AIRBUS A319/A320

РОССИЯ

STANDARD OPERATING PROCEDURES

АО «Авиакомпания «Россия»
«Rossiya Airlines» JSC

СОДЕРЖАНИЕ стр.

1. ОБЩИЕ ПОЛОЖЕНИЯ ... 3
1.1. ОСНОВНЫЕ ПРИНЦИПЫ ОРГАНИЗАЦИИ РАБОТЫ ЭКИПАЖА - GOLDEN RULES ... 3
1.2. РАСПРЕДЕЛЕНИЕ ОТВЕТСТВЕННОСТИ И ОБЯЗАННОСТЕЙ. ... 4
1.3. ПРИНЦИП «СТЕРИЛЬНОЙ КАБИНЫ» (STERILE COCKPIT RULE) ... 6
1.4. РАБОТА С КОНТРОЛЬНЫМИ ЛИСТАМИ ... 6
1.5. ПРИНЯТИЕ РЕШЕНИЯ ... 7
1.6. ПЕРЕДАЧА УПРАВЛЕНИЯ ... 7
1.7. ИСПОЛЬЗОВАНИЕ АВТОМАТИЧЕСКИХ РЕЖИМОВ УПРАВЛЕНИЯ ... 8
1.8. УСЛОВИЯ СТАБИЛИЗИРОВАННОГО ЗАХОДА НА ПОСАДКУ ... 9
1.9. УСТАНОВКА И ИСПОЛЬЗОВАНИЕ ПОДВИЖНЫХ ИНДЕКСОВ ... 11
1.10. УСТАНОВКА ВЫСОТОМЕРОВ И ПЕРЕКРЕСТНЫЙ КОНТРОЛЬ ... 11
1.11. ПРОЦЕДУРЫ ЗАНЯТИЯ И ВЫДЕРЖИВАНИЯ ЗАДАННЫХ ВЫСОТ ПОЛЕТА ... 12
1.12. НАВИГАЦИЯ ПО МАРШРУТУ ПОЛЕТА ... 12
1.13. ТРЕБОВАНИЯ К ОБОРУДОВАНИЮ ВС ДЛЯ ЗАХОДА ПО CAT II/III ICAO ... 12
1.14. ПРЕДПОЛЕТНАЯ, ПРЕДПОСАДОЧНАЯ ИНФОРМАЦИЯ, БРИФИНГ НА ЭШЕЛОНЕ ... 12
1.15. ВЗАИМОДЕЙСТВИЕ ПРИ ВЫПОЛНЕНИИ ПОЛЕТОВ УВЕЛИЧЕННЫМ СОСТАВОМ ЭКИПАЖА ... 14
1.16. ВЗАИМОДЕЙСТВИЕ ЛЕТНОГО И КАБИННОГО ЭКИПАЖА ... 14
1.17. ПОРЯДОК ОПОВЕЩЕНИЯ ПАССАЖИРОВ ... 14
1.18. ПРАВИЛА ВЕДЕНИЯ РАДИООБМЕНА ... 14
1.19. ОБЯЗАННОСТИ ЛЕТНОГО СПЕЦИАЛИСТА-НАБЛЮДАТЕЛЯ (ОБЗЕРВЕРА) ... 14
1.20. ПРЕДПОЛЕТНАЯ ПОДГОТОВКА ... 16

2. ПОДГОТОВКА К ПОЛЕТУ ... 17
2.1. TECHNICAL CONDITION OF THE AIRCRAFT ... 17
2.2. WEATHER BRIEFING ... 17
2.3. NOTAMS ... 17
2.4. GPS PRIMARY AVAILABILITY ... 17
2.5. FLIGHT PLAN AND OPERATIONAL REQUIREMENTS ... 17
2.6. NAT HLA OPERATIONS ... 17
2.7. OPTIMUM FLIGHT LEVEL ... 18
2.8. FUEL REQUIREMENTS ... 18
2.9. CABIN CREW BRIEFING ... 19
2.10. CM2 SAFETY EXTERIOR INSPECTION ... 19
2.11. CM1 TECHNICAL CONDITION OF THE AIRCRAFT ... 19
2.12. CM2 PRELIMINARY COCKPIT PREPARATION ... 20
2.13. CM1 EXTERIOR INSPECTION ... 26
2.14. COCKPIT PREPARATION ... 31
2.14.1. OVERHEAD PANEL ... 33
2.14.2. PEDESTAL ... 37
2.14.3. * FMGS DATA INSERTION ... 41
2.14.4. * WHEN BOTH PILOTS SEATED ... 43
2.14.5. * GLARESHIELD ... 44
2.14.6. LATERAL CONSOLES / OXYGEN MASK TEST ... 45
2.14.7. CM 1/2 INSTRUMENT PANELS ... 46

3. ВЫПОЛНЕНИЕ ПОЛЕТА ... 47
3.1. BEFORE PUSHBACK or START ... 47
3.2. AUTOMATIC ENGINE START ... 49
3.3. AFTER START ... 52
3.4 TAXI ... 54

3.5. VISUAL GROUND GEOMETRY 57
3.6. 180º TURN ON RUNWAY 57
3.7. BEFORE TAKEOFF 59
3.8. TAKEOFF 60
3.9. AFTER TAKEOFF 64
3.10. CLIMB 65
3.11. CRUISE 66
3.12. DESCENT PREPARATION 69
3.13. DESCENT INITIATION 72
3.14. DESCENT MONITORING 73
3.15. DESCENT ADJUSTMENT 74
3.16. APPROACH GENERAL 76
3.17. AIRCRAFT CONFIGURATION MANAGEMENT 80
3.17.1. INITIAL APPROACH 80
3.17.2. INTERMEDIATE / FINAL APPROACH 81
3.18. AIRCRAFT GUIDANCE MANAGEMENT 85
3.18.1. APPROACH USING LOC AND G/S GUIDANCE (ILS, LDA with G/S) 85
3.18.2. APPROACH USING FINAL APP GUIDANCE 87
3.18.3. APPROACH USING FINAL APP GUIDANCE FOR RNAV(RNP) 91
3.18.4. APPROACH USING FPA GUIDANCE 95
3.18.5. CAT II / CAT III APPROACH 98
3.18.6. CIRCLING APPROACH 103
3.18.7. VISUAL APPROACH 105
3.19. LANDING 112
3.19.1 MANUAL LANDING 112
3.19.2 AUTOLAND 115
3.20. GO AROUND WITH FD 115
4. РУЛЕНИЕ НА СТОЯНКУ И ПОСЛЕПОЛЕТНЫЕ РАБОТЫ ЭКИПАЖА 117
4.1. AFTER LANDING 117
4.2. PARKING 118
4.3. SECURING THE AIRCRAFT 121
4.4. CM1 POST FLIGHT EXTERIOR INSPECTION 122
5. СТАНДАРТНЫЕ ФРАЗЫ 123
5.1. CHECKLIST CALLOUTS 123
5.2. ACTIONS COMMANDED BY PF 123
5.3. FMA 124
5.4. FLIGHT PARAMETERS 124
5.5. FLIGHT PARAMETERS IN APPROACH 124
5.6. FLIGHT PARAMETERS DURING LANDING 125
5.7. FLIGHT PARAMETERS IN GO-AROUND 125
5.8. FLAPS OR GEAR CONFIGURATION 125
5.9 PF/PM DUTIES TRANSFER 126
5.10. ABNORMAL AND EMERGENCY CALLOUTS 126
5.11. SUMMARY FOR EACH PHASE 128
6. ПРИЛОЖЕНИЯ 134
6.1. NORMAL CHECKLIST 134
6.2. BRIEFING ITEMS 135
6.3. REFUELING CHECK LIST 136

1. ОБЩИЕ ПОЛОЖЕНИЯ

Стандартные эксплуатационные процедуры (СЭП) / Standard Operating Procedures (SOP) – это описание алгоритма выполнения стандартных задач и действий членов летного экипажа, **которые выполняются по памяти**. SOP выполняются подготовленным и сертифицированным экипажем, все системы ВС исправны и возможно использование любого автоматического режима.

Стандартные эксплуатационные процедуры (SOP) – являются основным нормативным документом, применяемым членами летного экипажа для управления самолетом и определяют порядок их взаимодействия на ВС семейства A320 в соответствии со стандартами авиакомпании. Некоторые стандартные процедуры, применяемые эпизодически, описаны в SUPPLEMENTARY TECHNIQUES (PRO-NOR-SUP), SPECIAL OPERATIONS (PRO-SPO) FCOM Airbus.

1.1. ОСНОВНЫЕ ПРИНЦИПЫ ОРГАНИЗАЦИИ РАБОТЫ ЭКИПАЖА - GOLDEN RULES

1. Fly, navigate and communicate:

in this order and with appropriate tasksharing.

• Fly the Aircraft, Fly the Aircraft, Fly the Aircraft…
• Don’t allow anything to distract you from your role as PF or PM!
• PM must ACTIVELY MONITOR the flight parameters and highlight any excessive deviations.
• Both pilots must maintain their Situational Awareness and immediately resolve any uncertainty as a crew.

2. Use the appropriate level of automation at all times.

• The appropriate level of automation depends upon the situation and the task. Pilot judgment prevails, including selecting manual flight.
• Understand the implication of the intended level of automation.
• Select the intended level.
• Confirm the expected aircraft reaction.

3. Understand the FMA at all times.

• Monitor your FMA.
• Announce your FMA.
• Confirm your FMA.
• Understand your FMA.

4. Take action if things do not go as expected.

• By PF changing the level of automation.
• By PF reverting to manual flight.
• By PM taking action:

- Question.
- Challenge.
- Take-over.

1.2. РАСПРЕДЕЛЕНИЕ ОТВЕТСТВЕННОСТИ И ОБЯЗАННОСТЕЙ.

Пилот, занимающий левое кресло - CM1	**Пилот, занимающий правое кресло - CM2**
На предполетной подготовке:	
анализ метеообстановки и изучение NOTAM	
определение количества заправляемого топлива	
определение технического состояния ВС	
проведение брифинга с кабинным экипажем	
проверка наличия необходимых документов	проверка наличия аварийного оборудования
подготовка пилотской кабины	
ввод данных в FMGS (PF)	
расчет взлетно-посадочных характеристик	
оповещение пассажиров	ведение радиосвязи
взаимодействие с наземным персоналом	
На предполетной подготовке и в полете:	
Взаимодействие с пассажирами и с кабинным экипажем	заполняет Navigation Log (IFlightDoc)

Все дополнительные процедуры, такие как «manual engine start», «engine start with external pneumatic power» и др., а также процедура противообледенительной обработки ВС выполняются по принципу: CM2 читает, CM1 выполняет.

Пилотирующий пилот - PF	**Пилот осуществляющий контроль - PM**
В полете:	
выдерживает траекторию и осуществляет контроль параметров полета (высоты, скорости, курса, крена, режима работы двигателей и т.д.)	своевременно информирует об отклонениях от расчетных параметров полёта
озвучивает изменения на FMA	проверяет соответствие озвученных изменений фактическим
дает команды на изменение конфигурации ВС	выполняет команды PF
управляет рычагами управления двигателей (thrust levers setting)	ведет радиосвязь, взаимодействует с пассажирами и с кабинным экипажем
подает команды и выполняет Контрольные листы (CHECKLISTS)	осуществляет чтение и контроль правильности выполнения Контрольных

Пилотирующий пилот - PF	Пилот осуществляющий контроль - PM
	листов (CHECKLISTS)
	собирает метео информацию по основному и запасным аэродромам
	осуществляет программирование FMGS

При потере индикации пространственного положения ВС одним из пилотов, PF остается пилот, имеющий индикацию. Если потеряна индикация пространственного положения у обоих пилотов, PF становится CM1.

CM1 всегда является PF в случаях:

- выполнения руления ВС;
- метеоусловия не позволяют второму пилоту пилотировать ВС;
- выполнения захода по процедурам CAT II/III, AUTOLAND;
- выполнения прерванного взлета;
- отказа двух двигателей;
- потери электропитания (ELEC EMER CONFIG);
- во всех других случаях по решению КВС.

Техника контроля пилотирования при выполнении полета в ручном режиме:

В случае выполнения КВС или инструктором функций PM следует выполнять следующие требования:

- при выполнении взлета, до подключения автопилота, левая (правая) рука КВС (инструктора) находится на sidestick, ноги на педалях, не прилагая усилий к органам управления, не вмешиваясь в управление и быть готовым взять управление на себя в случае допущенных PF отклонений.

- при выполнении захода на посадку с высоты 1000 футов, левая (правая) рука КВС (инструктора) находится на sidestick, ноги на педалях, не прилагая усилий к органам управления, не вмешиваясь в управление и быть готовым взять управление на себя в случае допущенных PF отклонений.

С момента запуска двигателей (и/или с момента начала буксировки) до набора эшелона полета и с начала снижения до выключения двигателей (и/или до момента окончания буксировки) все члены летного экипажа обязаны находиться на своих рабочих местах, используя для ведения радиосвязи головные гарнитуры. Переключатель INT/RAD на АСР должен находиться в положении INT. В полете как минимум один ЧЛЭ постоянно использует головные телефоны (авиагарнитуру). Если авиагарнитура не используется, она должна находиться в специально отведенном для этого месте (headset stowage).

Второй пилот, при необходимости, может выполнять руление ВС по решению КВС на прямолинейных участках при отсутствии факторов, усложняющих руление.

Заруливание на стоянку и выруливание со стоянки выполняет CM1.

1.3. ПРИНЦИП «СТЕРИЛЬНОЙ КАБИНЫ» (STERILE COCKPIT RULE)

Изложен в РПП часть А, глава 8. (А-8.3.13.5)

1.4. РАБОТА С КОНТРОЛЬНЫМИ ЛИСТАМИ

NORMAL CHECKLIST

Выполнение стандартных эксплуатационных процедур на определенных этапах полёта заканчивается выполнением Контрольных листов (**NORMAL CHECKLIST**).

Данный Normal Checklist (приложение 5, п. 5.1) разработан с учетом требований FCOM (QRH), предназначен непосредственно для использования членами летного экипажа в нормальной эксплуатации и размещается в пилотской кабине отдельно в ламинированном виде в двух экземплярах.

Например:

«BEFORE START CHECKLIST». . . . . . **ORDER CM1**

Команду на выполнение очередного раздела контрольного листа даёт PF (на земле CM1). Если PF (CM1) своевременно не подает команду на выполнение CHECKLIST, PM (CM2) должен напомнить.

BEFORE START CHECKLIST . . . . . **COMPLETE BOTH**

CM2 (PM) берет в руки палетку с Контрольными листами, находит соответствующий раздел, зачитывает содержание пунктов, которые требуют проверки и подтверждения.

Переход к следующему пункту производится только после получения ответа.

Пилоты должны отвечать на соответствующий пункт только после того, как проверено фактическое состояние системы.

Если пункт карты выполняется обоими пилотами, первым отвечает **PF** (на земле **CM1**).

Если состояние системы не соответствует этапу полета, то необходимо прервать чтение, выполнить необходимое действие и только затем продолжить чтение.

Если правильные действия выполнить невозможно, то член экипажа дает ответ, отражающий существующую ситуацию.

- **If there are two parts of CHECKLIST:**

  «DOWN TO THE LINE» . . . . . **ANNOUNCE PM**

  По окончании чтения раздела до линии PM объявляет о выполнении установленной фразой *«DOWN TO THE LINE»*.

  «BELOW THE LINE» . . . . . **ORDER PF**

  Для продолжения чтения раздела PF подает команду: *«BELOW THE LINE».*

- **If interruption needed:**

  «BEFORE START CHECKLIST» . . . . . **ORDER CM1**

  Если чтение необходимо прервать на выполнение другой операции (радиосвязь), то CM1(PF) подает команду на повторное выполнение CHECKLIST с начала.

«BEFORE START C/L COMPLETE» . . . . . **ANNOUNCE CM2**

По окончании чтения всего раздела CM2(PM) объявляет о выполнении установленной фразой *«BEFORE START CHECKLIST COMPLETE».*

При выполнении пункта CHECKLIST **«ECAM MEMO»,** контроль осуществляют оба пилота.

REFUELING and DEFUELING CHECKLIST

Общая информация по заправке топливом ВС содержится в РПП часть А гл. 8.2.2 и FCOM PRO/NOR/SUP/FUEL.ЧЭ ответственным за заправку ВС, для контроля выполнения процедур, необходимо пользоваться Refueling Check List раздела 6.3 SOP.

1.5. ПРИНЯТИЕ РЕШЕНИЯ

Изложены в РПП часть А, глава 8.

1.6. ПЕРЕДАЧА УПРАВЛЕНИЯ

Экипаж ВС должен постоянно придерживаться принципа «ONE HEAD UP» и в случае необходимости отвлечения PF (подготовка к снижению, внесение изменений в FMGS и т.п.) он должен передать свои обязанности другому члену экипажа в установленном порядке.

В случае оценки хотя бы одного элемента техники пилотирования ниже 4, КВС обязан взять управление на себя, если функции PF выполнял второй пилот.

Передача управления осуществляется по команде с последующим подтверждением. Командир ВС может взять управление ВС в любой момент времени и на всех этапах полёта, после этого он выполняет функции PF, а второй пилот - функции PM.

ВНИМАНИЕ! Обратная передача управления допускается при условии стабилизированного полета до ТВГ.

При выполнении маневра ухода на второй круг повторная передача управления разрешается после выполнения **«AFTER TAKEOFF» CHECKLIST.**

«YOU HAVE CONTROL» . . . . . **ORDER PF**
«I HAVE CONTROL» . . . . . **ANNOUNCE PM**

ВЗЯТИЕ УПРАВЛЕНИЯ

«I HAVE CONTROL». . . . . . **ORDER PF**
«YOU HAVE CONTROL» . . . . . **ANNOUNCE PM**

ПЕРЕДАЧА ВЕДЕНИЯ РАДИОСВЯЗИ

«YOU HAVE COMMUNICATION» . . . . . **ANNOUNCE PM**
«I HAVE COMMUNICATION» . . . . . **ANNOUNCE PF**

ВОЗОБНОВЛЕНИЕ ВЕДЕНИЯ РАДИОСВЯЗИ

«I HAVE COMMUNICATION» . . . . . **ANNOUNCE PM**
«YOU HAVE COMMUNICATION» . . . . . **ANNOUNCE PF**

ПЕРЕДАЧА УПРАВЛЕНИЯ И РАДИОСВЯЗИ

«YOU HAVE CONTROL AND COMMUNICATION» . . . . . **ORDER PF**
«I HAVE CONTROL AND COMMUNICATION» . . . . . **ANNOUNCE PM**

В случае возникновения необходимости вмешательства в управление ВС PM должен отчетливо произнести ***«I HAVE CONTROL»***, нажать кнопку приоритета на sidestick и удерживать ее до полного взятия управления ВС.

Управление ВС перед взлётом передаётся CM2 на исполнительном старте после вывода самолёта на осевую линию ВПП. На взлете CM1 всегда управляет двигателями до скорости **V1** и, в случаях, требующих прекращения взлета, осуществляет все действия по управлению двигателями и тормозными системами.

1.7. ИСПОЛЬЗОВАНИЕ АВТОМАТИЧЕСКИХ РЕЖИМОВ УПРАВЛЕНИЯ

Рекомендовано пилотирование с использованием командных стрелок (FD) и автомата тяги (A/THR) в течение всего полета. При заходе по ILS, если экипаж не намеревается совершить посадку с использованием автопилота (AP) (autoland), необходимо руководствоваться ограничениями FCOM/LIM/AFS/AUTOPILOT FUNCTION.

Long term interface - MCDU	Short term interface - FCU
Как правило, выполняются PF при временной передаче управления PM . При включенном AP допускается кратковременная работа PF с MCDU **без передачи управления:** – Для выбора страницы MCDU – DIR TO (в горизонтальном полете) – ACTIVATE APPROACH PHASE Оба пилота должны быть проинформированы о любых изменениях в MCDU.	Выполняются: – PF , если автопилот включен; – PM по команде PF. PF должен проверить и объявить изменения режимов AP-FD-A/THR на FMA и целевые значения высоты, курса и скорости на PFD, а PM должен это проверить и подтвердить.
При ручном пилотировании ВС, PF запрещаются действия на MCDU и FCU (кроме использование EFIS control panel и включения автопилота).	

При использовании функции MCDU **DIRECT TO** требуется обязательное подтверждение правильности ввода данных обоими пилотами: пилот, выполняющий действия на MCDU (как правило, **PM** по команде **PF**), должен запросить подтверждение фразой **«CONFIRM DIRECT TO… (WPT)… *(WITH ABEAM POINTS / RADIAL IN / RADIAL OUT)*»,** а другой пилот, убедившись в правильности выполняемой операции, должен подтвердить изменения фразой **«CONFIRMED»**.

В случае, когда ВС не следует по запланированной траектории, PF должен:

- немедленно установить соответствующие значения целей на FCU;
- задействовать необходимые режимы на FCU;
- убрать руку с glareshield.

Если продолжить полет по запланированной траектории, используя FCU, не удается, PF должен:

- отключить автопилот кнопкой отключения, расположенной на sidestick;
- выключить FD со своей стороны;
- дать команду PM на выключение FD со стороны PM.

Запрещается использование FD только на одном PFD.

Ручное пилотирование ВС используется с целью поддержания надлежащего уровня или проверки техники пилотирования, либо при условии, что состояние систем ВС не позволяет осуществлять автоматическое управление ВС.

При ручном управлении ВС с использованием FD, PF обязан выполнять их команды - FD должны находиться в центре. Иначе директора необходимо отключить.

При заходе на посадку, с момента начала индикации радиовысотомера PF должен держать одну руку на рычагах управления двигателями, другую на sidestick, а ноги на педалях. При включенном автопилоте допускается кратковременная работа PF на FCU для выполнения необходимых действий.

При использовании speedbrakes PF держит руку на рычаге управления speedbrakes.

Если заход на посадку и посадка планируется без использования A/THR, автомат тяги должен быть отключен не ниже 1000 футов AAL.

1.8. УСЛОВИЯ СТАБИЛИЗИРОВАННОГО ЗАХОДА НА ПОСАДКУ

Основные положения процедуры стабилизированного захода на посадку изложены в РПП часть А глава 8 п. 8.3.1.10 (14)

Заход на посадку считается стабилизированным, если при достижении высоты 1000 ft AAL и ниже выполняются следующие условия:

- ВС находится на расчетной траектории;
- Режим работы двигателей, как правило, выше малого газа;
- ВС (механизация крыла и шасси) находится в посадочной конфигурации;
- Проведены все необходимыезжхжжэхзз брифинги и выполнена карта контрольных проверок;
- Требуются лишь небольшие изменения по крену, тангажу и режиму работы двигателей для выдерживания следующих контрольных параметров:
- скорость в пределах V speed target – 5 kt и V speed target +10 kt;

Примечание: *Допускается кратковременное превышение расчётной скорости захода на посадку более чем на 10 kt на высотах ниже 1000 ft над уровнем аэродрома при заходе на посадку в условиях болтанки или порывистого ветра, сложного рельефа местности аэродрома посадки.*

Допускается кратковременное превышение расчётной скорости захода на посадку более чем на 10 kt при пересечении 1000 ft над уровнем аэродрома на аэродромах с предписанными скоростными ограничениями (например, 160 узлов до удаления 4 NM от порога ВПП), при условии устойчивого уменьшения скорости захода на посадку до

расчётной в минимально возможное время после пересечения 1000 ft над уровнем аэродрома. Также это необходимо оговаривать при проведении предпосадочной подготовки – approach briefing.

- вертикальная скорость не более 1000 футов в минуту;
- тангаж в пределах от -2.5° до + 10°;
- крен не более 7°.

Примечание: *Для визуального захода и захода Circle-to-land допускаются следующие исключения из приведенного выше правила:*

- При визуальном заходе вывод ВС на посадочный курс ВПП и вывод ВС из крена должен быть закончен до высоты не ниже 500 ft AAL;
- При заходе Circle-to-land необходимо придать ВС посадочную конфигурацию и выполнить карту контрольных проверок до высоты не ниже 500 ft AAL, а вывод ВС на посадочный курс ВПП и вывод ВС из крена должен быть закончен до высоты не ниже 400 ft AAL.

Отклонения ВС от заданной траектории при выполнении захода на посадку по приборам на высоте 1000 ft AAL и ниже, до высоты принятия решения (DA/DH) или минимальной высоты снижения (MDA/MDH), не превышают следующие:

- для захода по ILS не более 1 точки по курсовому / глиссадному маяку;
- для неточных заходов на посадку с использованием традиционных радионавигационных средств:

  - не более 1 точки по курсовому маяку (LOC);
  - не более 1/2 точки или 2,5° от заданного радиала маяка VOR;
  - не более 5° от заданного пеленга NDB.

- для захода на посадку RNP / RNAV (GNSS):

  - XTK не более 0,3 NM;
  - V/DEV не более 3/4 точки (75 футов) ниже заданной траектории при использовании LNAV/VNAV minima.

- для захода на посадку RNP AR / RNAV (RNP):

  - XTK менее 1 RNP;
  - V/DEV менее 3/4 точки (75 футов).

При выполнении захода на посадку по приборам ниже высоты принятия решения (DA/DH) или минимальной высоты снижения (MDA/MDH) основными ориентирами для оценки траектории ВС являются наземные визуальные ориентиры, связанные с ВПП. Заход может быть продолжен, если ВС находится на расчетной траектории, снижение выполняется с постоянным углом наклона траектории, а расчет на посадку обеспечивает ее выполнение в зоне приземления.

В момент пересечения порога ВПП вектор путевой скорости ВС не должен выходить за пределы ширины ВПП.

Примечание: *Если для выполнения захода из-за особенностей аэродрома требуется превышение установленных значений вертикальной скорости, такие превышения допустимы, но должны быть заранее обсуждены на брифинге.*

Экипаж обязан прекратить снижение и выполнить уход на второй круг, если заход на посадку не стабилизирован.

1.9. УСТАНОВКА И ИСПОЛЬЗОВАНИЕ ПОДВИЖНЫХ ИНДЕКСОВ

Подвижные индексы (BUGS) резервного указателя скорости (ASI) устанавливаются:

Перед полетом	На эшелоне полета	Перед снижением с эшелона
V2 & Green dot speed	VMOMMO & Green dot speed	Vapp & Green dot speed

1.10. УСТАНОВКА ВЫСОТОМЕРОВ И ПЕРЕКРЕСТНЫЙ КОНТРОЛЬ

Основные правила установки шкалы давления барометрических высотомеров изложены в РПП часть А, п.8.3.3. «Установка давления на высотомерах».
При полете на эшелоне разрешается предустановка значения QNH аэродрома назначения на панели управления EFIS независимо каждым пилотом.

При пересечении (покидании) высоты перехода (эшелона перехода), если правила полетов не предусматривают иного:

«SET STANDARD» / «SET QNH» . . . . . .ORDER PF
При пересечении высоты / эшелона перехода PF наблюдает мигание barometer reference на PFD, и дает команду на смену системы отсчета.

(PULL STD) selector on own side . . . . . PULL / PUSH BOTH
Пилоты устанавливают нужную систему отсчета, каждый на «своей» стороне EFIS.

STANDBY ALTIMETER . . . . . SET PM

***«STANDARD (QNH) CROSSCHECKED PASSING FL__(FT) NOW» . . . . .*ANNOUNCE PM**
PM проверяет установку системы отсчета на EFIS обоих пилотов и докладывает пересекаемый эшелон/высоту по «своему» PFD.

***«CHECKED»* . . . . . .ANNOUNCE PF**
PF сравнивает показания текущей высоты по «своему» PFD в момент доклада PM и подтверждает соответствие.

1.11. ПРОЦЕДУРЫ ЗАНЯТИЯ И ВЫДЕРЖИВАНИЯ ЗАДАННЫХ ВЫСОТ ПОЛЕТА

С целью изменения заданной высоты (эшелона полета) PF, или PM по команде пилотирующего пилота, устанавливает заданное значение высоты на FCU и активирует выбранный режим набора высоты или снижения.

Все изменения на FMA должны быть озвучены PF (например: ***«THRUST CLIMB, OPEN CLIMB, ALT BLUE, FL90 BLUE»***), PM обязан убедиться в правильности поступившей информации и подтвердить фразой ***«CHECKED»***.

За 1000 ft до заданной высоты (эшелона полета) PM докладывает: ***«THOUSAND TO GO»***, PF подтверждает полученную информацию стандартной фразой ***«CHECKED»***.

В случае, если другое ВС в радиусе 6 nm и менее находится на высоте ±1200 ft от собственного ВС или намеревается занять высоту на 1000 ft выше или ниже заданной высоты пилотов – вертикальную скорость требуется ограничить до 1000 ft/min. В воздушном пространстве RVSM (FL290 – FL410) необходимо ограничить вертикальную скорость до 1000 ft/min за 1000 ft до заданной высоты.

Активация режима занятия и выдерживания заданной высоты (эшелона полета) озвучивается PF и подтверждается PM фразой ***«CHECKED»***.

Подробно процедуры изложены:

- РПП, часть А, глава 8:
  - п.8.3.4 Эксплуатация задатчика-сигнализатора заданной высоты,
  - п.8.3.6.4 Контроль за информацией ТА и приближением режима RA.
- РПП, часть А, глава 12:
  - п.12.3. Выполнение полетов в условиях сокращенных интервалов вертикального эшелонирования (RVSM).
- FCTM AS-TCAS – OPERATING TECHNIQUES.

1.12. НАВИГАЦИЯ ПО МАРШРУТУ ПОЛЕТА

Экипаж должен постоянно знать текущее местоположение ВС. Непрерывный контроль пути осуществляется с помощью маршрутных карт, карт подхода и захода на посадку. Для контроля безопасных высот на снижении, в случае захода на посадку методом векторения рекомендуется использование RADAR MINIMUM APPROACH CHART.

1.13. ТРЕБОВАНИЯ К ОБОРУДОВАНИЮ ВС ДЛЯ ЗАХОДА ПО CAT II/III ICAO

Изложены в FCOM LIM-AFS - AUTOMATIC APPROACH, LANDING AND ROLLOUT; FCOM PRO-NOR-SRP-FMS – APPROACH; QRH OPS.08 REQUIRED EQUIPMENT FOR CAT2 AND CAT3.

1.14. ПРЕДПОЛЕТНАЯ, ПРЕДПОСАДОЧНАЯ ИНФОРМАЦИЯ, БРИФИНГ НА ЭШЕЛОНЕ

Основные правила проведения брифинга изложены в РПП часть В, п.2.5. «Брифинг». Брифинг проводится под руководством пилотирующего пилота PF перед выполнением взлета, захода на посадку и при полете на эшелоне. Минимальное содержание брифинга изложено в палетке BRIEFING ITEMS раздел 6.2 SOP и находится на оборотной стороне NORMAL CHECKLIST.

ВНИМАНИЕ! Брифинг проводится с использованием MCDU, PFD, ND, charts (approved by company) и палетки BRIEFING ITEMS

Для проведения брифинга может использоваться как русский, так и английский язык. Следующие действия должны быть выполнены перед началом проведения брифинга:

- выполнены соответствующие процедуры подготовки пилотской кабины
- радиосредства выбраны и настроены
- данные, введенные PF в FMGS, проверены PM.

DEPARTURE BRIEFING

Предполетный брифинг (DEPARTURE BRIEFING) проводится, как правило, на стоянке после ввода и проверки данных в FMGS и на FCU обоими пилотами и должен быть завершен до окончания предполетной подготовки.

Для проведения предполётного брифинга нет необходимости ожидать данных по загрузке и получения ATC clearance.

После получения ATC clearance PF устанавливает (проверяет) и озвучивает введённые RWY in use, SID and TRANSITION assigned for departure, first cleared ALTITUDE, airborne FREQUENCY, ATC code, а PM подтверждает правильность ввода данных.

DEPARTURE BRIEFING CONFIRMATION

DEPARTURE BRIEFING CONFIRMATION выполняется только в случае изменений которые могли произойти с момента проведения **DEPARTURE BRIEFING** (например: изменение SID, состояние ВПП и т.д.). DEPARTURE BRIEFING CONFIRMATION выполняется на прямолинейном участке руления, при необходимости после остановки ВС.

PF должен подтвердить:

- First cleared ALTITUDE
- TAKEOFF RWY
- SID identification
- Departure FREQUENCY
- ATC code

PM должен проконтролировать полученную информацию.

В случае значительных изменений, подготовка к взлету и DEPARTURE BRIEFING CONFIRMATION проводятся после остановки ВС.

CRUISE BRIEFING

Брифинг на маршруте (CRUISE BRIEFING), проводится в установившемся горизонтальном полёте. Брифинг выполняется и при необходимости повторяется в зависимости от продолжительности и условий конкретного полета.

