IXEG

international x-plane engineering group

737 CLASSIC

Interface Guide

The IXEG 737 Classic is a highly customized simulation that provides functionality and features above and beyond what X-Plane provides by default. As such, we have implemented custom user interface elements to make interaction with the simulation easier and to feel more natural.

These custom user interface elements augment some of the default ones that X-Plane provides and replaces others completely. In this interface guide, we will show you how and when to use these custom interfaces. Please note that we do not discuss how to use the default X-Plane interface in this guide, nor how to configure your hardware settings. Please consult the official X-Plane documentation for information on configuring X-Plane

This 737 Classic simulation provides the following types of custom user interfaces and we will discuss each in turn on the following pages:

1. GUI Windows for accessing IXEG specific features.
2. Cockpit manipulators.
3. Ghost Throttle
4. Co-route Flight Plans
5. Mini EHSI
6. Custom Commands for mapping to joystick buttons.
7. Custom Manipulator Datarefs

GUI WINDOWS

The 737 Classic utilizes the following 8 GUI dialog windows:

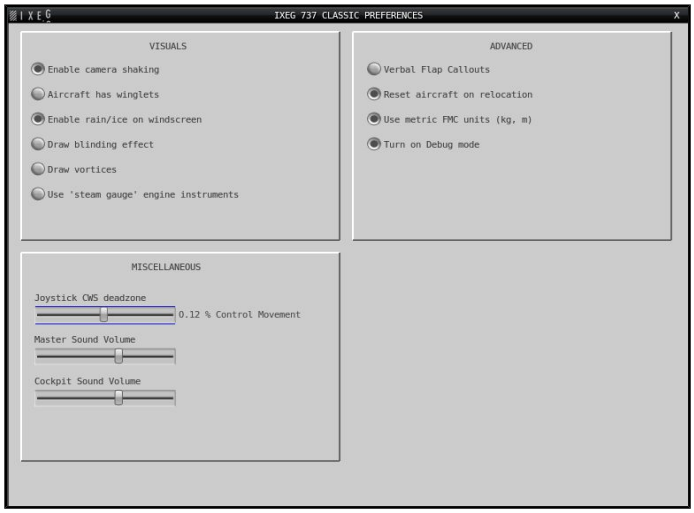
1. Main Menu
2. Hints and Tips
3. Preferences
4. Preflight
5. Ground Services
6. Cabin Crew
7. View Presets window
8. Failures

MAIN MENU

The main menu is a special dialog window from which you may access any of the other dialog windows listed above (2 - 8). The main menu may only be accessed in one way, and that is by moving the mouse cursor anywhere along the left side of the x-plane screen. This will cause the main menu dialog window to *fly out* along the left side of the screen at the mouse cursor location. We call this *"bumping/popping the main menu"*. The main menu also shows the current version of the 737.

Moving the mouse cursor anywhere to the right of the main menu window will cause the main menu to be hidden again. Any time you see a reference in the 737 Classic documentation to *bump or pop the main menu*, then you do so with this method.

