

FMGS INITIALIZATION

CHECKING THE CLOCK DATE

- CHECK the CLOCK DATE and ADJUST if necessary.

If the date in the active database does not match the clock date, the MCDU displays “CHECK DATA BASE CYCLE”. If this message appears, check the period of validity in the second database and select it, if required.

A340-300		
1L	ENG	1R
	CFM56-5-C2	
2L	ACTIVE DATA BASE	2R
	28NOV-25DEC AB49012001	
3L	SECOND DATA BASE	3R
	←26DEC-22JAN AB49012001	
4L	STORED	4R
	02RTES 00RWYS	
5L	CHG CODE 11WPPTS 00NAVS	5R
	[] DELETE ALL→	
6L	IDLE/PERF	6R
	+0.0/+0.0	

CAUTION

Cycling the database deletes the active and secondary flight plans. Do not cycle it while airborne because doing so will delete the flight plan, eliminate all speed predictions, and blank the ND. If the aircraft is in managed speed, Green Dot becomes the speed target.

CHECKING stored WAYPOINTS, NAVAIDS, RUNWAYS, or ROUTES

- PRESS the DATA key.
- PRESS the next page key [→] .
- SELECT, successively, as required :
 - STORED WAYPOINT
 - STORED NAVAIDS
 - STORED RUNWAYS
 - STORED ROUTES
- CHECK the contents of each of these data storages and DELETE items, as appropriate.

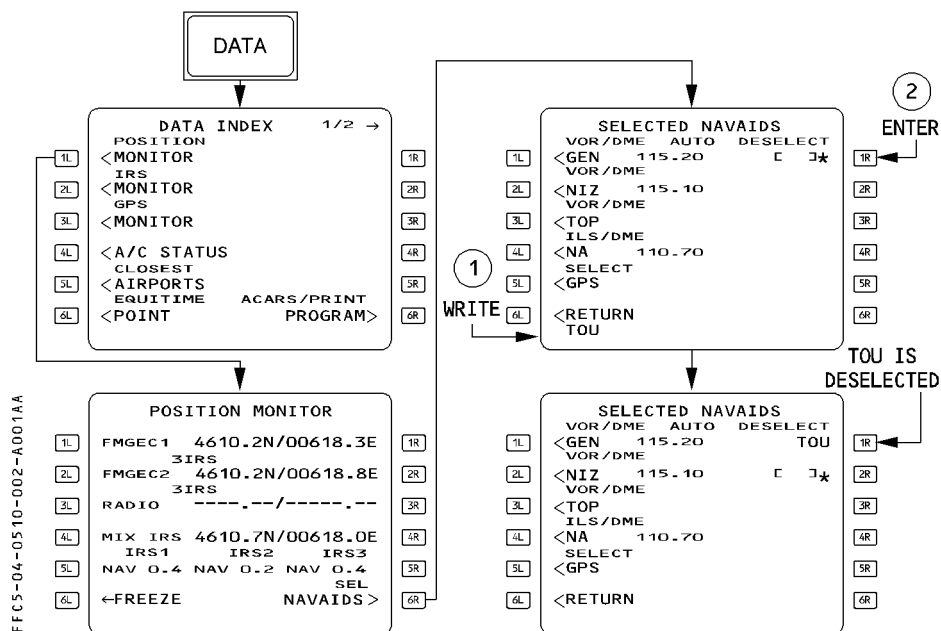
FFCS-04-0510-001-A001AA

NAVAIDS DESELECTION

If NOTAMS indicate that selected navaids are unreliable or unserviceable, deselect them as follows :

- PRESS the DATA key
- SELECT THE POSITION MONITOR page
- SELECT the SELECTED NAVAIDS page
- Under “DESELECT”, INSERT the navaid identifier into the brackets.

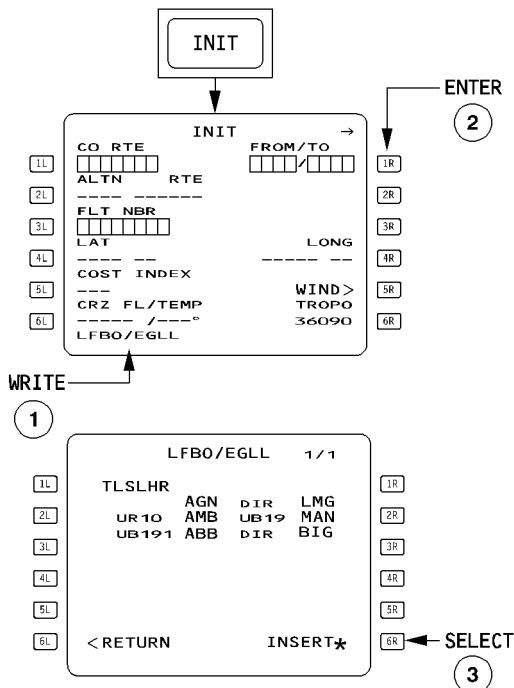
The pilot can make only six deselections.



FLIGHT PLAN INITIALIZATION

– Follow SOP instructions when the route is a company route stored in the database.

● If the company route is unknown, proceed as follows :



– WRITE a “FROM/TO” city pair, and ENTER it

– If one or more company routes run between the cities, the ROUTE SELECTION page appears and defines them.

