

FS9: Wilco Airbus A320 CFM

Flight Tutorial Frankfurt - Wien (Beginner)



In chapter 1. all panels, panel parts and subpanels are shown together with its term used in the following tutorial. This enables the user to locate the knobs, switches and buttons to which the tutorial refers.

1. Displays / Panels:

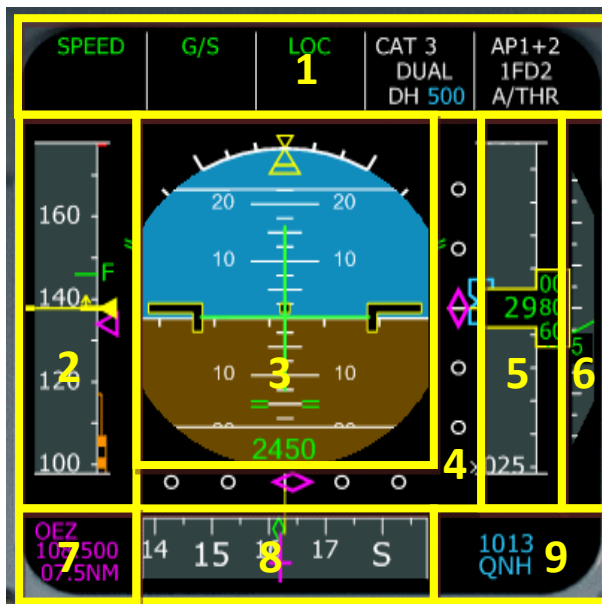
1.1. Main Panel



Picture 1: Main Panel

- 1 = PFD (Primary Flight Display)
- 2 = ND (Navigation Display)
- 3 = EFIS (Electronic Flight Information System)
- 4 = FCU (Flight Control Unit)
- 5 = EWD (Engine Warning Display)
- 6 = Brakes
- 7 = Landing Gear

1.2. PFD - Primary Flight Display



Picture 2: PFD – Primary Flight Display

- 1= FMA – Flight Modus Annunciator
- 2 = Speed Indicator
- 3 = Attitude Indicator – Artificial Horizon - Flight-Director Indicator
- 4 = Lateral and Vertical ILS Glide Path
- 5 = Radar Altitude Indicator
- 6 = Vertical Speed Indicator
- 7 = ILS Identification
- 8 = Heading and Track Indicator
- 9 = Air Pressure

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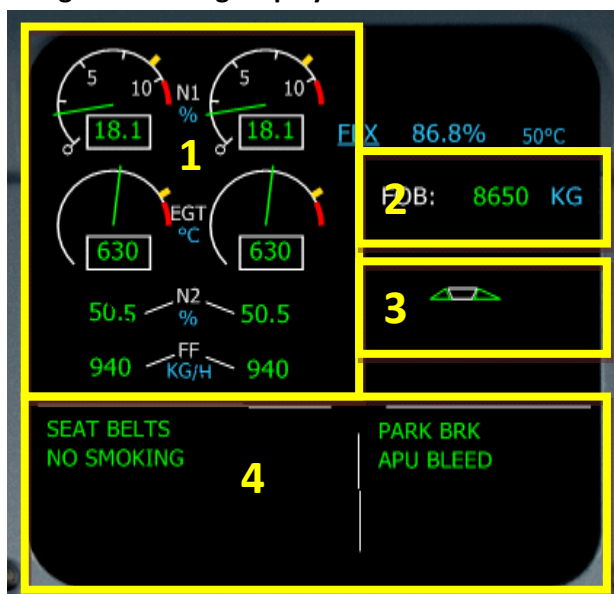
1.3. ND – Navigation Display



Picture 3: ND – Navigation Display

- 1= Speed (Ground Speed / True Air Speed) and wind (direction / speed)
- 2 = Next waypoint, degree, distance, time of arrival
- 3 = Lateral flight path

1.4. EWD - Engine Warning Display



Picture 4: EWD – Engine Warning Display

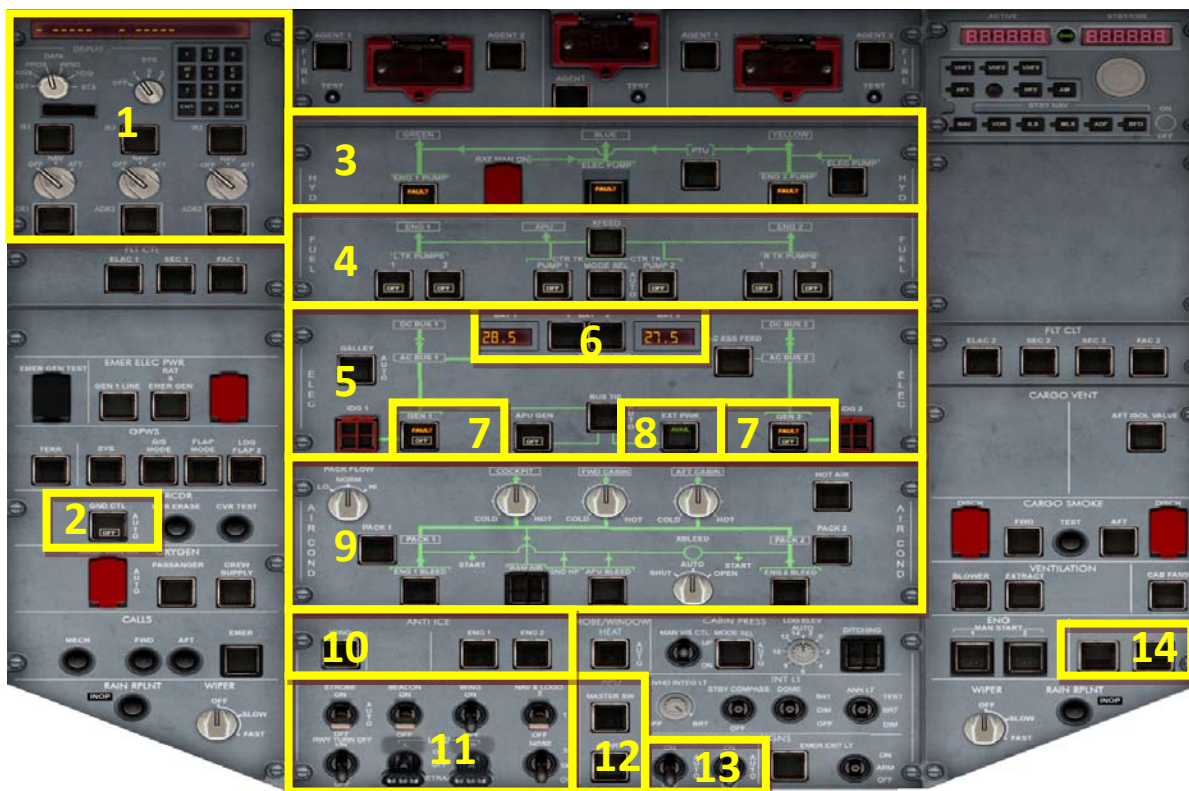
- 1= Engine Information
- 2 = FOB = Fuel on board
- 3= FLAPS Status
- 4 = Status Information, Start-Menu or Landing-Menu

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1.5. Overhead Panel



Picture 5: Overhead Panel

- | | |
|--|---|
| 1 = ADIRS - Panel | 9 = Air Condition Panel |
| 2 = Co-Pilot functionality switch | 10 = Anti-Ice Panel |
| 3 = Hydraulic Panel | 11 = External Lights |
| 4 = Fuel Panel | 12 = APU Master / APU Start (APU-Bleed = Air Con-Panel) |
| 5 = Electric Panel | 13 = „Fasten Seat Belt“ and „No Smoking“ switches |
| 6 = Batteries 1 and 2, Battery Voltage | 14 = Door switches |
| 7 = Generators 1 and 2 | |
| 8 = External Power | |

