

ATTACHMENT C

AIR CRUISERS MAINTENANCE MANUAL

6 pages

**AIR CRUISERS****Engineering****TO :** Matt Mc Cormick**From :** Ed Smialowicz**Fax :** [REDACTED]
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E-Mail : [REDACTED]**Total Pages :** 6**Date :** 11 April, 2002**Copy :****Our Ref. :**
Your Ref. :**Subject :** Delta MD11 incident, Charlotte

Matt,

Attached are 5 sheets from our Component Maintenance Manual (25-61-21) which describes the operation of the MD-11 Door 1 Slide/Raft.

I have marked Fig. 3 to show the sequence of the pack release during deployment and the location of the inflation cable.

Confirming our findings during the detailed examination at Charlotte on 2 April 02, there was no abnormalities on the slide/raft which could account for the premature inflation.

Please contact Boeing if you need detailed information on the door pan and decorative cover since these are Boeing parts.

Best Regards, Ed.



COMPONENT MAINTENANCE MANUAL
60289-Series

2. Evacuation Slide/Raft Assembly Description

- A. The MD-11 Door 1 evacuation slide/rafts are designed to provide a safe, reliable and efficient means of rapid egress from the aircraft. The slide/raft becomes a flotation device immediately after deployment, without interfering with evacuation procedures. The major subsystems include the inflatable assembly and a stored gas reservoir/valve assembly, both of which are packed in a cloth carrying case.
- B. The slide/raft is an uncomplicated rectangular structure formed by upper and lower longitudinal body tubes positioned one over the other. The respective upper and lower body tubes are connected at the sill end by "sill" tubes and at the runway end by "runway" tubes. This structure permits usability in the raft or slide mode with only one of the chambers inflated.
- C. A lane divider tube and lateral cross tubes (spacer tubes) interconnect the lower perimeter tube to resist tube twist or "roll" when under load, and prevent the sliding lanes from being formed into troughs which would adversely affect evacuation rate.
- D. The sliding surface or floor of the slide/raft is attached to the lower tube as a taut membrane. It commences atop the upper sill tube transitions downward to the lower tube, extends along the lower tube and transitioning again to a level atop the upper runway tube. The runway floor transition comprises approximately the lower one quarter of the slide/raft.
- E. The slide/raft is constructed from lightweight heat-reflective, urethane coated nylon fabric. Excellent puncture, tear, and abrasion resistance of the sliding surface and tube structures, lessens any chance of penetration from a sharp object (i.e., footwear).
- F. Eight inflatable posts are located equidistant around the upper body tube, providing primary support for the raft canopy. When the posts are fully inflated, they afford attachment for the canopy via cord tie-offs and "velcro" fasteners. Supplemental canopy support is provided at three locations along the longitudinal centerline of the slide/raft by multi-section support rods which are erected as part of the canopy installation sequence. The rods are stowed within the survival kit. The high visibility, international orange coated nylon fabric canopy is packed in a separate "vacuum-packed" container.



**COMPONENT MAINTENANCE MANUAL
60289-Series**

- G. To provide lighting to the sliding lane lamp harnesses encased clear plastic light sleeve cemented are located along the inboard surface of the upper body tubes and across runway tube. The lights are actuated automatically during deployment of the slide/raft. The lamp harness is connected to the power unit on the underside of the slide/raft.
- H. Frangible links are used to control the deployment sequence in a predictable, repeatable manner. The links are precision tension fuses which separate at pre-determined force values. The links are connected to webbing grommet tabs which are permanently attached to the inflatable.
- I. A pull handle for manual inflation actuation serves as a backup should the slide/raft fail to inflate automatically upon opening of the door. The pull handle, triangular in shape, is constructed of white webbing and a red colored metallic handle which reads "PULL" in white letters. The inflation valve release cable passes through a grommet and attaches to the pull handle with a quick disconnect.
- J. No-fail handles are located at both sides on the runway end of the inflatable for use of the slide/raft as a non-inflatable apron chute. Persons on the ground may grasp these handles to extend the slide/raft into a hand-held chute if pressure loss within the inflatable is evident.
- K. A flexible, double-braided polyester/Kevlar hose with an ethylene propylene liner and aluminum swivel end fittings interconnects the inflation reservoir/valve assembly to the aspirators.
- L. The survival kit satisfies FAA requirements and in addition contains the manual hand pump and canopy masts. The survival kit is stowed within a pouch in the carrying case.
- M. Each slide/raft is stowed within a fabric carrying case and inside a backpack. The backpack is affixed permanently to the aircraft during installation and is provided by Douglas Aircraft Company (DAC) (Door 1 P/N 7446-515).



