

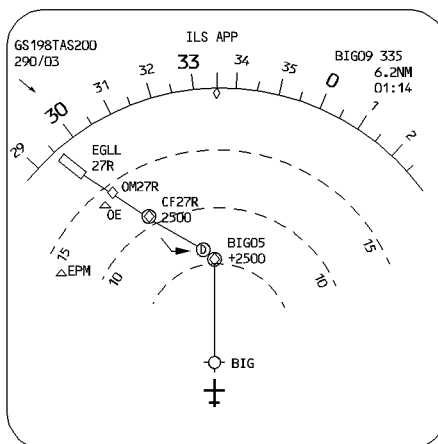
INITIAL APPROACH

UPON REACHING THE INITIAL AREA

- ACTIVATE the APPROACH PHASE, either
 - Automatically, when flying over the DECEL pseudo waypoint (NAV/APPR NAV or LOC* or LOC mode engaged), or
 - Manually on the PERF page, when the HDG mode is engaged, if an early deceleration is required, or when flying a go-around.

F-PLN PAGE

			AEF 101 →	
1L	FROM	UTC	SPD/ALT	1R
	D1 40L	110	/FLO86	
2L	BIG1A	BRG333° 12NM		2R
	BIG	112 °/ 5220		
3L	C335°	TRK335° 9		3R
	BIG05Δ	114 °/*2760		
4L	(DECEL)	114 250/ 2500		4R
	C275°	6		
5L	CF27R	116 190/*2500		5R
	DEST UTC DIST EFOB			
6L	EGLL27R	0119 541 6.4	↑↓	6R



DES PERF PAGE

			DES	
1L	ACT MODE	UTC	DEST EFOB	1R
	MANAGED	0119	6.4	
2L	CI	PRED TO	FLO25	2R
	40	UTC	DIST	
3L	MANAGED			3R
	.77/300			
4L	SELECTED			4R
	-70/240	0109	22	
5L	EXPEDITE	0106	10	5R
	ACTIVATE	NEXT		
6L	←APPR PHASE	PHASE>		6R

			DES	
1L	ACT MODE	UTC	DEST EFOB	1R
	MANAGED	0119	6.4	
2L	CI	PRED TO	FLO25	2R
	40	UTC	DIST	
3L	MANAGED			3R
	.81/340			
4L	SELECTED			4R
	-78/280	0109	22	
5L	EXPEDITE	0106	10	5R
	CONFIRM	NEXT		
6L	*APPR PHASE	PHASE>		6R

FFC5-04-0570-001-A001A

PRESS

1

PRESS

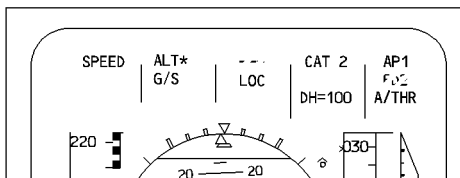
2

MANAGED SPEED

- CHECK that managed speed is active : MONITOR the target speed.

Note : The aircraft decelerates automatically at DECEL pseudowaypoint when managed speed is active and NAV mode is engaged (DECEL point displayed in magenta).

During the approach, the autothrust maintains the maneuvering speed of the current configuration. (GD, S, F, VAPP).



If ATC requires a specific speed :

Procedure

- SWITCH to selected speed (turn and pull the speed selector knob on the FCU).
 - ADJUST the aircraft configuration accordingly.
- If ATC orders successive step descents down to the final approach flight path :
- Use the V/S or FPA mode.
 - MONITOR VDEV.

NAV ACCURACY

As required by the SOP.

Without installed GPS and when no DME is available for the accuracy check, use HIGH/LOW on the PROG page.

In this case, consider a “HIGH” to be equivalent to a positive crosscheck.

ATC CLEARANCE

- MODIFY the F-PLN, RAD NAV, and PERF APPR data to agree with the latest clearance and landing information.

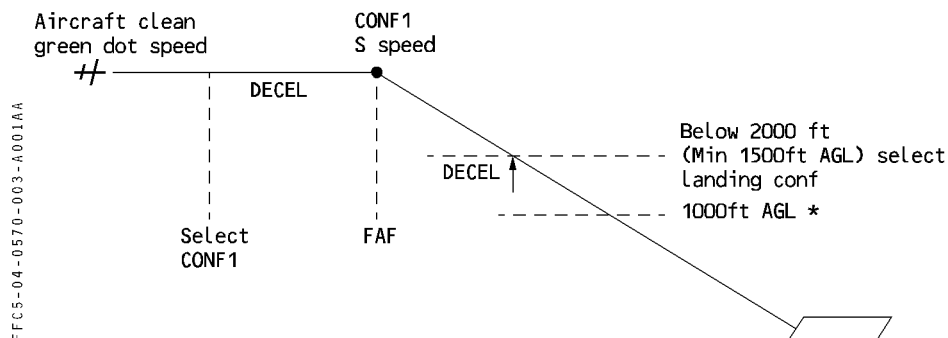
ILS APPROACH

INTERMEDIATE/FINAL APPROACH (ILS approach entered in the F-PLN)

The preferred technique for flying an ILS approach is to fly a decelerated approach using the AP/FDs, the LOC and G/S modes, autothrust in the SPEED mode, managed speed target is recommended.

Decelerated approach

The decelerated approach technique brings the aircraft down to 1 000 feet, at VAPP. In most cases, the interception of the final descent path is achieved with Conf 1 at S speed.



* The approach must be stabilized at approach speed (mini ground speed) in the landing configuration before reaching 1 000 feet AGL.

APPROACH MODE ACTIVATION (LOC - G/S)

When cleared by ATC and when appropriate :

- PRESS the APPR pushbutton to arm the APPR mode for the approach entered in the flight plan.

Note : If a non precision approach is selected in the active flight plan and if the pilot manually tunes an ILS on the RAD NAV page, the MCDU and PFD display “CHECK APPR SELECTION”. This message is a reminder to the pilot that, although an ILS is tuned on RAD NAV page, the available approach guidance modes are APP NAV - FINAL when the APPR pushbutton is pressed in on the FCU.

	FLIGHT PHASE RELATED PROCEDURES		4.05.70	P 4
	APPROACH		SEQ 001	REV 12

The FCU APPR pushbutton arms or engages LOC and G/S modes, if :

- An ILS approach is entered in the flight plan, or
- No approach, or only runway, is entered in the flight plan, and an ILS is manually-tuned on RAD NAV, or
- Both RMPs are set to NAV, and an ILS is selected.

AUTOLAND

- CHECK that the FMA displays the aircraft capability (CAT2 or CAT3) for the intended ILS approach.
- MONITOR the radio automatic callout.

● **At 350 feet RA :**

- CHECK that “LAND” is displayed on the FMA.

If LAND is not displayed, do not perform an autoland. A go-around must be performed, if visual references are insufficient.

- CHECK ILS course.

● **Between 50 and 40 feet RA :**

- CHECK that “FLARE” is displayed on the FMA.

● **At approximately 30 feet RA :**

- CHECK that “IDLE” is displayed on the FMA and that autothrust starts to reduce thrust toward IDLE.

● **At 10 feet, “RETARD” callout comes up :**

- MOVE the thrust levers to IDLE.

Autothrust disconnects.

● **At touchdown :**

- CHECK that “ROLL OUT” appears on the FMA.

● **At the end of the Rollout**

- Disengage autopilots :

If an AP is not disengaged at the end of the rollout and the pilot uses the nosewheel steering tiller to taxi the aircraft off the runway, the autopilot will steer the aircraft back to the localizer when the tiller is released.

