ОАО «Авиакомпания «Сибирь»

РУКОВОДСТВО ПО ПРОИЗВОДСТВУ ПОЛЁТОВ

Приложение В5-2-01 (А319/320/321)

STANDARD OPERATING PROCEDURES

Siberia Airlines
2007
Приложение В5-2-01 (А319/320/321) к руководству по производству полётов ОАО «Авиакомпания «Сибирь»

Siberia Airlines
2007
### ЛИСТ СОГЛАСОВАНИЯ

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0 ВВЕДЕНИЕ

«Стандартные операционные процедуры» разработаны на основании Руководства по летной эксплуатации (FCOM) A319/320/321 с учетом последних изменений, имеющегося опыта эксплуатации самолета A319/320/321, требований нормативных документов ОАО «Авиакомпания Сибирь» и воздушного законодательства РФ.


Точное и пунктуальное выполнение операций, порядка взаимодействия и распределения обязанностей в процессе предполетной подготовки, выполнения полета и послеполетных процедур, изложенных в «Стандартных операционных процедурах» являются обязательным для всех членов экипажей ВС A319/320/321 ОАО «Авиакомпания Сибирь».

Любые предложения, изменения и замечания к «Стандартным операционным процедурам» подаются в Службу летных стандартов в письменном виде и используются в целях дальнейшего их совершенствования.
Изображение документа представляет собой страницу с содержанием. Содержание включает следующие разделы:

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### 0.3 Лист регистрации изменений

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Страница зарезервирована
FOREWORD

Standard Operating Procedures consist of inspections, preparations, and normal procedures. All items of a given procedure are listed in a sequence that follows a standardized scan of the cockpit panels, unless that sequence goes against the action priority logic, to ensure that all actions are performed in the most efficient way.

Standard Operating Procedures are divided into flight phases, and are performed by memory.

These procedures assume that all systems are operating normally, and that all automatic functions are used normally.

Some normal procedures, that are non-routine will be found in the SUPPLEMENTARY TECHNIQUES Chapter (FCOM 3.04), and in the SPECIAL OPERATIONS Chapter (FCOM 2.04).

NORMAL CHECKLIST

After completing a given procedure, the flight crew uses the related normal checklist to ascertain that they have checked the safety points.

The crewmember that reads the checklist should announce completion of the checklist (Example: "LANDING CHECKLIST COMPLETED").

The normal checklist, developed by Airbus, takes advantage of the ECAM system and only includes the items that may directly impact safety and efficiency if done incorrectly.

All normal checklists are requested by the PF, and read by the PNF. They are of the challenge/response type. The responding crewmember only responds to the challenge after having checked the configuration. If the configuration does not agree with the checklist response, he must take corrective action before answering.

If corrective action is not possible, the pilot modifies the response to reflect the actual situation (specific answer). Whenever necessary, the other crewmember crosschecks the validity of the response. The challenger waits for the response, before proceeding any further.

Note: Normal checklists are not "TO DO" lists. The flight crew should have performed the actions, or checks, prior to going through the checklist.

Obviously, the flight crew must take corrective action on any item that is not in the proper condition, when it reads the list.

For the checklist items identified as “BOTH”, the PF replays first.

ECAM MEMO should always be checked by both pilots after checklist response, when applicable.

If checklist was interrupted while challenging or responding, it should be started again.
COMMUNICATION

Cross-cockpit communications:

Cross-cockpit communication is VITAL for any crew. Whenever a crewmember makes any adjustments or changes to any information or equipment on the flight deck, he must advise the other crewmember and obtain an acknowledgement. This includes but not limited to such items as: FMGS alterations, changes in speed or Mach, the tuning of navigation aids, flight plan modifications, and the selection of such systems as anti-ice and pack low flow.

The flight crew must use headsets and INT/RAD switch on ACP in INT position from engine taxi to top of climb, and from top of descent until the aircraft is parked. Headsets shall be always worn during pre-departure or descent and approach briefings.

While ATIS monitoring (listening) it is recommended to use headsets with reduced loudspeaker volume to minimum.

During PA operations both loudspeakers volume should be reduced to minimum.

Selection of VHF frequencies shall be preferably done through one’s own RMP. After selecting and activating a non-dedicated VHF frequency (SEL LT ON), the radio communication selection key shall be returned to the dedicated VHF frequency (SEL LT OFF).

When PNF uses the side stick transmit switch it is imperative that no side stick input is made.

VHF 1 will normally be used for all ATC communications; VHF 2: for ATIS information, dispatch or customer or airline service frequency; VHF 3: emergency frequency monitoring.

When voice communication can’t be established and push back using hand signals is required, engines must not be started during push back.

Sterile cockpit rule:

Below 10 000 feet, any non-essential conversation within the cockpit and between the cabin and cockpit crews should be avoided. The period of sterile cockpit shall be from block off to FL100 during climb and from FL100 to block on during decent. Adherence to this policy facilitates effective crew communication, as well as communication of emergency or safety-related information by cabin crew.

When “SEAT BELT” sign is illuminated in the cabin during climb and decent, the cabin crew will not enter the flight deck as this is the indication that a sterile cockpit is in force.
USE OF THE FLIGHT MANAGEMENT AND GUIDANCE SYSTEM

AUTOPilot AND FLIGHT DIRECTOR

AP and FD provide assistance to the crew throughout the flight:
- By freeing up the Pilot Flying from routine handling tasks, and thus providing time and resources to assess the overall operational situation.
- By providing the Pilot Flying with adequate attitude or flight path orders, with the flight director symbol on the Primary Flight Display, so as to facilitate accurate handling of the aircraft.

The FCU is the short-term interface between the pilot and the FMGC, used to select guidance targets and arm/engage guidance modes.

There are 2 types of modes and associated targets:
- Managed modes and targets: The aircraft is guided along the FMS lateral and vertical flight plan and speed profile. These modes and targets are armed or engaged by pressing the FCU knobs.
- Selected modes and targets: The aircraft is guided by selected targets according to the modes selected on the FCU. These modes and targets are armed or engaged by the pilot by turning and pulling the FCU knobs.

In flight FCU altitude knob shall be always left on 100 ft selection.

The PF's task is to set the desired modes and targets to fly the aircraft where he wants to go.
- If the autopilot is used, the PF may select the modes on the FCU.
- If the autopilot is not used, the PF asks the PNF to select the intended modes and targets on the FCU.

The armed and engaged modes are indicated on the Flight Mode Annunciator (FMA) on top of the PFD; the targets (SPD, ALT, HDG...) are indicated on the associated scales on the PFD.
- The crew must check the FCU-selected targets on the PFD.
- The crew must monitor the engaged/armed modes on the FMA

If the autopilot and/or flight director do not guide the aircraft where the crew is expecting:
- The PF should disengage the autopilot using the instinctive disconnect pushbutton on the sidestick, and both pilots should delete the flight director symbols from the PFD with the flight director pushbuttons located on the EFIS control panel, and fly the aircraft manually.
- The PF should not disengage the autopilot by sidestick override, except if instinctive reaction.

The autopilot may be used from after takeoff down to a late stage of the approach (including autoland when permitted).

The autopilot may be used in most failure cases, when available:
- In case of engine failure, including CATII / CATIII ILS approaches and fail-passive automatic landings.
- In case of abnormal configuration, down to 500 feet AGL in all modes.
AP can be set ON when the aircraft is within flight envelope (attitude, speed). AP automatically goes OFF when normal flight envelope significantly exceeded. Do not try to engage AP when aircraft is out of the flight envelope. It is recommended to engage AP during stabilized flight.

**Note:**
- in normal law AP is available and may be used within normal flight envelope 5 sec (100 ft) after lift off;
- in alternate law AP may be available only depending on the causes and types of failures;
- in direct low AP is not available.

When the autopilot is engaged, there is no backdriven feedback system to the sidestick, since this is no longer necessary with fly-by-wire controls.

When the PF handflies the aircraft using the flight director, he must obey the flight director orders; in other words, the crossbars must be centered, or the flight path vector must be on the flight path director symbol so as to fly according to the selected modes and targets.
- If the PF does not wish to fly the flight director orders, both pilots must delete the flight director symbols from the PFDs.
- When flying a visual approach, the flight directors should be deselected.

**AUTOTHROTTLE (A/THR)**

The A/THR's design objective is to provide assistance to the crew for thrust management throughout the flight.

The A/THR may be engaged in one of the following modes, which automatically depend on the AP/FD vertical modes:

- **THRUST mode**: The A/THR maintains a fixed thrust level (e.g. THR CLB or THR IDLE), when the AP/FD guides the aircraft in climb or descent at a constant speed (e.g. CLB or DES modes)

- **SPEED/MACH mode**: The A/THR varies the thrust, so as to maintain a target speed, when the AP/FD guides the aircraft on a given trajectory (e.g. V/S, ALT, G/S modes).

When the A/THR is active, the thrust levers are set to detents (e.g. MCT, CLB); they remain in this fixed position, while the A/THR varies or sets the thrust according to the active mode.

When the A/THR is active, the thrust lever position defines the maximum thrust available for the A/THR.

The crew must monitor the A/THR to ensure correct operation:
- On the PFD, by checking the active mode on the FMA, the current speed versus the target speed and, most importantly, the speed trend vector on the speed scale.
- On the ECAM, by checking the thrust command symbols on the engine thrust indication (N1 or EPR).

In case the PF is not satisfied with the A/THR's operation, he must first set target thrust manually, then disengage it using one of the instinctive disconnect pushbuttons located on the thrust levers. He can then command the thrust manually, which is totally conventional.
A/THR disconnection procedure:

- Initially move the thrust levers manually to match the actual THR pointer with the white circle THR target;
- Next disengage A/THR using one of the instinctive disconnect pushbuttons located on the thrust levers.

It is not recommended to set A/THR OFF with the A/THR p/b located on the FCU. This is considered as an unvoluntary A/THR OFF command (as if it was due to failure – creating ECAM action). In this case thrust is frozen and remains locked at present value as long as THR levers remain in CLB detent and ECAM caution as well as FMA message triggered during thrust lock. Consequently you will get ECAM actions, when all systems of A/THR operates normally.

The A/THR may be used from thrust reduction, after takeoff, down to flare, at landing. During final approach PF should keep one hand on the THR levers.

The A/THR may be used in most failure cases, when available, in case of:
- One engine failure, without any restrictions;
- Abnormal configuration, with selected target speed for the approach.

FLIGHT MANAGEMENT SYSTEM (FMGS)

The FMGS is designed to provide assistance to the crew for:
- Navigation
- Flight planning
- Aircraft performance (optimum speeds/altitudes)
- Predictions

The FMGS is an important long-term planning and management tool, linked to the AP/FD. When the AP/FD is engaged in Managed modes, the aircraft is guided along the FMS flight plan, using the FMS target speeds.

The FMGS MCDU is a major interface between the pilots and the FMGS. However, the various FMGS entries required at successive flight phases should not distract the crew from the general flight conduct and duties.

The prime concern for the flight crew should be:
- is the aircraft flying as expected NOW?
- what is the aircraft expected to fly NEXT?

If any doubt is raised about the aircraft current trajectory, or proposed target speed..., the PF must immediately select the appropriate modes and targets on the FCU (which automatically disengages the managed modes).

Subsequently and if time permits, the PNF will analyze and correct whatever might have gone wrong on the MCDU.

Selections and actions on the MCDU shall be done by the PNF by request of the PF or PF after transferring control to the PNF.
GENERAL RULES FOR GOOD USE OF THE FMGS

- Monitor the AP/FD/ATHR modes and engagement status on the FMA
- Any FMA modification must be announced.
- Monitor the result of any target selection performed on the FCU, on the related scales of the PFD (e.g. SPD target, on SPD scale)
- Monitor the AP/FD/ATHR resulting guidance, on the basic flight instrument scales of the PFD (HDG, SPD, ALT, attitude...)
- If the PF is not satisfied with the guidance he must:
  • REVERT TO BASICS
  • FLY THE AIRCRAFT where he wants to go.

TASK SHARING FOR NORMAL FLIGHT

• PF (Pilot Flying) is responsible for:
  - Thrust levers setting,
  - Flight path and airspeed control,
  - Aircraft configuration (PF orders, PNF executes),
  - Navigation,
  - Checklist response.

• PNF (Pilot Non Flying) is responsible for:
  - Checklist reading / checklist response correct answer,
  - Communication,
  - Execution of required actions on PF command,
  - Alternates and destination weather monitoring / collection,
  - Computarised flight plan filling.

During handling the aircraft PF should not carry out other activities, e.g. tune radios, select transponder codes, make any actions on FMGS MCDU and overhead panel or make PA announcement. Additionally, PF should not read technical documents, books or any other published press when handling the aircraft.

The captain always has priority as PF for:

- Taxiing the aircraft from block off till line up position and from the end of rolling after landing till block on;
- RTO is required;
- Dual engine failure;
- ELEC EMER CONFIG;
- CAT II/III operation.

CM2 may taxi the aircraft by CM1 request only in a straight line.

The flight crew has to follow ONE HEAD UP philosophy during the all phases of flight and PF must transfer control if he intend to make descent preparation, FMGS changes, cockpit and papers preparation, etc.
TASK SHARING FOR ABNORMAL / EMERGENCY PROCEDURES

- **PF is responsible for:**
  - Thrust levers setting,
  - Flight path and airspeed control,
  - Aircraft configuration,
  - Navigation,
  - Communication, until ECAM or QRH actions completed,
  - Checklist response,
  - Starting and stopping procedures, required by ECAM or QRH,
  - Cabin crew liaison.

- **PNF is responsible for:**
  - ECAM and QRH actions,
  - Checklist reading / checklist response correct answer,
  - Execution of required actions on PF command,
  - Communication after ECAM or QRH actions completed.

A cross-check by dual response must be performed before actuation of critical controls including:
- Thrust lever reduction of failed engine;
- Engine Master switches;
- Engines and APU fire P/B and extinguisher P/Bs;
- IDG disconnect P/Bs;
- Other guarded P/Bs;
and before any other irreversible actions.

TAKING OVER THE FLIGHT CONTROLS

Because of the nature of "fly by wire" and "side stick" systems, the PNF should not make control inputs to correct the PF's handling of the aircraft.

If a take-over becomes necessary during flight, the PNF must call clearly "I have control", and press the sidestick priority pushbutton, keeping it pressed until the transfer of control is clearly established.
CREW BRIEFINGS

The main objective of the crew briefing is for the PF to inform the PNF of his intended course of action. Take off and approach briefings should be adapted to the conditions of the flight and concentrate on the items that are relevant for the particular take off or approach and landing.

Briefings should encompass items listed below in COCKPIT PREPARATION and DESCENT PREPARATION sections, but not limited; making maximum cross-reference to the MCDU, PFD, ND where it is possible.

It is recommended, whenever practical, to complete take off briefing at the gate and approach briefing prior to the top of descent.

CM1 may use the phrase “Standard RTO briefing” to cover RTO briefing, but full RTO briefing should be practiced at least once at the first flight of the day.

PNF may interrupt PF briefing to clarify any misunderstandings. Upon completion of the briefing PF should ask PNF about any questions.

If during taxi to the holding position or just before take off the crew has received any changes in ATC clearance, concerning SID, RW in use, first cleared altitude, heading or track after take off, it is mandatory to re-programme FMGS or FCU in accordance with ATC requirements and perform a new take off briefing. During descent preparation for expected CAT II/III approach and landing the CM1 as PF should perform additional briefing for CAT II/III approach.

ALTIMETER SETTING

Aircraft must be operated according to the barometric altimeter readings as follows:
- in Terminal area, at or below transition altitude – the altitude readings are based on aerodrome QNH;
- at or above the transition level – FL readings are associated with the altimeter standard pressure setting (1013.2 hPa).

Before departure barometric altimeters must be set to the QNH prevailing at the aerodrome of departure.

During descent barometric altimeters must be set to the QNH prevailing at the aerodrome of arrival when descending through the transition level or when cleared by ATC to an altitude (height).

- crossing transition altitude (transition level) PF initiates altimeters setting by calling “SET STANDARD” or “SET QNH...”
- when altimeters setting has been completed by the crew, PNF crosschecks setting and announces “STANDARD SET. CROSSCHECKED. PASSING FL... NOW” or “QNH ... SET. CROSSCHECKED. PASSING... FT NOW”
- finally, the crew performs respective checklist.
STABILIZED APPROACH

The aircraft shall be fully stabilized on the approach path not later than 1000 ft above threshold elevation (AGL) without visual reference to the ground (IMC) or not later than 500 ft above threshold elevation (AGL) with visual reference to the ground (VMC).

The aircraft is considered to be stabilized provided that:

- the aircraft is on the correct final approach slope;
- in order to maintain the correct glide path requires negligible corrective flight control movements;
- indicated air speed does not exceed that calculated for the approach speed value plus VREF + 20 knots and not less than VREF calculated for the approach speed value;
- the configuration of the aircraft is one required for landing according to FCOM;
- the descent rate does not exceed 1000 fpm (if adherence to published approach profiles requires higher rate of descent than 1000 fpm it should be considered during approach briefing);
- engine thrust setting is stabilized at the value as required by the aircraft landing configuration;
- checklist is fully completed.

The missed approach is to be initiated at 1000 ft above threshold elevation if correct stabilization is not achieved without visual reference to the ground or at 500 ft above threshold elevation with visual reference to the ground.

In all cases the pilot non flying (PNF) is responsible for informing the pilot flying (PF) of any deviations from the proper approach path and shall take-over controls when deviation tolerances are exceeded and flight safety is jeopardized.

The pilot flying (PF) shall initiate the missed approach immediately in case any member of the flight crew announces so, even if, in his/her opinion, continuation of the approach and landing can be safely completed.
FLAP SETTING FOR TAKE OFF AND LANDING

There is three different configurations given by the FCOM to the crew for take off: CONFIG 1+F; CONFIG 2 and CONFIG 3. This allows the crew to select the configuration that gives either:

- the highest permissible takeoff weight, or for a given weight,
- the highest flexible temperature;

if different configurations give equivalent performance (equivalent flex is obtained) the crew should select the configuration associated with the lowest takeoff speeds.

A high configuration (CONFIG 2/CONFIG 3) is preferable to minimize tailstrike risks or on badly paved runways and accelerate stop distance limited runways to decrease takeoff speeds.

A low configuration (CONFIG 1+F) is preferable to optimize climb gradient more specifically in hot weather conditions or suspected windshear and severe turbulence.

It is recommended to select CONFIG 2 for take off as long as it does not include a FLEX TEMP reduction higher than 5° to provide maximum tailstrike clearance.

The normal flap setting for landing is CONFIG FULL and should be used for manual landings and autoland. CONFIG 3 may be selected by captains discretion for manual landing and autoland and is recommended in suspected windshear conditions. CONFIG 3 landing reduce flaps wear and produce small fuel saving, but higher landing speed can result more brake wear, higher brake temperature and longer cooling period.

FLAPS AND LANDING GEAR HANDLING

All landing gear and flaps selections should be made by the PNF when it is required by the PF commands. Before making landing gear and flaps selection, PNF must closely check that the airspeed is within the limits and then will perform appropriate call.

There is no requirement to report that the flaps selected position has been achieved (ECAM will alert any inability of the system to achieve the selected position) but the PNF has to check the blue number on the ECAM flap indicator to confirm the correct selection has been made.
AIRCRAFT MANAGEMENT

It is recommended to fly with FD ON, AP ON and A/THR ON throughout the flight. Manual thrust setting and manual aircraft handling may be employed due to equipment failure, for pilot practice or during prevailing weather conditions. Autothrust may be used in cases of abnormal configuration with selected speed target for approach.

It is not permitted to select only one FD OFF. The PNF must select both FDs ON or OFF at the same time and announce “FDs ON” or “FDs OFF”.

In case of abnormal configuration AP may be used down to 500 ft AGL in all modes. Maximum usage of AP should be made in the event of an engine failure. For an engine failure during take off AP should be engaged as soon as the aircraft is fully under control and stabilized on the correct trajectory.

In the unlikely event of AP and A/THR failure it is imperative that the PF assumes manual control immediately.

TCAS AND ATC

TCAS should be flown in the TA/RA mode under most conditions from the moment of taking an active runway for departure until landing and clearing of the runway, unless otherwise stipulated in FCOM or for any other reasons.

The pilots should not maneuver the aircraft on the sole basis of a Traffic Advisory (TA).

Note: Traffic Advisory information is only intended to assist the sighting of other aeroplanes and alert the flight crew that an RA, requiring a change in flight path, may follow.

Whenever the aircraft has deviated from assigned clearance in response to an RA, the flight crew shall fill in the Incident Report form and report the circumstances to the Company upon completion the flight.

• Actions to be taken on receiving a TA:
  1) The flight crew should immediately assess the information provided by the TA and commence a visual search of that portion of the sky within which the potential threat is likely to be seen.
     It is a good practice for PF to announce to the PNF “I have control, you watch outside”
  2) The flight crew should prepare to respond to an RA.
  3) In climb / descent reduce vertical speed to 1000 fpm.
• **Actions to be taken on receiving an RA:**

1) Pilots are to initiate the required maneuver immediately, in doing so:
   - disconnect the autopilot and flight directors;
   - adjust aircraft’s pitch promptly to achieve the required vertical speed (follow the green sector).

2) Maneuvers should never be made in the direction opposite to that given in an RA.

3) Pilots shall notify ATC as soon as practicable responding to the RA that directs a deviation from assigned altitude using the standard phraseology: "**TCAS CLIMB (DESCEND)**".

4) If pilots receive simultaneously an instruction to maneuver from ATC and on RA, and both conflict, the advice given by TCAS should be followed. Inform ATC "**UNABLE TO COMPLY, TCAS RA**" if possible and continue maneuver as indicated until the TCAS «**CLEAR OF CONFLICT**» message is heard.

5) Respond immediately to any “reversal” RA maneuver advisories and notify ATC as soon as practicable.

6) If the TCAS “**CLEAR OF CONFLICT**” message is heard, notify ATC and follow any subsequent change to clearance as advised by ATC.

Pilots should comply with the vertical speed limitations during the last 2000 ft of climb or descent. In particular, pilots should limit vertical speeds to 1500 fpm during the last 2000 ft of climb / descent, especially when the aircraft is aware of the traffic that was converging in altitude and intended to level off 1000 ft above or below the assigned altitude.

**All TCAS RAs take precedence over ATC instructions concerning altitude change.**

Stall warnings or ground proximity warning system (GPWS) warnings take precedence over TCAS advisories.

The flight crew should follow TCAS advisories taking into account restrictions stipulated in FCOM of the aircraft concerned.

**Do not descend below minimum safe altitude (height) in response to TCAS descent RAs.**

If the flight crew receives a TCAS RA to climb while being on glide slope, perform a go-around procedure.

If the flight crew receives a TCAS RA to descend while being on glide slope, the commands are not to be followed below 1,100 ±100 ft AGL.

It is authorized not to follow TCAS RAs in case the pilots visually identify other traffic while simultaneous parallel approaches are conducted.
EGPWS

It is not infallible, but an immediate and positive response must be made to all GPWS alerts and warnings. Only after immediate and positive visual verification of the outside can such warning be judged inappropriate. As a consequence, when flying conditions do not allow such verification (at night, or by day whenever the terrain and obstacles are not clearly visible), the corrective actions must be carried out immediately without wasting time in search for the cause of the warning.

The flight crew should discuss the usage of TERR on ND during briefings to enhance situational awareness during departure and arrival. It is recommended to use TERR on ND during operations in the mountain area and in the not well-known area.

Normally PNF should display TERR on ND until reaching TOC on departure and from TOD until leaving the runway on arrival where terrain is a significant feature.

Caution “TERRAIN AHEAD” gives typically 60 sec reaction time prior to the potential terrain conflict; warning “TERRAIN AHEAD, PULL UP” only 30 sec reaction time. If TERR on ND is not selected, caution or warning will be triggered, terrain data will be automatically displayed on ND and TERR on ND light comes on.

EGPWS has priority over the PWS and approved to operate with GPS PRIMARY or NAV ACCUR HIGH.

PA ANNOUNCEMENT

It is Captain’s responsibility to maintain contact with passengers in order to keep them informed about details of the flight and deviations from normal operations.

The public address system (PA) is an important and effective means available to Captain to inform the passengers and enhance the reputation.

Captain may delegate PA to the first officer.

Announcements should be coordinated with the purser to avoid a duplication of information.

Announcements at least should consist of:

- Inflight information, which should be performed at a convenient stage after reaching TOC;
  Care must be taken not to disturb the passengers with routine announcements during the night.
- Arrival information before descent, which should be performed at a convenient stage after reaching TOD.
Страница зарезервирована
2  ПРЕДПОЛЕТНАЯ ПОДГОТОВКА

2.1  FLIGHT PREPARATION

TECHNICAL CONDITION OF THE AIRCRAFT

The crew will verify the technical state of the aircraft (deferred defect list), with regard to airworthiness, acceptability of malfunctions (MEL), and influence on the flight plan.

WEATHER BRIEFING

The crew will get a weather briefing.

The briefing should include:
- Actual and expected weather conditions, including runway conditions for takeoff and climb-out.
- Significant weather enroute, including winds and temperatures.
- Terminal forecasts for destination and alternate airports.
- Actual weather for destination and alternates, for short range flights and recent pastweather, if available.
- Survey of the meteorological conditions at airports along the planned route.

Weather can affect the choice of routing (for example, influence which route is quickest) and the choice of flight level. The flight crew must also consider the possibility of runways being contaminated at the departure and destination airfields. The flight crew must also verify ISA deviations and enroute icing conditions, and must consider the possibility of holding due to weather at the destination.

NOTAMS

The flight crew must examine NOTAMs for changes to routings, unserviceable nav aids, availability of runways and approach aids etc, all of which may affect the final fuel requirement.

In order to prevent the risks of projection of debris towards the trimmable horizontal stabilizer and the elevators, it is not recommended to takeoff from runways in bad condition (loose surface, under repair, covered with debris.....)

FLIGHT PLAN AND OPERATIONAL REQUIREMENTS

The crew will check the company flight plan for routing, altitudes, and flight time.

The Captain will check the ATC flight plan and ensure that it:
- Is filled in and filed, in accordance with the prescribed procedures,
- It agrees with the fuel flight plan routing.

The crew will check the estimated load figures, and will calculate the maximum allowable takeoff and landing weights.
OPTIMUM FLIGHT LEVEL

The flight crew should choose a flight level that is as close to the optimum as possible. To obtain the optimum flight level, use the chart in the QRH or in the FCOM (Refer to FCOM 2.05.20).

As a general rule, an altitude that is 4000 feet below the optimum produces a significant penalty (approximately 5 % of fuel). Flight 8000 feet below the optimum altitude produces a penalty of more than 10 % against trip fuel. (The usual contingency allowance is 5 %).

FUEL REQUIREMENTS

COMPUTERIZED FLIGHT PLAN CHECK

In most cases the flight crew uses a computer-derived flight plan to obtain the correct fuel requirements. Although these computerized requirements are normally accurate, the flight crew must check them for gross errors.

The easiest way to do this is to use the "Quick Determination of F-PLN" tables in FCOM 2.05.40. Although the aircraft will fly at ECON MACH that is based on the cost index, the 0.78 Mach table is accurate enough to permit the crew to check for gross error. Ensure that both the captain and the first officer have verified that the fuel calculations and required fuel on board are correct and that the figure complies with the applicable regulations.

FUEL TRANSPORTATION

The crew must check the policy covering the “tankering” of fuel on where there is a favourable fuel price differential or operational requirement. Remember that carrying unnecessary extra fuel increases the fuel consumption for that sector and therefore reduces the economy of the operation (lower flex temperature, more tire and brake wear, more time in climb phase, lower optimum flight level etc.).

CABIN CREW BRIEFING

Prior to departure, during pre-flight preparation Captain shall:
- receive the report from perser on the cabin crew complement and readiness for flight;
- inform the purser about the flight crew complement;
- inform the purser about the expected flight time and commercial loading;
- advise the purser about dangerous goods present onboard and give instructions concerning the actions of cabin crew in case of emergency;
- coordinate contents and number of announcements with the purser in order to avoid duplication of information;
- establish the code statement or special signals to use by a cabin crew member communicating with the flight deck;
- carry out the briefing with the cabin crew, e.g. informs about specifics of forthcoming flight, expected turbulence areas, gives additional instructions regarding the flight safety, extended water operations, operations in polar areas and over mountainous areas, etc.
Note: The briefing with the cabin crew may be carried out in the airport briefing room or on board the plane with the use of interphone system.

LOGBOOK INSPECTION

Check the Aircraft Maintenance Log as soon as practicable to gain an awareness of the aircraft status during preflight. In addition, verify that the number on the cover of the log, as well as the number on the flight release, agrees with the number of the aircraft. Check for current discrepancies, proper line check release, and fuel/oil entries. A timely logbook inspection will ensure prompt maintenance awareness of items that need attention prior to flight.

Consult the Minimum Equipment List (MEL) for any operating limitations or crew operating procedures as a result of MELs identified on the flight plan or placards in the logbooks. Check the aircraft logbook for a proper line check release.

Review MEL items to ensure that no restrictions apply, if applicable.

According to MEL or FCOM, a failure or a combination of failures corresponding to inoperative items affecting takeoff performance (Refer 6.10) might lead to different dispatch conditions like:

- NO GO
- Takeoff prohibited
- Takeoff not recommended
- Refer to MEL
- Refer to FCOM
- No effect on takeoff performance
2.2 SAFETY EXTERIOR INSPECTION

Items marked by (*) are the only steps to be completed during a transit stop. This inspection ensures that the aircraft and its surroundings are safe for operations. On arriving at the aircraft, check for obstructions in the vicinity, engineering activity, refueling, etc.

* - WHEEL CHOCKS ..........................................................CHECK IN PLACE PNF
* - LANDING GEAR DOORS .................................................CHECK POSITION PNF

WARNING

Do not pressurize the green hydraulic system without clearance from ground personnel, if any gear door is open. Remember that the green hydraulic system is pressurized if the yellow system is pressurized and the PTU is on auto.

* - APU AREA .................................................................CHECK PNF

Observe that the APU inlet and outlet are clear.
2.3 PRELIMINARY COCKPIT PREPARATION

Items marked by asterisks (*) are the only steps to be completed during a transit stop. The following procedure, performed by the PNF ensures that all required checks are performed before the application of electrical power to avoid inadvertent operation of systems and danger to the aircraft and personnel. Including APU start and the establishment of electrical and pneumatic power.

**ENG**

- MASTER 1 and 2 .................................................................OFF PNF
- MODE selector .................................................................NORM PNF

**L/G**

- L/G lever .................................................................CHECK DOWN PNF

**WIPERS**

- WIPERS .................................................................OFF PNF

**ELEC**

- If the aircraft has not been electrically supplied for 6 hours or more, perform the following check:
  - BAT 1 and 2 .................................................................CHECK OFF PNF
  - BAT 1 and 2 VOLTAGE ..............................................CHECK ABOVE 25.5 V PNF

  Battery voltage above 25.5 V ensures a charge above 50%.

- If battery voltage is below 25.5 V:
  
a charging cycle of about 20 minutes is required.
  - BAT 1 and 2 .................................................................AUTO PNF
  - EXT PWR .................................................................ON PNF

  Check on ECAM ELEC page, battery contactor closed and batteries charging.

- after 20 minutes:
  - BAT 1 + 2 .................................................................OFF PNF
  - BAT 1 and 2 VOLTAGE ..............................................CHECK ABOVE 25.5 V PNF
• If battery voltage is above 25.5 V:
  - BAT 1 and 2 ................................................................. AUTO PNF
  
  If the APU is started on batteries only, it should be started within 30 minutes after the selection of batteries to AUTO (35 minutes after battery selection to AUTO, the battery charge is less than 25% of maximum capacity).

  - If the aircraft has been electrically supplied during the last 6 hours:
    - BAT 1 and 2 ......................................................................... AUTO PNF
    - EXT PWR (when AVAIL light is on) ........................................... ON PNF
      AVAIL light goes out.

HYD

WARNING

Do not pressurize hydraulic systems without clearance from ground crew.

APU FIRE

- APU FIRE pushbutton ......................................................... IN and GUARDED PNF
- AGENT light ............................................................... OUT PNF

  If the APU is already running, ensure that the following check has already been completed. If not, perform it.

- APU FIRE TEST pushbutton ........................................... PRESS PNF

  Check:
  - APU FIRE warning on ECAM+CRC+MASTER WARN light (AC Power available)
  - APU FIRE pushbutton lighted red.
  - SQUIB and DISCH lights on

APU START

  - If EXT PWR ON light is on:
    - APU MASTER switch ......................................................... ON PNF
      ON light comes on.
      APU page appears on ECAM.

    - APU START ................................................................. ON PNF
      FLAP OPEN indication appears on ECAM APU page.
      On ECAM APU page, N and EGT rise.
      When N = 95%:
      - On ECAM APU page, AVAIL indication appears.
      - On APU panel: START ON light goes out.
      - AVAIL light comes on.

      10 seconds later:
      - ECAM DOOR page replaces ECAM APU page.
- EXT PWR .................................................................................... AS RQRD PNF

- If EXT PWR ON light is out:
  - APU MASTER switch............................................................................ ON PNF
    ON light comes on.
  - APU START ........................................................................................... ON PNF
    At 95% RPM:
    - START ON light goes out.
    - AVAL light comes on.
    - APU GEN comes on line.
    - ECAM APU page appears after 10 seconds.
    - If required, adjust brightness on ECAM control panel.

    10 seconds later:
    - ECAM DOOR page replaces ECAM APU page.

COCKPIT LIGHTS

* - COCKPIT LIGHTS .....................................................……………A S RQRD PNF
  - Set OVHD INTEG LT, STBY COMPASS, DOME, ANN LT switches as required.
  - Set FLOOD LT and INTEG LT as required.

DOME light should be on because it is the only lighting source in the EMER ELEC configuration. The DIM position is recommended for takeoff.

PARKING BRAKE

* - PARKING BRAKE............................................................................. ON PNF
* - ACCU PRESS & BRAKES PRESS indicators................................. CHECK PNF
  - Check for normal indications.
  - The ACCU PRESS indication must be in the green band. If required use the electric pump on yellow hydraulic system to recharge the brake accumulator.

WARNING

Yellow and green hydraulic systems are pressurized from yellow electric pump. Get ground crew clearance before using the electric pump.
ALTERNATE BRAKING SYSTEM

**Note:** The purpose of this check is to verify, before the first flight of the day, the efficiency of the alternate braking system (absence of "spongy pedals").

**Note:** If no pushback required the flight crew must ensure that the main wheels are chocked prior to commencing this procedure.

- **Y ELEC PUMP** ................................................................. CHECK OFF PNF
- **PARKING BRAKE** ............................................................ OFF PNF
- **BRAKE PEDALS** ............................................................. PRESS PNF

*Apply maximum pressure on both pedals.*

- **BRAKE PRESSURE** (on BRAKE press indicator).............. CHECK PNF

*Pressure must build up without delay symmetrically on left and right sides for the same application simultaneously applied on left and right pedals. With full pedal deflection, the pressure must be between 2000 and 2700 psi.*

- **BRAKE PEDALS** ............................................................. RELEASE PNF
- **PARKING BRAKE** ............................................................ ON PNF

The parking brake must be on during the exterior inspection to allow the flight crew to check brake wear indication.

**F/CTL**

- **FLAPS** ................................................................. CHECK POSITION PNF

*Check on the upper ECAM display that the FLAPS position agrees with the handle position.*

* - **SPEED BRAKE lever** ......................... CHECK RET and DISARMED PNF

**WARNING**

*If flight control surface positions do not agree with the control handle positions, check with the maintenance crew before applying hydraulic power.*

**PROBE/WINDOW HEAT**

- **PROBE/WINDOW HEAT** ........................................... CHECK AUTO PNF
AIR COND

- APU BLEED ................................................................. ON PNF
  Do not use APU BLEED if ground personal confirms that ground air is connected. Pilots should also check the ECAM BLEED page to determine whether an HP ground air unit is connected (pressure in the bleed system).

- ALL WHITE LIGHTS ....................................................... OFF PNF

- X BLEED ................................................................. AUTO PNF

- Zone temperature selectors ...................................... AS RQRD PNF
  Full range temperature 24 ± 6° C (75 ± 11º F)

CARGO HEAT

- SELECTORS ................................................................. AS RQRD PNF
  Set temperature selectors as required.

ELEC

- Scan / check : no amber lights except GEN FAULT lights ......................... PNF

VENT

- Check all lights off ................................................................. PNF

ECAM

* - RECALL ................................................................. PRESS PNF
  - Press the RECALL pushbutton for at least 3 seconds to recall all warnings that have been cleared or cancelled.
  - If applicable, check warnings compatible with MEL, then CLR or CANCEL them.
  - If any action is required, call maintenance personnel as soon as possible.

* - DOOR ................................................................. PRESS PNF
  If oxygen pressure is half boxed in amber, check "MIN FLT CREW OXY CHART" to verify if the pressure is sufficient for the scheduled flight (Refer to 6.6).

* - HYD ................................................................. PRESS PNF
  Check that the quantity indexes are in the normal filling range.

* - ENG ................................................................. PRESS PNF
  Check that the oil quantity is at or above 9.5 qts + estimated consumption (maximum average estimated consumption ~ 0.5 qt/h).
  Minimum starting oil temperature -40°C.
**EMERGENCY EQUIPMENT** ........................................................................CHECK PNF

Check the following equipment:

- Life jackets stowed
- Axe stowed
- Gloves stowed
- Smoke hoods stowed
- Portable fire extinguisher lock wired and pressure in the green area
- Flashlights stowed and charged
- Escape ropes stowed

**REAR and OVERHEAD CIRCUIT BREAKERS panels**

- REAR and OVERHEAD CIRCUIT BREAKERS panels ...............CHECK PNF

Check that all circuit breakers are set.