**COMPONENT MAINTENANCE MANUAL
60289-Series**

- N. Aspirator assemblies are located on upper and lower tubes. Each aspirator is comprised of an inlet housing section, an internal nozzle array, and a cylindrical diffuser/mixing tube. The inlet housing is equipped with one way flappers which act as a check valve following complete inflation. During inflation the aspirators entrain ambient air using high pressure stored gas from the reservoir exiting the internal nozzles.
- O. A canopy of high visibility international orange, coated nylon fabric is packed in a separate "vacuum packed" container and secured to the slide/raft by a lanyard. When installed, the canopy is retained by a combination of webbing tie-offs and hook and pile fasteners at each station. Webbing tie-offs are used to retain the vertical "side shields" of the canopy around the perimeter of the upper main body tubes of the inflatable.

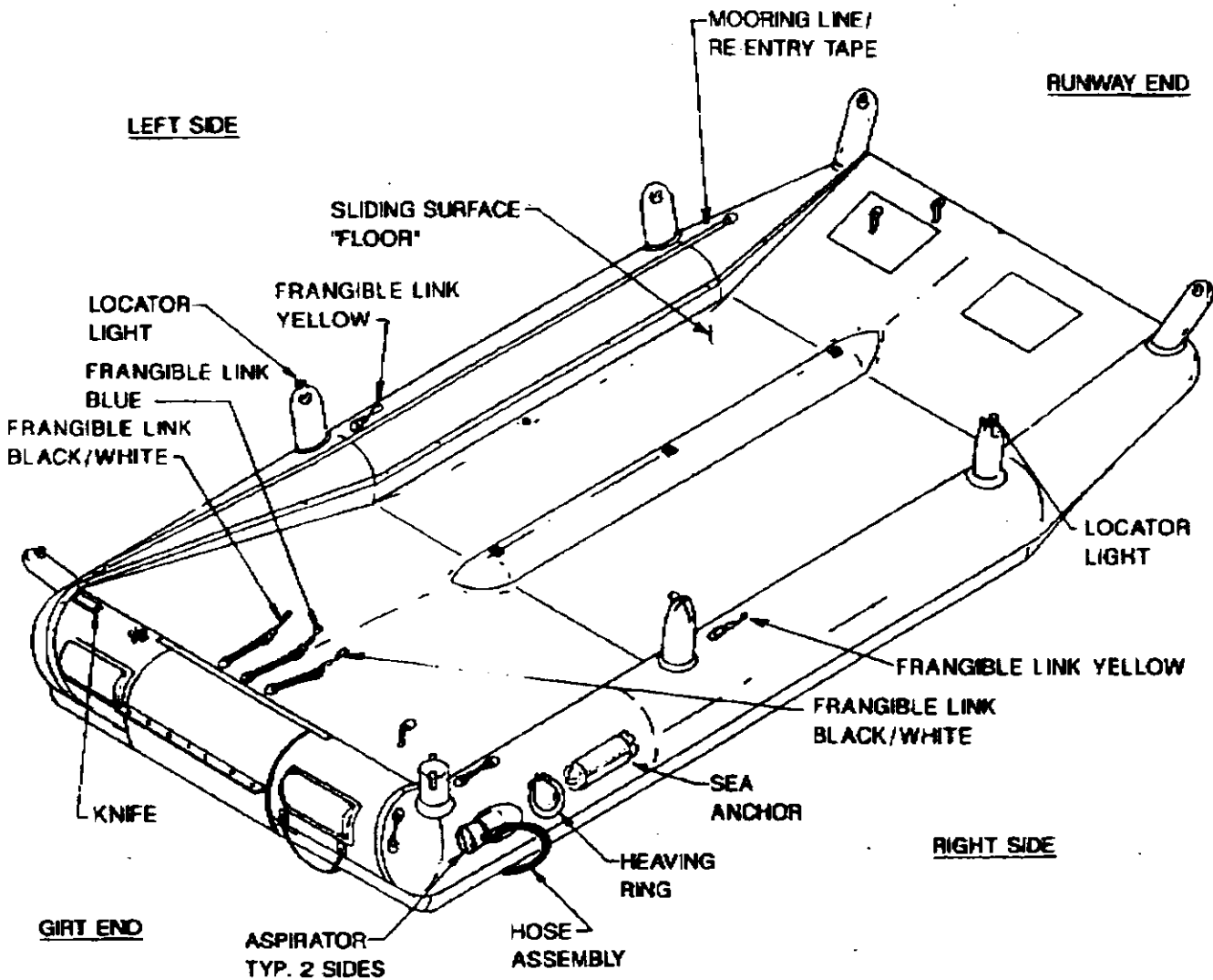
3. Operation

- A. On-land deployment of the inflatable is accomplished as follows:
 - (1). Door must be opened in the "emergency" armed mode. The girt will tension as the door opens upward, pulling the slide/raft out from under the decorative cover.