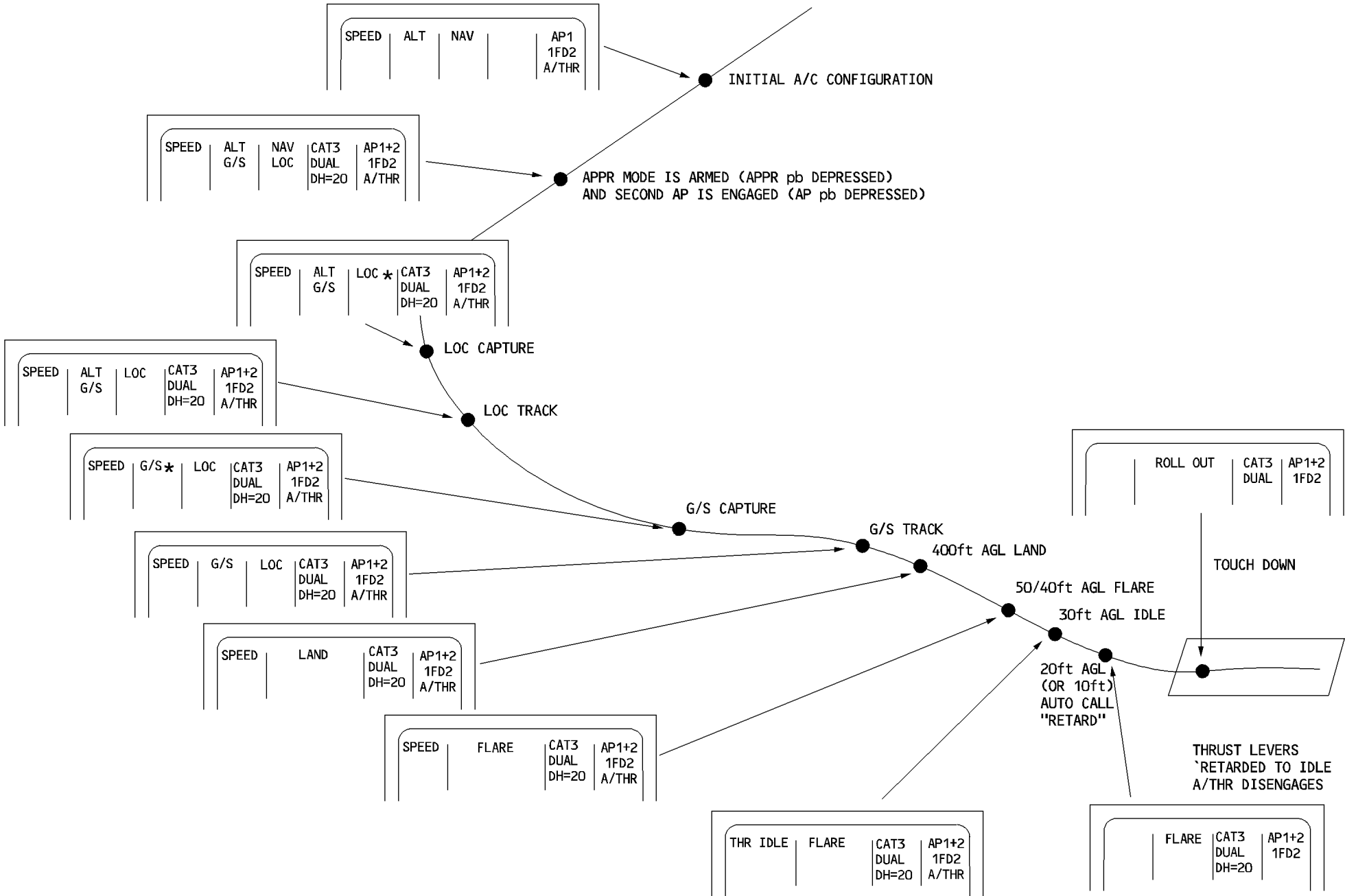
 FLIGHT PHASE RELATED PROCEDURES APPROACH	4.05.70 P 5	
	SEQ 001	REV 07

MANUAL LANDING

- **at DH**
 - DISCONNECT the autopilots. SPEED mode remains engaged.
- **At 20 ft “RETARD” automatic call out comes up**
 - MOVE the thrust levers to IDLE if they are not there already. (The autothrust disconnects).
- **At touch down**
 - “ROLL OUT” appears on the FMA and the yaw bar comes up on the PFD.

Note : *The retard call out is only a reminder when a manual landing is performed.*

STANDARD ILS AUTOMATIC APPROACH



	FLIGHT PHASE RELATED PROCEDURES		4.05.70	P 7
	APPROACH		SEQ 100	REV 07

EARLY SELECTION OF APPROACH MODE LOC - G/S

Pressing the APPR pushbutton arms LOC and G/S.

The RA signal is not valid above 8200 feet AGL (TRT) or 5000 feet AGL (Collins). If the aircraft is cleared for an ILS approach when it is higher than 8000 feet AGL or 5000 feet AGL (Collins), proceed as follows :

- PRESS the APPR pushbutton on the FCU.

- **When aligned on the localizer check LOC and G/S engagement :**

- CAT 1 is displayed on FMA. (Radio altimeters not yet valid).

- Check that the FMA displays the correct capability for the intended approach when the aircraft is below 5000 feet AGL.

GLIDE SLOPE INTERCEPTION FROM ABOVE

If the aircraft is above the glide slope, the system will not capture the G/S automatically.

The pilot must bring the aircraft onto the glide slope beam, and selects an appropriate V/S to intercept it. Refer to SOP.

DATA LOCK

When the aircraft reaches 700 feet RA with APPR mode (LOC and G/S) armed or engaged, the ILS frequency and course are frozen in the receiver.

This function (ILS tune inhibit) is available when at least one AP/FD is engaged. Any attempt to change ILS frequency or CRS through the MCDU or RMP does not affect the receiver.

If the speed is managed, the system does not accept any modifications the flight crew may enter on the PERF APPR page (surface wind, selected landing configuration, or VAPP) for speed guidance purposes below this altitude.

When the aircraft reaches 400 feet RA, LAND mode engages. The flight crew can disengage this mode only by engaging the GO AROUND mode.

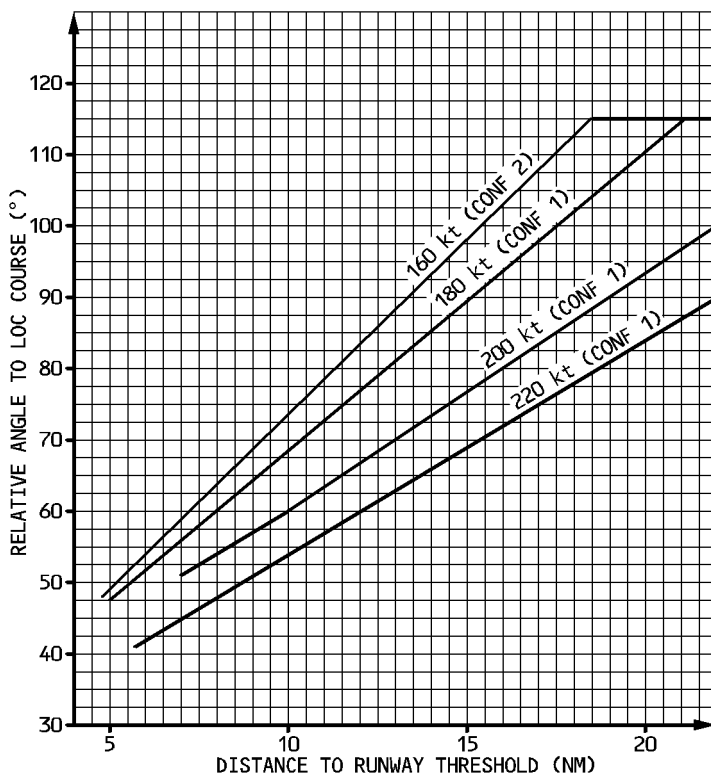
USE of RMPs for ILS/DME

If both FMGCs fail, the pilot tunes the ILS frequency on both RMPs simultaneously. If the ILS has a DME, the PFD does not display the DME distance. In this the situation the pilot flies without DME information. If necessary, increase the DH accordingly.

LOC BEAM CAPTURE

The pilot must always monitor the capture of a LOC beam. During this evolution the associated deviation indications on the PFD and ND must indicate movement toward the center of the scale. The pilot can avoid making a false capture by being careful not to arm the LOC too early.

The following graph shows the angle of interception versus distance that minimizes the overshoot.



The capture begins when the deviation is two dots or less. It is programmed to line the aircraft up on the beam with a single overshoot, even when the intercept angle is large.

 FLIGHT PHASE RELATED PROCEDURES APPROACH	4.05.70 P 9	
	SEQ 001	REV 07

Note : ICAO requires loc beam to ensure a normal capture within 10 NM and +/- 35 degrees of the course centerline. Some current ILS systems just meet the requirement and are subject to false capture outside these limits.

