January 24, 1975
C1-750-33/COM PROGRAMS
10-35-00-05
AOL 10-742A

To: All DC-10 Operators

Subject: PASSENGER OXYGEN SYSTEM MAINTENANCE, DC-10

Applicable to: All DC-10 Passenger Aircraft

Reference: (a) Adjustment/Test Passenger, Oxygen System DC-10 Maintenance Manual, Chapter 35-20-00
(b) AOL 10-742 dated December 13, 1974

Gentlemen:

THE INFORMATION CONTAINED IN THIS AOL SUPERSEDES INFORMATION PRESENTED IN AOL 10-742, DATED DECEMBER 13, 1974.

Since the introduction of the DC-10, Douglas representatives have accumulated extensive experience through many visits to operators' facilities to witness and assist with passenger oxygen drop tests. The purpose of this All Operator Letter is to convey to the operator the Douglas recommended action to improve the passenger oxygen mask drop reliability.

Operators should, at the earliest opportunity, schedule an inspection/maintenance oxygen drop as well as increase the frequency of maintenance drops in order to eliminate intermittent latches, correct mask packing problems, exercise the door latch actuating mechanism(s) and develop a higher level of maintenance personnel proficiency. Reference (a) can be utilized to perform routine maintenance drops. Intervals should be determined from operators' experience, (1500 flight hours is recommended initially).

For operator planning purposes, this "Inspection/Maintenance" program can be accomplished on one oxygen electrical section at a time. It is estimated that a section can be inspected and refurbished during an overnight maintenance period. To upgrade passenger oxygen compartments located in the seatbacks, overheads, and partitions, use the procedure outlined in Service Sketch #2215A, attached.

January 24, 1975
C1-750-33/COM PROGRAMS
10-35-00-05
AOL 10-742A

To assist with rapid implementation of this program, Douglas has ordered latches and strikers on a speculative basis. Upon receipt of an intended schedule of accomplishment, Douglas will make arrangements with each operator to provide, at no cost, an initial supply of latches, both Adams Rite and Consolidated (including striker for Consolidated latches only) necessary to commence a planned program to update those installations that fail to function during the 95V test.

After accomplishing this AOL on each aircraft, removed latches must be returned to Douglas on an expedited basis for test and/or repair. These latches will be used as a total pool to support each operators additional requirements. The supply of latches available, demands that we distribute latches in limited quantities on a first come - first serve basis. Our experience indicates that approximately twenty percent (20%) will be removed from each aircraft. Additional latches will be furnished in those instances where the latch screening test requires increased quantities. Removed latches should be returned to:

Douglas Aircraft Company
2401 E. Wardlow Road
Long Beach, California 90801
ATTN: Product Support Control Booth, C1-751/52
(Reference AOL 10-742 A)

We intend to furnish latches on a one for one basis for all latches that fail the initial 95V test. At the completion of the program for the DC-10 fleet, operators will be invoiced for all latches furnished beyond those quantities returned to Douglas that failed the 95V test.

Consolidated Controls is now producing a "floating" striker which is more tolerant to potential misalignment problems. For this reason, Douglas recommends that Operators with Consolidated latch installations order a sufficient quantity of new Strikers, P/N 73427 to replace all present Consolidated Strikers, P/N 71700-1 in each aircraft. These orders should be placed directly with Consolidated Controls. The existing Adams Rite Striker, P/N AR 2792-1 will not be replaced.

In addition, Douglas is currently reviewing, with each seat manufacturer, specific design changes which will improve oxygen door deployment reliability. Instructions for design improvements affecting delivered seats will be included in service bulletins issued by the respective seat manufacturers.

Very truly yours,

McDonnell Douglas Corporation

R. H. Luke, Director
Product Support
Commercial Programs
Douglas Aircraft Company

RWW/mr

This service sketch defines those items necessary to upgrade the passenger oxygen compartments located in the seatbacks, overheads, and partitions for improved reliability.

