

## KLN 94 Pages

Bendix/King®

### Airport (APT) Pages

- 1 Ident, elevation, name, city, state, use type
- 2 Latitude/longitude, bearing/radial and distance
- 3 Time from UTC, fuel, approaches, radar environment
- 4 Runway numbers, length, surface, lighting
- 5 Comm/ILS frequencies
- 6 User remarks
- 7 DP/STAR procedures
- 8 Approach procedures

### VOR Pages

- 1 Ident, frequency, name, lat/long
- 2 Magnetic station declination, bearing/distance

### NDB Page

- 1 Ident, frequency, name, lat/long, bearing/distance

### Intersection (INT) Pages

- 1 Ident, lat/long, bearing/distance, DME designation (for ILS DMEs)
- 2 Location relative to VOR

### User-defined Waypoint (USR) Pages

- 1 Ident, lat/long, bearing/distance
- 2 Location relative to VOR
- 3 User remarks

### Active Waypoint (ACT) Pages

Waypoint pages for active flight plan waypoints and/or the direct-to waypoint. (Pull right inner knob out to scan FPL 0 waypoints).

### Navigation (NAV) Pages

- 1 Active waypoint/leg, CDI, crosstrack correction, CDI scale, VNAV status, bearing, ETE
- 2 Present position (lat/long and radial/distance)
- 3 Present time, departure time, flight time, ETE & ETA at destination
- 4 Moving map

### Flight Plan (FPL) Pages

- 0 Active flight plan
- 1-25 Stored (numbered) flight plans

## GPS Navigation System

### Setup (SET) Pages

- 1 Position initialization for GPS receiver
- 2 Date, time, and time zone initialization, mag var
- 3 Database update
- 4 Nearest airport criteria
- 5 SUA alert enable/disable
- 6 SUA alert/map
- 7 Map setup for aero data
- 8 Map setup for land data
- 9 Low voltage warning
- 10 Turn anticipation enable/disable
- 11 Default first waypoint character
- 12 Barometric pressure units
- 13 Altitude alerting
- 14 QuickTune™ default

### Auxiliary (AUX) Pages

- 1 GPS state, GPS altitude, EPE
- 2 GPS signal status
- 3 RAIM prediction
- 4 Trip planning for distance, bearing, ESA, and ETE
- 5 Trip planning for fuel requirements
- 6 Pressure altitude
- 7 Density altitude
- 8 True airspeed (TAS)
- 9 Winds aloft
- 10 Alarm/timer
- 11 Sunrise/sunset
- 12 List of user-defined waypoints
- 13 List of airports and user waypoints with stored remarks
- 14 Software versions
- 15 \*Fuel required, fuel on board, landing fuel
- 16 \*Fuel reserve, extra fuel
- 17 \*Fuel endurance, range, efficiency
- 18 \*Fuel flow
- 19 \*Cumulative fuel used
- 20 \*TAS, Mach
- 21 \*SAT, TAT, pressure alt, density alt

\* Page only displayed if appropriate equipment is interfaced with KLN 94.

# KLN 94 INSTRUMENT APPROACH REFERENCE

**WARNING: Make sure that you have practiced instrument approaches with the KLN 94 in VFR weather before attempting to fly approaches in IMC.**

## APPROACH SEQUENCE

1. Select an approach and load into FPL 0
  - a. **PRESS** **PROC**. Choose "**Select Approach?**"
  - b. **SELECT** airport on PROC 2 page
  - c. **SELECT** an approach/IAF from APT 8 page. Choose "**Vectors**" for radar vectors
  - d. **CHANGE** an approach using above procedure
  - e. **DELETE** approaches on the FPL 0 page.
2. Get established on the final approach course.
  - a. **VERIFY APR ARM** (or **TERM**) is annunciated within 30 nm of destination.
  - b. **SELECT** the NAV 4 page.
  - c. **SELECT** OBS mode for procedure turns and holding patterns. Use OBS mode until inbound to the FAF.
  - d. **SELECT** LEG mode for radar vectors and NoPT routes including DME arcs. LEG mode is mandatory from the FAF to the MAP.
  - e. **PRESS** **PROC** and **ACTIVATE** Vectors from PROC 1 page for radar vectors.
3. At or before 2 nm from the FAF inbound:
  - a. **SELECT** the FAF as the active waypoint.
  - b. **SELECT** LEG mode.
4. At 2 nm inbound to the FAF:
  - a. **VERIFY APR ACTV** (or **APR**) annunciated.
5. At the FAF if **APR ACTV** not annunciated:
  - a. **DO NOT DESCEND.**
  - b. **EXECUTE MISSED APPROACH.**