SWITCHING FROM NON ILS TO ILS APPROACH

If an ILS approach is possible when a non ILS was previously scheduled, use one of the following procedures :

1. Use a secondary flight plan to prepare the alternate ILS approach, time permitting.
 - COPY the ACTIVE flight plan.
 - REVISE the ARRIVAL : insert the ILS approach and the applicable STAR/VIA.
 - On the RAD NAV page, TUNE in the ILS manually.
 - REVISE the PERF APPR page.
2. ATC changes the clearance from the non-ILS to the ILS approach.
 - **If a secondary flight plan has been prepared :**
 - ACTIVATE the SEC F-PLN and adjust.
 - Follow subsequent standard procedures.
 - **If a secondary flight plan has not been prepared :**
 - REVISE the ARRIVAL on the primary F-PLN, inserting the ILS approach.
 - REVISE the PERF APPR page.
 - Follow subsequent standard procedures.

CAUTION

If the pilot decides to fly the ILS approach without revising the arrival of the primary flight plan (a non ILS approach is in the F-PLN), LOC and G/S modes will not be available when he presses the APPR pushbutton.

Consequently, he should :

- Manually TUNE in the ILS on the RAD NAV page : CHECK that the CHECK APPR SELECTION message comes up.
- Press the ILS pushbutton and select ROSE ILS on the EIS CONTROL panel.
- Use HDG, V/S or TRK, FPA modes to fly the ILS.

 FLIGHT PHASE RELATED PROCEDURES APPROACH	4.05.70	P 10
	SEQ 001	REV 09

TASK SHARING DURING CAT I, CAT II and CAT III APPROACH AND LANDING

FCOM 3.01.22 provides all limitations regarding CAT I, CAT II and CAT III approaches and landings. This includes precautions to be taken when performing autoland on CAT I ILS beam with good visibility. Anytime a precision approach is performed the PNF must announce that a flight parameter is being exceeded if :

- During glide beam capture
 - Pitch attitude becomes lower than 0° or greater than + 10° (nose up).
 - Vertical speed exceeds + 500 feet/minute or – 1250 feet/minute.
- During final approach
 - Speed goes below speed target – 5 knots or above speed target + 10 knots (announce “SPEED”).
 - Pitch attitude goes below 0° or above 10° (announce “PITCH”).
 - Bank angle becomes greater than 7° (announce “BANK”).
 - Descent rate becomes greater than 1000 feet/minute (announce “SINK RATE”).
 - There is too much LOC or GLIDE deviation (announce “LOCALIZER” or “GLIDE”).

If the pilot has any doubt about the autopilot guidance, he should use the instinctive disconnect pushbutton to disconnect the autopilot, or should commence an automatic go around.

The pilot may perform a CAT II/CAT III approach if :

- The FMA displays the corresponding category.
- The required systems and functions are operative.
- The airfield installation is authorized for such a category.
- You are qualified for the specific approach.

CAT III approach

AUTO CALL OUT RA is mandatory.

Autothrust in SPEED MODE is mandatory.

Note : *AUTO CALL OUT is not mandatory for CAT 2 approach : the PNF may perform this function.*

TASKSHARING FOR CAT I APPROACH (or better)

PF	PNF
At 350feet AGL (or RA)	
- Check ILS course on the PFD - Announce "LAND GREEN" when displayed on FMA	
At Decision Altitude (or Decision height) +100feet*	
	Monitor or announce "Hundred above"
At Decision Altitude (or Decision Height)*	
	Monitor or announce "Minimum"
If external visual references are sufficient	
Announce "LANDING"	
If automatic landing not performed	
Disconnect the APs and perform the landing	Monitor CALL OUT or announce, as appropriate : 300feet 200feet 100feet 50feet 30feet 20feet 10feet
At "RETARD" annunciation, retard thrust levers to IDLE, if not yet performed	
If automatic landing performed	
refer to CAT III without DH	
If external visual references are insufficient	
Announce "GO AROUND" and execute	

(*) : Decision Height, if QFE is used.

Note : CAT I minimum (DH or DA) is always baro-referenced and should be entered in the MDA/MDH field of the PERF APPR page.

Pin Programming allows Operators to select the required callouts.

 FLIGHT PHASE RELATED PROCEDURES APPROACH	4.05.70 P 12	
	SEQ 001	REV 09

TASK SHARING FOR CAT III/CAT III APPROACH WITH DH

PF	PNF
At 350feet RA	
- Check ILS course on PFD - Commence outside scanning - Announce "LAND GREEN" when displayed on FMA	
At Decision Height +100feet	
	Monitor AUTO CALL OUT "Hundred above"
At Decision Height	
	Monitor CALL OUT "Minimum".
If external visual references are sufficient	
Announce "LANDING"	
If Automatic landing not performed	
Disconnect the AP's and perform the landing	Monitor CALL OUT or announce as appropriate : 400ft 300ft 200ft 100ft 50ft 30ft 20ft
At "RETARD" annunciation, retard thrust levers to IDLE if not yet performed	10ft "RETARD" auto call out*
If Automatic landing is performed	
refer to CAT 3 without DH	
If external visual references are not sufficient	
ANNOUNCE "Go-around" and EXECUTE	

- * "RETARD" auto call out comes up at 10 feet if LAND mode is engaged with one or two APs engaged. Otherwise it is announced at 20 feet.

virgin atlantic A340-600 <i>Flight Crew Operating Manual</i>	FLIGHT PHASE RELATED PROCEDURES		4.05.70	P 13
	APPROACH		SEQ 001	REV 12

TASK SHARING FOR CAT III APPROACH/LANDING WITH NO DH

PF	PNF
At 350feet RA	
• Check ILS course on PFD • Announce "LAND GREEN" when displayed on FMA	
At 100feet RA	
• If no failure is detected, announce "LANDING"	• Monitor AUTO CALL OUT
At 40 feet RA	
	• Check FLARE on FMA and announce
At 30 feet RA	
• Monitor thrust reduction and flare by flight instruments	• Monitor AUTO CALL OUT
At 10 feet RA	
AUTO CALL OUT "RETARD"	
• RETARD both thrust levers to IDLE • Monitor lateral guidance by external reference	• Monitor engines parameters
At TOUCH DOWN	
	• CHECK ROLL OUT on FMA and announce
• Select and control reverse thrust	• Check reverse green and announce • Announce 70kt
• Disengage the APs at the end of the Roll out (when leaving the runway at the latest)	

	FLIGHT PHASE RELATED PROCEDURES		4.05.70	P 14
	APPROACH		SEQ 001	REV 07

LANDING CATEGORIES

Each FMGC computes its own landing category : CAT1, CAT2, CAT3 single, and CAT3 dual and displays the corresponding landing category on the FMA.

Each category depends upon the availability of aircraft systems and functions.

When the landing category downgrades, a triple clic aural warning is activated.

FAIL-OPERATIONAL AUTOMATIC LANDING SYSTEM

An automatic landing system is fail-operational if, in the event of a failure below alert height, the remaining part of the automatic system allows the aircraft to complete the approach, flare, and landing. A CAT 3 DUAL system is a fail-operational automatic landing system.

Note : *In the event of a failure, the automatic landing system operates as a fail-passive system.*

FAIL-PASSIVE AUTOMATIC LANDING SYSTEM

An automatic landing system is fail-passive if, in the event of a failure, there is no significant out-of-trim condition or deviation of flight path or attitude, but the landing is not completed automatically. A CAT3 single system is a fail-passive automatic landing system.

Note : *With a fail-passive automatic landing system the pilot assumes control of the aircraft after a failure.*

Below 200 feet (radio altimeter), the FMGS freezes the landing capability until LAND mode is disengaged or both autopilots are off.

Therefore a failure occurring below 200 feet does not change the category of the system.

ALERT HEIGHT

The alert height is the height above touch down, above which a CAT3 autoland would be discontinued and a missed approach executed, if a failure occurred in either the airplane systems or the relevant ground equipments.

Below the alert height, if such a failure occurs, the flare, touchdown and roll out may be accomplished using the remaining automatic system.

	FLIGHT PHASE RELATED PROCEDURES		4.05.70	P 15
	APPROACH		SEQ 001	REV 14

WARNINGS FOR ILS APPROACH

AUTOLAND warning

With “LAND” or “FLARE” in green on the FMA and at least one AP engaged, the AUTOLAND red light appears on the glareshield when the aircraft is below 200 feet RA and one of the following events occurs :

- The autopilots are lost, or
- The aircraft gets too far off the beam (LOC and G/S flash on PFD), or
- Loss of LOC signal above 15 feet, or loss of glide signal above 100 feet (transmitter or receivers), or
- The difference between both radio altimeter indications is greater than 15 feet.

When the Autoland light comes on, Autoland must be discontinued, (Refer to 4.05.70 pages 17, 18, 19). AUTOLAND warning flashes 3 seconds when the AP is manually disconnected (instinctive disconnect pushbutton) below 200 feet.