– INSERT the preferred company route

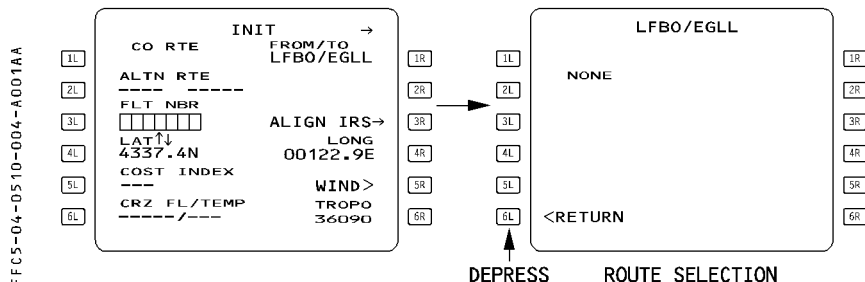
● If the database does not contain a company route :

The flight plan will be constructed manually :

- PRESS the INIT key
- ENTER a city pair in the FROM/TO field.

The ROUTE SELECTION page comes up with "NONE"

- SELECT RETURN [6L] key then construct the flight plan manually

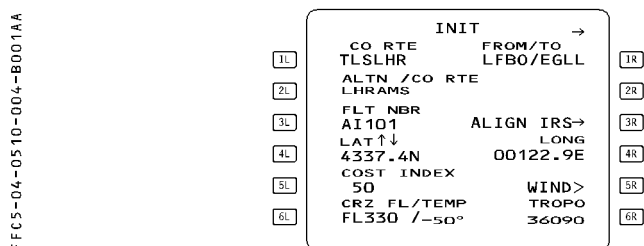


If waypoints, navaids or airports are not in the nav database, the pilot must define and store them manually, using the data “stored” function.

ALIGNING IRS

- The pilot can enter latitude with N or S preceding or following the value (for example, N4350.5 or 4350.5N), and longitude with E or W preceding or following the value (for example, E00364.5 or 364.5E, W11020.3 or 11020.3W).

Leading zeros may be omitted.



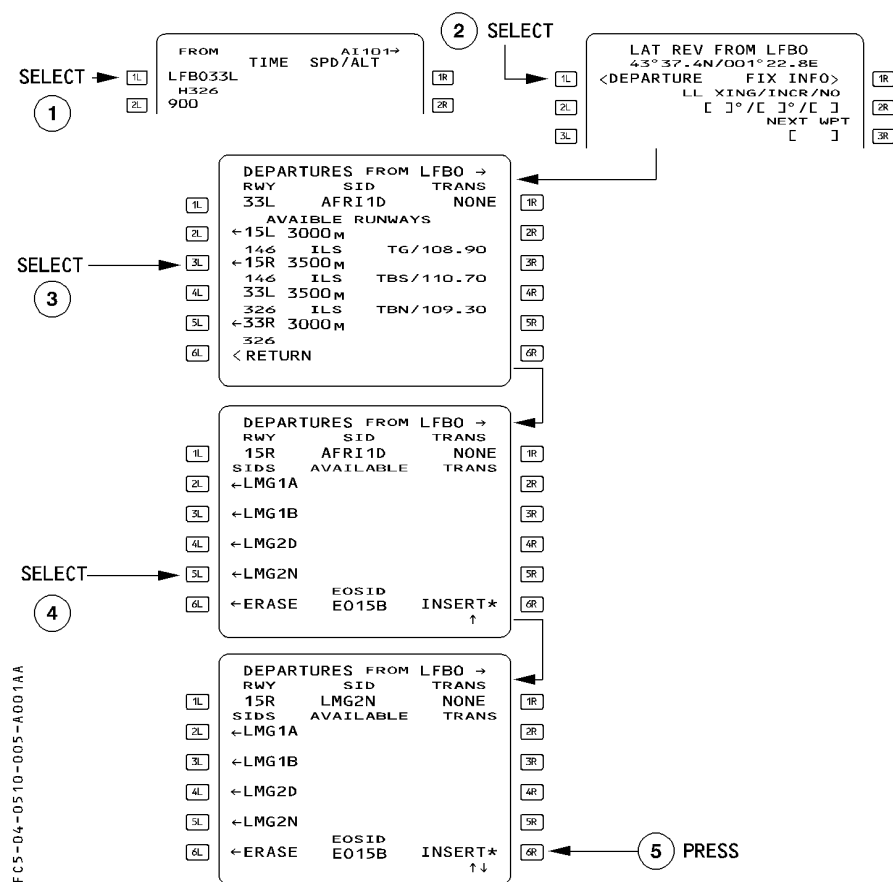
- If the airport reference point is modified after the completion of the alignment, the MCDU displays the message "RESET IRS TO NAV". During stop over, it should be considered as a reminder for a quick realignment.

● If the “RESET IRS TO NAV” message comes up later :

- Check the latitude and longitude shown on the INIT A page against the position of the IRSs in NAV MODE on the IRS pages (accessed through the IRS MONITOR page).
- If these positions differ, RESET the ADIRS CDU mode by switching the selector switches OFF and back to NAV within five seconds. (All three IRSs must be switched OFF and then all three switched to NAV.)

LATERAL FLIGHT PLAN

SELECTING A DEPARTURE



You may use the [→] and [←] keys to gain access to the listings of runways, SIDs, and transitions.