I. LATCH SCREENING AND COMPARTMENT INSPECTION

A. Add restraint to all oxygen compartment doors to prevent full opening and inadvertent generator firing.

B. De-energize the four "PAX OXY REL" circuit breakers located on the Flight Engineers circuit breaker panel.

C. Set up the electrical test circuitry shown in Figure 1, Page 6, Connect the power jumper lead from the VARIAC to the respective section switch screw terminal as noted below:

S1-156 D3 Fwd. Pass. Section
S1-156 C3 Mid. Pass. Section
S1-156 B3 Aft left Pass. Section
S1-156 A3 Aft right Pass. Section

D. Verify VARIAC is set at 95 VAC, 400 HZ.

E. Apply power for 3-5 seconds.

NOTE: Apply power only once.

F. Record by location those doors which failed to deploy.

G. Door Pull

1. Pull on any door which failed to open.

2. If the door opens and the latch has released electrically, the reason the door did not open during Para. E. was due to binding of the door or latch misalignment, see Item V or VI. Proceed to Para. I. J.

3. If door fails to pull open, proceed to Para. I. H.

H. Manually unlatch all remaining doors. Electrically verify the integrity of the latch wiring from the power supply to the latch. Repair as necessary.

January 24, 1975
AOL 10-742A

J. Inspect all latches and strikers in ALL oxygen compartment locations for the following:

Adams Rite	Consolidated
Bent Bail	Poor alignment
Broken Manual Release	Bent Striker
Poor Alignment	
Mtg. Bolts installed backwards	

NOTE: Excessive door preload can be a factor causing latches to malfunction. Since it is extremely difficult to accurately measure pre-load on delivered aircraft seats, causes for pre-load must be eliminated or reduced to a level allowing normal door opening - these causes are:

(a) Poorly aligned doors.
(b) Latch/striker misalignment or adjustement.
(c) Warped or misaligned door hinges.
(d) Rubber seal around fan blower outlet (if installed), or actual blower interference.
(e) Door hitting stops prior to latching.
(f) Mask compression due to improper packing.

K. Remove all latches that fail to release at 95 volts during the screening test in paragraph I. or have physical damage. Replace with latches identified as follows: Adams Rite - White Dot, Consolidated Controls - 80V or P/N 73875.

NOTE: It should be noted that Consolidated latches and floating strikers are intended to be physically interchangeable with Adams Rite latches and strikers, and may be substituted at the operators option. Contact seat manufacturer for equivalent CCC P/N's and any possible interference due to seat mods, or manual release arrangements.

L. Latches that meet the 95 volt screening test should be marked with a yellow dot unless latch has previously been identified as a 80 volt latch with a white dot, ink stamped 80 V, or P/N 73875. Yellow dot should be visable when latch is in the installed position.

II. INSTALLATION OF FLOATING STRIKER (CONSOLIDATED LATCH ONLY)

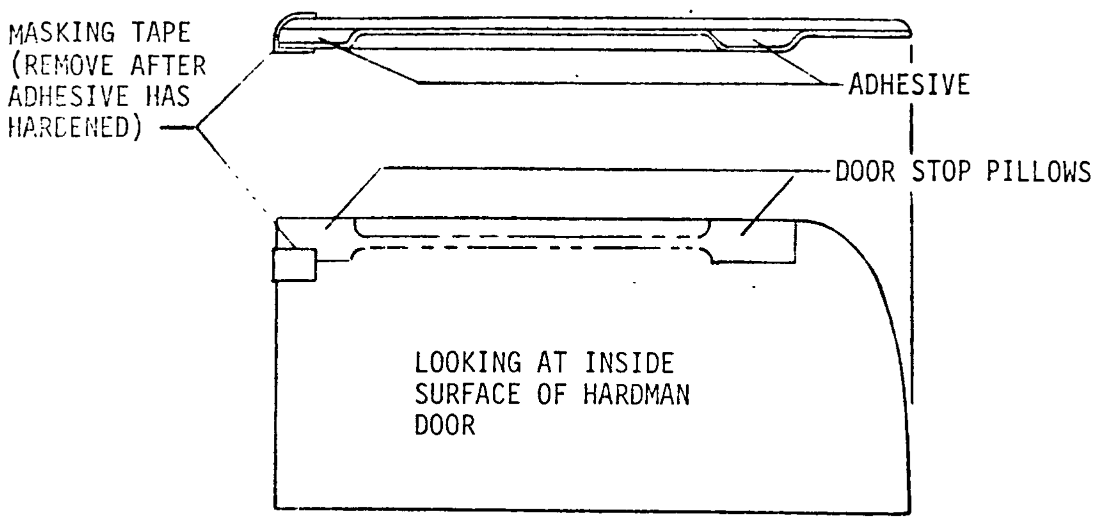
A. Remove existing fixed striker, P/N 71700-1, in all O_2 compartments.