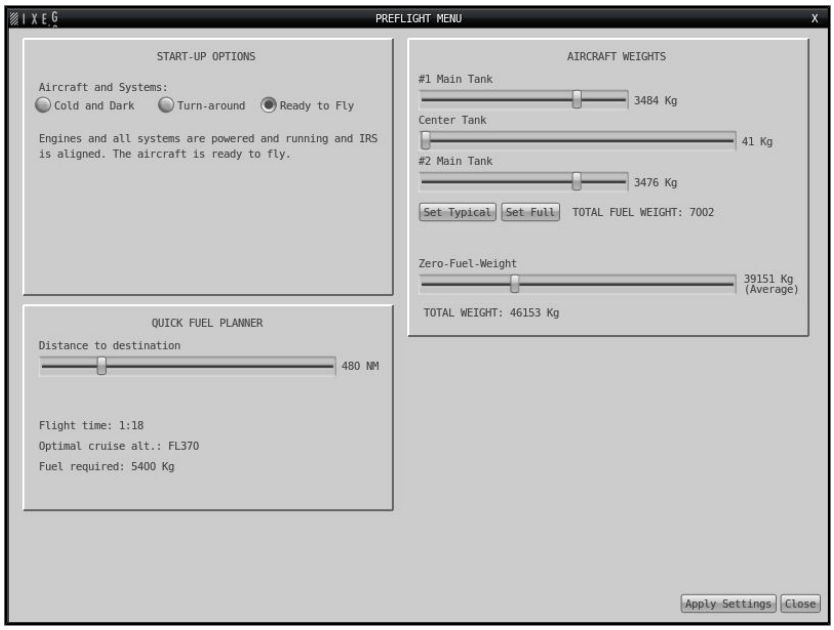
PREFERENCES



The preference window, shown above with default settings, allows you to select the following preferences:

- Enable camera shaking effects.
- Switch between winglets and no winglets. This can be done in real-time if desired.
  - Winglets have no effect on performance at this time.
- Enable rain/ice effects on the windshield
- Draw blinding effect when the camera points towards the sun
- Draw wingtip vortices under certain conditions
- Choose between analog "steam gauge" engine instruments or the slightly more modern looking EIS (*Engine Instrument System*) display.
- Joystick CWS dead zone. Compensates for joystick slop when in CWS autopilot mode.
- Master Sound Volume. Affects all sound levels globally.
- Cockpit Sound Volume. Affects only cockpit sound level.
- Verbal Flap Callouts. Uses X-Plane text-to-speech to annunciate commanded flap setting.
- Reset aircraft on relocation. Resets aircraft state when relocating the aircraft using X-Plane's *Select Global Airport* menu item. Disable to preserve aircraft state in these circumstances. (i.e. preserve FMS entries while selecting another runway for example.)
- Use metric FMC units. Toggle FMS unites between metric and imperial.
- Turn on debug mode. Used for debugging LNAV and VNAV issues until FMS abilities have been proven over time. Saves route data for export. (see *Bug Reporting Guide.pdf*).

PREFLIGHT



The preflight menu is the most common way to begin your simulation session AFTER setting the 737 start location using the default x-plane menu to locate the aircraft. Once the aircraft is located, either on a runway or a ramp, then you will generally access this menu to set the start state of the aircraft; however, the settings are saved so if you have a tendency to always start your simulations in the same state, you do not have to access this menu every time but only relocate or open the aircraft. The preflight menu contains three possible start up Options:

1. Cold and Dark
2. Turn-around
3. Ready to fly

The *Cold and Dark* option simulates the aircraft with no power at all. This start state is designed to simulate a *first flight of the day* condition, or perhaps an aircraft that has sat a while between flights and was shut down fully. This start state requires the most time and work to prepare the aircraft for flight.

The *Turn-around* option simulates an aircraft at a gate that has just concluded a previous flight and is about to begin another with a new crew. This is the most common start state professional pilots experience. In this state, the aircraft will be powered by the APU, its inertial navigational system will already be aligned, the air conditioning will be on, etc. Use this start state when you don't have time, nor want to wait for a full alignment of the IRS system (~ 10 minutes) or simply want to simulate taking the aircraft over from the previous crew.

The *Ready to fly* option has the plane completely ready to go. Just release the brakes to get moving. Don't forget the flaps!

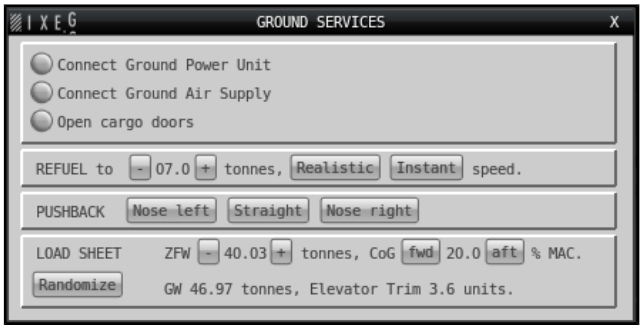
In addition to the start up options, the preflight menu also contains a *quick fuel planner*. We provide this simple calculator as a convenience tool for estimating fuel and time required to conduct a flight based on the distance. Simply set the slider to the distance between departure and destination airports to yield the time, fuel and suggested flight level for cruise.