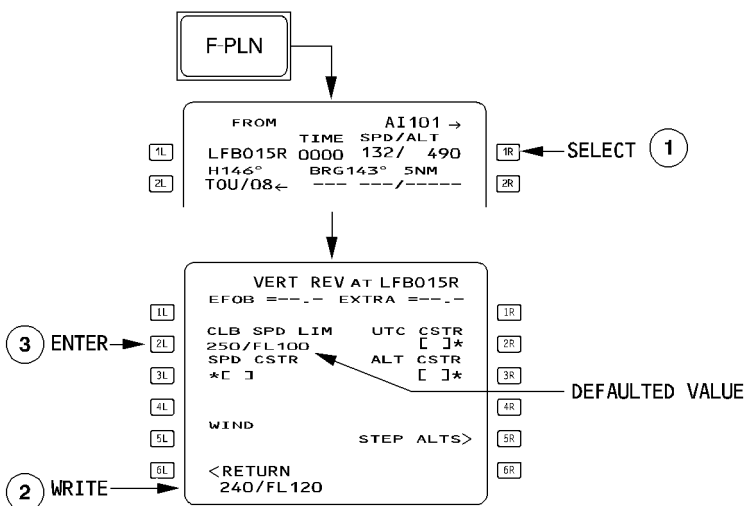
virgin atlantic A340-600 <i>Flight Crew Operating Manual</i>	FLIGHT PHASE RELATED PROCEDURES COCKPIT PREPARATION	4.05.10 SEQ 001	P 6 REV 07
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Procedure

- PRESS the F-PLN key on MCDU
- SELECT the DEPARTURE prompt [1L] key
- SELECT the RWY in USE, SID and TRANS
- CHECK the resulting temporary F-PLN
- If it is correct, INSERT it using [6R] key.
- If it is not correct, ERASE it using [6L] key.

VERTICAL FLIGHT PLAN

– ENTERING/MODIFYING A SPEED LIMIT



- PRESS the F-PLN key on MCDU
- SELECT the VERTICAL REVISION at FROM waypoint
- WRITE a new speed limit/altitude and ENTER.

The pilot can insert one climb speed limit and one descent speed limit into the vertical flight plan, or modify or clear the limits that are already in it.

The speed limit is defined by a speed and an altitude (for example, 230/9000), which means that the managed speed target will be limited by the speed limit when the aircraft flies below the specified altitude.

250 knots at 10,000 feet is the default speed limit in the vertical flight plan in both climb and descent.

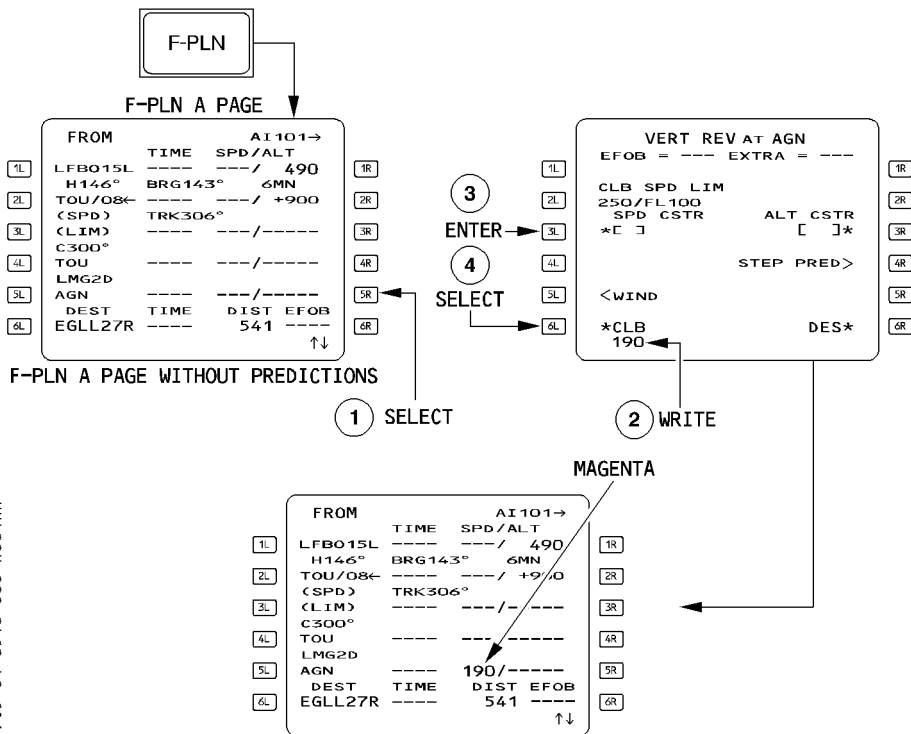
The vertical revision page presents the climb speed (CLB SPD) limit if the revised waypoint belongs to a SID or is between departure and top of climb.

The vertical revision page shows the descent speed (DES SPD) limit if the revised waypoint belongs to a standard terminal arrival route (STAR) or is between top of descent and destination.

It can be deleted by a clear action, field reverts to brackets. It can also be cleared directly on the F-PLN A page by clearing the SPD LIM pseudo waypoint.

FFCS-04-0510-007-A001AA

ENTERING A SPEED CONSTRAINT



Procedure

- PRESS the F-PLN key on MCDU
- SELECT the VERT REV page at revised waypoint
- WRITE the speed constraint value into the scratchpad and ENTER it in 3L.
- INSERT the constraint using the appropriate *CLB or DES* prompt when displayed. If CLB and DES are not displayed, insertion occurs when the value is entered in 3L.

The system displays the climb (CLB) or the descent (DES) prompt at [6L] or [6R] when the predictions are not yet available or when the waypoint is part of the cruise phase as originally defined.

When predictions are not yet available, the constraints are displayed on the F-PLN A page in magenta.

When predictions are available, the speed constraint is highlighted by a star (*).

* If the predicted speed matches the constraint, the star is magenta.

* If the prediction is that the aircraft will miss the speed constraint, the star is amber.

If a speed constraint cannot be met (by more than 10 kt), the FMGS generates the message “SPD ERROR AT WPT XX”.

The pilot or the database may assign speed constraint to any waypoint in the climb or the descent phase except the FROM, origin, or destination waypoints, and any pseudo waypoints.