11 – 13 = Sub Panel “Lower Overhead Panel” available

1.6. FMGC - MCDU – Multifunction Control and Display Unit



Picture 6: MCDU

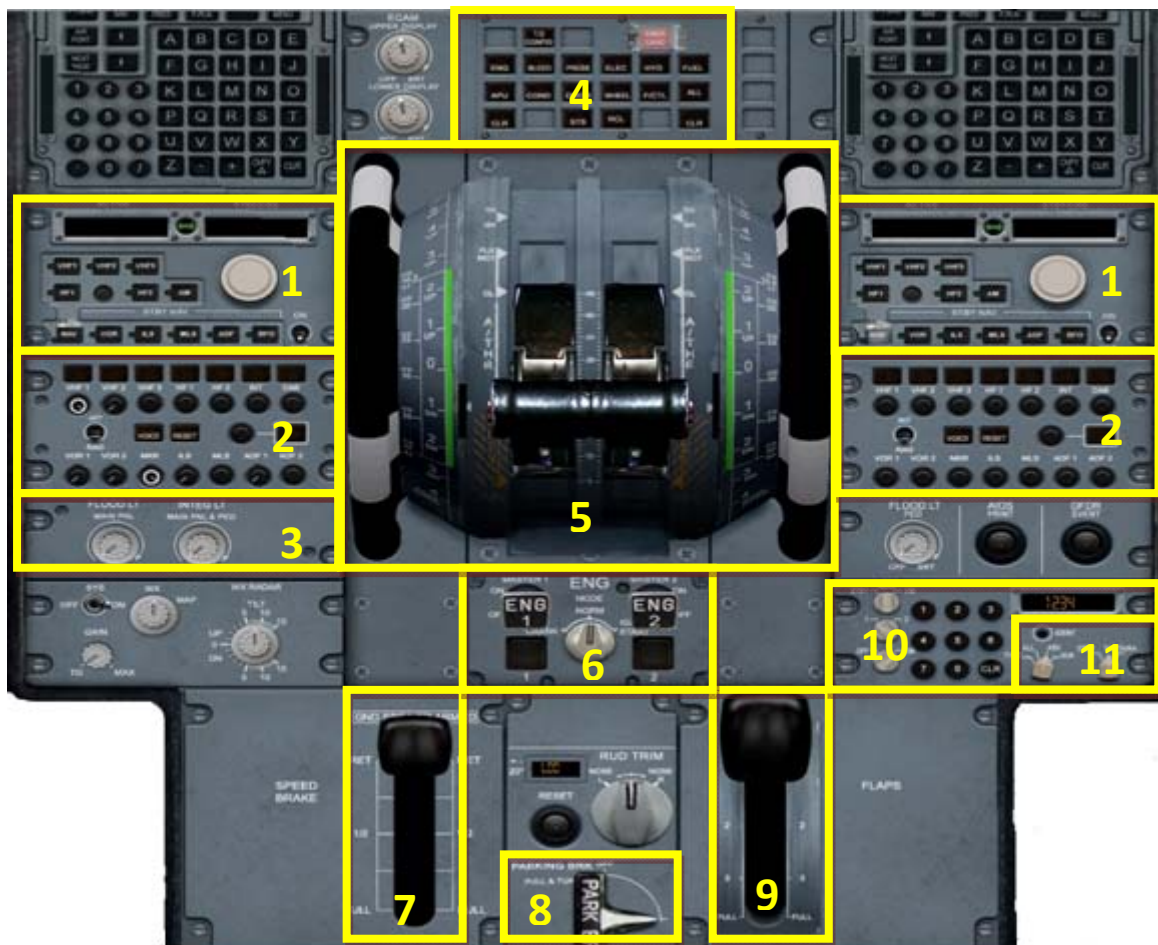
- | |
|--|
| 1 = Display |
| 2 = LSK 1-6L = Line Select Key 1-6 left |
| 3 = LSK 1-6R = Line Select Key 1-6 right |
| 4 = Scratch pad |
| 5 = Page keys |
| 6 = Keyboard (numeric) |
| 7 = Keyboard (alphabetic) |

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1.7. Pedestal



Picture 7: Pedestal

- 1 = Radio (sub-panel available)
- 2 = Audio
- 3 = Cockpit Panel Light
- 4 = ECAM Control (sub-panel available)
- 5 = Thrust Levers
- 6 = Engine Mode and Master (sub-panel available)
- 7 = Spoiler / Speed Brakes Lever
- 8 = Parking Brakes
- 9 = Flaps Lever (sub-panel available)
- 10 = Transponder
- 11 = TCAS - Traffic Alert and Collision Avoidance System

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1.8. Panel Click Spots (Ultimate Airbus A32x V2)



Picture 8: Click spots "Ultimate Airbus A32x V2"

2. General Information / Tips:

2.1. Documentation Wilco A320 CFM:

A lot of important information necessary for a beginner and his first flight with the WILCO Airbus A320 CFM is missing or scattered all over "Pilots Guide" the manual WILCO distributed with its software. The following manual therefore presents a description of a complete and successful beginner's tutorial flight with the WILCO A320.

2.2. Additional Information:

Users who want to get full and accurate information on this very complex product, its systems and functionality will find a lot of information in „Airbus 320 CFM Pilot Guide_UK“ (saved during installation in your FS-folder under Aircraft\feelThere PIC Airbus Manuals.

2.3. Pictures:

The following description of the tutorial flight and its steps refers to the previously mentioned pictures and terms so that it is easier to find the knobs, switches and buttons.

2.4. Procedure- and Checklist:

Based on the original Airbus A320 CFM procedure- and checklist one in content and sequence modified procedure- and check list has been prepared for the WILCO A320 CFM. This list is part of and used in this tutorial.

2.5. „Ultimate Airbus A32x V2“

This is a small add-on program developed by Steffen Froemter which makes it much easier to fly the WILCO A320 CFM because it adds a lot of smaller sub-panels and click spots as well as some automation (done by a Co-Pilot) to this Airbus. This manual is based on the assumption that the freeware (which can be downloaded from AvSim) is installed.

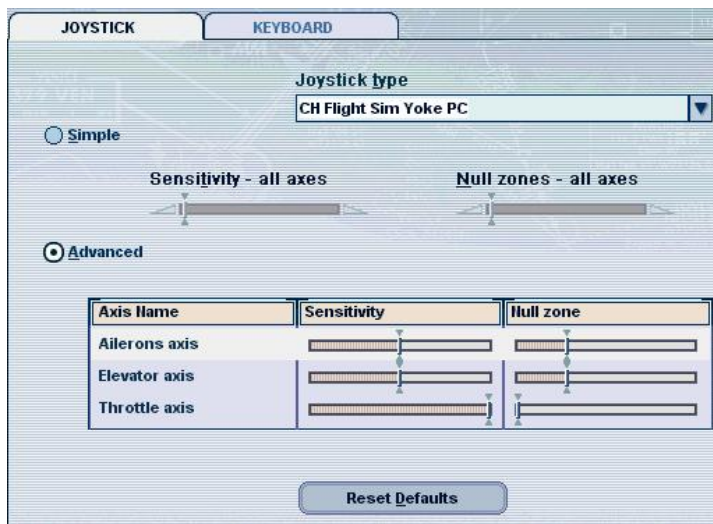
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2.6. Joy-Stick Settings:

To fly the WILCO A320 CFM in an optimal way a joystick (like in the real aircraft) should be used. The A320 CFM customized FS) settings (Options / Settings / Controls / Calibration) for the joystick in FS9 should look as follows:



Picture 9: FS9 Joystick Configuration

Additionally the following „Buttons / Keys” should be assigned to the joystick. This makes it p. e. during the critical takeoff phase much easier to handle certain functions as it is not necessary to take the hand off the joystick p. e. to perform certain actions using the mouse or the keyboard. The functions I recommend to assign to the joystick are brakes, views, autopilot, flaps, auto-throttle and gear. The joystick settings can be changed in FS9 under Options / Settings / Controls / Buttons/Keys.

2.7. Procedure- and Checklist:

This flight tutorial is based on the original procedure- and checklist from Airbus but modified in content and sequence to work with “WILCO Airbus A320 CFM” and that Steffen Froemter’s “Ultimate Airbus A32x V2” freeware is installed.

2.8. Tutorial Flight with Wilco A320 CFM:

The following flight goes from the airport of FRANKFURT/Germany (ID: EDDF) (ATIS – frequency = 118.025) to VIENNA/Austria (ID: LOWW) (ATIS-frequency = 121.725), as on some installations the tutorial flight mentioned in WILCO’s “Pilots Guide” is not available.

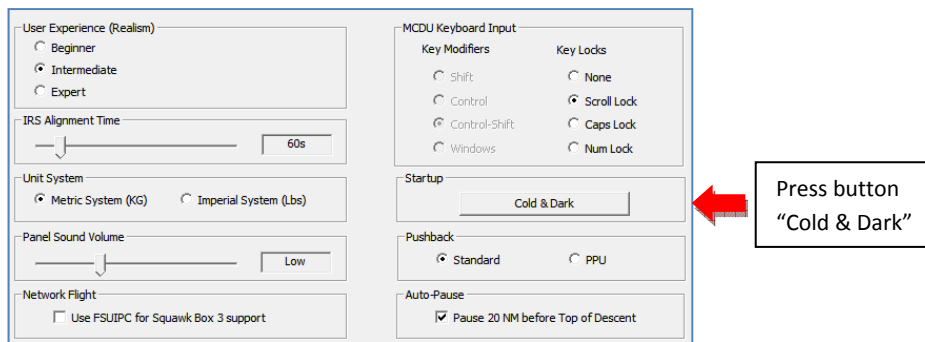
3. Flight Preparation:

3.1. FS9 A320 Configuration – Basic Settings

The A320 Configurator can be found in the start-menu under Programs / Wilco Publishing / Airbus Series 1 / Configurator and the settings should look as follows:

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Press button
"Cold & Dark"

Picture 10: FS9 A320 CFM Configurator - Configuration

Remark: Even if you set the Unit System to "Metric System (KG)" which is only relevant for weights, please do **not** also change the FS to the "Metric System". These will p. e. result in that all PFD altitude values are displayed in "m" whereas all the values in the FCU and MCDU will remain in feet.

3.2. FS9 A320 Configurator / Load Manager – Weight Settings

Using the Load-Manager section of the A320 Configurator the weight of passengers and freight can be set. For this flight the total weight should be set to app. 56.000 kg ZFW (Zero Fuel Weight = weight of the aircraft, including passengers and freight but excluding fuel).

3.3. Start FS9

Start FS9 with the following flight:

Aircraft: Airbus A320 CFM
Weather: Fair weather
Location: Frankfurt (EDDF) any gate
Time and Season: Day – any season

Sometimes it happens that the aircraft is not "dark & cold" because the WILCO software saves the configuration / situation status of the A320 CFM the last time you "left" the plane. In this case please set all knobs, switches and buttons to OFF so that no lights are ON (Batteries 1 + 2 should be set OFF last) - please see [Picture 15: Overhead Panel before switching OFF both batteries](#) -.

3.4. Fuel Planning:

Fuel planning normally is part of the flight preparation. WILCO offers a fuel planning tool (part of the A320 Configurator) but as this will be a very short flight (less than 400 miles) please fill the LEFT and RIGHT tanks only up to 80%. All other tanks will stay empty.