Finally, the preflight menu contains sliders for manually setting the fuel level in the tanks and also setting the zero fuel weight. The fuel sliders override the default x-plane fuel sliders and if you want to set the fuel using sliders as you are used to with default x-plane aircraft, then you will need to use this IXEG preflight menu instead.

Use the zero fuel weight slider to simulate 'payload weight', that is the weight of passengers, luggage, food, etc. Setting the slider all the way to the left will simulate a nearly empty aircraft whereas setting the slider all the way to the right will simulate a fully loaded aircraft. Note that this slider WILL allow you to overload the aircraft slightly. IXEG does not provide a passenger/payload manager tool.

NOTE: We also provide a 2nd location to set the zero fuel weight as part of the *Ground Services* dialog, which is discussed next.

GROUND SERVICES



Use the ground services menu to simulate activities performed by the ground crew, such as:

1. Connect ground power (GPU) to the aircraft
2. Connect ground air supply to the aircraft
3. ~~Toggle the cargo doors open/closed.~~ (INOP for Version 1.0.0)
4. Refuel the aircraft
5. Perform a pushback
6. Set zero fuel weight and adjust the center of gravity (CoG)

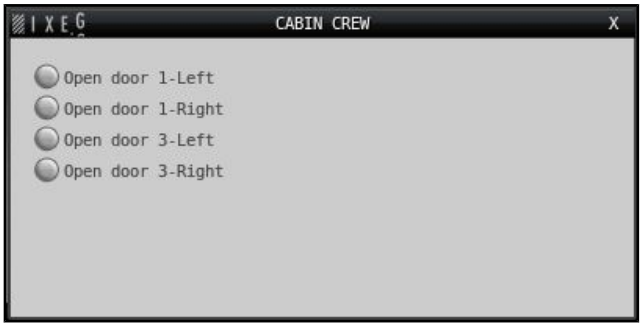
The first 3 items above are self-explanatory. To have the aircraft refueled, select the amount of fuel desired with the +/- buttons and then press either the *Realistic* or *Instant* button to begin refueling. If you select *Realistic*, then the fuel will be added slowly, to simulate the time required to refuel the aircraft. In this case, keep an eye on the fuel gauges to determine when you have the fuel you have requested. If you select *Instant*, then the fuel will be added instantly.

To initiate a pushback, you must release the brakes first, then press any of the pushback buttons depending upon which direction you want the nose of the aircraft pointing after the pushback. Note that we do not provide any type of intelligent pushback algorithm but simply provide a reasonable pushback distance. Set the parking brake to terminate the pushback at any time.

The *LOADSHEET* section of the GROUND SERVICES menu is intended to mimic the electronic load sheet that real pilots get sent to the cockpit. The load sheet usually contains important weight and balance information that needs to be input into the FMS. In our load sheet version you can adjust those numbers by clicking on the respective buttons and see the information change in real time. The actual weight of the aircraft will change as well, so this is a quick way to adjust the load of the aircraft, and ultimately it´s ZFW (zero-fuel-weight) and GW (gross-weight).

CABIN CREW

INOP in Version 1.0.0



The cabin crew menu is rather self-explanatory and contains actions that would generally be performed by the cabin crew members. Simply select the options desired.