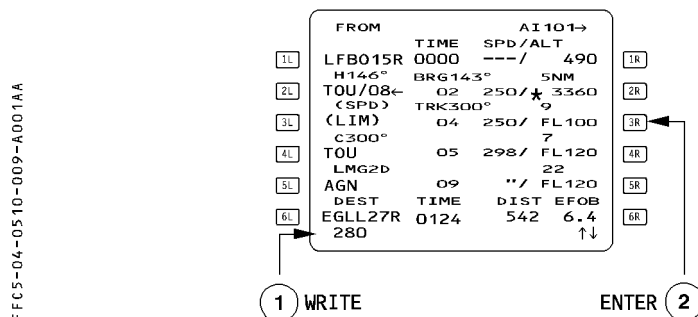
When a speed constraint is assigned to a waypoint, the constraint will limit the managed speed target as follows :

- In takeoff or climb phase until you pass the constrained waypoint.
- In descent and approach phase, after passing the constrained waypoint.

Speed constraints are observed by the FMGS when NAV mode and speed managed are active.

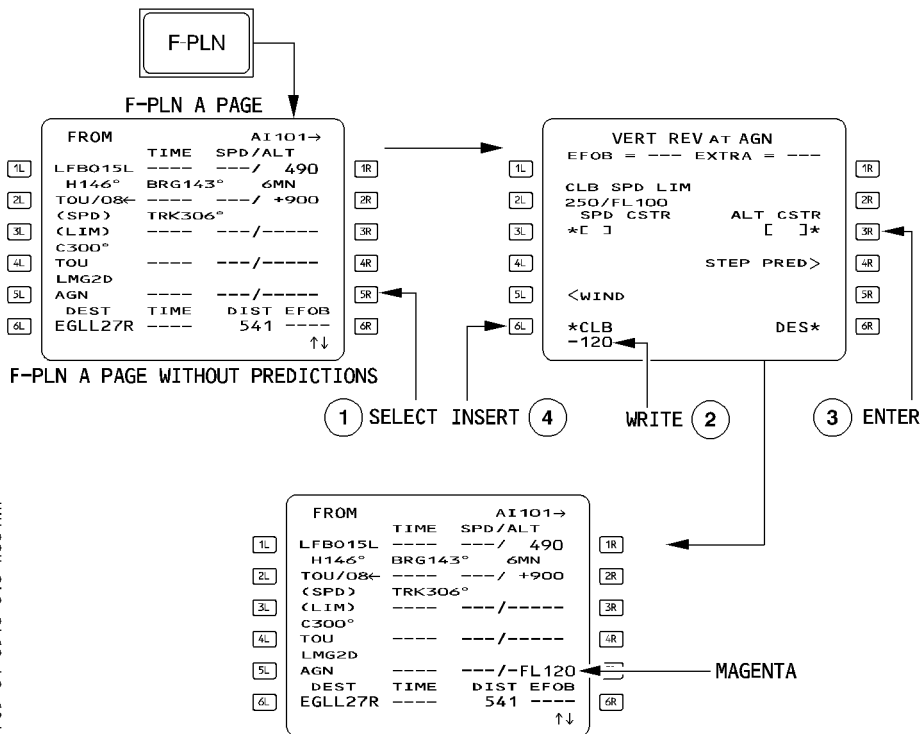
ENTERING A SPEED CONSTRAINT THROUGH F-PLN A PAGE

You may also enter a speed constraint through the F-PLN A page.



Use the CLR key to delete them directly from the flight plan page, as well. However if there is also an altitude constraint assigned at that point, the clear action deletes it too.

ENTERING AN ALTITUDE CONSTRAINT



FFC5-04-0510-010-A001AA

Procedure

- PRESS the F-PLN key on MCDU
- SELECT the VERT REV page at the revised waypoint
- WRITE an altitude constraint into the scratchpad and ENTER it in 3R.
- INSERT the constraint using *CLB or DES* prompt when it is displayed. Otherwise the value is inserted when it is entered in 3R

*The system displays the *CLB or DES* prompt when the predictions are not yet available or when the waypoint is part of the cruise phase as originally defined.*

Note : The altitude constraints must be entered in feet AMSL, whatever the pressure reference is (QNH or QFE).

The pilot or the database may assign an altitude constraint to any waypoint in the climb or descent phases except the FROM, origin, or destination waypoints, or any pseudo waypoint.

An altitude constraint may be defined as an “at”, an “at or above”, or an “at or below” constraint. In certain procedures, the database may define an altitude constraint as a window in which the aircraft should fly.

- Enter “AT” constraints with no sign.

Enter “AT or ABOVE” constraints preceded by a + sign (+FL 130, for example).

Enter “AT or BELOW” constraints preceded by a – sign (–15000, for example).

Use four digits when entering altitude. Include the lead zero (0500 feet, for example).

For flight level, enter a two- or three-digit number, with or without the letters “FL”. The lead zero is optional. (Examples : + FL120 or +120 ; –FL090 or –90 or –090)

- Enter the altitude value as either altitude or flight level ; the MCDU displays the selected value as an “ALT” or “FL,” as appropriate for the transition altitude.

The constraint must be higher than the thrust reduction altitude and lower than the cruise flight level. Once inserted in the flight plan, the altitude constraint (ALT CSTR) is displayed in magenta as long as predictions are not available.

When predictions are available, the altitude constraints are replaced by the predicted altitude at relevant waypoints highlighted by a star.

- * if the predicted altitude matches the constraint the star is magenta if the predicted altitude is missed (by more than 250 feet), the star is amber.