3.5. Flight plan Planning:

The flight goes from Frankfurt EDDF to Vienna LOWW and the following flight plan will be used:

EDDF – SULUS UZ650 VEMUT UZ37 BUDEX UZ205 VENEN - LOWW

It is a "real" one also used by commercial airlines. The terminology of the above flight plan is as follows: We are flying from Frankfurt to the first waypoint SULUS and then using the airway UZ650 until the waypoint VEMUT. From there we are using the airway UZ37 to BUDEX and then the airway UZ205 to VENEN which is the last waypoint before Vienna. The flight plan will also be entered into the MCDU using this terminology.

3.6. Navigation Database:

The original WILCO navigation database delivered with the Airbus A320 CFM is from 2006 and therefore outdated. In this tutorial we use an updated version of the navigation database which can be downloaded from <http://www.navigraph.com/www/fmsdata.asp> - but it is no freeware. Please use the "Wilco/Feelthere 737/777/ERJ, Legacy" version and after the download open the zip-file and run

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"WILCO_FT_xxxx.exe". The new navigation database will then automatically be copied into the right FS folder "FeelThere\Nd".

4. Tutorial Flight:

This tutorial flight describes all the phases of a flight from Frankfurt to Vienna, from the "cold & dark" situation in Frankfurt to the landing at Vienna, parking and securing the aircraft.

During the tutorial flight we are using the WILCO A320 CFM procedure- and checklist which is based on the original from Airbus. This list consists of a "running number" to identify the action to be performed and in which panel, panel-part or sub-panel the necessary knobs, switches and buttons can be found. The various panels available and their terms are explained in chapter 1. If additional explanations for the actions are necessary the row is marked in yellow and the explanations can be found below the respective procedure- and checklist using the "running number" as a reference.

Again using this tutorial the cockpit should be "dark & cold". After switching the batteries 1 +2 to ON it should look like in the Picture 5: Overhead Panel. If not switch off all lights on the Overhead Panel – the last ones to be switched off in this case should be the "Batteries 1 +2". Then start this tutorial with the preliminary cockpit preparation.

4.1. Preliminary Cockpit Preparation

PRELIMINARY COCKPIT PREPARATION						
NO.	PANEL			ACTION		REMARK
	TYP	PART	SUB-PANEL			
1	OVERHEAD			DOORS	OPEN (BOTH)	Left and right side of the aircraft
2	OVERHEAD	ELEC		BAT 1 + 2 (Batteries)	ON (BOTH)	
3	OVERHEAD	ELEC		EXT PWR (External Power)	ON	Becomes AVAIL at least after 1 minute
4	OVERHEAD	APU		MASTER SW	ON	
5	OVERHEAD	APU		START	ON	Becomes AVAIL after a short period
6	OVERHEAD	APU		BLEED	ON	Only after APU START is AVAIL
7	OVERHEAD			GND CTL (Co-Pilot Functionality)	ON	If Co-Pilot functionality should be used
8	OVERHEAD	ELEC		GEN 1 + 2 (Electric Generators)	PRESS	OFF should disappear
9	PEDESTAL	LIGHT		FLOOD LT (Cockpit Light)	AS RQRD	
10	PEDESTAL	LIGHT		INTEG LT (Cockpit Light)	AS RQRD	
11	PEDESTAL			PARKING BRAKE	CHECK IF SET TO ON	
12	PEDESTAL			FLAPS LEVER	CHECK POSITION = 0	
13	PEDESTAL			SPEED BREAK LEVER	CHECK RET. AND DISARMED	

8. **Electric Generators 1+2:** Even after switching the generators to ON the warning FAULT will remain, because they are not yet running. FAULT will automatically disappear when the engines are running up.

4.2. Cockpit Preparation – Part 1

COCKPIT PREPARATION						
NO.	PANEL			ACTION		REMARK
	TYP	PART	SUB-PANEL			
14	OVERHEAD	ADIRS		ADIRS	NAV	All 3 knobs
15	OVERHEAD		LOWER OH	EXT. LIGHTS (p. e. Nav Lights)	ON	Co-Pilot Functionality based on 7
16	OVERHEAD		LOWER OH	SIGNS (Seat Belts / No Smoking)	ON (BOTH)	
17	OVERHEAD	AIR COND		AIR CON PACK FLOW	NORM	
18	PEDESTAL	AUDIO		AUDIO SWITCH	AS RQRD	Press VHF1 and MKR = white ring
19	PEDESTAL		RADIO	SWITCH	ON	Make settings
20	PEDESTAL		RADIO	SET FREQUENCIES	SET	If ATC is used
21	PEDESTAL		RADIO	ATC CLEARANCE	OBTAIN	If ATC is used

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28. **RADIO – SET FREQUENCIES** – As the ATIS frequency for Frankfurt is 118.025 set the VHF1 frequency in STBY/CRS to 118.025 (outside the white knob you can select the figures from 118. to 136. and inside between .000 and .975). Then press on the green arrow to switch the previously entered value from STBY into ACTIVE. After a short period you will hear the ATIS information (weather, winds, pressure and runways in use etc.). After all necessary information has been obtained press the switch again.

4.3. FMGS / MCDU – Data Insertion

COCKPIT PREPARATION – FMGS/MCDU DATA INSERTION						
NO.	PANEL			ACTION		REMARK
	TYP	PART	SUB-PANEL			
22	MCDU	INIT 1		FROM / TO	ENTER	
23	MCDU	INIT 1		ALIGN IRS	PRESS	
24	MCDU	INIT 1		FLT NBR (Flight Number)	ENTER	
25	MCDU	INIT 1		CRZ FL (Cruise Flight Level)	ENTER	
26	MCDU	INIT 2		ZFWCG/ZFW	ENTER	Double click for computed data
27	MCDU	INIT 2		BLOCK	ENTER	Double click for computed data
28	MCDU	F-PLAN		DEPARTURE FROM–AVAIL. RUNWAYS	SELECT	
29	MCDU	F-PLAN		SIDS AVAILABLE	SELECT	
30	MCDU	F-PLAN		TRANS AVAILABLE	SELECT	If available
31	MCDU	F-PLAN		INSERT	PRESS	
32	MCDU	F-PLAN		FLIGHT PLAN	ENTER	
33	MCDU	F-PLAN		ARRIVAL AT – AVAIL. RUNWAYS	SELECT	
34	MCDU	F-PLAN		SIDS AVAILABLE	SELECT	
35	MCDU	F-PLAN		TRANS AVAILABLE	SELECT	If available
36	MCDU	F-PLAN		INSERT	PRESS	
37	MCDU	F-PLAN		F-PLAN DISCONTINUITIES	CLEAR	Speeds and altitudes are now calculated
38	MCDU	PERF-TO		FLAPS / THS	ENTER	
39	MCDU	PERF-TO		FLEX TO TEMP	ENTER	
40	MCDU	PERF-TO		THR RED / ACC	AS REQD	
41	MCDU	PERF-TO		V1, VR and V2	ENTER	Double click for computed data
42	MCDU	PERF-CLIMB		DATA	CHECK	
43	MCDU	PERF-CZR		DATA	CHECK	
44	MCDU	PERF-APPR		DATA	CHECK	
45	MCDU	PER-GO ARD		DATA	CHECK	

Open the MCDU. In case the data or menu page is displayed, use the INIT button so that page INIT A opens.

22. **FROM/TO:** Write EDDF/LOWW using the MCDU keyboard and then press LSK 1R to that the data from the scratch pad are cut and pasted into the field FROM/TO. Then automatically the page with all saved flight plans opens. As we do not previously saved a flight plan from Frankfurt to Vienna please use LSK 6L (RETURN) to go back to page INIT A.
23. **ALIGN IRS:** Please press LSK 3R to start the IRS (Inertial Reference System). This may take some time based on the settings in the A320 Configurator (please see chapter 3.1. for details). If the IRS is aligned the ND changes to the standard view.
24. **FLT NBR:** Please enter the flight number using the MCDU keyboard – in our case AB320 – into the scratch pad and then use LSK 3L to cut and paste the data into the field FLT NBR.
- xx. **COST INDEX:** The Cost Index determines the speed used for climb, cruise and descent if managed speed is used. Normally the cost index is saved from the last flight. If the field is empty or a value is already available please enter using the MCDU keyboard a value of 50 and then use LSK 5L to cut and past the value into the field COST INDEX. Cost Index 50 means “economically” e.g. that we will fly not so fast to save fuel.
25. **CRZ FL:** Please enter the Cruise Flight Level using the MCDU keyboard – in our case 310 – e. g. 31000 feet into the scratch pad and then use LSK 6L to cut and paste the value into the field CRZ FL/TEMP. This means that the cruise flight level will be 31.000 feet. The outside temperature for this flight level then automatically will be calculated = -47 degrees.