ARRIVAL BRIEFING

Предпосадочная подготовка и брифинг (ARRIVAL BRIEFING) должны быть завершены перед началом снижения (top of descent). Если текущая метеоинформация не доступна, для программирования FMGC и проведения брифинга может использоваться информация о прогнозируемых метеоусловиях. В разделе брифинга, касающегося части захода на посадку, необходимо акцентировать внимание на первоначальные действия экипажа в случае ухода на второй круг с повторением первоначальных действий: Thrust Levers - TOGA, Rotation - Perform, GA/Flaps Call out - Announce, FMA and Flaps confirmation,

Positive Climb and Gear Retraction, Activation of NAV mode, Communication with ATC, THR Red and ACC ALT actions, C/L completion. Подробно разобрать схему ухода и ограничительные высоты на маршруте, если таковые имеются.

1.15. ВЗАИМОДЕЙСТВИЕ ПРИ ВЫПОЛНЕНИИ ПОЛЕТОВ УВЕЛИЧЕННЫМ СОСТАВОМ ЭКИПАЖА

Изложено в РПП часть А, главы 4, 7.

Дополнительные члены экипажа – специалисты, включенные в задание на полет для предоставления технологического отдыха путем подмены в полете каждого члена экипажа. Дополнительный член летного экипажа в установленное время выполняет функции заменяемого пилота в полном объеме. Во время полета дополнительный член экипажа должен быть пристегнут привязными ремнями в течение всего полета. Плечевые ремни должны быть застегнуты во время взлета и посадки и при полете в условиях турбулентности.

Дополнительному члену экипажа разрешается с помощью стандартных фраз привлекать внимание членов основного экипажа к незамеченным ими событиям, угрожающим безопасности полета, а также, если услышал сигнал бедствия или команду диспетчера, адресованную экипажу и не услышанную им.

Дополнительному члену экипажа запрещается отвлекать основной экипаж посторонними разговорами и вопросами, пытаться подсказывать какие-либо действия по включению и выключению систем ВС и включать без согласования с экипажем источники освещения в темное время суток.

При включении в экипаж второго пилота, проходящего программу ввода в строй, в состав экипажа включается SAFETY PILOT – второй пилот, имеющий допуск к самостоятельным полетам на данном типе ВС, или КВС, имеющий допуск к полетам с правого кресла, или пилот-инструктор. SAFETY PILOT обязан находиться на своем рабочем месте (Observer Seat) в течение всего полета, за исключением тех периодов полета на эшелоне, когда ему необходимо отлучиться для удовлетворения своих естественных потребностей.

SAFETY PILOT контролирует действия членов основного экипажа на всех этапах полета.

Любой член экипажа, обнаруживший нарушение критериев стабилизированного захода на посадку, должен громко дать команду «NOT STABILIZED – GO AROUND».

Примечание: *По требованию любого члена экипажа при нарушении критериев стабилизированного захода на посадку КВС обязан прекратить снижение и выполнить уход на второй круг.*

1.16. ВЗАИМОДЕЙСТВИЕ ЛЕТНОГО И КАБИННОГО ЭКИПАЖА

Изложено в РПП часть А, главы 4, 8 (8.3.12.2).

1.17. ПОРЯДОК ОПОВЕЩЕНИЯ ПАССАЖИРОВ

Изложен в РПП часть А, глава 8, Приложение А/8-2.

1.18. ПРАВИЛА ВЕДЕНИЯ РАДИООБМЕНА

Процедура ведения радиосвязи изложена в РПП часть А, Глава 12.

1.19. ОБЯЗАННОСТИ ЛЕТНОГО СПЕЦИАЛИСТА-НАБЛЮДАТЕЛЯ (ОБЗЕРВЕРА)

Летный специалист-наблюдатель допускается в кабину экипажа в производственных и методических целях и размещается в кресле дополнительного члена экипажа.

Во время полета специалист-наблюдатель (обзервер) должен быть пристегнут привязными ремнями в течение всего полета. Плечевые ремни должны быть застегнуты во время взлета и посадки и при полете в условиях турбулентности.

Специалист-наблюдатель должен ознакомиться с правилами поведения и взаимодействия с экипажем при нахождении в кабине и получить инструктаж по технике безопасности и использованию аварийно-спасательного оборудования, расположенного возле его кресла.

Инструктаж проводит **СМ1**

Инструктаж должен содержать, как минимум, следующую информацию:

- порядок входа и выхода из кабины пилотов, использование двери в кабину экипажа;
- использование кресла дополнительного члена экипажа;
- использование радио гарнитуры;
- расположение и использование аварийно-спасательного оборудования (кислородная маска, спасательный жилет, спасательный канат);
- расположение и использование аварийных выходов из кабины экипажа;
- действия в случае разгерметизации и аварийной эвакуации.

РАЗРЕШАЕТСЯ:

- привлекать внимание членов экипажа к незамеченным ими событиям, угрожающим безопасности полета, сигналам бедствия или командам диспетчера, адресованным экипажу.
- использовать радио гарнитуру на рабочем месте дополнительного члена экипажа.
- принимать пищу в кабине пилотов на своем месте.

ЗАПРЕЩАЕТСЯ:

- отвлекать экипаж посторонними разговорами и вопросами;
- включать без согласования с экипажем источники освещения в темное время суток.
- вмешиваться в управление ВС, использовать органы управления, переключатели, кнопки, предохранители.

Во всех случаях, в т.ч. и в аварийной ситуации, обзервер выполняет указания КВС.

1.20. ПРЕДПОЛЕТНАЯ ПОДГОТОВКА

Члены летного экипажа обязаны явиться на предполетную подготовку не позднее, чем за 1 час до указанного в наряде («Задании на полет») времени вылета.

В транзитном аэропорту предполетная подготовка начинается после завершения послеполетных работ, а при смене экипажа – с момента окончания таможенных и иммиграционных процедур членами экипажа в аэропорту.

Технологический график предполетной подготовки экипажа

№ п/п	Этапы предполетной подготовки	Время
1	Медицинский контроль	**00 час 20 мин**
2	Получение документации, штурманская подготовка *.	
3	Изучение информации о технической готовности ВС	
4	Изучение метеорологической обстановки*	
5	Изучение NOTAM*	
6	Брифинг с бригадой бортпроводников***	
7	Уточнение необходимой заправки топливом* и получение кодовых сигналов	
8	Время в пути до ВС (пограничные и таможенные формальности **)	**00 час 10 мин**
9	Предполетный осмотр ВС, подготовка кабины ВС *	**00 час 30 мин**
ИТОГО:		**01 час 00 мин**

* Выполняется как в базовом, так и в транзитном а/п, необходимо проверить последнее обновление документов EFB.

** При выполнении международных полетов.

*** В базовом аэропорту выполняется как правило в комнате предполетной подготовки кабинных экипажей.

ВНИМАНИЕ! При возникновении нестандартных ситуаций, превышающих полномочия командира ВС и в случае отклонений от стандартного хода предполетной подготовки в базовом аэропорту (задержки, перенос вылета, неявки члена экипажа и т.п.), командир ВС обязан проинформировать ГОУП ЦУП.

2. ПОДГОТОВКА К ПОЛЕТУ

2.1. TECHNICAL CONDITION OF THE AIRCRAFT

The crew will verify the technical state of the aircraft (AIRCRAFT STATUS REPORT), with regard to airworthiness, acceptability of malfunctions (MEL/CDL), and influence on the flight plan.

2.2. 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, alternate and en route alternate airports.
- Actual weather for destination and alternates, for short range flights and recent past weather, 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.

2.3. NOTAMS

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

2.4. GPS PRIMARY AVAILABILITY

- **For RNP1 operations, RNAV(GNSS) approaches and RNAV(RNP) ✻ approaches:**

  If required by operational regulation, for specific conditions (e.g RNAV(RNP), mountainous terrain, etc.) an appropriate Ground-Based Prediction Program should be used to check the RAIM/AIME for each intended procedure (arrival, departure and alternate if required).

2.5. 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,

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.

2.6. NAT HLA OPERATIONS

RESERVED

2.7. 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 performance application of EFB.

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. Contingency allowance is 3-5 %

2.8. 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.

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.

To assist in fuel loading decision when extended delay is expected on the ground (for any reason, e.g. weather, congested traffic and so on), the following information may be helpful:

- both engines idle fuel burn - 12 kg/min (approximately);
- APU fuel burn - 2 kg/min (approximately).

FUEL TRANSPORTATION

The flight crew must check the policy covering the “tankering” of fuel on sectors where there is a favorable fuel price differential or operational requirement.

Remember that carrying unnecessary extra fuel increases the fuel consumption 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.).

REFUELLING

Once the refueling is completed FO should check the amount of uplifted fuel. If a difference between calculated arrival fuel and uplifted fuel against actual fuel displayed on ECAM fuel page is greater than 100 kg, fuel check will need to be performed by maintenance and if needed flight log should be filled in for corrections (APU run, engine run etc.) or revised refuel sheet should be requested.

Captain should be satisfied that fuel has been loaded correctly and all appropriate entries have been made in technical log book.If refueling with passengers on board is required flight crew should refer to OM Part B Chapter 7 paragraph 7.2.

WARNING During refueling operations, ensure that no HF transmission is performed. During refueling, do not operate the external lighting. Electrical transients caused by switching among the APU and external power during automatic refueling may stop the process.

2.9. CABIN CREW BRIEFING

Изложен в РПП часть А. Глава 8 п.8. 3.1.1(J) «Совместный брифинг летного и кабинного экипажей».

2.10. CM2 SAFETY EXTERIOR INSPECTION

Items marked by asterisks (*) 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 CM2**

*** LANDING GEAR DOORS . . . . . .CHECK POSITION CM2**

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 CM2**

Observe that the APU inlet and outlet are clear.

NOTE: *If necessary perform additional inspection according to FCOM PRO-NOR-SUP-ADVWXR - GROUND OPERATIONS IN COLD WEATHER CONDITIONS - SAFETY EXTERIOR INSPECTION.*

2.11. CM1 TECHNICAL CONDITION OF THE AIRCRAFT

AIRCRAFT TECHNICAL STATUS . . . . . .CHECK CM1

CM1 reviews the Aircraft Technical Log Book, verifies that the certificate of maintenance and daily inspection are up to date and signed. Check the differed or carried forward defects.
Check the deferred defects list items, and any relevant MEL/CDL requirements.
If refueling has already been completed, check the uplift.
Check that all necessary documents according to Company Operation Manual (Часть А,Глава 8, Приложение 1) are on board.

PARKING BRAKE . . . . . .ON CM1
The parking brake must be on during exterior inspection to allow the flight crew to check brake wear indicators.

NAV & LOGO lights. . . . . SET AS RQRD CM1
Set 1 - for the first flight of the day / 2 – for the second one.
At night time WING LIGHT switch may be set ON to detect ice accretion.

EXTERIOR WALK AROUND . . . . . .PERFORM CM1

2.12. CM2 PRELIMINARY COCKPIT PREPARATION

Items marked by asterisks (*) are the only steps to be completed during a transit stop.
The following procedure, performed by the CM2 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. Included is APU starting and the establishment of electrical and pneumatic power.

* REAR and OVERHEAD CIRCUIT BREAKERS panels

REAR and OVERHEAD CIRCUIT BREAKERS panels . . . . . .CHECK CM2
Check that all circuit breakers are set. Reset as necessary.

RAIN REPELLENT

RAIN RPLNT indicators ❄ . . . . . .CHECK PRESSURE and QAUNTITY CM2

CAUTION: Never use rain repellent to wash the windshield and never use it on a dry windshield.

EMERGENCY EQUIPMENT

CM2 checks the following equipment:

- Escape ropes stowed
- Oxygen masks stowed
- Flashlights stowed
- Portable fire extinguisher lockwired and pressure in the green area
- Life jackets stowed
- Smoke hoods stowed and serviceable
- Gloves
- Axe stowed

Emergency equipment shall be checked:

- Prior to the first flight of the day;
- On an aircraft after it has been left unattended by a flight crew for any period of time;
- After new flight crew has assumed control of the aircraft.

AIRCRAFT POWER UP

*** RADAR**

***RADAR . . . . . .OFF CM2**

***PWS . . . . . .OFF CM2**

***GAIN . . . . . .AUTO/CAL CM2**

***MODE selector . . . . . AS RQRD CM2**

ENG

MASTER 1 and 2 . . . . . OFF CM2

MODE selector . . . . . .NORM CM2

L/G

L/G lever . . . . . Check DOWN position CM2

WIPERS

WIPERS . . . . . OFF CM2

ELEC

- **If the aircraft has not been electrically supplied for 6 hours or more, perform the following check :**

BAT 1 and 2 . . . . . .CHECK OFF CM2

BAT 1 and 2 VOLTAGE . . . . . CHECK ABOVE 25.5 V CM2

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

- **if battery voltage is at or below 25.5 V :**

  A charging cycle of about 20 minutes is required.

  BAT 1 and 2 . . . . . AUTO CM2

  EXT PWR . . . . . ON CM2

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

  - **After 20 minutes:**

    BAT 1 + 2 . . . . . .OFF CM2

    BAT 1 and 2 VOLTAGE . . . . . .CHECK ABOVE 25.5 V CM2

    BAT 1 + 2 . . . . . AUTO CM2

- **If battery voltage is above 25.5 V :**

  BAT 1 and 2 . . . . . .AUTO CM2

  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 CM2

- **EXT PWR (when AVAIL light is on) . . . . . .ON CM2**

APU FIRE TEST/APU START

WARNING	The automatic shutdown of the APU and the discharge of the APU fire extinguisher bottle may occur if the flight crew presses the APU FIRE test pb for more than 3 seconds.

APU FIRE

APU FIRE pushbutton . . . . . IN and GUARDED CM2

AGENT light . . . . . CHECK OUT CM2

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

APU FIRE TEST pushbutton . . . . . .PRESS CM2

Check:

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

***APU START**

NOTE: *If needed postpone APU start in accordance with local airport regulation*

- **If EXT PWR ON light is on :**

APU MASTER switch . . . . . .ON CM2

ON light comes on.
APU page appears on ECAM.

APU START . . . . . ON CM2

NOTE: *Wait at least 3 s before selecting APU START pb-sw after pressing APU MASTER SW*

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 CM2

External power may be kept ON to reduce the APU load, especially in hot conditions: When APU BLEED is ON, keeping the EXT PWR ON enables to increase the bleed air flow of the APU, thus improving the efficiency of the air conditioning.

- **If EXT PWR ON light is out:**

APU MASTER switch . . . . . .ON CM2

ON light comes on.

APU START . . . . . ON CM2

NOTE: *Wait at least 3 s before selecting APU START pb-sw after pressing APU MASTER SW*

At 95% RPM:

- START ON light goes out.
- AVAIL 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.

NOTE: *For more information on APU starter limitations and APU operations during refueling:*

- Refer to FCOM LIM-APU APU Start.

- Refer to FCOM LIM-APU APU Start/Shutdown during Refueling/Defueling.

AIR COND

*** APU BLEED . . . . . .ON CM2**

Do not use APU BLEED, if the ground personnel confirms that a LP or HP ground air unit is connected to the aircraft.

To determine if an HP ground air unit is connected, the flight crew should also check on the BLEED SD page, if there is pressure in the bleed air system.

ALL WHITE LIGHTS . . . . . OFF CM2

X BLEED . . . . . .AUTO CM2

Zone temperature selectors . . . . . .AS RQRD CM2

Full range temperature is 24 ± 6° C (75±11°F).

CARGO HEAT

SELECTORS . . . . . AS RQRD CM2

Full range temperature is 15 ± 10° C (59±19°F)

* COCKPIT LIGHTS

*** COCKPIT LIGHTS . . . . . AS RQRD CM2**

- Set OVHD INTEG LT. STBY COMPASS, DOME, ANN LT switches as required.
- Set glareshield and FCU INTEG LT.
- Set pedestal 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.

* ECAM

*** RECALL . . . . . PRESS CM2**

Press the RECALL pushbutton for at least 3 seconds, to recall all warnings that have been cleared or cancelled.

- If applicable, check warnings are compatible with the MEL, then CLEAR or CANCEL them.
- If any action is required, call maintenance personnel as soon as possible.

*** DOOR . . . . . PRESS CM2**

If the oxygen pressure is half boxed in amber, check the "MIN FLT CREW OXY CHART" to verify if the pressure is sufficient for the scheduled flight (Refer to FCOM LIM-OXY Minimum Flight Crew Oxygen Pressure).

*** HYD . . . . . .PRESS CM2**

Check that the quantity indexes are in the normal filling range.

NOTE: *The volume of the hydraulic fluid in the reservoirs may change with Outside Air Temperature. As a result, the reservoir fluid level that appears on the HYD SD page may be outside of the normal range with no HYD RSVR LO AIR PR or HYD RSVR LO LVL warning. If the fluid level is outside of the normal range, contact maintenance to determine if service is required.*

*** ENG . . . . . .PRESS CM2**

Check that the oil quantity is at, or above, 9,5 qts + estimated consumption (maximum average estimated consumption ~ 0.5 qt/h).

F/CTL

FLAPS . . . . . CHECK POSITION CM2

Check the upper ECAM display to confirm that FLAPS position agrees with handle position.

*** SPEEDBRAKE lever . . . . . .CHECK RETRACTED and DISARMED CM2**

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

* PARKING BRAKE

*** PARKING BRAKE . . . . . ON CM2**

ACCU PRESS & BRAKES PRESS indicators . . . . . CHECK CM2

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: *Applicable to aircraft without Alternate Braking Control Unit (ABCU) (classic aircraft)*

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").

Y ELEC PUMP . . . . . CHECK OFF CM2

CHOCKS . . . . . .CHECK IN PLACE CM2

PARKING BRAKE . . . . . .OFF CM2

BRAKE PEDALS . . . . . PRESS CM2

Apply maximum pressure on both pedals.

BRAKE PRESSURE (on BRAKE press indicator) . . . . . CHECK CM2

Pressure must build up without delay 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 CM2

PARKING BRAKE . . . . . .ON CM2

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

PRINTER

PRINTER PAPER . . . . . CHECK CM2

Ensure that there is paper in the printer – check visible part of the paper roll in the printer slot.

NOTE: *If there is a transfer of duties during this flight, the crew must remind the incoming flight crew of the applicable OEB(s) during the briefing when transferring the duties.*

2.13. CM1 EXTERIOR INSPECTION

The exterior walkaround ensures that the general condition of the aircraft is satisfactory and that the visible aircraft components and equipment are safe for the flight:

– There is no impact damage to the structure

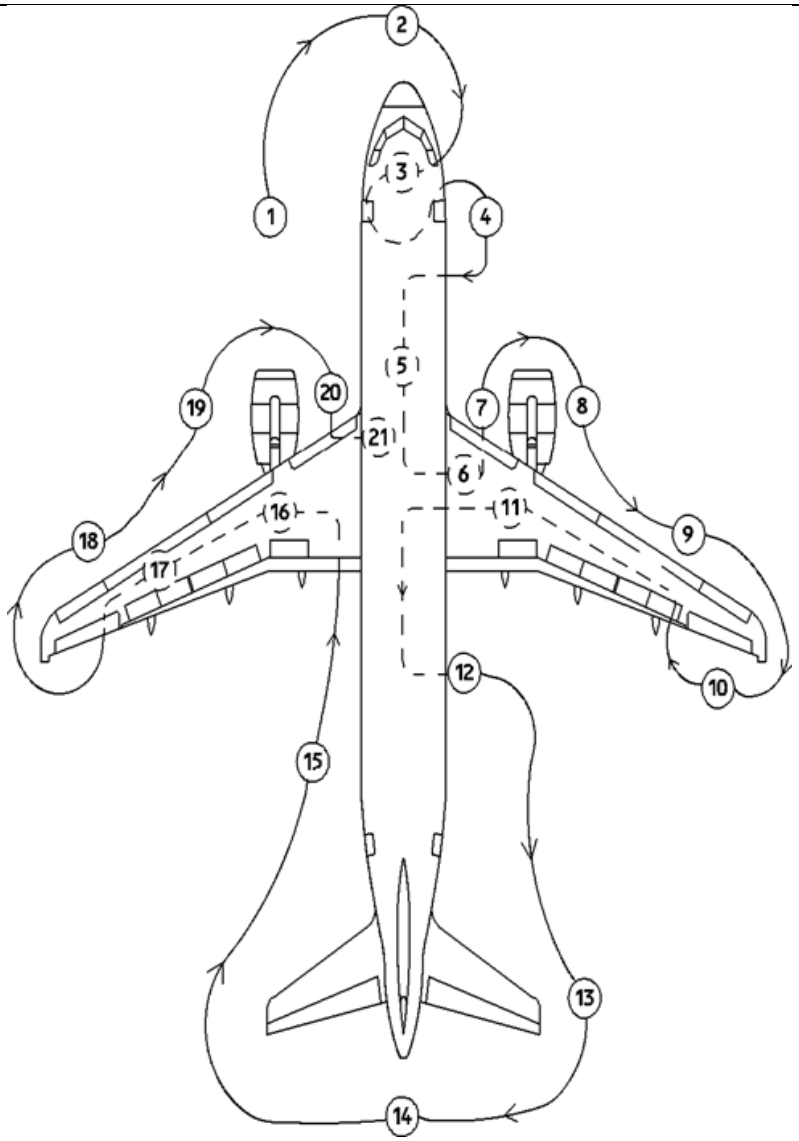
– There is no evident fuel, oil, or hydraulic leak

– All ground access doors are closed.

The CM1 must perform a complete walkaround before each flight.

The parking brake must be set to ON during the eжжxterior walkaround, in order to enable the flight crew to check brake wear indicators.

NOTE: *If necessary perform additional inspection according to FCOM PRO-NOR-SUP-ADVWXR - GROUND OPERATIONS IN COLD WEATHER CONDITIONS - EXTERIOR WALKAROUND.*



(1) LH FWD FUSELAGE

AOA probes . . . . . CONDITION
F/O 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

Pitot 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
(Must be in place if two main landing gear chocks removed)
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 ✻ . . . . . CLOSED
Antennas . . . . . CONDITION
Check all antennas condition, and check that the RA antennas are clean
Drain mast . . . . . CONDITION
RAM air inlet flap . . . . . CONDITION
LP and HP ground connection doors . . . . . CLOSED
Anticollision 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 level. . . . . FLUSH
Fuel water drain valve tank . . . . . NO LEAK
Landing light . . . . . CONDITION
Slat 1 . . . . . CONDITION

(7) ENG 2 LH SIDE

Oil fill access door . . . . . CLOSED
Thrust reversers. . . . . CLOSED/LATCHED
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
Thrust reversers . . . . . CLOSED/LATCHED
Turbine exhaust . . . . . CLEAR
Pylon/access panel . . . . . CONDITION/CLOSED
Fan cowl doors . . . . . CLOSED/LATCHED

(9) RH WING LEADING EDGE

Slats 2, 3, 4, 5 . . . . . CONDITION
Inner and outer cells magnetic fuel level. . . . . FLUSH
Fuel water drain valve . . . . . 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
Antennas on top of fuselage . . . . . CHECK CONDITION

(11) RH L/G AND FUSELAGE

Chocks . . . . . REMOVED
(Must be in place if nose wheel chocks removed)
Wheels and tires . . . . . CONDITION
Brakes and brake wear ind . . . . . CONDITION
Torque link damper ✻. . . . . CONDITION

Hydraulic lines . . . . . CHECK
Landing gear structure . . . . . CHECK
Downlock springs . . . . . CHECK
Safety pin . . . . . REMOVED
Ground hydraulic connection yellow . . . . . CLOSED
Shroud fuel drain . . . . . CONDITION /NO LEAK

(12) RH AFT FUSELAGE

RA Antennas . . . . . CONDITION
(Check that the RA antennas are clean)
Cargo door and selector panel . . . . . CHECK
Bulk door ✻ . . . . . CHECK
Toilet service access door . . . . . CLOSED
(May be opened if toilet is being servicing)
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 light . . . . . CONDITION
Fire extinguisher overpressure indication (red disc) . . . . . IN PLACE

(15) LH AFT FUSELAGE

Stabilizer, elevator, fin, and rudder . . . . . CONDITION
Potable water service door . . . . . CLOSED
(May be opened if water system is being servicing)
Ground hydraulic connection blue door. . . . . CLOSED
Ground hydraulic connection green and reservoir filling door. . . . . CLOSED

(16) LH LANDING GEAR

Chocks . . . . . REMOVED
(Must be in place if nose wheel 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 surfaces . . . . . .CONDITION
Static dischargers . . . . . .CHECK
Antennas on top of fuselage . . . . . .CHECK CONDITION

(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 cells magnetic fuel level. . . . . FLUSH
Slats 2, 3, 4, 5 . . . . . CONDITION

(19) ENG 1 LH SIDE

Oil fill access door . . . . . CLOSED
Thrust reversers . . . .CLOSED/LATCHED
Fan cowl doors . . . . . CLOSED/LATCHED
Drain mast . . . . . .CONDITION/NO LEAK
Engine inlet and fan blades . . . . . .CHECK
Pylon/access panel . . . . . .CONDITION/CLOSED

(20) ENG 1 RH SIDE

Vent inlet . . . . . .CLEAR
Pressure relief/Start valve handle access door . . . . . CLOSED
Thrust reversers . . . . . .CLOSED/LATCHED
Turbine exhaust . . . . . .CLEAR
Fan cowl doors . . . . . .CLOSED/LATCHED

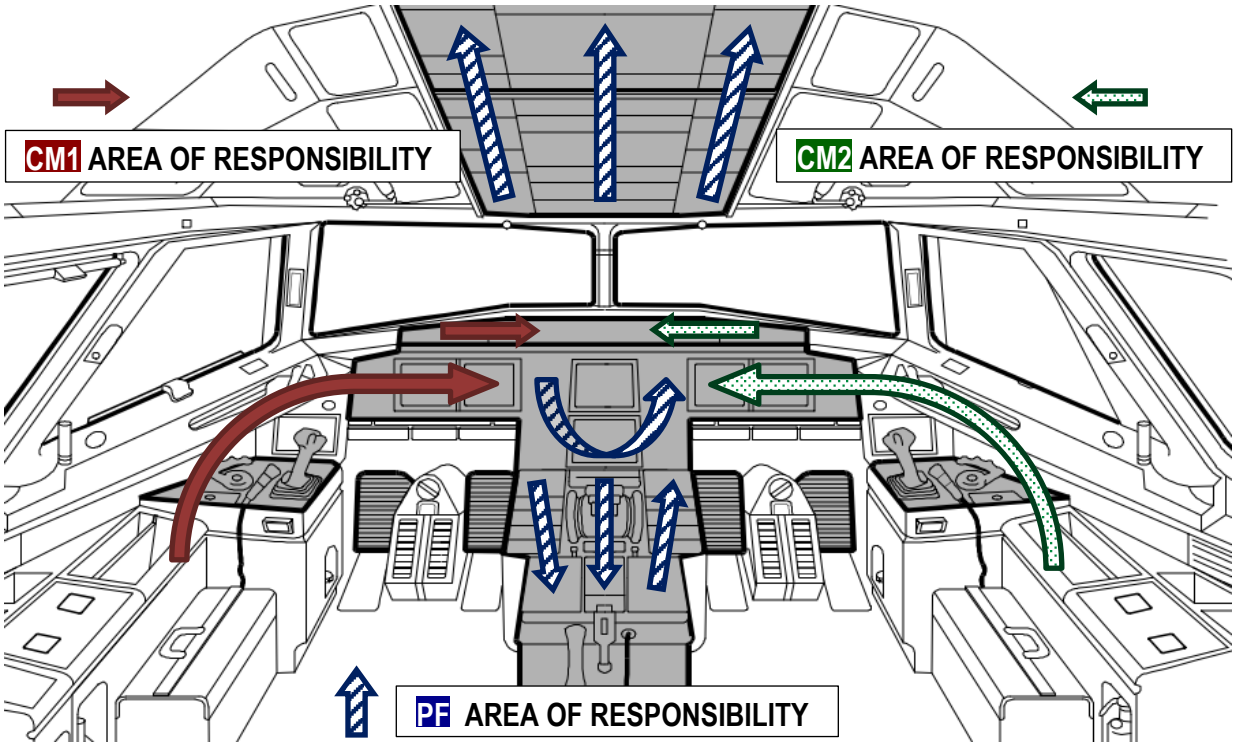
(21) LH CENTER WING

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

2.14. COCKPIT PREPARATION

Items marked by asterisks (*) are the only steps to be completed after a transit stop without flight crew change. Otherwise, the new flight crew performs all the items.

The PF and PM should perform the cockpit preparation according to the panel scan sequence and the task sharing defined below.



***GEAR PINS and COVERS . . . . . .CHECK CM1**

Check that three are on board and stowed.

COCKPIT DOOR

ANN LT . . . . . .TEST CM1

Check that the OPEN and FAULT lights (on the pedestal), and the three STRIKE STATUS lights (on the overhead panel) come on.

ANN LT . . . . . .BRT / DIM CM1

Check that all lights go off.

*** PROBE/WINDOW HEAT**

*** PROBE/WINDOW HEAT . . . . . CHECK AUTO CM1**

Set ON if the air temperature approaches, or falls below freezing point (0°C) and there is precipitation or condensation.

NOTE: *Ensure that the probe covers are removed in order to prevent it from melting.*

CAUTION: With ice or snow accumulated on the windshield and/or the upper cockpit fuselage, and if the PROBE/WINDOW HEAT is on, melted ice or snow running down from these areas could re-freeze on the fuselage area below, if the temperature is very low. This could create ice build-up on the forward fuselage that could possibly disturb the airflow around the static/pitot/angle-of-attack probes (FCOM PRO-NOR-SUP-ADVWXR - GROUND OPERATIONS IN COLD WEATHER CONDITIONS).

COCKPIT DOOR . . . . . .CHECK CORRECT OPERATION CM1

• 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 OPEN indication goes off.

• Use mechanical override and check that the door opens normally, and that it closes when the mechanical override is used.

• Report Cabine Crew when ready for emergency code operation check.

AIRCRAFT ACCEPTANCE

*** TECHNICAL CONDITION OF THE AIRCRAFT . . . . . CONFIRM CM1**

CM1 discusses with **CM2** the technical condition of the aircraft (deferred defect list). This includes all of the following: airworthiness, acceptability of the MEL, or the Configuration Deviation List (CDL). Both pilots also check the , influence of the technical condition of the aircraft on the flight plan.

- Crosscheck with ECAM recall.

NOTE: *It is recommended to review and discuss information concerning the MEL/CDL status including FCOM procedures if any, at briefing room or before the aircraft acceptance procedure initiation.Following technical condition of the aircraft line flight crew must check and emphasize the procedures actions only, if any. The threats of briefing items shall be used to conclude the possible consequences if any potentional risk is existed.*

*** MEL/CDL . . . . . CHECK BOTH**

Access the MEL and CDL items via the Ops Library Browser.

As appropriate, check, discuss together and activate MEL and CDL items. The activated MEL and CDL items are sent to the performance applications. Both pilots check and prepare together the MEL OPS procedures (if necessary).

*** ECAM STATUS . . . . . CHECK BOTH**

CM1 press p/b STATUS and both check, Check that INOP SYS display is compatible with MEL.If a message appears in MAINTENANCE STATUS, Refer to MEL-MI-00-08 ECAM and MAINTENANCE STATUS. (note: AP 1+2 may display, before IRS completely align).

AIRCRAFT CONFIGURATION SUMMARY . . . . . CHECK BOTH

Check systems in FCOM GEN aircraft configuration summary list. For awareness of the current aircraft configuration both pilots should discuss together the optional installed aircraft systems and functions related to the ongoing flight. Can be omitted if both pilots operate a homogenous fleet of aircraft.

*** OEB . . . . . CHECK BOTH**

Both pilots go to the OEB section of the QRH. They should review and discuss all OEBs and associated procedures if applicable to the aircraft.

AIRCRAFT ACCEPTENCE . . . . . PERFORM CM1

NOTE: *The aircraft acceptance can be performed at a later stage. However, it must be completed latest at the end of the Cockpit Preparation*

2.14.1. OVERHEAD PANEL

*** During the scan sequence of the overhead panel:**

*** ALL WHITE LIGHTS . . . . . .EXTINGUISH PF**

It is a general rule to turn off all white lights for all the systems during the scan sequence.

OXYGEN

OXYGEN CREW SUPPLY . . . . . ON PF

*** RCDR**

*** RCDR GND CTL . . . . . ON PF**

In order to perform the test, ensure that the PARK BRK is on.

CVR TEST . . . . . .PRESS AND MAINTAIN PF

The CVR test is successful when an audio test signal is heard through the loudspeakers and the CVR TEST pb is pressed and maintained. The parking brake must be ON to perform the CVR test.