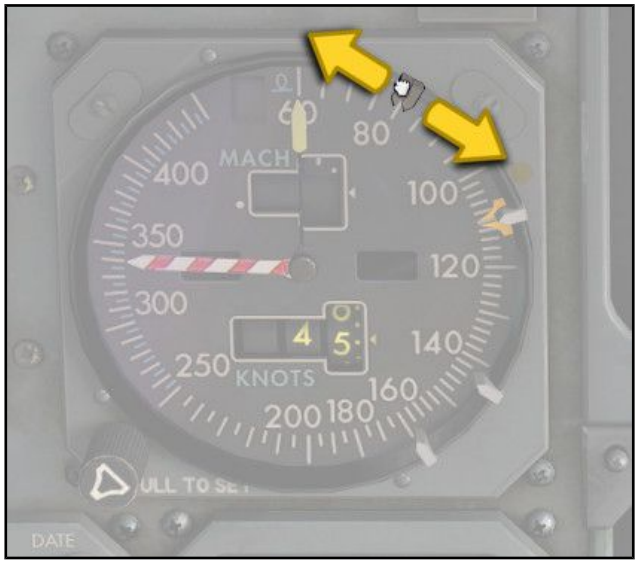
COCKPIT MANIPULATORS

Cockpit manipulators are the mechanism by which you interact with the 3D cockpit using the mouse cursor. There are only two types of manipulations currently possible. Mouse scroll wheel is not supported in this Version 1.0.0 release.

1. Mouse Click
2. Click & Drag

We have endeavored to make interaction between the 3D cockpit and the mouse to be intuitive and natural as in the real aircraft. Some controls are not convenient in the real 737-300 though and therefore; these controls might be equally awkward in our simulation. All the controls can be manipulated with either a click or a click-drag operation. The following generalizations apply.

- Two position (toggle) switches are manipulated with a single mouse click on the switch.
- Three position switches are manipulated by click-dragging on the switch in the direction you want to move the switch.
- Knobs are turned by click-dragging on the knob horizontally.
- Buttons are manipulated with a single mouse click.
- Levers are moved by click-dragging on the lever in the direction you want to move the lever.
- Speed bugs are a bit unique and are manipulated by click-dragging on the speed-bugs in a straight-line, tangent to the bug at the time you begin the manipulation. (See below)



GHOST THROTTLE

The ghost throttle is an indicator, provided to help keep your hardware throttle setting synchronized with the 737 *auto-throttle* setting. The auto-throttle functionality of the IXEG 737 can move the throttles within the simulation, but of course we cannot move your hardware throttle and so they can get out of sync when the auto-throttle system is active. If the auto-throttle is disabled while your hardware throttle is not in the correct position, it can cause un-desired behavior in flight.

The ghost throttle is shown in the image below and will automatically appear in the lower right corner of your X-Plane screen whenever:

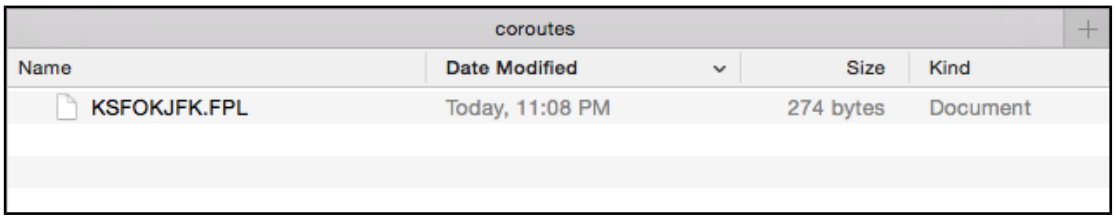
- The auto-throttle system is active, AND
- Your hardware throttle is moved.

It will also automatically disappear a few seconds after hardware throttle movement is stopped. The thick white outlines show your hardware throttle position and the translucent white shapes labeled *A/T* show the 737 auto-throttle position.