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- xx. **ALTN RTE – ALTN:** Both fields stay blank because this functionality e. g. using alternative routes and alternative destination airports are not programmed in the WILCO A320 CFM MCDU.
- xx. **Next Page – INIT 2:** Please use the button NEXT PAGE to change to the INIT B page.
26. **ZFWCG/ZFW:** Please press LSK 1R and the value of 20.9/57.1 (or any other value based on your configuration) appears in the scratch pad. Press again LSK 1R and the value will be cut and pasted to ZFWCG/ZFW.
27. **BLOCK:** Please press LSK 2R and the value of 8.7 (or any other value based on the fuel loaded) appears in the scratch pad. Press again LSK 2R and the value will be cut and pasted to BLOCK (please see chapter 3.4 for details).
- xx. **F-PLAN:** Please use the F-PLAN button to change to the F-PLAN page.
28. **DEPARTURE:** Please use LSK 1L (next to EDDF) and then the DEPARTURE page opens. Press again LSK 1L (next to DEPARTURE) and a new page with all available departure runways in Frankfurt opens. Select 07L = LSK 2L.
29. **SID:** Automatically another page with all for runway 7L available SID's (Standard Instrument Departure Flight plans) opens. Use the button with an arrow showing up to scroll to SULU3E and press the LSK ?L next to it.
30. **TRANS:** There are no transition waypoints available for this SID as we can see on the right side of the screen – because there is no entry.
31. **INSERT:** Then use LSK 6R to insert the chosen SID into your flight plan.
32. **FLIGHT PLAN:** The next step now is to enter the flight plan itself.
- Scroll up to the beginning of the flight plan (using the button with the arrow showing down) to EDDF07L. Then press LSK 2L (beneath 1829) and a new page opens. Enter SULUS into the scratch pad (using the MCDU keyboard) and press LSK 3R (NEXT WPT) – SULUS is the point where our SID ends and from where our flight plan starts. Automatically you return to the TMPY (temporary) page because the flight plan is not yet confirmed (entries in yellow).
 - Press the LSK ?L beneath SULUS and on the next page enter UZ650/VEMUT in the scratchpad and press LSK 2R (VIA/GO TO). Automatically all waypoints between SULUS and VEMUT on the airway UZ650 are inserted and again you will return to the TMPY (temporary) page because the flight plan is not yet confirmed.
 - Scroll up the flight plan (using the button with the arrow showing down) to VEMUT. Press the LSK ?L beneath VEMUT and on the next page enter UZ37/BUDEX in the scratchpad and press LSK 2R. Automatically all waypoints between VEMUT and BUDEX on the airway UZ37 are inserted and again you will return to the TMPY (temporary) page because the flight plan is not yet confirmed.
 - Scroll up the flight plan (using the button with the arrow showing down) to BUDEX. Press the LSK ?L beneath BUDEX and on the next page enter UZ205/VENEN in the scratchpad and press LSK 2R. Automatically all waypoints between BUDEX and VENEN on the airway UZ205 are inserted and again you will return to the TMPY (temporary) page because the flight plan is not yet confirmed.
 - Now confirm the flight plan with LSK 6R (INSERT) and the preliminary waypoints (yellow) are transferred to the actual flight plan (green).
33. **ARRIVAL:** Please use LSK 6L (next to LOWW) and the ARRIVAL page opens. Press again LSK 1R (next to ARRIVAL) and a new page with all available runways in Vienna opens. Select ILS16 = LSK 4L.
34. **SID:** Automatically another page with all for runway 16 available STAR's (Standard Arrival Flight plans) opens. Use the button with an arrow showing up to scroll to VENE1W and press the LSK ?L next to it.

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35. **TRANS:** There are no transition waypoints available for this STAR as we can see on the right side of the screen.
36. **INSERT:** Then use LSK 6R to insert the chosen STAR into your flight plan.
- xx. **Change Arrival Runway / STAR:** At any time during the flight the arrival runway as well as the STAR can be changed. In this case please use the same procedure as described in #33. to #36.
37. **Flight Plan Discontinuity:** Scroll to the beginning of the flight plan using the button with the arrow showing down. Now scroll down the flight plan using the button with the arrow showing up. After VENEN you will see a line "F-PLAN DISCONTINUITY" and then VENEN again. Flight plan discontinuities are automatically inserted between SID's, the normal flight plan and STAR's. In our case the flight plan ends in VENEN and we chose the corresponding STAR also starting in VENEN. So first we have to delete the 2nd VENEN by pressing "CLR" (clear) on the alphabetic keyboard. Then CLR comes up in the scratch pad. Now press the LSK ?L beneath the 2nd VENEN entry and the waypoint VENEN is deleted. Do the same with the line "F-PLAN DISCONTINUITY". Scroll down and delete all other double entries (if available) and all flight plan discontinuities.
- xx. **Flight Plan Calculation:** After all discontinuities are deleted the flight plan will be calculated e. g. showing speed and altitude at every waypoint. Additional newly calculated "waypoint"s are inserted:
- **(LIM)** = Limit = During takeoff or approach the end or begin of 250 knots speed limit (normally 10.000 feet). This is the point at which the speed can be accelerated or has to be reduced so that it does not exceed 250 knots at 10.000 feet.
 - **(T/C)** = Top of climb = Point at which the chosen cruising altitude will be reached (31.000 feet in our example).
 - **(T/D)** = Top of descend = Point at which the chosen cruising altitude has to be left.
 - **(DECEL)** = Deceleration = Point at which the speed will be reduced and the final approach begins.
 - If there are SPD or ALT data marked in red it means "restrictions set by the authorities" like in our example for the first waypoint "1829" (has to be passed at a minimum altitude of 1829 feet) or during descent also for "CF16" (set minimum altitude = 2590 feet).
38. **FLAPS/THS - PERF page:** Change to the PERF (performance) page by pressing the respective button on the MCDU. Enter into the scratchpad (using the MCDU keyboard) 1/50 and then press LSK 3R so that the values are cut and pasted into the field FLAPS/THS (flaps and thrust).
39. **FLEX TO:** Enter into the scratchpad (using the MCDU keyboard) 50 and then press LSK 4R so that the value is cut and pasted into the field FLEX TO TEMP.
40. **THR RED/ACC:** We leave the thrust reduction altitude as proposed by the MCDU (Ground level plus 1500 Feet) but would like to set the Acceleration Altitude another 1500 feet higher. So enter /3364 into the scratchpad and then press LSK 5L.
41. **V1, V2 and VR:** Press LSK 1L (V1) and a calculated value (133) appears on the scratchpad. Press LSK 1L again and the value is cut and pasted into the V1 field. Repeat the same for V2 (139) using LSK 2L respectively LSK 3L for VR (141).
- xx. **Performance Pages:** Please also check the other PERF pages (CLB, CRZ, DES and APPR). Make sure all parameters are OK. Especially the Cost Index should be checked, which determines the speed used for climb, cruise and descent if managed speed is used.
- xx. **Save Flight Plan:** A flight plan established in a way like explained above can be saved in the MCDU (but without SID's and STAR's) so that it is available next time and the user has not to key in all flight plan data again. If you want to save this flight plan please change to the MCDU DATA page and press LSK 4R (STORED FLIGHT PLANS). Then select NEW FLIGHT PLAN LSK 6R and on the next page then please enter a name for this flight like EDDFLOWW. Press LSK 1L and then LSK 2L to

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save it. The next time you are entering EDDF/LOWW into the FROM/TO field on the INIT A page this flight plan automatically will be loaded and you can decide to use it or not.

- xx. Aircraft Positioning:** Now programming of the MCDU is finished. But the position of the aircraft in relation to the departure runway (as displayed in the Navigation Display) is not shown properly. So therefore this information should not be used during taxi to “find” the right takeoff runway. During takeoff acceleration the GPS will be aligned and the aircraft displayed on the right position on the departure runway.

4.4. Cockpit Preparation – Part 2

COCKPIT PREPARATION						
NO.	PANEL			ACTION		REMARK
	TYP	PART	SUB-PANEL			
46	GLARESHIELD	EFIS		BARO REF	SET	
47	GLARESHIELD	EFIS		FD (Flight Director)	CHECK ON	
48	GLARESHIELD	EFIS		ILS	OFF	
49	GLARESHIELD	EFIS		ND mode and range	SET	
50	GLARESHIELD	EFIS		VOR / ADF select	AS RQRD	
51	GLARESHIELD	FCU		First Altitude	SET	>than THR RED altitude
52	GLARESHIELD	FCU		DASH-BALL-DASH-BALL-ALT-BALL-DASH	CHECK	
53	PEDESTAL		ECAM	STATUS	CHECK	
54	PEDESTAL	THR LEVER		LEVERS	CHECK IDLE	
55	PEDESTAL	ENG		ENG MASTER 1 + 2	CHECK OFF	
56	PEDESTAL	ENG		ENG MODE SEL	CHECK NORM	
57	PEDESTAL		RADIO	ATC - FREQUENCY	SET	If ATC is used
58	PEDESTAL		RADIO	ATC CLEARANCE	OBTAIN	If ATC is used
59	MAIN	ND-DISPL.		IRS ALIGN	CHECK	

46. **BARO REF:** As we are flying with “Fair Weather” it means that in Frankfurt there will be no surface winds and for takeoff the runways 7L and 7R are in use. The air pressure currently is 1013 hPa and we have a temperature of 5 degrees C. Therefore please set the BARO REF to 1013 hPa.
47. **Flight Director:** The flight director button should be “green” e.g. it is ON. In this case the FMA on the PFD should read CLB and NAV (both values in blue). If not switch the F/D off and on again which also assures that all data from a previous flight are deleted.
49. **ND mode and range:** Set ND mode during takeoff to ARC and range to 10.
51. **First Altitude:** On the FCU (Flight Control Unit) – Altitude – using the respective knob please set the 1st to be reached altitude at 12.000 Feet. This value has to be in any case higher than the Thrust Acceleration Altitude (in our example 3364 Feet). If this is the case then a ball appears to the right of the altitude entered which means that the aircraft will fly in “managed mode” until this altitude is reached.

