

Dash 7-150 for X-Plane 11

Version 2.3 7 April 2019



Dash 7-150 for X-Plane 11 v 2.3

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Overview

Version 2.3 introduces the Speed Indicators feature. For a description and instructions on the feature, see the “Custom Features Notes” section. Other additions include features missed in previous versions, such as cockpit mouse manipulators for the brakes, throttles, condition levers, flaps & elevator trim. Also implemented is the X-Plane 11 toggle yoke feature, activated from the X-Plane menu. The cockpit has a few more enhancements, but otherwise, this is largely a maintenance release with background changes enabling future upgrades. These include the introduction of the ‘CockpitStructure.obj’ object, which greatly simplifies the ‘_cockpit’ object, freeing up its texture space and enabling the addition of discrete 3D features afterward. The panel resolution was also increased to 4K, but will not yet yield results as the native X-Plane art also has to be either updated or replaced; however, it seems the way of the future and was a necessary first step.

As before, all three platforms, Windows, MAC, and Linux are supported. As X-Plane 11 is 64 bit only, 32 bit versions of the plugin have been deprecated and no longer ship with the aircraft.

It should be noted that some artistic license was taken with the instrument layout in order to account for the instrument support provided by X-Plane and also to allow the most critical instruments and controls to be in view while still looking out the front of the windshield.

Version 2.3 updates to the aircraft include:

- Added Speed Indicators.
- Introduced the CockpitStructure object, which strips out anything that you don’t ‘touch’ from the standard _cockpit object file. This is a background change and should be invisible to the user, but simplifies the _cockpit.obj file, allowing the addition of more 3D features planned for later upgrades.
- Implemented cockpit mouse manipulators for brakes, throttles, condition levers, flaps & elevator trim.
- Implemented the ‘Toggle Yoke’ feature. This is activated from the X-Plane 11 Flight Menu.
- Increased the Cockpit Instrument Panel resolution to 4K, however, the instrument resolution is still limited by the native X-Plane art. Until it is updated accordingly or replaced, the advantage of the higher background resolution cannot be fully realized.
- Various other additions & tweaks to the cockpit.
- Moved logo lights from flap booms to underside of horizontal stabilizers.
- Defined docking port feature locations for pushback & ground services (where available).
- Tweaks to the clist file.

Version 2.2 updates to the aircraft include:

- The FMOD sound package.
- Removed the 100 ft altitude adjust feature; this is now natively available through planemaker, and is set as the default.
- The HF antenna (cable extending from the Stbd side of the cockpit to the tail). Note that this is only on selected liveries; it was an experiment in selectively hiding objects.
- New DC Voltage gauges (one for each bus) that properly display in excess of 24 VDC.
- Changes to the electrical bus loading.

Version 2.1 updates to the aircraft include:

- The aircraft plugin was corrected and compiled against Version 3 of the SDK. It has been tested under X-Plane 11.11 and loads without error under all three platforms.
- Fixes to the fuel cutoff and idle state switches that allow the engines to be controlled without a mixture axis, similarly to previous versions under X-Plane 10. Austin's overhaul of the PT-6 engine model wreaked havoc on many PT-6 powered aircraft. Version 2.1 allows either analog control of all engines with the mixture axis, or engine specific control with the switches.
- Adjustments to the "Starter Idiot Lights" again to accommodate some of Austin's engineering.
- Tweaks to the plist file.

Standard Feature Notes

Beta - This aircraft is beta equipped. In X-plane, beta is an engine idle function whereby the props go beyond full fine and the engines spin up accordingly. Note that when beta is engaged, the throttles are unresponsive. Under beta, the aircraft taxis quite nicely, thus it is recommended that you assign a key to this function (sim/engines/beta_toggle).

Reverse - As with most aircraft equipped with PT6 engines, there is a reverse function that can be used for backing up and showing off as well as STOL braking. There is no button on the dash as this is really a HOTAS function (Hands On Throttle And Stick) and should be assigned to a joystick/throttle or keyboard button (sim/engines/thrust_reverse_toggle). When you need engine brakes, like on landing, you need them now, and you shouldn't be taking your hands off the controls to poke around for the reverse switch. When reverse is active, the reverse annunciators light up on the annunciator panel and the prop mode indicators glow red (See prop mode indicators below). Note that you do not get reverse thrust unless you **advance the throttles**.