Depending on the CVR model, the audio test signal is:

- **For CVR 30 minutes:**
  - A continuous tone, or
  - A short tone.
- **For CVR 120 minutes:**
  - A short tone, or
  - A short tone and a beep every 4 s, or
  - Two short tones and a beep every 4 s.

NOTE: *The audio test signal stops when the CVR TEST pb is released. The flight crew may also hear an acoustic feedback (i.e. Larsen effect) during the test. The test is still valid even if this acoustic feedback (i.e. Larsen effect) is heard.*

EVAC

CAPT and CAPT/ PURS switch . . . . . CAPT/ PURS PF

*** ADIRS**

***Mode selectors (3) . . . . . .NAV PF**

A complete IRS alignment must be performed in the following cases:

- Before the first flight of the day, or
- When there is a crew change, or
- When the GPS is not available and the NAVAIDS coverage is poor on the expected route, or
- When the GPS is not available and the expected flight time is more than 3 h.

A fast IRS alignment must be performed when the deviation of the IRS position from the FMGC position is at or above 5 nm.

To perform an alignment, the aircraft must be stopped on ground.

Do not align IRS during engine start, or while the engines are running. In the case of aircraft movement during the IRS alignment, the flight crew must perform a new full alignment.

For more information, refer to FCTM/PR-NP-SOP - COCKPIT PREPARATION - ADIRS OPERATIONS.

*** EXTERIOR LIGHTS. . . . . SET PF**

- STROBE switch to AUTO
- BEACON switch to OFF
- REMAINING EXTERIOR LIGHTS as RQRD

*** SIGNS**

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

NOTE: Leaving the EXIT or NO SMOKING selector ON prevents the emergency batteries from charging. 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**

LO : If number of passengers is below 138

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

ELEC pb (on the ECAM Control Panel) . . . . . PRESS PF

BAT 1 pb-sw and BAT 2 pb-sw . . . . . OFF then ON PF

This action initiates a charging cycle of the batteries.
10 s after setting all BAT pb-sw ON, check on the ELEC SD page that the current charge of the battery is below 60 A, and is decreasing.

- **If the charge of at least one battery is not below 60 A:**
  Wait until the end of the charging cycle of the batteries and perform this check again.

*** FUEL**

*** FUEL PUMPS . . . . . ON** PF

*** FUEL MODE SEL . . . . . CHECK AUTO** PF

- **If FUEL CTR TK PUMPS LO PR** caution is present when center tank is less than 200 kg:

  *** FUEL MODE SEL . . . . . MAN** PF

  *** CTR TK PUMP 1 and 2 . . . . . .OFF** PF

CAUTION: If the FUEL MODE SEL pushbutton is unduly left in the MAN position on ground, when the CTR TK PUMP 1 & 2 pushbuttons are not in the OFF position: There is a possibility of fuel spillage, if there are any hidden failures.

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 pushbuttons . . . . . 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 . . . . . NORM PF

VENT

ALL LIGHTS . . . . . .CHECK OFF PF

RMP 3

RMP . . . . . .ON PF

SEL LIGHT . . . . . .CHECK OFF PF

NOTE: *Use VHF3 for ACARS*

THIRD OCCUPANT AUDIO CONTROL PANEL

PA knob . . . . . RECEPT PF

This allows cabin attendant announcements to be recorded on the CVR.
For proper recording, set volume at or above medium range.

MAINTENANCE PANEL

ALL LIGHTS . . . . . CHECK OFF PF

*** CTR INSTRUMENT PANEL**

*** STBY ASI . . . . . CHECK PF**

*** STBY ALTI and STBY ALTI in meter . . . . . CHECK PF**

*** STBY HORIZON . . . . . CHECK PF**

Check no flag - Erect if necessary.

*** ISIS** ✻ **. . . . . CHECK PF**

- Adjust brightness, check IAS, altimeter readings, altimeter settings and attitude display.
- Check no flags
- Reset attitude, if necessary.

NOTE: *Use of the ISIS bugs function is not recommended.*

* CLOCK

*** CLOCK . . . . . CHECK/SET PF**

NOTE: *1. If the date is incorrect, set the date manually then set and keep the clock mode to internal (INT) mode for the whole flight.*

2. To comply with the time precision requirement (+/-1 s UTC) for ATC datalink communication, the flight crew must either:

– Use the clock in GPS mode, or

– Use the clock in INT mode and synchronize the clock with the GPS at least one time per day. This synchonization ensures that the UTC time drift is below +/- 1 s UTC.

For more information refer to FCOM AIRCRAFT SYSTEMS – INDICATING/RECORDING SYSTEMS - CLOCK.

NOSEWHEEL STEERING

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

2.14.2. PEDESTAL

*** RMP 1**

*** RMP . . . . . ON** PF

*** Green NAV Light . . . . . CHECK OFF** PF

*** SEL LIGHT . . . . . CHECK OFF** PF

*** COM FREQUENCIES . . . . . TUNE** PF

The pilot uses his onside RMP to tune any one of the VHF or HF radios.
Tune VHF 1 for ATC (only VHF 1 is available in emergency electrical configuration),
VHF 2 - 121,5 or temporary for weather, company frequencies.
VHF 3 - DATA
HF – 11193.

ACP 1

INT knob . . . . . PRESS OUT / VOLUME CHECK PF

Make sure that INT volume is turned up, to permit contact with the ground crew.

VHF 1 . . . . . CHECK PF

Check transmission and reception if affected by maintenance report.

HF 1 ✳ (if required for flight) . . . . . CHECK PF

Check transmission and reception if affected by maintenance report.
Do not transmit on HF during refueling.

INT/RAD switch . . . . . INT PF

*** WEATHER RADAR**

*** Power supply switch . . . . . CHECK OFF** PF

*** WINDSHEAR switch . . . . . CHECK OFF** PF

*** GAIN . . . . . AUTO** PF

*** MODE . . . . . AS RQRD** PF

SWITCHING panel

SWITCHING panel . . . . . CHECK PF

Check all selectors at NORM.

*** THRUST LEVERS**

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

*** ENG MASTER switches . . . . . CHECK OFF** PF

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

***PARKING BRAKE**

*** PARKING BRK . . . . . ON** PF

*** BRAKE PRESS indicator CHECK . . . . . .** PF

Check pressure on ACCU and BRAKE PRESS indicator. If it is necessary to cool brakes, parking brake may be released after checking that chocks are in place.

GRAVITY GEAR EXTN

GRAVITY GEAR EXTN . . . . . .CHECK STOWED PF

*** ATC/TCAS**

*** MODE selector . . . . . .SET STBY PF**

*** ATC SYS 1 or 2 . . . . . .SELECT PF**

For RVSM operations (refer to FCOM PRO SPO - RVSM), select SYS 1 if AP 1 is used, and SYS 2 if AP 2 is used. Only system 1 available in the Emergency Electrical Configuration.

*** ALT RPTG . . . . . ON PF**

*** THRT/ALL selector ✳ . . . . . SET ALL PF**

*** TRAFFIC selector . . . . . SET ABV PF**

ACP 2

INT knob . . . . . PRESS OUT/VOLUME CHECK PF

Make sure that INT volume is turned up.

VHF 2 . . . . . .CHECK PF

Check transmission and reception if affected by maintenance report.

NOTE: *Use VHF2 for 121,5 or temporary for ATIS etc.*

INT/RAD switch . . . . . INT PF

*** RMP 2**

RMP . . . . . .ON PF

Green NAV Light . . . . . .CHECK OFF PF

SEL LIGHT . . . . . .CHECK OFF PF

*** COM FREQUENCIES . . . . . TUNE PF**

The pilot uses his onside RMP to tune any one of the VHF or HF radios.

Tune VHF 1 for ATC (only VHF 1 is available in emergency electrical configuration),

VHF 2 - 121,5 or temporary for weather, company frequencies.

VHF 3 - DATA HF – 11193.

* 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 tests are over. If the "PLEASE WAIT" message appears, do not press any MCDU key until the message clears.

*** AIRCRAFT TYPE . . . . . .CHECK** PF

Press the DATA key, and display the STATUS page (if not displayed).

*** FM database validity . . . . . .CHECK** PF

- Check DATA BASE validity and stored WPT / NAVAIDS / RWY / ROUTES if any.
- On the MCDU ACFT STATUS page, the last day of the active database validity period is the same day as the first day of the second database validity period. On this day, the message “CHECK DATA BASE CYCLE” will not be triggered. For any flight on that day, manually select the second database.
- 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 navaid.

*** ACARS . . . . . INITIALIZE** PF

*** ACARS. . . . . .REQUEST F-PLN** PF

NOTE: *Presence any of the following messages on the ECAM MEMO makes impossible to get F-PLN / loadsheet via ACARS:*

- ACARS STBY
- DATALINK STBY
- COMPANY DATALINK STBY

*** AIRFIELD DATA . . . . . .OBTAIN** BOTH

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

*** FLIGHT PLAN INITIALIZATION. . . . . .COMPLETE** PF

- Press the INIT key.
- Check / Insert city pair (FROM/TO field).
- Check / modify ALTN/CO RTE.
- Check / Enter flight number (SDM_ _ _ _).

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.*

- Enter cost index computed by OFP, if no data insert cost index for LRC.
- Enter intended initial CRZ FL.
- Modify it, if necessary, taking into account ATC constraints or expected gross weight.
- Check / modify CRZ FL TEMP agree with forecast.
- Enter / check the expected ground temperature for take off (GND TEMP field) ✲

– PRESS IRS INIT prompt.
– Check latitude/longitude using airport view chart (approved by company) or OFP.

*** ADIRS POSITION INITIALIZATION. . . . . .AS APPROP. PF**

– Confirm or insert coordinates for IRS alignment. FCTM PR-NP-SOP - COCKPIT PREPARATION - FMGS PREPARATION.

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

The PF 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.
Check SID and TRANS using F-PLN page and ND PLAN mode versus the navigation chart: compare tracks and distances between waypoints if applicable, check speed and altitude constraints.
Lateral revision at WPT for ROUTE modification if needed. (Refer to FCOM AIRCRAFT SYSTEMS – AUTO FLIGHT - FLIGHT MANAGEMENT - FLIGHT PLANNING - LATERAL FUNCTIONS – GENERAL – LATERAL REVISIONS).
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 (INIT B page), or forecast wind for CLB and CRZ phases. (Refer to FCOM AIRCRAFT SYSTEMS – AUTO FLIGHT - FLIGHT MANAGEMENT - FLIGHT PLANNING - VERTICAL FUNCTIONS – GENERAL – FLIGHT PHASES).

*** SECONDARY FLIGHT PLAN . . . . . 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 return to the departure airfield. 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.
d) If there is an emergency turn procedure or EO SID published in chart (approved by company) it may be entered in the SEC F-PLN.

*** RADIO 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.

2.14.3. * FMGS DATA INSERTION

GROSS WEIGHT INSERTION (INIT B page):

While ZFWCG and ZFW are not available; and if refueling has not been completed at that time the crew should enter the expected values from OFP in order to obtain predictions.

*** ZFWCG/ZFW . . . . . INSERT PF**

*** BLOCK FUEL. . . . . .INSERT PF**

The PF should insert the weights after all other insertions. This is to avoid cycles of prediction computations at each change in flight plan, constraints, etc. If ZFWCG, ZFW, and BLOCK FUEL are inserted, the FM will provide all predictions, as well as the EXTRA fuel, if any.

*** GROSS WEIGHT CALCULATED . . . . . .CHECK PF**

CAUTION: The characteristic speeds, displayed on the **MCDU** (green dot, F, S, VLS), are computed from the ZFW and ZFWCG entered by the crew on the MCDU. Therefore, this data must be carefully checked (Captain's responsibility).

*** PROG page. . . . . AS RQRD PF**

RW in use for arrival, in case of return or deviation, in BRG/DIST field is recommended.
If P-RNAV(RNAV-1) SID is used, check or enter "1" in the REQUIRED field.

*** TAKEOFF DATA CALCULATION**

***TAKEOFF DATA . . . . . .CALCULATE BOTH**

PF and PM discuss and decide on all of the following:

- RWY to be used
- RWY Intersection
- FLAPS SETTING
- Use of ANTI-ICE
- Use of PACKS
- Thrust setting options (FLEX, TOGA, DERATE CLB).

PF and PM verify and discuss the operational margins for TAKEOFF that result from the performance determination and the intended performance contingency procedures (e.g. EOSID).

NOTE: *In the case of light-variable wind it is recommended to calculate PERF with 5 kts tailwind.*

CONDITIONS	PROCEDURE	REASON
Dry or wet well paved runway	Use EFB optimum	Extend engine life and save maintenance costs.
Windshear expected along takeoff path	UseTOGA thrust	Maintain acceleration capability
Contaminated runway	Use TOGA thrust, (flex forbidden)	Improve stopping distance Decrease time on runway. Required by regulations.
Badly paved runway Or ASDA limited runway	Use CONF2/CONF3	Improve comfort Improve stopping distance
High altitude takeoff	Use CONF2/CONF3	Improve comfort

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

*** V1, VR, V2 . . . . . .INSERT PF**
*** FLEX TO TEMP . . . . . .INSERT PF**
*** TRANS altitude . . . . . .CHECK or MODIFY PF**
*** THR RED/ACC altitude . . . . . .CHECK or MODIFY PF**
Set THR RED/ACC altitudes 1000 AAL or as required by local regulations.
*** ENG OUT ACC altitude . . . . . CHECK or MODIFY PF**
Set in accordance with EFB PERF (or Special Procedure chart).
*** FLAPS/THS reminder . . . . . INSERT PF**
Set if takeoff CG is available at this time.
*** TO SHIFT . . . . . AS RQRD PF**
Enter takeoff SHIFT distance, if takeoff is to be from an intersection.
This is essential for position updating at takeoff and, consequently, for navigation accuracy.

***CLIMB, CRUISE SPEED PRESELECTION (PERF CLB page)**

*** 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.
*** INITIAL EXPECTED CLEARANCE ALT on FCU . . . . . SET PF**
*** FIRST AIRBORNE ATC FREQ ON STBY (RMP1) . . . . . .PRESELECT PF**
*** V2 & Green dot speed bugs on STBY ASI . . . . . SET CM1**

2.14.4. * WHEN BOTH PILOTS SEATED

*** NO WHITE LIGHTS . . . . . CHECK PM**

Check no white lights on overhead panel.

*** FMGS DATA CONFIRMATION**

*** AIRFIELD DATA . . . . . .CONFIRM PM**

*** IRS ALIGN . . . . . .CHECK PM**

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 low than 5 NM. Select ND in ROSE-NAV or ARC mode, and confirm that aircraft position is consistent with the position of the airport, the SID and the surrounding NAVAIDs.

*** FM database validity . . . . . CHECK PM**

*** INIT A page . . . . . .CHECK PM**

*** F-PLN A page . . . . . .CHECK PM**

Check SID and TRANS using F-PLN page and ND PLAN mode versus the navigation chart: compare tracks and distances between waypoints if applicable, check speed and altitude constraints.

*** SECONDARY FLIGHT PLAN . . . . . CHECK PM**

*** RAD NAV page . . . . . .CHECK PM**

Check that all RAD NAV aids are inserted accordingly to SID and ADF-VOR select switches on EFIS control panel are set properly.

*** INIT B page . . . . . CHECK PM**

*** PROG page . . . . . AS RQRD PM**

RW in use for arrival, in case of return or deviation, in BRG/DIST field is recommended.

*** TAKEOFF DATA . . . . . .CALCULATE AND CHECK PM**

*** F-PLN ROUTING. . . . . .CHECK BOTH**

▪ **Flight plan routing** should be checked by reading waypoints from MCDU F-PLN (**CM1**) and filling up the OFP Route Check part by (**CM2**), exept SID and STAR navigation points.

▪ Check DIST TO DEST along the F-PLN, FUEL remaining, and total FLIGHT TIME for gross error versus OFP.

NOTE: *In the case of pilot's waypoint(s) where manualy inserted, cross check of new waypoint(s) shall be carefully performed by both PF and PM through the applicable methods:check latitude/longitude using OFP(Navigaton Chart) or compare tracks and distances between nearby waypoints.*

2.14.5. * GLARESHIELD

Glareshield integral light and flood light . . . . . AS RQRD PF

*** EFIS CONTROL PANEL**

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

▪ Set QNH on EFIS control panel and on standby altimeters.

▪ Check the barometric reference and altitude indications on the PFDs and on the standby altimeter.

The maximum difference is:

±20 ft between both PFDs

And depending on the aircraft configuration:

±100 ft between ISIS and PFDs, or

±300 ft between mechanical standby altimeter and PFDs.

*** FD . . . . . CHECK ON BOTH**

*** CSTR . . . . . CHECK 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 . . . . . .CHECK DASHED PF**

*** HDG window . . . . . .CHECK DASHED PF**

*** HDG V/S – TRK FPA . . . . . .CHECK HDG V/S PF**

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

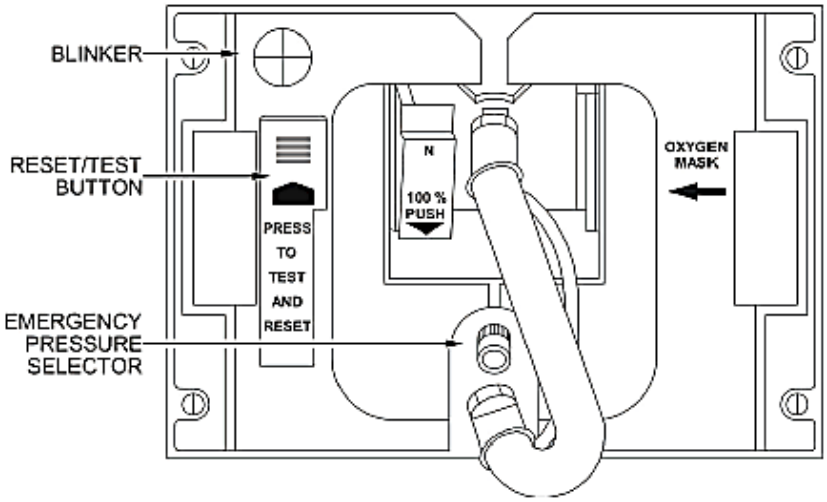
*** V/S window . . . . . .CHECK DASHED PF**

*** OUTER ALT SEL knob . . . . . .CHECK 1000FT PF**

Set OUTER ALT SEL knob 100 if required.

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

2.14.6. LATERAL CONSOLES / OXYGEN MASK TEST



WARNING To prevent hearing damage to ground mechanics connected to the intercom system, inform them that a loud noise may be heard in the headset when performing this test.

On the OXYGEN panel:

CREW SUPPLY . . . . . .CHECK ON BOTH

On the instrument panels:

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.

- **Release both keys.** 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.

NOTE: *All masks must be checked:*
• Prior to the first flight of the day;
• On an aircraft after it has been left unattended by flight crew for any period of time;
• After new flight crew has assumed control of the aircraft.

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).

2.14.7. CM 1/2 INSTRUMENT PANELS

PFD and ND brightness knob . . . . . AS RQRD BOTH

Check the ND outer ring to maximum brightness (radar/terrain display)

LOUDSPEAKERS . . . . . .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, baro-settings, heading and attitude.

*** 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 4° between two NDs),
- Check initial waypoint, VOR/ADF indications.

*** ECAM control panel**

* PRESS pushbutton . . . . . .PRESS PF

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

*** FUEL QTY . . . . . .CHECK BOTH**

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

TAKEOFF BRIEFFING

*** TAKEOFF BRIEFFING . . . . . PERFORM PF**

ATC CLEARANCE

*** ATC CLEARANCE . . . . . OBTAIN CM2**

ATC clearance must be completely copied and confirmed by all crewmembers.

*** RWY ident, SID, first ALT, DEP frequency . . . . . .CONFIRM / SET PF**

*** ATC CODE . . . . . SET PF**

*** ATC CLEARANCE . . . . . CHECK BOTH**

Confirm that MCDU inserted RWY and SID, RMP1, ATC panel and FCU settings are in accordance with ATC clearance.

3. ВЫПОЛНЕНИЕ ПОЛЕТА

3.1. BEFORE PUSHBACK or START

LOADSHEET . . . . . .CHECK BOTH

Both crew members carefully check the Load and Trim Sheet (LTS), particularly for gross errors. Make sure that the loadsheet data are correct: Correct flight data, correct aircraft,dry operating index, configuration, Fuel On Board, etc. Check that the takeoff CG is within the LTS operational limits.

ZFWCG / ZFW / THS reminder . . . . . .CHECK / REVISE PF

ZFWCG / ZFW / THS reminder . . . . . CHECK PM

EFB/MCDU GREEN DOT. . . . . COMPARE BOTH

Both pilots compare the Green Dot speed computed by the FMGS and the Green Dot speed computed with the use of the TAKEOFF application. A difference in value indicates a difference in the TOW used in both systems (EFB/FMGS).

TAKEOFF DATA . . . . . PREPARE and CHECK/REVISE PF

TAKEOFF DATA . . . . . .PREPARE and CHECK PM

Revise TAKEOFF DATA if actual takeoff weight is greater or less more by one tonne than weight previously used for takeoff data calculation.

– The PF checks or recalculates/revises the takeoff speeds and flexible temperature.

– The PM independently recalculates and checks it on the MCDU.

Take particular care in determining the takeoff configuration.
Confirm any takeoff weight limitation.

SEATS, SEAT BELTS, HARNESSES, RUDDER PEDALS, ARMRESTS . . . .ADJUST BOTH

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

MCDU PERF TO page . . . . . .SELECT PF

MCDU F-PLN page . . . . . SELECT PM

EXT PWR . . . . . CHECK AVAIL CM1

CAUTION If the CM1 requests to unplug the EXT PWR with the EXT PWR ON,
the ground engineer may be severely injured.

EXT PWR DISCONNECTION . . . . . REQUEST CM1

BEFORE START CHECKLIST down to the line . . . . . .COMPLETE BOTH

ATC PUSH BACK/START UP CLEARANCE

WINDOWS and DOORS . . . . . CHECK CLOSED BOTH

– Check that the cockpit windows are closed and locked by pushing the control handle to the mechanical stop, and check that the red indicator is visible.
– Check, on the ECAM lower display, that all aircraft 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, 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.

SLIDES . . . . . .CHECK ARMED BOTH

Check, on the ECAM lower display, that all slides are armed.

ATC mode selector . . . . . .AUTO/XPNDR CM2

Use ATC transponder depending on local regulation.

ATC PUSH BACK/START UP CLEARANCE . . . . . .OBTAIN CM2

WARNING Before requesting ATC push back/start up clearance, the flight crew must ensure that ground crew is ready for push back/start up.

BEACON . . . . . .ON CM1

NW STRG DISC . . . . . .CHECK AS RQRD CM1

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

CAUTION: If the ECAM does not display the NW STRG DISC memo, but the ground crew confirms that the tow pin is in the towing position, the flight crew **should not start the engine during pushback**. This is to avoid possible nose landing gear damage upon hydraulic pressurization. To dispatch the aircraft in such a case, Refer to MEL/MI-32-51 NWS Electrical Deactivation Box.

In case of a powerpush by the main landing gear, the nosewheel steering selector should remain in the normal position to steer the aircraft (Refer to FCOM PRO-NOR-SUP-MISC - PUSHBACK WITH POWER PUSH UNIT).

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

PARKING BRK must be ON, except during puchback.

CAUTION: If, during engine start with parking brake on, the aircraft starts to move due to a parking brake failure, immediately release the P BRK handle to restore braking by pedals. Do not use brakes during push back, unless due to an emergency.

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

NOTE: *This CHECKLIST must be completed before pushback/towing or engine start whichever is earlier.*

3.2. AUTOMATIC ENGINE START

Startup clearance from ground crew. . . . . .OBTAIN CM1

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 the case of low pressure from an external pneumatic power group), it is recommended use the manual start procedure, instead the automatic procedure.

If, during the engine start, the ground crew reports a fuel leak from the engine drain mast, run the engine at idle for 5 minutes. If the leak disappears during these 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 the flight.

ENG MODE selector . . . . . .IGN/START CM1

The lower ECAM display shows the ENG page.

"STARTING ENGINE 2" . . . . . .ANNOUNCE CM1

Engine 2 is usually started first. (It powers the yellow hyd, which pressurizes the parking brake).

ELAPSED TIME . . . . . .START CM2

ENG 2 MASTER switch . . . . . .ON CM1

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

- 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 ENG 2 MASTER sw.

Then, perform a 30 s dry crank. (FCOM PRO-NOR-SUP-ENG - ENGINE VENTILATION (DRY CRANKING).

ON ECAM UPPER DISPLAY	ON ECAM LOWER DISPLAY
N2 increases	Corresponding start valve in line. Bleed pressure indication green. Oil pressure increases.
At 16% N2	Indication of the active igniter (A or B).

ON ECAM UPPER DISPLAY	ON ECAM LOWER DISPLAY
At 22 % N2 **- FF increases** (may be crossed up to 200 kg/h) **15 seconds (maximum) after fuel is on** **- N1 increases** **- EGT increases**	
At 50 % N2	Start valve starts closing. (It is fully closed between 50% and 56% N2) Igniter indication off.

MAIN and SECONDARY ENG. IDLE PARAMETERS . . . . . CHECK NORMAL CM1

As soon as the engine-start is complete, the flight crew should check the parameters stabilized.
At ISA sea level:
N1 about 19.5 %
EGT about 390° C
N2 about 58.5 %
FF about 275 kg/h (600 lb/h)
Grey background on N2 indication disappears.

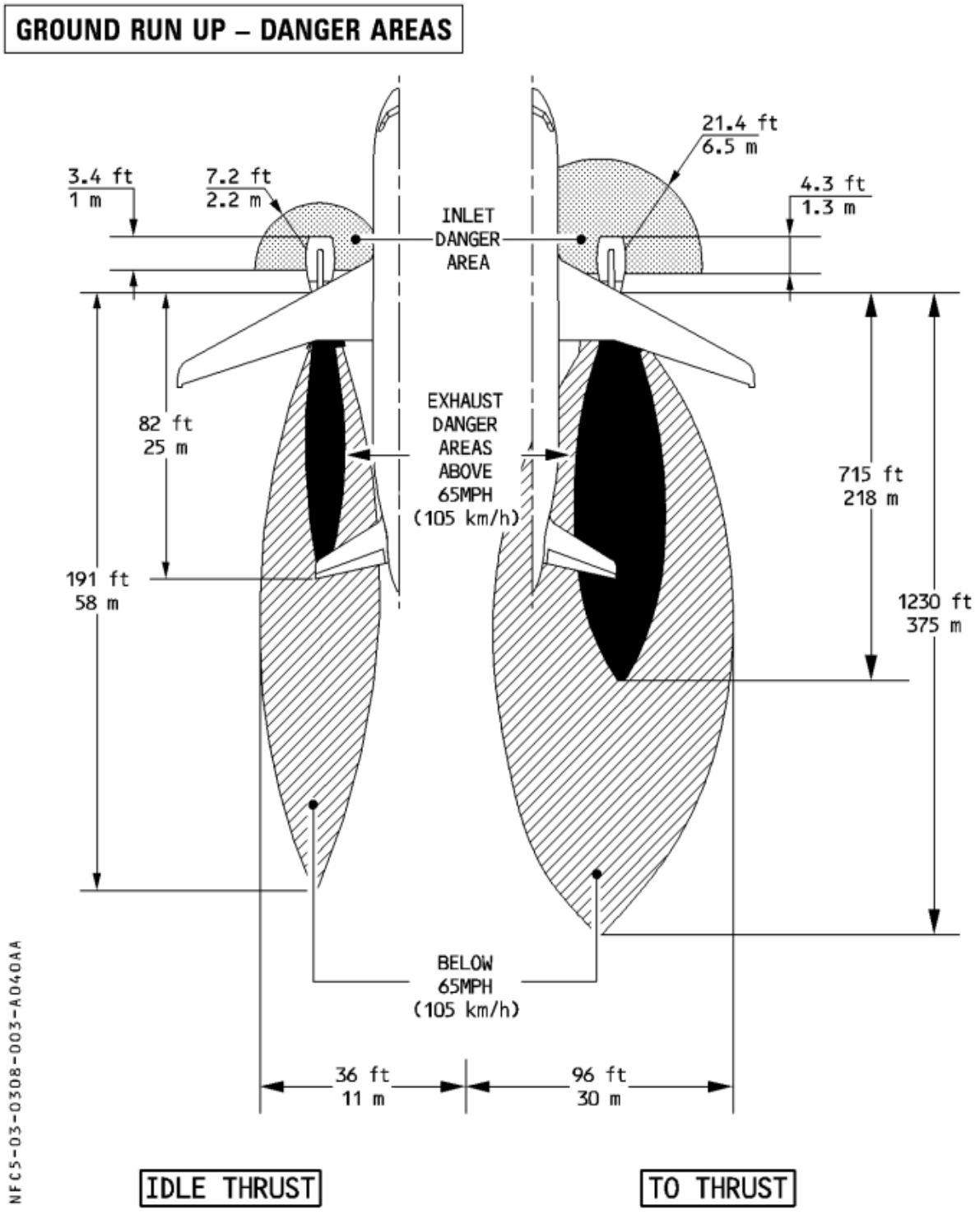
STARTING ENGINE 1" . . . . . .ANNOUNCE CM1

ENG 1 MASTER switch . . . . . .ON CM1

SAME PROCEDURE AS FOR ENGINE 1.

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

- 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.
- The last engine started must run for at least 2 minutes before takeoff initiation, to ensure that takeoff is not initiated before the center tank pumps test is finished, since takeoff on center tank is prohibited.

***"AFTER START PROCEDURE"*. . . . . ANNOUNCE** CM1

APU BLEED . . . . . .OFF CM1

- This action enables to avoid ingesting engine exhaust gases.
- APU BLEED valve closes, ENG BLEED valves open.

APU MASTER switch (if APU not required) . . . . . .OFF CM1

AVAIL light goes out after APU cooling period.

WING ANTI ICE . . . . . .AS RQRD CM1

For definition of icing conditions refer to FCOM LIM-ICE_RAIN Definition of Icing Conditions.

When icing conditions are encountered:

- The flight crew may turn on the wing anti-ice to prevent ice accretion on the wing leading edge.

- The flight crew must turn on the wing anti-ice if there is evidence of ice accretion, such as ice on the visual indicator, or on the wipers, or with the SEVERE ICE DETECTED alert. This is to remove any ice accumulation from the wing leading edge.

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.

ENG ANTI ICE . . . . . . AS RQRD CM1

Engine anti-ice must be set to ON during all ground operations, when icing conditions exist or are anticipated.

CAUTION: In icing conditions the flight crew must turn on the engine anti-ice and should not wait until seeing ice building up.

During ground operation, when in icing conditions and the OAT is +3°C or less for more than 30 min, the following procedure should be applied for ice shedding:

CAUTION: If, during thrust increase, the aircraft starts to move, immediately retard the thrust levers to IDLE.

If ground surface conditions and the environment permit, the flight crew should accelerate the engines to approximately 70% of N1 for 30 seconds at intervals no greater than 30 minutes.

NOTE: *Calculating this 30 minutes interval the flight crew must consider not only taxi-out time but also taxi-in time of the previous flight when the engines were running on ground at or near idle in icing conditions and OAT +3 °C or below, and if a maintenance action to de-ice the engines was not performed during transit stop. This taxi-in time can be determined by TLB using LANDING time and BLOCK ON time of the previous flight.*

In addition, this engine acceleration should also be performed just before take-off, with particular attention to engine parameters to ensure normal engine operation.
If ground surface or environments do not permit to accelerate the engine to 70% N1, then power setting and dwell time should be as high as practical.
When operating in conditions of freezing rain, freezing drizzle, freezing fog or heavy snow, ice shedding should be enhanced, by additional run ups at intervals, to not exceed 10 minutes, advancing throttles to 70% N1 momentarily (no hold time).

PROBE/WINDOW HEAT . . . . . AUTO CM1

NOTE: *If deicing / anti-icing procedure with engine runining is expected delay following action prescribed with after start procedure, upon completion of the spraying operation.*

GROUND SPOILERS . . . . . .ARM CM2
RUD TRIM . . . . . .ZERO CM2

NOTE: *After the reset, the flight crew may observe an indication of up to 0.3 ° (L or R) in the RUD TRIM position indication.*

FLAP lever . . . . . SET CM2

CAUTION: Do not move flaps and slats if they are not free of ice. Delay flaps, slats extension until deicing / anti-icing procedure is completed.

- Set FLAPS for takeoff.
- Check their position on the ECAM upper display.
- **If taxiing in icing conditions with rain, slush or snow: Maintain the flaps retracted until reaching the holding point before takeoff.** This action prevents contamination of the slats/flaps mechanism.

PITCH TRIM HANDWHEEL. . . . . .SET CM2

Set takeoff CG on pitch trim handwheel with tolerance of +- 1% CG.

CAUTION: Do not move Trimmable Horizontal Stabilizer (THS) if it is not free of ice.