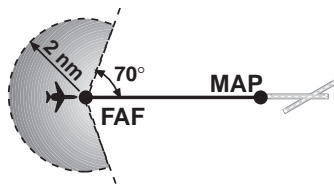
**NOTE:** *There is no automatic leg sequencing at the MAP.*

6. After the MAP:
    - a. **FLY** the exact published missed approach procedure from the approach charts.
    - b. **PRESS** **DP**. Verify automatic selection of the first waypoint of the missed approach procedure (usually the missed approach holding point). Change it if desired.
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## APPROACH TIPS

1. The database must be up to date.
2. Only one approach can be in the flight plan at a time.
3. Use the **PROC** button to initiate approach and IAF selections.
4. Data cannot be altered, added to or deleted from the approach procedures contained in the database. (DME arc intercepts may be relocated along the arc through the NAV 4 page or FPL 0 page.)
5. To change a DP, STAR or approach, select a new one using the normal procedure for selecting and loading a procedure.
6. To delete a DP, STAR or approach, select the FPL 0 page, place the cursor over the name of the DP, STAR or approach, press **CLR** and then **ENT**.
7. Some approach waypoints in the database may not appear on the approach plates (in some cases this includes the FAF)!
8. Waypoint suffixes attached to some approach waypoints: i - IAF, f - FAF, m - MAP, h - missed approach holding fix.
9. Use the NAV 4 page for flying approaches.
10. At the time of installation the KLN 94 is configured to annunciate either (1) **APR ARM** and **APR ACTV** or (2) **TERM** and **APR**. The two sets mean exactly the same.
11. At 30 nm from the destination airport the KLN 94 will go into **APR ARM** (or **TERM**) if there is an approach in the flight plan. Left/right D-bar scaling will change from  $\pm 5.0$  nm to  $\pm 1.0$  nm over the next 30 seconds.
12. If the approach includes a DME arc, the DME arc intercept point will be a) on your present position radial off the arc VOR at the time you select an arc IAF, or b) the beginning of the arc if currently on a radial beyond the arc limit. To adjust the arc intercept to be compatible with a radar vector, bring up the first waypoint of the arc in the NAV 4 page scanning field (or under the cursor on the FPL 0 page), press **CLR**, then **ENT**. Fly the arc in LEG. Adjust the HSI or CDI course pointer with reference to the desired track value on the NAV 4 page (it will flash when the pointer needs to be adjusted). Left/right D-bar information is relative to the arc. Displayed distance is not along the arc but straight to the active waypoint. (The **ARC** radial is also displayed on the NAV 4 page.)
13. Two nm from the FAF inbound and in LEG, the KLN 94 will go into **APR ACTV** (or **APR**) and the D-bar scaling will begin changing from  $\pm 1.0$  nm to  $\pm 0.3$  nm.

14. **APR ARM to APR ACTV** (or **TERM to APR**) is automatic provided all of the following are satisfied:
  - a) In **APR ARM** (normally automatic).
  - b) In **LEG** mode!
  - c) FAF is the active waypoint!
  - d) Within 2 nm of the FAF.
  - e) Outside the FAF.
  - f) Inbound to the FAF.
  - g) RAIM is available. (For early prediction go to AUX 3 page.)
15. RAIM availability is mandatory for approach operation.
16. **APR ACTV** (or **APR**) mode is mandatory for approach operation.
17. DIRECT-TO operation between the FAF and MAP cancels approach **ACTV** (or **APR**). Fly the missed approach in **APR ARM** (or **TERM**).
18. Flagged navigation inside the FAF due to a RAIM problem may usually be restored by pressing the **PROC** button to change from **ACTV to ARM** (or **APR to TERM**). A message is provided as a reminder. Fly the missed approach procedure.
19. Instrument approaches using the KLN 94 may be essentially automatic starting 30 nm out (with manual baro setting update) or it may require judicious selection of the OBS and LEG modes.