 - (2). The slide/raft is then pushed outboard by door-mounted webbing straps and inflates automatically.
- B. Separation of the inflatable from the aircraft to permit its use as a flotation device is accomplished as follows:
 - (1). Pull the release handle, located beneath a cover flap on the girt extension.
 - (2). The girt will separate and the slide/raft will drift from the aircraft.
- C. Actuation of the inflation valve causes primary gas to be released out of the reservoir into the hose attached to the aspirators. The primary gas expands through the aspirator nozzles and causes the mixing tube to ingest ambient air through the open "flappers". The flappers act as a check valve and close when the inflatable pressure reaches approximately 1.5 psig. The remaining gas from the reservoir then flows directly into the inflatable increasing the pressure to the operating range.



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COMPONENT MAINTENANCE MANUAL
60289-Series

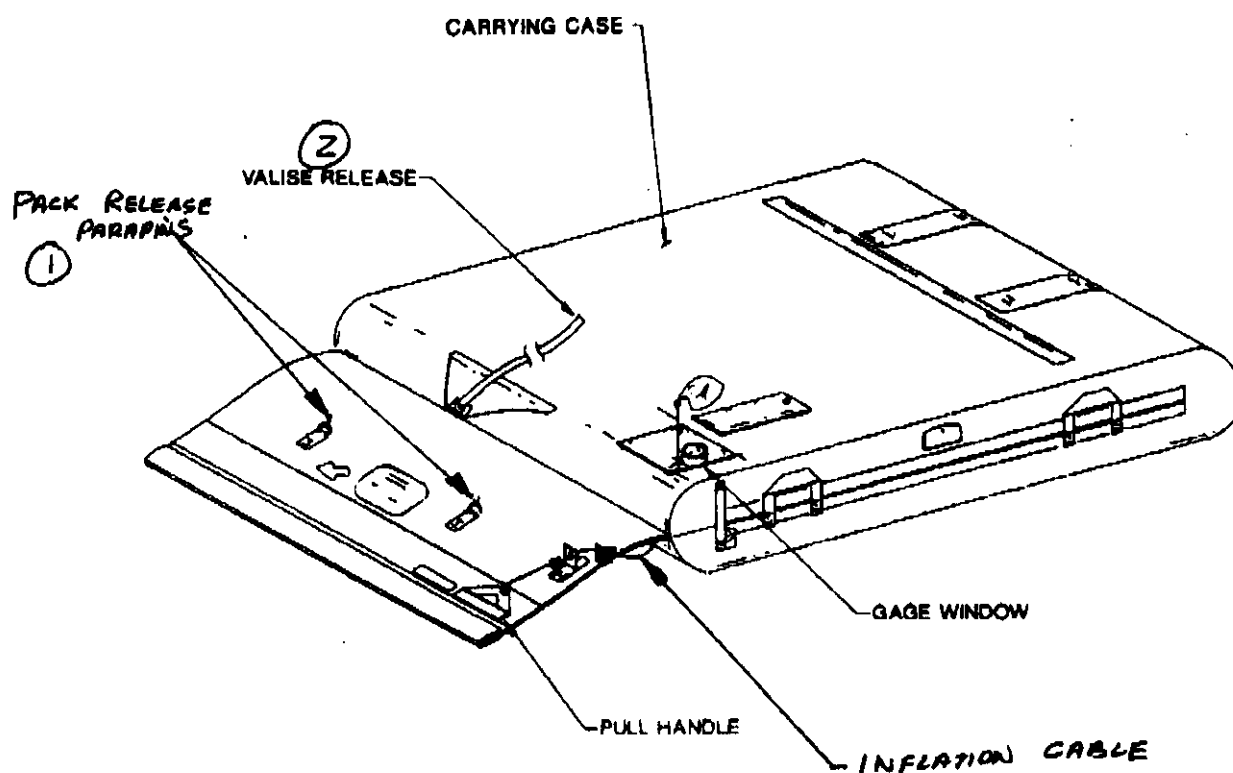


INFLATED EVACUATION SLIDE/RAFT ASSEMBLY
FIGURE 2

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60289-Series



PACKED CONFIGURATION
FIGURE 3

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Page 7, 7 Mar 1996
Page 8, Blank