

Learjet 45 Durst JAD **Revision 3** - Summary of Modifications

Jon Dyer 20 September 2020

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Summary of changes and additions made to David Durst's Learjet 45 Panel.

- **Panel Background Colour.** Changed to a more authentic lighter and bluer colour.
- **Knobs.** Modified all knobs to have (my preferred) left/right mouse clicks to adjust values.
- **Autopilot and Display Controller.** Improved autopilot functionality.
Changed the switch lights to the correct green indicators.
Added Course, Heading, Altitude and IAS Sync, and IAS/M toggle, using middle mouse clicks.
Swapped left and right bearing pointer switches to their correct NAV sources.
Moved switches to correct locations, and changed captions to correct text.
Added XFR button and arrow.
Modified NAV/GPS switching. Now FMS alone is NAV/GPS switch.
ALT now Altitude Hold, FLC now Flight Level Change.
Moved the VS adjust function from the Altitude Select knob to the IAS knob as in real Learjet 45.
Modified so that NAV2 radio as well as NAV1 radio can drive the HSI and couple to the autopilot.
- **PFD.** Added Autopilot Mode Annunciator (Flight Mode Annunciator FMA)
Added HSI TO/FROM pointer, added Mach readout, corrected wind vector.
DH now in feet, changeable in increments of 3 feet. Added audible "Minimums" alert.
Added heading digital readout. Moved RA and DH to correct location.
Added digital VS and VS Set readouts.
Added dynamic flap dependent red caution lines and V-Speeds to ASI tape.
Added MDA BARO and added MDA bug to altitude tape. STD now correctly sets to 1013 hPa.
- **EICAS.** Added throttle position (detent) indication: MCR, MCT, T/O and APR.
Fuel and fuel flow now selectable in lbs or kg.
Many improvements and additions to CAS advisories.
Correctly shows ITT (not EGT). Corrected labelling.
Added HYD screen, improved FLT and ELEC screens.
- **MFD.** Numerous modifications to map. Added selectable terrain (OFF, SEA only, FULL)
Added borders and airspace.
- **Radios** (Honeywell RM-855B RMUs). Radios selectable (yellow box) with line-select keys, and radios, transponder, and TCAS range correctly tuned/set with tune knobs. Added ADF2.
- **TCAS.** Improved TCAS, added NORMAL, ABOVE and BELOW functionality rather than ALL.
- **Standby ASI.** Added new Standby ASI. Mach subscale now functional.
- **Standby AI.** Changed colours.
- **Throttle Quadrant.** Improved Throttle Quadrant and Gear Lever/lights.
- **Annunciator Crew Warning Panel (CWP).** Added CWP, with press to test facility.
- **Master Caution/Warning.** New and improved.
- **Audible Warnings.** Many audible warnings added*.
- **Night lighting.** Improved.
- **Electrics.** Changed from 12V to 24V.
- **FSX.** Modified to work in FSX (with some caveats) as well as FS2004.

Extra Changes and Additions Revision 1

- **Autopilot** Improved functionality. Added "True" Vertical Speed (VS) mode, Added Go-Around mode.
- **PFD.** Corrected error with TO/FROM flag in on FMS mode in HSI.
- **EICAS.** Added START and NAC (Nacelle Anti-Ice) displays.
- **Master Caution/Warning.** Can now be reset.
- **Clock.** Davtron M850 revised with greater functionality.
- **De-Ice.** Wing/structural/airframe de-ice added. Ice detector and indicator added.

Extra Changes and Additions Revision 2 (Incorporating changes made in Update 1 and Update 2.)

- **Autopilot** Improved autopilot functionality and corrected a number of errors, including an error with NAV2 radio driving the HSI CDI. AP and YD flash amber for 5 seconds when disengaged. Can now correctly disengage AP without disengaging YD. Revised the Autopilot Mode Annunciator (FMA).
- **Display Controller** Added a NAV button (authentic). The NAV and FMC buttons together form the “NAV/GPS” switch. The NAV1 or NAV2 radios can drive the HSI and autopilot. Click the NAV button to toggle between NAV1 and NAV2.
- **PFD.** Added a drift bug (track bug) (blue triangle) to the HSI. Improved the bearing pointer diamond and circle graphics. Updated the NAV source annunciators to show VOR, LOC and ILS. Added a hatched box to the altimeter readout if below 10,000 ft.
- **EICAS.** Added a pitch trim box (white/red). Corrected an error where CAS “AIRSPEED” gets stuck on after landing, and error where CAS “SPOILERS” appears briefly when turn right. PIT, AIL and RUD now correctly show trims rather than control position, but can now be switched to show control positions (sometimes useful in FS) with a right-click on the FLT button. On the FLT screen added digital readouts to the aileron trim and rudder trim. Corrected an error with the operation of the analogue needles – they now deflect correctly.
- **MFD.** Added a drift bug to the map. PIT, AIL and RUD now correctly show trims as above. Updated PIT, AIL and RUD labels. Added spoiler box (white/red). Corrected range-ring errors. Added facilities annunciator to map. Added a drift bug (track bug) (blue triangle) to map. Added a setup menu item to change compass from HDG to TRK, and added a heading bug (red line) if on TRK mode.
- **Radios** (Honeywell RM-855B RMUs). Changed the labels to correct text (white).

Extra Additions Revision 3 (Incorporating changes made in Revision 2 Update 1.)

- **PFD.** The HSI compass now has three modes: default rose mode, arc mode, arc mode with map. Press the HSI button to toggle between the three modes.
- **EICAS.** Heading bug now correct colour, and “parks” at the edge of travel, rather than just disappearing.
- **Air File** The Lear45.air file has been modified to enable de-icing to function.

Reference Material

- Learjet 45 Airplane Flight Manual.
- Learjet 45 Pilot Training Manual.