Propeller Auto Feather - The two autofeather switches execute the X-plane commands sim/systems/feather_mode_test, feather_mode_off, and feather_mode_on. When prop_feather_mode = 0, the SEL light is lit indicating that the system is in standby. When prop_feather_mode = 1, the ARM light is lit. Pressing the test button sets the test mode, which is indicated by both SEL and ARM being lit. What any of this does in X-plane is still a bit of a mystery. The props are set to autofeather in planemaker and seem to do so regardless of the value of the prop_feather_mode.

Engine Intake Deflectors - These are the X-plane Inertial Separator switches with custom artwork. Normally, they are in the Retracted position, but can be Extended for use in icing / snow / fod scenarios. Simply click on them with the mouse.

Engine Fire Handles - Engine Fire Handles are located just aft of the overhead panel; normally out of site. They are visible with a quick tilt-upward command [R] key from the overhead panel view.



Toggle Yoke Visibility - As of version 2.3, the Toggle Yoke Visibility Function is fully supported, either by the default Flight->Toggle Yoke Visibility menu, or by a keystroke if a particular key is so programmed to execute the sim/operation/toggle_yoke command.

External Power - Our Dash 7-150 is one of the few that is also equipped with an APU. APU controls along with a switch to activate a Ground Power Unit are located under the AC power section of the overhead panel. Note that to use either of these, you will have to enable the bus tie to tie the aircraft busses to the external power sources.

Landing Lights - The aircraft has 4 landing lights, one mounted in each wing and one mounted in each flap boom. Between them, the spill light (the area they light up), is impressive, but in order to get the proper effect, HDR rendering (Settings->Rendering Options) must be enabled.

GPS - We have also retrofitted our Dash 7-150 with a pair of GNS530 units. They are located down on the console, just forward of the throttle quadrant. X-plane has native commands that will toggle the GPS pop-ups into view (in full resolution) for a quick check or programming. The commands are: sim/GPS/g430n1_popup and sim/GPSg430n2_popup. It is strongly suggested that you program a custom key under the Joystick and Equipment menu to enable these functions.

Checklists - The Dash 7-150 is supplied with a clist.txt file. In order to use this feature, you must download and install the Xchecklist plugin by Sparker. The plugin can be found at: <http://forums.x-plane.org/index.php?app=downloads&showfile=20785>. Note that if the Dash7-150_clist.txt file is not to your liking, it is readily edited with a text editor to suit your needs. The plugin includes documentation on the clist file parameters.

Custom Feature Notes

Air-Stair - The air-stair door is encoded to the X-plane custom slider[0] and can be operated through the Shift-F1 key, or from the cockpit by the air-stair door switch located on the lower area of the overhead panel on the co-pilot's side. The switch is white when the door is closed, amber during the transition phase and red when the door is open.

Cargo Door - The cargo door is encoded to the X-plane custom slider[1] and can be operated through the Shift-F2 key, or from the cockpit by the cargo door switch located on the middle lower area of the overhead panel. The switch is white when the door is closed, amber during the transition phase and red when the door is open.

Baggage Door - The baggage door is mounted in the aft stbd section of the fuselage, and is encoded to the X-plane custom slider[2]. It can be operated through the Shift-F3 key, or from the cockpit by the baggage door switch located on the middle lower area of the overhead panel. The switch is white when the door is closed, amber during the transition phase and red when the door is open.

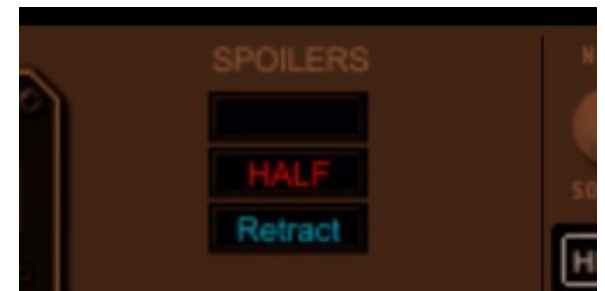
Note: As of version 11.11, X-Plane has introduced new datarefs for control of aircraft doors. It was decided to NOT update to these new commands for the time being, as most users are still used to the sliders programmed to the <Shift> function keys. These will be ported to the new commands in a later version as they become more popularly known.

