

Bendix King KFC 150 Pilots Guide

Autopilot and Flight Director.

Filename: **BendixKingAP151KFC150_JD**



Hotspots:



1. DN (nudge down) rocker switch
2. UP (nudge up) rocker switch
3. ALT (Altitude Hold) button
4. HDG (Heading) button
5. NAV (Navigation) button
6. APR (Approach) button
7. BC (Backcourse) button
8. TEST button
9. AP ENG (Autopilot Engage) button
10. FD (Flight Director) button

A comprehensive simulation of the real Bendix King KFC 150 autopilot.

Advanced features found on this autopilot have been accurately simulated, with greater functionality than is found on the default Flight Simulator autopilot.

The real Bendix King Autopilot Pilot's Guide (available on the web for download) may be used instead of the description found here.

Operation of these autopilots has been made as close as possible to their real-life counterpart.

To this end these autopilots use right/left mouse clicks for knobs (right for increment, left for decrement) unless otherwise stated. This is considered superior the standard Flight Simulator method of left clicks only, and more closely simulates real-life operation.

Alternatively, the mouse wheel can also be used on all knobs to increment or decrement values.

All standard Flight Simulator shortcut key assignments operate normally unless otherwise stated.

If a previously saved "Flight" is loaded, all relevant operating modes are correctly selected.

Note: for this autopilot to be operated the **TEST** button (8) must be pressed to initiate the pre-flight test, and the flight director must be engaged – see below for more information.

Autopilot Test

Just like the real KAP 150, the **TEST** button (8) must first be pressed (clicked) for the unit to operate. (The red **TRIM** indicator reminds the pilot of this requirement.)



When the **TEST** button is clicked all indicators are displayed for 8 seconds, and in real life the unit goes through a system self-test routine. Following the self-test routine all indicators are extinguished and a series of 5 beeps are sounded, indicating the unit has passed all its self-tests.
(Note: for sounds to be heard, the gauge `dsd_fsx_xml_sound.gau` must be installed – see Note 1.)



Flight Director (10)

To engage the flight director click the FD button (10). This selects the flight director but leaves the autopilot disengaged. The **FD** indicator will be displayed, and a command bar will be activated on the aircraft's Attitude Indicator (AI). With no autopilot mode selected the command bar will command wings level and pitch hold, using the pitch attitude existing at the time of engagement. Click any of the autopilot mode buttons (3 to 7) to activate any of the autopilot modes (as described below) for the FD function. The relevant mode indicator will be displayed.

The pilot can manually fly the aircraft using the flight director command bar, or can engage the autopilot and let it satisfy the commands.



AP Engage Button (9)

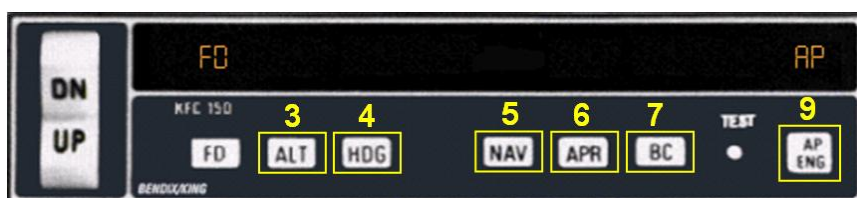
Note: The autopilot cannot be engaged until the flight director is engaged.

To engage the autopilot click the AP ENG button (9). The **AP** indicator will be displayed.

If the autopilot is engaged with none of the autopilot modes selected, the autopilot will be in Wing Leveller mode and Pitch Hold mode, using the pitch attitude existing at the time of engagement.

Click any of the autopilot mode buttons (3 to 7) to activate any of the autopilot modes. The relevant mode indicator will be displayed.

Pressing the AP ENG button for a second time will disengage the autopilot. The **AP** indicator will flash for five seconds and an aural tone will sound.



ALT button (3)

When pressed, will engage the Altitude Hold mode, and the **ALT** indicator will be illuminated.

The altitude maintained is the altitude at the moment the ALT button is pressed.

If the ALT button is pressed when ALT hold mode is engaged, it will disengage the mode, defaulting to Pitch Hold mode.



HDG button (4)

When pressed, will engage the Heading mode, which commands the airplane to turn to and maintain the heading selected by the heading bug on the Heading Indicator (HI) or Horizontal Situation Indicator (HSI). The **HDG** indicator will be illuminated. A new heading may be selected at any time and will result in the airplane turning to the new heading. The HDG button will toggle between HDG and Wing Leveller modes.



NAV button (5)

When pressed, will arm the Navigation mode. If the selected navigation Course Deviation Indicator (CDI) is less than 50% deflected when armed, the system will automatically capture, and the **NAV** indicator will illuminate steadily as the active roll mode. Otherwise the autopilot will remain in either Wing Leveller or Heading mode, and the **NAV** indicator will flash to signify that the Navigation mode is armed.

If the Navigation mode captures from Heading mode, then the **HDG** indicator will extinguish.

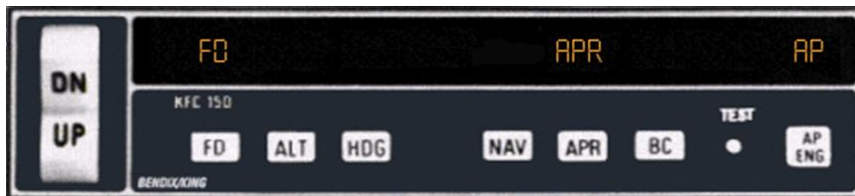


The Navigation mode provides automatic beam capture and tracking of VOR, LOC or GPS as selected for presentation on the HI or HSI. Navigation mode is recommended for en route navigation tracking. If the NAV button is pressed when the Navigation mode is either armed or coupled, it will disengage the mode.