4.5. Before Pushback and Start

BEFORE PUSHBACK OR START						
NO.	PANEL			ACTION		REMARK
	TYP	PART	SUB-PANEL			
60	MCDU	F-PLAN		F-PLAN PAGE	SET	
61	OVERHEAD	ELEC		EXT PWR (External Power)	OFF	
62	OVERHEAD			DOORS	CLOSE (BOTH)	Left and right side of the aircraft
63	PEDESTAL	THR LEVER		LEVERS	CHECK IDLE	
64	PEDESTAL		RADIO	PUSHBACK / START CLEAR	OBTAIN	If ATC is used
65	PEDESTAL			PARKING BRAKE	OFF	Engine Starter Panel opens automatically
66	OVERHEAD		LOWER OH	BEACON ON	ON	Co-Pilot Functionality based on 65

65. **Pushback:** Engines can be started during or after pushback. To start pushback use SHIFT +P (has to be used for start and stop the pushback). In case a 90 degrees turn is required use additionally 1 (tail goes to the left) or 2 (tail goes to the right).

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4.6. Engine Start

ENGINE START – during pressback						
NO.	PANEL			ACTION		REMARK
	TYP	PART	SUB-PANEL			
67	PEDESTAL		ENGINE	ENG MODE SEL	IGN START	Panel opens automatically after 65
68	PEDESTAL		ENGINE	MASTER SW 2	ON	
69	MAIN	EWD		No. 2 RUNNING UP	CHECK	
70	PEDESTAL		ENGINE	MASTER SW 1	ON	
71	MAIN	EWD		No. 1 RUNNING UP	CHECK	
72	PEDESTAL			PARKING BRAKE	ON	

xx. Engine Start: After setting the Engine Mode Selector to IGN START you can check on the EWD that the FADEC (Full Authority Digital Engine Control) have turned on because the amber information is replaced by active displays.

4.7. After Engine Start

AFTER ENGINE START						
NO.	PANEL			ACTION		REMARK
	TYP	PART	SUB-PANEL			
73	PEDESTAL		ENGINE	ENG MODE SEL	NORM	
74	OVERHEAD	APU		APU BLEED	OFF	
75	PEDESTAL		ECAM	ECAM STATUS	CHECK	
76	PEDESTAL		ECAM	ECAM DOOR PAGE	CHECK	
77	OVERHEAD	ANTI-ICE		ENG ANTI ICE	AS RQRD	
78	OVERHEAD	ANTI-ICE		WING ANTI ICE	AS RQRD	
79	OVERHEAD		LOWER OH	APU MASTER SW	OFF	

4.8. TAXI

TAXI						
NO.	PANEL			ACTION		REMARK
	TYP	PART	SUB-PANEL			
80	OVERHEAD		LOWER OH	NOSE LIGHT	TAXI	
81	PEDESTAL		RADIO	TAXI CLEARANCE	OBTAINED	If ATC is used
82	PEDESTAL			PARKING BRAKE	OFF	
83	MAIN	AUTO BRK		SET TO	MAX	
84	PEDESTAL	THR LEVER		LEVERS	AS RQRD	
85	PEDESTAL	SPEED-BR.		GRD SPOILERS	ARM	Co-Pilot Functionality based on 84
86	GLARESHIELD	FCU		FCU ALT / HDG	CHECK / SET	
87	GLARESHIELD	EFIS		FD	CHECK ON	
88	PEDESTAL		RADIO	ATC CODE	CONFIRM / SET	If ATC is used

84. TAXI: Set Thrust Levers to the manual range. Around 40 % N1 (EWD) should be enough to move the aircraft. Taxiing should be operated at 20 knots, with 10 knots during turns. As soon as the aircraft moves, idle thrust should be enough to keep it going to the holding point of runway 07L.

4.9. Before Takeoff

BEFORE TAKEOFF						
NO.	PANEL			ACTION		REMARK
	TYP	PART	SUB-PANEL			
89	PEDESTAL		RADIO	TAKEOFF / LINE UP CLEAR	OBTAIN	If ATC is used
90				APPROACH PATH CLEAR OF TRAFFIC	CHECK	
91	PEDESTAL	TCAS		TCAS	TA or TA/RA	
92	PEDESTAL			FLAPS	SET	ECAM Panel opens automatically
93	MAIN	EWD		TO MEMO	CHECK NO BLUE	
94	PEDESTAL		ECAM	TO CONFIG	PRESS	Panel opens automatically after 92
95	PEDESTAL		RADIO	ATC (if no AUTO position)	ON	If ATC is used
96	OVERHEAD	AIR COND		PACKS 1 + 2	AS RQRD	

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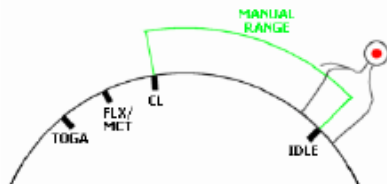
97	OVERHEAD		LOWER OH	EXT. LIGHTS (Strobes, Land. Lights)	SET	Co-Pilot Functionality based on 94
----	----------	--	----------	-------------------------------------	-----	------------------------------------

90. **Approach Path Clear:** Look left and right (using the click spots on the glareshield) and assure that the runway is clear. Then enter the runway 07L for takeoff.

4.10. Takeoff

TAKEOFF						
NO.	PANEL			ACTION		REMARK
	TYP	PART	SUB-PANEL			
98	PEDESTAL	THR LEVER		SET LEVERS TO	FLEX / TOGA	
99	GLARESHIELD			CHRONO	START	
				At VR		
100					ROTATE	
				When V/S POSITIVE		
101	MAIN	GEAR		LANDING GEAR	"Up"	Co-Pilot Functionality
102	PEDESTAL	SPEED-BR.		GROUND SPOILERS	DISARM	Co-Pilot Functionality
103	OVERHEAD		LOWER OH	NOSE LIGHT	OFF	
104	GLARESHIELD	FCU		AUTOPILOT	AS RQRD	
				At thrust reduction altitude:		
105	OVERHEAD	AIR COND		ONE PACK	ON	
106	PEDESTAL	THR LEVER		SET LEVERS TO	CL	
				At F speed:		
107	PEDESTAL			FLAPS 1	SELECT	If applicable
				At S speed:		
108	PEDESTAL			FLAPS 0	SELECT	Co-Pilot Functionality
109	OVERHEAD	AIR COND		2 ND PACK	ON	

98. **Takeoff:** If cleared for takeoff push the thrust levers to 60 – 70 % N1 (EWD) and monitor the EWD to make sure thrust is available. If everything is OK, you can push the thrust levers to the FLEX detent (you will hear two clicks) and it will be confirmed on the FMA. You can also use the TOGA detent (if the runway is short or wet). But for this flight we decide to save some fuel and use FLEX thrust takeoff instead. As the Thrust Levers are not animated in the WILCO A320 and if no joystick is available use F1 to set the respective thrust.



Picture 8: Thrust Lever Positions

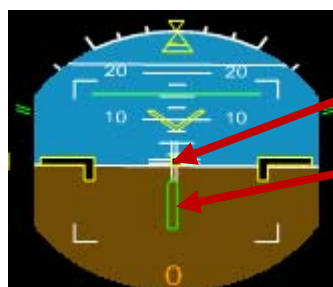
At this time the IRS are now automatically aligned with the GPS position and the aircraft should be displayed on the ND at the beginning of runway 07L.

100. Rotate:

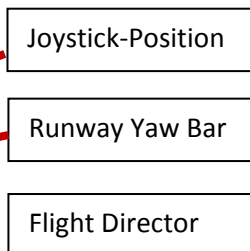
- During the takeoff roll, the stick should be pressed half way forward until the speed reaches 80 knots. The stick position can be monitored on the PFD (please see picture 11).
- As soon as the takeoff thrust is applied and if the runway has an ILS, the yaw bar appears on the PFD to help guiding the aircraft along the runway centerline (please see picture 11).
- When the speed is over 80 knots, the stick can be released to come back to a neutral position.
- When VR is reached (indicated with a blue circle on the PFD speed tape), pull the stick for the rotation. If the FD is not perfectly stable at this time, take a 15° pitch angle.

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Picture 9: On the runway



Picture 10: During takeoff

- Shortly after takeoff the joystick position indicator and the runway yaw bar on the Attitude Indicator will disappear and Flight Director Indicator will show up.
- Landing Gear – Autobrake:** The autobrake will automatically turn off 10 seconds after the Landing Gear is retracted.
 - Thrust Reduction Altitude:** When the THR RED altitude is reached (1.864 feet in our example) a flashing LVR CLB message appears on the FMA (1st column). Move the thrust levers back to the CL detent. As the thrust reduces when the levers are moved back to the CL detent, you should anticipate the pitch reduction caused by this thrust reduction.
 - Acceleration Altitude:** At this altitude the CLB modus becomes active on the FMA (2nd column). The aircraft will now accelerate to the target speed of 250 knots (below 10.000 feet).
 - A.FLOOR:** If you are flying with a too high pitch automatically the Alpha Floor mode (Display = A.FLOOR in PFD / FMA section) will be switched on e.g. full thrust automatically will be set - not considering the position of the thrust levers. As soon as the pitch is back to normal the thrust levers will be automatically set back to TOGA LK (displayed on the FMA). This is a “locked” = fixed mode and can only be switched off using the following procedure:
 - Set the thrust levers into the TOGA position
 - Switch off auto thrust using the FCU button
 - Now bring back the thrust lever to the CL position
 - Activate auto thrust again using the FCU button
 - If already activated the Autopilot has to be switched to ON again

4.11. Takeoff

CLIMB						
NO.	PANEL			ACTION		REMARK
	TYP	PART	SUB-PANEL			
110	GLARESHIELD	FCU		VALUES / DATA	SET IF AP ON	
111	MCDU	Var.PAGES		VALUES / DATA	SET IF AP ON	
				At transition altitude:		
112	MAIN	EFIS		BARO REF	SET / X CHECK	
				At 10.000 feet:		
113	OVERHEAD		LOWER OH	LANDING LIGHTS	OFF	Co-Pilot Functionality
114	MAIN	EFIS		EFIS OPTION	ARPT	
115	PEDESTAL		RADIO	RADIO NAV	CHECK	
116	OVERHEAD		LOWER OH	SEAT BELTS	AS RQRD	
117	PEDESTAL		ECAM	ECAM MENU	REVIEW	
118	MCDU	PROG	TO	OPT / MAX ALTITUDE	CHECK	

- At 10.000 feet:** As soon as the altitude of 10.000 feet is reached it means that the speed restriction of 250 knots no longer is valid. Therefore the aircraft speeds up to the calculated value of 302 knots (FMGC or MCDU) based on the COST INDEX used for this flight.