Prop Mode Indicator - As of version 1.1, the prop gauges include an integrated prop mode indicator light. Off = normal, Yellow = feathered, blue = beta, red = reverse.



Integrated Prop Mode Indicators [Showing Beta]

Spoilers - Roll spoilers are operated automatically in conjunction with the ailerons. Braking spoilers however, are manual, and are applied in two stages (half & full) by the command sim/flight_controls/speed_brakes_down_one. They are retracted by the command sim/flight_controls/speed_brakes_up_all. They can be operated by clicking on the appropriate buttons on the dash as shown, but ideally, the commands should be assigned to a custom key.



Braking Spoilers Controls/Indicators

Engine Starter Idiot Lights - Normally in X-plane it's kind of difficult to engage the starters from the overhead console whilst simultaneously monitoring the engine instruments on the instrument panel during the start sequence. Accordingly, each starter switch incorporates a cluster of 4 indicator lights, which provide a mechanism to monitor the engine startup sequence from the overhead console (read: more flashing lights to dazzle you with). The lights monitor Fuel Flow (Top Left), Inter Turbine Temperature (Top Right), Oil Pressure (Bottom Left) and N1 (Bottom Right). The lights are out prior to engaging the starter, and go out again, with the exception of the ITT light, which continues to glow green if started to the low idle state. This indication is a reminder that the current engine operating state is incapable of carrying any significant load until the engine is switched to a high idle state.



Starter “Idiot” Lights incorporated with the starter buttons

The meaning of the lights are as follows:

Fuel Flow	: Yellow - Fuel Injection Start, Green - Fuel Flowing,	Out	N1 > 42 %
Oil Press	: Red - below 5psi, Green - 5-17 psi,	Out	OP >17 psi
IT Temp	: Green - 242-550C, Yellow - 550-700C, Red - >680C,	Out	N1 > 50 %
N1 (Ng)	: Red - < 3%, Yellow - 3-25%, Green - 25->40%,	Out	N1 > 42 %

Normal Operation: All 4 lights flash red, amber, to green, the last one will be the N1 indicator as it crosses 25%. When all 4 lights glow green, RELEASE the starter. The lights should go out one by one as the engine ignites and accelerates to idle. The last one will be the IT Temp indicator, which will go yellow, and will take a few more seconds to settle back to its low idle state temperature (at the top of the green arc).

ITT Red: Hot Start! caused by early release of the starter button; NOT good for your engine.

Fuel Flow/ITT - stays dark: No ignition, Fuel Cutoff switches not enabled.

Oil Pressure - Sustained red or yellow: oil pressure failure; abort start sequence, immediately activate the fuel cutoff.

Lone Green ITT: Engine has achieved stable low idle state(44%). Do not apply any significant electrical or air conditioning loads on it in this state, or you will have a fire with no air flow.

All Out: Engine running in high idle state (56%); can support full electrical/air conditioning/hydraulic pump loads.

Tip: The igniters are automatically engaged by the start sequence, thus the “Auto Ign” annunciators will light if the starter has been engaged. If you lose track of which engines you’ve already started, check the annunciator panel.

Logo Lights - The logo lights are mounted on the underside of the horizontal stabilizers and light up the empennage of the aircraft and especially the tail logo. The switch for them is located in the lighting section on the overhead panel. It turns green to indicate that they are on. As per the landing lights above, this also requires HDR rendering to get the full desired effect.