B. Install floating striker, P/N 73427, following alignment instructions provided in paragraph V. A.

III. HARDMAN DOOR REWORK

A. Fill flush door stop pillows on Hardman seats only using epoxy adhesive or equivalent rigid filler.

NOTE: It is suggested that masking tape be placed on adjacent door faces to prevent adhesive from defacing door.



IV. OVERHEAD AND PARTITION OXYGEN COMPARTMENTS (FUS. 1 - 56)

A. Incorporate S/B 35-7, as required to free binding doors (Fus. 1-56). This service bulletin trims the doors and adds a door opening spring to the overhead and partition oxygen compartments.

B. Align the latches and strikers in these compartments per Para. V.

V. LATCH ALIGNMENT

A. Consolidated Controls

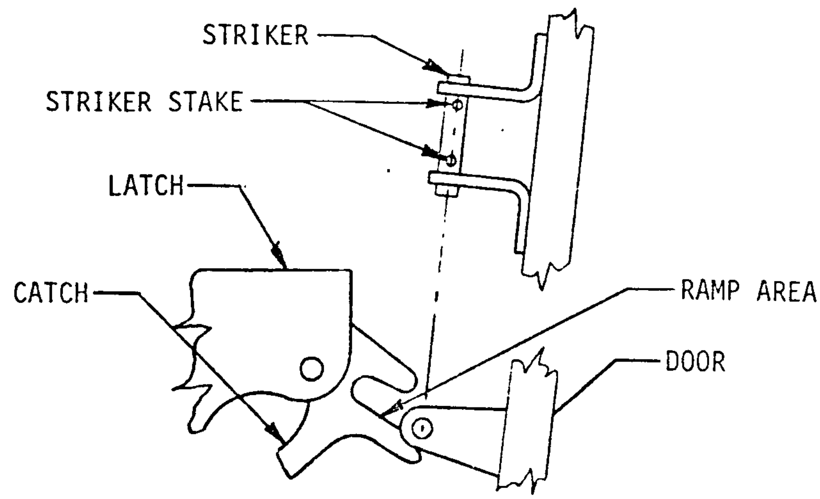
At the point of engagement of the striker and latch, center the striker in the latch opening without sideloading the striker. The latch opening shall be normal to the plane of the door stops.

B. Adams Rite

The striker shall be parallel to the top of the door. The latch catch shall be normal to the plane of the door stops. The striker shall approach the latch catch and contact the catch in the ramp area as shown below. The catch shall not contact the staked area of the striker and the

DOUGLAS AIRCRAFT COMPANY	TITLE DC-10 PASSENGER OXYGEN SYSTEM IMPROVEMENTS (AOL 10-742A)			
MCDONNELL DOUGLAS CORPORATION	SCALE	APPR. C. Lyman / R. [illegible]	12-18-74	SERVICE SKETCH 2215 A REV. 1-24-75 PAGE 3
LONG BEACH, CALIF. 90801	MODEL	APPR. [illegible]	1/1/[illegible]	
		DFTSMN. J VAN SON	12/10/74	

striker shall not contact any portion of the body (or spring) of the latch in any position of the door including side play (see sketch below).



C. See sketch for typical tool aids, Page 7, Figure II

VI. DOOR BINDING

A. With latch and striker aligned as described in Paragraph V, the clearance between the oxygen compartment seatback door and its door opening should be adequate to assure repeated door opening.