**STAFF PAPERS** ..................................................................................CHECK PNF

Check following documents on board:

<table>
<thead>
<tr>
<th>Document</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>• FCOM volumes 1,2,3,4</td>
<td>• Папка с сертификатами</td>
</tr>
<tr>
<td>• Weight and Balance Manual (WBM)</td>
<td>• НПП ГА – 85</td>
</tr>
<tr>
<td>• Minimum Equipment List (MEL)</td>
<td>• РПП ОАО «Авиакомпания Сибирь»</td>
</tr>
<tr>
<td>• Airplane Flight Manual (FM)</td>
<td>• Папка справочного тех. материала</td>
</tr>
<tr>
<td>• QRH (in duplicate)</td>
<td>• Папка спр. аэронав. материала</td>
</tr>
<tr>
<td>• Takeoff Charts (RTOW)</td>
<td>• Technical Logbook</td>
</tr>
<tr>
<td>• Normal CHECKLIST (in duplicate)</td>
<td></td>
</tr>
<tr>
<td>• DE-ICING CHECKLIST</td>
<td></td>
</tr>
</tbody>
</table>
2.4 PNF EXTERIOR INSPECTION

The exterior inspection ensures that the overall condition of the aircraft and its visible components and equipment are safe for the flight.

Complete inspection is normally performed by maintenance personnel or in the absence of maintenance personnel by PNF before each originating flight. Items marked by asterisks (*) must be performed again by PNF before each flight.

The parking brake must be on during the exterior inspection to allow the flight crew to check brake wear indicators.

- Check structure for impact damage
- Check that there is no evident fuel, oil or hydraulic leaks.

**WARNING**

*If a landing gear door is open, contact the maintenance crew before applying hydraulic power.*
(1) **LH FWD FUSELAGE**

* AOA probes .......................................................... CONDITION
- F/0 and CAPT static ports ........................................... CLEAR
- Avionics equipment vent air inlet valve ...................... CONDITION
- Oxygen bay ............................................................. CLOSED
- Oxygen overboard discharge indicator ...................... GREEN
* Toilet servicing door ............................................ CLOSED

(2) **NOSE SECTION**

* Pilot probes ......................................................... CONDITION
- STBY static ports ................................................... CLEAR
* TAT probes ........................................................... CONDITION
* Radome and latches ................................................. CONDITION/LATCHED
- Forward avionics compartment door ......................... CLOSED
- Ground electrical power door (if not required.) .......... CLOSED

(3) **NOSE L/G**

* Nose wheel chocks ................................................ IN PLACE
* Wheels and tires ..................................................... CONDITION
- Nose gear structure ................................................ CONDITION
- Taxi, TO, turn-off lights .......................................... CONDITION
- Hydraulic lines and electrical wires ......................... CONDITION
- Wheel well ............................................................ CHECK
- Safety pin .................................................................. REMOVED

(4) **RH FWD FUSELAGE**

- RH + AFT avionic compartment doors ....................... CLOSED
- Avionic equipment vent air outlet valve ..................... CONDITION
- F/O-CAPT static ports ............................................. CLEAR
* AOA probe .............................................................. CONDITION
- Forward cargo door and selector panel ..................... CHECK

(5) **LOWER CENTER FUSELAGE**

- Potable water drain panel (if installed) ....................... CLOSED
- Antennas .................................................................... CONDITION
- Drain mast ............................................................... CONDITION
- RAM air inlet flap ..................................................... CONDITION
- LP and HP ground connection doors ......................... CLOSED
- Anti-collision light .................................................. CHECK
- CTR TK magnetic fuel level ......................................... FLUSH
- Pack air intakes and outlets .................................... CLEAR
(6) RH CENTER WING
- Yellow hydraulic bay door ........................................... CLOSED
- Fuel panel ................................................................. CLOSED
- Inner tank magnetic fuel ............................................ FLUSH
- Fuel water drain valve inner tank.......................... NO LEAK
- Landing light ............................................................. CONDITION
- Wing leading edge ventilation intake.......................... CLEAR
  *- Slat 1 ........................................................................ CONDITION

(7) ENG 2 LH SIDE
- Oil fill access door .................................................... CLOSED
  *- Fan cowl doors ....................................................... CLOSED/LATCHED
  *- Drain mast ............................................................. CONDITION/NO LEAK
  *- Engine inlet and fan blades ....................................... CHECK

(8) ENG 2 RH SIDE
- Vent inlet ....................................................................... CLEAR
- Pressure-relief/Start valve handle access door ........... CLOSED
- Turbine exhaust ............................................................. CLEAR
- Pylon/access panel ..................................................... CONDITION/CLOSED

(9) RH WING LEADING EDGE
  *- Slats 2, 3, 4, 5 ............................................................ CONDITION
- Inner and outer cells magnetic fuel level .................... FLUSH
- Fuel water drain valves (outer cell, surge tank) ........... NO LEAK
- Refuel coupling ......................................................... CLOSED
- Surge tank air inlet ..................................................... CLEAR
  *- Fuel ventilation overpressure disc ........................... INTACT
- Navigation light ........................................................ .. CONDITION
  *- Wing tip ................................................................. CONDITION

(10) RH WING TRAILING EDGE
- Static dischargers ......................................................... CHECK
  *- Control surfaces ...................................................... CONDITION
  *- Flaps and fairings .................................................... CONDITION
(11) RH L/G AND FUSELAGE

*- Chocks ....................................................................... REMOVED
*- Wheels and tires ........................................................... CONDITION
- Brakes and brake wear indicator .................................... CONDITION
- Torque link damper ....................................................... CONDITION
- Hydraulic lines ............................................................. CHECK
- Landing gear structure .................................................. CHECK
- Downlock springs ......................................................... CHECK
- Safety pin ....................................................................... REMOVED
- Ground hydraulic connection yellow................................ CLOSED
- Water drain mast ............................................................ CONDITION
- Shroud fuel drain ........................................................... CONDITION

(12) RH AFT FUSELAGE

- Cargo door and selector panel ........................................ CHECK
- Bulk door ......................................................................... CHECK
- Toilet service access door ............................................... CLOSED
- Outflow valve ................................................................. CONDITION
- Drain mast ....................................................................... CONDITION
- Flight recorder access door ............................................... CLOSED

(13) TAIL

*- Stabilizer, elevator, fin, and rudder ................................... CONDITION
- Static dischargers ............................................................. CHECK
*- Lower fuselage structure (tail impact on runway) ............... CONDITION

(14) APU

- Access doors ................................................................. CLOSED
- Air intake ......................................................................... CONDITION
- Drain ................................................................................ CONDITION/NO LEAK
- Oil cooler air outlet .......................................................... CLEAR
- Exhaust ............................................................................. CLEAR
- Navigation air outlet ......................................................... CONDITION
- Fire extinguisher overpressure indication (red disc) .............. IN PLACE

(15) LH AFT FUSELAGE

*- Stabilizer, elevator, fin, and rudder ................................... CONDITION
*- Potable water service door .............................................. CLOSED
- Ground hydraulic connection blue and green doors .......... CLOSED
- Hydraulic reservoir filling door ........................................ CLOSED
(16) LH LANDING GEAR

*- Chocks ..............................................................REMOVED
*- Wheels and tires...............................................CONDITION
- Brakes and brake wear indicator..............................CONDITION
- Torque link damper ..............................................CONDITION
- Hydraulic lines.....................................................CHECK
- Landing gear structure.........................................CHECK
- Downlock springs..................................................CHECK
- Safety pin..................................................................REMOVED

(17) LH WING TRAILING EDGE

*- Flaps and fairing..................................................CONDITION
*- Control surface.....................................................CONDITION
- Static dischargers...................................................CHECK

(18) LH WING LEADING EDGE

*- Wing tip ...........................................................CONDITION
- Navigation light....................................................CONDITION
- Surge tank air inlet..................................................CLEAR
*- Fuel ventilation overpressure disc..........................INTACT
- Fuel water drain valve ............................................NO LEAK
- Inner and outer cell magnetic fuel level......................FLUSH
*- Slats 2, 3, 4, 5 ..................................................CONDITION

(19) ENG 1 LH SIDE

- Oil fill access door..................................................CLOSED
*- Fan cowl doors..................................................CLOSED/LATCHED
- Drain mast..........................................................CONDITION/NO LEAK
*- Engine inlet and fan blades.................................CHECK

(20) ENG 1 RH SIDE

- Vent inlet ..........................................................CLEAR
- Pressure relief/Start valve handle access door................CLOSED
- Turbine exhaust...................................................CLEAR
- Pylon/access panel................................................CONDITION/CLOSED

(21) LH CENTER WING

*- Slat 1 ..........................................................CONDITION
- Wing leading edge ventilation intake .........................CLEAR
- Fuel water drain valves........................................NO LEAK
- Inner tank magnetic fuel.......................................FLUSH
- Landing lights....................................................CONDITION
- Hydraulic reservoir pressurization door........................CLOSED
- RAT doors..........................................................CLOSED
2.5 COCKPIT PREPARATION

*Items marked by (*) are the only steps to be completed during a transit stop.

The PF and PNF should perform the cockpit preparation according to the panel scan sequence when both pilots seated, defined below, and the task sharing defined in the SBI SOP.

DOCUMENTATION AND MAINTENANCE

On entering the aircraft, CM1 obtains the technical (maintenance) log and verify that the certificate of maintenance and daily inspection (or similar) are up to date and signed. Check the deferred or carried-forward defects and advise CM2. If refueling has already been completed, check the uplift.

PANEL SCAN SEQUENCE

CM1 AREA OF RESPONSIBILITY

CM2 AREA OF RESPONSIBILITY

PF AREA OF RESPONSIBILITY
- **GEAR PINS and COVERS** ....................................................... CHECK PF
  Check that three are on board and stowed (in the box).

**OVERHEAD PANEL**

*IT IS A GENERAL RULE TO EXTINGUISH ALL WHITE LIGHTS FOR ALL THE SYSTEMS DURING THE SCAN SEQUENCE. THEREFORE, THESE ACTIONS ARE NOT LISTED HERE.*

**RCDR**

* - **RCDR GND CTL** ................................................................. ON PF
  In order to perform the test, ensure that the parking brake is on.

- **CVR TEST** ................................................................. PRESS AND RELEASE PF
  Check low frequency signal through the loudspeakers.

**ADIRS**

* - **Mode rotary selectors (1+2+3)** ........................................ NAV PF
  - The ADIRS outputs are used by many of the aircraft's systems, so it is essential to set the selectors to NAV as soon as possible to provide data to the related systems.
  - Perform a complete alignment if it is the first flight of the day or long segments in poor radio NAVAID coverage airspace are expected.
  - For other flights, perform a fast alignment, if the residual ground speed greater than 5 knots. The alignment is not necessary, if the residual ground speed is less than 5 knots.
  - In case of ADIRS alignment, check that the ALIGN lights of the three ADIRS are on.
  - For more information on ADIRS OPERATION, refer to SUPPLEMENTARY TECHNIQUES (FCOM 3.04.34).

**EXT LT**

- **EXTERIOR LIGHTS** ........................................................ AS RQRD PF
  Set the STROBE switch to AUTO, the BEACON switch to OFF, and remaining switches as required.

**SIGNS**

* - **SEAT BELTS** .............................................................. ON PF
* - **NO SMOKING** ............................................................ AUTO PF
* - **EMER EXIT LT** .......................................................... ARM PF

**Note:** The CIDS has been programmed for a non-smoking flight, NO SMOKING signs are permanently on, with the NO SMOKING switch at AUTO (with permanent charge of emergency batteries).
CABIN PRESS

- LDG ELEV ................................................................. AUTO PF

* AIR COND

* - PACK FLOW ................................................................. AS RQRD PF

Select:

LO : If the number of passengers is below 115.

HI : For abnormally hot and humid conditions.

NORM : For all other normal operating cases.

If the APU is supplying, pack controllers select HI flow automatically, independent of the selector position.

ELEC

- ECAM ELEC PAGE .................................................. CALL PF

- BAT 1 + 2 ................................................................. OFF then ON PF

10 seconds after selecting ON, check on the ECAM ELEC page that both battery charge currents are below 60 A and decreasing.

* FUEL

* - All FUEL TK PUMPS pb sw .............................................. ON PF

* - MODE SEL pb sw .................................................. CHECK AUTO PF

* - X FEED pb sw ....................................................... CHECK CLOSED PF

ENG 1 - ENG 2 FIRE

- ENG 1 and 2 FIRE pushbuttons ....................... CHECK IN and GUARDED PF

- AGENT 1 and AGENT 2 lights ...................................... CHECK OUT PF

- ENG 1 (2) TEST pushbutton ........................................ PRESS PF

Check:

- ENG 1 (2) FIRE warning on ECAM + CRC + MASTER WARN light.
- ENG FIRE pushbutton lighted red.
- SQUIB and DISCH lights on.
- FIRE light (on ENG panel) on.

AUDIO SWITCHING panel

- AUDIO SWITCHING panel ............................................. NORM PF
THIRD OCCUPANT AUDIO CONTROL PANEL

- PA reception knob ................................................................. Select reception PF
  - This allows cabin attendant announcements to be recorded on the CVR.
  - For proper recording, set volume at or above medium range.

MAINTENANCE PANEL

- Check all lights out. If not out, select associated pushbutton switch to off ................................................................. PF

RMP 1+2

- RMP ......................................................................................... ON PF
- Green NAV light ................................................................. CHECK OFF PF
- SEL light ............................................................................ CHECK OFF PF
- COM FREQUENCIES ......................................................... TUNE PF

Use VHF 1 for ATC (only VHF1 is available in emergency electrical configuration), VHF2 for ATIS, and company frequencies. VHF3 is for emergency 121.5.

* AIRFIELD DATA

- ATIS ......................................................................................... OBTAIN BOTH

Obtain data needed for initializing the system and preparing the cockpit. This should include, RUNWAY IN USE, ALTIMETER SETTING, and WEATHER DATA.

* FMGS INITIALIZATION

At electrical power-up, the FMGSs and FCU run through various internal tests. Allow enough time (3 minutes) for tests' completion, and do not start to press pushbuttons until the tests are over. If the "PLEASE WAIT" message appears, do not press any MCDU key until the message clears.

* - FM database validity ................................................................. CHECK PF
  - Press the DATA key, and display the A/C STATUS page (if not displayed).
  - Check ENGINE & AIRCRAFT TYPE.
  - Check DATA BASE validity and stored WPT / NAVAIDS / RWY / ROUTES if any
  - Check IDLE / PERF
  - Delete the stored data, if applicable.

* - NAVAID DESELECTION ............................................................. AS RQRD PF

If NOTAMs warn of any unreliable DME or VOR/DME, display DATA, then POSITION MONITOR. Access the SEL NAVAID page, and deselect the related navaids.
**- FLIGHT PLAN INITIALIZATION.......................................................... COMPLETE PF**

- Press the INIT key.
- Insert CO RTE or city pair, and check FROM/TO.
- Check/modify ALTN/CO RTE.
- Enter flight number.
- Check latitude/longitude.
- Enter (and/or check) cost index.
- Enter intended initial CRZ FL, or check if it was already supplied by the database. Modify it, if necessary, taking into account ATC constraints or expected gross weight.
- Check and modify CRZ FL TEMP and tropopause level to agree with forecast.

*Note:* For ATC needs, the crew should enter exactly the entire flight number, as shown on the ICAO flight plan, without inserting any space on the MCDU INIT page.

**- ALIGN IRS prompt .......................................................... CHECK / PRESS PF**

- ADIRS position initialization involves setting the ADIRS navigation starting point. This is only necessary for a complete or fast alignment.
- Press the ALIGN IRS prompt to send the coordinates displayed on the MCDU INIT page to the three ADIRS.
- Use the defaulted departure airport reference point coordinates to initialize the ADIRS.
- When flying on long segments without radio coverage, it is better to use the gate coordinates to initialize the ADIRS: To insert these coordinates, slew them on the MCDU, and then press the ALIGN IRS prompt.

**- F-PLN A page.......................................................... COMPLETE AND CHECK PF**

If CO RTE has been inserted, the F-PLN should automatically include the preferential or probable takeoff runway approach and landing runway, associated SIDs, STARs, transition and en route waypoints. However some databases will only include departure and arrival airport idents and en route waypoints.

The crew must check, modify, or insert (as applicable) the F-PLN in the following order, according to the data given by ATIS, ATC, or MET:

- Lateral revision at departure airport. Select RWY, then SID, then TRANS using scroll keys.
- Lateral revision at WPT for ROUTE modification if needed. (Refer to 4.04.10 FCOM).
- Vertical revision. Check or enter climb speed limit, constraints according to ATC clearance. Enter step altitude as appropriate.

**- WINDS.......................................................... AS APPROPRIATE PF**

Choose between using TRIP WIND or forecast wind for CLB or CRZ phases. (Refer to 4.04.20 FCOM).

*Note:* 
- In case of limited time for flight preparation wind insertion may be done after reaching TOC.
- Wind data may be inserted earlier on INIT A page.
* - **F-PLN** ...........................................................................................................CHECK PF
  - Check the F-PLN using F-PLN page and ND PLAN mode versus the computer (paper)
    flight plan or navigation chart.
  - Check DIST TO DEST along the F-PLN. Compare it with the total distance computed for
    the flight with the computer (paper) flight plan.

* - **RAD NAV** .....................................................................................................CHECK PF
  - Check the VOR, ILS and ADF tuned by the FMGC.
  - Modify them if required, and check that the correct identifier is displayed on the ND and
    PFD (ILS). If unsatisfactory, go through the audio check.
  - Preferably use the identifier for navaids entry.
  - If the ADF idents is not in the database, be sure to include a decimal point when tuning
    the frequency (e.g. 315. or 325.7).

* - **SEC F-PLN** ..........................................................................................AS APPROPRIATE PF
  This is routinely a copy of the active flight plan. However, consideration may be given to the
  following:
  a) Copy the active F-PLN, but modify it at a suitable WPT for an immediate return to the
     departure airfield in the event of, for example, engine failure. Insert airfield data into SEC PERF
     APPR page
  b) If weather is below landing minimums at the departure airfield, the secondary flight plan
     should be that required for a diversion immediately after takeoff.
  c) If there is a chance of a change in runway or SID during taxi, prepare for it by copying the
     active flight plan and making the necessary modifications on SEC F-PLN and SEC PERF TO
     page.

* - **PROG** ........................................................................................................AS RQRD PF
  - Insert RW in use on the PF side; VOR/DME or DME for NAV ACCUR check on the PNF
    side.
**FMGS DATA INSERTION**

**GROSS WEIGHT INSERTION (INIT B page):**

* - ZFW / ZFCG ................................................................. INSERT PF
* - BLOCK FUEL ............................................................... INSERT PF

**CAUTION**

The characteristic speeds displayed on the MCDU (green dot, F, S, VLS) are computed from the ZFW and ZFCG entered by the crew on the MCDU. Therefore, this data must be carefully checked (Captains responsibility).

- The flight crew should insert the weights after completing all other insertions. This is to avoid cycles of prediction computations at each change in flight plan, constraints, etc.
- If ZFCG and ZFW are unavailable, it is acceptable to enter the expected values (ZFW from the computerized flight plan, ZFCG – any value) in order to obtain predictions. Similarly, the flight crew may enter the expected fuel on board, if refueling has not been completed at that time.
- If ZFCG, ZFW, and BLOCK FUEL are inserted, the FM will provide all predictions, as well as the EXTRA fuel, if any.

**TAKEOFF DATA INSERTION (PERF TAKEOFF page):**

* - V1, VR, V2 ................................................................. INSERT PF
* - TRANS ALT ............................................................... CHECK or MODIFY PF
* - THR RED/ACC altitude ................................................ CHECK or MODIFY PF
  
  For noise abatement procedure “A”, the crew must set the acceleration altitude at, or above, 3000 feet AGL.
* - TO SHIFT ................................................................. AS RQRD PF
  
  Enter the takeoff SHIFT distance, if takeoff is to be from an intersection. This is essential for position updating at takeoff and, consequently, for navigation accuracy.
* - FLAPS reminder ........................................................ INSERT PF
* - FLX TO TEMP ............................................................... INSERT PF
* - ENG OUT ACC altitude ............................................... CHECK or MODIFY PF
CLimb, CRUise, DEScent, SPEED PRESELECTION

* - PRESEt SPEEDS .................................................................................. AS RQRD PF

If the flight is cleared for a close-in turn or close-in altitude constraint, the flight crew may preselect green dot speed on the PERF CLB page. Once the CLB phase is active, the preselected speed will be displayed in the FCU speed window and on the PFD (blue symbol). Once the turn is completed or the altitude cleared, the pilot will resume the managed speed profile by pressing the SPD selector on the FCU.

Similarly the pilot may select a CRZ MACH number on the PERF CRZ page (constant CRZ Mach segment, for example). When the CRZ phase is active, the preselected CRZ MACH number will be displayed in the FCU speed window and on the PFD. When ECON MACH number may be resumed, the crew presses the FCU SPD selector. In either of the above cases, the pilot may cancel the CLB or CRZ preselected SPD/MACH prior to activating the related phase, by selecting ECON on the PERF CLB or CRZ pages.

SPD LIM is defaulted to 250 knots below 10000 feet in the managed speed profile. This may be either cleared or modified on the VERT REV page at the origin (or a climb waypoint).
WHEN BOTH PILOTS ARE SEATED:

GLARESHIELD

- Glareshield integral light and flood light ........................................ AS RQRD PF
  
* - BARO REF ................................................................................... SET BOTH
  
  • Set QNH on EFIS control panel and on the standby altimeter.

* - FD ......................................................................................... CHECK ON BOTH
* - LS ......................................................................................... AS RQRD BOTH

Note: Do not engage the autothrust on ground, as it may generate the AUTO FLT A/THR OFF warning at engine start.

* EFIS CONTROL PANEL

* - CSTR ....................................................................................... ON BOTH

* - ND mode and range .................................................................... AS RQRD BOTH

  MODE: Display the ARC mode on the ND if the takeoff direction is approximately the departure direction, or the ROSE NAV mode if the direction change is to be more than 70° after takeoff (to allow the ND to display the area behind the aircraft).

  RANGE: Set the minimum range to display the first waypoint after departure, or as required for weather radar.

* - VOR/ADF selector ................................................................. AS RQRD BOTH

  Display VOR and ADF needles as needed.

* FCU

* - SPD MACH window ................................................................. DASHED PF

* - HDG-V/S / TRK-FPA .............................................................. HDG-V/S PF

* - ALT window .......................................................... INITIAL EXPECTED CLEARANCE ALT PF

* - ALT SEL knob .................................................................. SET 100 FT PF

* - METRIC ALT pushbutton ................................................ AS RQRD PF

THE GLARESHIELD CHECK SHALL CONSIST OF READING BY PF THE FOLLOWING:

<table>
<thead>
<tr>
<th>PANEL</th>
<th>CALL-OUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>BARO</td>
<td>“QNH _ _ _”</td>
</tr>
<tr>
<td>EFIS</td>
<td>“FD” “CSTR” “ARC” (“ROSE”) “SCALE _ _” “ADF(VOR)1 / 2”</td>
</tr>
<tr>
<td>FCU</td>
<td>“SPD-DASHED” “HDG-DASHED” “HDG-V/S” “FIRST CLRD _ _ _” “V/S-DASHED”</td>
</tr>
</tbody>
</table>
OXYGEN MASK TEST

LATERAL CONSOLES

BLINKER
RESET/TEST BUTTON
EMER PRESS SELECTOR

On the OXYGEN panel:
- CREW SUPPLY ................................................................. CHECK ON BOTH

On the glareshield:
- LOUDSPEAKERS ............................................................. ON BOTH

On the audio control panel:
- INT reception knob ....................................................... PRESS OUT-ADJUST BOTH
- INT/RAD switch .............................................................. INT BOTH

On the mask stowage box:
Press and hold the reset/test button in the direction of the arrow.
- Check that the blinker turns yellow for a short time, and then goes black.
Hold the reset/test button down, and press the emergency pressure selector.
- Check that the blinker turns yellow and remains yellow, as long as the emergency pressure selector is pressed.
- Listen for oxygen flow through the loudspeakers. Warn any engineer, whose headset may be connected to the nose intercom, that a loud noise may be heard when performing this check.
Check that the reset/test button returns to the up position and the N 100 % selector is in the 100 % position.
Press the emergency pressure selector again, and check that the blinker does not turn yellow. This ensures that the mask is not supplied.

On the ECAM DOOR/OXY page:
- REGUL LO PR message ................................................. CHECK OFF BOTH
- The crew must perform this check after having checked all masks. It ensures that the LP valve is open, (due to residual pressure between the LP valve and the oxygen masks, an LP valve failed in the closed position may not be detected during the oxygen mask test).
CM 1 / 2 INSTRUMENT PANELS

- PFD and ND brightness knob ........................................ AS RQRD BOTH
  Check the ND outer ring to maximum range (radar display)

- LOUDSPEAKER .......................................................... SET BOTH
  One o’clock position.

* - PFD ........................................................................... CHECK BOTH
  - Check PFD/ND not transferred.
  - Check for correct display when ATT and HDG are available.
  - Check IAS, FMA, initial target ALT, altimeter readings, VSI, altimeter settings, heading and attitude display.
  - Check barometer settings and altitude indications on PFD and standby altimeter.
    Tolerance limits are given in 3.04.34 FCOM and at ground check:
      - PFD 1 or 2: ±25 feet
      - Standby altimeter: ±300 feet
      - ADR1 and ADR2 (on PDF): ±20 feet

* - ND ............................................................................. CHECK BOTH
  - Check for correct display.
  - Crosscheck compass indication on the ND and DDRMI.
  - Check ground speed less than 5 knots, heading (max difference 4º), initial waypoint, VOR/ADF indications.

THE INSTRUMENT CHECK SHALL CONSIST OF READING BY PF THE FOLLOWING:

<table>
<thead>
<tr>
<th>INSTRUMENT</th>
<th>CALL-OUT</th>
</tr>
</thead>
<tbody>
<tr>
<td>PFD</td>
<td>“THIRTY”</td>
</tr>
<tr>
<td></td>
<td>“CLIMB NAV-BLUE”</td>
</tr>
<tr>
<td></td>
<td>“ONE FD TWO”</td>
</tr>
<tr>
<td></td>
<td>“_ _ _ BLUE (MAGENTA)”</td>
</tr>
<tr>
<td></td>
<td>“ALTIMITUDE _ _ _”</td>
</tr>
<tr>
<td></td>
<td>“V/S _ _”</td>
</tr>
<tr>
<td></td>
<td>“QNH _ _ _”</td>
</tr>
<tr>
<td></td>
<td>“WINGS LEVEL ON THE HORIZON”</td>
</tr>
<tr>
<td></td>
<td>“HEADING _ _ (ND) _ _ (RMI) _ _”</td>
</tr>
<tr>
<td>ND</td>
<td>“GND SPEED _ _”</td>
</tr>
<tr>
<td>STBY INSTR</td>
<td>“LEVEL – NO FLAG”</td>
</tr>
<tr>
<td></td>
<td>“QNH _ _ _”</td>
</tr>
</tbody>
</table>
CTR INSTRUMENT PANEL

* - STBY ASI  .................................................................CHECK PF
* - STBY ALTI and STBY ALTI in meter  .........................CHECK PF
  Set QNH (QFE for metric).
* - STBY HORIZON  ..........................................................CHECK PF
  Check no flag - Erect if necessary.
* - DDRMI  .................................................................CHECK PF
  Check compass indication.

*CLOCK

- Check time and date, adjust if necessary elapsed time at zero, chrono at zero................................................. PF

NOSEWHEEL STEERING

* - A/SKID & N/W STRG .................................................ON PF

PEDESTAL

ACP

- INT knob .................................................. PRESS OUT / VOLUME CHECK BOTH
  Make sure that INT volume is turned up to permit contact with the ground crew.

*WEATHER RADAR

* - Power supply switch ................................................. CHECK OFF PF
* - GAIN ................................................................. AUTO PF
* - MODE ................................................................. AS RQRD PF

COCKPIT DOOR

- ANN LT ................................................................. TEST PF
  Check that the OPEN and FAULT lights (on the pedestal), and the three LED lights (on the overhead panel) come on.
- ANN LT ................................................................. BRT PF
  Check that all lights go off.
- CKPIT DOOR ..................................................CHECK CORRECT OPERATION PF
  • Set the toggle switch to the UNLOCK position. Check that the door opens, and the OPEN light comes on.
  • Then, with the door fully opened, release the toggle switch (check that it returns to the NORM position). Close the door. CHECK that it is locked, and the OPEN indication goes off.
- **CKPIT DOOR MECHANICAL OVERRIDE** ........................................... CHECK PF

  Check that the door opens normally, and that it closes when the mechanical override is used.

**SWITCHING panel**

- **SWITCHING panel** ............................................................................. CHECK PF

  Check all selectors at NORM.

* **ECAM control panel**

* - **STS** .................................................................................................. PRESS PF

  Check that INOP SYS display is compatible with MEL.

  If a message is displayed in MAINTENANCE STATUS:
  
  • At transit: Disregard, unless AIR BLEED maintenance status.
  
  • At main base, or at an airport where repairs can easily be made (at the end of the last flight of the day): Report for maintenance analysis.

* - **PRESS** ............................................................................................... PRESS PF

  Check that the CAB PRESS page displays LDG ELEV AUTO, to confirm correct position of the LDG ELEV selector.

**THRUST LEVERS**

* - **THRUST LEVERS** ............................................................................. CHECK IDLE PF

**ENG**

* - **ENG MASTER switch** ...................................................................... CHECK OFF PF

* - **ENG MODE selector** ................................................................. CHECK NORM PF

**PARKING BRK**

* - **PARKING BRAKE** ........................................................................... ON PF

  • Check pressure on BRAKE PRESS indicator.

  • If chocks are in place, release the parking brake to increase brake cooling.

**GRAVITY GEAR EXTN**

* - **GRAVITY GEAR EXTN** .......................................................... CHECK STOWED PF
ATC

- TCAS MODE selector .......................................................... SET/CHECK STBY  PF
- ALT RPTG .............................................................................. SET ON  PF
- XPDR .................................................................................... SET SYS1  PF

Only system 1 is available, in emergency electrical configuration.

* FMGS DATA CONFIRMATION

* - AIRFIELD DATA ................................................................. CONFIRM PNF
* - IRS ALIGHN ................................................................. CHECK PNF

On the POSITION MONITOR page, check that the IRS are in NAV mode, and check that the distance between each IRS and the FMS position is lower than 5 NM. Select ND in ROSE-NAV or ARC mode, and confirm that the aircraft position is consistent with the position of the airport, the SID and surrounding NAVAIDs.

* - GROSS WEIGHT INSERTION .......................................... CHECK PNF

The PNF checks FMGS data.

* - TO DATA ............................................................. CALCULATE/CHECK PNF

The PNF calculates and check takeoff data.

* - F-PLN A and B pages ......................................................... CHECK PNF

- Select the EFIS CSTR pushbutton switch on.
- Ensure that the inserted F-pln agrees with planned routes. (Refer to FCOM 4.05.10)
- Use the scroll key to check the whole F-PLN thoroughly. Tracks and distances between waypoints are displayed on the second line from the top of the MCDU. Compare them with the navigation charts, if necessary.
  Check correct stringing, using ND in PLAN mode.
  SID tracks and distances must be checked from the appropriate navigation charts.

* - FUEL QTY ................................................................. CHECK PNF

- Check that ECAM fuel on board corresponds to the F-PLN.
- Check that fuel imbalance is within limits.
**TAKEOFF BRIEFING**

* - TAKEOFF BRIEFING ..................................................................................PERFORM PF

The purpose of the takeoff briefing is for the PF to inform the PNF of the planned course of action for both normal and abnormal situations during takeoff. Takeoff briefing should contain (but not limited) following items

- Type of aircraft - (A319; A320 or A321). Awareness of the aircraft model may prevent tailstrike.
- Technical status – review MEL, operational or maintenance procedures and aircraft status to assess their effect on the performance of the flight.
- Weather – brief the actual (expected) departure weather, including any significant weather problems such as thunderstorms, low visibility, icing, turbulence or windshear for using radar, anti-ice protection or special procedures.
- RW condition – brief for any penalties and thrust setting.
- Flap setting; THR setting and usage of PACKs.
- Noise abatement or local procedure; THR RED and THR ACCEL altitudes.
- Altitudes: transition, first cleared, MSA (SSA).
- SID – brief SID title, JEPPESEN SID chart index number and the date of issue; review profile, altitudes (heights) and speeds.
- RAD/NAV – review selected (if required) radio aids for departure and correctly tuned / identified on RAD/NAV page ; ATC frequency after take off.
- Abnormalities – EO SID; emergency turn back to origin airport or diversion to alternate (if applicable for take off) and consider overweight landing procedure.
- Usage of SEC flight plan.
- Usage AP; FD; A/THR; TERR display.
- RTO briefing (CM1 responsibility) – review SOPs for rejected take off, including the effect of wind direction and RW contamination.
**PF TAKEOFF BRIEFING**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC MODEL</td>
<td>AC STATUS page, B 02, MEL</td>
</tr>
<tr>
<td>TECHNICAL STATUS</td>
<td>ANTI-ICE; RADAR</td>
</tr>
<tr>
<td>WEATHER</td>
<td></td>
</tr>
<tr>
<td>RW_/ _ / CONDITION</td>
<td>PERF TAKEOFF page</td>
</tr>
<tr>
<td>CONFIG_/ _ /</td>
<td></td>
</tr>
<tr>
<td>T/O: FLEX_/ _ / TOGA</td>
<td></td>
</tr>
<tr>
<td>NOISE: THR RED / THR ACCEL</td>
<td></td>
</tr>
<tr>
<td>TRANSITION ALT_/ _ /</td>
<td></td>
</tr>
<tr>
<td>FIRST CLRD_/ _ / FCU; PFD</td>
<td></td>
</tr>
<tr>
<td>MSA_/ _ / JEPPESEN</td>
<td></td>
</tr>
<tr>
<td>SID / F-PLN page</td>
<td></td>
</tr>
<tr>
<td>RAD/NAV / RAD/NAV page</td>
<td></td>
</tr>
<tr>
<td>EO SID / EMER APPROACH / SEC F-PLN page</td>
<td></td>
</tr>
<tr>
<td>ALTERNATE FOR T/O / SEC F-PLN page</td>
<td></td>
</tr>
<tr>
<td>AFS / AP engagement</td>
<td></td>
</tr>
</tbody>
</table>

**CM1 RTO BRIEFING**

**ATC CLEARANCE**

Obtain ATC clearance or use the probable clearance.

* - ATC CLEARANCE ......................................................... OBTAIN PNF

* - ATC clearance ..................................................... MONITOR / CHECK PF

* - F-PLN ........................................................................... CHECK PF

Once the ATC is obtained and checked, check the conformity of ATC clearance with SID inserted into the FMGS.

**ATC**

* - ATC CODE .................................................................... SET PNF
Страница зарезервирована
3 ВЫПОЛНЕНИЕ ПОЛЕТА

3.1 BEFORE PUSHBACK or START

- LOADSHEET ............................................................................................................CHECK CM1

The CM1 should thoroughly check the load and trim sheet, particularly for gross errors. Make sure that the loadsheet data is correct: Correct flight, correct aircraft, dry operating index, configuration, fuel on board, etc.

Compare the ZFW / ZFCG with the previously-entered data, and adjust if necessary.

* - ZFW /ZFCG ................................................. CHECK BOTH /INSERT CM2

The CM1 reads from loadsheet and CM2 enters data into INIT B page.

- TAKEOFF DATA ....................... PREPARE and CHECK/ REVISE BOTH

Once the loadsheet is checked:

- If actual GROSS WEIGHT is less then precalculated during FMGS INSERTION (difference is not more then 2000 kg), no changes in TO DATA required.
- If changes in TO DATA required, CM2 calculates new TO DATA using RTOW, CM1 check/insert data and CM2 enters data into CFPL.
- Check that the takeoff CG is within LTS operational limits.

* - THS reminder ................................................. CHECK BOTH /INSERT CM2

- SEATS, SEAT BELTS, HARNESSSES, RUDDER PEDALS, ARMRESTS............................................. ADJUST BOTH

The seat is correctly adjusted when the pilot's eyes are in line with the red and white balls.

- COCKPIT DOOR ............................................ CHECK CLOSED CM1

If entry is requested, identify the person requesting entry before unlocking the door. With the cockpit door selector on NORM, the cockpit door is closed and locked. If entry is requested from the cabin, and if no further action is performed by the pilot, the cabin crew will be able to unlock the door by entering a code on the code pad and depressing the request button. Except for crew entry/exit, the cockpit door should remain closed until engine shutdown.

- MCDU ................................................ IN TAKEOFF CONFIGURATION BOTH

It is recommended that the crew display F-PLN on the PNF side and PERF TAKEOFF on the PF side.

- EXT PWR ................................................................. CHECK OFF CM1

Request that external power be removed.

- "BEFORE START CHECKLIST down to the line"..........................CALL CM1

- BEFORE START CHECKLIST down to the line ............ COMPLETE BOTH
- **PUSHBACK/START UP CLEARANCE** ........................................... **OBTAIN BOTH**
  Obtain ATC pushback/startup clearance **CM2**.
  Obtain ground crew clearance **CM1**.

- **NW STRG DISC** ................................................................. **CHECK AS RQRD CM1**
  In case of pushback (conventional or towbarless), the nosewheel steering selector bypass pin
  must be on tow position. The ECAM NW STRG DISC memo indicates this to the flight crew.

**CAUTION**

If NW STRG DISC is not displayed on the ECAM, but the ground crew confirms
that the steering selector bypass pin is in towing position, then the pushback must
not be performed. This is to avoid possible nose landing gear damage at the green
hydraulic pressurization.

To dispatch the aircraft in such a case, refer to MEL.

In case of power push by the main landing gear, the nosewheel steering selector should remain
in the normal position to steer the aircraft. Refer to 3.04.80 FCOM.