When the auto-throttle system becomes active, your hardware throttle position will be ignored and can be moved freely to align with the auto-throttle position as indicated by the ghost throttles. When the auto-throttle is disengaged, then the hardware throttle input will continue to be ignored until it is brought into alignment with the auto-throttle position, at which point you will regain control of the throttle with your joystick throttle. We call this, *capturing the ghost throttle*

COROUTE FLIGHT PLANS

Company Routes, or coroutes can be entered into the FMS via the CDU. A company route on the IXEG 737 is implemented via a *flight plan file*, which is a text file with the flight plan routing contained within the file. In order to be loaded into the FMS, these coroute files must reside in a folder called *coroutes*, which is located within the root 737 directory.



There are several file formats available for various flight sim products, each identifiable by a unique file extension; however, the IXEG 737 only supports one file format at the moment, **.FPL* In the near future, we will expand this functionality to support other common file formats as well. The *.FPL format is a compact, common and recognizable format as shown below. This format contains only lateral enroute path information and contains no procedure specifications.

```
K SFO  MELTS  J84  EKR  J100  OBJ  DCT  SNOWY  KJFK
```

In order to be able to load a flight plan file as a coroute into the FMS, the following is required of the file:

- Plain text file with a *.fpl extension (BEWARE of hidden *.txt file extension!)
- Filename less than / equal to 10 characters (extension not included)
- Departure airport code
- *To* point after the departure airport code
- Alternating *Via / To* fields
- Arrival Airport code (preceded by a *To* point)
- At least one valid *To* waypoint
- An odd number of data fields. (above example has 9)
- Valid *via* airways and *to* waypoints.
  - *DCT* or *DIRECT* are acceptable text for *via* data fields

EXCEPTION: Some flight plan software might add the text, *SID* after the departure airport code and the text, *STAR* before the arrival airport code when exporting *.fpl format. If this is the case, then you may leave that text in as the coroute importer will tolerate these two keywords. In this way, you do not have to hand edit the file from the flight plan software and can simply copy it to the coroutes folder.

It is perfectly acceptable to open a text editor and quickly hand type your routing if you desire. In some cases, this can be the quickest way to assemble a short route should you be familiar with all the airway and waypoints required. The filename and text contents of the file are also case insensitive.

To enter the coroute into the FMS, simply enter the coroute filename into the CDU scratchpad as shown left below, and then select the button next to coroute field.

MINI EHSI

When you need to adjust the map view and map range of the EHSI, then the location of these map controls on the center pedestal make it very difficult to see the EHSI while you are trying to adjust the controls with the mouse.

To make things a bit easier, we provide for you a *mini-EHSI* pop-up window in the lower corner of the X-Plane window as shown below. This pop-up view will appear and disappear automatically. It appears whenever you manipulate the map controls an disappears a short time thereafter. The pilot and copilot mini EHSIs appear in the lower left and right corners of the screen respectively.