B. Oxygen seatback compartments and doors that, by design, do not require door clearance for repeated door opening need not comply with the above paragraph.

C. If any evidence of door binding exists, rework or reform door opening and/or trim door as required. Replace door if necessary.

VII. PACKAGING AND CLEANING

A. Proper packing of oxygen masks, hoses and lanyards is essential to reliable operation of the oxygen system. Packing instructions are shown in DC-10 Maintenance Manual, Chapter 35-22-02, Page 201. Additional aids, which will facilitate packing and hence reduce maintenance time are contained in Service Bulletin 35-16.

B. Remove all dust and dirt from all compartments.

C. Seal openings between individual air blower (if installed) and oxygen compartment. i. E., bend reliefs, lightening holes and gap between partition and door when it is closed.

D. Clean and lubricate all seat door hinges and plastic door edges where applicable.

VIII. WIRING CHECK

A. Insure that the terminal block in the compartment is fastened to the compartment wall in the proper manner, i.e., mounting screws should not protrude above terminal block. If they protrude, apply Primer Silicon Rubber Selastic 1201 RTV, followed by the application of Silicon Rubber Sealant DC-92-024, or equivalents, to cover the exposed metal surface of the terminal block mounting screw(s).

B. Insure that the terminals on the latch wires are installed correctly at the compartment terminal block thus avoiding a possible short to the mounting screw.

C. Install protective cover (where required) over seat terminal strip to insure against foreign objects shorting or contaminating terminal strip.

D. Visually inspect and insure that generator heat shield is not contacting electrical terminal (if installed).

IX. FUNCTIONAL TEST

A. At rework completion, functional test as follows:

Functional Test Passenger Oxygen System Using Oxygen Mask Eject Switch

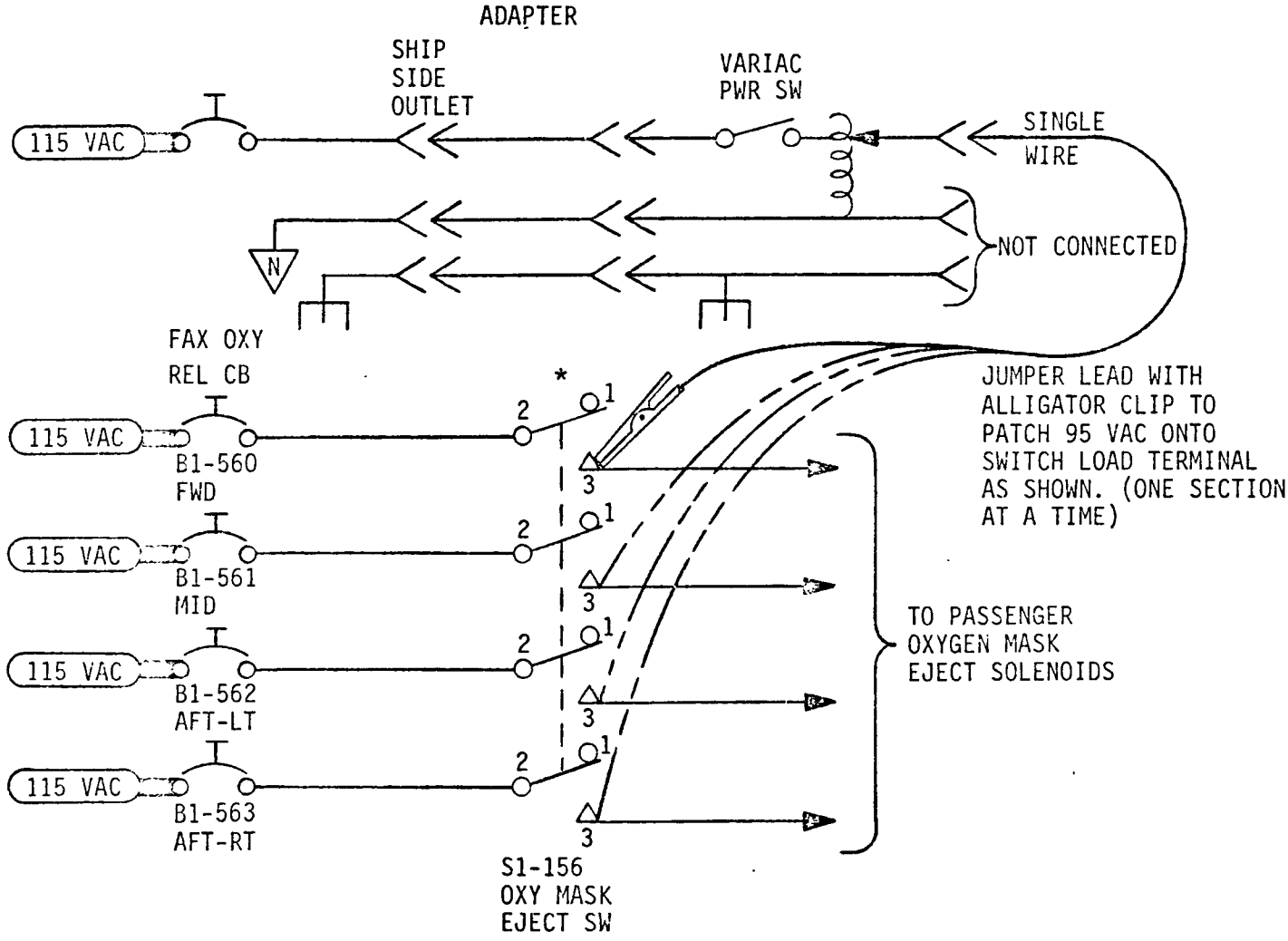
(1) Place OXY MASK EJECT Switch on Flight Engineer's upper panel in EJECT position for approximately 1 second; then, release switch.