- **WINDOWS and DOORS** ................................................. **CHECK CLOSED BOTH**
  - Check cockpit windows closed and locked (red circle on handle fully visible).
  - Check, on the ECAM lower display, that all doors are closed.
  - Check that the cockpit door is closed and locked (no cockpit door open/fault indication).
    If entry is requested, identify the person requesting entry before unlocking the door. With
    the cockpit door selector on NORM, the cockpit door is closed and locked. If entry is
    requested from the cabin, and if no further action is performed by the pilot, the cabin crew
    will be able to unlock the door by using the emergency access procedure. Except for crew
    entry/exit, the door should remain closed until engine shutdown.

- **BEACON** ..................................................................................... **ON CM2**

- **THR LEVERS** ................................................................. **CHECK IDLE CM1**

**CAUTION**

Engines will start, regardless of the thrust lever position; thrust will rapidly
increase to the corresponding thrust lever position, causing a hazardous situation,
if thrust levers are not at IDLE.

- **PARKING BRAKE ACCU PRESS** ................................. **CHECK CM1**
  The ACCU PRESS indication must be in the green band.
- PARKING BRAKE ........................................... AS RQRD CM1
  - If no pushback is required, check that the PARKING BRK handle is ON, and check the BRAKES PRESS indication.

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>If, during engine start with parking brake on, the aircraft starts to move due to a parking brake failure, immediately release the PARKING BRK handle to restore braking by pedals.</td>
</tr>
<tr>
<td>- If pushback is required, set the PARKING BRK to OFF (only when the communication with ground crew established and ATC clearance obtained).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not use brakes during pushback, unless required due to an emergency.</td>
</tr>
</tbody>
</table>

- "BEFORE START CHECKLIST below the line" ......................... CALL CM1

- BEFORE START CHECKLIST below the line.................... COMPLETE BOTH

- TCAS MODE selector ........................................... SET ON CM2
  Perform the appropriate ATC selection to allow the ATC transponder operate in mode S, if required (ON - transponder only operates in the selective aircraft interrogation mode of Mode S, TCAS is on standby). To prevent possible interference to radar surveillance systems, TCAS should be selected before the holding/lining up.
3.2 ENGINE START

**AUTOMATIC ENGINE START**

Use the automatic engine start procedure in most circumstances. However, if the start aborts due to insufficient starter inlet air pressure (e.g. on high airfields or in case of low pressure from an external pneumatic power group), it is recommended to proceed with the manual start procedure, rather than use the automatic one.

If, during the engine start the ground crew reports a fuel leak from engine drain mast, run the engine at idle for 5 minutes. If the leak disappears during the 5 minutes, the aircraft can be dispatched without maintenance action. If the leak is still present after 5 minutes, maintenance action may be required before next flight.

- **ENG MODE selector** .................................................................IGN/START CM1
  The lower ECAM display shows the ENG page.

- **ELAPSED TIME** .................................................................START CM2

- "**STARTING ENGINE 2**" ........................................... ANNNOUNCE CM1
  Engine 2 is usually started first. It powers the yellow hydraulic system, which pressurizes the parking brake.

- **MASTER switch 2** .................................................................ON CM1
  - Do not turn the MASTER switch ON before all amber crosses and messages have disappeared on the engine parameters (upper ECAM display).

<table>
<thead>
<tr>
<th>ON ECAM UPPER DISPLAY</th>
<th>ON ECAM LOWER DISPLAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>N2 increases</td>
<td>Corresponding start valve in line. Bleed pressure indication green. Oil pressure increases.</td>
</tr>
<tr>
<td><strong>At 16% N2</strong></td>
<td><strong>Indication of the active igniter (A or B)</strong></td>
</tr>
<tr>
<td>At 22 % N2</td>
<td>- FF increases 15 seconds (maximum) after fuel is on</td>
</tr>
<tr>
<td></td>
<td>- EGT increases</td>
</tr>
<tr>
<td></td>
<td>- N1 increases</td>
</tr>
<tr>
<td><strong>At 50 % N2</strong></td>
<td>Start valve cross line. Igniter indication off</td>
</tr>
</tbody>
</table>

- Parameter callouts are not mandatory.
- In case the electrical power supply is interrupted during the start sequence (indicated by the loss of ECAM DUs), abort the start by switching OFF the MASTER switch. Then, perform a 30-second dry crank.
- **MAIN AND SECONDARY ENG. IDLE PARAMETERS** ..........................................................CHECK NORMAL CM1
  
  At ISA sea level:  
  - N1 about 19.5%  
  - N2 about 58.5%  
  - EGT about 390°C  
  - FF about 275 kg/h (660 lb/h)

  Grey background on N2 indication disappears.

- "**STARTING ENGINE 1**" ..........................................................ANNOUNCE CM1

- **MASTER switch 1** .................................................................ON CM1

  Same procedure as for engine 2.

  Both pack valves reopen with 30 second delay after the second engine N2 is above 50%.

  **Note:** A PTU FAULT is triggered, if the second engine is started within 40 seconds following the end of the cargo doors operation.
3.3 AFTER START

- ENG MODE selector ................................................................. NORM CM1
  - Turning the ENG MODE selector to NORM indicates the end of the start sequence. AFTER START actions may be performed.
  - On ECAM lower display the WHEEL page replaces the ENG page.
  - Leaving the ENG MODE selector at the START/IGN position would prevent continuous relight selection on the ground (would be supplied at lift off). In addition, the ENG page would remain displayed. The selector must be cycled to recover normal control of ignition and to display WHEEL page.
  - After start, to avoid thermal shock, the pilot should operate the engine at idle or near idle for at least 2 minutes before advancing the thrust lever to high power. Taxi time at idle may be included in the warm-up period.

- APU BLEED ................................................................. OFF CM1
  - Turn APU BLEED off just after ENG start to avoid ingesting engine exhaust gases.
  - APU BLEED valve closes, ENG BLEED valves open.

- GROUND SPOILERS ........................................... ARM CM2
- RUD TRIM ................................................................. ZERO CM2
  If RUD TRIM position indication is not at zero, press the RESET pushbutton.

- FLAPS lever ................................................................. SET CM2
  - Set flaps for takeoff.
  - Check their position on the ECAM upper display.
  - If taxiing in slush, keep the flaps retracted until reaching the holding point before takeoff.

- PITCH TRIM ................................................................. SET CM2
  Set takeoff CG on pitch trim wheel within the tolerance of 1%.

- ENG ANTI ICE .......................................................... AS RQRD CM2
  - If icing conditions last longer than 30 minutes, or if significant engine vibration occurs, the engine should be accelerated to approximately 70 % N1 for 30 seconds before operating at higher thrust. (Do not set N1 above 75 % on both engines with the parking brake ON). If airport surface conditions and congestion do not permit to accelerate the engine to 70 % N1, then power setting and dwell time should be as high as practical. This run up should also be performed just prior takeoff with particular attention to engine parameters to ensure normal engine operation.

  When operating in conditions of freezing rain, freezing drizzle, freezing fog or heavy snow, ice shedding may be enhanced, by additional run ups at intervals, to not exceed 10 minutes, advancing throttles to 70 % N1 momentarily (no hold time).

  - If switched on, IGNITION memo appears on ECAM as continuous ignition is automatically selected.

Note: Icing conditions may be expected when the OAT (on the ground and for take-off), or when TAT (in flight) is 10°C or below with visible moisture in the air or standing water, slush, ice or snow is present on the taxiways or runways.

It is captains responsibility for making final decision of using ENG and WING ANTI ICE.
- **WING ANTI ICE** ..........................................................AS RQRD CM2
  
  When wing ANTI ICE is switched on the ground, the anti ice valves open for about 30 seconds (test sequence) then close as long as the aircraft is on ground.

- **APU MASTER switch (if APU not required)** .........................OFF CM2
  
  - AVAIL light goes out after APU cooling period.

- **ECAM STATUS** ..........................................................CHECK CM1
  
  - Check that there is no status reminder (STS) on the ECAM upper display.
  - If the status reminder is displayed, press the STS pushbutton, and then clear STS after verifying.

- **ECAM DOOR page** ......................................................SELECT CM1
  
  - Check that all slides are armed
  - Deselect the DOOR page after verifying the slides.

- **“CLEAR TO DISCONNECT”** ...............................................ANNOUNCE CM1
  
  Request:  Chocks removed
  Nose wheel steering bypass pin removed (NW STRG DISC memo not displayed)
  Interphone disconnect
  Hand signal on the left/right side.

- **"FLIGHT CONTROL CHECK"** .........................................ANNOUNCE CM1

- **FLIGHT CONTROLS** .....................................................CHECK BOTH
  
  1. At a convenient stage, prior to taxi, the CM1 silently applies full longitudinal and lateral sidestick deflection.
  
     On the F/CTL page the CM2 checks full travel and the correct sense of all elevators and all ailerons, and the correct deflection and retraction of all spoilers.
  
     The CM2 calls out “FULL UP”, “FULL DOWN”, “NEUTRAL1”, “FULL LEFT”, “FULL RIGHT”, “NEUTRAL”, as each full travel/neutral position is reached.
  
     The CM1 silently checks that the CM2 calls are in accordance with the sidestick order.
  
     Note: In order to reach full travel, full sidestick must be held for a sufficient period of time.
  
  2. The CM1 presses PEDAL DISC pushbutton on nosewheel tiller, calls “RUDDER” and silently applies full left rudder, full right rudder and neutral. The CM2 calls out “FULL LEFT”, “FULL RIGHT”, “NEUTRAL”, as each full travel/neutral position is reached.
  
     Note: The CM2 should follow pedal movement with his/her feet.
  
  3. The CM2 applies full longitudinal and lateral sidestick deflection and silently checks full travel and correct sense of all elevators and all ailerons, and the correct deflection and retraction of all spoilers, on the ECAM F/CTL page.
  
     Note: The FLT CTL page is automatically shown for 20 seconds.

- **"AFTER START CHECK LIST"** ....................................... CALL CM1

- **AFTER START CHECK LIST** ........................................ COMPLETE BOTH
3.4 TAXI

- **TAXI clearance** ................................................................. OBTAIN CM2
- **GROUND clearance** ........................................................... RECEIVE CM2

Obtain a hand signal on the left / right side with the NWS disconnect pin removed. This is indicated by the thumb up signal. This must be done before requesting taxi clearance and should be confirmed by both pilots.

- "**CLEAR RIGHT SIDE**" .................................................. ANNOUNCE CM2
- "**CLEAR LEFT SIDE**" ..................................................... ANNOUNCE CM1
- **NOSE light** ........................................................................ TAXI CM1
  - Turn on the nosewheel light to TAXI day and night.
  - RWY TURN OFF lights may be switched ON, as required.

- **PARKING BRAKE** ............................................................. OFF CM1

Check that brake pressure is zero (triple indicator). Slight residual pressure may be indicated for a short period of time.

- **THRUST LEVERS** ............................................................. AS RQRD CM1
  - Little, if any, power above idle thrust will be needed to get the aircraft moving (40 % N1 maximum). Thrust should normally be used symmetrically. Once the aircraft starts to move, little thrust is required.
  - Use of the engine anti-ice increases ground idle thrust, so the pilot must use care on slippery surfaces.
  - The engines are close to the ground. Avoid positioning them over unconsolidated or unprepared ground (beyond the edge of the taxiways, for example).

Avoid high thrust settings at low ground speeds, which increase the risk of ingestion (FOD), and the risk of projection of debris towards the trimmable horizontal stabilizer and towards the elevators.

- "**BRAKE CHECK**" ......................................................... ANNOUNCE CM1
- **BRAKES** .......................................................................... CHECK CM1

Once the aircraft starts moving:
  - Check the brake efficiency of the normal braking system: The aircraft must slow down when pressing the brake pedals.

**CAUTION**

*If the aircraft has been parked in wet conditions for a long period, the efficiency of the first brake application at low speed will be reduced.*

Thereafter, the normal maximum taxi speed should be 30 knots in a straight line, 10 knots for a sharp turn. As the ground speed is difficult to assess, monitor ground speed on ND. Do not "ride" the brakes. As 30 knots is exceeded with idle thrust, apply brakes smoothly and decelerate to 10 knots, release the brakes and allow the aircraft to accelerate again.

If a "spongy" pedal is felt during taxi, this indicates a degraded performance of the alternate braking system.
- **"PRESSURE ZERO"** ..................................................... CHECK / ANNOUNCE CM2
  
  - Check that green pressure has taken over yellow pressure. The yellow pressure on the brake pressure triple indicator must be at 0 when pressing the brake pedals.

  Although green hydraulic power supplies braking system, if pedals are quickly pressed a brief brake pressure indication appears on BRAKE PRESS indicator.

  - **When aircraft has left the apron:**

- **AUTO BRK** ............................................................................................ MAX CM2
  
  - ON light comes on.
  
  - Autobrake may be armed with the parking brake on.
  
  - The selection of MAX mode prior to takeoff improves safety, in the event of an aborted takeoff.

  If the takeoff must be aborted, the autobrake system applies maximum braking as soon as the thrust levers are set to idle, if ground speed is above 72 knots.

- **ATC clearance** .......................................................................................... CONFIRM CM2

**TAKEOFF DATA/CONDITIONS**

If takeoff data has changed, or in case of runway change, prepare updated takeoff data as appropriate:

- **F-PLN (Runway)** ................................................................. REVISE CM2

- **FLAPS LEVER** ................................................................ AS APPROPRIATE CM2

  Select takeoff position.

- **V1, VR, V2** ............................................................. REINSERT CM2

- **FLEX TO temperature** ........................................................ REINSERT CM2

**FMGS FCU PFD ND**

- **F-PLN (SID, TRANS)** .......................................................... REVISE or CHECK CM2

  Take particular care to confirm that the ATC clearance agrees with the FMGS, if NAV mode is to be used.

- **INITIAL CLIMB SPEED AND SPEED LIMIT** ............ MODIFY or CHECK CM2

  Use VERT REV at departure, or at a CLB waypoint.

- **CLEARED ALTITUDE ON FCU** .................................................. SET CM2

- **HDG ON FCU** ............................................................ IF REQUIRED, PRESET CM2

  - If a heading is required by the ATC after takeoff, preset the heading on the FCU. NAV mode will be disarmed.
  
  - RWY TRK mode will keep the aircraft on the runway track.

- **FD** ..................................................................................... CHECK SELECTED ON BOTH

- **FMA** ..................................................................................... CHECK BOTH
- **FLIGHT INSTRUMENTS** ................................................................. CHECK BOTH
- **RADAR (if required)** ................................................................. ON CM2
  
  If radar is required for the flight use the following test procedure:
  - Adjust the tilt downward until ground returns appear and then slowly adjust it in 1 to 2 degree steps up to 15° UP for weather returns.
  - Select **tilt at 4° UP** for takeoff.

- **ATC code** ................................................................. CONFIRM/SET CM2

- **TAKEOFF BRIEFING** ................................................................. CONFIRM CM1
  
  This briefing should normally be only a brief confirmation of the thorough takeoff briefing made at the gate. Any changes in the clearance are to be addressed at this time. Make extensive use as is possible of the displays.
  
  For example "**Takeoff from RWY 07 (PERF page), weight 68 000 kg (lower ECAM), configuration 2, 10 000 kg of fuel, FLEX 50°, 93 % N1 (upper ECAM), LMG 2D departure (FPLN page), V1 140, V2 145 (PFD), initial clearance 12000 feet blue (FMA)**".

- **CABIN REPORT** ................................................................. RECEIVE CM1
  
  Obtain cabin report from the purser, as a minimum: "**CABIN SECURED FOR TAKEOFF**"

- **TO CONFIG pushbutton** ................................................................. PRESS CM2
  
  Check that ECAM upper display shows "**TO CONFIG NORMAL**".

- **TO MEMO** ................................................................. CHECK NO BLUE LINE CM2
  
  - "**BEFORE TAKEOFF CHECKLIST down to the line**" ......................... CALL CM1
  
  - **BEFORE TAKEOFF CHECKLIST down to the line** ........... COMPLETE BOTH
180° TURN ON RUNWAY

A standard runway is 45 meters wide. However, this aircraft only needs a pavement of 30 meters wide for a 180° turn. The following procedure is recommended for making such a turn in the most efficient way.

- **FOR THE CM1**
  - Taxi on the right-hand side of the runway and turn left, maintaining 25° divergence from the runway axis. Maximum ground speed is 10 knots.
  - When the CM1 is at about 2 meters before the runway edge, he turns the nosewheel full right and sets 40 % to 43 % N1 (A319).
  - When the CM1 is physically over the runway edge, he turns the nosewheel full right and sets 50 % to 55 % N1 (A320/321).

- **FOR THE CM2**
  The procedure is symmetrical. (Taxi on the left hand-side of the runway).

*Note:* To avoid skidding the nosewheel on a wet runway, perform the turn at very low speed, using asymmetric thrust and differential braking as necessary.
3.5 BEFORE TAKEOFF

- **BRAKE TEMP** ................................................................. CHECK CM2
  
  If brake temperature is above 300° C, delay takeoff

- **TAKEOFF OR LINE UP CLEARANCE** .............................. OBTAIN CM2

- **APPROACH PATH CLEAR OF TRAFFIC** .......................... CHECK BOTH

- **CABIN CREW** .................................................................. ADVISE CM1
  
  Set SEAT BELTS OFF, then ON twice.

- **ENG MODE selector** ........................................................ AS RQRD CM2
  
  Select IGN if:
  - The runway has standing water.
  - Heavy rain is falling.
  - Heavy rain or severe turbulence is expected after takeoff.

- **TCAS Mode selector** ......................................................... TA or TA/RA CM2
  
  Selecting TA mode FAA recommended:
  - In case of known nearby traffic which is in visual contact.
  - At particular airports and during particular procedures identified as having a significant potential for unwanted or inappropriate resolution advisories (closely spaced parallel runways, converging runways...)

- **TERR on ND on PNF side** ............................................... ON CM2
  
  Select TERR on ND if terrain is a significant feature.

- **PACK 1 and 2** ................................................................. AS RQRD CM2
  
  Consider selecting packs off or APU bleed ON. This will improve performance only when TOGA thrust is used. In case of a FLEX takeoff, selecting packs OFF or APU bleed ON will reduce takeoff EGT, and thus reduce maintenance costs. The use of flex thrust may reduce maintenance costs. The effect is particularly significant with the first degrees of FLEX. Use of APU bleed is not authorized if wing anti ice is to be used.

- **EXTERIOR LIGHTS** ......................................................... SET CM1
  
  - Set the RWY TURN OFF, LAND and NOSE switches to ON/TO, in order to minimize bird strike hazard during takeoff.
  - Set the STROBE lights to ON, before entering the runway.

- **SLIDING TABLE** ............................................................. STOW BOTH

- **AIRBORNE FREQUENCY (VHF 1)** ................................. PRESELECT / CHECK BOTH

- **“BEFORE T/O CHECKLIST below the line”** ........................ CALL CM1

- **BEFORE TAKEOFF CHECKLIST below the line** ........... COMPLETE BOTH
  
  Read the checklist below the line, when line up or takeoff clearance is received.
### 3.6 TAKEOFF

Rolling takeoff is recommended when possible.

- **If CM2 is PF:**
  - "YOU HAVE CONTROL" ....................................................ANNOUNCE CM1
  - "I HAVE CONTROL" ............................................................ANNOUNCE CM2
  - "TAKEOFF" ............................................................................ANNOUNCE PF
  - BRAKES .................................................................................... RELEASE PF
  - CHRONO .................................................................................... START BOTH

- **If the crosswind is at or below 20 knots and there is no tailwind:**
  - THRUST LEVERS .................................................................FLX or TOGA CM1
    - To counter the nose-up effect of setting engine takeoff thrust, apply half forward stick until the airspeed reaches 80 knots. Release the stick gradually to reach neutral at 100 knots.
    - For crosswind takeoffs, routine use of into-wind aileron is not recommended. In strong crosswind conditions, small amounts of lateral control may be used to maintain wings level, but the pilot should avoid using excessive amounts. This causes excessive spoiler deployment, which increases the aircraft tendency to turn into wind.
    - CM1 progressively adjusts engine thrust in two steps:
      - from idle to about 50 % N1.
      - from both engines at similar N1 to takeoff thrust.
    - Once the thrust is set, the captain keeps his hand on the thrust levers until the aircraft reaches V1.

- **In case of tailwind or if crosswind is greater than 20 knots:**
  - THRUST LEVERS .................................................................FLX or TOGA CM1
    - PF applies full forward stick.
    - For crosswind takeoffs, routine use of into-wind aileron is not recommended. In strong crosswind conditions, small amounts of lateral control may be used to maintain wings level, but the pilot should avoid using excessive amounts. This causes excessive spoiler deployment, which increases the aircraft tendency to turn into wind.
    - CM1 sets 50 % N1 on both engines then rapidly increases thrust to about 70 % N1 then progressively to reach takeoff thrust at 40 knots ground speed, while maintaining stick full forward up to 80 knots. PF Release stick gradually to reach neutral at 100 knots.
    - Once the thrust is set, the captain keeps his hand on the thrust levers until the aircraft reaches V1.

*Note:* ENG page replaces WHEEL page on the ECAM lower display.
- DIRECTIONAL CONTROL ........................................ USE RUDDER PF
  At 130 knots (wheel speed) the connection between nosewheel steering and the rudder pedals is removed, hence in strong crosswinds more rudder input will be required at this point to prevent the aircraft from turning into the wind.

- PFD / ND ............................................................ SCAN BOTH
  - Check the flight mode annunciator on the PFD:
    - MAN TOGA (MAN FLX …), SRS, RWY (or blank), both FDs on.
    - Check the FMGS position (aircraft on runway centerline).

- "MAN TOGA (MAN FLEX …), SRS, RWY, A/THR BLUE" ..... ANNOUNCE PF
- "CHECKED" ............................................................ ANNOUNCE PNF

Before reaching 80 knots:
- TAKEOFF N1 ......................................................... CHECK PNF
  Check that the actual N1 of individual engines has reached the N1 rating limit before the aircraft reaches 80 knots. Check EGT.
  Note: If there is a discrepancy of more than 1 % of N1 between the engines, it should be entered in the logbook after flight.

- "THRUST SET" ........................................................... ANNOUNCE PNF

- PFD and ENG indications ..................................... SCAN PNF
  - Scan airspeed, N1, and EGT throughout the takeoff.
  - Disregard the EGT index pulsing amber when using TOGA or FLX thrust.

- "ONE HUNDRED " ..................................................... ANNOUNCE PNF
  - The PF crosschecks the speed indicated on the PFD and announces "CHECKED".
  - Below 100 knots the captain may decide to abort the takeoff according to the circumstances.
  - Above 100 knots, rejecting the takeoff is a more serious matter.

- "CHECKED" .................................................. ANNOUNCE PF
- "V1" ................................................................. ANNOUNCE PNF
- "ROTATE" ............................................................ ANNOUNCE PNF

- ROTATION ................................................ PERFORM PF
  - At VR, use a constant pitch rate to smoothly rotate the aircraft to a pitch attitude of 10° (7.5° for A321).
  - If some lateral control has been applied on the ground, center the stick during rotation so that the aircraft gets airborne with a zero roll rate demand.
  - After lift-off, follow the SRS pitch command bar.
    If no FD is functioning :
    - Select 15° pitch with two engines.
    - If one engine has failed, adapt pitch to maintain at least V2 (pitch about 12.5°).
CAUTION

If a tailstrike occurs, avoid flying at an altitude requiring a pressurized cabin, and return to the originating airport for damage assessment.

- "POSITIVE CLimb"
- "GEAR UP"
- LDG GEAR
- GRND SPLRS
- EXTERIOR LIGHTS

Set NOSE & RWY TURN OFF light switches to OFF.
LAND lights should be left ON up to FL100

- AP

Above 100 feet AGL, AP 1 or 2 may be engaged.

- “AP 1 (2) ON”
- "NAV GREEN ( RW TRK)"
- "GEAR_UP"

At thrust reduction altitude (LVR CLB flashing on FMA):

- THRUST LEVERS

Move the thrust levers promptly to the CL detent, when the flashing LVR CLB prompt appears on the FMA. A/THR is now active.
In manual flight, the pilot must anticipate the change in pitch attitude in order to prevent the speed from decaying when thrust is reduced.

- "THR CLB, A/THR"
- PACK 1 (if applicable)

• Select PACK 1 ON after CLB thrust reduction.

Note: Selecting pack ON before reducing takeoff thrust would result in an EGT increase.

At acceleration altitude:

- "THR CLB/OP CLB" or "THR CLB/CLB"

Check the target speed change from V2 + 10 to the first CLB speed (either preselected or managed).

Note: 1. For most normal operations, thrust reduction and acceleration altitudes will be the same. So, the FMA will change from FLX/SRS/NAV to THR CLB/CLB/NAV.
2. If FCU-selected altitude is equal to or close to the acceleration altitude, then the FMA will switch from SRS to ALT*.
• Above acceleration altitude (or once in climb phase):
The following procedure ensures that the aircraft is effectively accelerating toward climb speed.

• At F speed:
  - "FLAPS 1" .................................................................ORDER PF
  - "SPEED CHECKED" ................................................CONFIRM PNF
  - FLAPS 1 ...............................................................SELECT PNF
  - "FLAPS 1" ..........................................................ANNOUNCE PNF

  Note: For takeoff in CONF 1 + F, "F" speed is not displayed.

• At S speed:
  - "FLAPS ZERO" ..........................................................ORDER PF
  - "SPEED CHECKED" ................................................CONFIRM PNF
  - FLAPS ZERO ..........................................................SELECT PNF
  - "FLAPS ZERO" ........................................................ANNOUNCE PNF

  Note: CRUISE page replaces ECAM ENG page.

  - PACK 2 (if applicable) .......................................................ON PNF
    • Select PACK 2 ON after flap retraction.

  Note: 1. PACK 2 may be selected earlier, but not sooner than 10 seconds after PACK 1 is selected ON, for passenger comfort.

  2. If packs are not switched on after the takeoff phase, an ECAM caution will be triggered.
NORMAL TAKEOFF PATTERN

MCDU SETTING
PERF TO: V2=FLX TEMP
THR RED: DEFAULT 1500 AGL
MIN 400 AGL
ACCEL ALT: DEFAULT 1500 AGL
MIN 400 AGL
PERF CLB: ONLY IF CLB SPD DIFFERENT
FROM ECON SPD.

FCU SETTING
FIRST CLEARED ALT/FL
HDG PRESET: ONLY IF DIFFERENT
FROM NAV.

ACCELERATION
THR LEVERS: CLB

V2+10 KT (18° MAX)

VR

ROTATE TO 15°.
THEN AFTER LIFTOFF,
FOLLOW SRS.

FLAPS 1
(IF APPLICABLE)

THR LEVERS: FLX OR TOGA

80 KT

POWER CHECK

100 KT

IAS CROSSCHECK

ACCELERATION HEIGHT

SPD TGT: INITIAL CLB SPD
FOLLOW FD BAR OR 10°

GEAR UP

AP ENGAGED (IF DESIRED)

NOTE: IN CASE OF AN IMMEDIATE LANDING, IF THE PATTERN IS MADE
BELOW 1500 FEET, SELECT ECAM RECALL DURING THE DOWNWIND LEG
3.7 AFTER TAKEOFF

- APU BLEED ................................................................. AS RQRD PNF
  If the APU has been used to supply air conditioning during takeoff, select APU BLEED to OFF.
  For use of APU BLEED, refer to APU LIMITATION chapter (see 3.01.49 pages FCOM).

- APU MASTER switch ......................................................... AS RQRD PNF

- ENG MODE selector .......................................................... AS RQRD PNF
  Select IGN if severe turbulence or heavy rain is encountered.

- TCAS MODE selector ........................................................... TA/RA PNF
  Select TA/RA if the takeoff has been performed with TA only.

- ANTI ICE PROTECTION .................................................. AS RQRD PNF
  ENG ANTI ICE should be ON when icing conditions are expected, with a TAT at or below 10ºC.
  Note: With ENG ANTI ICE ON, the FADEC automatically selects continuous ignition.

- "AFTER T/O CHECKLIST down to the line" .............................. CALL PF
  If transition altitude above 5000 ft AGL.

- AFTER TAKEOFF CHECKLIST down to the line ............ COMPLETE BOTH
3.8 CLIMB

- **Normal vertical mode is CLB or OP CLB with managed speed active.**

- **MCDU** …………………………………………………………………………… PER CLB PF
  - **PF MCDU** should be showing the **PERF** CLB page (allowing PF to monitor when the aircraft will reach the FCU selected altitude) but he may select other pages such as F-PLN page as may be tactically necessary.
  - The **MCDU PROG** page displays OPT FL and MAX REC FL. It is worth noting that this OPT FL is a function of the cost index.
  - The displayed MAX REC FL gives the aircraft at least a 0.3 g buffet margin. The pilot may enter a cruise flight level above this level into the MCDU and the FMGS will accept it, provided that it does not exceed the level at which the margin is reduced to 0.2 g.

- **MCDU** …………………………………………………………………………… F-PLN PNF
  - **PNF MCDU** should be showing the **F-PLN** page (allowing him to enter any ATC long-term revisions to the lateral or vertical flight plan).

- **CLIMB SPEED MODIFICATIONS:**
  - **If ATC, turbulence or operational considerations lead to a speed change :**
    Select the new speed with FCU SPD selection knob and pull. Speed target is now "selected". To return to managed speed mode, push FCU SPD selection knob. The speed target is now "managed".
    **Note:** The best speed (and rate of climb) for long-term situations lies between green dot speed and ECON speed. At high altitude, acceleration from green dot to ECON speed can take a long time.

- **EXPEDITE CLIMB**
  - **If ATC requires a rapid climb through a particular level :**
    Push the EXP pushbutton on the FCU. The target speed is now green dot speed.
    **FMA:** THR CLB/EXP CLB/NAV
    **Note:** Use EXP only for short-term tactical situations. For the best overall economy fly at ECON IAS return to ECON CLB speed:
    - Push ALT selector knob.
    - Check FMA: THR CLB/CLB/NAV

- "**TRANSITION**" ................................................................. ANNOUNCE PNF
- "**SET STANDARD**" ................................................................. CALL PF
- **BARO REF** .............................................................................. SET BOTH
  - At transition altitude (baro setting flashing on PFD) set STD on the EFIS control panel and STBY ALT.
  - Cross-check baro settings and altitude readings.
- "**STANDARD SET CROSS-CHECKED.PASSING FL …NOW**" ...... CALL PNF
- "**CHECKED**"..................................................................................ANNOUNCE PF
- **CRZ FL** ................................................................. SET AS RQRD PF
  - If ATC clears the aircraft to its intended CRZ FL or above, there is no need to modify the CRZ FL entered in the INIT A page during cockpit preparation. The FCU will automatically take into account a higher CRZ FL selected with the FCU ALT knob.
  - If ATC limits CRZ FL to a lower level than the one entered in the INIT A page (or present on the PROG page) the flight crew must insert this lower CRZ FL in the PROG page. Otherwise there is no transition into CRZ phase: the managed speed targets and Mach are not modified, and SOFT ALT mode is not available. In that case FMA will display: MACH/ALT/NAV instead of MACH/ALT CRZ/NAV.

- **"AFTER T/O CHECKLIST below the line"** ......................... CALL PF
  Or "**AFTER TAKEOFF CHECKLIST**" if transition altitude below 5000 ft.

- **AFTER TAKEOFF CHECKLIST** .................................. COMPLETE BOTH

- **ENG ANTI ICE** .................................................. AS RQRD PF
  ENG ANTI ICE should be ON when the aircraft encounters icing conditions, unless the SAT is below - 40° C.

- **RADAR TILT** .................................................. ADJUST PF
  The tilt angle depends on aircraft altitude and on the selected range on the ND. The radar must have a slightly negative tilt in order to avoid overscanning and to show some ground return at the top edge of the ND.

- **At FL100:**
  - **"FL ONE HUNDRED PROCEDURE"** .................. ANNOUNCE PF
  - **LAND lights** ................................................. RETRACT PNF
  - **EFIS option** ................................................. AS RQRD BOTH
    Select CSTR on both sides.
  - **ECAM MEMO** ............................................ REVIEW PNF
  - **RAD NAV page** ............................................ CHECK PNF
    Clear manually tuned VORs and ADFs from MCDU RAD NAV page, using KLR key.
  - **SEC F-PLN page** .......................................... AS RQRD PNF
    Recopy the active flight plan in the secondary if an immediate return flight plan or takeoff alternate has been constructed previously.
  - **OPT/MAX ALT** ............................................. CHECK PNF
3.9 **CRUISE**

- "**YOU HAVE CONTROL**" .......................................................... ANNOUNCE PF
- "**I HAVE CONTROL**" .............................................................. ANNOUNCE PNF
- SEAT BELTS ............................................................... AS RQRD PF
- TERR on ND ................................................................. OFF PNF
- ECAM MEMO .............................................................. REVIEW PF
- ECAM SYS PAGES .......................................................... REVIEW PF

Periodically review system display pages and, in particular:

**ENG:**  - Oil pressure and temperature
**BLEED:**  - BLEED parameters
**ELEC:**  - Parameters, GEN loads
**HYD:**  - A slight decrease in quantity is normal. Fluid contraction during cold soak can be expected. Green system is lower than on ground, following LDG gear retraction.
**FUEL:**  - Fuel distribution.

**COND:**  - Duct temperature, compared with zone temperature. Avoid large differences for passenger comfort.
**FLT CTL:**  - Note any unusual control surface position.

- VHF 3 ................................................................. SET 121,5 PF

Emergency frequency 121,5 shall be monitored by the both pilots.

- RADAR TILT .................................................. ADJUST PF

Below 20000 feet:  Start with tilt near zero then adjust. If using different ranges on the two NDs set the tilt down for the shorter ND range (in order to monitor and detect weather activity) and near zero for the longer ND range (in order to monitor course changes).

Above 20000 feet:  A slight downward tilt is recommended.

- "**I HAVE CONTROL**" .......................................................... ANNOUNCE PF
- "**YOU HAVE CONTROL**" .................................................. ANNOUNCE PNF
- FLIGHT PROGRESS .................................................. CHECK PNF

Monitor flight progress in the conventional way.

When overflying a waypoint:

- Check track and distance to the next waypoint.

When overflying the waypoint, or every 30 minutes:

- Check FUEL: Check FOB (ECAM), and fuel prediction (FMGC), and compare with the computer flight plan or the in-cruise quick-check table (Refer to 3.05.20 FCOM).

Check that the sum of the fuel on board and the fuel used is consistent with the fuel on board at departure. If the sum is unusually greater than the fuel on board at departure, suspect a frozen fuel quantity indication. Maintenance action is due before the next flight. If the sum is unusually smaller than the fuel on board at departure, or if it decreases, suspect a fuel leak.
CAUTION

This check must also be performed each time a FUEL IMBALANCE procedure is necessary. Perform the check before applying the FUEL IMBALANCE procedure. If a fuel leak is confirmed, apply the FUEL LEAK procedure.

- **STEP FLIGHT LEVEL** ................................................. **AS APPROPRIATE PF**
  (Refer to 3.05.15 FCOM)

- **NAVIGATION ACCURACY** ............................................................ **CHECK PF**
  Navigation accuracy must be monitored, at all times but especially when any of the following occurs:
  - IRS only navigation
  - The PROG page displays LOW ACCY.
  - "NAV ACCUR DOWNGRAD" appears on the MCDU.

Methods for checking accuracy:

- Manually tune VOR (VOR/DME or ADF) to a station that is within range on the RAD NAV page and select associated needles on the ND.
  Check that the needle (raw data) overlies the corresponding blue navaid symbol (FM computed) and that the DME distance is equal to the distance showing between the aircraft symbol and the navaid symbol on the ND.
- Or insert a VOR/DME idents in BRG/DIST TO field on the PROG page and compare the computed BRG (DIST) with the raw data on the ND. This method allows the FM error to be quantified.

  *If the check is positive (error ≤ 3NM): FM position is reliable.*
  - Use ND (ARC or NAV) and managed lateral guidance.

  *If the check is negative (error > 3NM): FM position is not reliable.*
  - Use raw data for navigation and monitor it.
  - If there is a significant mismatch between the display and the real position: disengage MANAGED NAV mode and use raw data navigation (possibly switching to ROSE VOR so as not to be misled by FM data).

- **CABIN TEMP** ........................................................................... **MONITOR PNF**
  Pay regular attention to the ECAM CRUISE page in order to monitor passenger cabin temperatures and adjust them as necessary.

- **If the oxygen mask has been used:**
  - **OXY MASK** ................................................................. **CHECK BOTH**
    Check that the oxygen mask has been properly stored, as indicated in the FCOM 1.35.20.
3.10 DESCENT PREPARATION

Descent preparation and approach briefing can take approximately 10 minutes, so they should begin approximately 80 NM before top of descent.

- "YOU HAVE CONTROL" ..........................................................ANNOUNCE PF
- "I HAVE CONTROL" .................................................................ANNOUNCE PNF
- LDG ELEV .................................................................................CHECK PF
  Check on ECAM CRUISE page that LDG ELEV AUTO is displayed.
- WEATHER AND LANDING INFORMATION .......................OBTAIN BOTH
  Check weather reports at ALTERNATE and DESTINATION airports. Airfield data should include runway in use for arrival.
- ECAM STATUS ............................................................................CHECK PF
  - Check that there is no status reminder on the upper ECAM display.
  - If there is a status reminder, check the aircraft STATUS.
  - Check the ECAM status page before completing the approach checks. Take particular note of any degradation in landing capability, or any other aspect affecting the approach and landing.

FMGS

- ARRIVAL page ..........................................................COMPLETE / CHECK PF
  Insert TRANS, APPR, STAR, and APPR VIA if applicable. (Access by lateral revision at destination.)
- F-PLN A page ..........................................................CHECK PF
  - Check speeds and altitude constraints.
  - Add new speed or altitude constraints if required.
  - Check or insert the routing for alternate.
- RAD NAV page .............................................................................CHECK PF
  Set nav aids, as required, and check idents on the NDs (VOR-ADF) and PFDs (ILS). If a VOR/DME exists close to the airfield, select it and enter its ident in the BRG/DIST field of the PROG page, for NAV ACCY monitoring during descent.
- PROG page .............................................................................CHECK PF
  Insert VOR/DME or RW in use at destination in BRG/DIST field.
- PERF CRUISE page ..........................................................CHECK PF
  Enter winds for descent starting at cruise flight level as well as for alternate. Modify the cabin descent rate if different pressure rate is required.
- **PERF DES page** ............................................................ *CHECK PF*

Prior to descent, access PERF DES page and check ECON MACH/SPD. If a speed other than ECON is required, insert that MACH or SPD into the ECON field. This new MACH or SPD is now the one for the descent path and TOD computation, and it will be used for the managed speed descent profile (instead of ECON).