APR button (6)

When pressed, will arm the Approach mode. If the selected navigation CDI is less than 50% deflected when armed, the system will automatically capture and **APR** indicator will illuminate steadily as the active roll mode. Otherwise the autopilot will remain in either ROL or HDG mode, and the **APR** indicator will flash to signify that the Approach mode is armed.

If the Approach mode captures from Heading mode, then the **HDG** indicator will extinguish.



When the glideslope is captured the **GS** indicator is displayed.



The Approach mode provides automatic beam capture and tracking of VOR, GPS or LOC with Glideslope (GS) on an ILS, as selected for presentation on the HI or HSI. If the APR button is pressed when the Approach mode is either armed or coupled, it will disengage the mode.

BC button (7)

When pressed, will select the Back Course Approach mode. The **BC** indicator will illuminate and the **APR** indicator will flash to signify that the Approach mode is armed. If the selected navigation CDI is less than 50% deflected when armed, the system will automatically capture, and the **APR** and **BC** indicators will illuminate steadily. Otherwise the autopilot will remain in either Wing Leveller or Heading mode. This mode functions similarly to the Approach mode except that the autopilot response to LOC signals is reversed and the glideslope is inhibited.



Nudge Up/Down rocker switch (2/1)

The response of the animated rocker switch is dependent upon the vertical mode present when pressed.

If Pitch Hold mode is active the pitch angle is moved up or down by 0.9° per key press.

If Altitude mode is active, the altitude is increased/decreased by 100 feet per press, resulting in a climb/descent with a vertical speed of approximately 500 feet/minute.

If a **BendixKingAP29!KAS297B_JD** has been installed on the instrument panel, and if the Vertical Speed mode has been selected, the rocker switch will increment/decrement the vertical speed by 100 feet/min up to a maximum of $\pm 3,000$ ft/min.



Note 1. Sounds

For custom sounds to be heard, the gauge `dsd_fsx_xml_sound.gau` must be installed. This is a freeware gauge from Doug Dawson. See Credit for Sound Gauge below.

Installation

Download the file: `dsd_fsx_xml_sound.zip` available from FlightSim.com.
Unzip the zip file.

Step 1.

Install the file: `dsd_fsx_xml_sound.gau` into the flight simulator **Gauges** sub-folder.
(Normally ...\\fsx\\Gauges or ...\\Flight Simulator 9\\Gauges)

Step 2.

Install the file: `SoundJD.ini` into the flight simulator **Gauges** sub-folder.
(The file `SoundJD.ini`, and the folder: `SoundJD` are included in the KX155A package.)

Step 3.

Install the folder `SoundJD` into the flight simulator **Sound** sub-folder.
(Normally ...\\fsx\\Sound or ...\\Flight Simulator 9\\Sound)

Step 4.

Copy and paste the line:

`gaugenn=dsd_fsx_xml_sound!Sound, 2,2,2,2, ./gauges/SoundJD.ini` into the [Window00] section in the `Panel.cfg` file for every aircraft that has the KX155A installed.
(Where `nn` is the next available gauge number). Note the dot before `/gauges` !

Credit for Sound Gauge

Many thanks to Doug Dawson, for his excellent freeware sound gauge.
It is available from various flightsim websites (e.g. Flightsim.Com and Avsim.)
This is a very sophisticated and versatile application - the above installation only used a fraction of the capability available.

Note 2. An external Autopilot Master switch (`BendixKingAP15!APMaster_Switch_JD`) can be used with this autopilot. This simulates removing the power from the unit.
(This switch is provided without labeling so that the user can provide their own labels in the colour and style appropriate for the aircraft panel.)



When switched back on the autopilot will be disengaged, the red **TRIM** indicator will be displayed, and the **TEST** button (8) must first be pressed to make the unit operational, as described above.



When re-engaged the autopilot will revert to the default Wing Leveller mode and Pitch Hold modes.



- Note 3.** When saving and recalling a Flight in Flight Simulator, all flights will be recalled with operating modes as saved, including pitch modes (Pitch Hold or Altitude Hold).
- Note 4.** This KFC 150 autopilot simulation is a very accurate representation of the real KFC 150. However any autopilot gauge has to interface with the Flight Simulator “core” autopilot. This has a number of “issues” which makes it difficult if not impossible to achieve total accuracy and realism. For this (and other) reasons, not every feature described in the Bendix King KFC 150 Pilot’s Guide has been implemented.
- Note 5.** The KFC 150 autopilot does not have a Go-Around mode, therefore the standard Flight Simulator shortcut key assignment for Go-Around (GTRL+SHIFT+G) has been disabled.
- Note 6.** For the flight director to work correctly the aircraft must have the following:
 (1) An Attitude Indicator (Artificial Horizon) with a flight director (such as the one on the default Beechcraft Baron).
 (2) An entry in the [autopilot] section of Aircraft.cfg: flight_director_available = 1
- Note 7.** My KA 285 Autopilot Annunciator **BendixKingAP28!KA285_JD** can be used with this autopilot. See “KA285.zip”.
- Note 8.** This autopilot can be used with my KAS 297B Altitude Selector/Alerter and VS Selector. See “KA285.zip”.