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## **PAGE MESSAGES**

Messages that could appear during approach operations. Refer to the Pilot's Guide for a complete list of messages.

### **XXXXX Deleted**

**From FPL 0** -- A pre-existing waypoint was deleted from FPL 0 because the same waypoint was in the Approach/DP/STAR just loaded into FPL 0.

### **APR ACTV Annunciator**

**Fail** -- Indicates an external annunciator drive circuit failure. Discontinue approach operation unless already on final approach inside the FAF.

**Adj Nav Crs to XXX°**-- Manually adjust the mechanical HSI or CDI to the indicated value.

### **APR ARM Annunciator**

**Fail** -- Indicates an external annunciator drive circuit failure. Discontinue approach operation unless APR ACTV is annunciated.

**Arm GPS Approach** -- Manually arm approach mode. (A reminder given 3 nm from the FAF if the approach mode was disarmed manually with an optional GPS approach arm switch.)

### **Bad Satellite Geometry**

**And RAIM Not Available** -- Can appear in approach ACTV (or APR) mode only. Integrity monitoring is lost and satellite geometry is degraded. Can be followed by a NAV flag.

## PAGE MESSAGES Continued

### **Bad Satellite Geometry**

**See EPE on AUX 1 page** -- Integrity monitoring is lost and the estimated position error is greater than allowed for the current phase of flight. Cross check the position with other on-board equipment every 15 minutes.

### **Check APR ACTV**

**Annunciator** -- Indicates an overcurrent condition in the external annunciator circuit. Discontinue approach operation unless already on final approach inside the FAF.

### **Check APR ARM**

**Annunciator** -- Indicates an overcurrent condition in the external annunciator circuit. Discontinue approach operation unless APR ACTV (or APR) is annunciated.

### **Enable Turn**

#### **Anticipation For**

**GPS Approach** -- Turn anticipation has been disabled on the SET 10 page. For proper approach operation, it should be enabled on the SET 10 page.

**GPS Course is XXX°** -- Displays the new desired track when GPS is not displayed on the primary indicator.

**If Required Select OBS** -- Use OBS mode for holding patterns or procedure turns. Appears 4 nm from a waypoint that normally would require the OBS mode.

### **If Using Procedure**

#### **Turn Reduce Speed**

#### **To Remain Within**

**Protected Area** -- The aircraft's flight path may extend beyond the protected airspace for the procedure turn if the aircraft's present ground speed is maintained (ORS 02 and higher).

**Press ALT To Set Baro** -- A reminder given 30 nm from the destination airport to update the barometric setting.

**Press PROC Button Now For Navigation** -- After a NAV flag in approach ACTV (or APR) mode, press  button to restore navigation for the missed approach. (Integrity monitoring is less critical in approach ARM (or TERM) mode so navigation may be restored.)

### **RAIM Not Available**

#### **APR Mode Inhibited**

**Predict RAIM on AUX 3** --RAIM is predicted to not be available at either the FAF or the MAP. Determine when RAIM will be available on the AUX 3 page. Integrity monitoring is required for approach operation.

### **RAIM Not Available**

**Cross Check Position** --Integrity monitoring is absent. Compare the GPS position with other on-board navigation equipment.

## PAGE MESSAGES Continued

### **RAIM Position Error**

**Cross Check Position**--RAIM has detected a problem with a satellite. Compare the GPS position with other on-board navigation equipment.

### **Redundant WPTs in FPL**

#### **Edit Enroute WPTs**

**As Necessary**--Examine the active flight plan and remove those waypoints that occur both in the en route and the approach or DP/STAR sections of the flight plan.

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## SCRATCHPAD MESSAGES

Messages that could appear during approach operations. Refer to the Pilot's Guide for a complete list of messages.

### **➔ CRS**

**XXX°**--When in OBS mode, manually adjust the HSI or CDI course pointer to the prescribed value to provide direct-to navigation.