Warning of excessive beam deviation

This warning is a flashing of the LOC and G/S scales on the PFD and ND ROSE ILS. It occurs whenever :

- G/S deviation is greater than 1 dot (above 100 feet RA).
- LOC deviation is greater than 1/4 dot (above 15 feet RA).

Warning associated with ILS “landing capability”

- Any downgrading in the aircraft's capability for automatic approach and landing sounds a triple-click aural warning.

Failure of both localizer and glideslope receivers

The PFD and ND (rose ILS mode) display red LOC and G/S flags (if the LS pushbutton has been pressed green). LOC and G/S scales disappear from the PFD.

If LOC or G/S modes are engaged and at least one AP/FD is engaged

- The AP disengages.
- The FD reverts to its HDG - V/S or TRK - FPA modes.

virgin atlantic A340-600 <i>Flight Crew Operating Manual</i>	FLIGHT PHASE RELATED PROCEDURES		4.05.70	P 15a
	APPROACH		SEQ 100	REV 14

Failure of localizer or glideslope transmitter (when captured)

- The corresponding index is lost.
- The LOC and G/S scales flash.
- The corresponding FD bars flash.

Above 200 feet RA, if the transmitter failure lasts less than 7 seconds, the FMA retains the LOC and G/S modes (or the LAND mode) and the autopilots are able to regain these modes. If the failure lasts longer than 7 seconds, the AP disengages and the FD reverts to its HDG-V/S or TRK-FPA modes.

Below 200 feet RA, if the transmitter failure occurs, the AUTOLAND warning appears, indicating that the crew must perform a GO AROUND (if insufficient visual references) with one or 2 autopilots engaged.

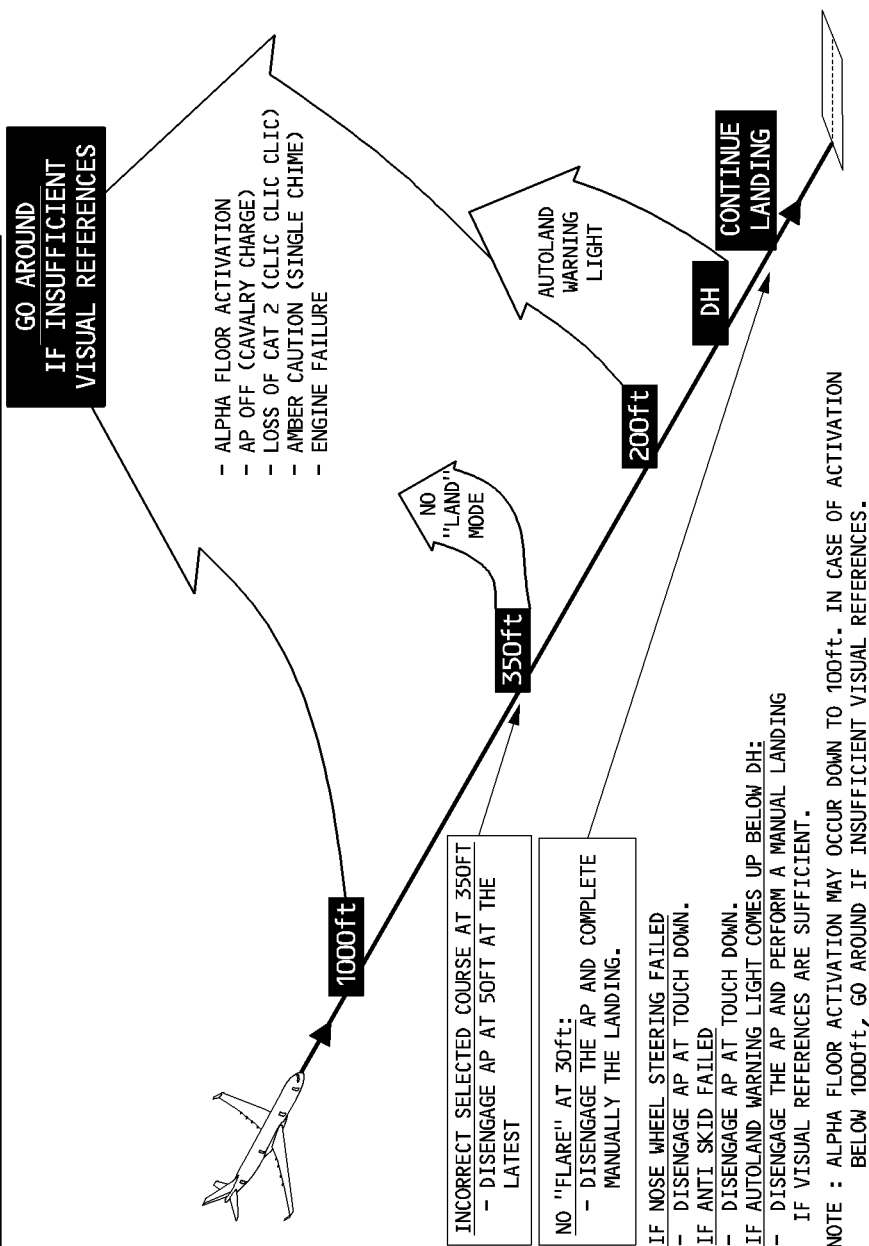
 FLIGHT PHASE RELATED PROCEDURES APPROACH	4.05.70	P 16
	SEQ 001	REV 12

FAILURES AND ASSOCIATED ACTIONS ABOVE 1000 FT FOR CAT II or CAT III

FAILURE (for multiple failures, the most limiting applies)	ACTION TO BE PERFORMED ABOVE 1000 FT	LANDING CATEGORY
ONE OUTER ENGINE-OUT	Complete ECAM procedure. Land in CONF3	CAT III DUAL
ONE INNER ENGINE-OUT	Complete ECAM procedure. Land in CONF3.	CATIII SINGLE
TWO ENGINES OUT	Complete ECAM procedure	CAT 1 Disengage AP
LANDING CAPABILITY DECREASE	Try to recover	As displayed on FMA
"AP OFF" warnings	Try to recover	As displayed on FMA
LOSS OF A/THR	Switch AP, and try to re-engage	CAT II (if A/THR not recovered)
NOSEWHEEL STEERING		CAT III SINGLE (DH = 50 feet) Disengage AP at touch down
ANTI-SKID		CAT III SINGLE Disengage AP at touch down
AMBER "CHECK ATT" ON TWO PFDs	Check with standby horizon, use switching to recover (no switching below 1000 feet)	CAT III SINGLE (if the warning disappears) CAT I (if not)
AMBER "CHECK HDG" ON TWO PFDs AND TWO NDs	Check with standby compass, use switching to recover (no switching below 1000 feet)	
RED "HDG" ON ONE PFD AND ONE ND	Use switching to recover (no switching below 1000 feet)	
RED "ATT" ON ONE PFD		
RED "SPD" ON ONE PFD		
DIAGONAL LINE ON ONE PFD AND ONE ND		
RED "RA" ON TWO PFDs	AP and FD unavailable	CAT I (minimum RVR as per regulation)
SLATS/FLAPS FAILURE (LESS THAN CONF 3)		CAT I Disengage AP at or above 500 feet