ECAM STATUS . . . . . .CHECK BOTH

CM1 checks and CM2 crosschecks that there is no status reminder (STS) on the upper ECAM.

- **<u>If STS is displayed:</u>**

  STS pushbutton . . . . . PRESS CM1
  ECAM Status page . . . . . REVIEW BOTH

N/W STEER DISC MEMO . . . . . CHECK NOT DISPLAYED CM1

***"CLEAR TO DISCONNECT"* . . . . . ANNOUNCE CM1**

Request:

- Chocks removed.
- Nosewheel steering bypass pin removed. (NW STRG DISC memo not displayed)
- Interphone disconnected.
- Hand signal on the left/right side.

***"FLIGHT CONTROLS CHECK"* . . . . . ORDER CM1**

CAUTION: If deicing / anti-icing procedure is required, perform Flight Controls Check after completion of the spraying operation.

FLIGHT CONTROLS . . . . . .CHECK BOTH

1. Before taxi and before arming the autobrake, 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 order of flight control check must be full up, full down, neutral, full left, full right, neutral. The CM2 calls out *"FULL UP"*, *"FULL DOWN"*, *"NEUTRAL"*, *"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 calls "*RUDDER*" presses the PEDAL DISC pushbutton on nosewheel tiller, and silently applies full left, right and neutral rudder. The CM2 calls *"FULL LEFT"*, *"FULL RIGHT"*, *"NEUTRAL"*, as each full or neutral position is reached. CM2 should follow pedal movement with his 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. CM1 checks PITCH TRIM position on F/CTL page in units UP or DN.

NOTE: *The F/CTL page is automatically displayed for 20 seconds.*

AFTER START CHECKLIST . . . . . .COMPLETE BOTH

NOTE: *If deicing / anti-icing procedure with engine runining is expected, the after start checklist has to be divided into two parts: down to the line including check of STATUS and Anti Ice Switch on (if required) and below the line upon comleting of after start procedure.*

3.4 TAXI

GROUND CREW CLEARANCE . . . . . .OBTAIN CM1

Obtain a hand signal on the left/right side with the NWS disconnect pin removed.
This is indicated by the thumb up signal.

ATC TAXI clearance . . . . . OBTAIN CM2

EXTERIOR LIGHTS. . . . . .SET CM1

- NOSE switch to TAXI
  - RWY TURN OFF switch to ON
  - When crossing a runway STROBE switch to ON

The PF may ask the PM to set the exterior lights.

If during taxi “Hold position” instruction received, after stopping CM1 switches off NOSE and RWY TURN OFF lights to give the other aircraft or ground vehicles a clear sign that the aircraft is holding. Switch on RWY TURN OFF lights and set NOSE light to TAXI before resuming taxing.

CLEAR LEFT SIDE . . . . . CHECK / ANNOUNCE CM1

CLEAR RIGHT SIDE . . . . . CHECK / ANNOUNCE CM2

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, 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 foreign objects debris, and the risk of projection of debris towards the trimmable horizontal stabilizer and towards the elevators.

BRAKE CHECK

“BRAKE CHECK” . . . . . ANNOUNCE / 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.

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 should remain at 0 when pressing the brake pedals. Although green hydraulic power supplies the braking system, each time pedals are quickly pressed, a brief brake pressure indication may appear on the BRAKE PRESS indicator.

CM2 keeps his feet on pedals to be able to stop the aircraft when necessary.

BRAKE TEMPERATURE . . . . . CHECK CM2

- **If an arc is displayed in green on the WHEEL SD page,** above the brake temperature:

BRAKE FANS ❄ . . . . . ON CM2

AUTO BRK . . . . . . MAX CM2

ON light comes on. Autobrake may be armed, with the parking brake on.
In the event of an aborted takeoff, selecting the MAX mode prior to takeoff improves safety.
If the takeoff must be aborted, the autobrake system applies maximum braking as soon as the thrust levers are set to idle, if the ground speed is above 72 knots.

ONCE THE AIRCRAFT HAS LEFT THE APRON

PREDICTIVE WINDSHEAR SYSTEM . . . . . .AUTO CM2

RADAR . . . . . ON CM2

To check the radar refer to FCOM PRO-NOR-SOP-TAXI

TAKEOFF DATA / CONDITIONS CONFIRMATION

ATC clearance . . . . . CONFIRM BOTH

Confirm, that **FCU** settings, MCDU inserted **RWY** and **SID**, **RMP1 SBY** and **ATC** panel are in accordance with ATC clearance.

- **If takeoff data / conditions have changed, or in case of runway change, prepare updated takeoff data, and perform the following, as appropriate:**

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

FLAPS LEVER . . . . . AS APPROPRIATE CM2

Select takeoff position.

V1, VR, V2 . . . . . COMPUTE/INSERT CM2

FLEX TO temperature . . . . . COMPUTE/INSERT CM2

AFS / FLIGHT INSTRUMENTS

CLEARED ALTITUDE ON FCU . . . . . SET CM2

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

If an ATC heading is required after takeoff, in case of radar vector departure, preset the heading on the FCU. NAV mode will be disarmed.

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

Carefully confirm that the ATC clearance agrees with the FMGS, if NAV mode is used.

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

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

ATC code . . . . . CONFIRM/SET CM2

ALL REVISED DATA . . . . . .CHECK CM1

In order to compute the performance data and crosscheck CM2 preparations, the CM1 should stop the aircraft, or transfer the control to the CM2.

FD . . . . . .CHECK ON BOTH

PFD / ND . . . . . .CHECK BOTH

TAKEOFF BRIEFING . . . . . **CONFIRM** PF

If any changes occurred in ATC clearance confirm RWY in use, SID assigned for departure, Engine OUT route, FLAPS configuration, cleared ALTITUDE, airborne frequency, ATC code. Extensive use of MCDU, EWD, and PFD is recommended.

CABIN REPORT . . . . . **OBTAIN** CM2

Obtain cabin report from the purser, as a minimum: *"CABIN SECURED FOR TAKEOFF"*

TO CONFIG pushbutton . . . . . **PRESS** CM2

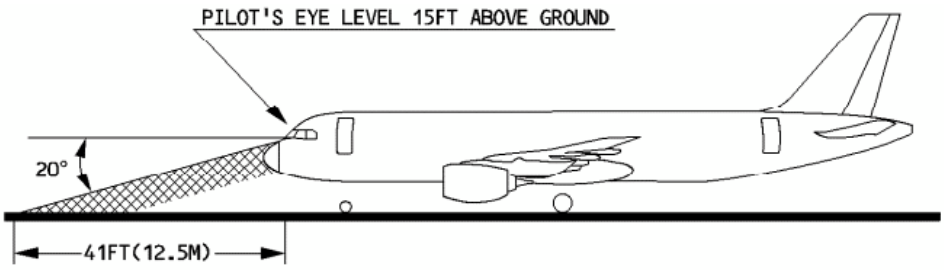
Check that ECAM upper display shows "TO CONFIG NORMAL".

TAKEOFF MEMO . . . . . **CHECK NO BLUE LINE** BOTH

BEFORE TAKEOFF CHECKLIST down to the line . . . . . **COMPLETE** BOTH

NOTE: *The flight crew has to check that all of above items are performed including preflight data insertion before this C/L initiation. If data was revised, it is necessary to perform this C/L once again.*

3.5. VISUAL GROUND GEOMETRY



3.6. 180º TURN ON RUNWAY

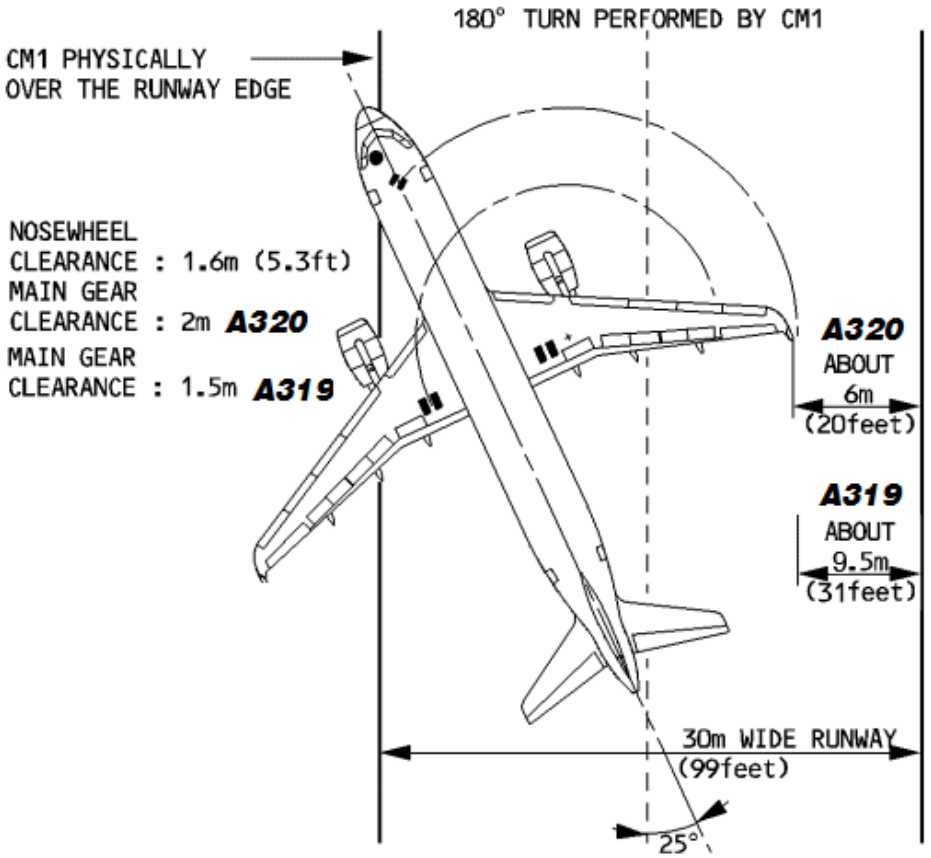
The standard width of a runway is 45 meters.
However, this aircraft only needs a runway width of 30 meters for A-319/320 for a 180° turn.
The following procedure is recommended for performing a 180° turn on the runway.

- **FOR THE** CM1

Taxi first to the right side of the runway.
Turn LEFT, maintaining 25° of divergence from the runway axis.

- **When physically over the runway edge:**

Turn the nosewheel fully right
On ENG 1, set N1 to between 30 % and 35 %
Set ENG 2 to idle.
The Ground Speed (GS) for the entire maneuver should be between 5 knots and 8 knots, to prevent the width of the turn from increasing.



NOTE: *To prevent the nosewheel from skidding on wet runway, it is possible to perform the turn at a very low speed using asymmetric thrust and differential braking, as necessary.*

- **FOR THE CM2**

The procedure is symmetrical.
(Taxi on the left-hand side of the runway firstly).

3.7. BEFORE TAKEOFF

- **IF THE BRAKE FANS ARE RUNNING ❄:**

BRAKE TEMP . . . . . CHECK CM2

- **If brake temperature is above 150°C, delay takeoff.**
- **If brake temperature is below 150°C, select brake fans off.**

LINE UP CLEARANCE . . . . . .OBTAIN CM2

***"LINE UP PROCEDURE"* . . . . . ORDER CM1**

TCAS Mode selector . . . . . TA/RA CM2

The flight crew use the TA ONLY mode in specific airports, that may provide resolution advisories that are neither wanted nor appropriate (e.g. closely-spaced parallel or converging runways).

TAKEOFF RUNWAY . . . . . .CONFIRM BOTH

Confirm that the line up is performed on the intended runway. Useful aids are:

● The runway markings. ●The runway lights, be careful that in low visibility, edge lights could be mixed up with the center line lights. ●The ILS signal, If the runway is ILS equipped, the flight crew can press the LS (ILS) pb: the LOC deviation should be centered after line up. ●The runway symbol on the ND.

***"APPROACH PATH CLEAR OF TRAFFIC, ALTIMETER CHECKED":* . . . . . / ANNOUNCE BOTH**

Check that the approach path is clear of traffic, visually and using TCAS display on ND. Check that the difference between each altitude indication (in the QNH reference) displayed on PFDs and the airport elevation is less than 75 ft.

EXTERIOR LIGHTS. . . . . SET CM2

- RWY TURN OFF switch CHECK ON
- STROBE switch to ON

  Set the STROBE switch to ON when entering the runway.

CABIN CREW . . . . . ADVISE CM2

Set SEAT BELTS OFF, then ON twice.

AIRBORNE FREQ . . . . . CHECK CM2

Check/set airborne freq on the RMP1 STBY window and, if CM2 is PM, on RMP2 VHF1 STBY.

ENG MODE selector . . . . . .AS RQRD CM2

Select IGN: • The runway has standing water.

• Heavy rain is falling or heavy rain or severe turbulence is expected after takeoff.

SLIDING TABLE . . . . . STOW BOTH

TERR ON ND . . . . . .AS RQRD CM2

• In mountainous area, 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 PM side only.

PACK 1 and 2 . . . . . AS RQRD CM2
Consider selecting packs OFF, or APU bleed ON. This will improve performance, when using TOGA thrust. In case of a FLEX takeoff, selecting packs OFF, or the APU bleed to ON, will reduce takeoff EGT and, thus, 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.

BEFORE TAKEOFF CHECKLIST below the line . . . . . .COMPLETE BOTH
Read the checklist below the line, when line-up clearance is obtained.

3.8. TAKEOFF

TAKEOFF CLEARANCE . . . . . .OBTAIN CM2
NOSE sw . . . . . T.O CM2
Set the NOSE sw to T.O when takeoff clearance is received.
LAND LIGHTS sw . . . . . ON CM2
Set the LAND LIGHTS sw to ON when takeoff clearance is received.

NOTE: *Setting the RWY TURN OFF sw, the LAND LIGHTS sw and the NOSE sw to ON/T.O minimizes bird strike hazard during takeoff.*

UPON ALIGNED ON RWY CENTERLINE:

- **If CM2 is PF:**

  "YOU HAVE CONTROL" **. . . . . ANNOUNCE CM1**

  "I HAVE CONTROL" **. . . . . ANNOUNCE CM2**

The below procedure is the standard takeoff procedure. However, rolling takeoff is permitted.

"TAKEOFF" **. . . . . .ANNOUNCE PF**
THRUST LEVERS . . . . . .50 % N1 CM1
CHRONO . . . . . START BOTH

THRUST SETTING

- **If the crosswind is at or below 20 knots and there is no tailwind :**

  HALF forward SIDESTICK . . . . . .APPLY PF
  To counter the nose-up effect of setting engine TO thrust, until the airspeed reaches 80 kt. Release the sidestick gradually to reach neutral at 100 kt.
  BRAKES . . . . . .RELEASE PF
  THRUST LEVERS . . . . . .FLX or TOGA CM1

- **In case of tailwind or if crosswind is greater than 20 knots :**

  FULL forward SIDESTICK . . . . . .APPLY PF
  BRAKES . . . . . .RELEASE PF
  THRUST LEVERS in TWO steps . . . . . FLX or TOGA CM1

CM1 rapidly increases thrust to about 70 % N1 then progressively to reach takeoff thrust by 40 knots ground speed, while PF maintaining stick full forward up to 80 knots and releases stick gradually to neutral at 100 knots.

NOTE: *Once the thrust levers are set to FLX or TOGA detent, the CM1 keeps his hand on the thrust levers until the aircraft reaches V1. 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. Therefore, in strong crosswinds, more rudder input will be required at this point to prevent the aircraft from turning into the wind.

FMA. . . . . .ANNOUNCE PF

Check the FMA on the PFD. The following modes are displayed:

MAN TOGA or MAN FLX xx /SRS/ RWY or blank / A/THR

NOTE: *If an ILS that corresponds to the departure runway is tuned, RWY mode appears. If not, no lateral mode appears until the aircraft lifts off.*

FMA . . . . . .CHECK PM

PFD/ND. . . . . .SCAN PM

Check the FMGS position on the ND (aircraft on runway centerline).

Before reaching 80 knots:

TAKEOFF N1 . . . . . .CHECK PM

Check that the actual N1 of the individual engines has reached the N1 rating limit, before the aircraft reaches 80 knots. Check EGT.

"*THRUST SET*" . . . . . ANNOUNCE PM

PFD and ENG indications . . . . . SCAN PM

Scan airspeed, N1, and EGT throughout the takeoff.

At 100 kt

" HUNDRED KNOTS" . . . . . .ANNOUNCE PM

The PF crosschecks and confirms the speed indicated on the PFD.

Below 100 knots, the Captain may decide to abort the takeoff, depending on the circumstances. Above 100 knots, rejecting the takeoff is a more serious matter.

At V1

***"V1"* . . . . . ANNOUNCE PM**

At VR

"ROTATE" . . . . . ANNOUNCE PM

ROTATION . . . . . PERFORM PF

■ At VR, initiate the rotation to achieve a continuous rotation with a rate of about 3 degrees/second, towards a pitch attitude of 15°(12.5 °, if one engine is failed).

■ Minimize lateral inputs on ground and during rotation, to avoid spoiler extension.

In strong crosswind conditions, small lateral stick inputs may be used, if necessary, to aim at maintaining wings level.

■ After lift-off, follow the SRS pitch command bar.

ATTITUDE . . . . . MONITOR PM

● **If pitch reaches 10° on ground announce "PITCH, PITCH"**.

NOTE: *A fast rotation rate increases the risk of tailstrike.*
If the established pitch rate is not satisfactory, PF must make smooth corrections on the stick to prevent excessive pitch attitude at lift-off, and consequently a reduced tail clearance.
PF must avoid rapid and large corrections, which cause sharp reaction in pitch from the aircraft.

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

WHEN POSITIVE CLIMB

"POSITIVE CLIMB" . . . . . ANNOUNCE PM

Announce, when vertical speed indication is positive baro and radio altitude are increasing.

***"GEAR UP"* . . . . . ORDER PF**

GEAR UP . . . . . SELECT/ANNOUNCE PM

ABOVE 100 FEET

AP . . . . . AS RQRD PF

Above 100ft AP 1 or 2 may be engaged.

FMA . . . . . ANNOUNCE PF

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

THRUST LEVERS . . . . . CL PF

Move the thrust levers to the CL detent, when the flashing **LVR CLB** prompt appears on the FMA and no negative speed trend. Autothrust is now active. In manual flight, the pilot must anticipate pitch attitude change, to prevent the speed from decaying, when thrust is reduced.

FMA . . . . . ANNOUNCE PF

PACK 1 and 2 (if applicable) . . . . . ON PM

- Select PACK 1 on, after CLB thrust reduction
- Select PACK 2 on, after FLAP retraction

NOTE: *1. Selecting the packs ON,before reducing takeoff thrust, will result in an EGT increase.*
2. PACK 2 may be selected earlier, but not sooner than 10 seconds after PACK 1 is selected on, for passenger comfort.
3. If packs are not switched on after takeoff phase, an ECAM caution will be triggered.

At acceleration altitude:

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

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

NOTE: *1. When THR RED and ACC ALT are equal, the FMA will change from* **MAN FLX SRS NAV** *to* **THR CLB CLB NAV**.

2. If the FCU-selected altitude is equal or close to the acceleration altitude, then the FMA will switch from **SRS** *to* **ALT***

Above acceleration altitude (or once in CLB phase):

The following procedure ensures that the aircraft is effectively accelerating toward CLB speed.

At F speed

NOTE: *For takeoff in CONF 1+F, the "F" speed is not displayed.*

"FLAPS 1" . . . . . **ORDER** PF

FLAPS 1 . . . . . **SELECT/ANNOUNCE** PM

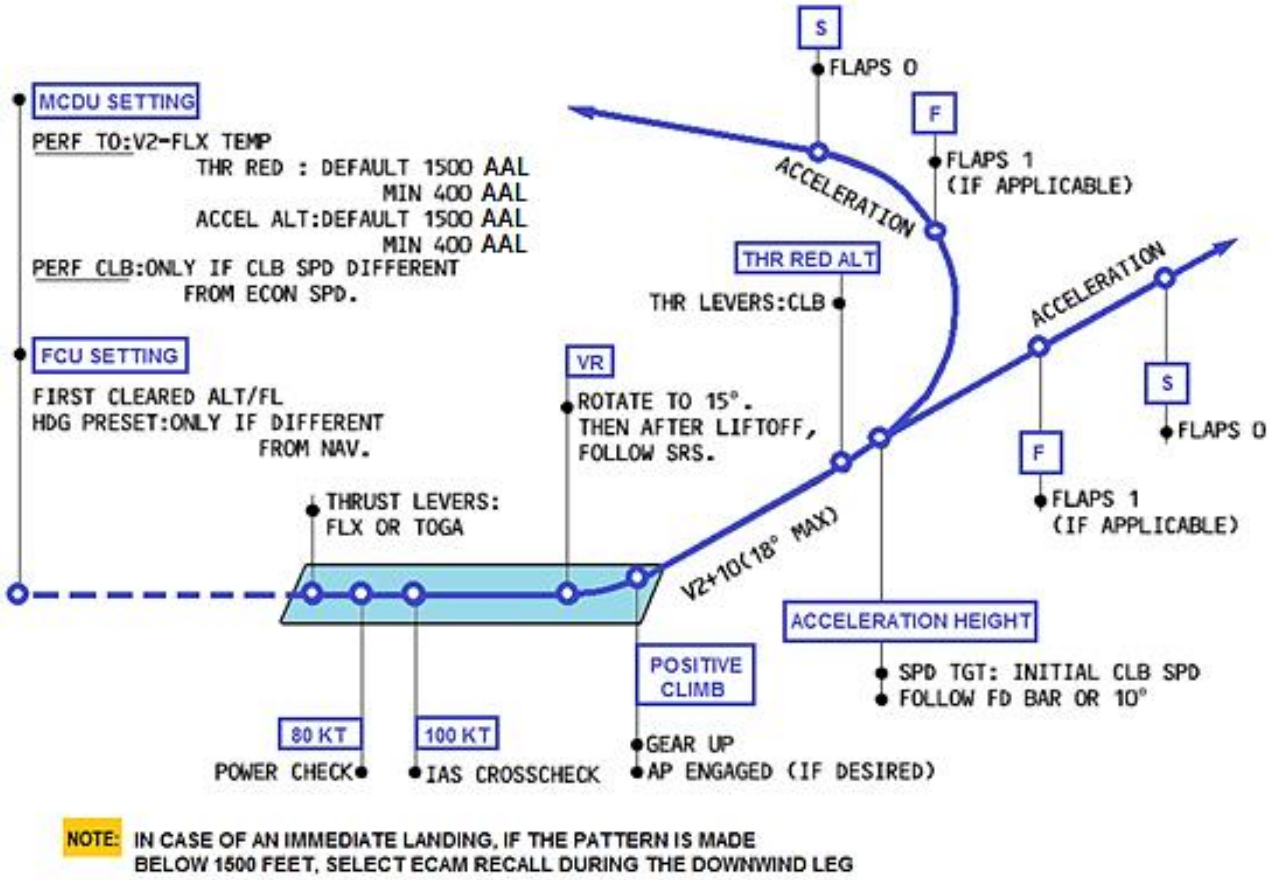
At S speed

"FLAPS ZERO" . . . . . **ORDER** PF

FLAPS ZERO . . . . . **SELECT/ANNOUNCE** PM

NOTE: *The CRUISE page replaces the ECAM ENG page.*

GRND SPLRS . . . . . **DISARM** PM



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

3.9. AFTER TAKEOFF

APU BLEED . . . . . .AS RQRD PM

If the APU has been used to supply air conditioning during takeoff, set the APU BLEED to OFF. For use of the APU BLEED, refer to FCOM LIM-APU - OPERATIONAL ENVELOPE.

APU MASTER switch . . . . . AS RQRD PM

ENG MODE selector . . . . . AS RQRD PM

Select IGN, if severe turbulence or heavy rain is encountered.

TCAS Mode selector . . . . . .TA/RA PM

Select TA/RA, if the takeoff has been performed with TA only.

ANTI ICE . . . . . .AS RQRD PM

ENG ANTI ICE must be ON, when icing conditions are expected, with a TAT at or below 10°C.

AFTER TAKEOFF CHECKLIST DOWN TO THE LINE . . . . . COMPLETE BOTH

3.10. CLIMB

Normal vertical mode is CLB or OP CLB with managed speed active.
V/S mode may be used only to reduce vertical speed.
Expedite climb mode is not recommended.

PF MCDU . . . . . PERF CLB PF
PM MCDU . . . . . .F-PLN PM
(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 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.*

At transition altitude:

***"SET STANDARD"* . . . . . .ORDER PF**
BARO REF . . . . . .SET STD / CROSSCHECK BOTH
At transition altitude (baro setting flashing on PFD) set STD on EFIS control panel and STBY ALT.
AFTER TAKEOFF CHECKLIST BELOW THE LINE . . . . . COMPLETE BOTH

ANTI ICE . . . . . AS RQRD PM
ENG ANTI ICE must be ON, when icing conditions are expected, with a TAT at or below 10°C, unless the SAT is below -40°C.

At 10000 ft:

***"FL 100 PROCEDURE"* . . . . . ANNOUNCE PF**
SEAT BELTS . . . . . .OFF PM
or
SEAT BELTS . . . . . OFF then ON PM
(If it stay ON)
SEAT BELTS . . . . . AS RQRD CM1
EXTERIOR LIGHTS . . . . . .SET PM

- NOSE switch to OFF
- RWY TURN OFF switch to OFF
- LAND switches to RETRACT

LS(ILS) pushbutton . . . . . .CHECK OFF BOTH

ECAM MEMO . . . . . REVIEW BOTH

RAD NAV page . . . . . .CHECK PM

Clear manually tuned VOR, ADF from MCDU RAD NAV page or use as required.

CRZ/OPT/MAX ALT . . . . CHECK/ANNOUNCE PM

– The MCDU PROG page displays OPT FL (function of the cost index) and MAX REC FL.

– 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.

REQUIRED RNP (MCDU PROG page) . . . . . .CHECK/CLEAR PM

VHF2 reception knob on ACP . . . . . INCREASE VOLUME BOTH

Increase volume of reseption of VHF2 for possibility of reading of 121.5

During climb:

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 FMGC 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 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**.

RADAR TILT . . . . . ADJUST AS APPROPRIATE PF

3.11. CRUISE

EFIS option . . . . . AS RQRD BOTH

Select ARPT or CSTR if grid MORA available.

TERR ON ND . . . . . OFF PM

ALTIMETERS. . . . . CHECK BOTH

PFDs altitude indicators should be checked to be in accordance with the instrument tolerances every 1 hour (FCOM PRO-SPO-RVSM - RVSM NORMAL PROCEDURE).

VMOMMO & Green dot speed on STBY ASI . . . . . SET CM1

ECAM MEMO . . . . . REVIEW BOTH

ECAM SYS PAGES . . . . . .REVIEW PF

Every 1 hour 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 landing 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.

DOOR: Oxygen pressure.

SEC F-PLN . . . . . .COPY ACTIVE PF

TCAS TRAFFIC selector . . . . . .SET BLW PF

CRUISE BRIEFING . . . . . .PERFORM PF

RADAR . . . . . .AS APPROPRIATE PF

NOTE: *For more information about using the weather radar refer to FCOM PRO-NOR-SOP-CRUISE*

STEP FLIGHT LEVEL . . . . . AS APPROPRIATE PF

CABIN TEMP . . . . . .MONITOR PM

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; refer to FCOM AIRCRAFT SYSTEMS-OXYGEN-FIXED OXYGEN SYSTEM FOR COCKPIT- DESCRIPTION-MASK STOWAGE.

When overflying the waypoint or every 30 minutes:

FLIGHT PROGRESS. . . . . CHECK PF

Monitor flight progress in the conventional way.

- Check track and distance to the next waypoint.
- Check FUEL: Check FOB (ECAM), and fuel prediction (FMGC), and compare with the computer flight plan or use the performance application of EFB.

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.

For more information about fuel leak, Refer to FCTM PR-AEP-FUEL 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.

GPS PRIMARY on PROG page . . . . . CHECK AVAILABLE PF

- **If GPS PRIMARY is not available**

  NAV ACCURACY . . . . . .CHECK PF

  Navigation accuracy must be monitored, especially when any of the following occurs:

  - GPS PRIMARY LOST appears on the ND
  - IRS only navigation
  - The PROG page displays LOW accuracy.
  - "NAV ACCUR DOWNGRAD" appears on the MCDU.

Refer to FCOM AIRCRAFT SYSTEMS-AUTO FLIGHT FLIGHT MANAGEMENT-NAVIGATION - EVALUATION OF POSITION ACCURACY.

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 VOR/DME idents in BRG/DIST TO field on the progress page and compare the computed BRG (DIST) with the raw data on the ND.

- **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.

  - **Disengage MANAGED NAV mode and use raw data navigation**
  - **Switch ND to ROSE VOR, so as not to be misled by FM data**
  - **Switch off TERR PB (on EGPWS panel)**

3.12. DESCENT PREPARATION

Descent preparation and arrival briefing can take approximately 10 minutes.

Before the start of the descent, provide information to the purser about the landing time, weather, gate number (if information is available), etc.

They should be completed before top of descent. If current ATIS information is not available, forecasted information may be used for FMGS programming and briefing.

When planning a descent, it is recommended to have some "margin" in altitude and distance from the RWY for unpredictable tailwind, direct routing by ATC etc.

WEATHER AND LANDING INFORMATION . . . . . OBTAIN BOTH

Check weather reports at ALTERNATE and DESTINATION airports. Airfield data should include RWY in use for arrival.

LDG ELEV . . . . . CHECK PF

Check on ECAM CRUISE page that LDG ELEV AUTO is displayed.

ECAM STATUS . . . . . CHECK PF

- Check that there is no STS reminder on the upper ECAM display.
- If there is a STS 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.

LANDING CONDITIONS . . . . . CONFIRM BOTH

Perform an in-flight landing performance assessment if the landing conditions changed compared with the landing computation at dispatch, or with a previous computation (e.g. runway, weather conditions, in-flight failure affecting performance, diversion).

For more information, Refer to FCTM/PR-NP-SOP - DESCENT PREPARATION - LANDING PERFORMANCE.

NOTE: *1. If the weather conditions are expected to change at the landing airport, or in the event of significant precipitation, the flight crew should consider a second calculation of the in-flight landing distance with the worst possible runway condition.The flight crew should complete calculation before initiation of approach.*

2. The selection of REV MAX is the standard practice for landing. However, on dry runways the flight crew may select REV IDLE. On WET runways (runway surface condition GOOD), the flight crew may select REV IDLE, if all the following conditions are satisfied:

- A landing distance assessment has been made with the following parameters:
• MEDIUM TO POOR landing performance level for the in-flight LD computation
• No reverser credit
- The result of this landing distance assessment is within the LDA.

- **If landing conditions changed:**

  LANDING PERF DATA . . . . . COMPUTE BOTH

  The PF and the PM independently compute the landing distance performance data, based on the new conditions at arrival.

In the LDG PERF application, modify the selections in accordance with the estimated arrival conditions:

- In the AIRPORT/RUNWAY part, select the applicable runway
- In the CONDITIONS part, enter the estimated landing conditions
- In the AIRCRAFT STATUS part, check the selected items, if any
- Launch the computation and check the results.

LANDING PERF DATA . . . . . CROSSCHECK BOTH

For more information, Refer to FCTM/PR-NP-SOP - DESCENT PREPARATION - LANDING PERFORMANCE.

AUTO BRK . . . . . .AS RQRD PF

Use of autobrake is preferable.
Use of MAX mode is not recommended at landing.
On short or contaminated runways, use **MED** mode.
On long runways, **LO** mode is recommended.
Firmly press the appropriate pushbutton, according to the runway length and condition, and check that the related ON light comes on.

NOTE: *If, on very long runways, the flight crew anticipates that braking will not be needed, use of the autobrake is not necessary.*

EFIS option. . . . . CSTR BOTH

FMGS

FPLN A page. . . . . CHECK PF

- Insert APPR, STAR, TRANS and APPR VIA if applicable.
- Ensure that the inserted F-PLN agrees with planned approach, missed approach.
- Use the scroll key to check the F-PLN thoroughly, using ND in PLAN mode as necessary.

Tracks and distances between waypoints are displayed on the second line from the top of the MCDU. Approach and Missed Approach tracks and distances must be checked from the appropriate navigation charts.

- Check speeds and altitude constraints. Add new speed or altitude constraints if required.
- In all cases do not modify the final approach (FAF to runway or MAP), including altitude constraints.
- Identify the position and altitude of Final Descend Point (FDP) and check the value of the FPA after this FDP.
- Identify the Missed Approach Point.

DES WIND . . . . . .CHECK / INSERT PF

Enter winds for descent as well as for alternate.