Speed Indicators - The speed indicators are a new feature as of version 2.3. They are an aid to precision & STOL approaches that provide a speed variance indication without having to glance down to the airspeed indicator. The indication is the difference between the indicated air speed and the calculated nominal approach speed. Full scale deflection represents +/- 10 kts. The nominal approach speed is calculated based on the flap setting and current aircraft weight. The calculation is a simple linear extrapolation based on the numbers from the table below. The aircraft weight is taken from the X-Plane dataref “sim/flightmodel/weight/m_total”, which X-Plane continually updates as the fuel is consumed; You, as the pilot need not worry about it. The target numbers used are:

for 32000 lbs		for 44,000 lbs	
15°	140 kias	15°	140 kias
25°	102 kias	25°	102 kias
45°	84 kias	45°	96 kias



Speed Indicators (Either side of Shade Panel)

Ideally, you want that needle pegged in the middle as you cross the threshold. It takes some practice, but you can really nail those landings if you get it. Yet another example of a unique feature of the Dash 7 that made it a truly remarkable STOL aircraft. The “OFF” flag is tied to the X-Plane dataref “sim/cockpit/electrical/avionics_on”, so as long as the avionics power is off, the flag will display. As long as the aircraft is on the ground, the default reading (as shown) is -2.5. In flight under cruise conditions (< 75% throttle), the indication is meaningless and shows a default value of 1.0. Not a feature of the real aircraft, but the speed indicator is also functional in climb. For climb conditions, as indicated by the throttle > 75% regardless of the flap setting, the indication is the indicated airspeed minus the programmed FLCH value. You, as the pilot, are responsible for determining the correct climb speed for conditions and inputting the value. Thus as you rotate, and initiate your climb, the speed indicator will initially show slow, but as the aircraft leaves the ground and accelerates to climb speed, it should stabilize in the middle. When you get to cruise altitude and pull the power back, the speed indicator will show the default 1.0 value.



IAS FLCH Value (135 kts)

Tips& Tricks

Pressurization - Pressurization is automatically set for a maximum cabin altitude of 7500 ft or a maximum pressure differential of 4.5 psi, which defines the service ceiling of 21,000 ft. If you find it gets inexplicably dark at high altitude, you are suffering from hypoxia. Remember, the pressurization system is fed from the engine bleeds. They must be on (switches green).

Will not follow a glide-slope - If you find that it won't descend properly and follow a glide-slope, check the trim indicator on the shade panel of the dash. If it's pegged at the top, the autopilot has it trimmed nose down to the limit; you have too much power on for the autopilot to fly the descent; remember, it's a STOL aircraft with 4 engines pumping air across those wings and flaps, and that means Lots of LIFT!

Engine torque gauges - Engine torque gauges require AC power, the inverters must be on for them to work.

Electrical Busses - There are two electrical busses, some things are on the other buss, so both battery switches must be on. Note that the battery switches, avionics and buss tie switches are duplicated on both the pilots and co-pilots side of the overhead panel. Also duplicated are the DC generator switches as X-plane has no real support for AC generators.

Hydraulics - Steering, flight controls, flaps, etc all are hydraulically operated. Cold & Dark on the ramp; none of it will work without either the electric pumps or the engines running.

Engine Startup - As a result of Austin's rewrite of the PT-6 engine model, the start-up temperatures are much more realistic, and can easily approach the temperature limits of the engine. Check out Austin's blog at <http://austinmeyer.com/2016/09/12/pt-6-operation/> for an overview on PT-6 engine operations. With the correct techniques, the startup temperatures in the Dash7's PT6A-50 engines can be limited to about 600 °C, 100 degrees below the red line. Some points to consider:

- Generally, follow the checklist.
- Don't forget the fuel cutoffs.
- Starters will be locked out if the generators are on or the Engine Bleeds are on.
- Starting to the low idle state generally results in lower peak ignition temperatures.
- Important! Maintain starter engagement till 25%! WATCH that N1 gauge or hold for all 4 green lights.
- Remember to check for oil pressure as the temperatures stabilize.
- Avoid any significant loads in the low idle state.

Recommended Views to Configure

X-plane allows you to setup custom views particular to each aircraft. The views are stored in the aircraft folder with the name *aircraft_prefs.txt*. These are highly recommended in this case, because you need to focus on some things that are not always in the field of view. In particular are the controls and instruments on the overhead panel, and a quick look return to the main view of the dash and windshield as noted above. If my prefs file got passed along with the aircraft, my views may already be the default, which are:

- numpad 7 - pilots main view of the dash and windshield

- numpad 8 - overhead panel controls

- numpad 9 - zoom in on pressurization gauges

- numpad 5 - throttle quadrant and GPS units.