Mini-EHSI pop-up when pilot map controls are manipulated

CUSTOM COMMANDS

Our 737 Classic uses several custom commands which can be mapped to your joystick buttons however you desire. Commands are the most common way to customize your hardware. You can access these custom commands through X-Plane's joystick setup menu. IXEG current custom command list is shown below. This list will grow over time. Eventually, you can reference the most up-to-date list of available commands in the X-Pilot forums.

```
ixeg/733/autopilot/TOGA
ixeg/733/autopilot/AP_disengage
ixeg/733/autopilot/AT_switch_cycle
ixeg/733/autopilot/AT_speed_toggle
ixeg/733/autopilot/AP_A_cmd_toggle
ixeg/733/autopilot/AP_B_cmd_toggle
ixeg/733/autopilot/FD_pilot_toggle
ixeg/733/autopilot/FD_copilot_toggle
ixeg/733/autopilot/N1_mode_toggle
ixeg/733/autopilot/SPEED_mode_toggle
ixeg/733/autopilot/CO_toggle
ixeg/733/autopilot/LVLCHG_mode_toggle
ixeg/733/autopilot/VNAV_mode_toggle
ixeg/733/autopilot/HDG_mode_toggle
ixeg/733/autopilot/LNAV_mode_toggle
ixeg/733/autopilot/VORLOC_mode_toggle
ixeg/733/autopilot/APP_mode_toggle
ixeg/733/autopilot/ALTHLD_mode_toggle
ixeg/733/autopilot/VS_mode_toggle
ixeg/733/autopilot/AP_A_cws_toggle
ixeg/733/autopilot/AP_B_cws_toggle
ixeg/733/autopilot/HDG_bug_inc_90
ixeg/733/autopilot/HDG_bug_dec_90
ixeg/733/bleedair/bleedair_ovht_test_act
ixeg/733/views/view_default
ixeg/733/views/view_test
ixeg/733/views/view_save
ixeg/733/views/view_cycle
ixeg/733/views/view_cycle_back
ixeg/733/views/view_
ixeg/733/firewarning/fire_cargo_test_act
ixeg/733/flaps/flaps_0
ixeg/733/flaps/flaps_1
ixeg/733/flaps/flaps_5
ixeg/733/flaps/flaps_10
ixeg/733/flaps/flaps_15
ixeg/733/flaps/flaps_25
ixeg/733/flaps/flaps_30
ixeg/733/flaps/flaps_40
ixeg/733/FMC/cdu1_clr
ixeg/733/FMC/cdu2_clr
ixeg/733/misc/pilot_check_list_bug
ixeg/733/misc/copilot_check_list_bug
ixeg/733/misc/egpws_test_act
ixeg/733/misc/gear_release_right_act
ixeg/733/misc/gear_release_left_act
ixeg/733/misc/gear_release_nose_act
ixeg/733/xpdr/xpdr_ident_act
ixeg/733/xpdr/xpdr_test_act
```