RAD NAV page . . . . . CHECK / INSERT PF
Set navaids as required for raw data navigation in case of nav accuracy degradation, and check idents on the NDs (VOR-ADF). For an ILS approach, check the frequency and course of the selected ILS.

PROG page . . . . . .INSERT RW IN USE PF

PERF DES page . . . . . .COMPLETE / 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 and/or SPD is the one applicable 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 kt below 10000ft is the defaulted speed, in the managed speed descent profile. The flight crew may delete or modify it if necessary on 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 FL.
- Insert the MDA / BARO (if CAT II/III approach, insert the DH / RADIO).

CAUTION: *When operating in low OAT* apply *altitude corrections,* as defined in OM Part A Chapter 8 paragraph 8.1.1.2 (C).

NOTE: *Changing RWY or type of arrival (VOR, ILS) automatically erases previous MDA/DH.*

Check or modify the landing configuration.
Always select the landing configuration on the PERF APPR page:
– CONF FULL is the normal landing configuration.
– If the forecasted tailwind at landing is greater than 10kt, CONF FULL is required.
– CONF 3 should be considered, depending on the available runway length and go-around performance, or if windshear /severe turbulence is considered possible during the approach.

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.

PERF GO-AROUND page. . . . . .CHECK/MODIFY PF
Check the THR RED ALT and ACC ALT, and modify if necessary.

FUEL PRED page. . . . . .CHECK PF
Correct fuel for diversion, check extra time.

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

The SEC F-PLN should be set before the top of descent, either 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/DH and navaids.

QNH . . . . . .PRESELECT PF
Preselect QNH on the EFIS control panel and on the ISIS.

STANDBY ASI . . . . . SET CM1
Set Vapp and Green Dot bugs.

TERR on ND . . . . . AS RQRD PF
- 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 PM side only.
- If NAV ACCURACY is LOW, do not use TERR on ND.

FMGS preparation . . . . . CHECK PM

PROG page . . . . . .AS RQRD PM
Insert RW in use or as needed for accuracy check.

QNH . . . . . PRESELECT PM

ARRIVAL BRIEFING . . . . . PERFORM PF

3.13. DESCENT INITIATION

Normal modes for descent are: DES or OPEN DES with speed managed.

V/S mode may only be used to reduce vertical speed.

Expedite descent mode is not recommended.

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

SEAT BELTS . . . . . ON then OFF CM1

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

- **<u>If ATC requires an early descent:</u>**

Use DES mode which will guide the aircraft down at a lower V/S in order to converge on the required descent path.

- **If ATC delays the descent:**

Beyond TOD, a **DECELERATE** message comes up on PFD and MCDU. This suggests to the crew to reduce the speed towards green dot speed (with ATC permission).
When cleared down for descent, select **OPEN DES** mode with managed speed active. Below FL300 select DES mode.

NOTE: *In some cases, when the aircraft is at the top of descent, it is possible that for a few minutes the ECAM may erroneously indicate that the FF is at 0. Therefore, in such cases, the flight crew must monitor the engine parameters, in order to check that the engine is operating correctly.*

ANTI ICE . . . . . AS RQRD PM

ENG ANTI ICE must be ON, when icing conditions are expected, with the TAT at or below 10°C.

▪ With engine ANTI ICE ON, the FADEC automatically selects a higher idle thrust, which gives better protection against engine flame-out.

▪ ANTI ICE ON reduces the descent path angle when at idle. The pilot can compensate for this by increasing descent speed, or by extending up to half speedbrakes.

RADAR . . . . . ADJUST AS APPROPRIATE PF

NOTE: *For more information about using the weather radar refer to FCOM RPO-NOR-SOP-DESCENT PREPARATION.*

3.14. DESCENT MONITORING

Performing descent and approach maneuvers according to the selected RWY approach system, the crew shall closely monitor the position of the aircraft relative to the optimum descent profile (calculated by the crew and/or FMGS).

MCDU . . . . . PROG/PERF DES PF

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

▪ PROG page in order to get VDEV or RQD DIST TO LAND/DIRECT DIST TO DEST info.

▪ PERF DES in order to get predictions down to any inserted altitude in DES/OP DES modes.

MCDU . . . . . F-PLN PM

DESCENT. . . . . .MONITOR PF

▪ When flying in NAV mode, use DES mode. (Refer to FCOM PRO-NOR-SRP-FMS-DESCENT-DESCENT MONITORING)

The aircraft descends along the descent flight path: the PFD and PROG page display VDEV. All constraints of the flight plan are taken into account for the guidance.

▪ When the aircraft is flying in HDG or TRK mode, 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). The NDs show a level-off symbol along the flight path. Its position is based on the current active AP/FD and A/THR modes. 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.

3.15. DESCENT ADJUSTMENT

HIGHT AGL, ft	Maximum vertical speed, ft/min
>10 000	6000
10000 – 3 001	3000
3000 – 2 001	2000
2000 – 1 000	1500
< 1000	1000

To increase the rate of descend:

- Increase descent speed (by use of selected speed) if comfort and ATC permit.
- Maintain high speed as long as possible. (SPD LIM may be suspended by ATC).
- If the aircraft is high and at high speed, it is more efficient to keep the high speed to ALT* and then decelerate, rather than to mix descent and deceleration.

SPEEDBRAKES . . . . . AS RQRD PF

- If engine anti-ice is selected in descent, the flight idle is increased. So, it may be necessary to use up to half speedbrakes to maintain the required rate of descent, in **OPEN DES** mode.
- 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.

NOTE: *1. If speedbrakes are used above 315 kt/M .75, with the AP engaged, their rate of retraction is low (total time for retraction from full extension is approximately 25 s). 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 2 000 ft before the selected altitude.*
3. On A-320 with A/P engaged the only half speedbrakes deflection is available.

At FL100:

"FL 100 PROCEDURE" **. . . . . ANNOUNCE PF**
SEAT BELTS . . . . . ON PM
SEAT BELTS . . . . . OFF then ON PM
(If ON before)
SEAT BELTS . . . . . CHECK ON CM1
EXTERIOR LIGHTS . . . . . .SET PM

- NOSE switch to T.O.
- LAND switches to ON.
- RWY TURN OFF switch to ON.

LS (ILS) pushbutton . . . . . .AS RQRD BOTH
Select LS, if an ILS or LOC approach is intended.
The PFD displays the LOC and G/S scales and deviation symbol, if there is a valid ILS signal.

ECAM STATUS . . . . . CHECK PM

- 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.

RAD NAVAIDS . . . . . CHECK / IDENTIFY PM

Check that the correct identifier is displayed on the ND and PFD (ILS).
If unsatisfactory, go through the audio check.

GPS PRIMARY on PROG page . . . . . .CHECK AVAILABLE PM

If P-RNAV(RNAV-1) STAR is used, check or enter "1" in the REQUIRED field.

For RNAV(GNSS) approach:

GPS PRIMARY must be available on at least 1 FMS.

- **If GPS PRIMARY is not available**

NAV ACCURACY . . . . . .CHECK PM

- **If error is more than 1nm:**
  - PF ND must be in ROSE LS/VOR depending on the approach.
  - Use of NAV mode is prohibited, *use TRK FPA mode (Refer to APPR using FPA guidance).*
  - TERR pushbutton switch to OFF on EGPWS panel .

VHF2 reception knob on ACP . . . . . DECREASE VOLUME BOTH

Approaching the transition level and when cleared for an altitude:

"SET QNH" **. . . . . ORDER PF**

QNH . . . . . SET BOTH

Set QNH on the EFIS control panel and on the standby altimeter.
Cross-check baro reference and altitude readings.
The vertical guidance requires a precise baro setting.
The maximum acceptable discrepancy between altimeters is 100 ft.

NOTE: *When operating in low OAT, altitude corrections, should be considered.*

ENG MODE selector . . . . . .AS RQRD PM

Select IGN if the runway is covered with standing water or if heavy rain or severe turbulence is expected in approach or go-around.

APPROACH CHECKLIST . . . . . .COMPLETE BOTH

CABIN REPORT . . . . . OBTAIN PM

3.16. APPROACH GENERAL

INTRODUCTION

The APPROACH section provides the standard operating procedures for the following app types:

- ILS approaches
- Conventional approaches: VOR, VOR-DME, NDB, NDB-DME
- Approaches based on a LOC signal without any G/S signal: LOC ONLY, ILS G/S OUT, LOC B/C
- RNAV approaches including:
  - RNAV(GNSS) approaches with LNAV minimum or LNAV/VNAV minimum
  - RNAV(RNP) approaches for which Authorization is Required (AR) - If capability installed.

NOTE: *In relation to the names in the ICAO Performance-Based Navigation (PBN) Manual:*
*"**RNP APCH** operations" corresponds to **RNAV (GNSS)** approaches but*
*"**RNP AR APCH** operations" corresponds to **RNAV (RNP)** approaches.*

CROSS-REFERENCE TABLE

This table provides Guidance Modes that should be used depending on the Approach Types.

For Circling Approach, Refer to 3.18.5 Circling Approach

For Visual Approach, Refer to 3.18.6 Visual Approach

TYPE OF APPROACH	Guidance Modes per Approach Types				
	3.18.1 LOC G/S	3.18.2 or 3.18.3 FINAL APP	*3.18.4 APPR using FPA Guidance*		
			LOC FPA	NAV FPA	TRK FPA
ILS (LDA)	*Refer 3.18.1*	*N/A*	*N/A*	*N/A*	*N/A*
LOC ONLY (LDA) ILS G/S OUT	*N/A*	*N/A*	*Refer to 3.18.4*	*N/A*	*N/A*
LOC B/C	*N/A*	*N/A*	*N/A*	*N/A*	*Refer to 3.18.4*
RNAV (GNSS) with LNAV/VNAV minima	*N/A*	*Refer to 3.18.2*	*N/A*	*N/A*	*N/A*
RNAV (RNP) RNP AR	*N/A*	*Refer to 3.18.3*	*N/A*	*N/A*	*N/A*
RNAV (GNSS) with LNAV only minnima *	*N/A*	*Refer to 3.18.2**	*N/A*	*Refer to 3.18.4*	*N/A*
VOR VOR-DME NDB NDB-DME *	*N/A*	*Refer to 3.18.2**	*N/A*	*Refer to 3.18.4*	*Refer to 3.18.4*
RNAV (GNSS) with LPV minima	*N/A / Not Authorized*				

* *The FINAL APP is the recommended guidance mode for this type of approach.*

FLYING REFERENCE

Use the following recommended flying reference:
- In vertical managed modes: HDG-V/S reference associated with the FD crossbars
- In vertical selected modes: TRK-FPA reference associated with FPD.

APPROACH SPEED TECHNIQUE

STANDARD STABILIZED APPROACH - is the main method of normal approach.

Landing configuration (Flaps 3 or Full with Landing Gear down) shall be set at FAP/FAF as latest. Otherwise the approach shall be discontinued.

EARLY STABILIZED APPROACH

Under certain circumstances, the flight crew shall reduce the speed down to VAPP in the landing configuration at the FAP/FAF as latest.Otherwise the approach shall be discontinued.
An early stabilized approach is recommended in the following cases:
- approach with selected vertical guidance (FPA)
- if the glide path angle is 3.5° or greater,
- if the actual or forecast tail wind during approach exceeds 5 knots,
- If the aircraft intercepts the flight path at or below 1500 ft AAL.

In order to obtain a valuable deceleration pseudo waypoint and to ensure a timely deceleration, the flight crew should enter VAPP as a speed constraint at the Final Descent Point.

DECELERATED APPROACH is the method of approach under exeptional cicrumstances which can be applied in according with OM Part A Chapter 8 paragraph 8.3.8.3, Circle to land or Visual approaches procedures, execution the international flight concerning to regulations.

The decelerated approach with FD or AP/FD guidance is the standard flying technique for ILS or FINAL APP guidance.
The aircraft should intercept the glideslope at S speed in CONF1.
If glideslope interception altitude ≤ 2500AAL, maximum speed for Final Descent Point is 160 kt, flaps 2, unless the ATC requires higher speed.
The flight crew should enter 160kt as a speed constraint at the Final Descent Point to ensure a timely deceleration.
Flaps lever should be set to the landing position (3 or FULL) at 1500 ft AAL at the latest.

DISCONTINUED APPROACH

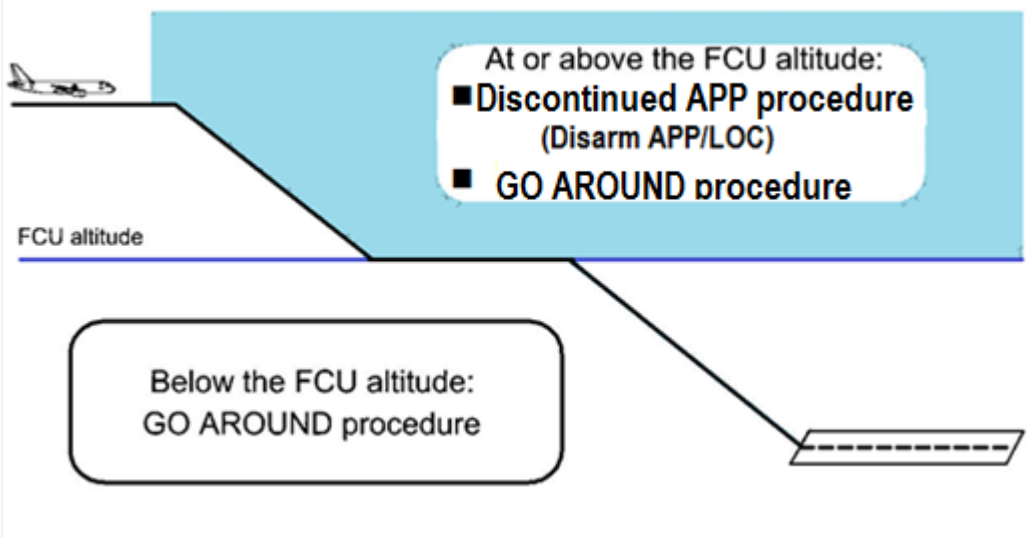
In order to discontinue an approach when the aircraft is at or **above** the altitude selected on the FCU, the flight crew can **either**:

- Apply the Discontinued APP procedure

(Disarming APP / LOC / FINAL APP modes), **OR**

- Apply the GO AROUND procedure.

When the aircraft is **below** the FCU altitude, the flight crew **must** apply the **GO AROUND** procedure.



- **IF AT OR ABOVE THE FCU ALTITUDE:**

  - **APPLY DISCONTINUED APP PROCEDURE WITHOUT TOGA:"CANCEL APPROACH" . . . . . .ANNOUNCE PF**

APPR pb or LOC pb . . . . . .PRESS PF

To disarm any AP/FD approach mode.

NOTE: *1. The FMS does not automatically string the previous flown approach in the active F-PLN when the aircraft overflies the last waypoint.*
The FMS has no more destination in the F-PLN.
2. Because the thrust levers are not set to TOGA detent, the FMS remains in approach phase.

AP/FD appropriate modes . . . . . .SELECT PF

FMA . . . . . CHECK/ANNOUNCE PF

FMA . . . . . CHECK PM

ATC . . . . . COMMUNICATE PM

Adjust aircraft configuration.

- **<u>If F-PLN has no destination anymore:</u>**

Perform a LAT REV at the last waypoint and redefine the destination in the NEW DEST field.

■ **OR APPLY GO AROUND PROCEDURE**

CAUTION: *In this case the SRS mode does not automatically disengage. The flight crew actions are required.*

3.17. AIRCRAFT CONFIGURATION MANAGEMENT

3.17.1. INITIAL APPROACH

DISTANCE TO FDP(FAF) . . . . . .INFORM PM

PM informs PF about distance to FDP(FAF) at suitable points, generally every 2-3 nm.

F-PLN SEQUENCING . . . . . ADJUST PM

PM should always keep flight plan sequenced during approach on request.

NOTE: *The NAV mode will be available after GO AROUND if the F-PLN is properly sequenced. A good cue to monitor the proper F-PLN sequencing is the TO waypoint on the* ***upper right side of the ND,*** *which should remain meaningful. In NAV mode, the F-PLN will sequence automatically. In HDG/TRK mode, the F-PLN will sequence automatically only if the aircraft flies close to the F-PLN route.*

ENG MODE selector . . . . . .AS RQRD PM

On PF request select IGN if the runway is covered with standing water, or if heavy rain or severe turbulence is expected during approach or go-around area.

APPROACH PHASE . . . . . CHECK/ACTIVATE PF

If the aircraft overflies the DECEL pseudo waypoint in NAV mode, the APPR phase activates automatically. If the aircraft is in HDG/TRK mode, approximately 10 NM from FAF, activate and confirm APPROACH phase on the MCDU (PERF DES page).

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.

GPS PRIMARY on PROG page . . . . . CHECK AVAILABLE PM

• If GPS PRIMARY is not available:

NAV ACCURACY . . . . . .MONITOR PM

If GPS PRIMARY is lost, check on PROG page that the required navigation accuracy is appropriate to the phase of flight.

If NAV ACCUR DOWNGRAD occurs, **use raw data** to crosscheck navigation accuracy.

If NAV ACCURACY is LOW, PF ND must be in **ROSE ILS/VOR** depending on the APP,

Use of NAV mode is prohibited, **TERR** pushbutton switch to **OFF**.

FLIGHT PATH . . . . . .MONITOR BOTH

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

SPEED BRAKES lever . . . . . .AS RQRD PF

- If the flight crew uses the speed brakes to increase the rate of deceleration or to increase the rate of descent, the VLS will increase as well:
- The flight crew should ensure that appropriate speed margin exists before the extension of the speed brakes,

- If the speed brakes are extended, the flight crew should ensure that appropriate speed margin exists before the beginning of a turn. This will avoid the activation of the Alpha-Floor protection.

NOTE: *In clean configuration, the VLS with speed brakes fully extended may be higher than green dot speed or VFE FLAP 1.*

RADAR

RADAR . . . . . ADJUST AS APPROPRIATE PF

NOTE: *For more information about using the weather radar refer to FCOM RPO-NOR-SOP-APPROACH - AIRCRAFT CONFIGURATION MANAGEMENT - INITIAL APPROACH.*

3.17.2. INTERMEDIATE / FINAL APPROACH

GENERAL

The intermediate and final approach procedure described here is general guidance whatever the type of approach expected.

AT GREEN DOT SPEED OR BELOW VFE NEXT

"FLAPS 1" **. . . . . ORDER PF**

FLAPS 1 . . . . . .SELECT / ANNOUNCE PM

- FLAPS 1 should be selected ***more than 7 n.m.*** *before the FAP/FAF.*

- For decelerated approaches, the aircraft must reach or be established on the final descent with FLAPS 1 and "S" speed at or above 2500 ft AAL.

Deceleration toward "S" speed . . . . . .CHECK BOTH

- If the aircraft does not decelerate on the flight path or aircraft speed is significantly higher than"S" speed, extend the landing gear in order to slow down. The use of speedbrakes is possible. The crew should be aware that the use of speedbrakes causes an increase in VLS.

TCAS mode selector . . . . . .TA or TA/RA PM

It is recommended to select TA only mode:

- In case of known nearby traffic which is in visual contact.
- At particular airports (closely-spaced parallel runways, low terrain along the final approach).

AT S speed or at 2500 FT AAL (minimum) for decelerated approaches

"FLAPS 2" **. . . . . .ORDER PF**

FLAPS 2 . . . . . SELECT / ANNOUNCE PM

For decelerated ILS approach approach only, if the aircraft intercepts the flight path at or below 2500 ft AAL, select FLAPS 2 at one dot below the flight path at the latest.

Deceleration toward "F" speed . . . . . CHECK BOTH

- If the aircraft speed is significantly higher than "F" speed on the flight path, or the aircraft does not decelerate on the flight path, extend the landing gear in order to slow down the aircraft.

The use of speed brakes is not recommended.

- When the speed brakes 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.

WHEN FLAPS ARE AT 2

"GEAR DOWN" . . . . . **ORDER PF**

GEAR DOWN . . . . . **SELECT / ANNOUNCE PM**

AUTO BRK . . . . . **CONFIRM PF**

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

GROUND SPOILER . . . . . **ARM PM**

CABIN CREW . . . . . **ADVISE PM**

Set SEAT BELTS OFF then ON twice.

WHEN LANDING GEAR IS DOWN

FLAPS 3 . . . . . **ORDER PF**

FLAPS 3 . . . . . **SELECT / ANNOUNCE PM**

Select FLAPS 3 below VFE NEXT.

WHEEL SD page . . . . . **CHECK BOTH**

- ECAM WHEEL page appears below 800 feet, or at landing gear extension.
- Check for three landing gear green indications on the landing gear indicator panel. At least one green triangle on each landing gear strut on the WHEEL SD page is sufficient to indicate that the landing gear is downlocked. Rely also the "LDG GEAR DN" green LDG MEMO message to confirm that the landing gear is downlocked.

RESIDUAL PRESSURE . . . . . **CHECK PM**

■ **If residual pressure is indicated on the triple indicator:**

RESIDUAL BRAKING PROC . . . . . **APPLY PM**

Due to the accomplishment of the alternate braking functional test (only for enhanced aircraft (with ABCU)) after the landing gear is downlocked, brief brake pressure indications may be observed on BRAKES PRESS.

"FLAPS FULL" . . . . . **ORDER PF**

Retract the speed brakes before selecting FLAPS FULL to prevent a pitch down when the speed brakes automatically retract.
Select FLAPS FULL below VFE next.
To minimize flaps wear, extend flaps full at VFE-15 KT when possible.

Deceleration toward "Vapp" speed . . . . . **CHECK BOTH**

Check deceleration towards VAPP.

Correct TO waypoint on the ND . . . . . **CHECK BOTH**

A/THR . . . . . **CHECK IN SPEED MODE OR OFF PF**

WING ANTI ICE . . . . . **OFF PM**

Switch WING ANTI ICE ON only if severe icing conditions.

SLIDING TABLE . . . . . STOW BOTH

LDG MEMO . . . . . CHECK NO BLUE LINE BOTH

LANDING CHECKLIST. . . . . COMPLETE BOTH

FLIGHT PARAMETERS . . . . . .MONITOR BOTH

PF announces any FMA modification.

PM calls out if:

- *The speed goes lower than the speed target -5 kt , or greater than the speed target +10 kt*
- *The pitch attitude goes lower than -2.5 °, or greater than +10 ° nose up*
- *The bank angle becomes greater than 7 °*
- *The descent rate becomes greater than 1 000 ft/min*

- Following PM flight parameter exceedance callout, the suitable PF response will be:

- *Acknowledge the PM callout, for proper crew coordination purposes*
- *Take immediate corrective action to control the exceeded parameter back into the defined stabilized conditions*
- *Assess whether stabilized conditions will be recovered early enough prior to landing, otherwise initiate a go-around.*

AT MINIMUM STABILIZATION HEIGHT :

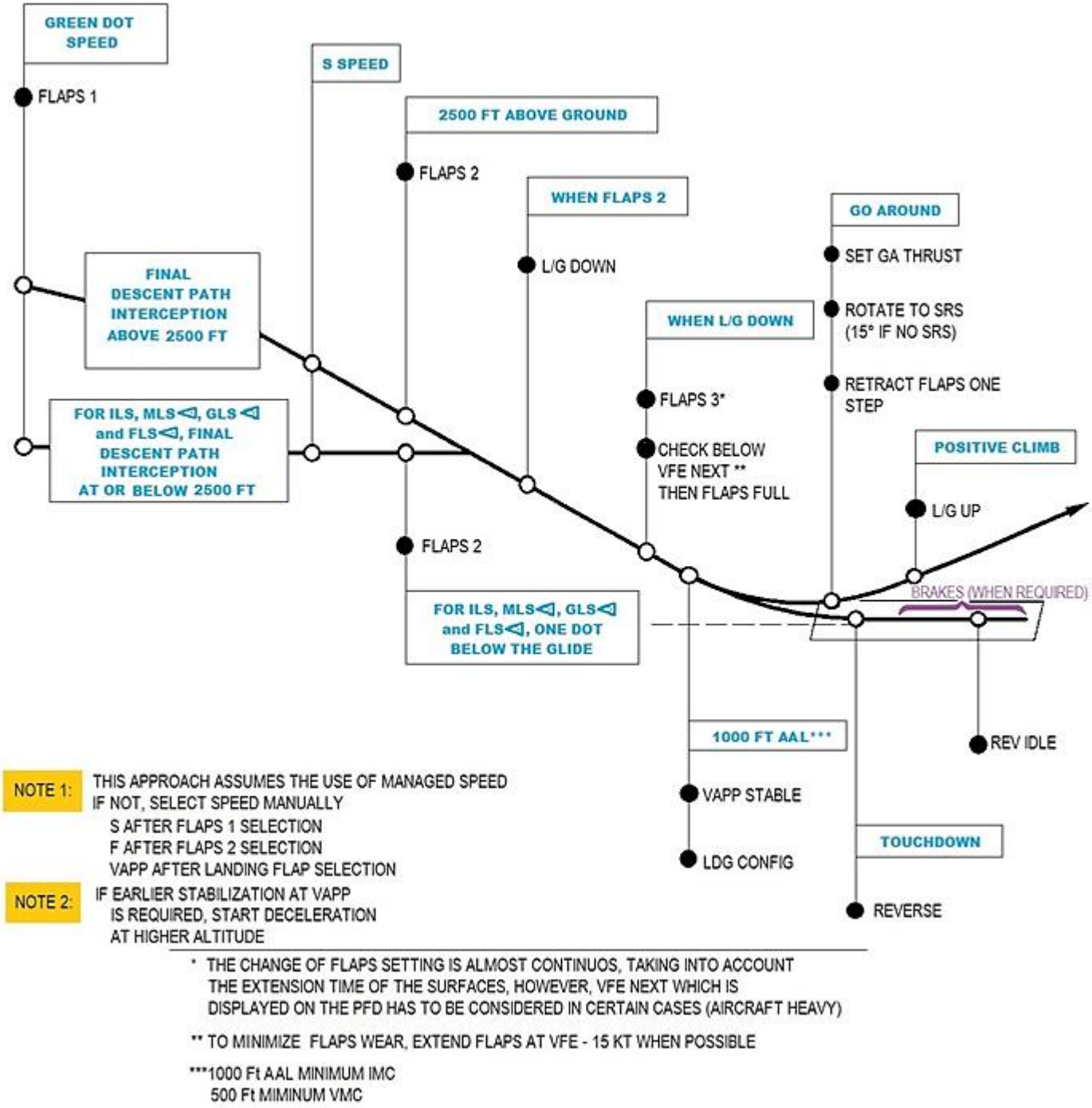
ONE THOUSAND or FIVE HUNDRED . . . . . .CHECK or ANNOUNCE PM

- If the A/C is not stabilized at minimum stabilization height or below and PF does not take immediate corrective action to control the exceeded parameters back into the defined stabilized conditions and there is doubt that stabilized conditions will be recovered early enough prior to landing:

"NOT STABILIZED-GO AROUND" . . . . . .ANNOUNCE PM

GO AROUND . . . . . .INITIATE PF

***"STABILIZED"* . . . . . ANNOUNCE PM**



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 CONTINUOS, 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 WEAR, EXTEND FLAPS AT VFE - 15 KT WHEN POSSIBLE

***1000 Ft AAL MINIMUM IMC
500 Ft MIMINUM VMC

NOTE 3: THE ABOVE DESCRIPTED SCHEME ASSUMES DECELERED APPROACH TECHNICS.

3.18. AIRCRAFT GUIDANCE MANAGEMENT

3.18.1. APPROACH USING LOC AND G/S GUIDANCE (ILS, LDA with G/S)

INTERMEDIATE APPROACH

APPR PB on FCU . . . . . PRESS PF

Press the APPR pushbutton, only when ATC cleared the aircraft for the approach at 3nm or less of lateral deviation from final track. LOC and/or G/S capture modes will engage no sooner than 3 seconds after being armed. ICAO defines the envelope where the quality of the G/S signal ensures a normal capture. This envelope is within 10 nm, ±8 ° of the centerline of the ILS glide path and up to 1.75 θ and down to 0.3 θ (θ = nominal glide path angle). When arming the approach well outside of the normal G/S capture envelope, a spurious G/S* engagement may occur due to a wrong G/S deviation signal. This spurious G/S capture will order a pitch up, if the aircraft is below the glide beam, and a pitch down attitude, if the aircraft is above the glide beam. Whenever the pilot notices the pitch movement, or the spurious G/S*, or the trajectory deviation, he will immediately disconnect the AP, if engaged, to re-establish a normal attitude and will disengage APPR mode.

It is then recommended to arm/rearm APPR (ILS) mode within the normal capture zone.

Both APs . . . . . .ENGAGE PF

- When APPR mode is selected, AP1 and AP2 should be engaged.
- Above 5 000 ft AGL, the FMA displays CAT 1.
- Below 5 000 ft AGL, the FMA displays the correct approach capability for the intended approach.

LOC . . . . . CHECK ARMED BOTH

G/S . . . . . CHECK ARMED BOTH

LOC CAPTURE . . . . . MONITOR BOTH

G/S CAPTURE . . . . . .MONITOR BOTH

G/A ALTITUDE . . . . . .SET BOTH

NOTE: *GA should be set: by PF if AP is ON,PM if AP is OFF.The PF may request that this action is performed by the PM depending on the situation.*

FINAL APPROACH

FLIGHT PARAMETERS . . . . . .MONITOR BOTH

The PM calls out if excessive deviation occurs:

• LOC: 1 dot

• GLIDE: 1 dot

Refer to chapter 5.5. FLIGHT PARAMETERS IN APPROACH

AT ENTERED MINIMUM + 100 FT:

HUNDRED ABOVE . . . . . MONITOR or ANNOUNCE PM

AT ENTERED MINIMUM:

MINIMUM . . . . . MONITOR or ANNOUNCE PM

■ **If visual references are sufficient:**

CONTINUE . . . . . .ANNOUNCE PF

Do not duck under the glide slope. Maintain a stabilized flight path down to the flare.

At 50 ft, one dot below the glide slope is 7 ft below the glide slope.

Below minimum, the visual references must be the primary reference until landing.

● **For LDA approach:**

AP . . . . . OFF PF
"FDs OFF" . . . . . ORDER PF
FD on own side . . . . . OFF PF
FD on own side . . . . . .OFF PM
"BIRD ON, SET RW TRACK" . . . . . .ORDER PF
TRK FPA . . . . . SELECT PM
RUNWAY TRACK . . . . . .CHECK/SET PM

■ **If visual references are not sufficient:**

"GO AROUND/FLAPS" . . . . . ANNOUNCE PF

Initiate a go around.

3.18.2. APPROACH USING FINAL APP GUIDANCE

GENERAL

The following items are to be performed in addition to previous SOP chapters in the following cases:

- **RNAV(GNSS)** approaches with LNAV and LNAV/VNAV minima
- Conventional approaches based on **VOR** or **NDB** using **FINAL APP** guidance.

AIRCRAFT EQUIPMENT

The minimum equipment required to perform RNAV (GNSS) approach is:

1 FMGC, 1 GPS, 2 IRS, 1 MCDU, 1 FD, 1 PFD on the PF side, 2 ND s (the temporary display of ND information via the PFD/ND switch is permitted on PM side), and both FCU channels. (FCOM PRO-SPO- PBN - RNP - RNP APCH / RNAV(GNSS)).

FLIGHT PREPARATION

For RNAV(GNSS) approaches, GPS PRIMARY availability should be confirmed.

DESCENT PREPARATION

WEATHER AND LANDING INFORMATION . . . . . OBTAIN BOTH

The FMS vertical profile does not take into account the effect of low OAT. Therefore, vertical managed guidance:

- Must not be used when the actual OAT is below the minimum temperature indicated on the approach chart, or
- Must not be used when the actual OAT is below -15°C if the minimum temperature is not indicated on the approach chart, or
- May not be used when temperature corrections are required (FINAL APP mode may not engage).

NOTE: *For RNAV(GNSS) approach with LNAV VNAV minima, use of QNH from a remote station is prohibited.*

F-PLN A page . . . . . CHECK BOTH

If a TOO STEEP PATH message is displayed after the Final Descent Point (FDP), do not use FINAL APP guidance for approach. Use NAV FPA or TRK FPA for approach.

- 0,1 degree of difference between the MCDU and the charted final vertical path is acceptable
- 1 degree of difference between the MCDU and the charted final lateral track is acceptable

NOTE: *A higher lateral track value can be acceptable if the navigation database has been validated to exclude potential coding error.*

- 3 degree of difference between the MCDU and the charted final lateral track is acceptable for conventional radio NAVAID approach.

PROG page . . . . . .COMPLETE BOTH

Insert the reference RWY threshold in the BRG/DIST field for position monitoring during approach.

GO AROUND STRATEGY . . . . . .REVIEW PF

The briefing should include a review of the "Management of Degraded Navigation" chapter.