FFC5-04-0570-017-A001AA

FAILURES AND ASSOCIATED ACTIONS BELOW 1000FT DURING A CAT II APPROACH

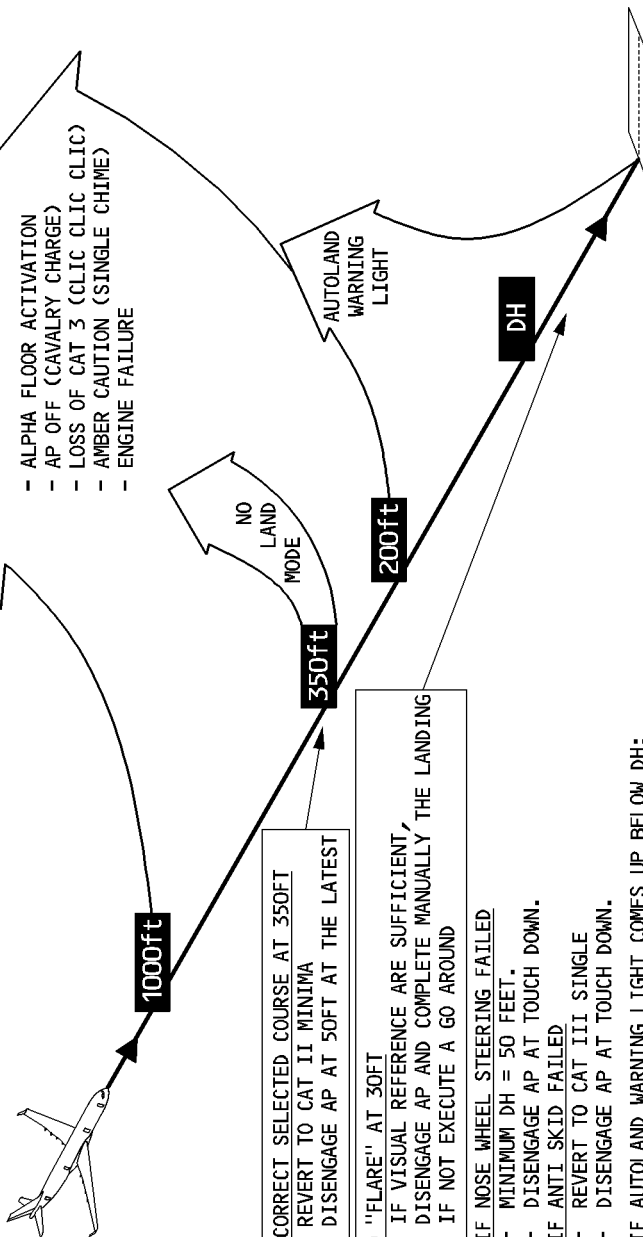


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FAILURES AND ASSOCIATED ACTIONS BELOW 1000FT FOR CAT III APPROACH WITH DH

**GO AROUND
IF INSUFFICIENT
VISUAL REFERENCES**

- ALPHA FLOOR ACTIVATION
- AP OFF (CAVALRY CHARGE)
- LOSS OF CAT 3 (CLIC CLIC CLIC)
- AMBER CAUTION (SINGLE CHIME)
- ENGINE FAILURE



INCORRECT SELECTED COURSE AT 350FT

- REVERT TO CAT II MINIMA
 - DISENGAGE AP AT 50FT AT THE LATEST
- NO "FLARE" AT 30FT**
- IF VISUAL REFERENCE ARE SUFFICIENT, DISENGAGE AP AND COMPLETE MANUALLY THE LANDING
 - IF NOT EXECUTE A GO AROUND

IF NOSE WHEEL STEERING FAILED

- MINIMUM DH = 50 FEET.
 - DISENGAGE AP AT TOUCH DOWN.
- IF ANTI SKID FAILED**
- REVERT TO CAT III SINGLE
 - DISENGAGE AP AT TOUCH DOWN.

IF AUTOLAND WARNING LIGHT COMES UP BELOW DH:

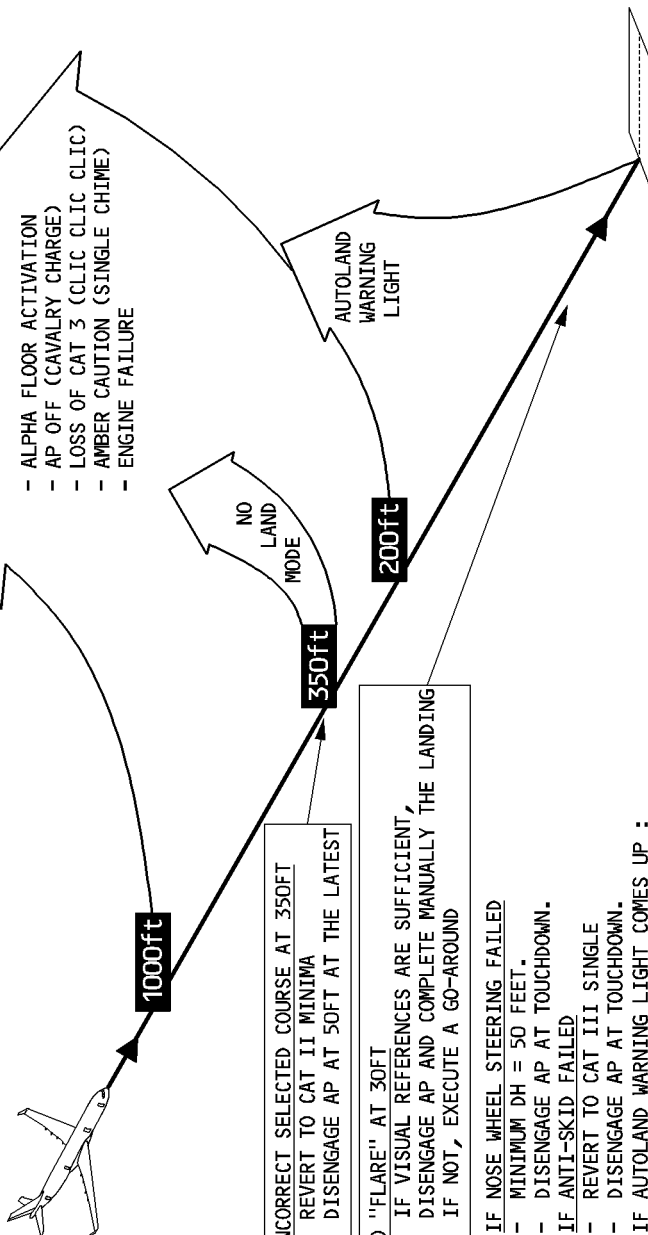
A GO AROUND MUST BE PERFORMED UNLESS THE VISUAL REFERENCES ARE SUFFICIENT FOR A MANUAL LANDING.

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FAILURES AND ASSOCIATED ACTIONS BELOW 1000FT FOR CAT III APPROACH WITHOUT DH

**GO AROUND
IF INSUFFICIENT
VISUAL REFERENCES**

- ALPHA FLOOR ACTIVATION
- AP OFF (CAVALRY CHARGE)
- LOSS OF CAT 3 (CLIC CLIC CLIC)
- AMBER CAUTION (SINGLE CHIME)
- ENGINE FAILURE



INCORRECT SELECTED COURSE AT 350FT

- REVERT TO CAT II MINIMA
- DISENGAGE AP AT 50FT AT THE LATEST

NO "FLARE" AT 30FT

- IF VISUAL REFERENCES ARE SUFFICIENT, DISENGAGE AP AND COMPLETE MANUALLY THE LANDING
- IF NOT, EXECUTE A GO-AROUND

IF NOSE WHEEL STEERING FAILED

- MINIMUM DH = 50 FEET.
- DISENGAGE AP AT TOUCHDOWN.

IF ANTI-SKID FAILED

- REVERT TO CAT III SINGLE
- DISENGAGE AP AT TOUCHDOWN.

IF AUTOLAND WARNING LIGHT COMES UP :

A GO AROUND MUST BE PERFORMED UNLESS THE VISUAL REFERENCES ARE SUFFICIENT FOR A MANUAL LANDING.

BACK-COURSE LOCALIZER APPROACH

Selection

● If the back-course approach is in the database :

During the approach preparation :

- SELECT lateral revision at destination.
- SELECT the ARRIVAL
- SELECT "B/C APPR"

The ILS frequency and BACK CRS are automatically tuned on the RAD NAV page.

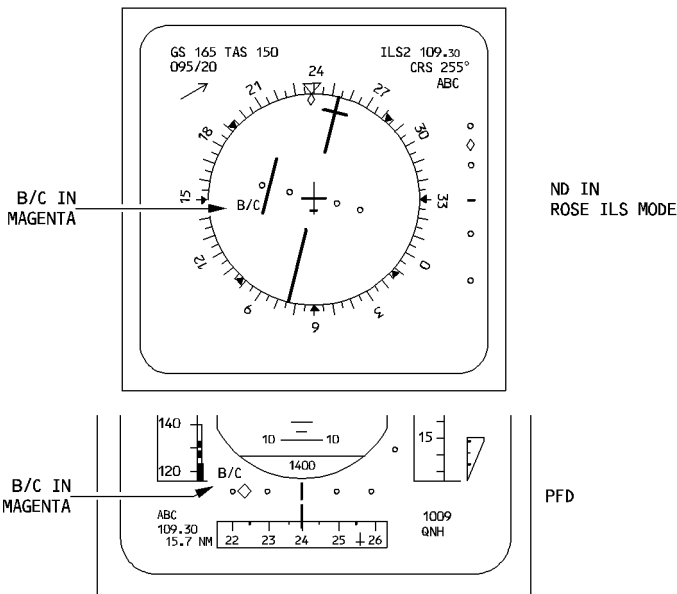
- INSERT the back-course approach

● If the back-course approach is not in the database :

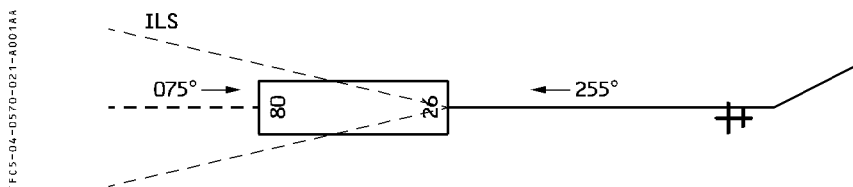
- PRESS the RAD NAV key on MCDU
- INSERT the ILS frequency
- INSERT the current final APPR CRS

The pilot insert the approach course as Bxxx (B means back-course).

