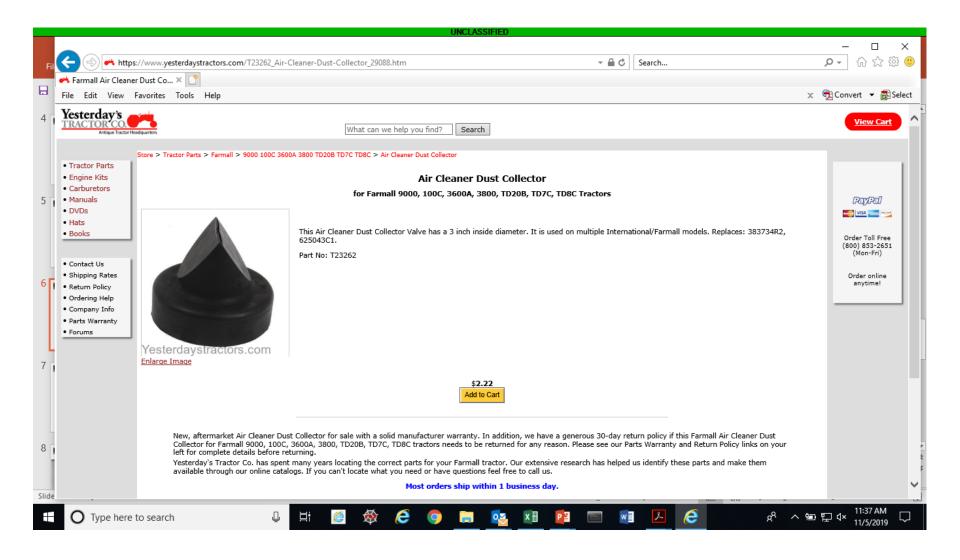
Unloader valve

















Web Site

https://www.avmc.army.mil/

Facebook

www.facebook.com/ccdc.avm

Instagram

www.instagram.com/CCDC_AVM

Twitter

@CCDC_AVM

Public Affairs

usarmy.redstone.ccdc-avmc.mbx.pao@mail.mil