DESCENT

AT FL100 / 10 000 ft:

NAV ACCURACY . . . . . CHECK PM

If NAV accuracy is LOW, use TRK FPA mode for approach (Refer to 3.18.4. APPROACH USING FPA GUIDANCE).

- **For RNAV(GNSS) approach:**

GPS PRIMARY . . . . . CHECK PF

GPS PRIMARY must be available on at least 1 FMS (GPS PRIMARY LOST not displayed on ND).

BARO REF/ALTIMETER . . . . . CHECK BOTH

The vertical guidance requires a precise baro setting. The maximum acceptable discrepancy between altimeters is 100 ft.

INITIAL / INTERMEDIATE / FINAL APPROACH

POSITION . . . . . .MONITOR BOTH

Check that ATC clearances allow the aircraft to fly through the capture area of vertical profile.
After a radar vectoring, consider a DIR TO RDL IN to sequence the F/PLN.

APPR pb on FCU . . . . . .PRESS PF

Press the APPR pb when all of the following conditions are satisfied:

- The aircraft is cleared for approach
- TO waypoint is the Final Descent Point.

APP NAV . . . . . CHECK ARMED or ENGAGED BOTH

FINAL . . . . . .CHECK ARMED BOTH

Check that the V/DEV scale is displayed on the PFD.
At the Final Descent Point / Vertical Intersection Point, a blue arrow on ND indicates that FINAL APP engagement conditions are met. Refer to FCTM PR-NP-SOP - APPROACH - GUIDANCE MANAGEMENT – APPROACH USING FINAL APP GUIDANCE.

AT THE FINAL DESCENT POINT:

FINAL APP . . . . . CHECK ENGAGED BOTH

GO-AROUND ALT . . . . . .SET PF

Set the go around altitude on the FCU when passing FDP.
If there are any altitude constraints on missed approach, set the lowest one.

"GO-AROUND ALT___SET" . . . . . ANNOUNCE PF

FLIGHT PARAMETERS . . . . . .MONITOR BOTH

- Monitor XTK error on ND.
- Monitor V/DEV on PFD.
- Crosscheck distances versus altitudes as published on the charts.
- If approaching on a conventional radio NAVAID procedure, monitor the lateral and vertical guidance using raw data.
- The PM calls out if excessive deviation occurs:

• XTK > 0.1 nm

• V/DEV > ½ dot

On the vertical scale, one dot corresponds to 100 ft. Thus ½ dot is 50 ft.

Refer to 5.5. FLIGHT PARAMETERS IN APPROACH

AT ENTERED MINIMUM + 100 FT:

HUNDRED ABOVE . . . . . MONITOR or ANNOUNCE PM

AT ENTERED MINIMUM:

MINIMUM . . . . . MONITOR or ANNOUNCE PM

■ **If visual references are sufficient:**

***«CONTINUE»* . . . . . .ANNOUNCE PF**

At the latest at the MAP or Minimum Use Height of the AP (whichever occurs first):

AP . . . . . .OFF PF

- For Minimum Use Height of the AP, Refer to FCOM LIM-AFS-GEN - Autopilot Function
- At minimum -50 ft, if the AP is still engaged, the message DISCONNECT AP FOR LDG may appear and pulse on the FMA to remind the flight crew that automatic landing is not available.

FD . . . . . AS RQRD BOTH

CAUTION: - From minima down to the MAP the FD provides an additional guidance. The FD must be switched off if the guidance is not relevant or not followed.
- After the MAP, disregard the FD as it reverts to HDG V/S.

- If it is decided to switch off the FD:

***"FDs OFF"* . . . . . .ORDER PF**

FD on own side . . . . . .OFF PF

FD on own side . . . . . OFF PM

"BIRD ON, SET RW TRACK" . . . . . .**ORDER PF**

TRK FPA . . . . . **SELECT PM**

RUNWAY TRACK . . . . . .**CHECK/SET PM**

Below minimum, the visual references must be the primary reference until landing.

■ **If visual references are not sufficient:**

"GO AROUND/FLAPS" . . . . . .**ANNOUNCE PF**

Initiate a go around

MANAGEMENT OF DEGRADED NAVIGATION

For VOR and NDB approaches, be prepared to continue the approach with reference to appropriate raw data by reverting to:

- NAV FPA, if the vertical guidance is not satisfactory
- TRK FPA, if the lateral and vertical guidance are not satisfactory.

For RNAV(GNSS) approaches with LNAV minima and LNAV/VNAV minima:

- Use the appropriate remaining AP/FD in the following cases:
• GPS PRIMARY LOST on one ND
• NAV ACCUR DOWNGRAD on one FMGS.
- Discontinue the approach in the following cases, if external visual references are not sufficient to proceed visually:
• GPS PRIMARY LOST on both NDs
• XTK > 0.3 nm
• NAV FM/GPS POS DISAGREE on ECAM
• NAV ACCUR DOWNGRAD on both FMGS.

For RNAV(GNSS) approaches with LNAV/VNAV minima:

- Discontinue the approach in the case of deviation of 75 ft below the vertical path (V/DEV>¾dot).

3.18.3. APPROACH USING FINAL APP GUIDANCE FOR RNAV(RNP)

GENERAL

The following items are to be performed in addition to previous SOP chapters in case of RNAV(RNP) approaches.

AIRCRAFT EQUIPMENT

The minimum equipment required to perform RNAV (RNP) approach is:
2 FMGC, 2 MCDU, 2 FD, 1 AP (at least), 2 FAC, 2 ELAC, 2 SFCC, 2 RA, 2 PFD with V/DEV displays, 2 ND, 2 GPS (MMR), 3 ADIRS in NAV mode, TAWS with display of terrain, FCU with both channels. (FCOM PRO-SPO-PBN - RNP AR / RNAV(RNP)).

FLIGHT PREPARATION

Use a prediction tool to check the GPS PRIMARY availability for the estimated time of operation. It ensures that the RNP criteria will be met during approach. This prediction should take into account the terrain environment.

DESCENT PREPARATION

WEATHER AND LANDING INFORMATION . . . . . .OBTAIN BOTH

The FMS vertical profile does not take into account the effect of low OAT. Therefore, vertical managed guidance:
- Must not be used when the actual OAT is below the minimum temperature indicated on the approach chart, or
- Must not be used when the actual OAT is below -15°C if the minimum temperature is not indicated on the approach chart, or
- May not be used when temperature corrections are required (FINAL APP mode may not engage).

NOTE: *Verify that wind is within limits.Use of QNH from a remote station is prohibited.*

F-PLN A page . . . . . .CHECK BOTH

If a TOO STEEP PATH is displayed after the Final Descent Point (FDP), FINAL APP guidance cannot be used. Select another approach.

PROG page. . . . . COMPLETE BOTH

- Insert the reference waypoint or RWY threshold in the BRG/DIST field for position monitoring during approach.
- Check/insert the RNP value in the 6L field.

TERR on ND . . . . . .ON BOTH

Unless weather radar is required on PF side, the flight crew selects terrain on both NDs.

GO AROUND STRATEGY . . . . . REVIEW PF

The briefing should include a review of the "Management of Degraded Navigation" chapter.

DESCENT

GPS PRIMARY ON BOTH FMS . . . . . .CHECK BOTH

For RNAV(RNP) approaches, GPS PRIMARY must be available on both FMS (GPS PRIMARY LOST not displayed on NDs).

GPS 1+2 . . . . . .CHECK both in NAV PM

Both GPS must be in NAV on the GPS MONITOR Page.

Both GPS and both FMS must be available before the IAF. Thus, if one FMS is inoperative or if one GPS is not in NAV before the IAF, RNAV(RNP) is not allowed.

INITIAL / INTERMEDIATE / FINAL APPROACH

BARO REF/ALTIMETER . . . . . CHECK BOTH

The vertical guidance requires a precise baro setting. The maximum acceptable discrepancy between altimeters is 100 ft.

FD or AP FD . . . . . USE FOR APPROACH

The use of FD or AP FD provides the required navigation accuracy. Refer to FCOM LIM-AFS-GEN - USE OF NAV MODE

APPR pb on FCU . . . . . PRESS PF

Press the APPR pb when all of the following conditions are satisfied:

- The aircraft is cleared for approach
- TO waypoint is the Final Descent Point.

APP NAV . . . . . .CHECK ARMED or ENGAGED BOTH

FINAL . . . . . CHECK ARMED BOTH

Check that the V/DEV scale is displayed on the PFD.

At the Final Descent Point / Vertical Intersection Point, a blue arrow on ND indicates that FINAL APP engagement conditions are met. Refer to FCTM PR-NP-SOP - APPROACH - GUIDANCE MANAGEMENT – APPROACH USING FINAL APP GUIDANCE.

AT THE FINAL DESCENT POINT:

FINAL APP . . . . . CHECK ENGAGED BOTH

GO-AROUND ALT . . . . . .SET PF

Set the go around altitude on the FCU when passing FDP.

If there are any altitude constraints on missed approach, set the lowest one.

“GO-AROUND ALT___SET” . . . . . ANNOUNCE PF

FLIGHT PARAMETERS . . . . . .MONITOR BOTH

- Monitor XTK error on ND.
- Monitor V/DEV on PFD.
- Crosscheck distances versus altitudes as published on the charts.
- The PM calls out if excessive deviation occurs:
- XTK reaches 0.1 nm
- V/DEV reaches ½ dot

On the vertical scale, one dot corresponds to 100 ft. Thus ½ dot is 50 ft.

Refer to 5.5. FLIGHT PARAMETERS IN APPROACH

- Go around must be initiated if excessive deviation occurs:

• XTK reaches 1 RNP

• V/DEV reaches ¾ dot

On the vertical scale, one dot corresponds to 100 ft. Thus ¾ dot is 75 ft.

AT ENTERED MINIMUM + 100 FT:

HUNDRED ABOVE . . . . . MONITOR or ANNOUNCE PM

AT ENTERED MINIMUM:

MINIMUM . . . . . MONITOR or ANNOUNCE PM

■ **If visual references are sufficient:**

***«CONTINUE»* . . . . . .ANNOUNCE PF**

At the latest at the MAP or Minimum Use Height of the AP (whichever occurs first):

AP . . . . . OFF PF

- For Minimum Use Height of the AP, Refer to FCOM LIM-AFS-GEN - Autopilot Function
- At minimum -50 ft, if the AP is still engaged, the message DISCONNECT AP FOR LDG may appear and pulse on the FMA to remind the flight crew that automatic landing is not available.

FD . . . . . AS RQRD BOTH

CAUTION: - From minima down to the MAP the FD provides an additional guidance. The FD must be switched off if the guidance is not relevant or not followed.
- After the MAP, disregard the FD as it reverts to HDG V/S.

- If it is decided to switch off the FD:

***"FDs OFF"* . . . . . .ORDER PF**

FD on own side . . . . . .OFF PF

FD on own side . . . . . OFF PM

***"BIRD ON, SET RW TRACK"* . . . . . .ORDER PF**

TRK FPA . . . . . SELECT PM

RUNWAY TRACK . . . . . .CHECK/SET PM

Below minimum, the visual references must be the primary reference until landing.

■ **If visual references are not sufficient:**

***"GO AROUND/FLAPS"* . . . . . .ANNOUNCE PF**

Initiate a go around.

ENGINE FAILURE

If one engine fails in approach, the AP must be disconnected. The approach may be continued with FD engaged

MANAGEMENT OF DEGRADED NAVIGATION

The approach may be continued in case of single failure of:

- GPS (MMR)
- FMGS
- EFIS DU
- MCDU
- AP

Discontinue the approach in the following cases:

- FINAL APP does not engage
- GPS PRIMARY LOST on both NDs
- Dual NAV ACCUR DOWNGRAD
- FM/GPS POSITION DISAGREE
- FMS1/FMS2 POS DIFF
- Dual loss of FMGC or dual loss of FINAL APP mode
- Loss of GPWS TERRAIN function in case of inconsistencies affecting obstacles or terrain computation
- NAV ALT DISCREPANCY

3.18.4. APPROACH USING FPA GUIDANCE

GENERAL

The following items are to be performed in addition to previous SOP chapters in the following cases:

- RNAV(GNSS) approaches using mixed NAV FPA guidance with LNAV minima only
- Conventional approaches based on VOR and NDB using selected TRK FPA or mixed NAV FPA guidance
- ILS G/S OUT, LDA without G/S, LOC ONLY and back course localizer approaches.

The approach is flown in TRK FPA when:

- The approach is not stored in the database or
- NAV accuracy is LOW.
- For training purposes.

AIRCRAFT EQUIPMENT

For RNAV(GNSS) approaches, Refer to FCOM PRO-SPO-RNP - RNP APCH / RNAV(GNSS) - REQUIRED RNP APCH EQUIPMENT.

The minimum equipment required to perform RNAV (GNSS) approach is:

1 FMGC, 1 GPS, 2 IRS, 1 MCDU, 1 FD, 1 PFD on the PF side, 2 ND s (the temporary display of ND information via the PFD/ND switch is permitted on PM side), and both FCU channels.

DESCENT PREPARATION

F-PLN A page . . . . . .CHECK BOTH

For approaches using NAV FPA:

• 1 degree of difference between the MCDU and the charted final lateral track is acceptable.

• 3 degree of difference between the MCDU and the charted final lateral track is acceptable for conventional radio NAVAID approach.

- In all other cases, use TRK FPA mode for approach.

GO AROUND STRATEGY . . . . . .REVIEW PF

The briefing should include a review of the "Management of Degraded Navigation" chapter.

WHEN CLEARED FOR APPROACH

LATERAL GUIDANCE MODE . . . . . .SET FOR APPROACH PF

Arm NAV, LOC mode as appropriate.

- **For LOC ONLY and ILS G/S OUT:**

LOC pb-sw . . . . . PRESS PF

CAUTION: DO NOT PRESS THE APPR PB

LOC . . . . . .CHECK ARMED BOTH

Press the LOC pb-sw when cleared for approach and on the intercept trajectory for the final approach course at 3nm or less of lateral deviation from final track.

NOTE: *In NAV mode, the aircraft may leave the F-PLN to capture the LOC.*

- **For back course localizer approaches:**

TRK FPA MODE . . . . . .USE FOR APPROACH PF

Refer to FCTM PR-NP-SOP-APPROACH-GUIDANCE MANAGEMENT-APPROACH USING FPA GUIDANCE - Back Course Localizer Approach.

TRK FPA (Bird) . . . . . SELECT PF

LATERAL PATH . . . . . INTERCEPT PF

Monitor NAV, LOC mode engagement as appropriate or adjust TRK.

At about 1 nm from the Final Descent Point (FDP):

FPA FOR FINAL APPROACH . . . . . .SET PF

At 0.3 nm from the Final Descent Point (FDP):

FPA pb-sw . . . . . PULL PF

FPA MODE . . . . . CHECK ENGAGED BOTH

Check NAV FPA, LOC FPA or TRK FPA is engaged.

GO AROUND ALTITUDE . . . . . SET PF

Set when below the go around altitude to avoid unexpected altitude capture.
If there are any altitude constraints on missed approach, set the lowest one.

“GO-AROUND ALT___SET” . . . . . ANNOUNCE PF

POSITION/FLIGHT PATH . . . . . MONITOR BOTH

POSITION/FLIGHT PATH . . . . . ADJUST PF

FLIGHT PARAMETERS . . . . . .MONITOR BOTH

Crosscheck distances versus altitudes as published on the charts.
If approaching on a conventional radio NAVAID procedure, monitor the lateral and vertical guidance using raw data. For approaches using NAV FPA, monitor XTK error on ND to check the lateral guidance. Refer to 5.5. FLIGHT PARAMETERS IN APPROACH

The PM calls out if excessive lateral deviation occurs:

• Approach using NAV MODE: XTK > 0.1 nm

- Approach using LOC MODE: LOC 1 dot
- Approach using TRK MODE:
  - VOR: ½ dot or 2.5 °
  - NDB: 5 °

AT ENTERED MINIMUM + 100 FT:

"HUNDRED ABOVE" . . . . . **MONITOR or ANNOUNCE PM**

AT ENTERED MINIMUM:

"MINIMUM" . . . . . **MONITOR or ANNOUNCE PM**

■ **If visual references are sufficient:**

"CONTINUE" . . . . . **ANNOUNCE PF**

AP . . . . . **OFF PF**

"FDs OFF" . . . . . **ORDER PF**

FD on own side . . . . . **OFF PF**

FD on own side . . . . . **OFF PM**

"SET RW TRACK" . . . . . **ORDER PF**

RUNWAY TRACK . . . . . **CHECK/SET PM**

Below minimum, the visual references must be the primary reference until landing.

■ **If visual references are not sufficient:**

"GO AROUND/FLAPS" . . . . . **ANNOUNCE PF**

Initiate a go around

MANAGEMENT OF DEGRADED NAVIGATION

For VOR and NDB approaches in NAV FPA, if lateral guidance is not satisfactory:

Be prepared to continue with reference to appropriate raw data by reverting to TRK FPA.

For RNAV(GNSS) approaches, with LNAV minima:

Use the appropriate remaining AP/FD in the following cases:

- GPS PRIMARY LOST on one ND
- NAV ACCUR DOWNGRAD on one FMGS

Discontinue the approach in the following cases, if external visual references are not sufficient to proceed visually:

- GPS PRIMARY LOST on both NDs
- XTK > 0.3 nm
- NAV FM/GPS POS DISAGREE on ECAM
- NAV ACCUR DOWNGRAD on both FMGS

3.18.5. CAT II / CAT III APPROACH

FLIGHT PREPARATION

The flight crew may perform a CAT II/CAT III approach, if:

- The flight crew is qualified to perform the specific approach. (Licenses, Minimums)
- The airport is approved for the intended operations. (Charts, MIN, NOTAM, OM Part A Chapter 8 paragraph 8.4.6.4).
- The required systems and functions are operative. (MEL, QRH OPS.08 REQUIRED EQUIPMENT FOR CAT2 AND CAT3).

Fuel planning: additional extra fuel should be considered for possible approach delays.

APPROACH PREPARATION

During descent preparation review and brief additionally:

- Limitations: FCOM LIM-AFS - AUTOMATIC APPROACH, LANDING AND ROLLOUT.
- When an ECAM or local caution occurs, the crew should use the list QRH OPS.08 REQUIRED EQUIPMENT FOR CAT2 AND CAT3 to confirm the landing capability.
- LVP: 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.
- 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.
- Landing lights are not normally used in CAT II/III weather conditions.

TASK SHARING

The task sharing for a CAT II / CAT III approach is that CM1 is PF and CM2 is PM.

The workload is distributed in such a way that the PF primary tasks are supervising and decision making, and the PM primary task is monitoring operation of the automatic systems.

In summary the tasks are shared as follows:

TASK SHARING FOR CM1

- Keeps hands on sidestick and thrust levers throughout the approach;
- Makes FCU selections (if any);
- Takes manual control in the event of AP disconnection;
- Monitors flight instruments.

<u>Approaching DH:</u>

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

<u>At or before DH (if the decision is to continue):</u>

- Calls “CONTINUE”;
- 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 at touchdown;
- Disengages AP when taxi speed is reached.

TASK SHARING FOR CM2

- Monitors flight instruments head-down throughout the approach and landing until rollout is completed;
- Calls any deviation or failure warning;
- Calls barometric heights as required, and monitors auto callouts or announces radio heights including “100 ABOVE”, “MINIMUM”;
- Monitors FMA and announces mode changes below 350ft AAL.

● If decision is not announced by CM1 At DH (identified by aural and visual warning):

GO-AROUND . . . . . INITIATE CM2

CAT II/III approach should be performed using standard ILS approach technique till 1000ft

As a general rule, if a failure occurs above 1000ft AAL the approach may be continued with a higher DH providing that above 1000ft AAL:

- ECAM actions completed;
- Landing capability is confirmed with QRH OPS.08 REQUIRED EQUIPMENT FOR CAT2 AND CAT3;
- RVR is at least equal to new minima;
- New/ higher DH is inserted into PERF page;
- Briefing update performed.

Below 1000ft and above 100ft (Alert Height) for CAT III DUAL or DH for CAT II / CAT III single:

- **If no sufficient visual references, GO-AROUND MUST BE INITIATED in case of:**
  - Amber caution (single chime), or
  - Landing capability degradation.

For CAT III approach:

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

For CAT II approach:

AUTO CALL OUT RA is not mandatory, in case of failure of AUTO CALL OUT the PM must perform this function.
AUTO CALL OUT RA is required for autoland.

RA CALL OUT . . . . . .MONITOR BOTH
Monitor CALL OUT or PM announces as appropriate: "TWO HUNDRED"; "HUNDRED ABOVE"; "ONE HUNDRED"; "MINIMUM"; "FIFTY", "THIRTY", "TWENTY", "RETARD".
"RETARD" auto call out comes up at 10ft if LAND mode is engaged with AP engaged. Otherwise it is announced at 20ft.

AT 350 FT RA:

***"LAND, COURSE CHECKED"* . . . . . .ANNOUNCE CM1**

- **if "LAND" does not appear on FMA: CM1 announces *"NO LAND"* *and perform go-around if insufficient visual references.***
- **if ILS course differs by more than 5 degrees from published:**
  - **CAT III approach:**
    GO-AROUND and revert to CAT II minima . . . . . .PERFORM CM1
  - **CAT II approach:**
    CM1 continue the approach and DISCONNECT AP at 80 ft at the latest.

FMA . . . . . .MONITOR CM2
CM2 monitors FMA and announces mode changes below 350ft AAL.

AT 200 FT RA and below:

If AUTOLAND warning appears on the glareshield go-around must be initiated.

AT DH + 100 FT:

***"HUNDRED ABOVE"* . . . . . MONITOR BOTH or ANNOUNCE CM2**
OUTSIDE SCANNING . . . . . COMMENCE CM1

AT DH:

***"MINIMUM"* . . . . . .MONITOR BOTH or ANNOUNCE CM2**
"CONTINUE" or "GO AROUND/FLAPS" . . . . . ANNOUNCE CM1
Perform landing or initiate a go-around procedure.

AT 40 FT RA:

FLARE on FMA. . . . . .CHECK CM2
"FLARE" or "NO FLARE". . . . . ANNOUNCE CM2
If NO FLARE mode at 30 ft, CM2 announces "NO FLARE".
If "NO FLARE" announced CM1 performs go around.

AT 30 FT RA:

THR reduction and flare by flight instruments. . . . . MONITOR CM2

AUTO CALL OUT RA. . . . . MONITOR BOTH or ANNOUNCE CM2

AT 10 FT RA:

Both THR LEVERS . . . . . .RETARD TO IDLE CM1

Lateral guidance by external reference . . . . . .MONITOR CM1

AT TOUCH DOWN:

NOTE: *In case of ANTI SKID or NWS failure,* **CM1** must *disconnect AP and take manual control.*

ROLL OUT on FMA . . . . . CHECK CM2

"ROLL OUT" or "NO ROLL OUT" **. . . . . .ANNOUNCE CM2**

CM1 will disconnect AP immediately, if "NO ROLL OUT" announced.

BOTH THRUST LEVERS . . . . . REV MAX or REV IDLE CM1

The flight crew must select reverse thrust immediately after main landing gear touchdown.
The flight crew must immediately select REV MAX, if any of the following occurs at any time during the landing:
- An emergency
- The deceleration is not as expected
- A failure affects the landing performance
- A long flare or a long touchdown
- An unexpected tailwind.

A small pitch up may occur during thrust reversers deployment before nose landing gear touchdown. However, the auto-flight system will control this pitch up.
As soon as the flight crew selects reverse thrust, they must perform a full-stop landing.

Continue standard landing procedure and disengage the APs at the end of rollout, and before leaving the runway.

If visual references are lost after touch down, a go-around should not be attempted.
The roll-out should be continued with AP in ROLL OUT mode down to taxi speed.

FOR CAT III WITHOUT DH APPROACH

Apply all of the above with the following exceptions and additions:

1. For CATIII with no DH, the flight crew should enter "**NO**" in the DH or RADIO field of the MCDU to avoid false "HUNDRED ABOVE" or "MINIMUM" auto callouts which would not be applicable.

2. The approach may be performed only if "**CAT 3 DUAL**" is displayed on the FMA.

3. Automatic rollout is mandatory. RW condition is not worse than **WET** for automatic rollout.

4. At **100 ft** (Alert Height - AH) if no failure:

CONTINUE . . . . . .ANNOUNCE CM1

The decision to continue does not depend on visual references, even though a minimum RVR is specified. The decision depends only on the operational status of the aircraft and ground equipment. If a failure occurs prior to reaching the AH, a go-around will be initiated. A go-around must nevertheless be performed if AUTOLAND warning is triggered below AH. However, it is good airmanship for the PF to acquire visual cues during flare and to monitor the roll out.

3.18.6. 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, LG down**.

Passing the Final Descent Point (FDP):

GO AROUND ALTITUDE . . . . . SET PF
For FPA guidance set when below the go around altitude to avoid unexpected altitude capture.
If there are any altitude constraints on missed approach, set the lowest one.
"GO-AROUND ALT___SET" . . . . . ANNOUNCE PF

Upon reaching MINIMUM (MDA for circling):

FPA . . . . . .PUSH PF
Push V/S/FPA knob to level off at MDA+10% of vertical speed. Search visual references.

- **If the flight crew finds no visual reference:**
  AT MAP GO AROUND . . . . . INITIATE PF
- **If flight crew finds sufficient visual references and is within circling area:**
  TRK/FPA . . . . . SELECT PF
  45° left or right TURN . . . . . .SELECT PF
  CHRONO. . . . . START PM
  Fly to downwind leg for 30s from wings level.
  TRK for DOWNWIND . . . . . SELECT PF
  "ACTIVATE SECONDARY". . . . . .ORDER PF
  SEC F-PLN . . . . . ACTIVATE PM
  At abeam of RW threshold CHRONO . . . . . .START PM
  Fly from abeam for **3s for each 100ft** AAL **±1s for 1kt** of headwind / tailwind.

CAUTION: The PF must maintain visual contact with required visual references during the circling and aircraft must remain within the circling area during approach.

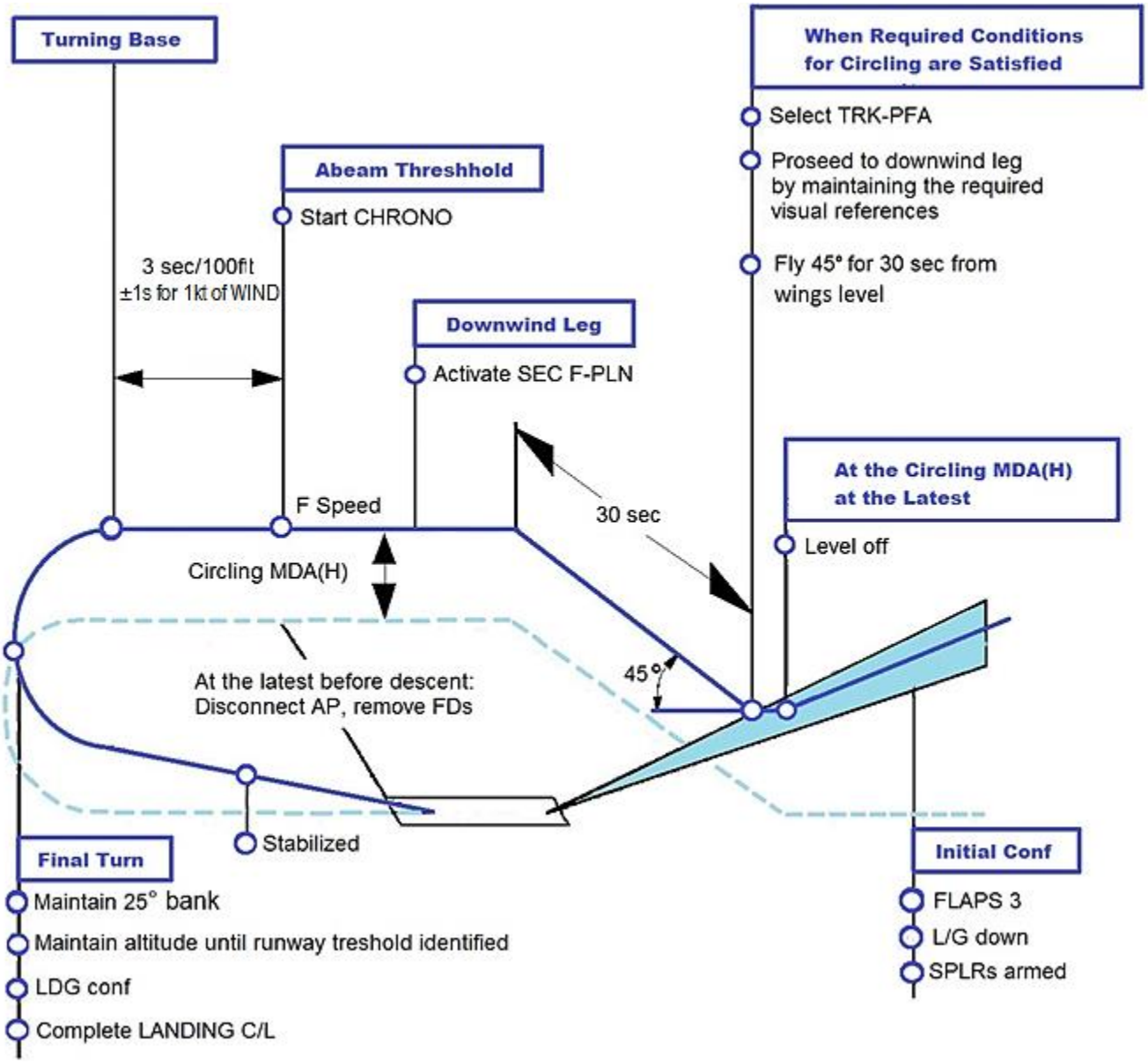
BEFORE TURNING FINAL

AUTOPILOT . . . . . DISENGAGE PF
***"FDs OFF"* . . . . . .ANNOUNCE PF**
FD on own side . . . . . .OFF PF
FD on own side . . . . . OFF PM
Final descend from MDA . . . . . .INITIATE PF
Descend below MDA may ONLY be started in turn towards RW if RW visual aids are in sight.
***"SET RW TRACK"* . . . . . ORDER PF**

RW TRACK . . . . . **SET** PM
"FLAPS FULL" . . . . . **ORDER** PF
FLAPS FULL . . . . . **SELECT / ANNOUNCE** PM
LANDING CHECKLIST . . . . . **COMPLETE** BOTH

CAUTION: In case of loss of visual contact with ground, climb toward the RW and proceed for **MISSED APPROACH** as defined for **the instrument approach.** The missed approach **must be flown with raw data**, since no longer ACTIVE PLN is valid.

CIRCLING APPROACH PATTERN



3.18.7. VISUAL APPROACH

Perform the approach on a nominal 3 degree glideslope using visual references. Approach should be stabilized by 500 feet AAL with bank angle as latest on the correct path, the landing configuration, at Vapp have to be achieved by 1000 feet AAL.

- 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. However visual references must be used.

AT THE BEGINNING OF THE DOWNWIND LEG (APPROXIMATELY 5NM FROM AIRFIELD).

APPR PHASE . . . . . .ACTIVATE PF
A/THR active and SPD MANAGED . . . . . .CHECK PF
AP . . . . . OFF PF
***"FDs OFF"* . . . . . .ORDER PF**
FD on own side . . . . . OFF PF
FD on own side . . . . . .OFF PM
***"BIRD ON"* (to display FPV) . . . . . ORDER PF**
TRK/FPA . . . . . SELECT PM
"SET GO AROUND ALTITUDE ___" . . . . . .ORDER PF
GO AROUND ALTITUDE . . . . . .SET PM
"GO-AROUND ALT___SET" . . . . . ANNOUNCE PF

AT GREEN DOT SPEED

"FLAPS 1" . . . . . .ORDER PF
FLAPS 1 . . . . . SELECT / ANNOUNCE PM

ABM THRESHOLD

"START CHRONO" . . . . . .ORDER PF
CHRONO . . . . . START PM

Extend the downwind leg to 3 s/100 ft AAL ± 1 s for 1 kt of headwind / tailwind.