CAUTION: DO NOT ACTUATE "OXY MASK EJECT" SWITCH FOR MORE THAN 5 SECONDS. IF RETEST IS REQUIRED, WAIT FOR AT LEAST 10 MINUTES FOR LATCHING SOLENOIDS TO COOL.

(2) Check all passenger oxygen module doors supplied by each of the four circuit breakers (PASS OXY RELEASE FWD CABIN, PASS OXY RELEASE MID CABIN, PASS OXY RELEASE LEFT AFT CABIN, and PASS OXY RELEASE RIGHT AFT CABIN) including those located in lavatories, ceilings, bag racks, partitions, attendant stations, lower galley (If applicable), and seatbacks to see if opened or closed.

(3) Open circuit breaker for any section (controlled by that breaker) which has achieved a 100% opening (all doors open at a single electrical actuation). SECTIONS HAVING ACCOMPLISHED 100% DOOR DROP NEED NOT BE RETESTED. DOORS IN REMAINING SECTIONS MUST BE REWORKED AS REQUIRED UNTIL 100% DOOR DROP BY SECTION IS ACHIEVED.

PASSENGER OXYGEN SYSTEM ELECTRICAL INTERCONNECT DIAGRAM

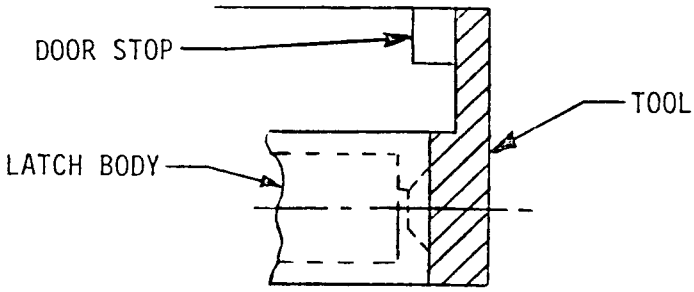


*CAUTION: VERIFY VOLTAGE IS AVAILABLE ON THE HOOK-UP WIRE BEFORE CONNECTING TO SWITCH. TURN OFF VARIAC POWER BEFORE CONNECTING.