MAGENTA

FFC5-04-0510-011-A-001AA

FROM	TIME	SPD/ALT	AI101→
1L LFB015L	----	---/	490
H146°	BRG143°	5NM	
2L TOU/08←	----	+900	
(SPD)	TRK306°		
3L (LIM)	----	----	
C300°			
4L TOU	----	----	
LMG2D			
5L AGN	----	---/FL120	
DEST	TIME	DIST EFOB	
6L EGLL27R	----	541	↑↓

F-PLN A PAGE WITHOUT PREDICTIONS

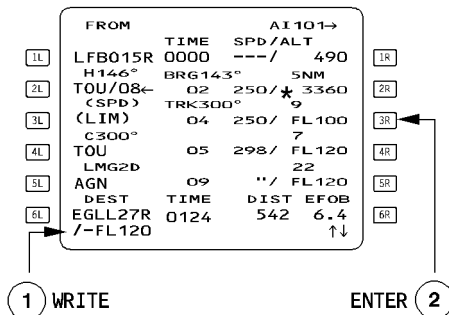
FROM	TIME	SPD/ALT	AI101→
1L LFB015R	0000	---/	490
H146°	BRG143°	5NM	
2L TOU/08←	02	250/★ 3360	
(SPD)	TRK300°		
3L (LIM)	04	250/ FL100	
C300°		7	
4L TOU	05	298/ FL120	
LMG2D		22	
5L AGN	09	"/★FL120	
DEST	TIME	DIST EFOB	
6L EGLL27R	0124	542 6.4	↑↓

F-PLN A PAGE WITH PREDICTIONS AND STARS

Entering an altitude constraint altitude F-PLN A page

The pilot may also enter an altitude constraint directly through the F-PLN A page.

When entering the value into the scratchpad do not forget the slash e.g. /-120 or /-FL 120. If the slash is omitted the value will be considered as a speed constraint if it is within the range value.



Use the CLR key to delete them directly from the flight plan page, as well. However, if there is also a speed constraint assigned at that waypoint, the clear action deletes it too.

The vertical revision page displays "ALT ERROR", value along with the difference between the constraint and the predicted altitude at the revised waypoint.

VERT REV AT LACOU	
EFOB=13.6	EXTRA=6.2
CLB SPD LIM	
250/FL100	
SPD CSTR	ALT CSTR
*L]	+FL180
	ALT ERROR
	-500
<RETURN	

FFCS-04-0510-013-A001AA

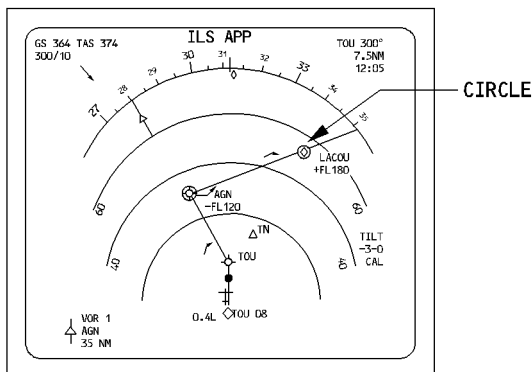
ND display

An altitude-constrained waypoint is marked by a circle (○) on the navigation display.

This circle is white when the guidance does not take the altitude constraint into account.

It is magenta if the guidance system takes the altitude constraint into account and predicts that it will be matched.

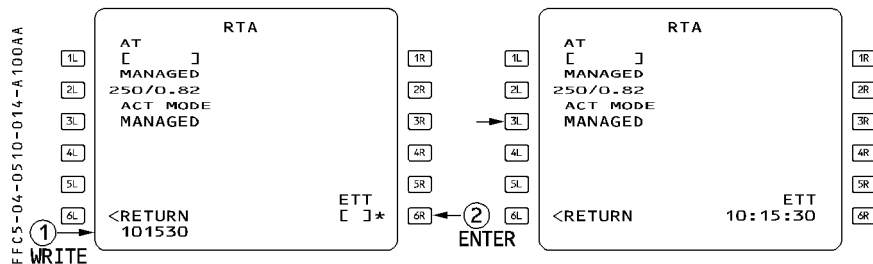
It is amber if the guidance system takes the altitude constraint into account and predicts that it will not be matched.



ENTERING AN ESTIMATED TAKEOFF TIME (ETT)

In preflight phase :

- SELECT the SEC F-PLN key on the MCDU.
- SELECT a VERT REV at any waypoint
- SELECT the Required Time of Arrival (RTA) prompt [2R] .
The MCDU displays the RTA page.
- WRITE the Estimated Takeoff Time.
The format is HHMMSS (entry of seconds is not mandatory).
- ENTER it in the 6R field



The display automatically reverts to the F-PLN A page.

If the aircraft has not taken off by the time entered as the estimated takeoff time, the MCDU displays the "CLK IS TAKE OFF TIME" message, meaning that the system will replace your estimated takeoff time with the actual time.

When beginning the takeoff roll, the system automatically adopts that clock time as the takeoff time.

If the origin airport is changed, or the clock time is invalid, the system automatically deletes the estimated takeoff time.

FLIGHT PLAN CHECK

– CHECK the EOSID on ND plan mode (yellow line).

Note : If the details of the EOSID require review, select the EOSID as a TMPY F-PLN and review it as TMPY. Then ERASE it.

SECONDARY F-PLN

Refer to 4.04.30 for details.

RADIO NAV

Whenever a navaid ident is correctly decoded in agreement with that published, no audio check is necessary.

Morse decoding is displayed on ND for VOR/DME, VOR/TAC, DME, ADF and on PFD for ILS.

Preferably use identifier for navaid entry.