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112. **Transition Altitude:** Setting up the MCDU we did not change the proposed transition altitude (set to 18.000 feet) e.g. now reaching this value of 18.000 feet the system has to be set to "STD = Standard". Please pull the "BARO" button at the altitude of 18.000 feet.
118. **CLIMB / Altitude:** Before the first set altitude of 12.000 feet will be reached (see chapter 51) please enter the chosen cruise altitude from the MCDU = 31.000 feet into the FCU and press the ALT button e.g. managed mode is selected.

4.12. Cruise

CRUISE						
NO.	PANEL			ACTION		REMARK
	TYP	PART	SUB-PANEL			
119	PEDESTAL		ECAM	ECAM MEMO / SYS PAGES	REVIEW	
120	MCDU	Var.PAGES		FLIGHT PROGRESS	CHECK	
121	MCDU	FUEL PRED		FUEL	MONITOR	
122	MCDU	PROG		NAV ACCURANCY	CHECK	
123	OVERHEAD	AIR COND		CABIN TEMP	MONITOR	

120. **Cruise Altitude:** As soon as the cruise altitude of 31.000 feet has been reached (near to the waypoint SULUS and marked on the ND with a white arrow showing up) the FMA data on the PFD should change to SPEED, ALT CRZ and NAV.

4.13. Descent Preparation

DESCENT PREPARATION						
NO.	PANEL			ACTION		REMARK
	TYP	PART	SUB-PANEL			
124	MCDU	Var.PAGES		FMGS	PREPARE	
125	MCDU	PERF APPR		GPWS LDG FLAP 3	AS RQRD	
126	PEDESTAL		RADIO	DESCENT CLEARANCE	OBTAIN	If ATC is used
127	OVERHEAD	ANTI-ICE		ANTI ICE	AS RQRD	

4.14. Descent

DESCENT						
NO.	PANEL			ACTION		REMARK
	TYP	PART	SUB-PANEL			
128	GLARESHIELD	FCU		DESCENT	INITIATE	
129	GLARESHIELD	PFD		FMA	CHECK	
130	MCDU	Var.PAGES		DESCENT DATA	INSERT	
131	GLARESHIELD	PFD		DESCENT	MONITOR	
132	PEDESTAL	SP BRAKES		SET	AS RQRD	
				When cleared to altitude:		
133	MAIN	EFIS		BARO REF	SET / X CHECK	
134	PEDESTAL		ECAM	ECAM STATUS	CHECK	
				At 10.000 feet:		
135	OVERHEAD		LOWER OH	LAND LIGHTS	ON	Co-Pilot Functionality
136	OVERHEAD		LOWER OH	SEATBELTS	AS RQRD	
137	GLARESHIELD	EFIS		SET OPTION	CSTR	
138	GLARESHIELD	EFIS		ILS pressbutton	AS RQRD	
139	PEDESTAL		RADIO	RADIO / NAV	SELECT / IDENT	
140	MCDU	PROG		NAV ACCURANCY	CHECK	

128. **Initiate Descent:** Before the T/D (Top of Descent) point, which is displayed on the ND with a white arrow showing down (between BUDEX and VENEN), is reached, the altitude should be set to 3.000 feet. This altitude in any case should be set in such a way that the vertical glide path is caught from below. At the T/D (Top of Descent) point then just press the ALT knob and the descent starts.

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133. **Transition Altitude:** Setting up the MCDU we did not change the proposed transition altitude (set to 18.000 feet) e.g. now reaching this value of 18.000 feet again the system has to be set to the actual pressure. Please press the “BARO” button at the altitude of 18.000 feet.
- xxx. **At 10.000 feet:** As soon as the altitude of 10.000 feet is reached the speed restriction of 250 knots becomes valid. Therefore the aircraft reduces the speed already at app. 12.000 feet (point displayed on the ND as a red dot – please see picture 13) so that it really flies with 250 knots when the altitude of 10.000 feet (app. at TEMTA) is reached.



Picture 11: ND: „Red Dot“ and Deceleration Point

- xxx. **Deceleration Point:** During descent of the aircraft the deceleration point is displayed on the ND as a big red D in a circle. At this point the approach phase automatically engages (also can be done manually in the MCDU on the APPR PAGE by pressing LSK 6L - ACTIVATE APPROACH PHASE) and the target speed is changed to Vapp speed in our example to 139 as calculated by the FMGC – MCDU. Even if Vapp is shown as the new target speed, the actual target speed will be the maneuvering speed until flaps are fully deployed into the landing configuration.



Picture 12: Final Approach Phase for LOWW

138. **ILS:** As soon as the approach phase is engaged (automatically or manually - see 4.15 ILS-Approach #144) the radio automatically tunes to the runway ILS. Please press the respective ILS button on the EFIS panel and the lateral and vertical ILS glide paths as well as the ILS identification become available on the PFD.

4.15. ILS-Approach

ILS - APPROACH

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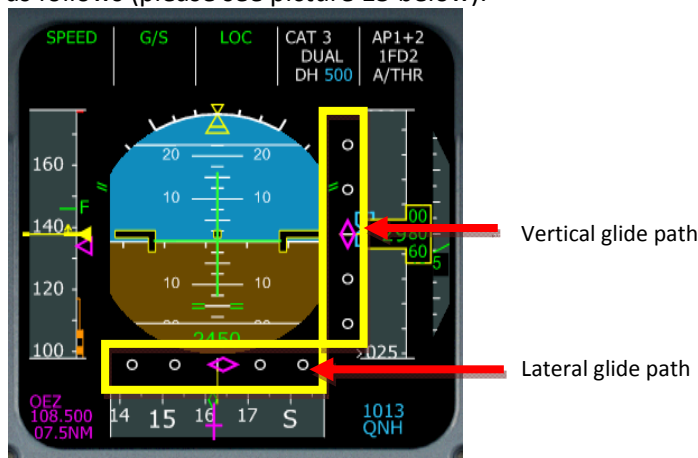
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NO.	PANEL			ACTION		REMARK
	TYP	PART	SUB-PANEL			
				Initial approach:		
141	OVERHEAD		LOWER OH	SEATBELTS	ON / AUTO	
142	PEDESTAL		ENGINE	ENG MODE sel	AS RQRD	
				Approx. 15 NM from touchdown:		
143	MCDU	PROG		NAV ACCURANCY	MONITOR	
144	MCDU	PERF		APPR PHASE	ACTIVATE or set green dot	
145	MAIN	PFD		POSITIONING	MONITOR	
				When cleared for ILS approach:		
146	MAIN	FCU		APPR	PRESS	
147	MAIN	FCU		BOTH AP	ENGAGE	
				At green dot:		
148	PEDESTAL		FLAP LEVER	FLAPS 1	SELECT	Co-Pilot Functionality – Flap Panel opens
				AT S SPEED		
149	PEDESTAL	TCAS		TCAS	TA or TA / RA	
150	MAIN	PFD		FMA	CHECK	
151	MAIN	PFD		LOC CAPTURE	MONITOR	
152	MAIN	PFD		G/S CAPTURE	MONITOR	
153	GLARESHIELD	FCU		GO AROUND ALT	SET	
				At 2.000 feet AGL:		
154	PEDESTAL		FLAP LEVER	FLAPS 2	SELECT	
				AT F SPEED		
				When Flaps 2:		
155	MAIN	GEAR		L/G DOWN	SELECT	Co-Pilot Functionality – based on 152
156	PEDESTAL	SP. BRAKES		GROUND SPOILERS	ARM	Co-Pilot Functionality – based on 152
157	MAIN	GEAR		AUTO BRAKE	AS RQRD	
				When L/G down, below VFE		
158	PEDESTAL		FLAP LEVER	FLAPS 3	SELECT	
159	PEDESTAL	ECAM		ECAM WHEEL PAGE	CHECK	
				When FLAPS 3 , below VFE:		
160	PEDESTAL		FLAP LEVER	FLAPS FULL	SELECT	
				AT VAPP		
161	MAIN	FCU		A/THR	CHECK SPD or OFF	
162	OVERHEAD	ANTI-ICE		WING ANTI ICE (if not required)	OFF	
163	OVERHEAD		LOWER OH	EXTERIOR LIGHTS	SET	
164	MAIN	EWD		LANDING MEMO	CHECK NO BLUE	

146. **Approach:** As soon as the final approach phase has been activated (#144) – please see also picture 14 - the ND display shows now ILS APP on top - press the APPR button on the FCU. This means that the aircraft after catching the lateral and vertical glide path will follow those paths not considering any other data set on the FCU or MCDU.
147. **Autopilot:** Please also press the 2nd Autopilot button. This means we are making a Category 3 approach (no interference of the pilots until after touchdown) and the aircraft is landing fully automatic with both autopilots in use.
- xxx. **Flaps:** During the approach the flaps will be slowly step by step extended from 1 to FULL based on aircraft speed (#148, #154, #158 and #160). When flaps are extended to FULL the aircraft should have reached its final approach speed (Vapp) at 139 knots.
151. **LOC Capture:** First the lateral glide path will be caught (LOC* or LOC displayed on the PFD - FMA).