### **Fpl Is**

**Full**--The KLN 94 cannot add any more waypoints to the flight plan.

### **Invalid**

**Add**--You cannot add waypoints to the approach sequence.

### **Invalid**

**Del**--You cannot delete waypoints from the approach sequence.

### **No Appr**

**at Apt** -- An airport has been entered on the PROC 2 page that does not have an approach in the database.






**No Apr In Fpl** --No approach has been loaded into the flight plan when the APR ARM button is pressed.

**No Intcpt** --The aircraft's actual track does not intersect with the DME arc. Alter course so that the actual track does intercept the arc.

**D Base Expire** --A reminder that the database is out of date.

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## NAV 4 (MOVING MAP) PAGE TIPS

- To display the NAV 4 page when on any other page, press  or .
- To scan through waypoints in scanning window, pull out and turn the right inner knob. Active flight plan waypoints are displayed in green. Non-flight plan waypoints are displayed in white. With desired waypoint displayed in scanning window, press  and  to go direct-to the selected waypoint OR press  to display the waypoint page for the selected waypoint (ORS 02 and higher).

- To temporarily declutter the map, press **CLR** once to deselect land data, press **CLR** a second time to declutter aero data. To restore, press **CLR** again or leave the NAV 4 page and return to it.
  - To configure what information is displayed on the map, press the **MNU** button, select **Setup Aero Data?** or **Setup Land Data Menu?** and press the **ENT** button to bring up the appropriate Setup page (SET 7 for aero data and SET 8 for land data). The range selected on these SET pages is the maximum range scale that the selected item will be displayed on the map.
  - To change the map orientation, press the **MNU** button, move the cursor over item 3 and turn the right inner knob to select the desired orientation:
    - N↑ = North up
    - TK↑ = Actual track up (when groundspeed > 2 kts)
    - HDG↑ = Heading up (if heading supplied to the KLN 94)
    - DTK↑ = Desired track up
  - To change the map scale factor:
    1. Press the **A** button. The top half increases the map scale and the bottom half decreases the map scale. The scale is displayed in the bottom left part of the map.
    2. For terminal area operations select AUTO scale factor by pressing the **A** button for 2 seconds.
  - To change the navigation information shown in the lower left corner of the display:
    1. Press the **CRSR** button.
    2. Use the right outer knob to move the cursor to line 4 or line 5 in the the lower left corner.
    3. For line 4, use the right inner knob to select between actual track (TK), bearing, radial, or groundspeed.
    4. For line 5, use the right inner knob to select between groundspeed, ETE, crosstrack correction, or VNAV status.
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## **KLN 94 BUTTONS**

- MSG** Displays the message page
- OBS** Changes between Leg and OBS navigation modes
- ALT** Displays the altitude pages, ALT 1 and ALT 2
- NRST** Selects the nearest APT, VOR, NDB, INT, USR, SUA, FSS, or CTR
- D▶** Initiates a direct-to operation
- CLR** Cancels operations
- ENT** Approves an operation
- PROC** Initiates the selection of or the changing of an approach, DP, or STAR. Activates vectors-to-final.
- ▲ (IND)** If on the NAV 4 (map) page, changes the map range scale. If on any other page, brings up the NAV 4 page.
- (MNU)** If on the NAV 4 (map) page, brings up the map menu for configuring map. If on any other page, brings up the NAV 4 page.
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## **SUMMARY OF OPERATION**

- Emergency Nearest Airport Search - Press **NRST** then **ENT** .
- Operation of right knobs - Cursor on
  - Press **CRSR** button. With the cursor on, outer knob controls cursor location and inner knob selects the character.
  - With the inner knob in, make selection character by character.
  - With inner knob out, make selection by scanning through the database alphabetically.
- Operation of right knobs - Cursor off
  - Outer knob selects page type (APT, VOR, etc.)
  - Inner knob selects specific page (APT 1, APT 2, etc.)
- Direct To operation
  - Press **D▶** once. Enter desired wpt using right concentric knobs, press **ENT** to view wpt info, press **ENT** to confirm.
  - Alternatively, highlight desired wpt in flight plan, then press **D▶** , then press **ENT** to confirm.
  - To center D-bar. With non-wpt page displayed press **D▶** then **ENT** .
  - To cancel direct to operation press **D▶** , then **CLR** , then **ENT** .

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