If the ADF ident is not in the database, be sure to include a decimal point when tuning the frequency (e.g. 315 or 325.7).

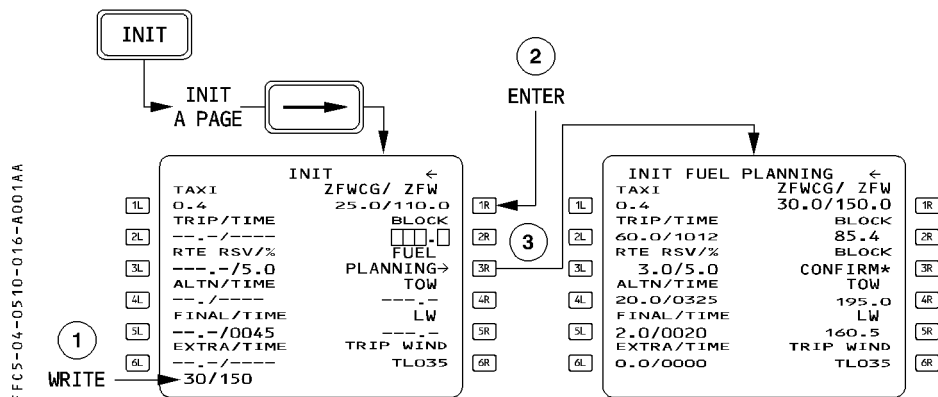
FFCS-04-0510-015-A001AA

RADIO NAV		
VOR1/FREQ	FREQ/VOR2	
TOU/117.7	117.7/TOU	
CRS	CRS	
[]	[]	
ILS /FREQ		
TBS/110.7		
CRS		
146		
ADF1/FREQ	FREQ/ADF2	
TN/378.0	415.0/T0E	
←ADF1BF0	BF0 ADF2→	

FMGS DATA INSERTION

GROSS WEIGHT INSERTION

The flight system must have a number for aircraft gross weight (GW) in order to perform all the performance computations.

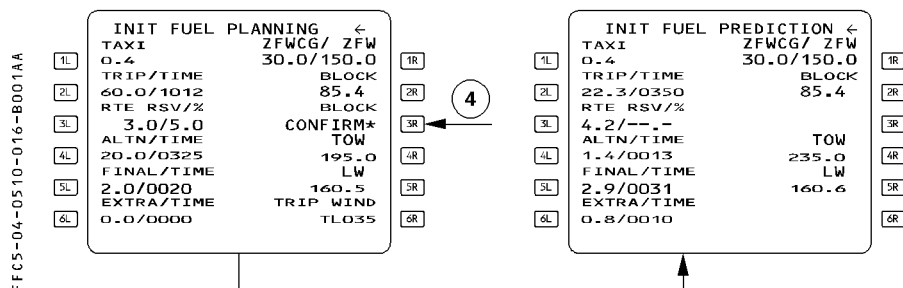


Procedure

- CHECK/MODIFY the ZFWCG
- ENTER a ZFW
- PRESS the FUEL PLANNING prompt.

The INIT B page displays the minimum block fuel required (XTRA = 0) for the given sector, and a BLOCK CONFIRM prompt is displayed.

If the minimum block fuel is suitable



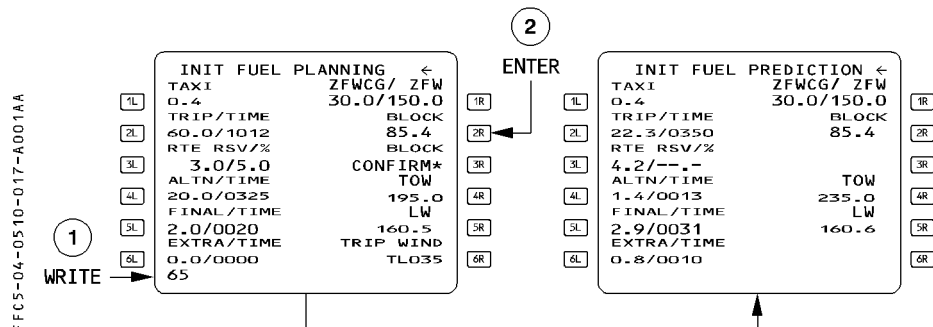
- PRESS the BLOCK CONFIRM prompt.

All predictions are available.

- PRINT the PREFLIGHT REPORT

The preflight report provides the crew with the predictions associated with this minimum fuel scenario.

If the minimum block fuel is not suitable



- APPLY the corrections to the minimum BLOCK FUEL according to the intended type of operation.

- ENTER the applicable BLOCK FUEL in 3R

All predictions are available.

- PRINT the PREFLIGHT REPORT

The preflight report provides the crew with the predictions associated with the fuel actually carried : this is the initial master document to monitor the progress of the flight.

- CHECK/MODIFY the TAXI FUEL

- CHECK/MODIFY the RTE RSV

	FLIGHT PHASE RELATED PROCEDURES		4.05.10	P 18
	COCKPIT PREPARATION		SEQ 001	REV 07

– CHECK/MODIFY the FINAL/TIME

Note : – As long as the final loadsheet is not available, the crew may insert the estimated ZFW/ ZFWCG in order to get fuel, time and altitude estimates.

The ZFWCG and ZFW must be updated with the final loadsheet.

- Insert the ZFWCG/ZFW/BLOCK fuel preferably after F-PLN completion. If inserted before F-PLN completion, the FMGC automatically recomputes the predictions at each F-PLN change, including changes in weight or wind. Thus F-PLN completion takes more time than normal.
- The system computes part of the characteristics speeds displayed on the PFD (VLS, F, S, green dot) from the ZFW and ZFCG entered by the crew on the MCDU (used by the fuel computer FCMC to compute the aircraft GW and CG). Therefore the crew must check carefully these data.