A speed limit of 250 knots below 10000 feet is the defaulted speed, in the managed speed descent profile. The flight crew may delete or modify it if necessary on the VERT REV at DEST page.

- **PERF APPR page** ...................................................... *COMPLETE / CHECK PF*

  - Enter the QNH, temperature, and wind at destination.

  *Note:* The entered wind should be the average wind given by the ATC or ATIS. Do not enter gust values. For example, if the wind is 150/20-25, insert the lower speed (150/20) (ground speed mini-function will cope with the gust).

  - Check or modify the TRANS ALT (level).

  - Insert the MDA, or DH (whichever applies).

  *Note:* A320 family is considered to be category C aircraft.

- **GO-AROUND page** .................................................... *CHECK/MODIFY PF*

  Check the THR RED ALT and ACC ALT, and modify if necessary (refer to RTOLW chart).

- **FUEL PRED page** ..................................................... *CHECK/MODIFY PF*

  Correct fuel for diversion.

- **SEC F-PLN page** ...................................................... *AS RQRD PF*

  Before the top of descent, the SEC F-PLN should either be set to an alternate runway for destination, or to the landing runway in case of circling. In all cases, routing to the alternate should be available. If there is a last-minute runway change, then the flight crew only needs to activate the secondary F-PLN, without forgetting to set the new MDA or DH and navaids.
- **GPWS LDG FLAP 3 .............................................................. AS RQRD PF**
  If the pilot plans on landing in FLAPS 3 configuration, the GPWS LDG FLAP 3 switch should be set to ON.

- **AUTO BRK .............................................................. AS RQRD PF**
  - The use of autobrake is recommended.
  - The use of MAX mode is not recommended at landing.
  - On short or contaminated runways, use MED mode.
  - On long and dry runways, LO mode is recommended.

  **Note:** If, on very long runways, the pilot anticipates that braking will not be needed, use of the autobrake is unnecessary.

Press firmly the appropriate pushbutton, according to runway length and condition, and check that the related ON light comes on.

- **"I HAVE CONTROL. CHECK MY JOB" .......................... ANNOUNCE PF**
  **Note:** All FMGS preparations made by PF for descent, approach and landing must be closely crosschecked by PNF.

- **"YOU HAVE CONTROL " .............................................. ANNOUNCE PNF**

- **APPROACH BRIEFING .............................................. PERFORM PF**

  The flight crew should use FMGS pages as a descent and approach briefing guide. It is recommended to complete approach briefing prior to the top of descent. Approach briefing should encompass items listed below (but not limited).

  - Weather at destination, including turbulence, icing conditions and significant weather as well as alternate weather.
  - STAR title, JEPPESEN STAR chart index number and date of issue. Discuss and review anticipated procedure, including speed and height (altitude) restrictions.
  - Approach title, JEPPESEN APPROACH chart index number and date of issue. Discuss the type and details of approach to be flown, mentioning check heights. Point out maximum obstacle during approach.
  - Missed approach; review and discuss profile, speeds and holding facility and procedures.
  - RAD/NAV; ensure, that required for approach nav aids are selected, correctly tuned and identified if necessary.
  - Transition level, MSA (SSA).
  - Landing configuration, VAPP.
  - MDA/DH, go-around: standard calls, task sharing, diversion decision.
  - Route for alternate: discuss routing, including distance, time, speed and company requirements.
  - Fuel capability; brief and review fuel and time for holding at destination and fuel at alternate in case of diversion, extra fuel.
  - Stabilized approach criteria.
  - Stopping: brief the stopping techniques, mentioning autobrake, reverses or manual braking.
  - Airfield and apron – review routing for taxi and stand expected after landing.
  - Runway – brief the RW for landing: length, width, elevation, slope. Lightning facilities, conditions and other factors.
Usage of AP, FD, A/THR system, AUTOLAND, TERR on ND; approach techniques for non precision approach.

SEC F-PLN.

Mention whether the aircraft is an A319, A320 or A321. Awareness of the aircraft model may prevent tailstrike.

<table>
<thead>
<tr>
<th>PF APPROACH BRIEFING</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Weather at destination</td>
<td>ATIS</td>
</tr>
<tr>
<td>• QNH</td>
<td></td>
</tr>
<tr>
<td>• STAR</td>
<td>F-PLN page</td>
</tr>
<tr>
<td>• APPR</td>
<td>JEPPESEN</td>
</tr>
<tr>
<td>• MISSED APPR</td>
<td></td>
</tr>
<tr>
<td>• ILS, VOR, ADF and associated altitudes</td>
<td>RAD/NAV page</td>
</tr>
<tr>
<td>• MSA</td>
<td>JEPPESEN</td>
</tr>
<tr>
<td>• TRANSITION LEVEL</td>
<td>PERF page</td>
</tr>
<tr>
<td>• LANDING CONFIGURATION</td>
<td></td>
</tr>
<tr>
<td>• VAPPR</td>
<td></td>
</tr>
<tr>
<td>• MDA / DH</td>
<td>FMA, JEPPESEN</td>
</tr>
<tr>
<td>• GO-AROUND</td>
<td>Standard calls / task sharing</td>
</tr>
<tr>
<td></td>
<td>Diversion decision</td>
</tr>
<tr>
<td>• FUEL for diversion: holding fuel possibility</td>
<td>FUEL page</td>
</tr>
<tr>
<td>• MINIMUM STABILIZATION HEIGHT</td>
<td>- 1000 FT AGL in IMC</td>
</tr>
<tr>
<td></td>
<td>- 500 FT AGL in VMC</td>
</tr>
<tr>
<td>• RW conditions, lighting and dimensions</td>
<td>ATIS, JEPPESEN</td>
</tr>
<tr>
<td>• Expected RW turn-off, taxi</td>
<td>JEPPESEN</td>
</tr>
<tr>
<td>• AP; FD; A/THR; TERR on ND</td>
<td>usage</td>
</tr>
<tr>
<td>• SEC F- PLN</td>
<td>usage</td>
</tr>
<tr>
<td>• Mention whether the A/C is an A319, A320, or A321 and technical status.</td>
<td></td>
</tr>
</tbody>
</table>
- DESCENT CLEARANCE ................................................................. OBTAIN PNF

When clearance is obtained, set the ATC-cleared altitude (FL) on the FCU (also considering what is the safe altitude).

If the lowest safe altitude is higher than the ATC-cleared altitude, check with the ATC that this constraint applies.

If it is confirmed, set the FCU altitude to the safe altitude, until it is safe to go to the ATC-cleared altitude.

- ANTI ICE PROTECTION .............................................................. AS RQRD PNF

- During descent, ENG ANTI ICE must be ON when icing conditions are encountered. ENGINE ANTI ICE must be ON before and during a descent in icing conditions, even if the SAT is below -40º.

- With engine ANTI ICE ON, the FADEC automatically selects a higher idle thrust which gives better protection against flame-out. The IGNITION memo appears on the ECAM.

- ANTI ICE ON reduces the descent path angle (when the engines are at idle). The pilot can compensate for this by increasing the descent speed, or by extending up to half speedbrakes.
3.11 DESCENT

DESCENT INITIATION

- **SEAT BELTS** ........................................................................................................ ON PF
- **TERR on ND** ...................................................................................................... ON PNF
  - In mountainous areas, consider displaying terrain on ND.
  - If use of radar is required, consider selecting the radar display on the PF side and TERR on ND on the PNF side only.

- **DESCENT** ........................................................................................................ INITIATE PF
  
  The normal method of initiating the descent is to select DES mode at the FMGS calculated top of descent (TOD).

  - **If ATC requires an early descent**:
    
    Use DES mode which will guide the aircraft down at a lower vertical speed in order to converge on the required descent path. (The pilot may use a V/S of - 1000 ft/min).

  - **If ATC delays the descent**:
    
    Beyond TOD, a DECELERATE message comes up on the PFD and MCDU. This suggests to the crew that it starts reducing speed towards green dot speed (with ATC permission). When cleared to descend, select DES mode with managed speed active. It is recommended to use selected speed when target speed is approaching to VMO/MMO.

- **FMA** .............................................................. ANNOUNCE PF

- **FMA** .............................................................. CHECK PNF

DESCENT MONITORING

- **MCDU** .............................................................. PROG/PERF DES PF

  PF MCDU should be set to PROG or PERF DES page:

  - PROG page in order to get VDEV and remaining distance direct to the RW (if the RW is inserted into the BRG/DIST field).
  - PERF DES in order to get predictions down to any inserted altitude in DES/OP DES modes and EXP mode.

- **MCDU** .............................................................. F-PLN PNF

  Note: The NDs show a level-off symbol \(\Rightarrow\) along the flight path. Its position is based on the current active AP/FD and A/THR modes.
- **DESCENT** .......................................................................................... \textbf{MONITOR PF}

(Refer to FCOM 4 05.60)

- When flying in NAV mode, use DES mode.
  
  The aircraft descends along the descent flight path: the PFD and PROG page display VDEV, and so it can be monitored. All constraints of the flight plan are taken into account for the guidance.

- When the aircraft is flying in HDG or TRK mode, and thus out of the lateral F-PLN, DES mode is not available. However the PFD still displays VDEV, and this is useful whenever cross track error is small (up to 5 NM) – PROG page displays DIST RQD TO LAND/ DIRECT DIST TO DEST: comparison of this data helps the crew to monitor the descent.
  
  The ND show a level-off symbol -> along the flight path. Its position is based on the current active AP/FD and A/THR modes.

  The flight crew can use this symbol to monitor the descent.

  MCDU predictions assume a return to the lateral F-PLN and descent flight path. Note that whenever the lateral mode is changed from NAV to HDG/TRK the vertical mode reverts to V/S at the value pertaining at the time of the mode change.

- From time to time during stabilized descent, the flight crew may select FPA to check that the remaining distance to destination is approximately the altitude change required divided by the FPA in degrees.

  \[
  \text{FPA (º)} = \frac{\Delta \text{FL}}{\text{DIST (NM)}}
  \]

**DESCENT ADJUSTMENT**

To increase the rate of descent:

- Increase descent speed (by use of selected speed) if comfort and ATC permit. It is economically better (Time/Fuel) than the following procedures.

- Maintain high speed as long as possible. (SPD LIM may be suspended, subject to ATC clearance).

- If the aircraft is high and at high speed, it is more efficient to keep the high speed to ALT* and decelerate, rather than to mix descent and deceleration.

- If the aircraft goes below the desired profile, use SPEED and the V/S mode to adjust the rate of descent.

- **SPEEDBRAKES** .................................................................................. \textbf{AS RQRD PF}

  In OPEN DES: Use speedbrakes to increase the rate of descent. The pilot may use up to half speedbrakes to maintain the required rate of descent, when engine anti-ice is used.

  In DES mode: If the aircraft is on, or below, the flight path and the ATC requires a higher rate of descent, do not use speedbrakes because the rate of descent is dictated by the planned flight path. Thus, the A/THR may increase thrust to compensate for the increase in drag. In this case, use OPEN DES with speedbrakes.

  \textbf{Note:}

  1. If speedbrakes are used above 315 knots/M.75 with the AP engaged, their rate of retraction is low (total time for retraction from full extension is approximately 25 seconds). The ECAM memo page displays SPD BRAKES in amber until retraction is complete.

  2. In order to avoid overshooting the altitude, due to speedbrakes retraction in ALT* mode, retract the speedbrakes at least 2000 feet before the selected altitude.
- **Radar Tilt** ................................................................. ADJUST PF

   Every 10,000 feet of the planned descent, and down to about 15,000 feet, adjust the tilt upwards to eliminate ground clutter on the upper part of the ND. Every 5,000 feet below 15,000 feet, adjust the tilt angle one degree upwards, in order to keep the ND relatively free of ground clutter.

- **At FL100:**

  - "**FL One Hundred Procedure**" ............................................. ANNOUNCE PF

  - **Land Lights** ................................................................. ON PNF

     LAND lights should be switched ON.

  - **EFIS option** .............................................................. CSTR BOTH

     Select CSTR on both sides.

  - **LS pushbutton** .......................................................... AS RQRD BOTH

     Select LS, if an ILS or LOC approach is intended. The PFD displays the LOC and glide scales and deviation symbol, if there is a valid ILS signal.

  - **RAD NAVAIDS** .................................................. CHECK / IDENTIFY PNF

     Ensure that appropriate radio nav aids are tuned and identified. For NDB approaches, manually select the reference nav aid.

  - **NAV Accuracy** .................................................. CHECK BOTH

     Crosscheck NAV ACCURACY using the PROG page (BRG/DIST computed data), and the ND (VOR/DME raw data). The navigation accuracy check determines which autopilot mode the flight crew should use for the approach, and the type of displays to be shown on the ND as well as the usage of the EGPWS.

- **Crossing transition level or when cleared to an altitude:**

  - "**Transition**" ........................................................... ANNOUNCE PNF

  - "**SET QNH ...**" ........................................................ CALL PF

  - **BARO REF** ............................................................ SET BOTH

     - Set QNH on the EFIS control panel and on the standby altimeter, when approaching the transition level and when cleared for an altitude.
     - Crosscheck baro settings and altitude readings.

     **Note:** When operating in low OAT, altitude corrections should be considered as defined below. Values to be added by the pilot to minimum promulgated altitude (ft).

<table>
<thead>
<tr>
<th>Airport Temperature °C</th>
<th>Height above the elevation of the altimeter setting source (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>200</td>
</tr>
<tr>
<td>0</td>
<td>20</td>
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<tr>
<td>-10</td>
<td>20</td>
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<td>30</td>
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<td>-30</td>
<td>40</td>
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<tr>
<td>-40</td>
<td>50</td>
</tr>
<tr>
<td>-50</td>
<td>60</td>
</tr>
</tbody>
</table>
- "QNH …SET. CROSS-CHECKED. PASSING …NOW" ........ ANNOUNCE PNF
- "CHECKED" ................................................................. ANNOUNCE PF
- "APPROACH CHECKLIST" ................................. CALL PF
- APPROACH CHECKLIST ........................................ COMPLETE BOTH
Страница зарезервирована
4 ЗАХОД НА ПОСАДКУ

4.1 ILS APPROACH

For more information about precision approaches and how to use the FMGS see FMGS pilot's guide (Refer to 4.05.70 FCOM). The approach procedures described here assume that the flight crew uses managed speed guidance which is recommended.

Note: If the forecasted tail wind at landing is greater than 10 knots, decelerated approach is not allowed, and the speed should be stabilized around VREF + 5 knots in final.

INITIAL APPROACH

- ENG MODE selector ........................................................ AS RQRD PNF
  Select IGN if the runway is covered with standing water, or if heavy rain or severe turbulence is expected during approach or go-around.

- APPROACH PHASE ............................................. CHECK / ORDER TO ACTIVATE PF
  • If the aircraft overlies the DECEL pseudo waypoint in NAV mode, the APPR phase activates automatically.
  • If the aircraft is in HDG/TRK mode, approximately 15 NM from touchdown activate and confirm APPROACH phase on the MCDU.

- “ACTIVATE APPROACH PHASE” ................................ ORDER PF

- “APPROACH PHASE ACTIVATED” .................................. ANNOUNCE PNF

- POSITIONING ......................................................... MONITOR PF
  • In NAV mode, use VDEV information on the PFD and PROG page.
  • In HDG or TRK mode, use the energy circle on ND representing the required distance to land.

- MANAGED SPEED .................................................. CHECK PF
  If ATC requires a particular speed, then use selected speed. When the ATC speed constraint (“maintain 170 knots to the outer marker”, for example) no longer applies, return to managed speed.

- SPEEDBRAKES ................................................ AS RQRD PF
  If the pilot uses the speedbrakes to increase the rate of deceleration or to increase the rate of descent, he should realize that VLS with speedbrakes fully extended, in the clean configuration, may be higher than green dot speed and possibly than VFE FLAP 1. The A/THR in speed mode or the pitch demand in OPEN DES will limit the speed to VLS. In this situation, the pilot should begin to retract speedbrakes upon reaching VLS + 5 knots and should select FLAP 1, as soon as speed is below VFE NEXT. He may then extend the speedbrakes, if necessary. The landing gear may always be extended out of sequence to aid deceleration.
- **NAV ACCURACY** ........................................................................................................ MONITOR PNF

  Check on the PROG page that the required navigation accuracy in appropriate to the phase of flight. Monitor NAV accuracy and be prepared to change approach strategy. If NAV ACCURACY DOWNGRAD occurs, use raw data to check navigation accuracy.

  The navigation accuracy determines which autopilot modes the flight crew should use, and the type of displays to be shown on the ND as well as the use of EGPWS.

<table>
<thead>
<tr>
<th>NAVIGATION ACCURACY</th>
<th>ND</th>
<th>AP/FD mode</th>
<th>TERR pushbutton</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAV ACCUR HIGH</td>
<td>PF</td>
<td>NAV</td>
<td>ON</td>
</tr>
<tr>
<td>NAV ACCUR LOW and NAV ACCUR check ≤ 1NM</td>
<td>PNF</td>
<td>ARC or ROSE NAV with navaid raw data</td>
<td>OFF</td>
</tr>
<tr>
<td>Aircraft flying within unreliable radio navaid area</td>
<td></td>
<td>ROSE ILS</td>
<td>HDG or TRK</td>
</tr>
<tr>
<td></td>
<td></td>
<td>or ROSE ILS with navaid raw data</td>
<td></td>
</tr>
</tbody>
</table>

- **RADAR TILT** ................................................................. ADJUST PF

  Increase tilt as required (+ 3° to + 4°).

**INTERMEDIATE/FINAL APPROACH (ILS APPROACH ENTERED IN THE F-PLN)**

The objective is to be stabilized on the final descent path at VAPR thrust above idle, in the landing configuration, at 1000 feet in instrument conditions, or at 500 feet in visual conditions, after continuous deceleration on the glideslope. To be stabilized, all of the stabilized approach conditions must be achieved prior to, or upon, reaching this stabilization height.

If the aircraft is not stabilized on the approach path in landing configuration, at 1000 feet in instrument conditions, or at 500 feet in visual conditions a go-around must be initiated.

**WHEN CLEARED FOR ILS APPROACH:**

- **APPR pushbutton on FCU** ................................................................. PRESS PF

  - Press the APPR pushbutton when ATC cleared the aircraft for the approach. This arms the LOC and G/S modes.
  - LOC and/or G/S capture modes will engage no sooner than 3 seconds after being armed.

- **Both APs** ........................................................................................ ENGAGE PF

  When APPR mode is selected, both autopilots should be engaged.

- **FMA CHANGES** .................................................................................. ANNOUNCE PF
AT GREEN DOT SPEED:

- Whenever possible, for all flap settings flap selection should be performed at VFE – 15 kt to reduce flap wear.
- At high weights, if the green dot speed is close to VFE NEXT, the crew may select a lower speed.

- "FLAPS 1" .................................................................................................................ORDER PF
- "SPEED CHECKED" ................................................................................................. CONFIRM PNF
- FLAPS 1 ...................................................................................................................... SELECT PNF
- "FLAPS 1" ............................................................................................................... ANNOUNCE PNF
  - FLAPS 1 should be selected not less than 3 NM from FAF (final approach fix).
  - Check deceleration toward "S" speed.
  - The aircraft must reach or be established on the glide slope with FLAPS 1 and S speed at or above 2000 feet AGL.
  - If the aircraft speed is significantly higher than S on the glide slope, or if the aircraft does not decelerate on the glide slope, extend the landing gear to slow it down. It is also possible to use of speedbrakes. However, the flight crew should be aware that the use of speedbrakes causes an increase in VLS.

- SPEED S ............................................................................................................... CHECK/SET PF/PNF
  - PF for AUTO APPR, PNF for MAN APPR.

- TCAS MODE selector ................................................................. TA or TA/RA PNF
  Selecting TA only mode recommended:
  - in case of known nearby traffic which is in visual contact
  - At particular airports and during particular procedures identified by an operator as having a significant potential for unwanted or inappropriate resolution advisories (closely spaced parallel runways, converging runway, low terrain along the final approach...).

- FMA ..................................................................................................................... ANNOUNCE/ CHECK PF/PNF

- LOC CAPTURE ............................................................................................... MONITOR BOTH
  The flight crew must always monitor the capture of LOC beam. During this evolution, the associated indications on the PFD and ND must indicate movement towards the center of the scale.

- "LOC STAR" .............................................................................................................. ANNOUNCE PF
- G/S CAPTURE ...................................................................................................... MONITOR BOTH
If above the glideslope:

- **V/S mode** ................................................................. SELECT PF
- **Vertical speed** ...........................................................ADJUST PF
  
  Adjust the vertical speed to intercept the glide slope (maximum V/S value – 2000 fpm).
- **FCU ALTITUDE** ....................................................... SET ABOVE A/C ALTITUDE PF

  *Note:* If the aircraft intercepts the ILS above radio altimeter validity range (no radio altitude indication available on the PFD), CAT 1 is displayed on FMA. Check that the FMA displays the correct capability for the intended approach when the aircraft is below 5000 feet.

- "**G/S STAR**" .........................................................ANNOUNCE PF
- "**SET GA ALTITUDE...FT**" ...................................... CALL PF
- **GO-AROUND ALT** .................................................. SET PNF

  Set the go around altitude on the FCU.

- "**GO-AROUND ALTITUDE... SET**" ................................................................. ANNOUNCE PNF

**AT 2000 FT AGL (minimum):**

- "**FLAPS 2**" ...........................................................ORDER PF
- "**SPEED CHECKED**" ................................................CONFIRM PNF
  
  • Check deceleration toward F speed.
  • If the aircraft intercepts the ILS glideslope below 2000 feet AGL, select FLAPS 2 at one dot below the glideslope.
  • If the aircraft speed is significantly higher than S on the glide slope, or the aircraft does not decelerate on the glide slope, extend the landing gear in order to slow down the aircraft. The use of speedbrakes is not recommended.
  • When the speedbrakes are deployed, extending the flaps beyond FLAPS 1 may induce a slight roll movement, and in calm conditions a small lateral control asymmetry may remain until disturbed by a control input or by an atmospheric disturbance.

- FLAPS 2 ................................................................. SELECT PNF
- "**FLAPS 2**" .................................................. ANNOUNCE PNF
- SPEED F ............................................................... CHECK/SET PF/PNF

  PF for AUTO APPR, PNF for MAN APPR.

**WHEN FLAPS ARE AT 2:**

- "**GEAR DOWN**" ......................................................ORDER PF
- L/G DOWN ................................................................. SELECT PNF
- GROUND SPOILERS .................................................... ARM PNF
- AUTO BRK .................................................................CONFIRM PNF

  If the runway conditions have changed from the approach briefing, consider another braking mode.

- "**GEAR DOWN**" ...................................................... CONFIRM / ANNOUNCE PNF
WHEN LANDING GEAR IS DOWN, below VFE:

- "FLAPS 3" ...................................................................................... ORDER PF
- "SPEED CHECKED" ........................................................................ CONFIRM PNF
- FLAPS 3 ...................................................................................... SELECT PNF

Select FLAPS 3 below VFE.

- "FLAPS 3" ........................................................................... ANNOUNCE PNF
- ECAM WHEEL page ................................................................. CHECK BOTH
  - ECAM WHEEL page appears below 800 feet, or at landing gear extension.
  - Check for three landing gear green indications.

- If residual pressure is indicated on the triple indicator:
  - RESIDUAL BRAKING PROC ............................................ APPLY BOTH
  - "FLAPS FULL" ................................................................. ORDER PF
  - "SPEED CHECKED" ............................................................ CONFIRM PNF

Check deceleration towards VAPR

- FLAPS FULL ................................................................................ SELECT PNF
  - Select FLAPS FULL below VFE.
  - Retract the speedbrakes before selecting FLAPS FULL to avoid an unexpected pitch down when the speedbrakes retract automatically.

- "FLAPS FULL" ........................................................................ ANNOUNCE PNF
- SPEED VAPP ........................................................................ CHECK/SET PF/PNF

  PF for AUTO APPR, PNF for MAN APPR.

- A/THR ................................................................................ CHECK IN SPEED MODE OR OFF PNF
- WING ANTI ICE .......................................................................... OFF PNF

Switch WING ANTI ICE ON only in severe icing conditions.

- EXTERIOR LIGHTS ...................................................................... SET PNF
  - Set NOSE switch to TAXI.
  - Set RWY TURN OFF switch to ON.

- SLIDING TABLE ................................................................. STOW BOTH
- LDG MEMO ............................................................................ CHECK NO BLUE LINE PNF
- CABIN REPORT ......................................................................... OBTAIN CM1
- CABIN CREW ............................................................................. ADVISE PF

  Set SEAT BELTS OFF, then ON twice.

- "LANDING CHECKLIST" ........................................................... CALL PF
- LANDING CHECKLIST .................................................................. COMPLETE BOTH
**AT MINIMUM STABILIZATION HIGHT:**

- "**ONE THOUSAND**" or "**FIVE HUNDRED**" ...................... ANNOUNCE PNF
- "**STABILIZED**" ............................................................... ANNOUNCE PF
  Continue approach.
  ● If the A/C is not stabilized on the approach path in landing configuration:
- "**NOT STABILIZED. GO AROUND**" .......................... ANNOUNCE PNF
- "**GO AROUND/FLAPS**" .................................................. ANNOUNCE PF
  Initiate a go-around.

- **FLIGHT PARAMETERS** .................................................. CHECK BOTH
  PF announces any FMA modification. The PNF calls out:

<table>
<thead>
<tr>
<th><strong>“SPEED”</strong></th>
<th>When the speed becomes lower than speed target – 5kt, or greater than speed target + 10 kt</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>“PITCH”</strong></td>
<td>When the pitch attitude becomes lower than -2.5° or greater than 10° nose up</td>
</tr>
<tr>
<td><strong>“BANK”</strong></td>
<td>When the bank angle becomes greater than 7°</td>
</tr>
<tr>
<td><strong>“SINK RATE”</strong></td>
<td>When the descent rate becomes greater than 1000 fpm</td>
</tr>
<tr>
<td><strong>“LOC” / “GS”</strong></td>
<td>When excessive LOC or GLIDE deviation occurs. 1/4 dot LOC; 1 dot GS</td>
</tr>
</tbody>
</table>

**AT DH + 100 FT (or MDA/MDH + 100 FT):**

- "**ONE HUNDRED ABOVE**" .............................. MONITOR (or ANNOUNCE) PNF
  ● If the required visual reference has been established upon reaching the DH (or MDA/MDA)
- "**CONTINUE**" .............................................................. ANNOUNCE PF
- **LANDING** ................................................................. PERFORM PF
  Do not duck under the glideslope. Maintain a stabilized flight path down to the flare. At 50 feet, one dot below glideslope is 7 feet below glideslope.
  ● If the required visual reference has not been established upon reaching the DH (or MDA/MDA)

**AT DH (or MDA/MDH):**

- "**MINIMUM**" .......................................................... MONITOR (or ANNOUNCE) PNF
- "**GO AROUND/FLAPS**" ................................................. ANNOUNCE PF
  Initiate a go-around.
NOTE 1: THIS APPROACH ASSUMES THE USE OF MANAGED SPEED. IF NOT, SELECT SPEED MANUALLY:
- S AFTER FLAPS 1 SELECTION
- F AFTER FLAPS 2 SELECTION
- VAPP AFTER LANDING FLAP SELECTION

NOTE 2: IF EARLIER STABILIZATION AT VAPP IS REQUIRED, START DECELERATION AT HIGHER ALTITUDE.

* THE CHANGE OF FLAPS SETTING IS ALMOST CONTINUOUS, TAKING INTO ACCOUNT THE EXTENSION TIME OF THE SURFACES, HOWEVER, VFE NEXT WHICH IS DISPLAYED ON THE PFD HAS TO BE CONSIDERED IN CERTAIN CASES (AIRCRAFT HEAVY).

** TO MINIMIZE FLAPS WAND EXTEND FLAPS AT VFE-15 KT WHEN POSSIBLE.

*** 10000 FT AGL MINIMUM INC.
5000 FT AGL MINIMUM VMC OR AS RESTRICTED BY AIRLINE POLICY/REGULATIONS.
4.2 CAT II / CAT III APPROACH

FLIGHT PREPARATION

In addition to normal flight preparation, the following planning and preparation must be performed when CAT II or CAT III approaches are envisaged.

- Review NOTAMS to make sure that the destination still meets visual or non-visual CAT II or CAT III requirements:
  - Runway and approach lighting;
  - Radio navaid availability;
  - RVR equipment availability; etc.
- Aircraft status: check that required equipment for CAT II or CAT III approaches are operative. The required equipment list is given in the FCOM and in the QRH. When the aircraft log book is available, confirm that no write-up during previous flights affects equipment required for CAT II / CAT III. A maintenance release statement for CAT II / CAT III may be indicated in the log book.
- Crew qualification and currency must be reviewed (both CAPT and F/O must be qualified and current).
- Weather information: check that the weather forecast at destination is within airline and crew minima. If the forecast is below CAT I minima, verify that alternate weather forecasts are appropriate to the available approach means and at least equal or better than airline requirements.
- Fuel planning: additional extra fuel should be considered possible approach delays.

APPROACH PREPARATION

During descent preparation review additionally:

- Aircraft status: check on ECAM STATUS page that the required landing capability is available. Although it is not required to check equipment that is not monitored by the system, if any of this equipment is seen inoperative (flag), the landing capability will be reduced.
- Weather: check weather conditions at destination and at alternates. Required RVR values must be available for CAT II / CAT III approaches. The selected alternate must have weather conditions equal to or better than airline requirements.
- State approval list: check list in JEPPESEN to verify that AFL has approval from the state to operate in CAT II / CAT III conditions.
- Landing minima.
Low visibility procedure: review the published low visibility procedure at destination. Unless LVP are reported active by ATIS, clearance to carry out a CAT II / CAT III approach must be requested from ATC, who will check the status of the ILS and lighting and protect the sensitive areas from incursion by aircraft or vehicles. Such an approach may not be undertaken until the clearance has been received.

Seat position: the correct seat adjustment is essential in order to take full advantage of the visibility over the nose. The seat is correctly adjusted when the pilot eyes are in line with the red and white balls located above the glareshield.

Use of landing lights: at night in low visibility conditions, landing lights can be detrimental to the acquisition of visual references. Reflected light from water droplets or snow may actually reduce visibility.

Landing lights would therefore not normally be used in CAT II or CAT III weather conditions.

**APPROACH BRIEFING**

The briefing should include the normal items as for any IFR arrival and in addition the following subjects should be covered prior to the first approach:

- Destination and alternate weather;
- Airfield and runway operational status CAT II / CAT III, etc.
- Aircraft systems status and capacity;
- Brief review of task sharing;
- Review approach procedure;
- Review applicable minima, go-procedure, ATC calls;
- Brief review of procedure in case of malfunction below 1000 ft;
- Optimum seat position and reminder to set cockpit lights when appropriate.
**TASK SHARING**

The task sharing for a CAT II / CAT III approach is that **CM1 is PF** and **CM2 is PNF**. The workload is distributed in such a way that the PF primary tasks are supervising and decision making, and the PNF primary task is monitoring operation of the automatic system.

In summary the tasks are shared as follows:

- **CM1** -
  - Has hands on controls and thrust levers throughout the approach, landing or go-around;
  - Makes FCU selections (if any);
  - Takes manual control in the event of AP disconnection;
  - Monitor flight instruments.

**Approaching DH:**

- Start to look for visual references, progressively increasing external scanning as DH is approached.

**At or before DH (if the decision is to continue):**

- Calls **“LANDING”**;
- Scans mostly head-up to monitor the flight path and flare by visual references;
- At **“RETARD”** call-out sets thrust levers to idle;
- Selects and controls reverse thrust;
- Disengages AP when taxi speed is reached.

- **CM2** -
  - Monitors flight instruments head-down throughout approach, go-around or landing until rollout is completed;
  - Calls any deviation or failure warning;
  - Calls barometric heights as required, and monitors auto call-out or calls radio heights including **“100 ABOVE”**;
  - Monitors FMA and calls mode changes below 1000 ft.

**At DH (identified by aural and visual warning):**

- If decision is not announced by CM1, calls **“MINIMUM”**;
- If no response from CM1, initiates a go-around.

**IF DECISION IS TO GO AROUND:**

- **CM1** -
  - Calls **“GO AROUND – FLAPS”**;
  - Initiates go-around by setting thrust levers to TOGA;
  - Monitors rotation on PFD;
  - Checks positive climb (V/S and RA);
  - Commands configuration changes.

- **CM2** -
  - Standard operating procedures.
CAT II / CAT III APPROACH

CAT II / CAT III approach should be performed using standard ILS approach techniques till 1000ft. The crew shall perform a stabilized approach, so that LANDING C/L to be accomplished before reaching FAF.

Note: As a general rule, if a failure occurs above 1000 ft AGL the approach may continued reverting to a higher DH, providing the appropriate conditions are met.

- **Downgrading from CAT III to CAT II is permitted only if:**
  - ECAM actions are completed,
  - RVR is at least equal to CAT II minima,
  - Briefing is amended to include CAT II procedure and DH,
  - Decision to downgrade is completed above 1000 ft AGL.

- **Downgrading from CAT II to CAT I permitted only if:**
  - ECAM actions are completed,
  - At least one FD is available,
  - RVR is at least equal to CAT I minima,
  - Briefing is amended to include CAT I procedure and DH,
  - Decision to downgrade is completed above 1000 ft AGL.

Note: Switching from one AP to another before 1000 ft AGL is permitted.

<table>
<thead>
<tr>
<th>FAILURE (if multiple failures, the most limiting applies)</th>
<th>ACTION TO BE PERFORMED ABOVE 1000FT</th>
<th>LANDING CATEGORY</th>
</tr>
</thead>
<tbody>
<tr>
<td>ONE ENGINE OUT</td>
<td>Complete ECAM procedure</td>
<td>CAT III SINGLE</td>
</tr>
<tr>
<td>LANDING CAPABILITY DECREASE</td>
<td>Try to recover</td>
<td>As displayed on FMA</td>
</tr>
<tr>
<td>LOSS OF A/THR</td>
<td>Switch AP, and try to reengage</td>
<td>CAT II (if A/THR not recovered)</td>
</tr>
<tr>
<td>NOSE WHEEL STEERING</td>
<td></td>
<td>CAT III SINGLE (DH = 50 ft)</td>
</tr>
<tr>
<td>ANTI SKID</td>
<td>Disengage AP at touch down</td>
<td>Disengage AP at touch down</td>
</tr>
<tr>
<td>AMBER “CHECK ATT” on two PFD</td>
<td>Check with STBY horizon, use switching to recover (no switching below 1000 ft)</td>
<td>CAT III SINGLE (if the warning disappears)</td>
</tr>
<tr>
<td>AMBER “CHECK HDG” on two PFD &amp; two ND</td>
<td>Check with STBY compass, use switching to recover (no switching below 1000 ft)</td>
<td>CAT III SINGLE (if not)</td>
</tr>
<tr>
<td>RED “HDG” on one PFD &amp; one ND</td>
<td>Use switching to recover (no switching below 1000 ft)</td>
<td>CAT I (minimum RVR as per regulation)</td>
</tr>
<tr>
<td>RED “ATT” on one PFD</td>
<td></td>
<td>CAT I</td>
</tr>
<tr>
<td>RED “SPD” on one PFD</td>
<td></td>
<td>CAT I</td>
</tr>
<tr>
<td>DIAGONAL line on one PFD &amp; one ND</td>
<td></td>
<td>CAT I</td>
</tr>
<tr>
<td>RED “RA” on two PFD</td>
<td>AP and FD not available</td>
<td>CAT I</td>
</tr>
<tr>
<td>SLATS/FLAPS FAILURE (LESS THAN CONFIG 3)</td>
<td></td>
<td>CAT I Disengage AP at or above 500 ft</td>
</tr>
</tbody>
</table>
Below 1000ft AGL the occurrence of any failure implies a go-around, and a reassessment of the system capability. Another approach may then be undertaken to the appropriate minima for the given aircraft status.

**CAT III APPROACH**

AUTO CALL OUT RA is mandatory.
A/THR in SPEED MODE is mandatory.

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

**AT 1000 FT:**

- **"ONE THOUSAND"** ................................................................. ANNOUNCE CM2
- **"CHECKED"** ........................................................................ ANNOUNCE CM1

Continue approach. Below 1000 ft go-around must be initiated in case of:

- ALPHA FLOOR activation;
- AP OFF (cavalry charge);
- LOSS of CAT 3 (click, click, click);
- AMBER caution (single chime)
- ENGINE failure.

**FLIGHT PARAMETERS** .............................................................CHECK BOTH

CM2 announces any FMA modification.
The CM2 calls out flight parameters deviation:

<table>
<thead>
<tr>
<th>PARAMETERS</th>
<th>IF DEVIATION EXCEEDS</th>
<th>CALL REQUIRED</th>
</tr>
</thead>
<tbody>
<tr>
<td>IAS</td>
<td>+ 10 kt / - 5 kt</td>
<td>“SPEED”</td>
</tr>
<tr>
<td>RATE OF DESCENT</td>
<td>- 1000 fpm</td>
<td>“SINKRATE”</td>
</tr>
<tr>
<td>PITCH ATTITUDE</td>
<td>10° nose up / - 2.5°</td>
<td>“PITCH”</td>
</tr>
<tr>
<td>BANK ANGLE</td>
<td>7°</td>
<td>“BANK”</td>
</tr>
<tr>
<td>LOCALIZER</td>
<td>excess deviation</td>
<td>“LOCALIZER”</td>
</tr>
<tr>
<td>GLIDE SLOPE</td>
<td>warning</td>
<td>1/4 dot</td>
</tr>
<tr>
<td></td>
<td></td>
<td>“GLIDESLOPE”</td>
</tr>
</tbody>
</table>

If any of these limits are exceeded approaching DH, a go-around should be considered.