10 SECONDS BEFORE BASE TURN

"FLAPS 2" . . . . . .**ORDER PF**

FLAPS 2 . . . . . **SELECT / ANNOUNCE PM**

AT BASE TURN

- **Turn into base leg with a maximum of 30° of bank.**
- **Descent with approximate FPA, in FLAPS 2, at F speed.**
- **Config AC in sequence**

"SET RW TRACK" . . . . . .**ORDER PF**

RW TRACK . . . . . .**SET PM**

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

FINAL APPROACH

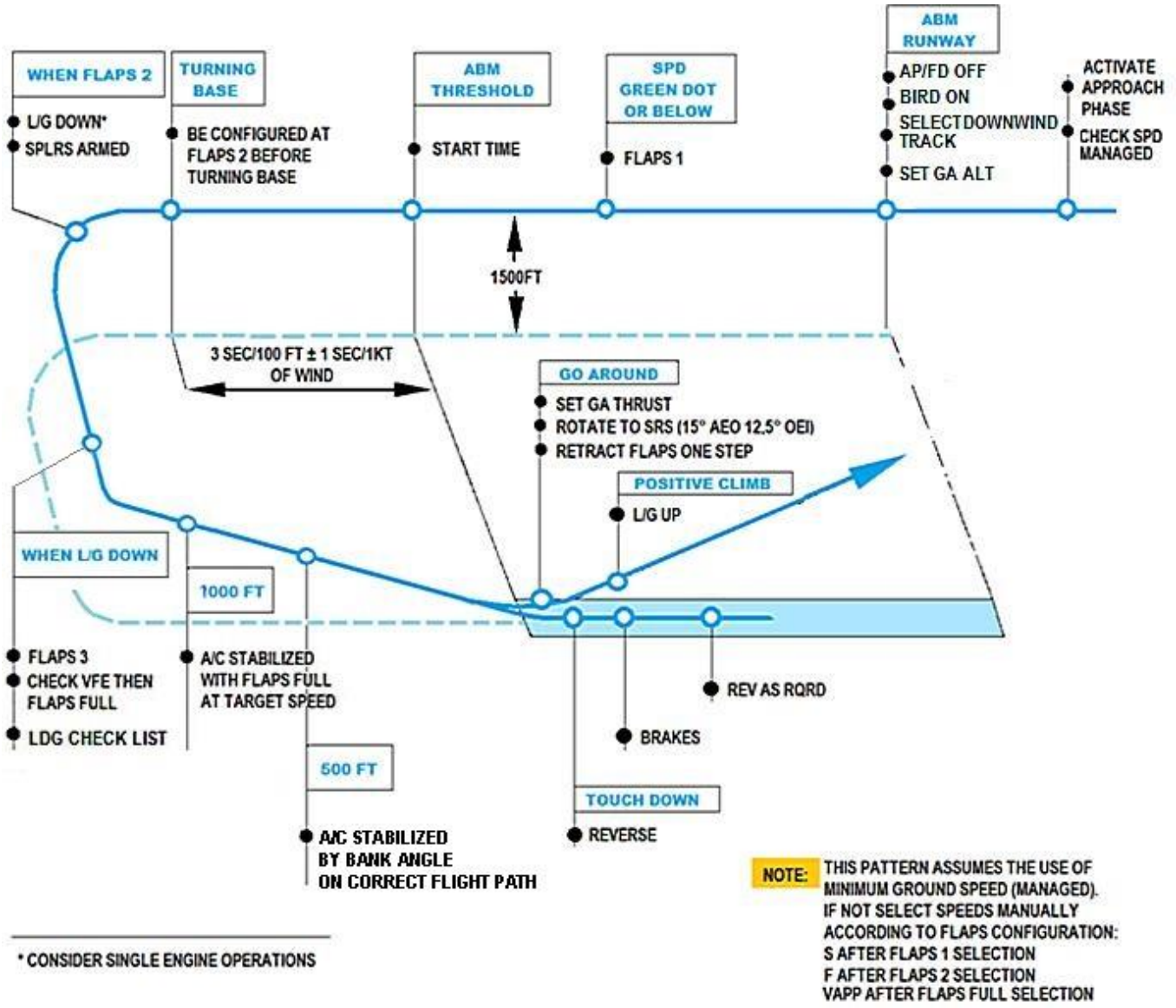
The speed trend arrow and FPV help the flight crew make timely and correct thrust settings (if in manual thrust), and approach path corrections. Avoid descending through the correct approach path with idle thrust. (Late recognition of this situation without a prompt thrust increase may lead to considerable speed decay and altitude loss).

Ensure that the aircraft is stabilized on the final descent path at VAPP (or ground speed mini) in the landing configuration with the thrust stabilized above idle at 500 feet AAL.

Avoid any tendency to "duck under" in the late stages of the approach.

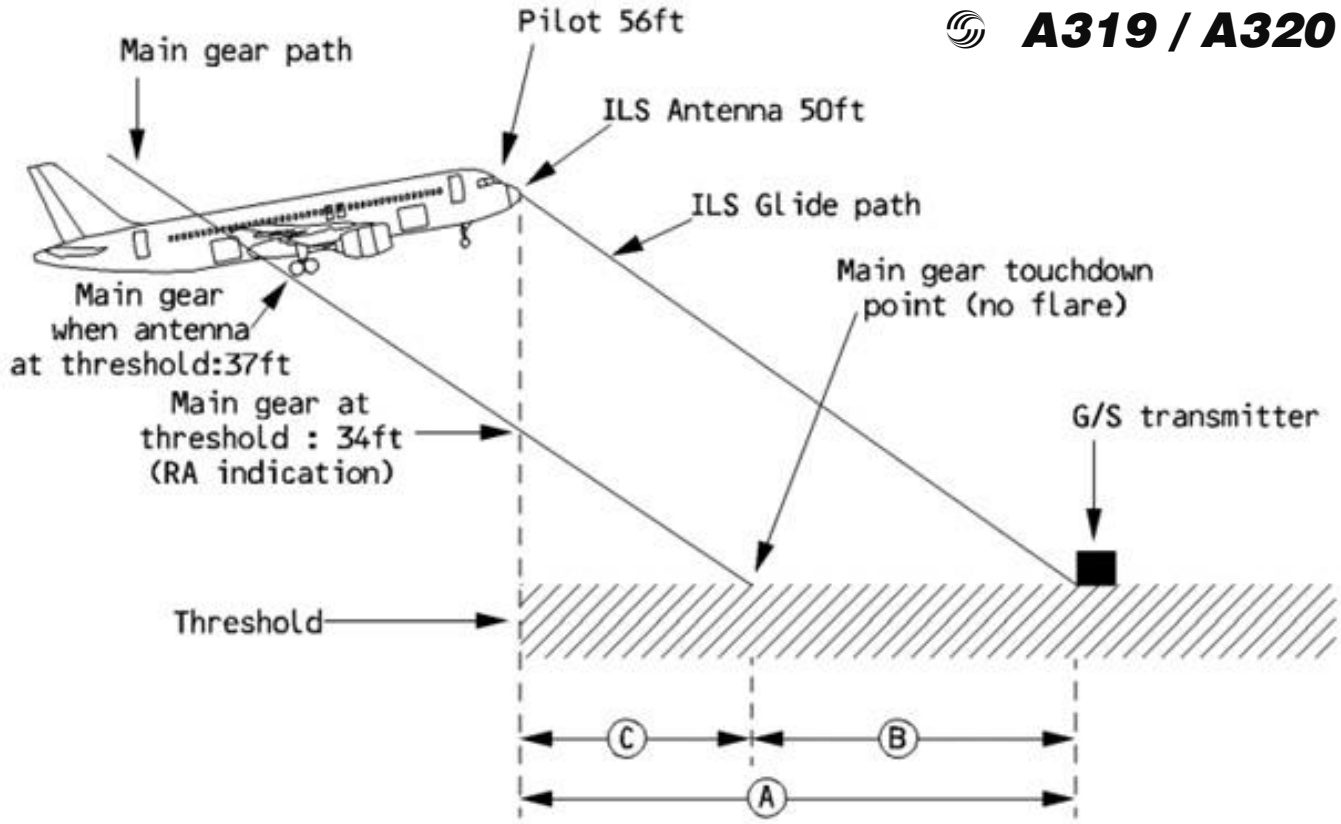
Avoid destabilizing the approach in the last 100 feet, in order to have the best chance of performing a good touchdown at the desired position.

VISUAL APPROACH (1 OR 2 ENGINES) PATTERN



ILS FINAL APPROACH AND LANDING GEOMETRY

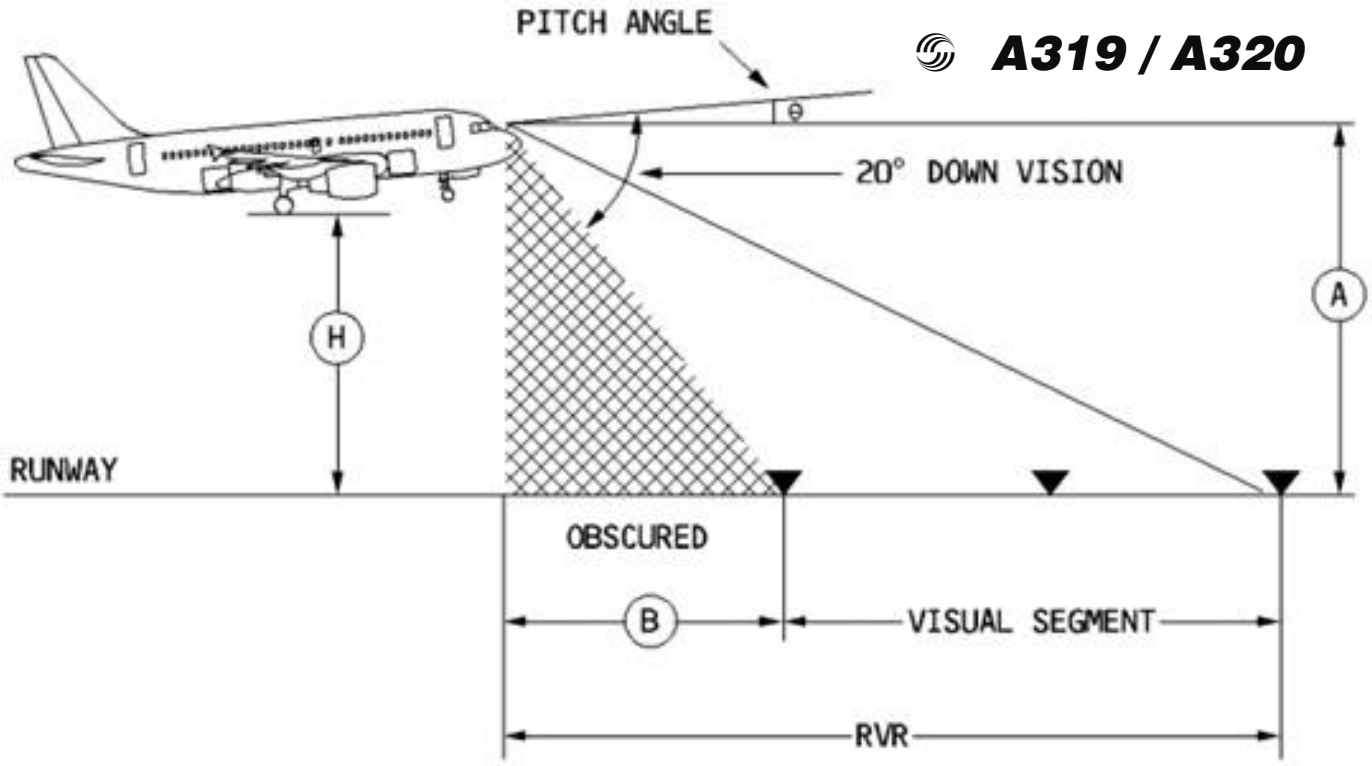
A319 / A320



*** All numbers are shown with accuracy of 10 m**

CONDITIONS:	PITCH ANGLE		GLIDE PATH (°)	Ⓐ *	Ⓑ *	TOUCHDOWN POINT Ⓒ *
■ FLAPS FULL ■ ILS ANTENNA AT 50 ft AT THRESHOLD ■ NO FLARE	A319	A320				
	4.8 °	5.3°	2.5 °	350 m	120 m	230 m
	5.3°	5.8 °	3.0 °	300 m	100 m	200 m

MINIMUM VISUAL GROUND SEGMENTS (Flare phase)



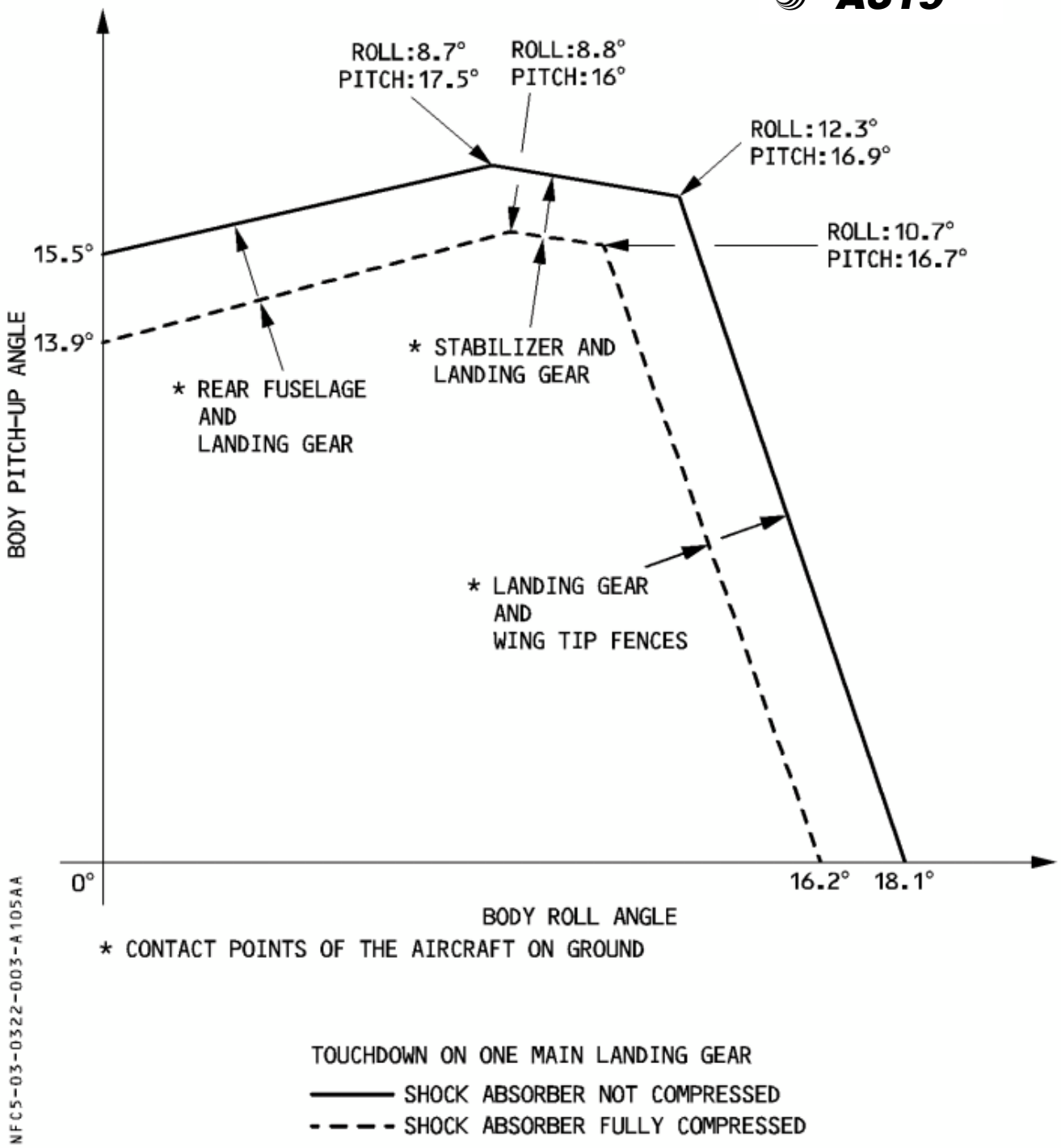
	CAT III				CAT II	
	A319	A320	A319	A320	A319	A320
Ⓗ RA HIGHT	Θ = 5.4°	Θ = 4.9°	Θ = 5.3°	Θ = 4.7°	Θ = 5.3°	Θ = 4.7°
	15 ft		50 ft		100 ft	
Ⓐ VISION HIGHT	35 ft		70 ft		120 ft	
MINIMUM RVR	110 m		140 m		260 m	
VISUAL SEGMENT	60 m				120 m	
OBSCURED Ⓑ	40 m		80 m		140 m	

*** All numbers are shown with accuracy of 10 m**

R

GROUND CLEARANCE DIAGRAM

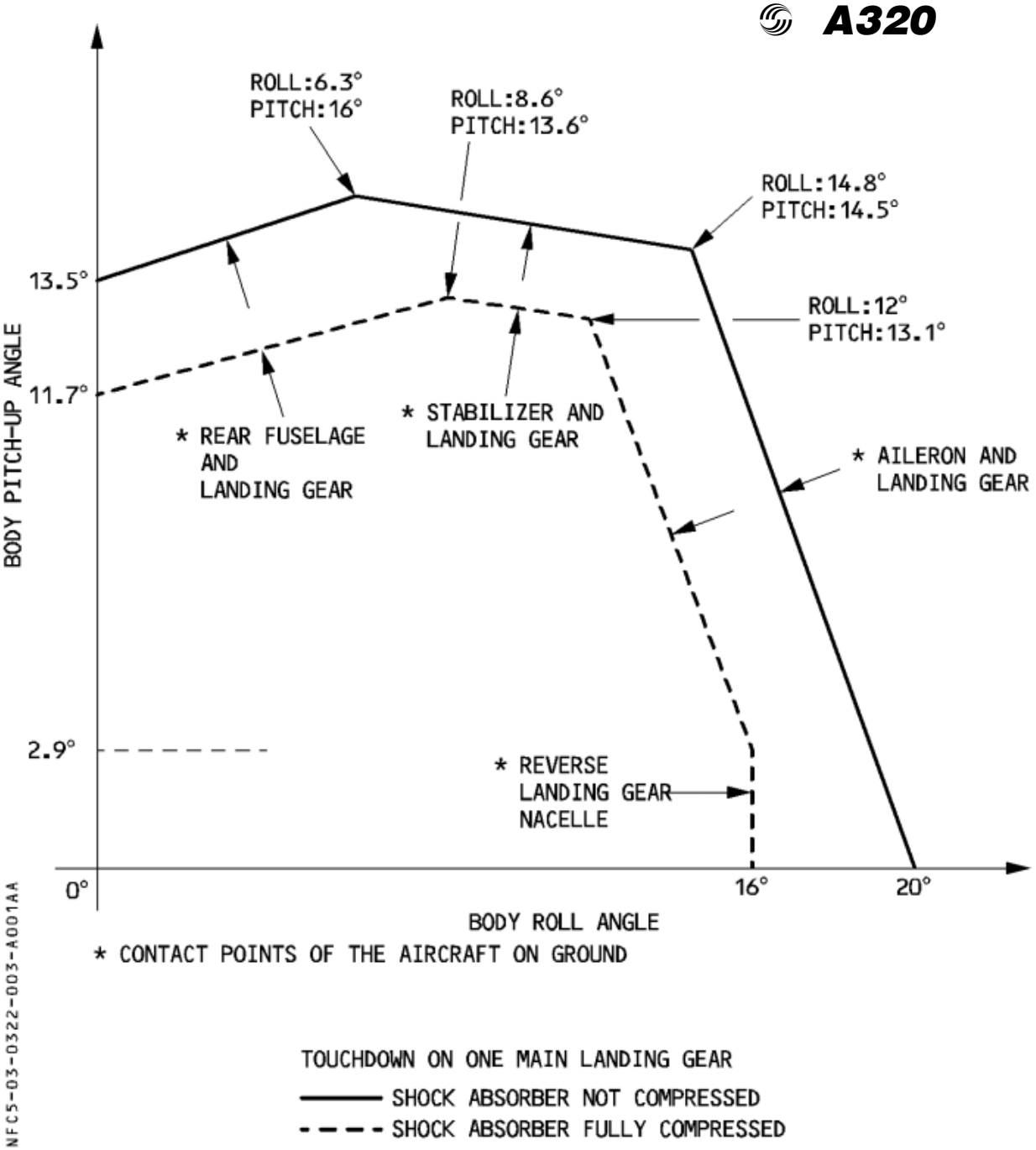
A319



R

GROUND CLEARANCE DIAGRAM

A320



3.19. LANDING

GENERAL

Windshear, strong gusty wind, contaminated runway, high threshold crossing, long flare with overflying touchdown zone, unexpected obstacles on the runway and many other factors can lead to an unsafe landing.

NOTE: *Be prepared for a go-around and land only if safe landing can be performed.*

The aircraft will be flown to land on the Touchdown Zone Markings (TDZ).
Below DA(H) / MDA(H), during transition to a visual stage of approach, the aircraft will be flown on continuation of glideslope angle of a trajectory until the flare.
The visual reference points (visual glide pass lights (PAPI, VASI, etc.) and touchdown zone markings) are useful aids to keep the correct descent trajectory.
Prior to flare, avoid destabilization of the approach and steepening the slope at low heights in attempts to target a shorter touchdown. If a normal touchdown (within the designated touchdown zone) cannot be achieved or if destabilization occurs just prior to flare, a go-around (or rejected landing) should be initiated with due consideration to all prevailing factors (remaining runway length, available performance, terrain, controllability, etc.).
The landing and rollout should be done as close to the centerline as possible.

NOTE: *Strict adherence to Stabilized Approach Criteria is the key factor of a successful landing within the designated touchdown zone (TDZ).*

NOTE: *The desire to achieve an extremely smooth / soft landing can lead to overshoot the designated TDZ and overrun the RW. The second most common consequence of an extremely smooth / soft landing is a tail strike. A very smooth / soft touchdown is not essential, nor even desired, particularly if the RW is wet or contaminated.*

BOUNCING AT TOUCH DOWN

Refer to FCTM PR-NP-SOP-LANDING - TAIL STRIKE AVOIDANCE - BOUNCING AT TOUCH DOWN.

3.19.1. MANUAL LANDING

For landing technique refer to FCTM PR-NP-SOP-LANDING.

FLARE

In stabilized approach conditions, the flare height is approximately 30 feet:

FLARE . . . . . PERFORM PF
Avoid flaring high.

ATTITUDE . . . . . .MONITOR PM
The PM should monitor the attitude, and call out:

"PITCH, PITCH"*, if the pitch attitude approaches the tail strike pitch limit indicator , or reaches 10 °,* ***"BANK, BANK"****,* if bank angle reaches 7°.

THRUST levers . . . . . IDLE PF

If autothrust is engaged, it automatically disconnects when the pilot sets both thrust levers to the IDLE detent. In manual landing, the "RETARD" call out is generated at 20 feet RA.

NOTE: *The ground spoilers extension is inhibited if:*

- Both thrust levers remain above the idle detent, or

- One thrust lever is above idle and one thrust lever is at idle detent.

GROUND CLEARANCE

A tailstrike occurs, if the pitch attitude exceeds **15° A319 / 13° A320**,
- with the landing gear compressed **13° A319 / 11° A320**.

A wingtip or engine scrape occurs, if the roll angle exceeds **18° A319 / 20° A320**,
- with the landing gear compressed **16° A319 / 16° A320**.

Be aware of the pitch-up tendency, with ground spoiler extension.

At touchdown:

DEROTATION . . . . . INITIATE PF

Lower the nosewheel without undue delay.The PM continues to monitor the attitude.

BOTH THRUST LEVERS . . . . . REV MAX OR REV IDLE PF

Select REV thrust immediately after the main landing gear touches down.

In the case of an reverser /engine inoperative, both thrust reversers must be used.

The flight crew must immediately select REV MAX, if any of the following occurs at any time during the landing:
- An emergency
- The deceleration is not as expected
- A failure affects the landing performance
- A long flare or a long touchdown
- An unexpected tailwind.

A small pitch up may occur during thrust reversers deployment before nose landing gear touchdown. However, the flight crew can easily control this pitch up.

Braking may begin before the nosewheel has touched down, if required for performance reasons. However, when comfort is the priority, the flight crew should delay braking until the nosewheel has touched down.

After reverse thrust is selected, the flight crew must perform a full stop landing.

GROUND SPOILERS . . . . . CHECK / ANNOUNCE PM

Check that the ECAM WHEEL page displays the ground spoilers extended after touchdown.

- **If no ground spoilers are extended:**
  - Verify and confirm that both thrust levers are set to IDLE or REV detent.
  - Set both thrust reverser levers to REV MAX, and fully press the brake pedal.

NOTE: *If ground spoilers are not armed, ground spoilers extend at reverser thrust selection.*

REVERSERS . . . . . .CHECK / ANNOUNCE PM

Check that the ECAM E/WD page displays reverse deployment is as expected (REV Green).

DIRECTIONAL CONTROL . . . . . ENSURE PF

- Monitor directional control, if the rollout is automatic.
- Ensure directional control, if rollout is manual. Use rudder pedals for directional control.
- Do not use the nosewheel steering control handle before reaching taxi speed.
- During rollout, the flight crew should avoid sidestick inputs (either lateral or longitudinal).
- If directional control problems are encountered, the flight crew should reduce thrust to reverse idle until directional control is satisfactory.

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 rapidly, a brake pressure indication appears briefly on the BRAKE PRESS indicator.

NOTE: *If no ground spoilers are extended, the autobrake is not activated.*

DECELERATION . . . . . .CHECK/ANNOUNCE PM

The deceleration is felt by flight crew, and confirmed by the speed trend on the PFD. The deceleration may also be confirmed by the DECEL light (if autobrake is on).

At 70 knots:

"70 KNOTS" . . . . . .ANNOUNCE PM

"CHECKED" . . . . . .ANNOUNCE PF

It is better to reduce reverse thrust when passing 70 knots. However, high levels of reverse thrust may be used in order to control aircraft speed in the case of an emergency.

CAUTION: Avoid the use of high levels of reverse thrust at low airspeed, unless required due to an emergency. The distortion of the airflow, caused by gases reentering the compressor, can cause engine stalls, that may result in excessive EGT.

At taxi speed:

BOTH THRUST LEVERS . . . . . FWD IDLE PF

When reaching taxi speed, and before leaving the runway, deselect the reversers.

On snow-covered grounds, the reversers should be stowed when the aircraft speed reaches 25 knots. When deselecting the reversers, be careful not to apply forward thrust by moving the thrust levers beyond the FWD IDLE position.

CAUTION: Except emergency, don't use reverse thrust to control speed while on taxiways.

Before 20 Knots:

AUTO BRK . . . . . DISENGAGE PF

Disengage the autobrake by pressing pedals to avoid some brake jerks at low speed.

Before reaching taxi speed on landing runway (if CM2 was PF)

"I HAVE CONTROL" . . . . . .ANNOUNCE CM1

"YOU HAVE CONTROL". . . . . .ANNOUNCE CM2

CHR on glareshield . . . . . .STOP BOTH

Stop CHR before leaving the RW.

CHR (clock on central instrument panel) . . . . . START CM2

Start CHR to ensure that the engines have had not less than 3 min cool down period before shutdown.

3.19.2. AUTOLAND

Automatic landing system performance is demonstrated with CAT II or CAT III ILS airport installation. However, automatic landing in CAT I or better weather conditions is possible on CAT I ground installations or on CAT II/III ground installations when ILS sensitive areas are not protected. Refer to FCOM LIM-AFS - AUTOMATIC APPROACH, LANDING AND ROLLOUT - AUTOMATIC LANDING.

For task sharing refer to 3.18.5. CAT II / CAT III APPROACH.

3.20. GO AROUND WITH FD

Apply the following three actions simultaneously:

THRUST LEVERS . . . . . .TOGA PF

If TOGA thrust is not required, set the thrust levers to TOGA detent then retard the thrust levers to CL detent. This enables the GO AROUND phase, with associated AP/FD modes.

NOTE: *If the thrust levers are not set briefly to TOGA detent:*

- The FMS 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.

ROTATION . . . . . PERFORM PF

Initiate rotation towards 15° of pitch with all engines operative (approximately 12,5° if one engine is out) to get a positive rate of climb, then follow the SRS FD pitch bars orders.

"GO AROUND - FLAPS" . . . . . .ANNOUNCE PF

FLAPS . . . . . .RETRACT ONE STEP PM

FMA . . . . . .ANNOUNCE PF

FMA . . . . . .CHECK PM

Check FMA. The following modes are displayed: **MAN TOGA / SRS / GA TRK or NAV A/THR**

"FLAPS___" . . . .ANNOUNCE PM

"POSITIVE CLIMB" . . . . . .ANNOUNCE PM

"GEAR UP" . . . . . .ORDER PF

GEAR UP . . . . . SELECT / ANNOUNCE PM

FLIGHT PARAMETERS . . . . . .MONITOR PM

During a go-around, the PM will make a callout for the following conditions:
– “PITCH”: If the pitch altitude becomes greater than 20º up or less than 10º up,
– “SINK RATE”: If there is no climb rate, – “BANK”: If the bank angle becomes greater than 7º.

NAV or HDG mode . . . . . **.SELECT PF**
Reselect NAV or HDG, as required (min height 100 feet).

ATC . . . . . **.COMMUNICATE PM**

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**

At F speed

“FLAPS 1” . . . . . **.ORDER PF**

FLAPS 1 . . . . . **.SELECT / ANNOUNCE PM**

At S speed

“FLAPS ZERO” . . . . . **.ORDER PF**

FLAPS ZERO . . . . . **.SELECT / ANNOUNCE PM**

NOTE: *Consider the next step: Engage NAV mode, to follow the published missed approach procedure, or Prepare for second approach by selecting the ACTIVATE APP PHASE.*

AFTER TAKEOFF CHECKLIST . . . . . **PERFORM BOTH**

4. РУЛЕНИЕ НА СТОЯНКУ И ПОСЛЕПОЛЕТНЫЕ РАБОТЫ ЭКИПАЖА

4.1. AFTER LANDING

When clear of the runway:

"AFTER LANDING PROCEDURE" . . . . . **.ANNOUNCE CM1**

EXTERIOR LIGHTS . . . . . SET CM2

- STROBE switch to AUTO.
- LAND switches to RETRACT.
- NOSE switch to TAXI.

Retract landing lights, unless they are needed.

RADAR . . . . . .OFF CM2

PREDICTIVE WINDSHEAR SYSTEM . . . . . OFF CM2

Switching the radar and PWS OFF after landing avoids risk of radiating persons at the gate area.

GROUND SPOILERS . . . . . DISARM CM2

ENG MODE selector. . . . . .NORM CM2

FLAPS . . . . . .AS RQRD 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.
- To avoid damage on the RTLU (Rudder Travel Limit Unit) mechanical stop, the SLATS/FLAPS should be retracted before all ADIRS are set to OFF simultaneously.

TCAS mode selector . . . . . .SET STBY CM2

ATC transponder should be operated in mode S (AUTO).

TERR on ND . . . . . .OFF CM2

ANTI ICE . . . . . AS RQRD CM2

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 CM2

AFTER LANDING CHECKLIST . . . . . .COMPLETE CM2

ONE ENGINE TAXI . . . . . .CONSIDER CM1

BRAKE TEMPERATURE . . . . . CHECK CM2

Check BRAKE TEMP on the ECAM WHEEL page for discrepancies and high temperature.

Maintenance action is due in the following cases:

- The temperature difference between two brakes of a gear is more than 150 °C, and the temperature of one of these brakes is above or equal to 600 °C, or
- The temperature difference between two brakes of a gear is more than 150 °C, and the temperature of one of these brakes is below or equal to 60 °C, or
- The difference between the average temperature of the left gear brakes (combination of body and wing L/G s) and right brakes (combination of body and wing L/Gs) is above or equal to 200 °C, or
- The temperature of one brake exceeds 900 °C.

BRK FAN PB-SW. . . . . .**AS REQUIRED** CM2

When the turnaround time is short or if the temperature of any brake is likely to exceed 500 °C, use the brake fans without delay. In other cases, the flight crew should delay brake fans selection to 5 min after landing, or approaching the gate, whichever occurs first. For more information, Refer to FCTM PR-NP-SOP- AFTER LANDING - Use of Brake Fans.

4.2. PARKING

ENTERING THE PARKING POSITION:

"TAXI LIGHTS OFF" . . . . . **ORDER** CM1

EXTERIOR LIGHTS . . . . . **SET** CM2

- RWY TURN OFF switch to OFF.
- NOSE switch to OFF

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 (or 350°C with brake fans ON), 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** CM1

APU BLEED . . . . . **ON** CM1

Select APU bleed ON, just before engine shutdown to prevent engine exhaust fumes from entering the air conditioning.

No less than 3 min after high thrust operations:

ENG MASTER switches 1 and 2 . . . . . **OFF** CM1

NOTE: The flight crew should operate the engines at or near idle thrust for a cooling period of 3 min before engine shutdown, in order to thermally stabilize the engines.
Idle reverse thrust and normal thrust to maneuver during taxi (no more than 40 % N1), are not considered as high thrust operations. Therefore, both of the following applies:
- If the flight crew uses idle reverse thrust for landing and normal thrust to maneuver during taxi after landing, the cooling period starts when the flight crew retards the thrust levers during the flare
- If the flight crew uses maximum reverse for landing, the cooling period starts when the flight crew sets the thrust levers to idle reverse during the landing rollout.
Before engine shutdown, routine cooling periods that last less than the recommended time, can result in engine degradation.