TAKEOFF WITH NO GROSS WEIGHT ENTRY - GROSS WEIGHT LOST BY THE FMGS

If a GW is not entered, or if the FMGS loses the number because of power interruption, managed speed will be available only for the takeoff phase, and then only if V2 has been inserted.

After engine start the MCDU displays "INITIALIZE WEIGHTS".

If the pilot does not respond, the following occurs :

- At takeoff, the speed reference system (SRS) mode remains active until the aircraft reaches acceleration altitude (ACC ALT) or engages another vertical mode.
- When the aircraft leaves the SRS mode, the target speed becomes the current speed and is no longer managed.

● **To regain normal speed target, the pilot must :**

- SELECT the appropriate climb speed on FCU and PULL out the knob.
- INSERT the FOB, if necessary, and GW on the FUEL PRED page.
- PRESS the SPD pushbutton on FCU to get managed speed target.

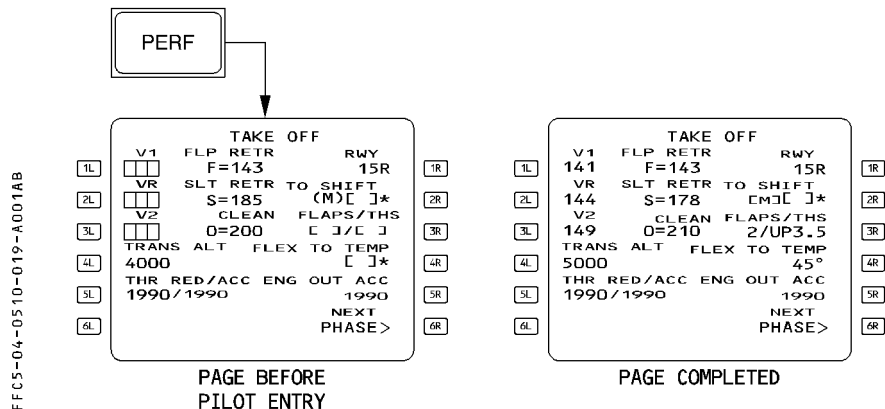
INSERTING GW AND CG AFTER ENGINE START

The pilot must enter the ZFW and ZFWCG on the INIT B page before engine start. If this is not done, the pilot can enter GW and CG after engine start on the FUEL PRED page.

- ACCESS to the FUEL PRED PAGE
- INSERT the gross weight. This allows performance computation.
- MODIFY if necessary the CG. The CG is defaulted to 25 %.

The FCMC (or the flight envelope part of the FMGC as backup) continuously updates and send the gross weight and center of gravity during the flight.

TAKEOFF DATA INSERTION



Procedure

- PRESS the PERF key on MCDU
- WRITE successively and ENTER V1, VR, V2 and takeoff shift.
- WRITE FLX TO TEMP.
(see procedure next page)
- CHECK/MODIFY the TRANS ALT* (transition altitude)
- CHECK/MODIFY the THR RED ALT* (thrust reduction altitude)
- CHECK/MODIFY the ACC ALT* (acceleration altitude)
- CHECK/MODIFY the ENG OUT ACC* (engine out acceleration altitude)
- CHECK V1, V2 on PFD**

*

Altitudes less than 400 feet above airfield elevation cannot be selected

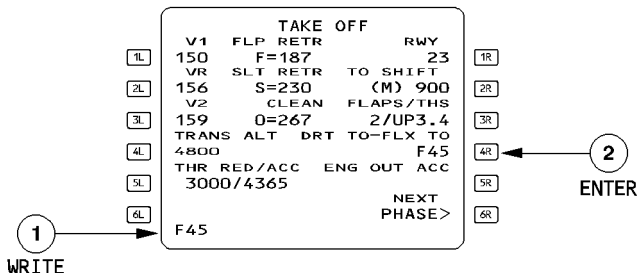
**

If the PFD does not display V2 at the top of its speed scale, check that at least one FD is ON

ENTERING A FLEX TEMPERATURE

- WRITE FXX (XX being 2 digits).
- ENTER the FLEX temperature using [4R].
- CHECK the thrust limit mode and N1 rating limit on the ECAM.

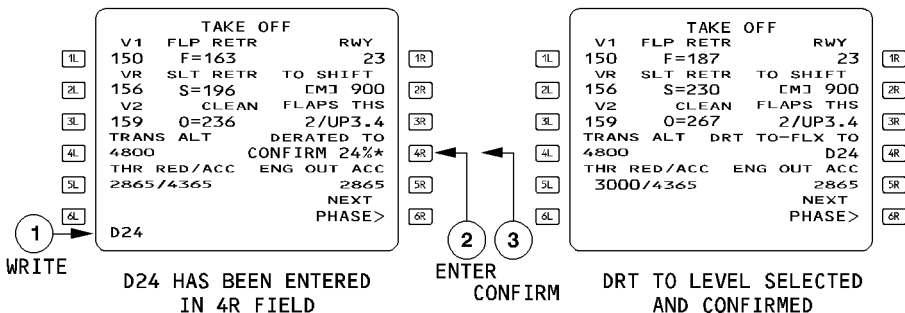
FFCS-04-0510-020-A102AA



ENTERING A DERATED LEVEL

- WRITE DXX (XX being 2 digits). Height derate levels are possible : 04, 08, 12, 16, 20, 24, 32, 40 %.
- CONFIRM the selection with the [4R] key.
- CHECK the thrust limit mode and N1 rating limit on the ECAM (e.g. D24 98,6 %).