The PFD and ND display B/C in magenta :



Example



- Standard ILS APPR procedure on RWY 075
- B/C LOC APP procedure on RWY 255

INSERT CRS = B255

Note : No title is displayed on the ND.

Procedure

● **Initial and intermediate approach**

The preferred technique is stabilized approach using AP/FD and A/THR.

- ACTIVATE the approach phase on the MCDU PERF page
- CHECK the NAVAIDS
- PRESS the LS pushbutton on the EFIS control panel
- SELECT the AP/FD in V/S FPA mode
- SELECT ROSE ILS on the ND control panel

When cleared for the approach :

- PRESS the LOC pushbutton on the FCU
the LOC B/C mode arms.
- CHECK LOC B/C blue on the FMA

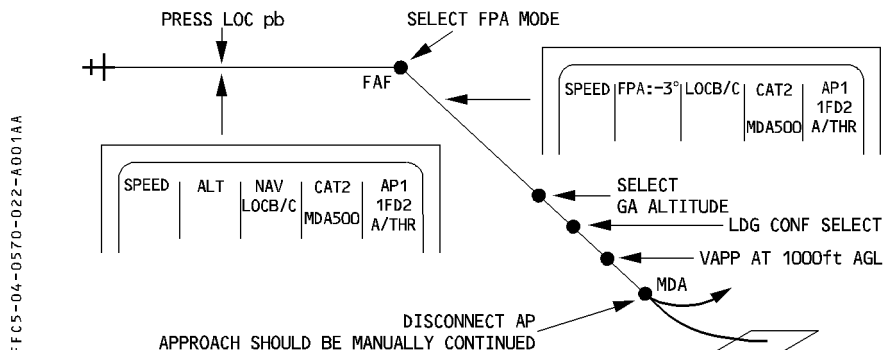
CAUTION

DO NOT ARM THE APPR MODES

- MONITOR the LOC capture
LOC B/C then LOC B/C green on the FMA*

● Final approach

Refer to SOP 3.03.19, non precision approach.



NON PRECISION APPROACH

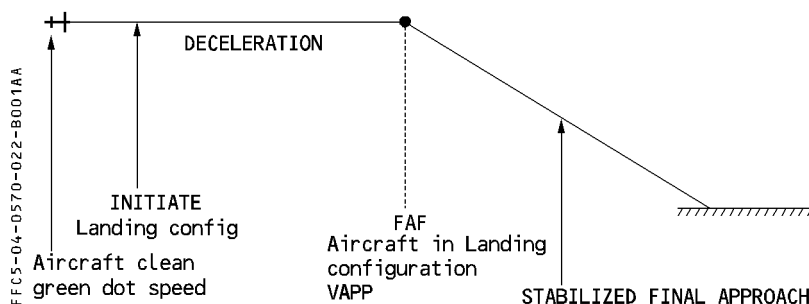
APPROACH SPEED TECHNIQUE

Airbus recommends the stabilized approach procedure to perform non precision approaches.

STABILIZED APPROACH

The “stabilized approach” brings the aircraft to intercept the final descent path in the landing configuration and at VAPP.

Managed speed is best for the stabilized approach and VAPP should be inserted as a speed constraint at the final approach fix.



	FLIGHT PHASE RELATED PROCEDURES		4.05.70	P 23
	APPROACH		SEQ 110	REV 13

GPS APPROACH

GPS OVERLAY APPROACH WITH REFERENCE NAVAIDS SERVICEABLE

In a GPS overlay approach, the aircraft is laterally guided along the trajectory of a published VOR or VOR/DME or NDB or NDB/DME approach using the GPIRS position data instead of radio navaid data. The GPS overlay approach is flown in GPS PRIMARY navigation mode with radio navaids tuned and raw data displayed on the ND.

Use the procedures for non precision approach (approach is stored in the database and navigation accuracy check positive). In addition apply the following recommendations :

- CHECK that GPS PRIMARY is displayed for the FMGC to be used.

● **If during the approach, GPS primary is lost, or the ECAM warning “FM/GPS POS DISAGREE” is triggered :**

- CHECK raw data

● **If the raw data are correct :**

- CONTINUE the approach

● **If the raw data display excessive deviations :**

- SELECT HDG-V/S or TRK-FPA using navaid raw data for guidance

GPS STAND-ALONE APPROACH OR OVERLAY APPROACH WITH REFERENCE NAVAIDS UNSERVICEABLE

In a GPS stand-alone approach the aircraft is laterally guided along the trajectory using the GPIRS position data solely. The waypoints of the trajectory are purely referenced in coordinates (WGS84 or equivalent) and are not defined by means of radio navaids. The GPS stand-alone approach is flown in GPS PRIMARY navigation mode without the assistance of radio navaids. Use the procedure for non precision approach (managed non precision approach, see next page). In addition, apply the following recommendations :

Before the flight, check the availability of the GPS Primary function at destination using the GPS Predictive page on MCDU, or using an approved ground based RAIM prediction software.

- GPS PRIMARY must be displayed on both MCDUs before starting the approach.

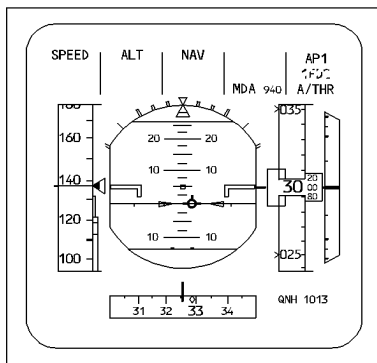
● **If during the approach, GPS PRIMARY is lost on one side :**

- Use the other side

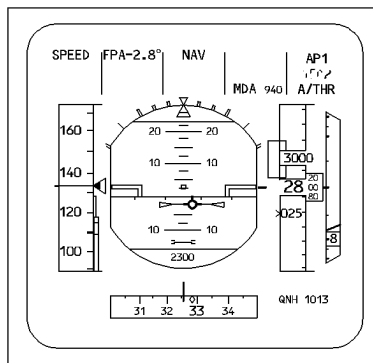
● **If GPS PRIMARY is lost on both sides or if “FM/GPS POS DISAGREE” ECAM warning is triggered during the approach :**

- PERFORM a Go around

NON PRECISION APPROACH - MANAGED LATERAL SELECTED VERTICAL GUIDANCE

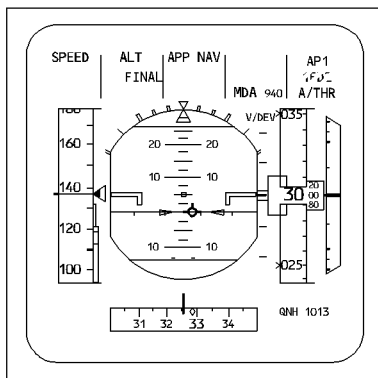


PF in intermediate approach, FPD and FPV selected. The pilot did not press the APPR pushbutton, the V DEV scale is not displayed. (If GPS is installed, the V DEV scale is displayed when the approach phase is active).

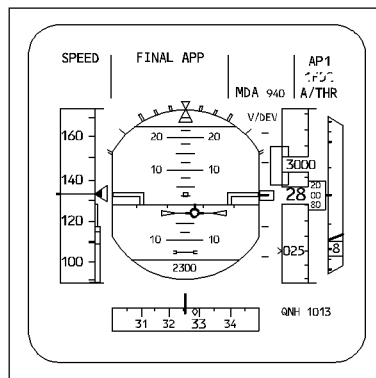


PF when established on final path: the vertical guidance is the final path angle as selected by the pilot (FPA), the lateral guidance is computed by the FM (NAV).