**RA CALL OUT** ................................................. MONITOR BOTH / ANNOUNCE CM2

Monitor CALL OUT or announce as appropriate:

- **“TWO HUNDRED”**
- **“ONE HUNDRED”**
- **“FIFTY”**
- **“THIRTY”**
- **“TWENTY”**
- **“HUNDRED ABOVE”**
- **“MINIMUM”**
- **“RETARD”** at 10 ft

*Note:* 1. AUTO CALL OUT RA is required for autoland, and mandatory for CAT III approach.
2. “RETARD” auto call out comes up at 10 ft if LAND mode is engaged with one or two AP engaged. Otherwise it is announced at 20 ft.
AT 350 FT:

- "LAND GREEN" ................................................................. ANNOUNCE CM2
  If LAND does not appear on FMA, announce “NO LAND GREEN”

- "CHECKED" ................................................................. ANNOUNCE CM1
  If “NO LAND GREEN” a go-around must be performed.

AT 200 FT RA and below:

- If AUTOLAND warning appears on the glareshield:
  - "GO AROUND - FLAPS" ................................................. ANNOUNCE CM1
    Any AUTOLAND warning requires an immediate go-around. If visual references are
    sufficient and a manual landing is possible, the CM1 may decide to complete the landing.
    Note: With LAND or FLARE green on the FMA and at least one AP engaged, the
    AUTOLAND red light appears on the glareshield when the aircraft is below 200 ft
    RA and one of the following events occurs:
    - The autopilots are lost, or
    - The aircraft gets too far off the beam (LOC or G/S flash on PFD), or
    - Loss of LOC signal above 15 ft, or loss of G/S signal above 100 ft
      (transmitter or receivers).
    - The difference between both RA indications is greater than 15 ft.

AT Decision Height + 100 FT:

- "HUNDRED ABOVE” ...........MONITOR AUTO CALL OUT / ANNOUNCE CM2
- Outside scanning ............................................................... COMMENCE CM1

AT Decision Height:

- If external visual references are not sufficient:
  - "GO AROUND - FLAPS" .................................................. ANNOUNCE CM1
    Perform a go-around procedure.

- If external visual references are sufficient:
  - "CONTINUE” ............................................................... ANNOUNCE CM1

AT 40 FT:

- FLARE on FMA ................................................................. CHECK CM2

- “FLARE” ................................................................. ANNOUNCE CM2
  Note: If FLARE does not come up on FMA CM2 must announce “NO FLARE” and a
  go-around must be performed. If visual references are sufficient and a manual
  landing is possible, the CM1 may decide to complete the landing.
AT 30 FT:
- THR reduction and flare by flight instruments .......................MONITOR CM1
- AUTO CALL OUT .......................................................... MONITOR / ANNOUNCE CM2

AT 10 FT:
- "RETARD" ................................................................. MONITOR / ANNOUNCE CM2
- Both THR LEVERS ...................................................... RETARD TO IDLE CM1
- Lateral guidance by external reference .................................MONITOR CM1
- Engines parameters ...................................................... MONITOR CM2

AT TOUCH DOWN:
- ROLL OUT on FMA ................................................................. CHECK CM2
- "ROLL OUT" ................................................................ ANNOUNCE CM2

Note: 1. In case of ANTI SKID or NWS failure, disconnect AP and take manual control at touch down.
2. If automatic pollout control is not satisfactory, disconnect the AP immediately.

Continue standard landing procedure and disengage the APs at the end of rollout (when leaving the runway at the latest).

VISUAL REFERENCES

The visual references required at DH In CAT II operations to continue the approach may be any of the following:
- a segment of the approach light system,
- the runway threshold,
- the touchdown zone.

In CAT III operations with DH, the condition required at DH is that there should be visual references, which confirm that the aircraft is over the touchdown zone. Go around is mandatory if the visual references do not confirm this.
4.3 NON PRECISION APPROACH

APPROACH GUIDANCE FOR NON PRECISION APPROACHES OTHER THAN LOC
NON PRECISION APPROACH

Two different approach strategies are available to perform non-precision approaches:

1. **Lateral and vertical guidance, selected by the crew**: TRK-FPA (or HDG-V/S) modes.
   
   **Note**: The non precision approach is flown in selected modes when:
   
   - The approach is not stored in database or
   - The NAV ACCURACY check is negative.

2. **Lateral guidance, managed by the FM, and vertical guidance selected by the crew**: NAV-FPA (or NAV-V/S) modes.
   
   **Note**: Until otherwise advised, approaches using managed vertical guidance procedures are not approved.

   For additional information on recommended flight crew procedures, and on navigation database vertical flight path validation, refer to the dedicated FCOM Bulletin “Use of managed guidance in approach and NAV database validation” and the FMGS Pilot’s Guide (4.05.70).

During non precision final approaches a stabilized descent path adherence as much as possible to the required slope must be maintained, using the pre-calculated rate of descent value, possibly updated during descent.

It is also advisable to use all auxiliary instrument information (DME, radar vectoring, intersections, etc.).

Upon reaching the MDA the approach shall be discontinued if external visual cues are inadequate, if the aircraft is not in the correct position for continuation of the approach or if any other reason dictates such a decision.

**Level flight to the MAPt is not allowed.**

The approach must be discontinued at the MAPt if it is overflown before reaching the MDA.

Should the approach be discontinued at the MDA before the MAPt, one shall proceed climbing along the final approach course until the threshold of active runway or MAPt is crossed and then follow the published missed approach procedure.

APPROACH GUIDANCE FOR LOC NON PRECISION APPROACHES

The Standard Operating Procedure of this section can be used for flying LOC approaches, provided the following approach guidance items are observed.

The FM NAV mode can be used down to LOC interception.

For LOC intermediate and final approach, use the LOC AP/FD mode for lateral navigation, associated with the FPA (or V/S) for vertical navigation.

Vertical navigation must be monitored using raw data (altimeter, distance to the runway given by radio-navaid).

The VDEV indication on the PFD must be disregarded, since it may be incorrect if the MAP is located before the runway threshold.
APPROACH SPEED TECHNIQUE

In all cases, the crew should use managed speed with AP ON.

The standard speed technique is to make a stabilized approach using AP/FD and A/THR:

The aircraft intercepts the final descent path in landing configuration, and at VAPR. For this purpose, the flight crew should insert VAPP as a speed constraint at the FAF.

If the ATC vectors the aircraft with speed adopt a decelerated approach technique and the crew uses managed guidance, the aircraft should intercept the final descent path at S speed in CONF 1.

The objective is to be stabilized on the final descent path thrust above idle, in the landing configuration at 1000 feet.

To be stabilized, all of the stabilized approach conditions must be achieved prior to, or upon, reaching this stabilization height:

If the aircraft is not stabilized on the approach and in landing configuration, at 1000 feet in instrument conditions, or at 500 feet in visual conditions, a go-around must be initiated.

If the forecasted tailwind at landing is greater than 10 kt, a decelerated approach is not allowed, and the speed should be stabilized around VREF +5 kt in final.

APPROACH PREPARATION

Before top of descent, during DESCENT PREPARATION:

- Intended approach on the F-PLN page .............................................SELECT PF
  Check the FM lateral and vertical flight path against the published approach chart, using the MCDU and the ND PLAN mode with constraints displayed.

- VAPP ............................................................................................... ENTER PF
  Enter VAPP as SPD constraint at the FAF, with a vertical revision of the F-PLN page.

- APPROPRIATE NAVAID ............................................... SELECT / CHECK PF
  Select / check that the appropriate navaid is selected on the RAD NAV page.

INITIAL APPROACH

- ENG MODE selector .................................................................AS RQRD PNF
  Select IGN if the runway is covered with standing water or heavy rain or if severe turbulence is expected in the approach or go around area.

- APPROACH PHASE .............................................. CHECK / ORDER TO ACTIVATE PF
  - If the aircraft overlies the DECEL pseudo waypoint in NAV mode, the APPR phase activates automatically.
  - In HDG or TRK mode, manually activate the APPR phase on the PERF APPR page, when the distance to land is approximately 15 NM from touchdown.
- **ACTIVATE APPROACH PHASE** .............................................. ORDER PF
- **APPROACH PHASE ACTIVATED** ........................................ ANOUNCE PNF
- **POSITIONING** ................................................................... MONITOR PF
  - In NAV mode, use VDEV information on PFD and PROG page.
  - In HDG or TRK modes, use the energy circle displayed on ND representing the required distance to land.
- **MANAGED SPEED** ................................................................. CHECK PF
  If ATC requires a particular speed, use selected speed. When the ATC speed constraint no longer applies, return to managed speed.
- **SPEEDBRAKES** ................................................................. AS RQRD PF
- **NAV ACCURACY** ................................................................. MONITOR PNF
  If the approach is stored in the navigation database, determine the strategy to be used for the final approach, according to the table below:

<table>
<thead>
<tr>
<th>NAVIGATION ACCURACY</th>
<th>Approach guidance</th>
<th>ND</th>
<th>AP/FD mode</th>
<th>TERR p/b</th>
</tr>
</thead>
<tbody>
<tr>
<td>NAV ACCUR HIGH</td>
<td>Managed</td>
<td>PF</td>
<td>NAV-FPA</td>
<td>ON</td>
</tr>
<tr>
<td>NAV ACCUR LOW and NAV ACCUR check ≤ 1NM</td>
<td>With navaid raw data</td>
<td>PNF</td>
<td>NAV-FPA</td>
<td>ON</td>
</tr>
<tr>
<td>NAV ACCUR LOW and NAV ACCUR check &gt; 1NM</td>
<td>Selected</td>
<td>ARC or ROSE NAV ** or ROSE NAV with navaid raw data</td>
<td>TRK-FPA</td>
<td>OFF</td>
</tr>
<tr>
<td>Aircraft flying within unreliable radio navaid area</td>
<td>Selected</td>
<td>ROSE VOR ** or ROSE VOR with navaid raw data</td>
<td>TRK-FPA</td>
<td>OFF</td>
</tr>
</tbody>
</table>

(*) For VOR approaches, one pilot may select ROSE VOR.
(**) For LOC approaches, select ROSE ILS.

**Note:**
1. During approach in overlay to a conventional radio navaid procedure, monitor raw data. If raw data indicates unsatisfactory managed guidance, revert to selected guidance.
2. The pilot can continue to fly a managed approach after receiving a NAV ACCUR DOWNGRADED message, if raw data indicates that the guidance is satisfactory.

- **RADAR TILT** ................................................................. ADJUST PF
  Increase tilt, as required (+ 3° to + 4°).
INTERMEDIATE / FINAL APPROACH

Note: For instructions for switching from a non ILS to an ILS approach, see the FMGS Pilot's Guide. (Refer to 4.05.70 FCOM).

- **ND MODE and RAW DATA** .............................. SELECT AS APPROPRIATE **BOTH**
  - Select ROSE NAV or ARC mode, and VOR or ADF raw data if managed lateral and selected vertical guidance is intended, as appropriate on the ND (refer to the table above) if managed lateral and selected vertical guidance is intended.
  - Select ND in the ROSE VOR mode if lateral and vertical guidance, selected by the crew is intended (refer to the table above).

- **TRK/FPA display** .............................................................. SELECT PF
  Select TRK/FPA display, when established on the FINAL APPROACH COURSE if and selected lateral and vertical guidance is in tended.

- **MANAGED SPEED** ........................................................ USE PF
- **A/THR** ................................................................. KEEP ACTIVE PF

WHEN CLEARED FOR APPROACH:

- **NAV and FPA on the FMA** ........................................ CHECK PF
  Check NAV/FPA on the FMA if managed lateral and selected vertical guidance is intended.

AT GREEN DOT SPEED:

- "**FLAPS 1**" ........................................................ ORDER PF
- "**SPEED CHECKED**" ................................................ CONFIRM PNF
- FLAPS 1 ................................................................. SELECT PNF
- "**FLAPS 1**" .................................................. ANNOUNCE PNF
- SPEED S.................................................................. CHECK/SET PF/PNF
  PF for AUTO APPR, PNF for MAN APPR.

- **TCAS MODE selector** .............................................. TA or TA/RA PNF
  See ILS approach (Refer to 3.03.18 FCOM).

- **ND DISPLAY** ........................................................ SELECT RANGE/MODE **BOTH**

AT S SPEED:

- "**FLAPS 2**" ........................................................ ORDER PF
- "**SPEED CHECKED** " ............................................. CONFIRM PNF
- FLAPS 2 ................................................................. SELECT PNF
- "**FLAPS 2**" .................................................. ANNOUNCE PNF
- SPEED F................................................................. CHECK/SET PF/PNF
  PF for AUTO APPR, PNF for MAN APPR.
WHEN FLAPS ARE AT 2:
- **"GEAR DOWN"** ......................................................... ORDER PF
- L/G DOWN ......................................................... SELECT PNF
- GROUND SPOILERS ........................................ ARM PNF
- AUTO BRK .................................................. CONFIRM PNF
  If the runway conditions have changed from the approach briefing, consider another braking mode.
- **"GEAR DOWN"** ........................................ CONFIRM / ANNOUNCE PNF

WHEN LANDING GEAR DOWN, below VFE:
- **"FLAPS 3"** ......................................................... ORDER PF
- "SPEED CHECKED" ........................................ CONFIRM PNF
- FLAPS 3 ..................................................... SELECT PF
  Select FLAPS 3 below VFE.
- **"FLAPS 3"** ................................................... ANNOUNCE PNF
- ECAM WHEEL page ....................................................... CHECK BOTH
  - ECAM WHEEL page appears below 800 feet, or at landing gear extension.
  - Check three landing gear green indications.
    - If residual pressure is indicated on the triple indicator:
    - RESIDUAL BRAKING PROC ................................ APPLY BOTH

WHEN FLAPS 3, below VFE:
- **"FLAPS FULL"** .................................................. ORDER PF
- "SPEED CHECKED" ........................................ CONFIRM PNF
  - Check deceleration towards VAPR
  - Check correct TO waypoint on the ND
- FLAPS FULL ..................................................... SELECT PNF
  - Select FLAPS FULL below VFE.
  - Retract the speedbrakes before selecting FLAPS FULL to avoid an unexpected pitch down when the speedbrakes retract automatically.
- **"FLAPS FULL"** ................................................... ANNOUNCE PNF
- SPEED VAPP .................................................... CHECK/SET PF/PNF
  PF for AUTO APPR, PNF for MAN APPR.
- A/THR .......................................................... CHECK IN SPEED MODE PNF
- WING ANTI ICE .............................................. OFF PNF
  Switch WING ANTI ICE ON only in severe icing conditions.
- **EXTERIOR LIGHTS** ................................................................. SET PNF
  Set NOSE switch to TAXI.
  RWY TURN OFF switch to ON.

- **SLIDING TABLE** ................................................................. STOW BOTH

- **LDG MEMO** ................................................................. CHECK NO BLUE LINE PNF

- **CABIN REPORT** ............................................................. OBTAIN CM1

- **CABIN CREW** ................................................................. ADVISE PF
  Set SEAT BELTS OFF then ON twice.

- **"LANDING CHECKLIST"** .................................................. CALL PF

- **LANDING CHECKLIST** ................................................... COMPLETE BOTH

**UPON REACHING THE FINAL APPROACH FIX:**

- **FINAL APPR TRACK** on the FCU ............................. SELECT PF
  Select final approach TRACK on the FCU if lateral and vertical guidance, selected by the crew is intended.

- **FPA** on the FCU .............................................................. SELECT PF
  Select an FPA (flight path angle) to the final descent path angle.
  Anticipate the selection of the FPA to smoother the interception of the final descent path.
  **Note:** If the pilot is using the AP, select the final FPA approximately 0.3 NM before the final approach fix.

- **GO-AROUND ALT** ........................................................... SET PF
  Set, when below the go-around altitude.

- **"GO-AROUND ALTITUDE... SET"** ............................... ANNOUNCE PF

- **POSITIONING** .............................................................. MONITOR PF
  - Use radio navaid raw data to monitor the lateral navigation.
  - Using altitude indication versus radio navaid position, adjust the FPA, as necessary, to follow the published descent profile, taking into account the minimum altitudes.
  - Do not use the FMGS VDEV on the PFD.
  - If the lateral navigation is unsatisfactory, revert to TRK/FPA.

- **FPA** .................................................................................. ADJUST PF
  Adjust the FPA to fly the intended vertical flight path.
AT MINIMUM STABILIZATION HIGHT:

- "ONE THOUSAND" or "FIVE HUNDRED" ......................... ANNOUNCE PNF
- "STABILIZED" ........................................................... ANNOUNCE PF
  Continue approach.

- If the A/C is not stabilized on the approach path in landing configuration:
  - "NOT STABILIZED. GO AROUND" .......................... ANNOUNCE PNF
  - "GO AROUND/FLAPS" ........................................ ANNOUNCE PF
    Initiate a go-around.

- FLIGHT PARAMETERS ............................................. CHECK BOTH
  PF announces any FMA modification. PNF calls out:
  - "SPEED", when speed goes below V target - 5 knots, or goes above the speed target +10 knots.
  - "SINK RATE", when V/S is greater than – 1000 ft/min.
  - "PITCH", when the pitch attitude goes below - 2.5°, or goes above +10° for A319/320 and +7.5° for A321.
  - "BANK", when the bank angle goes above 7°.
  - "COURSE", when greater than 1 / 2 dot (VOR) or 2.5° (VOR), or 5° (ADF)
  - "__FT HIGH (LOW)" at altitude checkpoints.

● At ENTERED MDA/MDH + 100 FT:
  - "ONE HUNDRED ABOVE" ...................................... ANNOUNCE PNF
    - If the required visual reference has been established upon reaching the MDA/MDH:
      - "CONTINUE" .................................................. ANNOUNCE PF
    - AP ............................................................... DISCONNECT PF
    - "FLIGHT DIRECTORS OFF" .................................. ANNOUNCE PF
    - FD on both side ............................................... OFF PF
    - LANDING ..................................................... PERFORM PF
      Continue, as with visual approach(Refer to 3.03.20 FCOM).

      - If ground references are not visible:
At ENTERED MDA or MDH:
- "MINIMUM" ..........................ANNOUNCE PNF
- "GO AROUND/FLAPS" ..................... ANNOUNCE PF
  Initiate a go-around.

Note: If ground references are not visible when the aircraft reaches MDA, the pilot should make an immediate go-around. However, if the distance to the runway is not properly assessed, a step descent approach may be considered and a level-off at MDA may be performed while searching for visual references. If the pilot has no visual reference at MAP, at the latest, he must begin a go-around.
CIRCLING APPROACH

For a circling approach the flight crew should prepare the flight plan as follows:

Primary flight plan   :   Introduce the instrument approach
Secondary flight plan:   - copy the ACTIVE F-PLN
                        - revise the Landing runway

The aircraft should circle in CONF 3 at F speed.

Upon reaching MDA
- Push the V/S/FPA knob to level off
- Search for visual reference

● If the flight crew finds no visual reference:
  - AT MAP: initiate go around .................................................................PF

● If the flight crew finds sufficient visual references:
  - Select 45° offset track for 30 sec ..........................................................PF
  - Select TRK for downwind ........................................................................PF
  - Early on downwind : activate SEC F-PLN ...............................................PNF

CAUTION

The PNF should activate the SEC F-PLN.
The PF should maintain visual contact during all the circling.

- Disengage autopilot before reaching the base leg ........................................PF
- “FLIGHT DIRECTORS OFF” .................................................................ANNOUNCE PF
- FD on both side .................................................................................. OFF PF

Aircraft must remain within the circling area during approach.

Note: The standard missed approach procedure for the circling approach is: to be established on the missed approach part of the instrument approach for the runway.
LOW VISIBILITY CIRCLING APPROACH

- **Turning Base**
  - Start Time
  - **ABeam Threshold**
  - **F Speed**
  - Minimum Circling Approach Height
  - **V_{app}**
  - Flaps Full
  - End of Turn 400ft Mini.
  - Stabilized

- **Runway in Sight**
  - Level Off
  - Proceed to Down Wind Leg
  - Fly 45° for 30 Sec
  - Maintain Visual Contact with Runway

**Initial Config:**
- Flaps 3
- L/G Down
- Splrs Armed
4.4 VISUAL APPROACH

OBJECTIVE

Perform the approach on a nominal 3 degree glideslope using visual references. Approach to be stabilized by 500 feet AGL on the correct approach path, in the landing configuration, at VAPR.

Method:
- The autopilot is not used.
- Both FDs are off.
- FPV use is recommended.
- A/THR use is recommended with managed speed.

Bear in mind the possible risk of optical illusions due to hindered night vision.

VISUAL CIRCUIT

INITIAL/INTERMEDIATE APPROACH

The flight plan selected on the MCDU should include the selection of the landing runway.

The downwind leg may also be part of the flight plan. This may be a useful indication of the aircraft position in the circuit on the ND., visual references must be used., at the beginning of the downwind leg:

- "ACTIVATE APPR PHASE" .................................................................ORDER PF
- Manually ACTIVATE APPR PHASE .......................................................PNF
- Select FDs to OFF .................................................................BOTH
- "BIRD ON" (to have FPV displayed) ........................................ORDER PF
- Select TRK-FPA .................................................................PNF
- Check A/THR active .................................................................PF

Extend the downwind leg to 45 seconds (± wind correction). Turn into base leg with a maximum of 30° of bank. Descent with approximate FPA, in FLAPS 2, at F speed.

FINAL APPROACH

- The speed trend arrow and FPV help the flight crew make timely and correct thrust settings (if in manual thrust), and approach path corrections. Avoid descending through the correct approach path with idle thrust. (Late recognition of this situation without a prompt thrust increase may lead to considerable speed decay and altitude loss).
- Have the aircraft stabilized by 500 feet AGL, on the correct approach path at VAPP (or ground speed mini) with the appropriate thrust applied. If not stabilized, a go-around should be considered.
- Avoid any tendency to "duck under" in the late stages of the approach.
- Avoid destabilizing the approach in the last 100 feet, in order to have the best chance of performing a good touchdown at the desired position.
**VISUAL APPROACH (1 OR 2 ENGINES)**

**WHEN FLAPS 2**
- L/G DOWN *
- SPLRS ARMED

**TURNING BASE**
- FLAPS 2

**ABM THRESHOLD**
- START TIME
- FLAPS 1

**SPD GREEN DOT OR BELOW**
- PERF KEY: PRESSED
- ACTIVATE APPROACH PHASE
- CHECK SPD MANAGED
- SELECT FDs OFF
- SELECT TRK-FPA
- SELECT GA ALTITUDE

**ABEAM RUNWAY**
- L/G UP

**GO AROUND**
- SET GA THRUST
- ROTATE TO 15° (12°.5 IF 1 ENGINE)
- RETRACT FLAPS ONE STEP

**POSITIVE CLIMB**
- AIRCRAFT STABILIZED WITH FLAPS FULL, AT TARGET SPEED
- BRAKES
- TOUCH DOWN
- REVERSE

**REV IDLE**

**45SEC=1 SEC/1KT OF WIND**

**WHEN L/G DOWN**
- FLAPS 3
- CHECK VFE THEN FLAPS FULL

**500FT**
- FOR SINGLE ENGINE APPROACH ON HIGH ALTITUDE AIRPORTS, WITH HIGH LANDING WEIGHT, DELAY SELECTION OF GEAR DOWN AND LANDING FLAPS/SLOTS CONFIGURATION TILL FINAL APPROACH.

**NOTE:**
- THIS PATTERN ASSUMES THE USE OF MINIMUM GROUND SPEED (MANAGED)
- IF NOT SELECT SPEEDS MANUALLY ACCORDING TO FLAPS CONFIGURATION:
  - S AFTER FLAPS 1 SELECTION
  - F AFTER FLAPS 2 SELECTION
  - VAPP AFTER FLAPS FULL SELECTION
4.5 **LANDING**

*The cockpit cut-off angle is 20 degrees.*

- **From stabilized approach conditions, the flare height is about 30 feet:**
  - **FLARE** .................................................................PERFORM PF
    
    Start the flare by progressively increasing and holding the backpressure on the sidestick.
  
  - **ATTITUDE** ..........................................................MONITOR PNF
    
    The PNF should monitor the attitude, and call out:
    
    - "**PITCH, PITCH**", if the pitch angle reaches 10º (A319/320), 7,5º (A-321).
    - "**BANK, BANK**", if the bank angle reaches 7º.

  - **THRUST levers** ......................................................IDLE PF
    
    In manual landing conditions, the call out "RETARD" is generated at 20 feet RA as a reminder.

**Crosswind landings**

- The preferred technique is to use rudder to align the aircraft with the runway heading during the flare while using lateral control to maintain the aircraft on the runway center line. Routine use of into wind aileron is not recommended, because sidestick deflection commands roll rate until touchdown.

  **In strong crosswind conditions, small amounts of lateral control may be used to maintain wing level. This lateral stick input must be reduced to zero at first main landing gear touchdown.**

**Ground clearance**

- Avoid flaring high.
- A tailstrike occurs if pitch attitude exceeds:
  
  - 15.5º (13.5º with the landing gear compressed) for A319
  - 13.5º (11º with the landing gear compressed) for A320
  - 11º (9,5º with the landing gear compressed) for A321.

  A wingtip or engine scrape occurs if the roll angle exceeds:
  
  - 18º (16º with the landing gear compressed) for A319
  - 20º (16º with the landing gear compressed) for A320
  - 18º (16º with the landing gear compressed) for A321.

- Be aware of pitch-up tendency with ground spoiler extension.

**DEROTATION**

Derotation should be commenced as soon as the main wheels have touched the ground. In flare mode, the aircraft will tend to nose down naturally as the aft stick applied for the flare is relaxed to the neutral. A comfortable nose wheel touchdown will be achieved if the stick is maintained just aft of neutral during the derotation. If brakes are applied with the nose high the pilot must be prepared to use full back stick to restrain the nose down pitching moment.
BOUNCE RECOVERY (REJECTED LANDING)

The bounce recovery technique depends on the height reached during the bounce.

- **Recovery from a light bounce:**
  - Maintain or regain a normal landing pitch attitude (do not increase the pitch attitude as this could cause a tail strike);
  - Continue the landing (if remaining RW distance is sufficient);
  - Use power as required to soften the second touchdown;
  - Be aware of the increased landing distance.

- **Recovery from a high bounce (more than 5 ft):**
  In the case of a more severe bounce do not attempt to land again as the remaining RW length might not be sufficient to stop the aircraft. The following technique should be applied:
  - Maintain or regain the normal landing pitch attitude;
  - Initiate a go-around by advancing the thrust levers to TOGA;
  - Maintain the landing flap configuration;
  - Be ready for a possible second touchdown;
  - When safely established in the go-around and no risk of further touchdown exists (i.e. a steady positive rate of climb) follow the normal go-around procedures and;
  - Re-engage the autopilot as soon as possible to reduce workload.

### AT TOUCHDOWN:

- **REV** ..........................................................AS RQRD PF
  - Select MAX REV immediately after the main landing gear touches down.
  - If the airport regulations restrict the use of reversers, select and maintain reverse idle until taxi speed is reached.
  - A slight pitch-up, easily controlled by the crew, may appear when the thrust reversers are deployed before the nose landing gear touches down.
  - Lower the nosewheel without undue delay, if MED is selected.
  - In case of engine failure, the use of the remaining reverser is recommended.
  - Braking may be commenced before nosewheel is down, if required for performance reasons; but when comfort is the priority, it should be delayed until the nosewheel has touched down.
  - During roll out, sidestick inputs (either lateral or longitudinal) should be avoided. If directional control problems are encountered, reduce thrust to reverse idle until directional control is satisfactory.
  - After reverse thrust is initiated, a full stop landing must be made.

- **GROUND SPOILERS** .................................................CHECK PNF
  Check that the ECAM WHEEL page shows the ground spoilers fully deployed after touchdown.

- **"GROUND SPOILERS. REVERSE GREEN. DECEL"** ............ANNOUNCE PNF
  Announce “NO SPOILERS” or “NO DECEL” if they do not deploy.

- **DIRECTIONAL CONTROL** ...........................................ENSURE PF
  - Use rudder pedals for directional control.
  - Do not use the nosewheel steering control handle before reaching taxi speed.
- **BRAKES** ..........................................................AS RQRD PF
  - Monitor the autobrake, if it is on. When required, brake with the pedals.
  - Although the green hydraulic system supplies the braking system, if pedals are pressed quickly a brief brake pressure indication appears on the BRAKE PRESS indicator.

- **At 70 knots:**
  - "**SEVENTY KNOTS**" ..................................................ANNOUNCE PNF
  - "**CHECKED**" ..........................................................ANNOUNCE PF
  - **THRUST levers** .....................................................REV IDLE PF

  70 knots is the minimum recommended speed with full reverse thrust.

**CAUTION**

Avoid using high levels of reverse thrust at low airspeed, because gases re-entering the compressor can cause engine stalls that may result in excessive EGT.

- **At taxi speed:**
  - **THRUST levers** .....................................................FWD IDLE PF

  Deselect the REV position upon reaching taxi speed and before leaving the runway. On snow-covered grounds, reversers should be stowed when the aircraft speed reaches 25 knots. When deselecting REV, be careful not to apply forward thrust by moving the thrust levers beyond the FWD IDLE position.

**CAUTION**

On taxiways, the use of reversers, even when restricted to idle thrust, may have the following effects:
- The engines may ingest fine sand and debris that may be detrimental to both the engines and the airframe systems.
- On snow covered areas, snow will recirculate into the air inlet, which may result in engine flame-out or roll back. Except in an emergency, do not use reverse thrust to control aircraft speed while taxiing.

- **Before 20 knots:**
  - **AUTO BRK** .........................................................DISENGAGE PF

  Disengage the autobrake to avoid some brake jerks at low speed by applying the pressure to one or both pedals.

  - "**MANUAL BRAKES**" .............................................ANNOUNCE PF
  - "**I HAVE CONTROL**" .......................................... ANNOUNCE CM1

  At a convenient stage prior to the leaving the runway the CM1 takes control.

  - **CHRONO** ..........................................................STOP BOTH

  Stop clocks before leaving the runway.
4.6 GO AROUND

GO-AROUND WITH FD ON

Apply the following three actions simultaneously:

- THRUST LEVERS ................................................................. TOGA PF
- "GO AROUND - FLAPS" ....................................................... ANNOUNCE PF
- ROTATION .............................................................................. PERFORM PF

  • Rotate the aircraft to get a positive rate of climb, and establish the required pitch attitude, as directed by the SRS pitch command bar.
  • Check and announce the FMA: "MAN TOGA, SRS, GA TRK".

- FLAPS ................................................................. RETRACT ONE STEP PNF
- "POSITIVE CLimb" ............................................................ ANNOUNCE PNF
- "GEAR UP" ........................................................................ ORDER PNF
- L/G UP .............................................................................. SELECT PNF
- "GEAR UP, FLAPS..." ..................................................... CONFIRM/ANNOUNCE PNF

  Note: Consider retarding to CL detent, if TOGA thrust is not required.

- NAV or HDG mode ................................................................. SELECT PF

  Reselect NAV or HDG, as required (minimum height 100 feet).

  Note: Go-around may be flown with both autopilots engaged. Whenever any other mode engages, AP 2 disengages.

● At go-around thrust reduction altitude:
  (LVR CLB flashing on FMA)

- THRUST LEVERS .................................................................. CL PF

● At go-around acceleration altitude:

- TARGET SPEED increases to GREEN DOT ......................... MONITOR BOTH

  ● If target speed does not increase to green dot:

- FCU ALT ................................................................. CHECK and PULL PF
- FLAPS ................................................................. RETRACT ON SCHEDULE BOTH

  Note: Consider the next step:
  • Engage NAV mode, to follow the published missed approach procedure, or
  • Prepare for a second approach by selecting the ACTIVATE APP PHASE, and CONFIRM on the PERF page.

- AFTER TAKE OFF CHECKLIST ........................................... PERFORM BOTH
GO-AROUND WITH NO FD

A go-around may have to be made without FD guidance (visual or non-precision approaches).

Apply the following three actions simultaneously:

- THRUST LEVERS ................................................................. TOGA PF
- "GO AROUND - FLAPS" .................................................... ANNOUNCE PF
- ROTATION .......................................................................... 15° OF PITCH PF

Rotate to 12.5°, if one engine is out.

- FLAPS ..................................................................... RETRACT ONE STEP PNF
- "POSITIVE CLIMB" .......................................................... ANNOUNCE PNF
- "GEAR UP" ................................................................. ORDER PF
- L/G UP ........................................................................ SELECT PNF
- "GEAR UP. FLAPS..." ................................................. CONFIRM / ANNOUNCE PNF

● At GA thrust reduction altitude:

- THRUST LEVERS .......................................................... KEEP TOGA PF

Disregard CLB or LVR CLB flashing on the FMA.

● At go-around acceleration altitude:

For a go-around with no FD, thrust reduction and acceleration altitude should be the same.

- SPEED TARGET to GREEN DOT .................................. SELECT PF
- AIRCRAFT ATTITUDE to 10 / 12° ................................ ADJUST PF
- THR levers / A/THR........................................................... SELECT to CL / ACTIVATE PF
- FD to ON.......................................................................... SET BOTH

Basic mode HDG V/S or TRK FPA engages.

- APPROPRIATE MODE .................................................... SELECT PF
- FMA................................................................................ CHECK BOTH
- FLAPS........................................................... RETRACT AT APPROPRIATE SPEEDS BOTH
- GA ROUTING AND FIRST CLRD ALTITUDE ..................... MONITOR BOTH

Note: If thrust levers are set to CL detent at thrust reduction altitude, a thrust reduction may occur, if the current speed is above the speed target (Refer to 4.05.80 FCOM).
GO-AROUND FROM AN INTERMEDIATE APPROACH ALTITUDE

To interrupt the approach, or to perform a go-around, from an intermediate altitude in the approach, and if TOGA thrust is not required, proceed as follows:

- SET the THR levers to TOGA detent, then retard the THR levers as required ................................................................. PF

  This enables to engage the GO AROUND phase, with associated AP/FD modes.

- SELECT the applicable AP/FD and A/THR modes on the FCU ....................................................................................... PF

  Note: If the thrust levers are not set briefly to TOGA detent, the FMGS does not engage the GO AROUND phase, and flying over, or close to the airport (less than 7 NM) will sequence the Destination waypoint in the F-PLN.
5 РУЛЕНИЕ НА СТОЯНКУ И ПОСЛЕПОЛЕТНЫЕ РАБОТЫ

5.1 AFTER LANDING

ONLY WHEN CLEAR OF THE RUNWAY:

- LAND LIGHTS .......................................................... RETRACT CM1
  - Retract landing lights, unless they are needed.
  - Set the STROBE lights to AUTO.

- GROUND SPOILERS .................................................. DISARM CM1
  Signal for PNF to commence after landing items.

- CHR counter ................................................... START CM2
  Start CHR counter on the clock to ensure that the engines have had not less than 3 min cooldown period before shutdown, even if the idle reverses used for landing.

- RADAR ................................................................. OFF CM2

- ENG MODE selector .............................................. NORM CM2

- FLAPS ............................................................. RETRACT CM2
  - Set the FLAP lever to position 0.
  - If the approach was made in icing conditions, or if the runway was contaminated with slush or snow, do not retract the flaps and slats until after engine shutdown and after the ground crew has confirmed that flaps and slats are clear of obstructing ice.
  - On ground, hot weather conditions may cause overheating to be detected around the bleed ducts in the wings, resulting in "AIR L(R) WING LEAK" warnings. Such warnings may be avoided during transit by keeping the slats in CONFIG 1 when the OAT is above 30°C.

- TCAS MODE selector .................................................. STBY / ON CM2
  Set ON if Mode S required for taxi.

- FCU and TERR on ND .................................................. OFF CM2
  Set FD and CSTR on FCUs and TERR on ND (PNF side) to OFF.

- ANTI ICE .......................................................... AS RQRD PNF
  If engine anti-ice is used, take care to control taxi speed, especially on wet or slippery surfaces. (N1 ground idle is increased).

- APU ................................................................. START PNF
  APU START may be delayed until just prior to engine shutdown.

- BRAKE TEMPERATURE ............................................. CHECK PNF
  Check BRAKE TEMP on the ECAM WHEEL page for discrepancies and high temperature. Refer to 3.04.32 FCOM for the brake temperature limitations requiring maintenance actions.

- "AFTER LANDING CHECKLIST" .............................. CALL CM1

- AFTER LANDING CHECKLIST ................................. COMPLETE CM2
5.2 PARKING

Prior to performing this check, consideration should be given to "GROUND OPERATIONS IN HEAVY RAIN" (Refer to 6.7).

- PARKING BRAKE ACCU PRESS ...................................................... CHECK CM1
  The ACCU PRESS indication must be in the green band. In case of low accumulator pressure, chocks are required before engine 1 shutdown.

- PARKING BRK .................................................................ON CM1
  - When one brake temperature is above 500°C, avoid applying the parking brake, unless operationally necessary.
  - Check the brake pressure on the Triple Indicator for the left and right brakes.

CAUTION

If the aircraft starts to move with the parking brake ON: Immediately release the PARKING BRAKE handle, to restore braking with the pedals.

- ANTI-ICE .................................................................OFF CM2
- APU BLEED .................................................................ON CM2
  Select APU bleed ON just before engine shutdown to prevent engine exhaust fumes from entering the air conditioning.

- ENG MASTER switch 1 and 2 ..................................................OFF CM1
- ELAPSED TIME .........................................................STOP CM2

CAUTION

If JP4 fuel is used at ambient temperatures higher than 10°C, dry motor the engines for 2 minutes after engine shutdown. This dry motor period should start approximately 90 seconds after the master lever is selected off.