- numpad 2 - radio stack.

- numpad 1,3,4,6 - external views

In my file, the external views are various views that are tied to the X-plane <Shift> 4, Circle View function. They may also be tied to the X-Plane <Shift>6, Ride-along View function. If the views behave differently than they did in a previous version, this is probably why.

There is an excellent tutorial on youtube on how to set these up or change them at: <https://www.youtube.com/watch?v=uYE4QGkW1ZI>.

Recommended Plugins

X-MultiThrottle 1.1 - As this is a multi-engine aircraft, if you have a dual axis throttle quadrant, the X-muliThrottle plugin by barbarossa will allow you to easily tie the two port engines to one throttle axis and the two stbd engines to the other. This is highly recommended as it allows for differential throttle control of each sides engines. This can facilitate ground handling and also allow the pilot to balance the thrust in the event of an engine failure. The plugin can be found at: <http://forums.x-plane.org/index.php?app=downloads&showfile=29207>. To use the plugin, assign the throttle1 axis to the far left engine and the throttle4 axis to the far right. The plugin will sort the other two out by itself. Note though, that if you try to load a twin afterward (something that doesn't have 4 engines), without changing the axis configuration appropriately, there will likely be issues.

Xchecklist 1.37 - In order to use the included Dash7-150_clist file, the Xchecklist plugin by Sparker is required. At time of writing, the current version was 1.37. The plugin can be found at: <https://forums.x-plane.org/index.php?/files/file/20785-xchecklist-linwinmac3264/>.

FOV loader 1.4.0 - This is a handy little plug-in that makes it easy to set your fields of view to your liking on an individual aircraft basis.

The plug-in can be found at: <http://forums.x-plane.org/index.php?files/file/4455-field-of-view-per-aircraft-plugin/>. The recommended lateral field of view (FOV) set in the X-plane rendering options window is 85 degrees. On my monitor, this allows the user to see the top of the windshield, the annunciator panel, most of the engine instruments and all the primary flight instruments. The screen-shot of the dash shown with the aircraft listing shows 85 degrees FOV.

Version 2.0

Version 2.0 was the last version to support X-Plane 10. Version 2.0 of the Dash 7-150 introduced two new significant features, namely the use of normal maps to highlight features such as access panels, doors, wing spoilers, etc., and the plug-in, which provides additional functionality and features as detailed below.

Incorporation of the normal maps resulted in a significant re-mapping of the wing assembly textures and the landing gear textures, thus livery files from version 1 are incompatible with version 2. Furthermore, the wing assembly textures were increased to 4K. This was necessary to get the fine subtle details on the wing panels, which looks good, but unfortunately results in higher VRAM requirements.

Features of the Plug-in

Version 2.0 entailed a major change in the aircraft due to the co-dependencies between the aircraft model and the plug-in. The plug-in publishes 18 specific new datarefs and 4 commands that the aircraft model uses. The plug-in supports Windows, Linux and Mac, both 32 and 64 bit. As of version 2.1, 32 bit is deprecated.

Each time the aircraft is loaded, the plug-in reports its activity in a logfile “Dash7-150_log.txt”. This file is written in the X-Plane 11/Aircraft folder (as this is one of the folders that is pretty much guaranteed to be there on each installation). Errors are not specifically logged, but progression of the initialization is. This file may be a source of information if things don’t go as intended. This file can be safely ignored or deleted as it is rewritten each time.

One of the items reported in the file is that the Initialization loop exits with a status of 0. This is normal and should occur within 2 or 3 loops. If it makes it to 10, something did not initialize properly. Successful completion of the first few loops of the main flight loop callback routine is also reported, based on the assumption that if it got through the first two loops, all is well and it will continue to run.

Specific features of the plugin are detailed as follows:

Initial Settings - As part of the initialization settings, if the aircraft loads on the ground, the landing gear is checked and confirmed to be in the down and locked position and the park brakes are set. The default fuel load loaded by X-Plane 10 is adjusted from the default of ½ the capacity (9000 lbs) to a more reasonable 5000 lbs, but only if X-Plane initially loads the default 9000 lbs. Any other value, it doesn't change.