FFCS-04-0510-020-B102AA

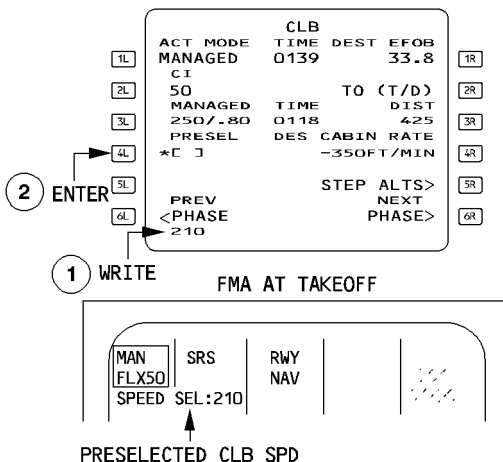


CLIMB SPEED PRESELECTION

If the managed speeds for the initial climb are not suitable, the pilot can preselect an appropriate climb speed on the "PERF CLB" page as long as the climb phase is not active.

The CLB SPD preselection applies when :

- ATC specifies an initial climb speed.
- The initial climb speed must be lower than normal because :
 - There are to be turns greater than 120° in the initial climb out.
 - Obstacle clearance or some other situation requires a high climb angle.
 - The airfield has a risk area to be cleared expeditiously (birds reported, for example).



FFC5-04-0410-021-A001AA

Procedure

- PRESS the PERF key on MCDU
- PRESS the NEXT PAGE on MCDU
- WRITE a climb speed and ENTER it in [4L]
- To revert to managed speed, select MANAGED by pressing [3L] key.

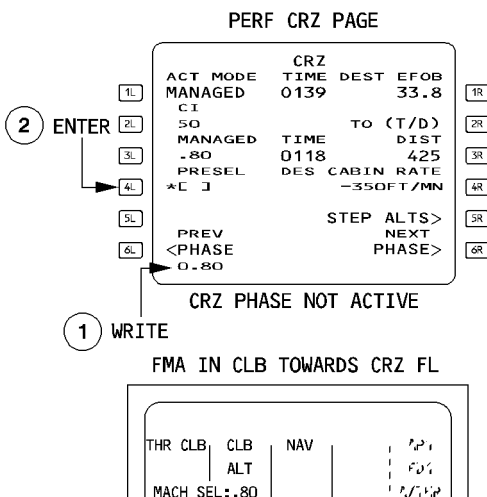
When the aircraft is transitioning into the climb phase, the preselected value becomes the target speed :

- The selected speed target is active.
- The primary flight display shows the target speed in blue.
- The speed window of the FCU displays the new speed or Mach number.

CRUISE MACH (SPEED) PRESELECTION

The pilot preselects a cruise Mach when it requires a Mach number other than the economy cruise Mach number.

When the aircraft transitions to the cruise phase, the speed target symbol goes to the preselected value and MACH (or SPD) becomes selected (blue target on PFD, target MACH shown in the speed/Mach window of the FCU).



FFCS-04-0510-022-A001AA

Procedure

- PRESS the PERF key on MCDU
- PRESS the NEXT PAGE key on MCDU until CRZ page is accessed.
- WRITE a cruise Mach (or speed) into the scratchpad and ENTER it in [4L] .
- To revert to managed speed, PRESS the [3L] key.

The pilot may modify the cruise Mach or speed on ground or in climb. When the cruise phase is active, the pilot cannot preselect a cruise Mach or speed.

ENTERING A HEADING/TRACK PRESET FUNCTION

The heading/track preset allows the pilot to preset a heading or a track for takeoff or goaround before he commands the aircraft to take up that heading or track (manual activation).

The flight crew can enter a heading or a track preset while the aircraft is on the ground and until takeoff.

Procedure

Before takeoff :

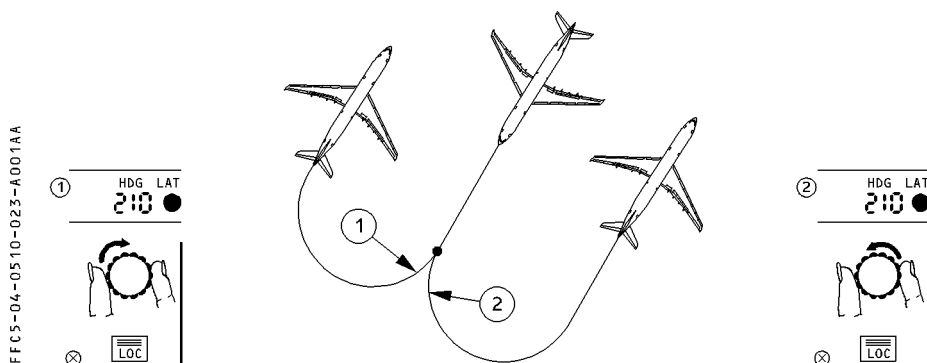
- SET the appropriate HDG or TRK in the FCU window.

This disarms the navigation mode and allows the runway mode to remain engaged after takeoff.

To activate the preset after takeoff :

- PULL the HDG/TRK selector knob.

The heading or track mode engages on the preset value.



The direction the pilot rotates the HDG/TRK selection knob usually determines the direction of the turn. A left rotation (decreasing heading) produces a left turn ; a right rotation produces a right turn.

However, when a heading has been preset before takeoff or a go-around, the direction of the turn will be such as to cause the shortest turn at the moment of engagement.

CANCELLING THE HEADING/TRACK PRESET FUNCTION

The pilot can cancel the heading preset by pushing the HDG/TRK selector knob back in again. This makes the navigation mode engage or arm.