152. **G/S Capture:** After also the vertical glide path has been caught the display on the PFD-FMA looks as follows (please see picture 15 below):



Picture 135: PFD - Vertical and lateral glide path

The middle of both fields shows the vertical and lateral position of the glide path where as the magenta rhombus shows the actual position of the aircraft. This means that during the approach both rhombuses are moving to the center. The picture above shows a position at which the aircraft is on the ideal position for landing.

On the EFIC control panel please change the knob for the various views to ILS. This view also shows the glide path and the position of the aircraft to it.



Picture 14: ND - ILS view LOWW Rwy16

153. **Go Around Altitude:** Please change the set altitude in the FCU to the first altitude to be reached after a "Go Around". Please just change the altitude and do **not** press or draw the knob at this point.
157. **Auto Brake:** Set to MED (medium)
161. **Auto Throttle:** Leave the A/THR on.....
162. **Wing Anti Ice:** Leave the Wing Anti Ice on.....
163. **Exterior Lights:** Just check if all Exterior Lights are on: Strobe, Beacon, Nav & Logo as well as Landing Lights.
164. **Landing Memo:** In the meantime the Landing Memo should have come up on the EWD. Please check if there are no "blue" entries. If for some reasons there are still "blue" entries (you might have forgotten to make certain settings) then please make those settings now.

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There are also various other approach procedures used depending on airline and weather condition (ILS- and non-ILS-approaches). P. e. another ILS-approach procedure is using first LOC functionality and after the lateral glide path has been caught, APPR functionality is used now to also catch the vertical glide path. Another procedure p. e. for a non-ILS approach is available in the download file of "Ultimate Airbus A32x V2".

4.16. Landing

LANDING						
NO.	PANEL			ACTION		REMARK
	TYP	PART	SUB-PANEL			
				At 20 feet:		
165				FLARE	PERFORM	
166	MAIN	PDF		ALTITUDE	MONITOR	
167	PEDESTAL	THR LEVER		THRUST LEVERS	IDLE	
168				At touchdown:		
169	GLARESHIELD	FCU		AP (if applicable)	OFF	Co-Pilot Functionality – based on 168
170	PEDESTAL	THR LEVER		REV	MAX	
171	MAIN	GEAR		BRAKES	AS RQRD	
172				At 70 knots:		
173	PEDESTAL	THR LEVER		REV	IDLE	Co-Pilot Functionality – based on 172
174				At taxi speed:		
175	PEDESTAL	THR LEVER		REV	STOW	
176				Before 20 knots:		
177	MAIN	GEAR		AUTOBRK	DISENGAGE	Co-Pilot Functionality – based on 176

- 165 **LAND and FLARE mode:** As the aircraft gets closer to the ground the LAND mode engages, then the FLARE mode. The actual modes are shown on the FMA.
167. **Thrust Levers: IDLE:** At the altitude of 20 feet you will hear an aural warning: „Retard, Retard“. Pull the trust levers back to IDLE and let the aircraft gently touch the ground.
170. **Trust Levers: REV:** After touchdown the thrust reversers (by using F2 from the keyboard) should be activated.
171. **BRAKES:** The autobrake makes the aircraft decelerate on the ground. You can also take the control at any time by using the brakes. Any manual action on the brakes automatically disconnects the autobrake system.

4.17. Go Around

GO AROUND						
NO.	PANEL			ACTION		REMARK
	TYP	PART	SUB-PANEL			
178	PEDESTAL	THR LEVER		THRUST LEVERS	TOGA	
179				ROTATION	PERFORM	
180	PEDESTAL		FLAP LEVER	FLAPS	RETRACT ONE STEP	
181	MAIN	GEAR		L/G	UP	
182	GLARE SHIELD	FCU		NAV OR HDG	SELECT	
183	PEDESTAL	THR LEVER		THRUST LEVERS	CL	
				At GA ACCEL Altitude:		
184	PEDESTAL		FLAP LEVER	FLAPS	RETRACT ON SCHEDULE	
185	MAIN	PFD		SPEED	MONITOR	

178. **Thrust Levers: TOGA:** If there is an emergency situation and "Go-around" should be performed p. e. the runway is blocked by another aircraft or there is a problem with the aircraft itself just set the thrust levers to TOGA and fly using the a. m. the procedure- and check list.

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4.18. After Landing

AFTER LANDING						
NO.	PANEL			ACTION		REMARK
	TYP	PART	SUB-PANEL			
186	OVERHEAD		LOWER OH	LANDING LIGHTS	RETRACT	Co-Pilot Functionality – based on 174
187	PEDESTAL	SP.BRAKES		GRND SPLRS	DISARM	Co-Pilot Functionality – based on 174
188	PEDESTAL		FLAP LEVER	FLAPS	RETRACT	Co-Pilot Functionality – based on 174
189	OVERHEAD		LOWER OH	EXT. LIGHTS (Strobes))	AS RQRD	Co-Pilot Functionality – based on 174
190	PEDESTAL		ENGINE	ENG MODE SEL	NORM	
191	PEDESTAL		RADIO	ATC (if no AUTO position)	STBY / OFF	
192	PEDESTAL	TCAS		TCAS MODE SEL	STBY	
193	OVERHEAD	ANTI-ICE		ANTI ICE	AS RQRD	Co-Pilot Functionality – based on 174
194	OVERHEAD		LOWER OH	APU	START	

189. **Exterior Lights:** Set “NOSE” light to „Taxi“.
- xxx. **FMGC / FMA reset:** One minute after the aircraft has touched the ground; its memories are cleared to make the units ready for the next flight.

4.19. Parking

PARKING						
NO.	PANEL			ACTION		REMARK
	TYP	PART	SUB-PANEL			
195	GLARESHIELD			CHRONO	STOPP	
196	PEDESTAL	P.BRAKE		PARKING BREAK	ON	
197	OVERHEAD	APU		APU BLEED	ON	
198	PEDESTAL		ENGINE	ENG MASTER 1 & 2	OFF	
199	OVERHEAD	FUEL		FUEL PUMPS	OFF	
200	PEDESTAL	RADIO		GROUND CONTACT	ESTABLISH	If ATC is used
201	OVERHEAD		LOWER OH	BEACON LIGHT	OFF	Co-Pilot Functionality – based on 199
202	OVERHEAD		LOWER OH	SEAT BELTS	OFF	
203	OVERHEAD			DOORS	OPEN (BOTH)	Left and right side of the aircraft

198. **Engine master 1 & 2:** To shut down the engines the right mouse button must be used.

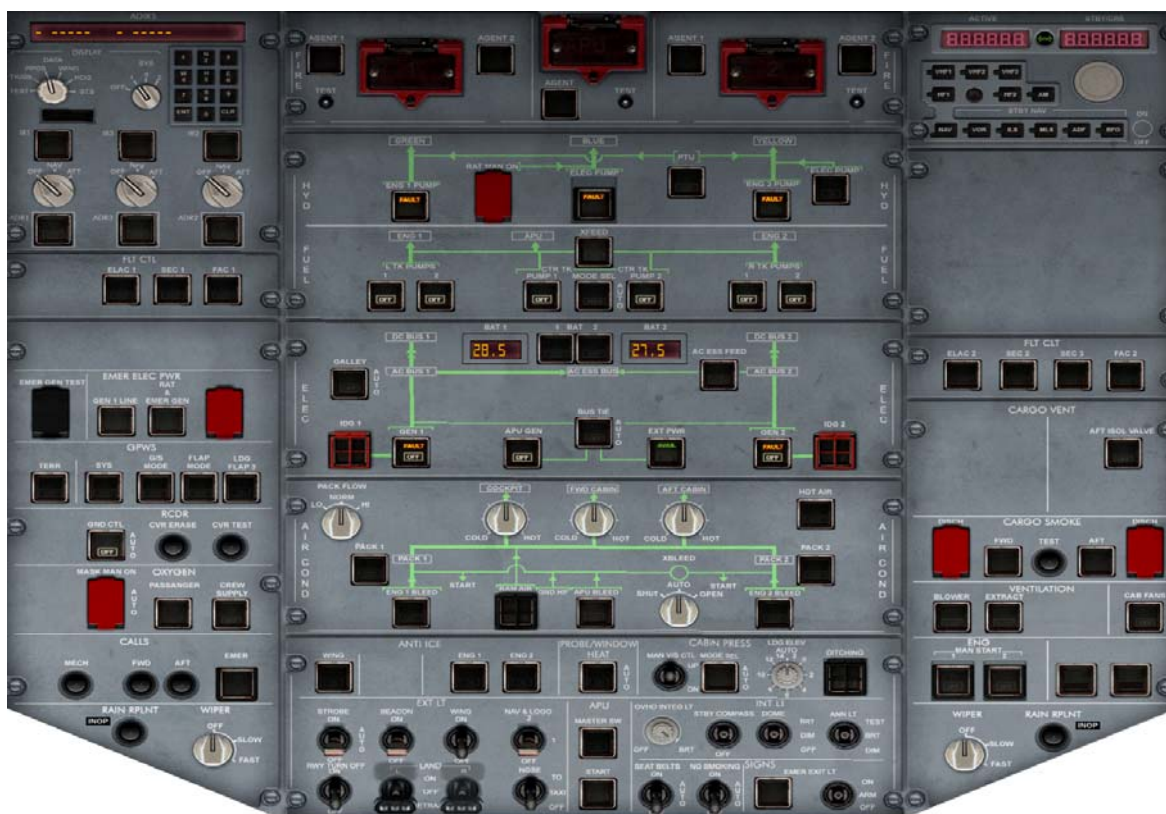
4.20. Securing Aircraft

SECURING AIRCRAFT						
NO.	PANEL			ACTION		REMARK
	TYP	PART	SUB-PANEL			
205	PEDESTAL	P.BRAKE		PARKING BREAK	CHECK ON	
206	OVERHEAD	ADIRS		ADIRS (1 + 2 + 3)	OFF	
207	OVERHEAD	LIGHTS		EXTERIOR LIGHTS	OFF	
208	OVERHEAD	APU		APU BLEED	OFF	
209	OVERHEAD	APU		APU MASTER SW	OFF	
210	OVERHEAD	LIGHTS		NO SMOKING	OFF	
211	OVERHEAD	ELEC		EXT PWR	AS RQRD	
212	OVERHEAD	ELEC		BAT 1 + 2	OFF	
213	OVERHEAD			DOORS	CLOSE (BOTH)	Left and right side of the aircraft