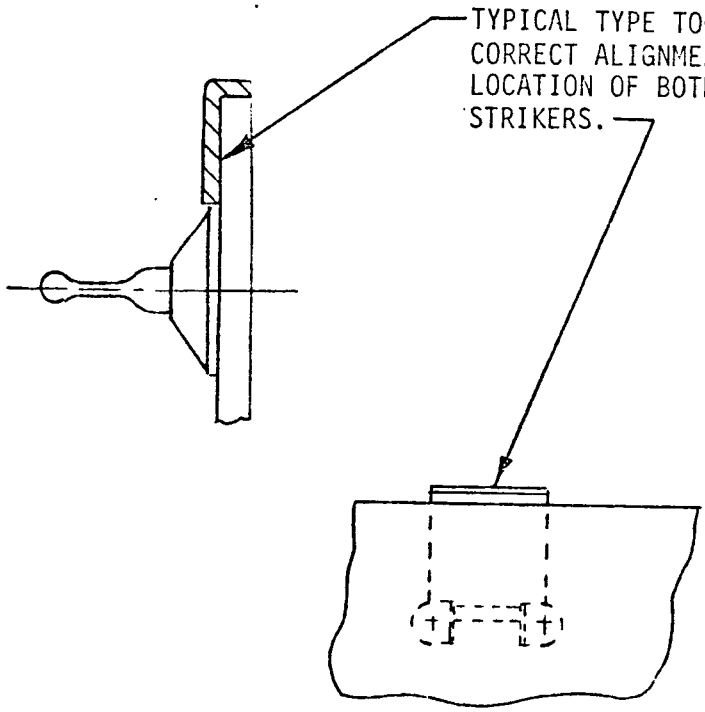
FIGURE I

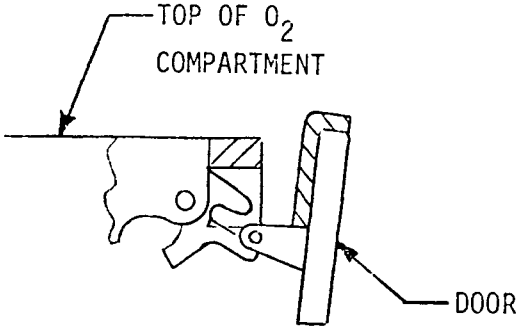
DOUGLAS AIRCRAFT COMPANY MCDONNELL DOUGLAS CORPORATION LONG BEACH, CALIF. 90801	TITLE: DC-10 PASSENGER OXYGEN SYSTEM IMPROVEMENTS (AOL 10-742A)			
	SCALE	APPR.		SERVICE SKETCH REV 1-24-75
	MODEL	APPR.		2215 A
		DFTSMN.	VAN SON	PAGE 6

DAC 68-729 (12-68)



CONSOLIDATED CONTROLS LATCH





ADAMS-RITE LATCH

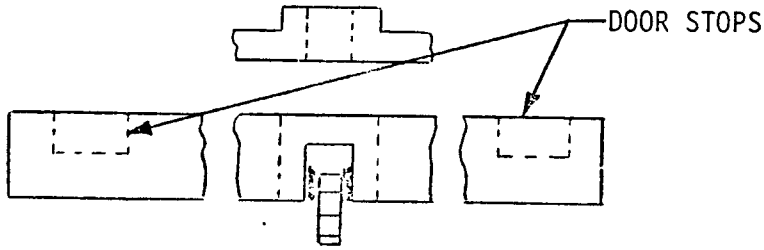


FIGURE II

TYPICAL TYPE TOOL FOR ALIGNMENT AND CORRECT LOCATION OF BOTH LATCHES.

DOUGLAS AIRCRAFT COMPANY MCDONNELL DOUGLAS CORPORATION LONG BEACH, CALIF. 90801	TITLE: DC-10 PASSENGER OXYGEN SYSTEM IMPROVEMENTS (AOL 10-742A)		
SCALE	APPR.		SERVICE SKETCH REV. 1-24-5
MODEL	APPR.		22215 A
	DFTSMN.		PAGE 7