Aircraft Tail Number Assigned by the Livery Selection - The aircraft tail number, which is displayed on the tail number plate is now assigned by the livery selection. The ICAO registration associated for each livery is taken from the directory name of the livery (so don't mess with the livery names). For the purposes of Air Traffic Control, in the absence of a specific callsign, a default callsign is taken from the dataref /sim/aircraft/view/acf_tailnum **when the aircraft is initially loaded**. If you change a livery, the number plate on the dash will reflect the new livery, but X-Plane will still use the previous callsign. In order to have the callsign changed, you must **re-open** the aircraft with your desired livery selection.

Aircraft loads with “chocks in-place” - To mitigate the embarrassment of having your aircraft roll away from you if it loads on a slope, the brake and tire coefficients are momentarily changed to 3.0 and reset back to their defaults on a later loop. This all takes place within the first second or so and no pilot intervention is required.

Default Fuel load - X-Plane 10 loads a default fuel load of half the capacity. That is currently a whopping 9,000 lbs, which is too much for most missions. If the plug-in finds exactly 9,000 lbs of fuel loaded, it will automatically change it to a more realistic 5,000. If you want any other value, you will have to load it yourself. Get your credit card out!

Roll Spoilers Double as Speed Brakes - In flight, a pair of roll spoilers on the top outer section of each wing assist the ailerons in inducing the aircraft to roll. The roll spoilers are tied to the sim/cockpit2/controls/yoke_roll_ratio dataref. Once the aircraft is on the ground, the roll spoilers are tied to the sim/flightmodel2/controls/speedbrake_ratio; thus they act in accordance with the four inboard speedbrakes.

Automatic Flap Retraction from 45° to 25° - This is a feature of a real Dash 7, whereby, if making an approach with full flap (45°), on contact with the runway, the flaps will automatically retract to the 25° position. Once down, this results in an immediate drop in the lift coefficient, allowing more initial weight on the wheels contributing to the braking effect. Also, In the event of an aborted landing resulting in a go-around, the flaps will also auto-retract one notch as the throttles are advanced through 50 %.

Autobrakes (Rejected Takeoff) - The Rejected Takeoff function is enabled by setting the Autobrakes switch to the RTO position. The function arms as the aircraft accelerates through 40 kts on its takeoff roll. The mode is invoked by either a) Pulling the throttles from Takeoff power back to idle, or b) engaging the reverse prop mode. In the case of (a), once the reverse mode engages, you **MUST** immediately push the throttles forward again in order to get reverse thrust. The plug-in automatically throws **ALL** the brakes into



full, including the wheel brakes, speed brakes and roll spoilers on the wing. If/When the aircraft leaves the ground, the RTO mode automatically disengages; the function disarms, and switch automatically returns to the OFF position.

Autobrakes (Landing) - The extent of auto-braking on landing can be set from 1 to MAX. Braking effort is cumulative; higher settings include braking effort from the lower settings. Extent of braking is as follows:

- | | |
|-----|---|
| OFF | No braking effort is automatically applied. |
| 1 | Speed brakes (& roll spoilers) deployed full. |
| 2 | Wheel brakes: regular effort. |
| 3 | Wheel brakes: maximum effort. |
| MAX | Reverse thrust mode automatically engaged, (You must still push the throttles forward). |

GPS2 is Fully Operational - As of version 2.0, the HSI selector switch NAV1/NAV2/GPS1/GPS2 is fully operational. The original switch was replaced by a generic, with a specific dataref and commands, all managed by the plug-in. Selection of GPS2 will now follow GPS2; if it doesn't check that the CDI setting on the GPS is actually set for GPS. It normally defaults to VLOC. Also, the VOR_1_OBS instrument on the co-pilot's side has been replaced with the VOR_2_OBS instrument, which enables full LNAV+V for category I approaches with GPS2. As part of this feature, the co-pilot's heading can no longer be set independently; it is now slaved to the pilot's heading. Accordingly, the co-pilot's barometric pressure settings is also slaved to the pilot's.