- Following high thrust operation, such as maximum reverse thrust during landing, operate the engine at idle for 3 minutes prior to shutdown to thermally stabilize the engine’s hot section. Operating time at idle, as during taxiing, is included in this 3-minute period. If operational requirements dictate, the engine may be shut down after a one-minute cooling period.

- If APU is not available, set EXT PWR at ON before setting ENG MASTERS OFF.

- Check that engine parameters decrease.

Note: If the engine fails to shut down, switch the affected master lever ON then OFF. If the engine still fails to shut down, press the affected ENG FIRE pushbutton (Engine will shut down after about 1 minute, during which it uses the fuel between the LP valve and the nozzles).

- The DOOR page is displayed on the lower ECAM display.
- **EXTERIOR LIGHTS** ................................................................. AS RQRD CM1

  Switch off the BEACON switch, when all engines have obviously spooled down (N1<6%).

- **GROUND CONTACT** ............................................................ ESTABLISH CM1
  - Establish ground communication.
  - Check chocks in place.

- **SLIDE DISARMED** ............................................................... CHECK CM1

  Check slides disarmed on the ECAM DOOR page. Warn the cabin crew, if any slide is not disarmed or when pushback is required.

- **SEAT BELTS** ................................................................. OFF CM1

- **FUEL PUMPS** ............................................................... OFF CM2

- **TCAS MODE** selector ....................................................... STBY CM2

  Set STBY if Mode S was required for taxi.

- **IRS PERFORMANCE** .......................................................... CHECK CM2

  Drift check:
  - Call up the POSITION MONITOR page. Check that the drift does not exceed the following:

  ![Drift Graph]

  Residual ground speed check:
  - CAPT and F/0 NDs display the IRS 1 and 2 residual ground speeds respectively. The IRS 3 residual ground speed can be read on the CAPT ND by switching the ATT HDG selector to CAPT ON 3.
  - If ground speed > 15 knots: Report (The IR part of the ADIRU must be considered as failed, if the excessive deviation occurs after two consecutive flights).
  - If ground speed > 21 knots: Report (The IR part of the ADIRU must be considered as failed).

- **FUEL QUANTITY** ............................................................... CHECK CM2

  Check that the sum of the fuel on board and the fuel used is consistent with the fuel on board at departure. If an unusual discrepancy is found, maintenance action is due.
- **STATUS (ECAM Control panel)** .................................................. PRESS CM2
  
  - Check the STATUS page.

  If maintenance status messages are displayed:

  - At transit: Disregard, unless AIR BLEED maintenance status.
  - At main base, or at an airport where repairs can easily be made (at the end of the last flight of the day): Report for maintenance analysis.

- **PARKING BRAKE** ................................................................. AS RQRD CM1
  
  - The parking brake should be released after chocks are in place, if the "BRAKES HOT" ECAM caution is displayed.

  - Releasing the parking brake prevents the critical structures from being exposed to high temperature levels for an extended time. However, if operational conditions dictate (e.g. slippery tarmac), the parking brake may remain applied.

  - When parking with a flat tire on the nose gear, keep the parking brake on, to avoid aircraft yawing at parking brake release.

- **DUs** ................................................................................. DIM BOTH

  Dim EFIS, ECAM and MCDU display units.

- **"PARKING CHECKLIST"** ..................................................... CALL CM1

- **PARKING CHECKLIST** ...................................................... COMPLETE BOTH

- **REPORT SEVERE ICING CONDITIONS** ............................... CM1

  Report severe icing conditions in the log book, requiring inspection of the fan acoustic panels of the engines during the walkaround.
5.3 SECURING THE AIRCRAFT

Prior to performing this check consideration should be given to COLD WEATHER (Refer to 6.9).

- PARKING BRAKE ................................................................. CHECK ON CM1
  Keep the parking brake on to reduce hydraulic leak rate in the brake accumulator.

- OXYGEN CREW SUPPLY ................................................. OFF CM1

- ADIRS (1 + 2 + 3) ......................................................... OFF CM1
  ADIRS should not be switched off during transits at latitudes above 82°N, in order to avoid
  their requiring excessive alignment time.

  After having switched off the ADIRS, wait at least 10 seconds before switching off the
  electrical supply to ensure that the ADIRS memorize the last data.

- EXTERIOR LIGHTS ......................................................... OFF CM2

- MAINT BUS switch ...................................................... AS RQRD CM2
  Should electrical power be required for crew or servicing personnel consider selecting the
  MAINT BUS switch (overhead in the forward cabin) to the ON position prior to selecting
  aircraft power off.

- APU BLEED ................................................................. OFF CM2

- APU MASTER switch ................................................... OFF CM2
  Switch off the APU after the passengers have disembarked.

- EMER EXIT LT ............................................................. OFF CM2

- NO SMOKING ............................................................... OFF CM2
  Switching off the NO SMOKING signs permits the emergency batteries to be charged
  (provide 2 external power is supplying the aircraft network).

- EXT PWR ................................................................. AS RQRD CM2

- BAT 1 and 2 ................................................................. OFF CM2
  Wait until the APU flap is fully closed (about 2 minutes after the APU AVAIL light goes out)
  before switching off the batteries. Switching the batteries off before the APU flap is closed
  may cause smoke in the cabin during the next flight.

  If the batteries are off while the APU is running, there is no APU fire extinguishing.

- "SECURING THE AIRCRAFT CHECKLIST" ....................... CALL CM1

- SECURING THE AIRCRAFT CHECKLIST ......................... COMPLETE BOTH
Страница зарезервирована
6 ПРИЛОЖЕНИЯ

6.1 COMMUNICATIONS AND STANDARD TERMS

Standard phraseology is essential to ensure effective crew communication. The phraseology should be concise and exact. The following Chapter lists the calls that should be used as standard. They supplement the callouts identified in the SOP.

These standard Airbus callouts are also designed to promote situational awareness, and to ensure crew understanding of systems and their use in line operation.

CHECKLIST CALLOUTS

- "CHECK": A command for the other pilot to check an item.
- "CHECKED": A response that an item has been checked.
- "CROSSCHECKED": A call verifying information from both pilots stations.

Upon completion of a checklist announce: "....CHECKLIST COMPLETED".

ACTIONS COMMANDED BY PF

The following commands do not necessarily initiate a guidance mode change, e.g.: selected to managed/managed to selected. The intent is to ensure clear, consistent, standard communication between crewmembers.

All actions performed on the FCU must be verified on the PFD/ND.

SET

The "SET" command means using an FCU knob to set a value, but not to change a mode. SET is accomplished by only rotating the appropriate selection knob.

Example:
- "SET GO AROUND ALTITUDE...."
- "SET QNH ...."
- "SET FL ...."
- "SET HDG ...."

MANAGE/PULL

The "MANAGE" command means pushing an FCU knob to engage, or arm, a managed mode or target.

The "PULL" command means pulling an FCU knob to engage a selected mode or target. Example:

- "PULL HDG 090 " (Heading knob is pulled and turned).
- "MANAGE NAV" (Heading knob is pushed).
- "FL 190 PULL" (Altitude knob is turned and pulled).
- "FL 190 MANAGE" (Altitude knob is turned and pushed).
- "PULL SPEED 250 KTS" (Speed knob is pulled and turned).
- "MANAGE SPEED" (Speed knob is pushed).
Note:  1. If the value was previously set, there is no requirement to repeat the figure. Simply call e.g. “HDG PULL” : “SPEED PULL” : “FL PULL”
2. It is sometimes preferable to first pull the FCU knob before setting the value (e.g. a long turn).

The VS/FPA selector knob has no managed function. The standard calls for the use of this knob are as follows:

“V/S Plus (or Minus) 700 PULL” or -
“FPA Minus 3° PULL” (V/S (FPA) knob is turned and pulled)
“PUSH TO LEVEL OFF” (V/S (FPA) knob is pushed)

ARM

The "ARM" command means arming a system by pushing the specified FCU button.

e.g. : "ARM APPROACH"
e.g. : "ARM LOC".

ON/OFF

The simple “ON” or “OFF” command is used for the autopilot, flight directors, autothrust and the bird (flight path vector).

e.g. : “BIRD ON” (The HDG-V/S/TRK-FPA pushbutton is pushed.)

FMA

Unless listed otherwise (e.g. CAT II & III task sharing), all FMA changes will be normally called by the PF.

For CAT II / CAT III approaches the FMA changes below 1000 ft should be called by the PNF.

Note:  All actions on the FCU and MCDU must be verified on the PFD and ND, as follows:

- First, ensure that the correct FCU knob is used, then verify indications on the PFD/ND.
- All armed modes are announced by by calling out their associated color (BLUE, MAGENTA); e.g. “G/S BLUE”, “LOC BLUE”.
- All active modes are announced without calling out the color (GREEN, WHITE); e.g. “NAV”, “ALT”.

ALTITUDE

The PNF calls out "ONE THOUSAND TO GO" when passing 1000 feet before the cleared altitude or FL, and the PF calls out : "CHECKED".
FLAP OR GEAR CONFIGURATION

FLAPS CALLS

<table>
<thead>
<tr>
<th>FLAPS CONFIGURATION</th>
<th>CALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>“FLAPS ONE”</td>
</tr>
<tr>
<td>1 + F</td>
<td>“FLAPS ONE”</td>
</tr>
<tr>
<td>0</td>
<td>“FLAPS ZERO”</td>
</tr>
</tbody>
</table>

The reply will be given when selecting the new flap position, e.g.:

<table>
<thead>
<tr>
<th>CALL</th>
<th>REMARK</th>
</tr>
</thead>
<tbody>
<tr>
<td>PF &quot;FLAPS ONE&quot;</td>
<td>PNF checks the speed:</td>
</tr>
<tr>
<td>PNF &quot;SPEED CHECKED&quot;</td>
<td>- Above the S or F speed and accelerating (Takeoff)</td>
</tr>
<tr>
<td></td>
<td>- Below VFE next and decelerating (Approach)</td>
</tr>
<tr>
<td>PNF &quot;FLAPS FULL&quot;</td>
<td>PNF selects the flaps lever position and replies</td>
</tr>
<tr>
<td></td>
<td>after checking the blue number on the ECAM</td>
</tr>
<tr>
<td></td>
<td>flaps indicator to confirm the correct selection</td>
</tr>
<tr>
<td></td>
<td>has been made</td>
</tr>
</tbody>
</table>

GEAR CALL

<table>
<thead>
<tr>
<th>CALL</th>
<th>REMARK</th>
</tr>
</thead>
<tbody>
<tr>
<td>PF &quot;GEAR UP (DOWN) &quot;</td>
<td>The PNF selects the gear lever position and</td>
</tr>
<tr>
<td>PNF &quot;GEAR UP (DOWN) &quot;</td>
<td>replies after checking the red lights on the</td>
</tr>
<tr>
<td></td>
<td>landing gear indicator panel to confirm gear</td>
</tr>
<tr>
<td></td>
<td>operation</td>
</tr>
</tbody>
</table>

FLIGHT PARAMETERS

PNF will make call-outs for the following conditions during final approach. Attitude callouts also to be made through to landing.

- "SPEED" when speed becomes less than Vapp - 5 or more than speed target + 10.
- "SINK RATE" when V/S is greater than - 1000 ft/min.
- "BANK" when bank angle becomes greater than 7°.
- "PITCH" when pitch attitude becomes lower than - 2.5° or higher than + 10°.
- "LOC" or "GLIDE" when either localizer or glide slope deviation is: 1/4 dot LOC ; one dot GS.
- "COURSE" when greater than 1/2 dot or 2.5 degrees (VOR) or 5 degrees (ADF).
- "....FT HIGH (LOW)" at altitude checks points.
PF / PNF DUTIES TRANSFER

To transfer control, flight crewmembers must use the following callouts:

To give control: The pilot calls out "YOU HAVE CONTROL". The other pilot accepts this transfer by calling out "I HAVE CONTROL", before assuming PF duties.

To take control: The pilot calls out "I HAVE CONTROL". The other pilot accepts this transfer by calling out "YOU HAVE CONTROL", before assuming PNF duties.

ABNORMAL AND EMERGENCY CALL OUTS

ECAM Procedures

1. "ECAM ACTION" is commanded by PF when required.

2. "CLEAR (title of the system)" is asked by the PNF for confirmation by the PF, that all actions have been taken/reviewed on the present ECAM WARNING/CAUTION or SYSTEM PAGE. e.g.: "CLEAR HYDRAULIC"

3. "CLEAR (title of the system)" is the command by the PF that the action and review is confirmed.

4. "ECAM ACTIONS COMPLETE" is the announcement by the PNF that all APPLICABLE ACTIONS have been completed.

5. Should the PF require an action from the PNF during ECAM procedures, the order "STOP ECAM" will be used. When ready to resume the ECAM the order "CONTINUE ECAM" will be used.

MEMORY ITEMS

The aim of such callouts is to callout the appropriate procedure by calling out, in most cases, the title of the procedure. This will allow the crew to be aware of the situation and be prepared to properly react (crew coordination, task sharing and communication).

<table>
<thead>
<tr>
<th>Category</th>
<th>Callout</th>
</tr>
</thead>
<tbody>
<tr>
<td>GPWS</td>
<td>As soon as avoidance maneuver is envisaged. &quot;PULL UP TOGA&quot;</td>
</tr>
<tr>
<td>WINDSHEAR</td>
<td>&quot;WINDSHEAR TOGA&quot;</td>
</tr>
<tr>
<td>UNRELIABLE SPEED INDICATION</td>
<td>&quot;UNRELIABLE SPEED&quot;</td>
</tr>
<tr>
<td>TCAS</td>
<td>As soon as &quot;TRAFFIC&quot; warning is triggered &quot;TCAS, I HAVE CONTROL&quot;</td>
</tr>
<tr>
<td>EMERGENCY DESCENT</td>
<td>&quot;EMERGENCY DESCENT&quot;</td>
</tr>
<tr>
<td>LOSS OF BRAKING</td>
<td>&quot;LOSS OF BRAKING&quot;</td>
</tr>
</tbody>
</table>
### SUMMARY FOR EACH PHASE

#### TO REMOVE GROUND SUPPLY

<table>
<thead>
<tr>
<th>EVENT</th>
<th>PF or CM1</th>
<th>GND Mech</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial ground contact</td>
<td>GROUND (from) COCKPIT</td>
<td>COCKPIT (from) GROUND</td>
</tr>
<tr>
<td></td>
<td>REMOVED EXTERNAL …</td>
<td>EXTERNAL… REMOVED</td>
</tr>
<tr>
<td>External disconnection</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### BEFORE ENGINE START / PUSH BACK

<table>
<thead>
<tr>
<th>EVENT</th>
<th>CM1</th>
<th>CM2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before start up clearance received</td>
<td>BEFORE START C/L DOWN TO THE LINE</td>
<td>BEFORE START C/L DOWN TO THE LINE COMPLETE</td>
</tr>
<tr>
<td>After start up clearance received</td>
<td>BEFORE START C/L BELOW THE LINE</td>
<td>BEFORE START C/L COMPLETE</td>
</tr>
</tbody>
</table>

#### PUSH BACK / ENGINE START

<table>
<thead>
<tr>
<th>EVENT</th>
<th>CM1</th>
<th>GND Mech</th>
</tr>
</thead>
<tbody>
<tr>
<td>When ready for push back and push back clearance received from ATC</td>
<td>GROUND (from) COCKPIT, CLEARED FOR PUSH</td>
<td>COCKPIT (from) GROUND, RELEASE BRAKES</td>
</tr>
<tr>
<td>Start of push</td>
<td>BRAKES RELEASED READY TO PUSH</td>
<td></td>
</tr>
<tr>
<td>When ready to start engines</td>
<td>CLEAR TO START? STARTING ENGINE …</td>
<td>CLEAR TO START</td>
</tr>
<tr>
<td>When push back completed</td>
<td>BRAKES SET</td>
<td>SET BRAKES</td>
</tr>
<tr>
<td>When ready to disconnect (after engine started and parameters are stabilized)</td>
<td>CLEAR TO DISCONNECT (hand signal on left / right)</td>
<td>DISCONNECTING (hand signal on left / right)</td>
</tr>
</tbody>
</table>
### AFTER ENGINE START

<table>
<thead>
<tr>
<th>EVENT</th>
<th>CM1</th>
<th>CM2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flight controls check in following sequence*</td>
<td><strong>FLIGHT CONTROL CHECK</strong></td>
<td></td>
</tr>
<tr>
<td>1. Elevators</td>
<td>FULL UP, FULL DOWN, NEUTRAL</td>
<td></td>
</tr>
<tr>
<td>2. Ailerons</td>
<td>FULL UP, FULL DOWN, NEUTRAL</td>
<td></td>
</tr>
<tr>
<td>3. Rudder**</td>
<td>RUDDER</td>
<td>FULL UP, FULL DOWN, NEUTRAL</td>
</tr>
<tr>
<td>All engines started and stabilized and GND is disconnected</td>
<td><strong>AFTER START C/L</strong></td>
<td><strong>AFTER START C/L COMPLETE</strong></td>
</tr>
</tbody>
</table>

### TAXI

<table>
<thead>
<tr>
<th>EVENT</th>
<th>CM1</th>
<th>CM2</th>
</tr>
</thead>
<tbody>
<tr>
<td>When taxi clearance obtained</td>
<td>CLEAR LEFT (RIGHT) SIDE</td>
<td>CLEAR RIGHT (LEFT) SIDE</td>
</tr>
<tr>
<td>Brake transfer check</td>
<td>BRAKE CHECK</td>
<td>PRESSURE ZERO</td>
</tr>
<tr>
<td>During taxi</td>
<td>BEFORE T/O C/L DOWN</td>
<td>BEFORE T/O C/L DOWN TO THE LINE COMPLETE</td>
</tr>
<tr>
<td>Lining up on the runway</td>
<td>BEFORE T/O C/L BELLOW THE LINE</td>
<td>BEFORE TAKE-OFF C/L COMPLETE</td>
</tr>
</tbody>
</table>

**Note:**
- * At a convenient stage, prior to taxi.
- ** The CM2 should follow pedal movement with his/her feet.
### TAKE-OFF

<table>
<thead>
<tr>
<th>EVENT</th>
<th>PF</th>
<th>PNF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setting thrust levers to initial stabilization value</td>
<td>TAKE-OFF</td>
<td></td>
</tr>
<tr>
<td>Before passing 80 kts</td>
<td></td>
<td>THRUST SET</td>
</tr>
<tr>
<td>At 100 kts</td>
<td>CHECKED</td>
<td>ONE HUNDRED</td>
</tr>
<tr>
<td>At V1</td>
<td></td>
<td>V1</td>
</tr>
<tr>
<td>At VR</td>
<td></td>
<td>ROTATE</td>
</tr>
<tr>
<td>Gear retraction</td>
<td>GEAR UP</td>
<td>POSITIVE CLimb</td>
</tr>
<tr>
<td>If AP is engaged by PNF</td>
<td>AP1 (2) ON</td>
<td></td>
</tr>
<tr>
<td>Check List</td>
<td>AFTER T/O C/L DOWN TO THE LINE</td>
<td>AFTER T/O C/L DOWN TO THE LINE COMPLETE</td>
</tr>
<tr>
<td>After altimeter setting</td>
<td>AFTER T/O C/L BELOW THE LINE</td>
<td>AFTER TAKE-OFF C/L COMPLETE</td>
</tr>
</tbody>
</table>

### REJECTED TAKEOFF

<table>
<thead>
<tr>
<th>EVENT</th>
<th>CAPT</th>
<th>F/O</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTO decision</td>
<td>STOP</td>
<td></td>
</tr>
<tr>
<td>REV green on EWD</td>
<td>REVERSE GREEN *</td>
<td></td>
</tr>
<tr>
<td>Deceleration</td>
<td>DECEL **</td>
<td></td>
</tr>
</tbody>
</table>

In case of failure or no positive deceleration:

* **NO REVERSE ENGINE...** or **NO REVERSE**

**NO DECEL**

*DECEL* callout means that the deceleration is felt by the crew, and confirmed by the speed trend on the PFD. It can also be confirmed by the DECEL light.

### ALTIMETER SETTING CHANGES TO / FROM QNH - STD

<table>
<thead>
<tr>
<th>EVENT</th>
<th>PF</th>
<th>PNF</th>
</tr>
</thead>
<tbody>
<tr>
<td>At transition altitude (transition level)</td>
<td></td>
<td>TRANSITION</td>
</tr>
<tr>
<td>Barometric setting change and subsequent altimeter cross-check</td>
<td>SET STANDARD (QNH)</td>
<td>STANDARD (QNH...) SET, CROSS-CHECKED, PASSING FL...( ...FT) NOW</td>
</tr>
<tr>
<td></td>
<td>CHECKED</td>
<td></td>
</tr>
</tbody>
</table>

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## APPROACH AND LANDING

<table>
<thead>
<tr>
<th>EVENT</th>
<th>PF</th>
<th>PNF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Passing FL100 (in climb/descent)</td>
<td>FL 100 PROCEDURE</td>
<td>APPROACH C/L</td>
</tr>
<tr>
<td>When cleared below transition level, or when appropriate</td>
<td>APPROACH C/L COMPLETE</td>
<td>APPROACH C/L COMPLETE</td>
</tr>
<tr>
<td>Activation of approach Phase (approx 15 nm from touchdown; automatic, if in managed nav)</td>
<td>ACTIVATE APPROACH PHASE</td>
<td>APPROACH PHASE ACTIVATED</td>
</tr>
<tr>
<td>Beginning of radio altimeter indication (could be auto callout of 2500 ft)</td>
<td>CHECKED</td>
<td>RADIO ALTIMETER ALIVE (see Note 4 below)</td>
</tr>
<tr>
<td>At &quot;GS**&quot; or below GA altitude for NPA</td>
<td>SET GA ALTITUDE ... FT</td>
<td>GA ALTITUDE ... FT SET</td>
</tr>
<tr>
<td>FAF</td>
<td>CHECKED</td>
<td>PASSING... (Fix Name) ... FT</td>
</tr>
<tr>
<td>Landing check list</td>
<td>LANDING C/L</td>
<td>LANDING C/L COMPLETE</td>
</tr>
<tr>
<td>1000 ft (500) AGL</td>
<td>ONE THOUSAND. (FIVE HUNDRED) STABILIZED or NOT STABILIZED. GO AROUND</td>
<td></td>
</tr>
<tr>
<td>100 ft above MDA/DH</td>
<td>CHECKED</td>
<td>ONE HUNDRED ABOVE (if no Auto Callout)</td>
</tr>
<tr>
<td>Above MDA/DH with visual reference</td>
<td>CONTINUE</td>
<td></td>
</tr>
<tr>
<td>MDA/DH no visual reference</td>
<td>GO AROUND - FLAPS</td>
<td>MINIMUM</td>
</tr>
<tr>
<td>PNF monitors pin-programmed auto callout, or announces if inoperative</td>
<td>ONE HUNDRED FIFTY</td>
<td></td>
</tr>
<tr>
<td>After touchdown</td>
<td>SPOILERS (See Note 5 below)</td>
<td>REVERSE GREEN (See Note 6 below)</td>
</tr>
<tr>
<td>Deceleration</td>
<td>DECEL (See Note 7 below)</td>
<td></td>
</tr>
<tr>
<td>At 70 knots</td>
<td>SEVENTY KNOTS</td>
<td></td>
</tr>
</tbody>
</table>

Note 4: Crew awareness, crew should now keep RA in scan to landing.

Note 5: If the spoilers are not extended, call NO SPOILER.

Note 6: If reverse deployment is not as expected, call NO REVERSE ENGINE... or NO REVERSE, as appropriate.

Note 7: **DECEL** Callout means that the deceleration is felt by the crew, and confirmed by the speed trend on the PFD. It can also be confirmed by the DECEL light. If no positive deceleration, call NO DECEL.
### GO AROUND

<table>
<thead>
<tr>
<th>EVENT</th>
<th>PF</th>
<th>PNF</th>
</tr>
</thead>
<tbody>
<tr>
<td>GO AROUND decision</td>
<td><strong>GO AROUND - FLAPS</strong></td>
<td><strong>FLAPS</strong></td>
</tr>
<tr>
<td>Flaps retraction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gear retraction</td>
<td><strong>GEAR UP</strong></td>
<td><strong>POSITIVE CLimb</strong></td>
</tr>
<tr>
<td>Check list</td>
<td><strong>AFTER T/O C/L DOWN TO THE LINE</strong></td>
<td><strong>AFTER T/O C/L DOWN TO THE LINE COMPLETE</strong></td>
</tr>
<tr>
<td>At transition altitude</td>
<td><strong>AFTER T/O C/L BELOW THE LINE</strong></td>
<td><strong>AFTER TAKE-OFF C/L COMPLETE</strong></td>
</tr>
</tbody>
</table>

### AFTER LANDING

<table>
<thead>
<tr>
<th>EVENT</th>
<th>PF</th>
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<tbody>
<tr>
<td>When AFTER LANDING PROCEDURE completed</td>
<td><strong>AFTER LANDING C/L</strong></td>
<td><strong>AFTER LANDING C/L COMPLETE</strong></td>
</tr>
</tbody>
</table>

### PARKING

<table>
<thead>
<tr>
<th>EVENT</th>
<th>PF</th>
<th>PNF</th>
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</thead>
<tbody>
<tr>
<td>Check list</td>
<td><strong>PARKING C/L</strong></td>
<td><strong>PARKING C/L COMPLETE</strong></td>
</tr>
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</table>

### SECURING THE AIRCRAFT

<table>
<thead>
<tr>
<th>EVENT</th>
<th>PF</th>
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<tbody>
<tr>
<td>Check list</td>
<td><strong>SECURING THE AIRCRAFT C/L</strong></td>
<td><strong>SECURING THE AIRCRAFT C/L COMPLETE</strong></td>
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</tbody>
</table>
### 6.2 NORMAL PROCEDURES

#### SAFETY EXTERIOR INSPECTION

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<tr>
<th></th>
<th>PF</th>
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<tbody>
<tr>
<td></td>
<td>* WHEEL CHOCKS..........CHECK IN PLACE</td>
<td></td>
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<tr>
<td></td>
<td>* L/G DOORS............CHECK POS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>* APU AREA................CHECK</td>
<td></td>
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</tbody>
</table>

#### PRELIMINARY COCKPIT PREPARATION

<table>
<thead>
<tr>
<th></th>
<th>PF</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>ENG MASTERS ............CHECK OFF</td>
<td></td>
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<tr>
<td></td>
<td>ENG MODE SEL............CHECK NORM</td>
<td></td>
</tr>
<tr>
<td></td>
<td>L/G lever...............CHECK DOWN</td>
<td></td>
</tr>
<tr>
<td></td>
<td>WIPERS........................OFF</td>
<td></td>
</tr>
<tr>
<td></td>
<td>BAT.........................CHECK/AUTO</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EXT PWR........................ON</td>
<td></td>
</tr>
<tr>
<td></td>
<td>APU FIRE..................CHECK/TEST</td>
<td></td>
</tr>
<tr>
<td></td>
<td>APU.............................START</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EXT PWR........................AS RQRD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>* COCKPIT LIGHTS.........AS RQRD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>* PARKING BRAKE............ON</td>
<td></td>
</tr>
<tr>
<td></td>
<td>* ACCU/BRAKES PRESS........CHECK</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ALTERNATE BRAKING:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Y ELEC PUMP................OFF</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PRK BRK........................OFF</td>
<td></td>
</tr>
<tr>
<td></td>
<td>BRK PEDALS................PRESS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>BRK PRESS..................CHECK</td>
<td></td>
</tr>
<tr>
<td></td>
<td>BRK PEDALS................RELEASE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FLAPS........................CHECK POS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>* SPD BRK lever.....CHECK RET/DISARM</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PROBE/WINDOW HEAT...........AUTO</td>
<td></td>
</tr>
<tr>
<td></td>
<td>APU BLEED..........................ON</td>
<td></td>
</tr>
<tr>
<td></td>
<td>AIR COND panel........CHECK</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CARGO HEAT..................AS RQRD</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ELEC panel.................CHECK</td>
<td></td>
</tr>
<tr>
<td></td>
<td>VENT panel................CHECK</td>
<td></td>
</tr>
<tr>
<td></td>
<td>* ECAM RECALL...............PRESS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>* ECAM OXY PRESS..........CHECK</td>
<td></td>
</tr>
<tr>
<td></td>
<td>* ECAM HYD QTY..............CHECK</td>
<td></td>
</tr>
<tr>
<td></td>
<td>* ECAM ENG OIL QTY.........CHECK</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EMER EQPT..................CHECK</td>
<td></td>
</tr>
<tr>
<td></td>
<td>C/B PANELS..................CHECK</td>
<td></td>
</tr>
<tr>
<td></td>
<td>STAFF PAPERS..................CHECK</td>
<td></td>
</tr>
<tr>
<td></td>
<td>* EXT WALK AROUND.........PERFORM</td>
<td></td>
</tr>
</tbody>
</table>
### COCKPIT PREPARATION

<table>
<thead>
<tr>
<th>PF</th>
<th>PNF</th>
</tr>
</thead>
<tbody>
<tr>
<td>* GEAR PINS &amp; COVERS ............... CHECK</td>
<td>* GEAR PINS &amp; COVERS ............... CHECK</td>
</tr>
<tr>
<td>OVERHEAD PANEL:</td>
<td></td>
</tr>
<tr>
<td>* ALL WHITE LIGHTS .............. EXTINGUISH</td>
<td></td>
</tr>
<tr>
<td>* RCDR GND CTL ................. ON</td>
<td></td>
</tr>
<tr>
<td>CVR .................................. TEST</td>
<td></td>
</tr>
<tr>
<td>* ADIRS ................................... NAV</td>
<td></td>
</tr>
<tr>
<td>EXT LT .......................... AS RQRD</td>
<td></td>
</tr>
<tr>
<td>* SIGNS .............................. SET</td>
<td></td>
</tr>
<tr>
<td>LDG ELEV ......................... AUTO</td>
<td></td>
</tr>
<tr>
<td>* PACK FLOW ..................... AS RQRD</td>
<td></td>
</tr>
<tr>
<td>BAT .................................. CHECK</td>
<td></td>
</tr>
<tr>
<td>* FUEL TK PUMPS .................... ON</td>
<td></td>
</tr>
<tr>
<td>* FUEL MODE SEL ................... AUTO</td>
<td></td>
</tr>
</tbody>
</table>
| * X FEED ......................... CHECK CLOSED | *
| ENG FIRE ......................... CHECK/TEST | |
| AUDIO SWITCH ........................ NORM | |
| PA (3rd occupant) ................... RECEPT | |
| MAINT PANEL ....................... CHECK | |
| RMP .................................. SET | |
| * AIRFIELD DATA ................... OBTAIN | |
| * FMGS INITIALIZATION: | * FMGS INITIALIZATION: |
| * DATA BASE VALID ............... CHECK | |
| * NAVAID DESELECTION ........... AS RQRD | |
| * F-PLN INITIALIZATION ......... COMPLETE | |
| * ALIGN IRS ......................... CHECK | |
| * F-PLN A ............... COMPLETE/CHECK | |
| * WINDS ......................... INSERT | |
| * F-PLN .......................... CHECK | |
| * RAD NAV ......................... CHECK | |
| * SEC F-PLN ....................... AS APPROPRIATE | |
| * PROG ....................... AS APPROPRIATE | |
| * FMGS INSERTION: | * FMGS INSERTION: |
| * ZFCG, ZFW, BLOCK FUEL .......... READ | |
| * T/O DATA ......................... INSERT | |
| * PRESET SPEEDS ................... AS RQRD | *

**When both pilots are seated:**

<table>
<thead>
<tr>
<th>GLARESHIELD:</th>
<th>GLARESHIELD:</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTEGRAL &amp; FLOOD LTS .... AS RQRD</td>
<td>* BARO REF .................. SET</td>
</tr>
<tr>
<td>* BARO REF ............... SET</td>
<td>* FD ........................ ON</td>
</tr>
<tr>
<td>* FD ........................ ON</td>
<td>* LS ........................ AS RQRD</td>
</tr>
<tr>
<td>* LS ........................ AS RQRD</td>
<td>* CSTR ......................... ON</td>
</tr>
<tr>
<td>* CSTR ......................... ON</td>
<td>* ND mode &amp; range .......... AS RQRD</td>
</tr>
<tr>
<td>* ND mode &amp; range .......... AS RQRD</td>
<td>* VOR/ADF sel ............... AS RQRD</td>
</tr>
<tr>
<td>* VOR/ADF sel ............... AS RQRD</td>
<td>* FCU ........................ SET</td>
</tr>
</tbody>
</table>
### LATERAL CONSOLE:
- **OXY MASK**: TEST

### PF INSTRUMENT PANEL:
- **PFD/ND brightness**: ADJUST
- **LOUDSPEAKER**: CHECK
- **PFD/ND**: CHECK

### CTR INSTRUMENT PANEL:
- **STBY INSTRUMENTS**: CHECK
- **CLOCK**: ADJUST
- **A/SKID N/W STRG**: ON

### PEDESTAL:
- **ACP**: CHECK
- **WEATHER RADAR/PWS**: CHECK/SET
- **COCKPIT DOOR**: CHECK
- **SWITCHING PANEL**: NORM
- **ECAM STATUS**: CHECK
- **LDG ELEV (ECAM)**: CHECK AUTO
- **THRUST LEVERS**: CHECK IDLE
- **ENG MASTERS**: CHECK OFF
- **ENG MODE sel**: CHECK NORM
- **PRK BRAKE PRESS**: CHECK
- **GRAVITY GEAR EXT**: CHECK
- **ATC/TCAS**: CHECK/SET
- **T/O BRIEFING**: PERFORM

### PEDESTAL:
- **ACP**: CHECK

### BEFORE PUSHBACK or START

<table>
<thead>
<tr>
<th>CM1</th>
<th>CM2</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOADSHEET**: CHECK</td>
<td>ZFW/ZFCG**: INSERT</td>
</tr>
<tr>
<td>ZFW/ZFCG**: CHECK</td>
<td>T/O DATA**: CHECK</td>
</tr>
<tr>
<td>T/O DATA**: ENTER/REVISE</td>
<td>T/O DATA**: CHECK</td>
</tr>
<tr>
<td>THS REMINDER**: CHECK</td>
<td>THS REMINDER**: INSERT</td>
</tr>
<tr>
<td>SEAT BELTS**: ADJUST</td>
<td>SEAT BELTS**: ADJUST</td>
</tr>
<tr>
<td>COCKPIT DOOR**: CHECK CLOSED</td>
<td>MCDU**: F-PLN</td>
</tr>
<tr>
<td>MCDU**: T/O PERF</td>
<td>EXT PWR**: CHECK OFF</td>
</tr>
<tr>
<td>BEFORE START C/L DOWN TO THE LINE</td>
<td>PUSH/START UP CLEAR**: OBTAIN</td>
</tr>
<tr>
<td>NW STRG DISC**: CHECK AS RQRD</td>
<td>WINDOWS**: CHECK CLOSED</td>
</tr>
<tr>
<td>WINDOWS/DOORS**: CHECK CLOSED</td>
<td>BEACON**: ON</td>
</tr>
<tr>
<td>THR LEVERS**: IDLE</td>
<td>PRK BRAKE ACCU PRESS**: CHECK</td>
</tr>
<tr>
<td>PRK BRAKE ACCU PRESS**: CHECK</td>
<td>PARKING BRAKE**: AS RQRD</td>
</tr>
<tr>
<td>BEFORE START C/L BELOW THE LINE</td>
<td>TCAS MODE**: ON IF RQRD</td>
</tr>
</tbody>
</table>

*FMGS DATA CONFIRMATION:
- **AIRFIELD DATA**: CONFIRM
- **IRS ALIGN**: CHECK
- **GROSS WEIGHT INSERTION**: CHECK
- **T/O DATA**: CALCULATE/ CHECK
- **F-PLN A and B**: CHECK
- **FUEL QTY**: CHECK

**BEFORE PUSHBACK or START**: CM1, CM2

**BEFORE PUSHBACK or START**: CM1, CM2

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**BEFORE PUS...
### ENGINE START

<table>
<thead>
<tr>
<th>CM1</th>
<th>CM2</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG MODE SEL..................IGN/START</td>
<td>ELAPSED TIME..................START</td>
</tr>
<tr>
<td>ANNOUNCE..................<strong>STARTING ENG 2</strong></td>
<td></td>
</tr>
<tr>
<td>MASTER SW 2.......................ON</td>
<td></td>
</tr>
<tr>
<td>CHECK:  - START VALVE</td>
<td></td>
</tr>
<tr>
<td>- N2</td>
<td></td>
</tr>
<tr>
<td>- IGNITER</td>
<td></td>
</tr>
<tr>
<td>- FUEL FLOW</td>
<td></td>
</tr>
<tr>
<td>- EGT</td>
<td></td>
</tr>
<tr>
<td>- N1</td>
<td></td>
</tr>
<tr>
<td>- OIL PRESS</td>
<td></td>
</tr>
<tr>
<td>- START VALVE CLOSED AT OR ABOVE 50% N2</td>
<td></td>
</tr>
<tr>
<td>ENG IDLE PARAMETERS............CHECK</td>
<td></td>
</tr>
<tr>
<td>N1 about 19.5%</td>
<td></td>
</tr>
<tr>
<td>N2 about 58.5%</td>
<td></td>
</tr>
<tr>
<td>EGT about 390ºC</td>
<td></td>
</tr>
<tr>
<td>FF about 275 kg/h</td>
<td></td>
</tr>
<tr>
<td>ANNOUNCE..............<strong>STARTING ENG 1</strong></td>
<td></td>
</tr>
<tr>
<td><strong>REPEAT THE START SEQUENCE</strong></td>
<td></td>
</tr>
</tbody>
</table>