CUSTOM MANIPULATOR DATAREFS

For the more intrepid hardware enthusiast, we provide the following list of IXEG manipulator datarefs. Manipulator datarefs are datarefs that are applicable to control inputs in the cockpit. All the things you can touch and actuate with the mouse have a corresponding manipulator dataref below. You will also find a dedicated forum at X-Pilot.com for discussing custom hardware development, integration and engaging IXEG for development.

```
ixeg/733/misc/seatbelt_act
ixeg/733/misc/smoking_act
ixeg/733/electrical/elec_gen1_onoff_act
ixeg/733/electrical/elec_gen2_onoff_act
ixeg/733/electrical/elec_apu_gen1_onoff_act
ixeg/733/electrical/elec_apu_gen2_onoff_act
ixeg/733/electrical/elec_grd_pwr_on_act
ixeg/733/electrical/elec_drive_temp_act
ixeg/733/electrical/elec_gen1_disc_act
ixeg/733/electrical/elec_gen2_disc_act
ixeg/733/electrical/elec_batt_on_act
ixeg/733/electrical/elec_dc_display_sel_act
ixeg/733/electrical/elec_ac_display_sel_act
ixeg/733/electrical/elec_galley_on_act
ixeg/733/electrical/elec_resid_volts_act
ixeg/733/electrical/elec_bus_transfer_act
ixeg/733/electrical/elec_stby_power_act
ixeg/733/electrical/gen1_disc_guard
ixeg/733/electrical/gen2_disc_guard
ixeg/733/electrical/stby_pwr_guard
ixeg/733/electrical/batt_pwr_guard
ixeg/733/electrical/emer_lights_guard
ixeg/733/electrical/bus_xfr_guard
ixeg/733/caution/caution_reset_act
ixeg/733/caution/caution_reset_cpt_act
ixeg/733/caution/caution_recall_act
ixeg/733/caution/caution_recall_cpt_act
ixeg/733/caution/caution_lights_test
ixeg/733/rheostats/light_overhead_act
ixeg/733/rheostats/light_breakers_act
ixeg/733/rheostats/light_fmc_pt_act
ixeg/733/rheostats/light_fmc_cpt_act
ixeg/733/rheostats/light_pedpanel_act
ixeg/733/rheostats/light_pedflood_act
ixeg/733/rheostats/light_afds_act
ixeg/733/rheostats/light_mapbr_pt_act
ixeg/733/rheostats/light_mapbr_cpt_act
ixeg/733/lighting/l_outboard_ll_act
ixeg/733/lighting/r_outboard_ll_act
ixeg/733/lighting/l_inboard_ll_act
ixeg/733/lighting/r_inboard_ll_act
ixeg/733/lighting/l_rwy_turnoff_act
ixeg/733/lighting/r_rwy_turnoff_act
ixeg/733/lighting/taxi_lt_act
ixeg/733/lighting/logo_lt_act
ixeg/733/lighting/strobe_lt_act
ixeg/733/lighting/position_lt_act
ixeg/733/lighting/anti_col_lt_act
ixeg/733/lighting/wing_lt_act
ixeg/733/lighting/wheel_well_lt_act
ixeg/733/lighting/land_light_all_act
ixeg/733/lighting/compass_light_act
ixeg/733/rheostats/light_fltkit_pt_act
ixeg/733/rheostats/light_fltkit_cpt_act
ixeg/733/lighting/no_smoking_lt_act
ixeg/733/lighting/fasten_belts_lt_act
ixeg/733/lighting/emer_exit_lts_act
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ixeg/733/lighting/emer_exit_lts_aft_act
ixeg/733/lighting/emer_exit_lts_aft_guard
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ixeg/733/misc/attend_act
ixeg/733/misc/grd_call_act
ixeg/733/airspeed/clacker_test_01_act
ixeg/733/airspeed/clacker_test_02_act
ixeg/733/airspeed/stallwarn_test_01_act
ixeg/733/airspeed/stallwarn_test_02_act
ixeg/733/misc/dome_light_act
ixeg/733/misc/service_iphone_act
ixeg/733/misc/flt_rec_guard
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ixeg/733/misc/flt_rec_test_act
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ixeg/733/misc/marker_hi_lo_act
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ixeg/733/misc/egpws_flap_act
ixeg/733/misc/gear_release_door_act
ixeg/733/misc/pax_oxy_guard
ixeg/733/misc/pax_oxy_act
ixeg/733/misc/checklist_act
ixeg/733/hydraulics/horn_cutout_act
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ixeg/733/bleedair/bleedair_rpack_act
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ixeg/733/bleedair/bleedair_recirc_fan_act
ixeg/733/bleedair/bleedair_trip_reset_act
ixeg/733/bleedair/bleedair_eng1_act
ixeg/733/bleedair/bleedair_eng2_act
ixeg/733/bleedair/bleedair_apu_act
ixeg/733/pressurization/cabin_auto_flt_alt_kft_act
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ixeg/733/pressurization/cabin_flt_grd_act
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ixeg/733/pressurization/cabin_manual_act
ixeg/733/pressurization/pilots_oxy_test_act
ixeg/733/misc/alt_horn_co_act
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ixeg/733/aircond/aircond_ws_air_cp_act
ixeg/733/aircond/aircond_foot_air_cp_act
ixeg/733/apu/apu_start_switch_act
ixeg/733/irs/irs_0_act
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ixeg/733/irs/irs_2_act
ixeg/733/irs/irs_3_act
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ixeg/733/irs/irs_9_act
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ixeg/733/irs/irs_left_mode_act
ixeg/733/irs/irs_right_mode_act
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ixeg/733/efis/efis_eq_supplyfan_act
ixeg/733/efis/efis_eq_exhaustfan_act
ixeg/733/hydraulics/flt_control_A_act
ixeg/733/hydraulics/flt_control_B_act
ixeg/733/hydraulics/alt_flaps_arm_act
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ixeg/733/hydraulics/flt_control_B_guard
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ixeg/733/antiice/ai_eng2_act
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