- **If APU is not available, set EXT PWR to ON, then set ENG MASTERS to OFF**.
  Check that engine parameters decrease.
- **The DOOR page is displayed on the lower ECAM display**

ELAPSED TIME and CHRONO (clock on central instrument panel) . . . . . .STOP CM2

"Кабинному экипажу двери в ручное". **. . . . . ORDER CM1**

SLIDE DISARM. . . . . .CHECK BOTH
Check slides disarmed on the ECAM DOOR page. Warn the cabin crew, if any slide is not disarmed.

BEACON LIGHT. . . . . OFF CM1
Turn off the BEACON switch, when all engines have spooled down. Set other exterior lights as required.

SEAT BELTS. . . . . .OFF CM1

FUEL PUMPS . . . . . .OFF CM1

GROUND CONTACT . . . . . .ESTABLISH CM1

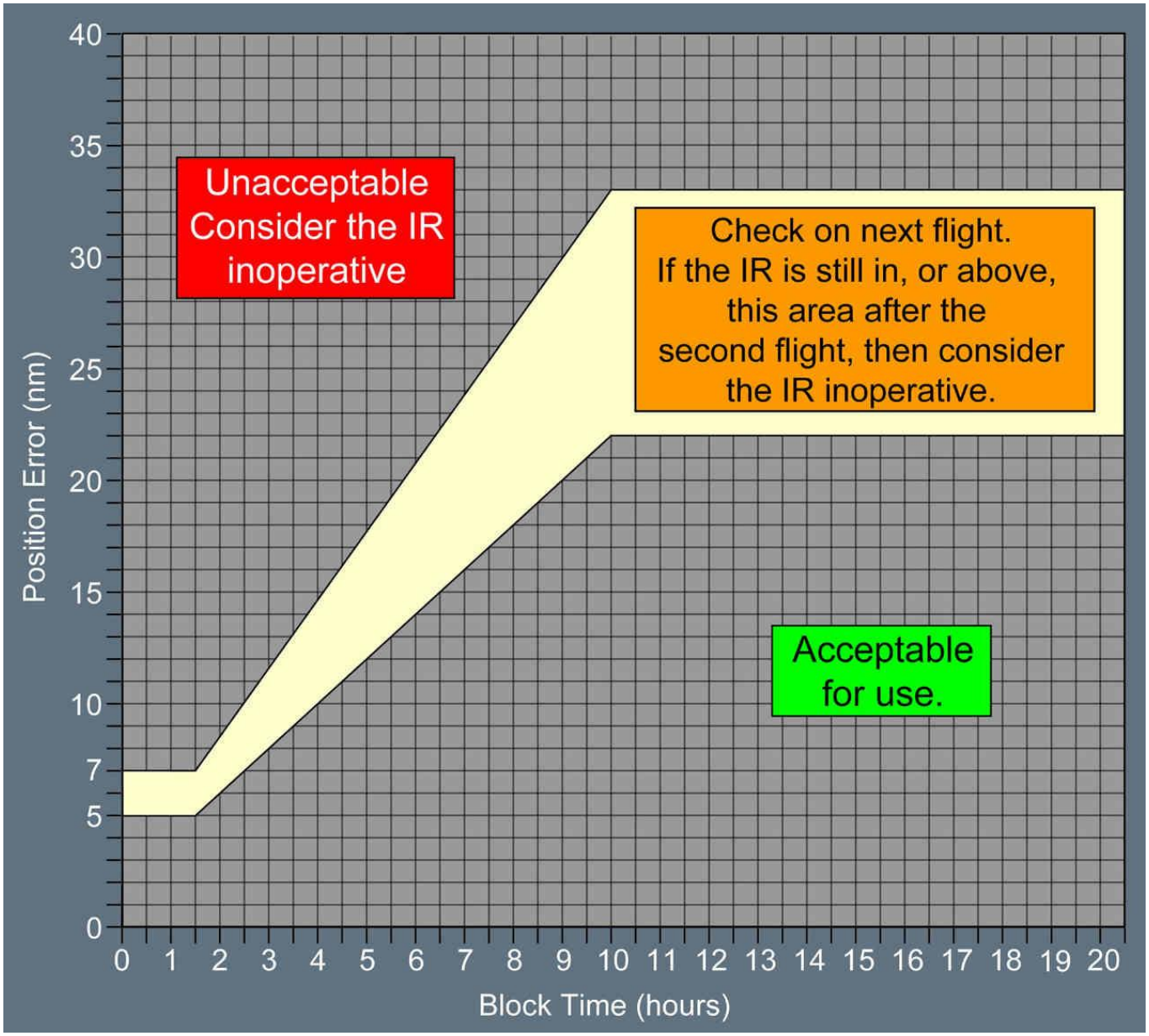
• Establish ground communication. • Check chocks are in place.

BRAKE FAN ❄ **. . . . . .OFF CM2**
Swith off, when not required.

ATC . . . . . STBY CM2

IRS PERFORMANCE . . . . . .CHECK CM2

- On the MCDU POSITION MONITOR page, read the deviation of each IRS position from the FMGC position and check that the value does not exceed the following:



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 CM1

Check the STATUS page. If maintenance status messages are displayed, refer to MEL 00-08 ECAM and MAINTENANCE STATUS.

PARKING BRAKE . . . . . .KEEP ON CM1

The parking brake should be released after chocks are in place, if the BRAKES HOT ECAM caution is displayed or if one brake temperature is above 300°C (150°C with brakes fans ON). 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.

PARKING CHECKLIST . . . . . .COMPLETE BOTH

Prior this check, consider "GROUND OPERATIONS IN HEAVY RAIN" (FCOM PRO-NOR-SUP-ADVWXR Ground Operations in Heavy Rain).

SEVERE ICING CONDITIONS . . . . . .REPORT CM1

Report severe icing conditions in the log book, requiring inspection of the fan acoustic panels of the engines during the walkaround.

4.3. SECURING THE AIRCRAFT

The flight crew should apply the following procedure upon completing the flight crew duty before leaving the aircraft.

Prior to performing this check, the following SUP Adverse Weather procedures should be taken into account when appropriate:

- Securing the aircraft for cold soak (Refer to FCOM PRO-NOR-SUP-ADVWXR Securing the Aircraft for Cold Soak).
- Water system draining (Refer to FCOM PRO-NOR-SUP-ADVWXR For Draining Water Procedure - Introduction).
- Ground operations in heavy rain (Refer to FCOM PRO-NOR-SUP-ADVWXR Ground Operations in Heavy Rain).
- Operations on contaminated airports (Refer to FCOM PRO-NOR-SUP-ADVWXR Parking).
- Operations with volcanic ash, sand or dust (Refer to FCOM PRO-NOR-SUP-ADVWXR Securing the Aircraft).

DUs . . . . . .DIM BOTH

Dim EFIS, ECAM and MCDU display units.

PARKING BRAKE. . . . . .CHECK ON CM1

To reduce hydraulic leak rate in the brake accumulator, keep the parking brake on.

ADIRS (1 + 2 + 3) . . . . . .OFF CM1

ADIRS should not be switched off during transits at latitudes above 73°N, 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 latest data.

OXYGEN CREW SUPPLY . . . . . .OFF CM2

EXTERIOR LIGHTS . . . . . OFF CM2

EMER EXIT LT . . . . . .OFF CM2

NO SMOKING . . . . . .OFF CM2

MAINT BUS switch . . . . . .AS RQRD CM2

Should electrical power be required for the crew or servicing personnel consider setting the overhead MAINT BUS switch (in the forward cabin) to the ON position, prior to setting aircraft power to off.

APU BLEED . . . . . .OFF CM2

APU MASTER switch. . . . . .OFF CM2

Switch off the APU after the passengers have disembarked. The APU may be left ON, if the EXT PWR not available and flight crew or qualified ground crew are in the cockpit to supervise and monitor the aircraft systems. BAT 1 and 2 must be left ON if the APU is ON. If the batteries are off while the APU is running, APU fire extinguishing is not available

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.

SECURING THE A/C C/L . . . . . COMPLETE BOTH

4.4. CM1 POST FLIGHT EXTERIOR INSPECTION

The post flight exterior inspection should be performed after each flight and ensures check of those parts of the aircraft that may have been affected during executed flight.

During post flight exterior walk around CM1 should check:

- Radome for impact damage,
- Wings and stabilizer edges and flight control surfaces for impact damage and any evident leaks,
- Engine fan blades for impact damage,
- Wheels and tires conditions.

5. СТАНДАРТНЫЕ ФРАЗЫ

Standard phraseology is essential to ensure effective crew communication. The phraseology should be concise and exact. The following Chapter lists the callouts 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.

5.1. CHECKLIST CALLOUTS

"CHECK": A command for the other pilot to check an item.
"CHECKED": A response that an item has been checked.
"CROSSCHECKED": A callout verifying information from both pilot stations.
If a checklist needs to be interrupted, announce order to start full checklist again after interuption.
Upon completion of a checklist announce: ***". . .CHECKLIST COMPLETE"***.

5.2. ACTIONS COMMANDED BY PF

The following commands do not necessarily initiate a guidance mode change, eg: selected to managed/managed to selected. The intent is to ensure clear, consistent, standard communication between crewmembers.
All actions performed on the FCU and MCDU must be checked on the PFD and ND (e.g.: **"FL350 blue"**, **"FL 200 magenta"**). Ensure that the correct FCU knob is used, and then verify indications 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.
"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.

"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 KNOTS"	(Speed knob is pulled and turned).
"MANAGE SPEED"	(Speed knob is pushed).

NOTE: *If the value was previously set, there is no requirement to repeat the figure. Simply call e.g.* ***"PULL HDG", "PULL SPEED", "PULL ALT".***

VS/FPA selector

The VS/FPA selector knob has no managed function.
The standard callouts 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"
"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).

5.3. FMA

The PF should call out any FMA changes,
unless specified differently (e.g. CAT II & III task sharing):

- All **ARMED** modes are announced **With** their associated **COLOR** (e.g. blue, magenta):
  "G/S blue", "LOC blue".
- All **ACTIVE** modes **WITHOUT** their associated color (e.g. green, white):
  "NAV", "ALT".

The PM should check and respond, ***"CHECKED"*** to all FMA changes called out by the PF

5.4. FLIGHT PARAMETERS

The PM calls out "thousand to go" when passing 1000 feet before the cleared altitude or FL, and the PF calls out "checked".
The PM calls out ***"BANK, BANK***" when bank angle reaches 30°.

5.5. FLIGHT PARAMETERS IN APPROACH

PM will make callouts for the following conditions during final approach.
Attitude callouts also to be made through to landing.
"SPEED" if the speed decreases below the speed target - 5 knots or increases above the speed target + 10 knots.
"SINK RATE" when V/S is greater than - 1000 ft/min.
"BANK" when bank angle becomes greater than 7° in approach.
"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 dot LOC ; 1 dot GS.
"COURSE" when greater than 1/2 dot or 2.5 degrees (VOR) or 5 degrees (ADF).
"CROSS TRACK" when the XTK is greater than 0.1 nm.
"V/DEV" when the vertical deviation is greater than ½ dot.
". . . FT HIGH (LOW)" at altitude checks points.

FOR RNAV (RNP) APPROACH

"CROSS TRACK" when XTK error is at or above 0.1 NM.
"V/DEV" when ½ dot deviation above or below path.
"SINK RATE" when the decent rate exceeds 1 000 ft/min.
"BANK" when the bank angle goes above 30 °.

5.6. FLIGHT PARAMETERS DURING LANDING

During landing, the PM announces:
"PITCH PITCH", if the pitch attitude approaches the tail strike pitch limit indicator, or reaches 10 °.
"BANK BANK", if the bank angle reaches 7 °.

5.7. FLIGHT PARAMETERS IN GO-AROUND

During a go-around, the PM will make a callout for the following conditions:
"BANK", If the bank angle becomes greater than 7º,
"PITCH", If the pitch altitude becomes greater than 20º up or less than 10º up,
"SINK RATE", If there is no climb rate.

5.8. FLAPS OR GEAR CONFIGURATION

FLAPS CALLOUTS

	FLAPS CONFIGURATION	CALLOUT
PF	1	***"FLAPS ONE"***
PF	1 + F	***"FLAPS ONE"***
PF	0	***"FLAPS ZERO"***

The reply will be given when selecting the new flap position e.g.:

	CALLOUT	REMARK
PF	*"FLAPS ONE"*	
PM	*"SPEED CHECKED"*	PM checks the speed: - **Above** the S or F speed and **accelerating** (Takeoff) - **Below** Vfe next and **decelerating** (Approach)
	"FLAPS ONE"	PM selects the flaps lever position and replies **after checking the blue number** on the ECAM flaps indicator to confirm the correct selection has been made.

GEAR CALLOUTS

	CALLOUT	REMARK
PF	*"GEAR UP (DOWN)"*	
PM	*"GEAR UP (DOWN)"*	The PM selects the gear lever position and replies **after checking the red lights** on the landing gear indicator to confirm gear operation.

5.9 PF/PM 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 PM duties.

5.10. ABNORMAL AND EMERGENCY CALLOUTS

ECAM PROCEDURES

1. ***"ECAM ACTION"***
   is commanded by PF when required.

2. ***"CLEAR _____(title of the system)?"***
   is asked by the PM 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?**".

   "CLEAR_____(title of the system)"
   is the command by the PF that the action and review is confirmed.

3. **"REMOVE STATUS"**
   will be used for status page.

4. ***"ECAM ACTION COMPLETED"***
   is the announcement by the PM that all APPLICABLE ACTIONS have been completed.

5. ***"STOP ECAM"***
   is used by the PF if an action from the PM during ECAM procedures is required.

   "CONTINUE ECAM"
   will be used when ready to resume the ECAM.

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).

GPWS . . . . . "PULL UP TOGA"
As avoidance maneuver is envisaged.

REACTIVE WINDSHEAR . . . . . "WINDSHEAR TOGA"

UNRELIABLE SPEED INDICATION . . . . . "UNRELIABLE SPEED"

TCAS . . . . . "TCAS, I HAVE CONTROL"
As soon as "TRAFFIC" warning is triggered

EMERGENCY DECSENT . . . . . "EMERGENCY DECSENT"

LOSS OF BRAKING . . . . . "LOSS OF BRAKING. ANTI-SKID OFF"

STALL WARNING AT LIFT-OFF. . . . . "STALL, TOGA 15°"

As soon as any stall indication is recognized. . . . . "STALL, I HAVE CONTROL"

CREW INCAPACITATION . . . . . "I HAVE CONTROL"

5.11. SUMMARY FOR EACH PHASE

BEFORE ENGINE START/PUSH BACK		
EVENT	**CM1**	**CM2**
Before start up clearance received	***BEFORE START C/L***	***DOWN TO THE LINE***
After start up clearance received	***BELOW THE LINE***	***BEFORE START C/L COMPLETE***
TO REMOVE GROUND SUPPLY		
EVENT	**CM1**	**GND Mech**
Initial ground contact	***GROUND (from) COCKPIT***	***COCKPIT (from) GROUND***
External____disconnection	***REMOVE EXTERNAL____***	***EXTERNAL____REMOVED***
PUSH BACK/ENGINE START		
When ready for pushback, and pushback startup clearance received from ATC	***GROUND (from) COCKPIT, CLEARED FOR PUSH***	***COCKPIT (from) GROUND, RELEASE BRAKES***
Start of push	***BRAKES RELEASED READY TO PUSH***	
When ready to start engines	***CLEAR TO START?*** ***STARTING ENG 2(1)***	***CLEAR TO START***
When push back completed	***BRAKES SET***	***SET BRAKES***
When ready to disconnect (after engine started, and parameters are stabilized)	***CLEAR TO DISCONNECT (hand signals on left/right)***	***DISCONNECTING (hand signals on left/right)***
AFTER ENGINE START		
EVENT	**CM1**	**CM2**
ENG mode selector norm.	***AFTER START PROCEDURE***	
Flight control check in following sequence	***FLIGHT CONTROLS CHECK***	*Note :* The CM2 should follow pedal movement with his/her feet*
1. Elevators		***FULL UP, FULL DOWN, NEUTRAL***
2. Ailerons/Spoilers		***FULL LEFT, FULL RIGHT, NEUTRAL***
3. Rudder*	***RUDDER***	***FULL LEFT, FULL RIGHT, NEUTRAL***
All engines started and GND is disconnected	***AFTER START C/L***	***AFTER START C/L COMPLETE***

TAXI		
EVENT	**CM1**	**CM2**
When taxi clearance obtained	***CLEAR LEFT SIDE***	***CLEAR RIGHT SIDE***
Brake transfer check	***BRAKE CHECK***	***PRESSURE ZERO***
During taxi	***BEFORE TAKEOFF C/L***	***DOWN TO THE LINE***
Lining up on the runway	***APPROACH PATH CLEAR OF TRAFFIC, ALTIMETER CHECKED BELOW THE LINE***	***APPROACH PATH CLEAR OF TRAFFIC, ALTIMETER CHECKED BEFORE TAKEOFF C/L COMPLETE***
TAKEOFF		
EVENT	**CM1**	**CM2**
Setting thrust levers to initial stabilization value	***TAKEOFF***	
Upon aligned RWY centerline	***YOU HAVE CONTROL***	***I HAVE CONTROL***
EVENT	**PF**	**PM**
When thrust levers set to FLEX/TOGA	***ANNOUNCE FMA***	***CHECKED***
Before passing 80 kt		***THRUST SET***
At 100 kt	***CHECKED***	***HUNDRED KNOTS***
At V1		***V1***
At VR		***ROTATE***
Gear retraction (when positive increase of V/S, BARO ALT, RA)	***GEAR UP***	***POSITIVE CLIMB*** ***GEAR UP***
If AP is engaged by PM	***AP1 (2) ON***	
After takeoff check (not normally requested upon flap retraction completed)	***AFTER TAKEOFF C/L***	***DOWN TO THE LINE***
After crossing transition altitude and altimeter setting (in climb)	***BELOW THE LINE***	***AFTER TAKEOFF C/L COMPLETE***
At 10000 ft or FL 100	***FL ONE HUNDRED PROCEDURE***	

APPROACH AND LANDING		
EVENT	**PF**	**PM**
At 10000 ft or FL 100	***FL ONE HUNDRED PROCEDURE***	
After altimeter setting	***APPROACH C/L***	***APPROACH C/L COMPLETE***
Activation of approach Phase (approx 10 nm from FAF or automatic in NAV mode)	***ACTIVATE APPROACH PHASE***	***APPROACH PHASE ACTIVATED***
RA alive	***CHECKED***	***RADIO ALTIMETER ALIVE (see NOTE 1 and 2 below)***
At G/S* or FINAL APP or below the go-around altitude for approach with FPA guidance	*- If the PF requests the PM to set the go-around altitude:* ***SET GA ALTITUDE_FT*** *- When the go-around altitude is set (by the PF or PM):* ***GA ALTITUDE_SET***	***CHECKED***
FAF	***CHECKED***	***PASSING___(Fix Name),___ FT***
When landing flaps set, and green landing memo on ECAM	***LANDING C/L***	***LANDING C/L COMPLETE***
1000 feet or 500 feet AAL	***CHECKED***	***ONE THOUSAND (FIVE HUNDRED) STABILIZED or NOT STABILIZED – GO AROUND (NOTE 2)***
FMA “LAND” green (ILS approach)	***LAND***	***CHECKED***
100 feet above MDA/DH	***CHECKED***	***HUNDRED ABOVE (NOTE 2)***
MDA/DH visual reference	***CONTINUE***	***MINIMUM (NOTE 2)***
MDA/DH no visual reference	***GO AROUND - FLAPS***	***MINIMUM (NOTE 2)***
After touchdown: - Ground spoilers extended - REV green on EWD		***SPOILERS(NOTE 3), REVERSE GREEN (NOTE 4)***
Deceleration		***DECEL (See NOTE 5 below)***
At 70 knots	***CHECKED***	***SEVENTY KNOTS***

ALTIMETER SETTING CHANGES TO / FROM QNH / STD		
EVENT	**PF**	**PM**
While crossing transition altitude (transition level) Barometric setting change and subsequent altimeter cross-check	***SET STANDARD*** ***(SET QNH)*** ***CHECKED***	***STANDARD (QNH)*** ***CROSS-CHECKED*** ***PASSING FL___ (___ FT) NOW***
NOTE 1: Crew awareness, crew should now keep RA in scan to landing. ***NOTE 2:*** PM monitors pin-programmed auto callout, or announces if inoperative. ***NOTE 3:*** If the spoilers are not extended, call ***NO SPOILERS.*** ***NOTE 4:*** If no reverse deployment, call ***NO REVERSE ENGINE_*** or ***NO REVERSE***, as appropriate. ***NOTE 5:*** ***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 when auto brake is used. If no positive deceleration, call **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.		
DISCONTINUED APPROACH		
DISCONTINUED APPROACH decision	***CANCEL APPROACH***	
GO AROUND		
GO AROUND decision	***GO AROUND - FLAPS***	
Flaps retraction		***FLAPS___***
Gear retraction	***GEAR UP***	***POSITIVE CLIMB*** ***GEAR UP***
After takeoff check (not normally requested upon flap retraction completed)	***AFTER TAKEOFF C/L***	***DOWN TO THE LINE***
After crossing transition altitude and altimeter setting (in climb)	***BELOW THE LINE***	***AFTER TAKEOFF C/L COMPLETE***
AFTER LANDING		
EVENT	**CM1**	**CM2**
When clear of the runway	***AFTER LANDING C/L***	***AFTER LANDING C/L COMPLETE***
PARKING		
Upon parking stand	***PARKING C/L***	***PARKING C/L COMPLETE***

SECURING THE AIRCRAFT		
EVENT	**CM1**	**CM2**
Upon last passenger has left aircraft	***SECURING THE AIRCRAFT C/L***	***SECURING THE AIRCRAFT C/L COMPLETE***
MALFUNCTION BEFORE V1 AT TAKEOFF		
EVENT	**CM1**	**CM2**
If GO decision	***GO***	
If RTO decision - REV green on EWD - Deceleration	***STOP***	***REVERSE GREEN*** ***DECEL (NOTE 5, page 101)*** ***70 KNOTS***

SPACE RESERVED

6. ПРИЛОЖЕНИЯ

6.1. NORMAL CHECKLIST

ROSSIYA	NORMAL CHECKLIST	A319/A320 ED 09 REV 02	SOP 6.1. 13.07.2023

BEFORE START	
COCKPIT PREP...COMPLETED	BOTH
GEAR PINS/COVERS...REMOVED	CM 1
SIGNS . . . . . ON / AUTO	CM 1
ADIRS . . . . . .NAV	CM1
FUEL . . . . . ___KG.LB	CM1
TO DATA . . . . . SET	BOTH
BARO . . . . . QNH ____ SET	BOTH
MOBILES . . . . . OFF	ALL
WINDOWS/DOORS.....CLOSED	BOTH
BEACON . . . . . .ON	CM1
THR LEVERS . . . . . .IDLE	CM1
PARKING BRAKE . . . .ON/OFF	CM1
TRANSPONDER. . . . . AUTO	CM2

APPROACH	
BRIEFING . . . . CONFIRMED	PF
ECAM STATUS . . CHECKED	PF
SEAT BELTS . . . . . ON	PF
BARO . . . . . QNH ___ SET	BOTH
MINIMUM . . . . . ____ SET	BOTH
ENG MODE SEL . . AS RQRD	PF

LANDING	
CABIN CREW . . . . .ADVISED	PM
MISSED APP ALT. . . ___ SET	PF
A/THR . . . . . SPEED/OFF	PF
AUTOBRAKE . . . . AS RQRD	PF
ECAM MEMO...LDG NO BLUE	PF
• LDG GEAR DN • FLAPS SET • SIGNS ON • CABIN READY (◄) • SPLRS ARM	

AFTER START	
ANTI ICE . . . . . AS RQRD	CM1
ECAM STATUS . . . .CHECKED	CM1
PITCH TRIM . . . . CG ___ SET	CM1
RUDDER TRIM . . . . . .ZERO	CM1
FLT CONTR . . . . . CHECKED	BOTH

AFTER LANDING	
RADAR . . . . . OFF	CM2
P.W.S. . . . . .OFF	CM2
SPOILERS . . . . . DISARMED	CM2
FLAPS . . . . . .RETRACTED	CM2
APU . . . . . .STARTED	CM2

BEFORE TAKEOFF	
FLIGHT INST . . . . . .CHECKED	BOTH
BRIEFING . . . . . CONFIRMED	CM1
FLAPS . . . . . .CONF ___	BOTH
T/O SPEEDS / FLEX . . . . .____	BOTH
ECAM MEMO . . T/O NO BLUE	CM1
• AUTO BRK MAX • FLAPS TO • SIGNS ON • TO CONFIG NORM • SPLRS ARM • CABIN READY (◄)	
T/O RWY . . . . . __CONFIRM	BOTH
CABIN CREW . . . . . ADVISED	CM2
ENG MODE SEL . . . AS RQRD	CM1
PACKS . . . . . AS RQRD	CM1
TCAS . . . . . TA or TA/RA	CM2

AFTER TAKEOFF	
LDG GEAR . . . . . UP	PF
FLAPS . . . . . .RETRACTED	PF
PACKS . . . . . ON	PF
BARO . . . . . STD SET	BOTH

PARKING	
HEAVY RAIN (PRO-NOR-SUP-ADVWXR)	
APU BLEED . . . . . ON	CM1
ENGINES . . . . . OFF	CM1
SEAT BELTS. . . . . .OFF	CM1
EXT LT . . . . . AS RQRD	CM1
FUEL PUMPS. . . . . OFF	CM1
P.BRK/CHOCKS.... AS RQRD	CM1
ATC / TCAS . . . . . STBY	CM2

SECURING THE AIRCRAFT	
ADVERSE WEATHER (PRO-NOR-SUP-ADVWXR)	
ADIRS . . . . . OFF	CM2
OXYGEN . . . . . OFF	CM2
APU BLEED . . . . . OFF	CM2
SIGNS . . . . . OFF	CM2
EMER EXIT LT . . . . . OFF	CM2
APU and BAT . . . . . OFF	CM 2
DISPLAY / MCDU . . . . . DIM	BOTH

6.2. BRIEFING ITEMS

ROSSIYA	BRIEFING ITEMS	A319/A320 ED 09 REV 09	SOP 6.2. 11.10.2024

STEP	PF	PM
DEPARTURE BRIEFING		
1	Confirm A/C ACCEPTANCE is completed / Set Distraction Free Environment	
Plan 2a)		T/O RWY (intersection)
		SID Designator (specify)
		First cleared ALT
		MSA/MORA for climb trajectory
		Extra-fuel & -time
Plan 2b)	Hotspots of planned taxi route	
	Stop-margin for RTO	
	EOSID	
	Return/Diversion Consideration	
	Non-standard operation	
3a)		Identified THREATS
3b)	Identified THREATS	
4	MITIGATIONS	
5	MISCELLANEOUS	
CRUISE BRIEFING		
1	THREATS Location and/or mitigations	
2		THREATS Location and/or mitigations
ARRIVAL BRIEFING		
1	Confirm A/C STATUS is verified / Set Distraction Free Environment	
Plan 2a)		MORA/MSA for planned trajectory
		STAR Designator (specify)
		Type of APP
		MINIMUM
		Baro Stabilization Altitude
		G/A TRAJECTORY
		Extra-fuel & - time
Plan 2b)	Guidance for APP	
	Landing FLAP setting	
	G/A Actions*	
	Stop-margin	
	Use of Reverse	
	Use of Autobrake	
	Planned RWY Exit	
	Hotspots for taxi-in	
	Non-standard operation	
3a)		Identified THREATS
3b)	Identified THREATS	
4	MITIGATIONS	
5	MISCELLANEOUS	

THREATS								
APT	ATC	A/C	ENVR	WX	OPER	CREW	TERR	NOTAM

*G/A Actions Review	Define actions and task sharing of GA procedure: TOGA thrust, Rotation to initial Pitch, GA call out, FMA announcement, Flaps step retraction, FMA and Flaps confirmation, Positive Climb and Gear Retraction, Activation of NAV mode, Communication with ATC, THR Red and ACC ALT actions, C/L.

6.3. REFUELING CHECK LIST

REFUELING Check List Airbus

AUTOMATIC REFUELING	
SAFETY PRECAUTIONS	**APPLY**
THE AIRCRAFT IS PROPERLY BONDED TO THE TANKER	**CHECK**
FUEL TYPE	**CHECK**
FUEL QUALITY (WATER /CONTAMINATION)	**CHECK**
• **On refueling control panel:**	
TEST sw LTS	**SET**
TEST sw HI.LVL	**SET**
REFUEL VALVES sel	**CHECK NORM and GUARDED**
PRESELECTOR sw (Requested Block Fuel)	**SET**
MODE SELECT sw	**REFUEL**
START REFUELING	**ORDER**
When the refueling is finished the END light comes on	
ACTUAL QUANTITY	**CHECK**
MODE SELECT sw	**OFF and GUARDED**
REFUEL PANEL DOOR	**CLOSE**
REFUEL COUPLING CAP IS INSTALLED	**CHECK**
AUTOMATIC REFUELING via the cockpit refuel panel (if applicable)	
• **On cockpit refueling control panel:**	
REFUEL PWR pb-sw	**ON**
PRESELECTOR sw (Requested Block Fuel)	**SET**
REFUEL CTL pb-sw	**ON**
When refueling is finished, the END light comes on	
ACTUAL QUANTITY	**CHECK**
REFUEL CTL pb-sw	**OFF**
REFUEL PWR pb-sw	**OFF**
REFUEL COUPLING CAP IS INSTALLED	**CHECK**

MANUAL REFUELING	
SAFETY PRECAUTIONS	**APPLY**
THE AIRCRAFT IS PROPERLY BONDED TO THE TANKER	**CHECK**
FUEL TYPE	**CHECK**
FUEL QUALITY (WATER /CONTAMINATION)	**CHECK**
• **On refueling control panel:**	
FUEL DISTRIBUTION PER TANKS	**DEFINE**
REFUEL VALVES sel	**SHUT**
MODE SELECT sw	**REFUEL**
REFUEL VALVES sel (tanks to be filled)	**OPEN**
START REFUELING	**ORDER**
FUEL QUANTITY	**MONITOR**
When the contents of the tanks reach the required level :	
Corresponding REFUEL VALVES sel	**SHUT**
MODE SELECT sw	**OFF and GUARDED**
REFUEL VALVES sel	**NORM and GUARDED**
REFUEL PANEL DOOR	**CLOSE**
REFUEL COUPLING CAP IS INSTALLED	**CHECK**

REFUELING Check List Airbus (continuation)

GROUND FUEL TRANSFER	
SAFETY PRECAUTIONS	**APPLY**
FUEL TANKER IS NOT CONNECTED TO A/C FUEL SYSTEM	**CHECK**
• **On cockpit overhead FUEL panel:**	
PUMPS (of the tanks not to be defueled)	**OFF**
MODE SEL pb-sw	**MAN**
PUMPS (of the tank to be defueled)	**ON**
★ **if left wing and/or center tanks is (are) to be defueled :**	
X FEED	**ON**
• **On refueling control panel:**	
REFUEL VALVES sel (of tanks not to be filled)	**SHUT**
REFUEL VALVES sel (of tanks to be filled)	**OPEN**
MODE SELECT sw	**DEFUEL/XFR**
FUEL QUANTITY	**MONITOR**
When the tank contents reach the required level :	
Corresponding REFUEL VALVES sel	**SHUT**
MODE SELECT sw	**OFF and GUARDED**
REFUEL VALVES sel	**NORM and GUARDED**
Cockpit FUEL panel to normal configuration	**SET**

DEFUELING	
SAFETY PRECAUTIONS	**APPLY**
THE AIRCRAFT IS PROPERLY BONDED TO THE TANKER	**CHECK**
• **On cockpit overhead FUEL panel:**	
PUMPS	**OFF**
• **On refueling control panel:**	
REFUEL VALVES sel	**NORM**
MODE SELECT sw	**DEFUEL/XFR**
• **On cockpit overhead FUEL panel:**	
MODE SEL pb-sw	**MAN**
PUMPS (of the tank(s) to be defueled)	**ON**
X FEED	**ON**
FUEL QUANTITY	**MONITOR**
When tank contents reach required level	
Corresponding PUMPS	**OFF**
• **On refueling control panel:**	
MODE SELECT sw	**OFF and GUARDED**
REFUEL VALVES sel	**NORM and GUARDED**
REFUEL PANEL DOOR	**CLOSE**
REFUEL COUPLING CAP IS INSTALLED	**CHECK**
Cockpit FUEL panel to normal configuration	**SET**

Страница зарезервирована