### AFTER START

<table>
<thead>
<tr>
<th>CM1</th>
<th>CM2</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG MODE SEL..................NORM</td>
<td>GND SPLRS..................ARM</td>
</tr>
<tr>
<td>APU BLEED.........................OFF</td>
<td>RUD TRIM......................ZERO</td>
</tr>
<tr>
<td></td>
<td>FLAPS......................SET</td>
</tr>
<tr>
<td></td>
<td>PITCH TRIM....................SET</td>
</tr>
<tr>
<td></td>
<td>ENG ANTI ICE..............AS RQRD</td>
</tr>
<tr>
<td></td>
<td>WING ANTI ICE..............AS RQRD</td>
</tr>
<tr>
<td></td>
<td>APU MASTER SW................OFF</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>ECAM STATUS.....................CHECK</td>
<td></td>
</tr>
<tr>
<td>ECAM DOOR page...................CHECK</td>
<td></td>
</tr>
<tr>
<td>ANNOUNCE............<strong>CLEAR TO DISCONNECT</strong></td>
<td></td>
</tr>
<tr>
<td>FLT CTL............................CHECK</td>
<td></td>
</tr>
<tr>
<td><strong>AFTER START C/L</strong></td>
<td></td>
</tr>
</tbody>
</table>

### TAXI

<table>
<thead>
<tr>
<th>CM1</th>
<th>CM2</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Taxi clearance obtained:</td>
<td>TAXI CLEARANCE..............OBTAIN</td>
</tr>
<tr>
<td>NOSE LIGHT..................TAXI</td>
<td></td>
</tr>
<tr>
<td>PRK BRAKE..................OFF</td>
<td></td>
</tr>
<tr>
<td>THR LEVERS..................AS RQRD</td>
<td></td>
</tr>
<tr>
<td>ANNOUNCE..............<strong>BRAKES CHECK</strong></td>
<td>PRESS ZERO..........CHECK/ANNOUNCE</td>
</tr>
<tr>
<td>BRAKES..........................CHECK</td>
<td></td>
</tr>
<tr>
<td>• When A/C has left the apron:</td>
<td>AUTO BRAKE..................MAX</td>
</tr>
<tr>
<td>• ATC clearance obtained:</td>
<td>ATC CLEARANCE................CONFIRM</td>
</tr>
</tbody>
</table>
### BEFORE TO C/L DOWN TO THE LINE

- **FMA & FLT INSTR**
  - CHECK

- **T/O BRIEFING**
  - CONFIRM

- **CABIN REPORT**
  - RECEIVE

**BEFORE TO C/L BELOW THE LINE**

- **TO CONFIG**
  - PRESS

- **TO MEMO**
  - CHECK NO BLUE

### BEFORE TAKEOFF

<table>
<thead>
<tr>
<th>CM1</th>
<th>CM2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>APPR PATH</strong> clear of traffic</td>
<td><strong>CHECK</strong></td>
</tr>
<tr>
<td><strong>CABIN CREW</strong> ADVISE</td>
<td><strong>ENG MODE SEL</strong> AS RQRD</td>
</tr>
<tr>
<td><strong>EXT LTS</strong> SET</td>
<td><strong>TCAS MODE SEL</strong> TA or TA/RA</td>
</tr>
<tr>
<td><strong>SLIDING TABLE</strong> STOW</td>
<td><strong>TERR on ND (PNF side)</strong> AS RQRD</td>
</tr>
</tbody>
</table>

### TAKEOFF

**If PF is CM2 transfer control**

<table>
<thead>
<tr>
<th>CM1</th>
<th>CM2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ANNOUNCE</strong> <strong>TAKEOFF</strong></td>
<td><strong>ANNOUNCE</strong> <strong>ONE HUNDRED</strong></td>
</tr>
<tr>
<td><strong>BRAKES</strong> RELEASE</td>
<td><strong>CHRONO</strong> START</td>
</tr>
<tr>
<td><strong>THR LEVERS</strong> FLEX/TOGA (CM1)</td>
<td><strong>PFD/ND</strong> SCAN</td>
</tr>
<tr>
<td><strong>CHRONO</strong> START</td>
<td><strong>ANNOUNCE</strong> <strong>CHECKED</strong></td>
</tr>
<tr>
<td><strong>ANNOUNCE</strong> <strong>FMA</strong></td>
<td><strong>TAKEOFF N1</strong> CHECK</td>
</tr>
<tr>
<td><strong>PF/NF</strong> SCAN</td>
<td><strong>ANNOUNCE</strong> <strong>THRUST SET</strong></td>
</tr>
</tbody>
</table>

---

- **Before reaching 80 kt:**
  - **ANNOUNCE** **CHECKED**

- **At 100 kt:**
  - **ANNOUNCE** **CHECKED**

- **At V1:**
  - **ANNOUNCE**

- **At VR:**
  - **ANNOUNCE**

- **When V/S positive:**
  - **ORDER** **GEAR UP**

- **AP** AS RQRD
Анонсировать..................FMA
• В режиме уменьшения
  мощности:
  ЛЕВЕРЫ ПОДЪЕМА..................CL
  Анонсировать...............FMA

• В режиме ускорения:
  Анонсировать...............FMA

• При F скорость:
  Правка........................................FLAPS 1

• При S скорость:
  Правка........................................FLAPS 0

Анонсировать................GEAR UP
PACK 1.................................ON

Конфигурировать...............SPEED CHECKED
Финал/Анонсировать........FLAPS 1

Конфигурировать...............SPEED CHECKED
Финал/Анонсировать........FLAPS 0
PACK 2.................................ON

**После взлета**

навигатор

<table>
<thead>
<tr>
<th>Пилот</th>
<th>Сторож</th>
</tr>
</thead>
<tbody>
<tr>
<td>При взлете до линии</td>
<td></td>
</tr>
<tr>
<td>APU BLEED..................AS RQRD</td>
<td></td>
</tr>
<tr>
<td>APU MASTER SW.............AS RQRD</td>
<td></td>
</tr>
<tr>
<td>ENG MODE SEL...............AS RQRD</td>
<td></td>
</tr>
<tr>
<td>TCAS MODE SEL.............TA/RA</td>
<td></td>
</tr>
<tr>
<td>ANT ICE.....................AS RQRD</td>
<td></td>
</tr>
</tbody>
</table>

**После пределена до линии**

<table>
<thead>
<tr>
<th>Пилот</th>
<th>Сторож</th>
</tr>
</thead>
<tbody>
<tr>
<td>МКУ..............PERF</td>
<td></td>
</tr>
<tr>
<td>FCU/FMGS...........SET IF AP ON</td>
<td></td>
</tr>
<tr>
<td>Правка..................SET STANDARD</td>
<td></td>
</tr>
<tr>
<td>Барометрический реф...................SET</td>
<td></td>
</tr>
<tr>
<td>Анонсировать...............CHECKED</td>
<td></td>
</tr>
<tr>
<td>Правка до линии ниже</td>
<td></td>
</tr>
<tr>
<td>РАДАР НАСТРОЙКА................ADJUST</td>
<td></td>
</tr>
<tr>
<td>При FL 100:</td>
<td></td>
</tr>
<tr>
<td>Анонсировать...............FL 100 PROCEDURE</td>
<td></td>
</tr>
<tr>
<td>ОПЦИЯ РАДИО.............CSTR</td>
<td></td>
</tr>
</tbody>
</table>

Анонсировать...............PERF |
FCU/FMGS..................SET IF AP OFF |
Предупреждение...............TRANSITION |

Все параметры сбросить...

<table>
<thead>
<tr>
<th>Пилот</th>
<th>Сторож</th>
</tr>
</thead>
<tbody>
<tr>
<td>МКУ..............F-PLN</td>
<td></td>
</tr>
<tr>
<td>FCU/FMGS...........SET IF AP OFF</td>
<td></td>
</tr>
<tr>
<td>Правка..................SET</td>
<td></td>
</tr>
<tr>
<td>Сигнализация............STANDARD SET XCHECK</td>
<td></td>
</tr>
<tr>
<td>НАСТРОЙКА FL...NOW</td>
<td></td>
</tr>
<tr>
<td>Двигатель..........................AS RQRD</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Пилот</th>
<th>Сторож</th>
</tr>
</thead>
<tbody>
<tr>
<td>МКУ..............CSTR</td>
<td></td>
</tr>
<tr>
<td>ОПЦИЯ РАДИО.............CSTR</td>
<td></td>
</tr>
<tr>
<td>ЭКМ ПРОГРЕСС............REVIEW</td>
<td></td>
</tr>
<tr>
<td>СЕК НАСТРОЙКА.............CHECK</td>
<td></td>
</tr>
<tr>
<td>Правка MAX FL............CHECK</td>
<td></td>
</tr>
<tr>
<td>Правка MAX FL............CHECK</td>
<td></td>
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### CRUISE

<table>
<thead>
<tr>
<th>PF</th>
<th>PNF</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEAT BELTS………………….AS RQRD</td>
<td></td>
</tr>
<tr>
<td>ECAM MEMO…………………..REVIEW</td>
<td>TERR on ND………………….OFF</td>
</tr>
<tr>
<td>ECAM SYS PAGES…………….REVIEW</td>
<td>VHF 3 (121,5)…………….MONITOR</td>
</tr>
<tr>
<td>VHF 3 (121,5)…………….SET/MONITOR</td>
<td></td>
</tr>
<tr>
<td>RADAR TILT………………….ADJUST</td>
<td></td>
</tr>
<tr>
<td>FLIGHT PROGRESS…………..CHECK</td>
<td></td>
</tr>
<tr>
<td>FUEL…………………………CHECK</td>
<td></td>
</tr>
<tr>
<td>NAV ACCURACY………………CHECK</td>
<td></td>
</tr>
<tr>
<td>CABIN TEMP………………….MONITOR</td>
<td></td>
</tr>
<tr>
<td>OXY MASK……………………CHECK</td>
<td></td>
</tr>
<tr>
<td>TERR on ND………………….OFF</td>
<td></td>
</tr>
<tr>
<td>VHF 3 (121,5)…………….MONITOR</td>
<td></td>
</tr>
<tr>
<td>OXY MASK……………………CHECK</td>
<td></td>
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</table>

### DESCENT PREPARATION

<table>
<thead>
<tr>
<th>PF</th>
<th>PNF</th>
</tr>
</thead>
<tbody>
<tr>
<td>LDG ELEV…………………..CHECK</td>
<td>WEATHER &amp; LDG INFORM……..OBTAIN</td>
</tr>
<tr>
<td>WEATHER &amp; LDG INFORM……..OBTAIN</td>
<td>WEATHER &amp; LDG INFORM……..OBTAIN</td>
</tr>
<tr>
<td>ECAM STATUS………………..CHECK</td>
<td></td>
</tr>
<tr>
<td>FMGS…………………………PREPARE</td>
<td></td>
</tr>
<tr>
<td>ARRIVAL PAGE</td>
<td></td>
</tr>
<tr>
<td>F-PLN PAGE</td>
<td></td>
</tr>
<tr>
<td>RAD NAV PAGE</td>
<td></td>
</tr>
<tr>
<td>PROG PAGE</td>
<td></td>
</tr>
<tr>
<td>RERF CRUISE PAGE</td>
<td></td>
</tr>
<tr>
<td>PERF DES PAGE</td>
<td></td>
</tr>
<tr>
<td>PERF APPR PAGE</td>
<td></td>
</tr>
<tr>
<td>GO-AROUND PAGE</td>
<td></td>
</tr>
<tr>
<td>FUEL PRED PAGE</td>
<td></td>
</tr>
<tr>
<td>SEC F-PLN PAGE</td>
<td></td>
</tr>
<tr>
<td>GPWS LDG FLAP 3…………….AS RQRD</td>
<td>APPR PREPARATION………CHECK</td>
</tr>
<tr>
<td>AUTO BRK…………………..AS RQRD</td>
<td>DES CLEARANCE…………….OBTAIN</td>
</tr>
<tr>
<td>APPROACH BRIEFING…………PERFORM</td>
<td>ANTI ICE………………….AS RQRD</td>
</tr>
<tr>
<td>PF</td>
<td>PNF</td>
</tr>
<tr>
<td>----</td>
<td>-----</td>
</tr>
<tr>
<td>SEAT BELTS…………………………ON</td>
<td>TERR ON ND…………………………ON</td>
</tr>
<tr>
<td>DESCENT…………………………..INITIATE</td>
<td>ANNOUNCE………………………CHECKED</td>
</tr>
<tr>
<td>ANNOUNCE………………………FMA</td>
<td>MCDU…………………………F-PLN</td>
</tr>
<tr>
<td>MCDU………………………PROG/PERF DES</td>
<td></td>
</tr>
<tr>
<td>DESCENT…………………………MONITOR</td>
<td></td>
</tr>
<tr>
<td>SPDBRK…………………………AS RQRD</td>
<td></td>
</tr>
<tr>
<td>RADAR TILT…………………………ADJUST</td>
<td></td>
</tr>
<tr>
<td>• At FL 100:</td>
<td></td>
</tr>
<tr>
<td>ANNOUNCE………………FL 100 PROCEDURE</td>
<td></td>
</tr>
<tr>
<td>EFIS OPTION……………………..CSTR</td>
<td>LAND LTS…………………………..ON</td>
</tr>
<tr>
<td>LS pb…………………………..AS RQRD</td>
<td>EFIS OPTION……………………..CSTR</td>
</tr>
<tr>
<td>• At TL or when cleared to an altitude:</td>
<td>LS pb…………………………..AS RQRD</td>
</tr>
<tr>
<td>ANNOUNCE……………………SET QNH …</td>
<td>RAD NAV……………………..SELECT/IDENT</td>
</tr>
<tr>
<td>BARO REF…………………………SET</td>
<td>NAV ACCURACY……………………CHECK</td>
</tr>
<tr>
<td>ANNOUNCE………………………CHECKED</td>
<td>ANNOUNCE……………………TRANSITION</td>
</tr>
<tr>
<td>APPROACH C/L</td>
<td>BARO REF…………………………SET</td>
</tr>
<tr>
<td></td>
<td>CALL……………………QNH …SET, X-CHECKED,</td>
</tr>
<tr>
<td></td>
<td>PASSING…FT NOW.</td>
</tr>
</tbody>
</table>
### ILS APPROACH

<table>
<thead>
<tr>
<th>PF</th>
<th>PNF</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Initial approach:</strong></td>
<td>ENG MODE SEL. (\ldots) AS RQRD</td>
</tr>
<tr>
<td>APPR PHASE (\ldots) CHECK/ORDER</td>
<td>APPR PHASE (\ldots) ACTIVATE</td>
</tr>
<tr>
<td>POSITIONING (\ldots) MONITOR</td>
<td>NAV ACCURACY (\ldots) CHECK</td>
</tr>
<tr>
<td>MANAGED SPEED (\ldots) CHECK</td>
<td></td>
</tr>
<tr>
<td>SPDBRK (\ldots) AS RQRD</td>
<td></td>
</tr>
<tr>
<td>RADAR TILT (\ldots) ADJUST</td>
<td></td>
</tr>
<tr>
<td><strong>Intermediate/Final approach:</strong></td>
<td></td>
</tr>
<tr>
<td>When cleared for ILS approach:</td>
<td>ANNOUNCE (\ldots) <strong>CHECKED</strong></td>
</tr>
<tr>
<td>APPR pb on FCU (\ldots) PRESS</td>
<td>CONFIRM (\ldots) <strong>SPEED CHECKED</strong></td>
</tr>
<tr>
<td>BOTH AP (\ldots) ENGAGE</td>
<td>FLAPS 1 (\ldots) SELECT</td>
</tr>
<tr>
<td>ANNOUNCE (\ldots) FMA</td>
<td>ANNOUNCE (\ldots) FLAPS 1</td>
</tr>
<tr>
<td><strong>At green dot speed:</strong></td>
<td></td>
</tr>
<tr>
<td>ORDER (\ldots) <strong>FLAPS 1</strong></td>
<td>CHECK OR SET <strong>S</strong> SPEED (\ast)</td>
</tr>
<tr>
<td><strong>LOC CAPTURE</strong> (\ldots) MONITOR</td>
<td>TCAS (\ldots) TA or TA/RA</td>
</tr>
<tr>
<td>ANNOUNCE (\ldots) <strong>LOC STAR</strong></td>
<td>LOC CAPTURE (\ldots) MONITOR</td>
</tr>
<tr>
<td>G/S CAPTURE (\ldots) MONITOR</td>
<td>G/S CAPTURE (\ldots) MONITOR</td>
</tr>
<tr>
<td>ANNOUNCE (\ldots) <strong>G/S STAR</strong></td>
<td>GO-AROUND ALT (\ldots) SET</td>
</tr>
<tr>
<td>CALL (\ldots) <strong>SET GO-AROUND ALT</strong> (\ldots)</td>
<td>ANNOUNCE (\ldots) <strong>GO-AROUND ALT</strong> (\ldots) SET</td>
</tr>
<tr>
<td><strong>At 2000 ft AGL:</strong></td>
<td>CONFIRM (\ldots) <strong>SPEED CHECKED</strong></td>
</tr>
<tr>
<td>ORDER (\ldots) <strong>FLAPS 2</strong></td>
<td>FLAPS 2 (\ldots) SELECT</td>
</tr>
<tr>
<td><strong>LOC CAPTURE</strong> (\ldots) MONITOR</td>
<td>ANNOUNCE (\ldots) <strong>FLAPS 2</strong></td>
</tr>
<tr>
<td>ANNOUNCE (\ldots) <strong>LOC STAR</strong></td>
<td>CHECK OR SET <strong>F</strong> SPEED (\ast)</td>
</tr>
<tr>
<td>G/S CAPTURE (\ldots) MONITOR</td>
<td>TCAS (\ldots) TA or TA/RA</td>
</tr>
<tr>
<td>ANNOUNCE (\ldots) <strong>G/S STAR</strong></td>
<td>LOC CAPTURE (\ldots) MONITOR</td>
</tr>
<tr>
<td>CALL (\ldots) <strong>SET GO-AROUND ALT</strong> (\ldots)</td>
<td>G/S CAPTURE (\ldots) MONITOR</td>
</tr>
<tr>
<td><strong>When FLAPS 2:</strong></td>
<td>GO-AROUND ALT (\ldots) SET</td>
</tr>
<tr>
<td>ORDER (\ldots) <strong>GEAR DOWN</strong></td>
<td>ANNOUNCE (\ldots) <strong>GO-AROUND ALT</strong> (\ldots) SET</td>
</tr>
<tr>
<td>L/G DOWN (\ldots) SELECT</td>
<td>CONFIRM (\ldots) <strong>SPEED CHECKED</strong></td>
</tr>
<tr>
<td>GND SPLRS (\ldots) ARM</td>
<td>FLAPS 3 (\ldots) SELECT</td>
</tr>
<tr>
<td>CONFIRM/ANNOUNCE (\ldots) <strong>GEAR DOWN</strong></td>
<td>ANNOUNCE (\ldots) <strong>FLAPS 3</strong></td>
</tr>
<tr>
<td><strong>When L/G down, below VFE:</strong></td>
<td>ECAM WHEEL PAGE (\ldots) CHECK</td>
</tr>
<tr>
<td>ORDER (\ldots) <strong>FLAPS 3</strong></td>
<td>CONFIRM (\ldots) <strong>SPEED CHECKED</strong></td>
</tr>
<tr>
<td>CONFIRM (\ldots) <strong>SPEED CHECKED</strong></td>
<td>FLAPS 3 (\ldots) SELECT</td>
</tr>
<tr>
<td>ANNOUNCE (\ldots) <strong>FLAPS 3</strong></td>
<td>ANNOUNCE (\ldots) <strong>FLAPS FULL</strong></td>
</tr>
<tr>
<td>ECAM WHEEL PAGE (\ldots) CHECK</td>
<td>CHECK OR SET <strong>F</strong> SPEED (\ast)</td>
</tr>
<tr>
<td><strong>When FLAPS 3, below VFE:</strong></td>
<td>TCAS (\ldots) TA or TA/RA</td>
</tr>
<tr>
<td>ORDER (\ldots) <strong>FLAPS FULL</strong></td>
<td>LOC CAPTURE (\ldots) MONITOR</td>
</tr>
<tr>
<td><strong>CONFIRM</strong> (\ldots) <strong>SPEED CHECKED</strong></td>
<td>G/S CAPTURE (\ldots) MONITOR</td>
</tr>
<tr>
<td>CONFIRM (\ldots) <strong>SPEED CHECKED</strong></td>
<td>GO-AROUND ALT (\ldots) SET</td>
</tr>
<tr>
<td>ANNOUNCE (\ldots) <strong>FLAPS FULL</strong></td>
<td>ANNOUNCE (\ldots) <strong>GO-AROUND ALT</strong> (\ldots) SET</td>
</tr>
</tbody>
</table>
CHECK OR SET **VAPP** *

- A/THR...............................CHECK
- WING ANTI ICE.......................OFF
- EXT LTS..............................SET
- SLIDING TABLE.....................STOW
- LDG MEMO...........CHECK NO BLUE LINE
- CABIN REPORT.............OBTAIN (CM1)

**SLIDING TABLE**.......................STOW

**CABIN CREW**........................ADVISE

**LANDING C/L**

**FMA MODIFICATION**..................CHECK

---

At minimum stabilization height:

**ANNOUNCE**..........................STABILIZED

- If A/C not stabilized:

**ANNOUNCE**..................**GO-AROUND/FLAPS**

At DH + 100ft (or MDA/MDH + 100):

**ANNOUNCE**..........................**CONTINUE**

**LANDING**...........................PERFORM

**AT DH (or MDA/MDH):**

**ANNOUNCE**.............**GO-AROUND/FLAPS**

---

**FLT PARAMETERS**..................CHECK

- Announce any deviation in excess of:
  - V/S: 1000 feet/min
  - IAS: speed target +10 kt; Vapp -5 KT;
  - LOC: 1/4 dot LOC
  - GLIDE: 1 dot GS
  - PITCH: 2.5° nose down; 10° nose up
  - BANK: 7°

**ANNOUNCE**........**ONE THOUSEND / FIVE HUNDRED**

**ANNOUNCE**........**NOT STABILIZED, GO-AROUND**

**MONITOR/ANNOUNCE**........**ONE HUNDRED ABOVE**

**MONITOR/ANNOUNCE**........**MINIMUM**

---

* PF FOR AUTO APPR, PNF FOR MAN APPR
CAT II / CAT III APPROACH

<table>
<thead>
<tr>
<th>CM1</th>
<th>CM2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Approach</strong> should be performed using standard ILS APPR techniques till 1000 ft. The crew shall perform a stabilized approach, so that LANDING C/L to be accomplished before reaching FAF. <strong>As a general rule, if a failure occurs above 1000 ft AGL the approach may continued reverting to a higher DH, providing the appropriate conditions are met.</strong></td>
<td></td>
</tr>
</tbody>
</table>

- **At 1000 ft:**

  ANNOUNCE ................................**CHECKED**
  Continue approach. Below 1000 ft go-around must be initiated in case of:
  - **ALPHA FLOOR** activation;
  - **AP OFF** (cavalry charge);
  - **LOSS of CAT 3** (click, click, click);
  - **AMBER caution** (sngl chime)
  - **ENGINE** failure.

FLT PARAMETERS ..........................CHECK

- **At 350 ft:**

  ANNOUNCE ................................**CHECKED**
  If “NO LAND GREEN” a go-around must be performed.

- **At 200 ft and below:**

  If AUTOLAND warning appears on the glareshield:
  ANNOUNCE ................................**GO-ARROUND. FLAPS**

- **At DH + 100 ft:**

  OUTSIDE SCAN ............................COMMENCE

- **At DH:**

  If external visual references are not sufficient:
  ANNOUNCE ................................**GO-ARROUND. FLAPS**
  GO-ARROUND ................................**PERFORM**
  If external visual references are sufficient:
  ANNOUNCE ................................**CONTINUE**

- **At 40 ft:**

  If FLARE does not come up on FMA CM2 must announce **“NO FLARE”** and a go-around must be performed. If visual references are sufficient and a manual landing is possible, the CM1 may decide to complete the landing.
• **At 30 ft:**
  - THR REDUCTION……………..MONITOR
  - AUTO CALL ……MONITOR/ANNOUNCE

• **At 10 ft:**
  - Both THR LEVERS……RETARD TO IDLE
  - Lateral guidance………………MONITOR
  - RETARD…………..MONITOR/ANNOUNCE
  - ENG PARAMETERS…………..MONITOR

• **At TOUCH DOWN:**
  - ROLL OUT on FMA……………….CHECK
  - ANNOUNCE……………………ROLL OUT

1. In case of ANTI SKID or NWS failure, disconnect AP and take manual control at touch down.
2. If automatic pollout control is not satisfactory, disconnect the AP immediately.

*Continue standard landing procedure and disengage the APs at the end of rollout (when leaving the runway at the latest).*
NON PRECISION APPROACH

<table>
<thead>
<tr>
<th>PF</th>
<th>PNF</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Approach preparation:</strong></td>
<td><strong>Initial approach:</strong></td>
</tr>
<tr>
<td>INTENDED APPR (F-PLN)........................SELECT</td>
<td>ENG MODE SEL............................AS RQRD</td>
</tr>
<tr>
<td>VAPR (SPD CSTR AT FAF)......................SELECT</td>
<td>APPR PHASE......................CHECK/ACTIVATE</td>
</tr>
<tr>
<td>NAVAID........................................SELECT/CHECK</td>
<td>NAV ACCURACY............................CHECK</td>
</tr>
<tr>
<td><strong>Initial approach:</strong></td>
<td><strong>Intermediate/Final approach:</strong></td>
</tr>
<tr>
<td>APPR PHASE.................................CHECK/ORDER</td>
<td>ND MODE/RAW DATA.......................SELECT</td>
</tr>
<tr>
<td>POSITIONING.................................MONITOR</td>
<td>TRK/FPA display.........................SELECT</td>
</tr>
<tr>
<td>MANAGED SPEED...............................CHECK</td>
<td>SPEED........................................MANAGED</td>
</tr>
<tr>
<td>SPDBRK..........................................AS RQRD</td>
<td>A/THR........................................KEEP ACTIVE</td>
</tr>
<tr>
<td>RADAR TILT....................................ADJUST</td>
<td>When cleared for approach:</td>
</tr>
<tr>
<td></td>
<td>NAV &amp; FPA (FMA)............................CHECK</td>
</tr>
<tr>
<td></td>
<td><strong>At green dot speed:</strong></td>
</tr>
<tr>
<td></td>
<td>ORDER........................................FLAPS 1</td>
</tr>
<tr>
<td></td>
<td>CHECK OR SET S SPEED *</td>
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<td>CONFIRM...................................SPEED CHECKED</td>
</tr>
<tr>
<td></td>
<td>FLAPS 1.................................SELECT</td>
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<tr>
<td></td>
<td>ANNOUNCE................................FLAPS 1</td>
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<td></td>
<td><strong>At S speed:</strong></td>
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<tr>
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<td>ORDER........................................FLAPS 2</td>
</tr>
<tr>
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<td>CHECK OR SET F SPEED *</td>
</tr>
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<td>CONFIRM...................................SPEED CHECKED</td>
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<td></td>
<td>FLAPS 2.................................SELECT</td>
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<td>ANNOUNCE................................FLAPS 2</td>
</tr>
<tr>
<td></td>
<td>When FLAPS 2:</td>
</tr>
<tr>
<td></td>
<td>ORDER......................................GEAR DOWN</td>
</tr>
<tr>
<td></td>
<td>When L/G down, below Vfe:</td>
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<tr>
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<td>ORDER......................................FLAPS 3</td>
</tr>
<tr>
<td></td>
<td>When cleared for approach:</td>
</tr>
<tr>
<td></td>
<td>NAV &amp; FPA (FMA)............................CHECK</td>
</tr>
<tr>
<td></td>
<td>CONFIRM...................................SPEED CHECKED</td>
</tr>
<tr>
<td></td>
<td>FLAPS 3.................................SELECT</td>
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<td></td>
<td>ANNOUNCE................................FLAPS 3</td>
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<tr>
<td></td>
<td>GND SPLRS................................ARM</td>
</tr>
<tr>
<td></td>
<td>AUTO BRAKE...............................CONFIRM</td>
</tr>
<tr>
<td></td>
<td>CONFIRM/ANNOUNCE.........................GEAR DOWN</td>
</tr>
<tr>
<td></td>
<td>CONFIRM...................................SPEED CHECKED</td>
</tr>
<tr>
<td></td>
<td>FLAPS 3.................................SELECT</td>
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<tr>
<td></td>
<td>ANNOUNCE................................FLAPS 3</td>
</tr>
<tr>
<td></td>
<td>ECAM WHEEL PAGE............................CHECK</td>
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</table>

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<table>
<thead>
<tr>
<th>When FLAPS 3, below V_{FE}:</th>
<th>CONFIRM .................. SPEED CHECKED</th>
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<tbody>
<tr>
<td>ORDER ......................................... FLAPS FULL</td>
<td>FLAPS FULL ................. SELECT</td>
</tr>
<tr>
<td>CHECK OR SET VAPP *</td>
<td>ANNOUNCE .................. FLAPS FULL</td>
</tr>
<tr>
<td>SLIDING TABLE ....................... STOW</td>
<td>A/THR ................................ CHECK</td>
</tr>
<tr>
<td>CABIN CREW .......................... ADVISE</td>
<td>WING ANTI ICE .................... OFF</td>
</tr>
<tr>
<td>LANDING C/L</td>
<td>EXT LTS ................................ SET</td>
</tr>
<tr>
<td>Upon reaching the FAF:</td>
<td>SLIDING TABLE ....................... STOW</td>
</tr>
<tr>
<td>Final APPR TRACK (FCU) .......... SELECT</td>
<td>LDG MEMO ........... CHECK NO BLUE LINE</td>
</tr>
<tr>
<td>FPA for final approach ............ SET</td>
<td>CABIN REPORT ............. OBTAIN (CM1)</td>
</tr>
<tr>
<td>GO-AROUND ALT ..................... SET</td>
<td>ANNOUNCE .................. FLAPS FULL</td>
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<tr>
<td>ANOUNCE .................. GA ALTITUDE ... SET</td>
<td></td>
</tr>
<tr>
<td>After the FAF:</td>
<td>ANNOUNCE .................. ONE THOUSAND / FIVE HUNDRED</td>
</tr>
<tr>
<td>POSITION/FLT PATH ....... CHECK/ADJUST</td>
<td>ANNOUNCE .................. NOT STABILIZED, GO-AROUND</td>
</tr>
<tr>
<td>At minimum stabilization height:</td>
<td>FLT PARAMETERS ................. CHECK</td>
</tr>
<tr>
<td>ANNOUNCE .................. STABILIZED</td>
<td>Announce any deviation in excess of:</td>
</tr>
<tr>
<td>• If A/C not stabilized:</td>
<td>V/S: 1000 feet/min</td>
</tr>
<tr>
<td>ANNOUNCE .................. GO-AROUND/FLAPS</td>
<td>IAS: speed target +10 kt; Vapp -5 KT;</td>
</tr>
<tr>
<td>FMA MODIFICATION ................. CHECK</td>
<td>LOC: 1/4 dot LOC</td>
</tr>
<tr>
<td>At MDA + 100:</td>
<td>GLIDE: 1 dot GS</td>
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<tr>
<td>ANNOUNCE .................. CONTINUE</td>
<td>PITCH: 2.5º nose down; 10º nose up</td>
</tr>
<tr>
<td>AP .................................. DISCONNECT</td>
<td>BANK: 7º</td>
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<tr>
<td>ANNOUNCE .................. FLIGHT DIRECTORS OFF</td>
<td>MONITOR/ANNOUNCE ............... ONE HUNDRED ABOVE</td>
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<tr>
<td>LANDING ......................... PERFORM</td>
<td>FD’s on both side .................. OFF</td>
</tr>
<tr>
<td>AT DH (or MDA/MDH):</td>
<td>ANNOUNCE .................. MINIMUM</td>
</tr>
<tr>
<td>ANNOUNCE .................. GO-AROUND/FLAPS</td>
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* PF FOR AUTO APPR, PNF FOR MAN APPR
## LANDING

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<tbody>
<tr>
<td><strong>At about 30 feet:</strong></td>
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<tr>
<td>FLARE........................................</td>
<td>ATTITUDE...............................MONITOR</td>
</tr>
<tr>
<td>THR LEVERS....................................</td>
<td></td>
</tr>
<tr>
<td><strong>At touchdown:</strong></td>
<td></td>
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<tr>
<td>REV...........................................AS RQRD</td>
<td>GRND SPLRS.........................CHECK</td>
</tr>
<tr>
<td>Directional control.........................</td>
<td>ANNOUNCE..................SPLRS,</td>
</tr>
<tr>
<td>BRAKES........................................</td>
<td></td>
</tr>
<tr>
<td><strong>At 70 kt:</strong></td>
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</tr>
<tr>
<td>ANNOUNCE....................................</td>
<td>ANNOUNCE..............SEVENTY KNOTS</td>
</tr>
<tr>
<td>THR LEVERS.................................REV IDLE</td>
<td></td>
</tr>
<tr>
<td><strong>At taxi speed:</strong></td>
<td></td>
</tr>
<tr>
<td>THR levers..................................FWD IDLE</td>
<td></td>
</tr>
<tr>
<td><strong>Before 20 kt:</strong></td>
<td></td>
</tr>
<tr>
<td>AUTO BRK.................................DISENGAGE</td>
<td></td>
</tr>
<tr>
<td>ANNOUNCE..................MANUAL BRAKES</td>
<td></td>
</tr>
<tr>
<td><strong>If PF is CM2 transfer control</strong>........</td>
<td></td>
</tr>
<tr>
<td>CHRONO.................................STOP</td>
<td>CHRONO.................................STOP</td>
</tr>
<tr>
<td><strong>ANNOUNCE</strong></td>
<td></td>
</tr>
<tr>
<td>ATITUDE..............................MONITOR</td>
<td></td>
</tr>
<tr>
<td>GRND SPLRS.......................CHECK</td>
<td></td>
</tr>
<tr>
<td>ANNOUNCE..................SPLRS,</td>
<td></td>
</tr>
<tr>
<td>REV GREEN, DECEL</td>
<td></td>
</tr>
<tr>
<td>ANNOUNCE..............SEVENTY KNOTS</td>
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</tr>
<tr>
<td>MONITOR..................................</td>
<td></td>
</tr>
<tr>
<td>CHECK.....................................</td>
<td></td>
</tr>
<tr>
<td>SPLRS,....................................</td>
<td></td>
</tr>
<tr>
<td>SPLRS,....................................</td>
<td></td>
</tr>
<tr>
<td>SEVENTY KNOTS..............................</td>
<td></td>
</tr>
<tr>
<td>SPLRS,....................................</td>
<td></td>
</tr>
<tr>
<td>SEVENTY KNOTS..............................</td>
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## GO AROUND WITH FD ON

<table>
<thead>
<tr>
<th>PF</th>
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<tbody>
<tr>
<td>THR LEVERS..................................</td>
<td></td>
</tr>
<tr>
<td>ANNOUNCE...GO AROUND-FLAPS</td>
<td>FLAPS....................................RETRACT ONE STEP</td>
</tr>
<tr>
<td>ROTATION....................................</td>
<td></td>
</tr>
<tr>
<td>ANNOUNCE...................................</td>
<td>ANNOUNCE............POSITIVE CLIMB</td>
</tr>
<tr>
<td>ORDER......................................</td>
<td>L/G........................................</td>
</tr>
<tr>
<td>NAV or HDG MODE...........................</td>
<td>GEAR UP, FLAPS...</td>
</tr>
<tr>
<td><strong>At GA thrust reduction alt:</strong></td>
<td></td>
</tr>
<tr>
<td>THR LEVERS..................................</td>
<td></td>
</tr>
<tr>
<td><strong>At GA acceleration alt:</strong></td>
<td></td>
</tr>
<tr>
<td>SPEED......................................</td>
<td></td>
</tr>
<tr>
<td><strong>AFTER T/O C/L</strong></td>
<td></td>
</tr>
<tr>
<td>SPEED......................................</td>
<td></td>
</tr>
<tr>
<td>FLAPS....................................RETRACT ON SCHEDULE</td>
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</tbody>
</table>
### GO AROUND WITH NO FD

<table>
<thead>
<tr>
<th>PF</th>
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<tbody>
<tr>
<td>THR LEVERS……………………..TOGA</td>
<td>FLAPS…………..RETRACT ONE STEP</td>
</tr>
<tr>
<td>ANNOUNCE…………..GO AROUND-FLAPS</td>
<td>ANNOUNCE…………..POSITIVE CLimb</td>
</tr>
<tr>
<td>ROTATION……………………..PERFORM</td>
<td>L/G……………………..UP</td>
</tr>
<tr>
<td>ANNOUNCE………………………..FMA</td>
<td>ANNOUNCE…………..GEAR UP FLAPS…</td>
</tr>
<tr>
<td>ORDER……………………..GEAR UP</td>
<td>GEAR UP, FLAPS…</td>
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</table>

**At GA acceleration alt:**

<table>
<thead>
<tr>
<th>PF</th>
<th>PNF</th>
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</thead>
<tbody>
<tr>
<td>SPEED……………………..GREEN DOT</td>
<td>FMA……………………..CHECK</td>
</tr>
<tr>
<td>A/C ATT……………………..10º/12º PITCH</td>
<td>SPEED……………………..MONITOR</td>
</tr>
<tr>
<td>THR LEVERS/ A/THR……..CL/ACTIVATE</td>
<td>FLAPS………….RETRACT ON SCHEDULE</td>
</tr>
<tr>
<td>FDs………………………..ON</td>
<td>GA routing / FIRST CLRD ALT-MONITOR</td>
</tr>
<tr>
<td>Appropriate MODE………….SELECT</td>
<td>GA routing / FIRST CLRD ALT-MONITOR</td>
</tr>
<tr>
<td>FMA………………………..ANNOUNCE</td>
<td>FLAPS………….RETRACT ON SCHEDULE</td>
</tr>
<tr>
<td>FLAPS…….RETRACT ON SCHEDULE</td>
<td>GA routing / FIRST CLRD ALT-MONITOR</td>
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</table>