207. **Exterior Lights:** Switch off all exterior lights.
- xxx. **Cockpit „Dark & Cold“:** Now the status of the cockpit should be “dark & cold”. All systems and switches should be “OFF”. Before switching the batteries to OFF the panel should look like in [Picture 15: Overhead Panel before switching OFF both batteries](#)
- WILCO A320 CFM saves the last used configuration when leaving the FS or when switching to another aircraft. So this status then will be also the starting configuration the next time you are opening the WILCO A320 CFM.

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Picture 15: Overhead Panel before switching OFF both batteries

5. Tips and Tricks:

5.1. Working with FS Flight Planner / Flight plan Saving

5.1.1. Use of the FS Flight Planner with WILCO A320 CFM

The actual or a saved flight plan of the Microsoft FS Flight Planner can be loaded into the MCDU. Using FS Flight Planner please plan a new or load a saved flight plan and then change to the DATA page of the MCDU. Please press LSK 6R (Import FS FPLN) and again LSK 6R (INSERT) and the actual flight plan will be loaded into the MCDU.

5.1.2. MCDU - Saving the actual flight plan

It is also possible to save the actual flight plan (but without SID's and STAR's) in the MCDU itself. After the flight plan has been completely entered (as described in this tutorial in #32 of the procedures) please change to the DATA page and press LSK 3R (STORED FLIGHT PLANS) – LSK 6R (NEW FLIGHT PLAN) – and using the keyboard enter a name for this flight plan p. e. EDDFLOWW. Press LSK 2L (STORE ACTIVE FLIGHTPLAN) and the flight plan will be saved. Next time you are planning a flight and enter the departure and destination airport (as described in this tutorial in #22 of the procedures) it will be automatically opened and proposed for use.

5.2. Working with real Flight Plans:

On the Internet there are several pages where “real” flight plans (like the one we used in this tutorial) are available. Two of the addresses are

http://www.vatflightplan.net/web_showfp.php?dep=EDDF&dest=LOWW&start=1 or at

<http://rfinder.asalink.net/free/>

On those pages you will find a lot of plans but you should know the airport codes (like in our example EDDF for Frankfurt or LOWW for Vienna). But those codes can be found also using the Microsoft FS Flight Planner.

5.3. SID's und STAR's:

All those a. m. flight plans start and end with a waypoint to which a SID or a STAR is available. In our example those are SULUS and VENEN e. g. you should therefore always select a SID and a STAR which ends or starts at those waypoints. To ease the selection the names of SID's and STAR's therefore always contain the name of the last or first waypoint and an additional number if there is more than one available.

As all SID's and STAR's in the WILCO A320 CFM Navigation Database are not related to a specific runway (like in the "real" MCDU) it can happen that you select a SID which is used in departures to the east even that the selected runway runs to the west. As the SID is also displayed on the ND you can use this functionality to select the right SID for your runway setting the display knob and the EFIS Control Panel to NAV. If the SID runs into the wrong direction newly select the departure runway and then change to another SID.

5.4. „Catching“ the ILS-Glide Path:

The WILCO A320 CFM has some problems catching the ILS-glide path if the angle is too big. Therefore the ideal angle should not be greater than 45 degrees. If the STAR used leads you to the last waypoint before the runway (starting with CF and the number of the runway itself) in a way that the angle would be too big (as shown in the picture below) than you should fly a manually set course to catch the glide path the right way.

In the following example – [Picture 168: Angle „catching“ a glide path](#) - (before we reach WPT) please "draw" the FCU knob with the blue triangle (by using the right mouse button) and set a course of app. 50 degrees e. g. start to fly a turn. Before reaching the lateral glide path (your course is app. 110 degrees whereas the runway course is 160 degrees) press LOC so that the lateral glide path will be caught. After catching the lateral glide path press APPR (to also catch the vertical glide path) and prepare for a smooth landing.



Picture 168: Angle „catching“ a glide path

5.5. Use of the Procedure and Checklist

As already previously explained the "Ultimate Airbus A32x V2" package also contains the complete procedure and checklist we used in this tutorial. After using this tutorial and flying the WILCO Airbus A320 CFM several times you will not need the explanations anymore. Then you can

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just use the complete procedure and checklist and fly the Airbus as a pilot and nearly as in the real life.

6. Credits - List of literature and pictures

In this tutorial explanations and other information as well as screenshots were used from the following documents:

- 6.1. Airbus Procedure- and Check List A320 CFM
- 6.2. WILCO A320 CFM Pilots Guide
- 6.3. WICLO A320 CFM Software
- 6.4. Microsoft FS) Documentation

7. Support

If there are open questions please feel free to contact

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8. Appendix - Glossary

APPENDIX - GLOSSARY	
Abbreviation	Description
ABV	Above (TCAS)
A/C	Aircraft
AGL	Above Ground Level
A.FLOOR	Alpha Floor
AMP	Audio Management Panel
AMSL	Above Mean Sea Level
A/THR	Autothrust
AC	Air Conditioning
ADIRU	Air Data Inertial Reference Unit
AIRAC	Aeronautical Information Circular
ALT	Altitude
APPR	Approach (Key on FCU)
APU	Auxiliary Power Unit
ATC	Air Traffic Control
BLW	Below (TCAS)
BRG	Bearing
CL or CLB	Climb
CLR	CLEAR (Key on MCDU Keyboard)
DES	Descent
DH	Decision Height
DIR	Direct
DME	Distance Measuring Equipment
ECAM	Electronic Centralized Aircraft Monitoring
EFIS	Electronic Flight Instrument System
EFOB	Estimated Fuel On Board
ELAC	Elevator and Aileron Computer
ENG	Engine
ETD	Estimated Time of Departure
E/WD	Engine/Warning Display
EXPED	Expedite (FCU Key)
EXT PWR	External Power
FAC	Flight Augmentation Computer
FADEC	Full Authority Digital Engine Control
FCU	Flight Control Unit
FD	Flight Director
FF	Fuel Flow
FL	Flight Level
FLX/MCT	Flexible/Maximum Continuous Thrust
FMA	Flight Mode Annunciator
FMGC	Flight Management and Guidance Computer
FO	First Officer
FOB	Fuel On Board
FPA	Flight Path Angle
F-PLAN	Flight Plan (MCDU Page)
FQ	Fuel Quantity
GPU	Ground Power Unit
GPWS	Ground Proximity Warning System
GS	Glide Slope
GW	Gross Weight
HDG	Heading
ILS	Instrument Landing System
INIT	Initiation (MCDU Page)
KG	Kilogram
IRS	Inertial Reference System
L/G	Landing Gear
LK	Lock
LOC	ILS Localizer
LSK	Line Select Key
MCDU	Multifunction Control and Display Unit
MDA	Minimum Descent Altitude
MKR	Marker
N/W	Nose Wheel
ND	Navigation Display
NDB(ADF)	Nondirectional Beacon (Automatic Direction Finder)
NM	Nautical Miles
OVFY	Overfly (Key on MCDU Keypad)

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PERF	Performance (MCDU Page)
PFD	Primary Flight Display
PPU	Power Push Unit
PROG	Progress (MCDU Page)
QNH	Barometric Pressure Reported By A Station
PSI	Pounds Per Square Inch
PTU	Power Transfer Unit
RAD/NV	Radio/Navigation (MCDU Page)
RMP	Radio Management Panel
RTO	Rejected Takeoff
RWY	Runway
SD	System Display
SEC	Spoiler and Elevator Computer
SID	Standard Instrument Departure
SRS	System Reference System
STAR	Standard Terminal Arrival Route
STDBY	Standby (TCAS)
TA	Traffic Advisory (TCAS)
TA/RA	Traffic Advisory & Resolution Advisory
TAS	True Airspeed
T/C	Top of Climb
TCAS	Traffic Alert and Collision Avoidance System
T/D	Top of Descent
TERR	Terrain Proximity Alert (GPWS)
THR	Thrust
THRT	TCAS Threat
THS	Trimmable Horizontal Stabilizer
TOGA	Takeoff Go-Around
TOW	Takeoff Weight
TRANS	Transition
TRK	Track
UTC	Universal Coordinated Time
V1	Speed at which takeoff cannot be aborted
V2	Minimum Takeoff Safety Speed
V/S	Vertical Speed
Vfe	Maximum Flap Extended Speed
VHF	Very High Frequency
Vls	Minimum Safe Speed
Vmax	Maximum Operating Speed In Current Condition
Vmo/Mmo	Maximum Operating Limit Speed
VOR	Very High Frequency Omirange Station
Vr	Rotation Speed
XFR	Transfer
ZFW	Zero Fuel Weight
ZFWCG	Zero Fuel Weight Centre of Gravity