NON PRECISION APPROACH - LATERAL AND VERTICAL MANAGED GUIDANCE

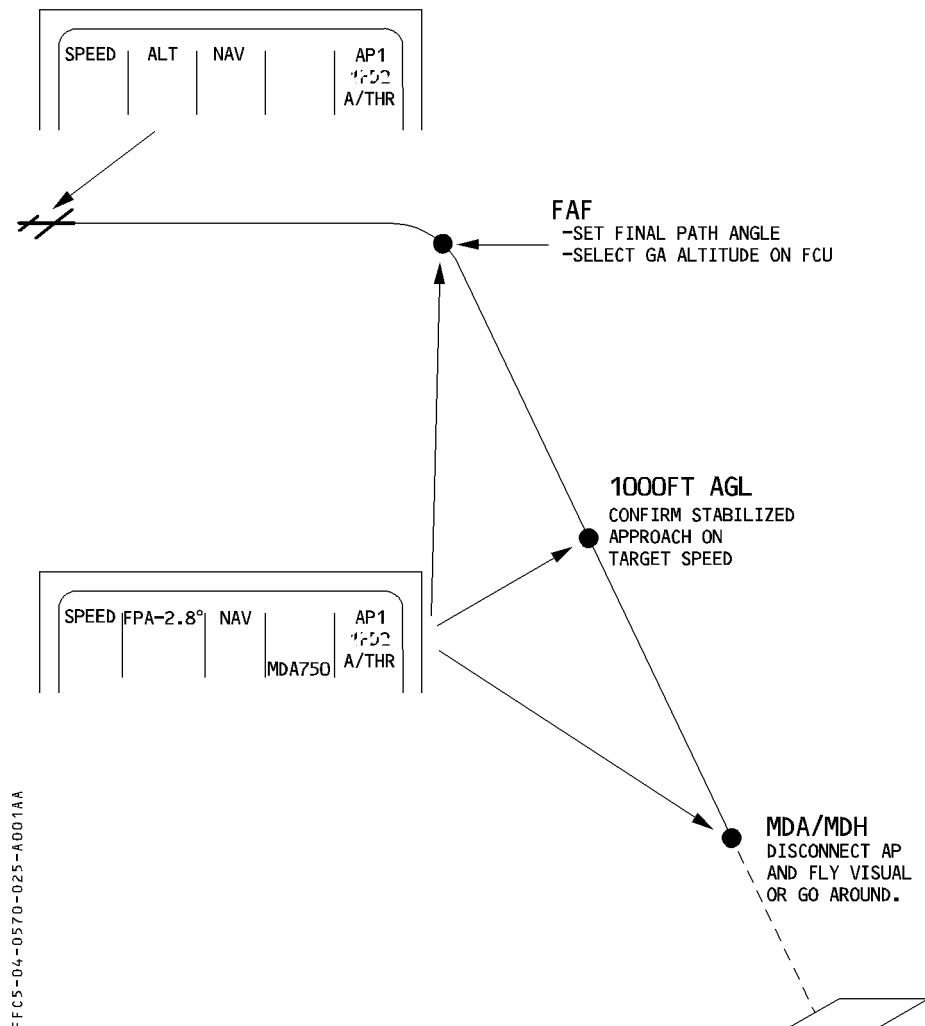


PF in intermediate approach, FPD and FPV selected. The pilot has pressed the APPR pushbutton, the FINAL managed mode is armed, the V DEV scale is displayed. (If GPS is installed, the V DEV scale is displayed when the approach phase is active). Each V DEV graduation indicates 100 feet, the rectangle shows the computed vertical path versus the aircraft position.



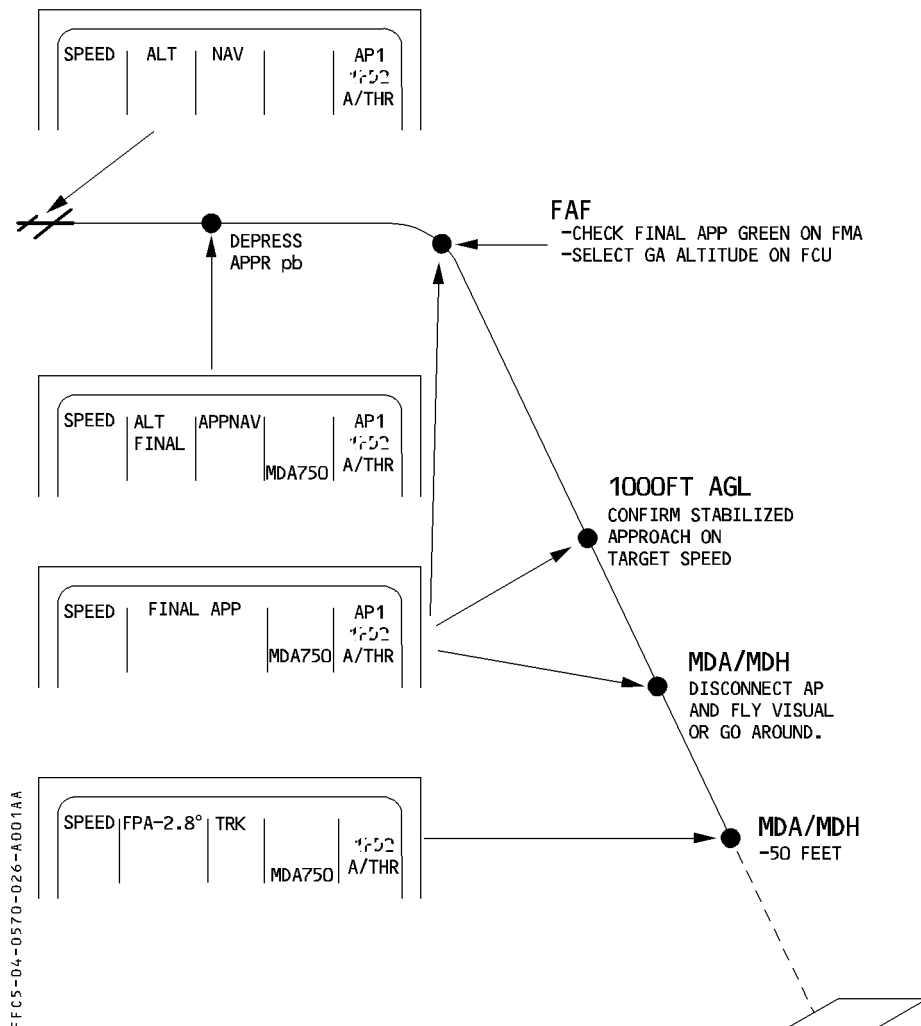
PF when established on final path: the lateral and vertical guidances are managed by the FM (FINAL APP).

NON PRECISION APPROACH PROFILE - MANAGED LATERAL AND SELECTED VERTICAL GUIDANCE



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NON PRECISION APPROACH PROFILE - LATERAL AND VERTICAL MANAGED GUIDANCE



CAUTION

When FINAL APP NAV modes are engaged, the AP/FD will disengage at MDA/MDH minus 50 feet (if entered) or Missed Approach Point whichever comes first. The FDs will revert to basic modes (HDG/V/S or TRK/FPA).

	FLIGHT PHASE RELATED PROCEDURES		4.05.70	P 27
	APPROACH		SEQ 001	REV 08

SELECTED NON-PRECISION APPROACH

The non precision approach is flown in selected modes (TRK-FPA or HDG-V/S) when

- * the approach is not stored in the database or
- * GPS PRIMARY is lost and the navigation accuracy is negative.

INTERMEDIATE APPROACH

Procedure

- USE TRK-FPA mode
- SELECT ND in the ROSE VOR mode
- KEEP the autothrust active
- USE managed speed

FINAL APPROACH

Upon reaching the final approach fix

- SELECT a final approach track on the FCU
- SELECT an FPA (flight path angle) to the final descent path angle
Anticipate the selection of FPA to smooth the interception of the final path.
- SELECT a go around altitude on FCU.
- USE raw data to monitor aircraft position and flight path.
- AT MDA/MDH

● If visual references are acquired

- DISCONNECT the autopilot and continue the approach visually.

● If visual references are not acquired

- INITIATE a go around

If the aircraft has arrived at MDA/MDH prior to reaching the missed approach point, a level off may be performed while searching for visual reference.

- At MAP at the latest, go around.

 FLIGHT PHASE RELATED PROCEDURES APPROACH	4.05.70 P 28	
	SEQ 001	REV 13

LOC APPROACH TYPE

- SELECT the LOC pushbutton in intermediate approach, to arm the LOC mode.
- SELECT the ND in ROSE ILS mode.