**GO AROUND FROM AN INTERMEDIATE APPR ALTITUDE**

<table>
<thead>
<tr>
<th>PF</th>
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<tbody>
<tr>
<td>THR LEVERS……..TOGA then AS RQRD</td>
<td>FMA………………………..CHECK</td>
</tr>
<tr>
<td>AP/FD and A/THR modes……..SELECT</td>
<td>SPEED……………………..MONITOR</td>
</tr>
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</table>

**GA routing / FIRST CLRD ALT..MONITOR**
### AFTER LANDING

<table>
<thead>
<tr>
<th>CM1</th>
<th>CM2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LAND LTS</strong>..........................RETRACT</td>
<td>CHR counter................................START</td>
</tr>
<tr>
<td><strong>When clear of the runway:</strong></td>
<td><strong>When clear of the runway:</strong></td>
</tr>
<tr>
<td><strong>GRND SPLRS</strong>..........................DISARM</td>
<td><strong>ENG MODE SEL</strong>........................NORM</td>
</tr>
<tr>
<td><strong>CM1 CM2</strong></td>
<td><strong>FLAPS</strong>..................................RETRACT</td>
</tr>
<tr>
<td><strong>CM1 CM2</strong></td>
<td><strong>TCAS MODE</strong>........................STBY/ON</td>
</tr>
<tr>
<td><strong>CM1 CM2</strong></td>
<td><strong>FCU and TERR on ND</strong>................OFF</td>
</tr>
<tr>
<td><strong>CM1 CM2</strong></td>
<td><strong>ANTI ICE</strong>............................AS RQRD</td>
</tr>
<tr>
<td><strong>CM1 CM2</strong></td>
<td><strong>APU</strong>..................................START</td>
</tr>
<tr>
<td><strong>CM1 CM2</strong></td>
<td><strong>BRAKE TEMP</strong>..........................CHECK</td>
</tr>
</tbody>
</table>

### AFTER LANDING C/L

<table>
<thead>
<tr>
<th>CM1</th>
<th>CM2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PRK BRAKE ACCU PRESS</strong>........CHECK</td>
<td><strong>ANTI ICE</strong>............................OFF</td>
</tr>
<tr>
<td><strong>PRK BRAKE</strong>............................ON</td>
<td><strong>APU BLEED</strong>.........................ON</td>
</tr>
<tr>
<td><strong>ENG MASTER SW 1 &amp; 2</strong>........OFF</td>
<td><strong>ELAPSED TIME</strong>........................STOP</td>
</tr>
<tr>
<td><strong>EXT LTS</strong>............................AS RQRD</td>
<td><strong>TCAS MODE</strong>........................STBY</td>
</tr>
<tr>
<td><strong>GRND CONTACT</strong>........................ESTABLISH</td>
<td><strong>IRS PERFORMANCE</strong>................CHECK</td>
</tr>
<tr>
<td><strong>SLIDE DISARMED</strong>........................CHECK</td>
<td><strong>ECAM STATUS</strong>........................PRESS</td>
</tr>
<tr>
<td><strong>SEAT BELTS</strong>...........................OFF</td>
<td><strong>FUEL QTY</strong>..........................CHECK</td>
</tr>
<tr>
<td><strong>FUEL PUMPS</strong>...........................OFF</td>
<td><strong>DU</strong>.............................DIM</td>
</tr>
<tr>
<td><strong>PRK BRAKE</strong>............................AS RQRD</td>
<td><strong>SECURING THE AIRCRAFT C/L</strong></td>
</tr>
<tr>
<td><strong>DU</strong>.............................DIM</td>
<td><strong>SECURING THE AIRCRAFT C/L</strong></td>
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### PARKING

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<thead>
<tr>
<th>CM1</th>
<th>CM2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PRK BRAKE</strong>............................AS RQRD</td>
<td><strong>EXT LTS</strong>........................OFF</td>
</tr>
<tr>
<td><strong>DU</strong>.............................DIM</td>
<td><strong>MAIN BUS SW</strong>..........................AS RQRD</td>
</tr>
<tr>
<td><strong>PRK BRAKE</strong>............................CHECK ON</td>
<td><strong>APU BLEED</strong>.........................OFF</td>
</tr>
<tr>
<td><strong>PRK BRAKE</strong>............................ON</td>
<td><strong>APU MASTER SW</strong>........................OFF</td>
</tr>
<tr>
<td><strong>OXYS (1+2+3)</strong>........................OFF</td>
<td><strong>EMER EXIT LT</strong>........................OFF</td>
</tr>
<tr>
<td><strong>OXYS (1+2+3)</strong>........................OFF</td>
<td><strong>NO SMOKING</strong>..........................OFF</td>
</tr>
<tr>
<td><strong>OXYS (1+2+3)</strong>........................OFF</td>
<td><strong>EXT PWR</strong>..........................AS RQRD</td>
</tr>
</tbody>
</table>

### SECURING THE AIRCRAFT

<table>
<thead>
<tr>
<th>CM1</th>
<th>CM2</th>
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<tbody>
<tr>
<td><strong>PRK BRAKE</strong>............................CHECK ON</td>
<td><strong>EXT LTS</strong>........................OFF</td>
</tr>
<tr>
<td><strong>PRK BRAKE</strong>............................CHECK ON</td>
<td><strong>MAIN BUS SW</strong>..........................AS RQRD</td>
</tr>
<tr>
<td><strong>PRK BRAKE</strong>............................CHECK ON</td>
<td><strong>APU BLEED</strong>.........................OFF</td>
</tr>
<tr>
<td><strong>PRK BRAKE</strong>............................CHECK ON</td>
<td><strong>APU MASTER SW</strong>........................OFF</td>
</tr>
<tr>
<td><strong>PRK BRAKE</strong>............................CHECK ON</td>
<td><strong>EMER EXIT LT</strong>........................OFF</td>
</tr>
<tr>
<td><strong>PRK BRAKE</strong>............................CHECK ON</td>
<td><strong>NO SMOKING</strong>..........................OFF</td>
</tr>
<tr>
<td><strong>PRK BRAKE</strong>............................CHECK ON</td>
<td><strong>EXT PWR</strong>..........................AS RQRD</td>
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### SECURING THE AIRCRAFT C/L

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<thead>
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<th>CM2</th>
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</thead>
<tbody>
<tr>
<td><strong>PRK BRAKE</strong>............................CHECK ON</td>
<td><strong>EXT LTS</strong>........................OFF</td>
</tr>
<tr>
<td><strong>OXYS (1+2+3)</strong>........................OFF</td>
<td><strong>MAIN BUS SW</strong>..........................AS RQRD</td>
</tr>
<tr>
<td><strong>OXYS (1+2+3)</strong>........................OFF</td>
<td><strong>APU BLEED</strong>.........................OFF</td>
</tr>
<tr>
<td><strong>OXYS (1+2+3)</strong>........................OFF</td>
<td><strong>APU MASTER SW</strong>........................OFF</td>
</tr>
<tr>
<td><strong>OXYS (1+2+3)</strong>........................OFF</td>
<td><strong>EMER EXIT LT</strong>........................OFF</td>
</tr>
<tr>
<td><strong>OXYS (1+2+3)</strong>........................OFF</td>
<td><strong>NO SMOKING</strong>..........................OFF</td>
</tr>
<tr>
<td><strong>OXYS (1+2+3)</strong>........................OFF</td>
<td><strong>EXT PWR</strong>..........................AS RQRD</td>
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### 6.3 NORMAL CHECKLIST DEPARTURE

<table>
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<tbody>
<tr>
<td>COCKPIT PREP</td>
<td>BOTH CM1</td>
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</tr>
<tr>
<td>GEAR PINS &amp; COVERS</td>
<td>CM1</td>
<td></td>
</tr>
<tr>
<td>SIGNS</td>
<td>ON / AUTO CM1</td>
<td></td>
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<tr>
<td>ADIRS</td>
<td>NAV CM1</td>
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</tr>
<tr>
<td>FUEL QTY</td>
<td>KG CM1</td>
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<tr>
<td>TO DATA</td>
<td>SET CM1</td>
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</tr>
<tr>
<td>BARO REF</td>
<td>QNH BOTH</td>
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</table>

<table>
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<tr>
<th>BEFORE START</th>
<th>OFF</th>
<th>BOTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOBILES</td>
<td>BOTH</td>
<td></td>
</tr>
<tr>
<td>WINDOWS / DOORS</td>
<td>CLOSED CM2</td>
<td></td>
</tr>
<tr>
<td>BEACON</td>
<td>ON CM2</td>
<td></td>
</tr>
<tr>
<td>THR LEVERS</td>
<td>IDLE CM1</td>
<td></td>
</tr>
<tr>
<td>PARKING BRAKE</td>
<td>ON (OFF) CM1</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AFTER START</th>
<th>ON (OFF)</th>
<th>CM2</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANTI ICE</td>
<td>BOTH</td>
<td></td>
</tr>
<tr>
<td>ECAM STATUS</td>
<td>CHECKED CM1</td>
<td></td>
</tr>
<tr>
<td>PITCH TRIM</td>
<td>SET CM1</td>
<td></td>
</tr>
<tr>
<td>RUDDER TRIM</td>
<td>ZERO CM1</td>
<td></td>
</tr>
<tr>
<td>TRANSPONDER</td>
<td>ON (STBY) CM2</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BEFORE TAKEOFF</th>
<th>CHECKED</th>
<th>BOTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLIGHT CONTROLS</td>
<td>BOTH</td>
<td></td>
</tr>
<tr>
<td>FLT INSTR</td>
<td>CHECKED BOTH</td>
<td></td>
</tr>
<tr>
<td>BRIEFING</td>
<td>CONFIRMED CM1</td>
<td></td>
</tr>
<tr>
<td>FLAP SETTING</td>
<td>CONFIG BOTH</td>
<td></td>
</tr>
<tr>
<td>V1, VR, V2 / FLEX TEMP</td>
<td>BOTH</td>
<td></td>
</tr>
</tbody>
</table>

**ECAM MEMO**

- AUTO BRAKE MAX
- SIGNS ON
- SPLRS ARM
- FLAPS TO
- TO CONFIG NORM

<table>
<thead>
<tr>
<th>AFTER TO</th>
<th>Advised</th>
<th>BOTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>CABIN CREW</td>
<td>NORM (IGN) CM1</td>
<td></td>
</tr>
<tr>
<td>ENG MODE SEL</td>
<td>ON (IGN) CM1</td>
<td></td>
</tr>
<tr>
<td>PACKS</td>
<td>ON (OFF) CM1</td>
<td></td>
</tr>
<tr>
<td>TRANSPONDER</td>
<td>TA/RA CM2</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BEFORE TO</th>
<th>PF</th>
</tr>
</thead>
<tbody>
<tr>
<td>LDG GEAR</td>
<td>UP</td>
</tr>
<tr>
<td>FLAPS</td>
<td>RETRACTED</td>
</tr>
<tr>
<td>PACKS</td>
<td>ON</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AFTER TO</th>
<th>CM1</th>
</tr>
</thead>
<tbody>
<tr>
<td>BARO REF</td>
<td>STND SET</td>
</tr>
<tr>
<td>APU</td>
<td>OFF BOTH</td>
</tr>
</tbody>
</table>

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### 6.4 NORMAL CHECKLIST ARRIVAL

<table>
<thead>
<tr>
<th><strong>Briefing</strong></th>
<th><strong>Confirmed</strong></th>
<th><strong>Approach</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>ECAM Status</td>
<td>CHECKED</td>
<td>PF</td>
</tr>
<tr>
<td>Seat Belts</td>
<td>ON</td>
<td>PF</td>
</tr>
<tr>
<td>BARO</td>
<td>QNH __Set</td>
<td>BOTH</td>
</tr>
<tr>
<td>MDA / DH</td>
<td>_____Set</td>
<td>BOTH</td>
</tr>
<tr>
<td>ENG Mode SEL</td>
<td>NORM (IGN)</td>
<td>PF</td>
</tr>
<tr>
<td>CABIN CREW</td>
<td>ADVISED</td>
<td>PNF</td>
</tr>
<tr>
<td>A/THR</td>
<td>SPEED (OFF)</td>
<td>PF</td>
</tr>
<tr>
<td>ECAM Memo</td>
<td>LDG NO BLUE</td>
<td>PNF</td>
</tr>
</tbody>
</table>

- L/G DOWN
- SIGNS ON
- SPLRS ARM
- FLAPS SET

<table>
<thead>
<tr>
<th><strong>Approach</strong></th>
<th><strong>Landing</strong></th>
<th><strong>After Landing</strong></th>
<th><strong>Parking</strong></th>
<th><strong>Securing The Aircraft</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Flaps</td>
<td>RETRACTED</td>
<td>CM2</td>
<td>CM2</td>
<td>CM2</td>
</tr>
<tr>
<td>Spoilers</td>
<td>DISARMED</td>
<td>CM2</td>
<td>CM2</td>
<td>CM2</td>
</tr>
<tr>
<td>APU</td>
<td>START</td>
<td>CM2</td>
<td>CM2</td>
<td>CM2</td>
</tr>
<tr>
<td>Radar</td>
<td>OFF</td>
<td>CM2</td>
<td>CM2</td>
<td>CM2</td>
</tr>
<tr>
<td>Transponder</td>
<td>ON (STBY)</td>
<td>CM2</td>
<td>CM2</td>
<td>CM2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>After Landing</strong></th>
<th><strong>Parking</strong></th>
<th><strong>Securing The Aircraft</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>APU Bleed</td>
<td>ON</td>
<td>CM1</td>
</tr>
<tr>
<td>Engines</td>
<td>OFF</td>
<td>CM1</td>
</tr>
<tr>
<td>Seat Belts</td>
<td>OFF</td>
<td>CM1</td>
</tr>
<tr>
<td>Ext LTS</td>
<td>OFF</td>
<td>CM1</td>
</tr>
<tr>
<td>Fuel Pumps</td>
<td>OFF</td>
<td>CM1</td>
</tr>
<tr>
<td>Parking Brake</td>
<td>OFF</td>
<td>CM1</td>
</tr>
<tr>
<td>Transponder</td>
<td>STBY</td>
<td>CM2</td>
</tr>
</tbody>
</table>

Consider HEAVY RAIN

<table>
<thead>
<tr>
<th><strong>Consider Cold Weather</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>ADIRS</td>
</tr>
<tr>
<td>Oxygen</td>
</tr>
<tr>
<td>APU Bleed</td>
</tr>
<tr>
<td>Emer Exit LTS</td>
</tr>
<tr>
<td>No Smoking</td>
</tr>
<tr>
<td>APU &amp; BAT</td>
</tr>
</tbody>
</table>

Consider COLD WEATHER

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6.5 **MAXIMUM WIND CONDITIONS**

- **Wind for takeoff and landing:**
  - Maximum crosswind for takeoff ........................................... 29 kt gusting up to 38 kt*
  - Maximum crosswind for landing ......................................... 33 kt gusting up to 38 kt*

  **Note:**
  1. In case of the loss of 3 spoilers, or of a flaps or slats jam/fault, the crosswind limit is ................................................................. 15 kt
  2. **Landing conditions, in case of a dual G + Y hydraulic system failure:**
     - Runway condition ................................................................. Dry
     - Crosswind ................................................................. No more than 10 kt (5m/s)

  - Maximum tailwind for takeoff .................................................. 10 kt
  - Maximum tailwind for landing ..................................................... 10 kt

  * : Maximum crosswind values with flight controls in normal law, as well as in direct law with and without yaw damper.

- **Wind for passenger/cargo door operation:**
  - Maximum wind for passenger door operation .............................. 65 kt
  - Maximum wind for cargo door opening ..................................... 40 kt
  - The cargo door must be closed, before the wind speed exceeds ........ 65 kt

**MAXIMUM WIND CONDITIONS FOR CAT II OR CAT III AUTOMATIC APPROACH LANDING AND ROLLOUT**

- **Head wind** ................................................................. 30 knots
- **Tail wind** ................................................................. 10 knots
- **Cross wind** ................................................................. 20 knots

  **Note:** Wind limitation is based on surface wind reported by the tower. If wind displayed on ND exceeds here-above limitations for autoland but the tower reports surface wind within the limitations then the autopilot can remain engaged. If the tower reports surface wind beyond limitations, only CAT I automatic approach without autoland can be performed.

- **Maximum crosswind under different runway conditions:**
  - Runway covered with a layer of 1/2 in (12.7 mm) of water, slush, or wet snow ................................................................. 10kt (5m/s)

  - Wet runway with coefficient of friction μ :

<table>
<thead>
<tr>
<th>SNOTAM Code</th>
<th>ICAO Code</th>
<th>Braking Action</th>
<th>Измеренный коэффициент сцепления (SFT)</th>
<th>Нормативный коэффициент сцепления (by ATC) **</th>
<th>MAX X-wind (KT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>95</td>
<td>Good</td>
<td>0,4 и выше</td>
<td>0,60 – 0,50</td>
<td>29</td>
</tr>
<tr>
<td>4</td>
<td>94</td>
<td>Good/Medium</td>
<td>0,39 – 0,36</td>
<td>0,49 – 0,45</td>
<td>29/29</td>
</tr>
<tr>
<td>3</td>
<td>93</td>
<td>Medium</td>
<td>0,35 – 0,30</td>
<td>0,44 – 0,40</td>
<td>29</td>
</tr>
<tr>
<td>2</td>
<td>92</td>
<td>Medium/Poor</td>
<td>0,29 – 0,26</td>
<td>0,39 – 0,35</td>
<td>29</td>
</tr>
<tr>
<td>1</td>
<td>91</td>
<td>Poor</td>
<td>0,25 – 0,17</td>
<td>0,34 – 0,30</td>
<td>29/29</td>
</tr>
<tr>
<td>9</td>
<td>99</td>
<td>Unreliable</td>
<td>ниже 0,17</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

- **TO**

- **Land**
6.6 MINIMUM FLIGHT CREW OXYGEN PRESSURE

<table>
<thead>
<tr>
<th>REF TEMPERATURE *</th>
<th>Deg. C</th>
<th>-10</th>
<th>0</th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>50</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Deg. F</td>
<td>14</td>
<td>32</td>
<td>50</td>
<td>68</td>
<td>86</td>
<td>104</td>
<td>122</td>
</tr>
<tr>
<td>MIN ** BOTTLE</td>
<td>2 CREWMEMBERS</td>
<td>468</td>
<td>486</td>
<td>504</td>
<td>522</td>
<td>540</td>
<td>558</td>
<td>576</td>
</tr>
<tr>
<td>PRESSURE (PSI)</td>
<td>2 CREWMEMBERS + 1 OBS</td>
<td>606</td>
<td>629</td>
<td>652</td>
<td>675</td>
<td>698</td>
<td>721</td>
<td>744</td>
</tr>
<tr>
<td></td>
<td>2 CREWMEMBERS + 2 OBS</td>
<td>759</td>
<td>788</td>
<td>817</td>
<td>846</td>
<td>875</td>
<td>904</td>
<td>933</td>
</tr>
</tbody>
</table>

* REF TEMPERATURE :
- On ground : (OAT + COCKPIT TEMP) / 2
- In flight : CAB TEMP (deg. C) - 10 deg. C
  or
  CAB TEMP (deg. F) - 18 deg. F

** MINIMUM BOTTLE PRESSURE TO TAKE INTO ACCOUNT :
- Preflight checks;
- The use of oxygen, when only one flight crewmember is in the cockpit;
- Unusable quantity (to ensure that the regulator functions with minimum pressure);
- Normal system leakage
  and
  - Protection after loss of cabin pressure, with mask regulator on NORMAL (diluted oxygen):
    - During an emergency descent: For all cockpit members for 13 minutes;
    - During cruise at FL 100 : For 2 flight crewmembers for 107 minutes, or
  - Protection in case of smoke, with 100 % oxygen : For all cockpit members for 15 minutes at a cabin altitude of 8000 feet.

Note: The above times are based on the use of a sealed mask, but may be shorter if the flight crewmember has a beard.
6.7 GROUND OPERATIONS IN HEAVY RAIN

When the aircraft is parked on the ground during heavy rain, it can take rainwater into the avionics ventilation system via the open skin air inlet valve. To prevent this, the following procedure must be applied:

- **After landing:**
  - EXTRACT.....................................................................................................OVRD
    This closes the avionics ventilation system, preventing rainwater from entering.
  - PACKS 1 and 2 ......................................................................................CHECK ON
    This adds air from the air conditioning system to ventilation air. If bleed air is not available, the arrangement can function for a limited time, as follows:
    - OAT < 39°C : no limit
    - 39°C < OAT < 45°C : 3 hours
    - OAT > 45°C : 30 minutes

- **After takeoff:**
  - EXTRACT.....................................................................................................AUTO
6.8 PROCEDURE FOR GROUND DE-ICING AND ANTI-ICING

In all circumstances, it is the Captain’s responsibility to decide whether or not to de-ice / anti-ice, or to order a repeated treatment.

**CAUTION**

- Check that no external air is supplied to the aircraft, via the low or high pressure ground connectors.
- If repeated anti-icing is necessary, ground crew must de-ice the surfaces with a hot fluid mixture applying a new layer of anti-icing fluid.

Ensure that the ground crew is using de-icing / anti-icing fluids, in accordance with applicable company requirements and Aircraft Maintenance Manual instructions.

The flight crew must establish good communication with the ground personnel, responsible for de-icing or anti-icing, before the procedure begins.

The aircraft may be de-iced or anti-iced with its engines and APU stopped, or with the APU running, and / or with the engines running. However, the flight crew should not start the engines or APU while the fluid is being sprayed on the aircraft.

**CAUTION**

- Avoid indiscriminate use of de-icing fluid and its ingestion by the engine or APU.
- Do not move flaps or slats, flight control surfaces, or trim surfaces, if they are not free of ice.
- Always have the aircraft treated symmetrically: the left and right sides must receive the same and complete treatment.

Anti-icing checklist is “TO DO” list. CM2 reads the ANTI-ICING CHECKLIST and CM1 performs the actions.

**Note:**

1. Actions with DITCHING guarded pushbutton should be done by CM1 with CM2 confirmation to avoid wrong switching on other guarded pushbuttons.

2. Start CHR counter of the clock (located on the right side of the control panel) to control the holdover time.
## ISO TYPE I FLUID MIXTURE

Approximate holdover times anticipated under various weather conditions (hours : minutes)

<table>
<thead>
<tr>
<th>OAT (°C)</th>
<th>Active Frost</th>
<th>Freezing Fog</th>
<th>Snow/Snow Grains</th>
<th>Freezing Drizzle</th>
<th>Light Freezing Rain</th>
<th>Rain on cold soaked wing</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>-3 and above</td>
<td>0:45</td>
<td>0:11-0:17</td>
<td>0:06-0:11</td>
<td>0:09-0:13</td>
<td>0:02-0:05</td>
<td>0:02-0:05</td>
<td></td>
</tr>
<tr>
<td>below -3 to -6</td>
<td>0:45</td>
<td>0:08-0:13</td>
<td>0:05-0:08</td>
<td>0:05-0:09</td>
<td>0:02-0:05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>below -6 to -10</td>
<td>0:45</td>
<td>0:06-0:10</td>
<td>0:04-0:06</td>
<td>0:04-0:07</td>
<td>0:02-0:05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>below -10 to -27</td>
<td>0:45</td>
<td>0:05-0:09</td>
<td>0:02-0:04</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Caution:** No holdover time guidelines exist

## ISO TYPE II FLUID MIXTURE

Approximate holdover times anticipated under various weather conditions (hours : minutes)

<table>
<thead>
<tr>
<th>OAT (°C)</th>
<th>Concentration fluid/water (Vol%/ Vol%)</th>
<th>Active Frost</th>
<th>Freezing Fog</th>
<th>Snow/Snow Grains</th>
<th>Freezing Drizzle</th>
<th>Light Freezing Rain</th>
<th>Rain on cold soaked wing</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>-3 and above</td>
<td>100/0</td>
<td>8:00</td>
<td>0:35-1:30</td>
<td>0:20-0:45</td>
<td>0:30-0:55</td>
<td>0:15-0:30</td>
<td>0:05-0:40</td>
<td></td>
</tr>
<tr>
<td>below -3 to -14</td>
<td>75/25</td>
<td>5:00</td>
<td>0:25-1:00</td>
<td>0:15-0:30</td>
<td>0:20-0:45</td>
<td>0:10-0:25</td>
<td>0:05-0:25</td>
<td></td>
</tr>
<tr>
<td>below -14 to -25</td>
<td>50/50</td>
<td>3:00</td>
<td>0:15-0:30</td>
<td>0:05-0:15</td>
<td>0:05-0:15</td>
<td>0:10-0:25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consider the use of Type I fluid with lower LOUT’s when Type II fluid cannot be used.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Caution:** No holdover time guidelines exist

## ISO TYPE IV FLUID MIXTURE

Approximate holdover times anticipated under various weather conditions (hours : minutes)

<table>
<thead>
<tr>
<th>OAT (°C)</th>
<th>Concentration fluid/water (Vol%/ Vol%)</th>
<th>Active Frost</th>
<th>Freezing Fog</th>
<th>Snow/Snow Grains</th>
<th>Freezing Drizzle</th>
<th>Light Freezing Rain</th>
<th>Rain on cold soaked wing</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>-3 and above</td>
<td>100/0</td>
<td>12:00</td>
<td>1:15-2:30</td>
<td>0:35-1:15</td>
<td>0:40-1:10</td>
<td>0:25-0:40</td>
<td>0:10-0:50</td>
<td></td>
</tr>
<tr>
<td>below -3 to -14</td>
<td>75/25</td>
<td>5:00</td>
<td>1:05-1:45</td>
<td>0:20-0:55</td>
<td>0:35-0:50</td>
<td>0:15-0:30</td>
<td>0:05-0:35</td>
<td></td>
</tr>
<tr>
<td>below -14 to -22</td>
<td>50/50</td>
<td>3:00</td>
<td>0:15-0:35</td>
<td>0:05-0:15</td>
<td>0:10-0:20</td>
<td>0:05-0:10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consider the use of Type I fluid with lower LOUT’s when Type IV fluid cannot be used.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Caution:** No holdover time guidelines exist
# DE-ICING/ANTI-ICING CHECK/LIST

## BEFORE DE-ICING (ANTI-ICING)

<table>
<thead>
<tr>
<th>Item</th>
<th>Status</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>PARK BRK</td>
<td>ON</td>
<td>CM1</td>
</tr>
<tr>
<td>CAB PRESS MODE SEL</td>
<td>CHECK AUTO</td>
<td>CM1</td>
</tr>
<tr>
<td>ENG BLEED 1 + 2</td>
<td>OFF</td>
<td>CM1</td>
</tr>
<tr>
<td>APU BLEED</td>
<td>OFF</td>
<td>CM1</td>
</tr>
<tr>
<td>DITCHING pushbutton</td>
<td>ON</td>
<td>CM1</td>
</tr>
<tr>
<td><strong>Note:</strong> If the “VENT AVNCS SYS FAULT” warning appears, reset the AEVC circuit breaker at the end of the aircraft de-icing procedure. <strong>AIR COND / AVNCS VENT / CTL D06 on 49VU. AIR COND / AVNCS VENT / MONG Y17 on 122VU.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>THR LEVERS</td>
<td>CHECK IDLE</td>
<td>CM1</td>
</tr>
<tr>
<td>« AIRCRAFT READY FOR DE-ICING »...</td>
<td>INFORM GROUND</td>
<td>CM1</td>
</tr>
</tbody>
</table>

## AFTER DE-ICING (ANTI-ICING)

<table>
<thead>
<tr>
<th>Item</th>
<th>Status</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>DITCHING pushbutton</td>
<td>OFF</td>
<td>CM1</td>
</tr>
<tr>
<td>OUTFLOW VALVE</td>
<td>CHECK OPEN</td>
<td>CM1</td>
</tr>
<tr>
<td>ENG BLEED 1 + 2</td>
<td>ON</td>
<td>CM1</td>
</tr>
<tr>
<td>APU BLEED</td>
<td>ON</td>
<td>CM1</td>
</tr>
<tr>
<td>DE-ICING/ANTI-ICING REPORT</td>
<td>OBTAIN (TLB)</td>
<td>CM1</td>
</tr>
<tr>
<td>- Type of fluid used</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- The mix ratio of fluid to water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- When the holdover time began</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## BEFORE TAKEOFF

<table>
<thead>
<tr>
<th>Item</th>
<th>Status</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>HOLDOVER TIME</td>
<td>CHECK</td>
<td>CM1</td>
</tr>
</tbody>
</table>
6.9 SECURING THE AIRCRAFT FOR COLD SOAK

- After switching off all bleeds, and before switching off AC power:
  - DITCHING pushbutton ................................................................. ON
    This closes the outflow valve, the pack valves, and the avionic ventilation inlet and extract valves.
  - PARKING BRAKE ........................................................................... OFF
    Check chocks in place, and release the parking brake to prevent brakes from freezing.

- After switching off the batteries:
  - DITCHING pushbutton ................................................................. OFF
  - PROTECTIVE COVERS ................................................................ INSTALL
    Install protective covers and plugs to protect the aircraft and engines from snow and ice.

WATER SYSTEM DRAINING

<table>
<thead>
<tr>
<th>Configuration</th>
<th>OAT</th>
<th>Exposure time</th>
<th>Depressurization required</th>
<th>Water tank Drain required</th>
<th>Purge of System Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Cond Heating water Waste Sys Cabin temperature</td>
<td>ON/OFF Above 10°C</td>
<td>Between 0°C and -15°C</td>
<td>Any</td>
<td>NO</td>
<td>NO</td>
</tr>
<tr>
<td>OFF ON Above 10°C</td>
<td>Below -15°C</td>
<td>1 hour 15min</td>
<td>YES</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OFF OFF</td>
<td>Between 0°C and -7°C</td>
<td>1 hour 30min</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td></td>
<td>Between -7°C and -15°C</td>
<td>0 hour 30min</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Below -15°C</td>
<td>Any</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

You must refill the tank with water **not more than 30 min** before you start the engines. If the temperature in the aircraft is below 4°C, pre-condition the aircraft.
## 6.10 MEL RESTRICTIONS

### Table of failures affecting takeoff performance

<table>
<thead>
<tr>
<th>Failures</th>
<th>MEL</th>
<th>Runway Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FAILURES</strong></td>
<td></td>
<td><strong>DRY</strong></td>
</tr>
<tr>
<td>One pair SPLR</td>
<td>5</td>
<td>27.64.01 A</td>
</tr>
<tr>
<td></td>
<td>1 or 3</td>
<td>27.64.01 B</td>
</tr>
<tr>
<td></td>
<td>2 or 4</td>
<td>27.64.01 C</td>
</tr>
<tr>
<td>Two pair SPLR</td>
<td>1 and 2</td>
<td>27.64.01 D</td>
</tr>
<tr>
<td></td>
<td>3 and 4</td>
<td>27.64.01 E</td>
</tr>
<tr>
<td>SPD BRK control SYS</td>
<td>27.92.01</td>
<td>Refer to MEL O2.27.92.01</td>
</tr>
<tr>
<td>GND SPLR control SYS</td>
<td>27.92.02</td>
<td>Refer to MEL O2.27.92.02</td>
</tr>
<tr>
<td>SEC 1</td>
<td>27.94.01 A</td>
<td>Refer to MEL O2.27.94.01</td>
</tr>
<tr>
<td>SEC 3</td>
<td>27.94.01 C</td>
<td>Refer to MEL O2.27.94.01</td>
</tr>
<tr>
<td>ENG ANTI ICE VLV</td>
<td>30.21.01</td>
<td>Refer to MEL O2.30.21.01</td>
</tr>
<tr>
<td>Main wheel BRK</td>
<td>32.42.01</td>
<td>Refer to MEL O2.32.42.01</td>
</tr>
<tr>
<td>GREEN BRK SYS</td>
<td>32.42.02</td>
<td>Refer to MEL O2.32.42.01</td>
</tr>
<tr>
<td>Tachometer</td>
<td>32.42.05</td>
<td>Refer to MEL O2.32.42.05</td>
</tr>
<tr>
<td>NWS Control SYS</td>
<td>32.51.01</td>
<td>Refer to MEL O2.32.51.01</td>
</tr>
<tr>
<td>Min IDLE on GND</td>
<td>73.20.03</td>
<td>Refer to MEL O2.73.20.03</td>
</tr>
<tr>
<td>THR REV (1 or 2)</td>
<td>78.30.01</td>
<td>No effect on takeoff performance</td>
</tr>
</tbody>
</table>
## Table of altitude restrictions

<table>
<thead>
<tr>
<th>FAILURES</th>
<th>LIMITS</th>
<th>MEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Conditioning Pack</td>
<td>FL 315</td>
<td>Refer to MEL 21-52-01 in section 3 Operational Procedures</td>
</tr>
<tr>
<td>AC Main Generation (IDG, GCU, Line Contactor)</td>
<td>FL 355</td>
<td>Refer to MEL 24-20-01 in section 3 Operational Procedures</td>
</tr>
<tr>
<td>Bleed Air Supply System</td>
<td>FL 315</td>
<td>Refer to MEL 36-11-01 in section 3 Operational Procedures</td>
</tr>
</tbody>
</table>

### A) Cabin Individual OXY Module
- **FL 15000 ft**
  - a) One or more may be inoperative provided associated seats are not occupied, or
  - b) Up to 70% may be inoperative and associated seats may be occupied provided:
    1) The operating altitude is limited to 15000 ft, and
    2) Flight is not conducted where the minimum enroute altitude is above 10000 ft MSL.
- **FL 10000 ft**
  - c) Up to 90% may be inoperative and associated seats may be occupied provided the operating altitude is limited to 10000 ft.

### B) Lavatory OXY Module
- **FL 10000 ft**
  - One or more may be inoperative provided the associated lavatory is not used.

### C) Galley OXY Module
- **FL 10000 ft**
  - a) One or more may be inoperative provided associated galley area is not occupied, or
  - b) One or more may be inoperative and the associated galley area may be occupied provided the operating altitude is limited to 10000 ft, or
  - c) One or more may be inoperative and the associated galley area may be occupied provided a portable OXY bottle and mask are available for the associated galley area occupants.

### Passenger OXY Control and Indicating
- **MEL 35-23-01**
  - **A) MASK MAN ON pb**
    - a) Manual Control (inop) FL150
    - b) AUTO Control (inop) FL300
## COMBINATION OF FAILURES

<table>
<thead>
<tr>
<th>A319 / A321</th>
<th>MEL</th>
<th>DRY</th>
<th>WET</th>
<th>CONTA</th>
</tr>
</thead>
<tbody>
<tr>
<td>THR REV (1 or 2)</td>
<td>78.30.01</td>
<td>No effect on takeoff performance</td>
<td>Refer to FCOM 2.04.10</td>
<td>Not recommended *</td>
</tr>
<tr>
<td>One pair SPLR (surface 5)</td>
<td>27.64.01 A</td>
<td>No effect on takeoff performance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>One pair SPLR (surface 1 to 4)</td>
<td>27.64.01 B</td>
<td>Refer to MEL 02.27.64.01 B</td>
<td>Not recommended *</td>
<td></td>
</tr>
<tr>
<td>Two pairs SPLR</td>
<td>27.64.01 C</td>
<td>Refer to MEL 02.27.64.01 D</td>
<td>Not recommended *</td>
<td></td>
</tr>
<tr>
<td>Ground SPLR control SYS</td>
<td>27.92.02</td>
<td>Refer to MEL 02.27.92.02</td>
<td>Not recommended *</td>
<td></td>
</tr>
<tr>
<td>One BRK</td>
<td>32.42.01</td>
<td>Refer to MEL 02.32.42.01</td>
<td>Not recommended *</td>
<td></td>
</tr>
<tr>
<td>One tachometer</td>
<td>32.42.05</td>
<td>Refer to MEL 02.32.42.05</td>
<td>Not recommended *</td>
<td></td>
</tr>
<tr>
<td>One pair SPLR (surface 5)</td>
<td></td>
<td>No effect on takeoff performance</td>
<td>Refer to FCOM 2.04.10</td>
<td>Not recommended *</td>
</tr>
<tr>
<td>One pair SPLR (surface 1 to 4)</td>
<td></td>
<td>Refer to MEL 02.27.64.01 B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two pairs SPLR</td>
<td></td>
<td>Refer to MEL 02.27.64.01 D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ground SPLR control SYS</td>
<td></td>
<td>Refer to MEL 02.27.92.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>One BRK</td>
<td></td>
<td></td>
<td>NO GO</td>
<td></td>
</tr>
<tr>
<td>One tachometer</td>
<td></td>
<td></td>
<td>NO GO</td>
<td></td>
</tr>
<tr>
<td>One BRK</td>
<td></td>
<td></td>
<td>Not recommended ** **</td>
<td></td>
</tr>
<tr>
<td>One tachometer</td>
<td></td>
<td></td>
<td>Not recommended ** **</td>
<td></td>
</tr>
<tr>
<td>Two pairs of SPLR</td>
<td></td>
<td></td>
<td>Not recommended ** **</td>
<td></td>
</tr>
<tr>
<td>One BRK</td>
<td></td>
<td></td>
<td>Not recommended ** **</td>
<td></td>
</tr>
<tr>
<td>One tachometer</td>
<td></td>
<td></td>
<td>Not recommended ** **</td>
<td></td>
</tr>
<tr>
<td>Ground SPLR control SYS</td>
<td></td>
<td></td>
<td>Not recommended ** **</td>
<td></td>
</tr>
<tr>
<td>One BRK</td>
<td></td>
<td></td>
<td>Not recommended ** **</td>
<td></td>
</tr>
<tr>
<td>One tachometer</td>
<td></td>
<td></td>
<td>Not recommended ** **</td>
<td></td>
</tr>
<tr>
<td>One tachometer</td>
<td></td>
<td></td>
<td>If tachometer failed is on brake failed: Equivalent to one tachometer Refer to MEL 02.32.42.05</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** In some cases, MEL requires thrust reversers to be operative and used.

* but computation possible using TLO or LPC

** no computation possible

*** equivalent to one tachometer and computation possible using TLO or LPC