Speed Indicators - As the speed indicators are a custom feature of the aircraft, they are operated by the plugin. They are only active in flight at lower speeds, while the flaps are extended. Otherwise they simply show default values.

Dual Electric Hydraulic Pumps - The second electric hydraulic pump was finally installed and the dual switches and gauges reflect the separated and isolated port and starboard systems. Engine driven pumps still feed their respective sides as they did before.

Separate Engine & APU Bleed Switches - Separate engine bleed switches replace X-Plane's default Left/Both/Right/APU selection. The logic is managed in the background and the APU bleed is no longer exclusive.

Starter Lockouts - Since on a PT-6, the starter and generator are the same piece of hardware, prior to engaging the starter, the generators MUST be OFF. If the generators are ON, you do NOT have starters. Also, if the engine bleeds are on, the starters will not engage.

Doors Lockouts - While in flight, the air-stair, cargo and baggage doors are locked out and will not operate. Note: This does NOT relieve you of the responsibility of making sure they are closed BEFORE you leave the ground.

Operation of Custom Systems - Operation of the dual electric hydraulic pumps, the four separate engine bleeds and the HSI Selector (for the GPS2 functionality) are also managed by the plug-in.

Object-Kill Datarefs - The Dash7-150 has evolved into a fairly complex model. The detail in the landing gear alone accounts for roughly half of the vertices and faces in the model. In order to help improve the frame rates a bit, the plug-in provides object-kill datarefs that will kill the landing gear, cabin & flight crew objects, if the view is from within the cockpit (You can't see them from there anyway). For external views, only the landing gear is killed, and only when it is fully retracted. Objects that are killed are completely disabled by X-Plane and are not processed by the CPU or the GPU. For further information on object-kill datarefs and how they work, see <http://developer.x-plane.com/?article=using-object-kill-datarefs-to-improve-framerate>.

Custom Commands & DataRefs Published by the Plug-in

For reference, the custom datarefs published by the plug-in are as follows. If you use the DataRefEditor Plug-in, or the newer DataRef Tool, these should all be listed near the top as they are prefixed with “Dash7-150” as opposed to “sim”.

Dash7-150/Object_Kill/ldg_gear
Dash7-150/Object_Kill/flight_crew
Dash7-150/Object_Kill/cabin
Dash7-150/cockpit/indicators/Hydraulic_Press1
Dash7-150/cockpit/indicators/Hydraulic_Press2
Dash7-150/cockpit/indicators/SpeedInd
Dash7-150/cockpit/switches/Elec_hyd_pump1
Dash7-150/cockpit/switches/Elec_hyd_pump2
Dash7-150/cockpit/switches/HSI_selector
Dash7-150/flightmodel/ENG_N_bleed1_on
Dash7-150/flightmodel/ENG_N_bleed2_on
Dash7-150/flightmodel/ENG_N_bleed3_on
Dash7-150/flightmodel/ENG_N_bleed4_on
Dash7-150/flightmodel/controls/RollSpoiler_LeftIn
Dash7-150/flightmodel/controls/RollSpoiler_LeftOut
Dash7-150/flightmodel/controls/RollSpoiler_RightIn
Dash7-150/flightmodel/controls/RollSpoiler_RightOut
Dash7-150/systems/APU_bleed_on

New - Introduced ver. 2.3

Custom commands published by the plug-in are listed as follows. These will be listed in the “Keyboard/Plugin Provided” section under the Settings menu (only when the aircraft/plugin are loaded) and may be assigned to keys or buttons just like any other command. Normally, they are used internally by the custom instruments and the plug-in.

Dash7-150/Elec_hydr_pump1_toggle
Dash7-150/Elec_hydr_pump2_toggle
Dash7-150/Inc_HSI_sel
Dash7-150/Dec_HSI_sel

The plugin also overrides some standard X-Plane commands. This is used to lock out certain functions, such as operation of the doors in flight, and operation of the starters unless certain settings are correct. The overridden commands are listed as follows.

sim/operation/slider_01
sim/operation/slider_02
sim/operation/slider_03

sim/starters/engage_starter_1
sim/starters/engage_starter_2
sim/starters/engage_starter_3
sim/starters/engage_starter_4