● Upon reaching the final approach fix :

- MONITOR LOC engagement.
- SELECT the FPA to the final descent path angle.

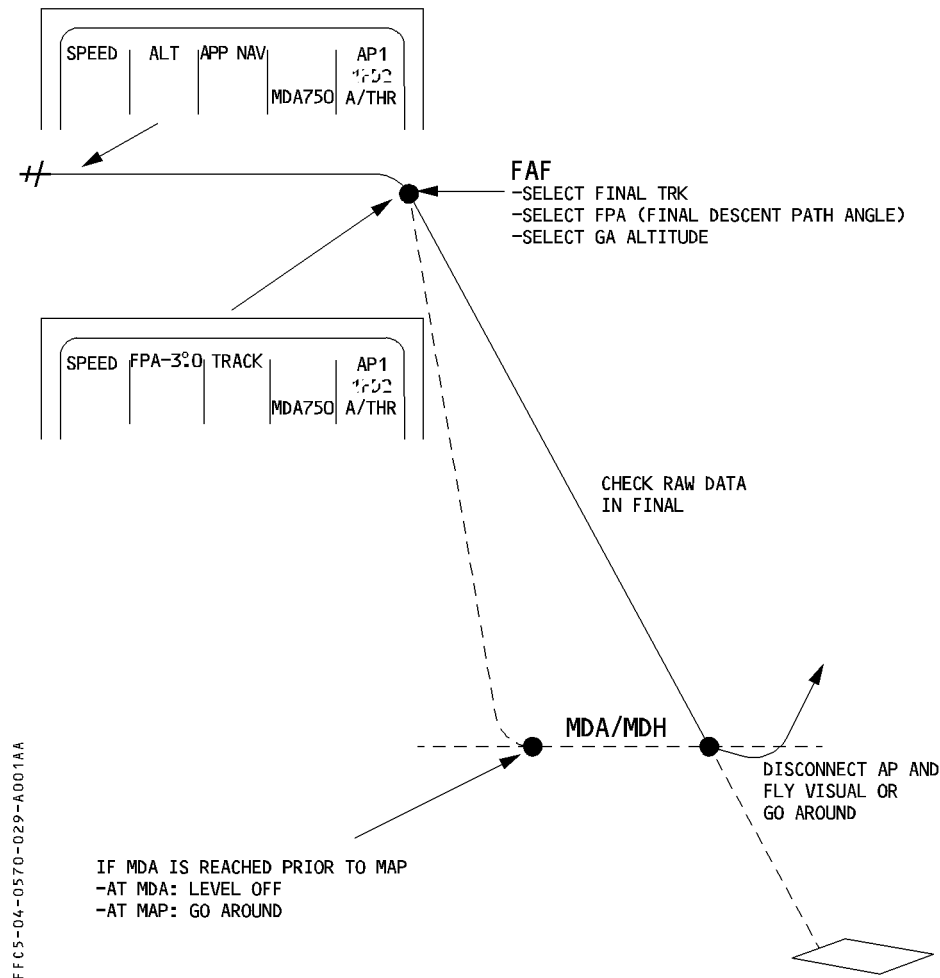
Note : *In case of a dual Radio Altimeter (RA) failure, the LOC pushbutton can be used to arm the LOC mode, as it does not depend on the RA signal.*

NON DIRECTIONAL BEACON (NDB) APPROACH TYPE

When the flight plan calls for an NDB approach, the system automatically tunes the ADF only when the aircraft is passing the first fix of the approach. Therefore, it is convenient to manually tune the ADF earlier (before activating the approach phase).

- Proceed, as described above, using selected modes.

NON PRECISION APPROACH PROFILE - SELECTED GUIDANCE



FFC5-04-0570-029-A001AA

virgin atlantic A340-600 <i>Flight Crew Operating Manual</i>	FLIGHT PHASE RELATED PROCEDURES		4.05.70	P 30
	APPROACH		SEQ 001	REV 07

CIRCLING APPROACH

If the pilot chooses not to follow the SOP procedure, select both FDs OFF and fly visually.

If the runway in use is not the flight plan runway, the ground speed and the VAPP will not be computed properly, and the speed on final may be higher than expected. Therefore, select the approach speed directly on the FCU.

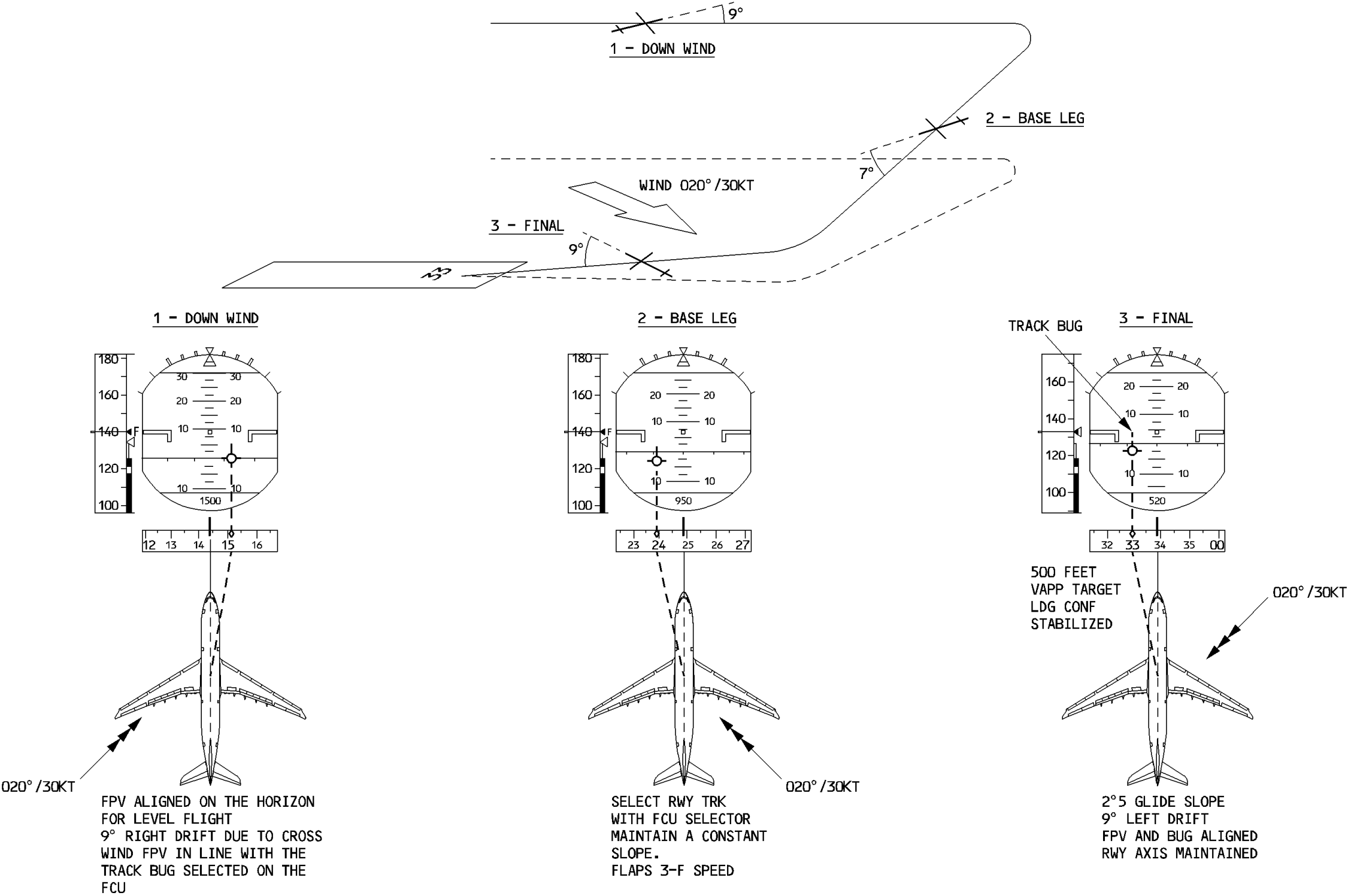
VISUAL APPROACH

When flying visual, the pilot may select an appropriate STAR and RWY in use on the MCDU.

The ND displays the extended runway centerline five nautical miles out from the runway. This helps the pilot during the final turn.

Along with the FPV, the PFD displays a track bug that may help the pilot to fly the downwind leg and intercept final. The FPV should be flown laterally with reference to the track bug.

VISUAL APPROACH PROFILE



FLC3-U4-U3-U2-U1-AUU1AA