PRODUCT SUPPORT & SERVICES

FLIGHT CREW TRAINING MANUAL

NORMAL EMERGENCY
& ABNORMAL PROCEDURES

42 PEC

72 PEC

An Alenia Aermacchi and EADS joint venture

ATR

PROPELLING TOMORROW'S WORLD

foreword

This Flight Crew Training Manual is an essential tool to learn the **ATR standard operating procedures**. It has been conceived as the standard baseline for all ATR flight crew training. To facilitate the learning process, procedures are presented in a pedagogical and user-friendly way, with, when necessary, a visualization of cockpit flows and schematics of flight patterns.

This manual is a comprehensive document that efficiently complements FCOM procedures.

In the Normal Procedures part, procedures are presented with detailed task sharing and include standard call outs. Additional procedures relating to specific operations and to equipments uses are part of this manual.

In the Emergency & Abnormal Procedures part, the general management of abnormal situations is explained. Then, a detailed presentation of the procedures to apply per specific situation is made.

NB: Should you find any discrepancy in the emergency procedures between the FCTM and the AFM, please follow the AFM procedures.

The Training and Flight Operations support team.

01. GENERAL

01.01. DEFINITIONS

1. Crew ..... 01.01 - 1
2. Procedure ..... 01.01 - 1
3. Checklist ..... 01.01 - 1
4. Emergency & abnormal situation ..... 01.01 - 1
4.1. Emergency situation ..... 01.01 - 1
4.2. Abnormal situation ..... 01.01 - 1
4.3. Standard communication ..... 01.01 - 2

01.02. CREW COORDINATION

1. Task sharing ..... 01.02 - 1
2. Function assignment ..... 01.02 - 1
3. Safety recommendations ..... 01.02 - 2
3.1. Executing given commands ..... 01.02 - 2
3.2. Collision avoidance ..... 01.02 - 2
3.3. Communicating in the cockpit ..... 01.02 - 2
3.4. Headset operations ..... 01.02 - 2
3.5. Safety belts and harnesses ..... 01.02 - 2
3.6. Cabin crew ..... 01.02 - 3
4. Cross control ..... 01.02 - 3

01.03. ATR DOCUMENTATION

1. AFM, FCOM and QRH ..... 01.03 - 1
2. Preconditions ..... 01.03 - 2
3. Memory items ..... 01.03 - 3

01.04. METHODOLOGY

1. Dark cockpit philosophy ..... 01.04 - 1
2. Checklist priorities ..... 01.04 - 1
3. Normal Procedures ..... 01.04 - 1
3.1. Initiating Procedures ..... 01.04 - 1
3.2. Procedures methodology ..... 01.04 - 2
3.3. Checklist methodology ..... 01.04 - 3
3.4. Procedures chronology ..... 01.04 - 4
4. Abnormal and emergency procedures ..... 01.04 - 6
4.1. Failure identification ..... 01.04 - 6
4.2. Failure analysis: system check ..... 01.04 - 7
4.3. Checklist methodology ..... 01.04 - 7
4.4. Assessments / decision / information ..... 01.04 - 9
4.4.1. Assessment ..... 01.04 - 9
4.4.2. Decision ..... 01.04 - 9
4.4.3. Information ..... 01.04 - 9
4.5. Example ..... 01.04 - 10
5. Flows ..... 01.04 - 12

01.05. GOLDEN RULES

1. Fly ..... 01.05 - 1
2. Navigate ..... 01.05 - 1
3. Understand problem before acting & assess situation ..... 01.05 - 1
4. One head up at all times ..... 01.05 - 1
5. Know and understand your FMA at all times ..... 01.05 - 1
6. Practice task sharing and back up each other ..... 01.05 - 1
7. Respect Stabilisation Criteria in Approach ..... 01.05 - 1
8. Monitor navigation accuracy ..... 01.05 - 1
9. No major reprogramming below FL 100 ..... 01.05 - 1
10. Use the proper level of automation ..... 01.05 - 1
11. Respect checklists priority ..... 01.05 - 1
12. Use team resources to build up decisions ..... 01.05 - 1

02. NORMAL PROCEDURES

02.01. GENERAL PROCEDURES & POLICIES

1. Auto Flight Control System (AFCS) ..... 02.01.01 - 1
1.1. General ..... 02.01.01 - 1
1.1.1. Advisory Display Unit (ADU) ..... 02.01.01 - 1
1.1.2. AFCS control panel ..... 02.01.01 - 1
1.1.3. Task Sharing ..... 02.01.01 - 2
1.2. Flight modes arming sequence ..... 02.01.01 - 3
1.2.1 Climb mode ..... 02.01.01 - 3
1.2.2. Descent mode ..... 02.01.01 - 5
1.2.3. NAV mode ..... 02.01.01 - 7
1.2.4. HDG mode ..... 02.01.01 - 9
1.2.5. APP mode ..... 02.01.01 - 11
1.2.6. GA mode ..... 02.01.01 - 13
2. Flaps operation ..... 02.01.02 - 1
3. Landing gear operation ..... 02.01.03 - 1
4. Altimeter and radioaltimeter management ..... 02.01.04 - 1
4.1. Altimeter setting ..... 02.01.04 - 1
4.2. Radioaltimeter setting ..... 02.01.04 - 1
5. Speed bugs policy ..... 02.01.05 - 1
5.1. Take-off speed bugs ..... 02.01.05 - 2
5.2. Cruise speed bugs ..... 02.01.05 - 3
5.3. Approach speed bugs ..... 02.01.05 - 4
6. Torque bugs policy ..... 02.01.06 - 1
6.1. Take-off torque bugs ..... 02.01.06 - 1
6.2. Cruise torque bugs ..... 02.01.06 - 2
6.3. Final approach torque bugs ..... 02.01.06 - 3
6.4. Torque preset ..... 02.01.06 - 4
7. Data cards processing ..... 02.01.07 - 1
7.1. Take-off data card ..... 02.01.07 - 1
7.2. Landing data card ..... 02.01.07 - 3
8. Briefings ..... 02.01.08 - 1
8.1. Departure briefing ..... 02.01.08 - 1
8.2. Departure clearance ..... 02.01.08 - 2

8.3. Take-off briefing ..... 02.01.08 - 2
8.4.Arrival briefing ..... 02.01.08 - 3
8.5. Holding time ..... 02.01.08 - 5
9. Stabilization policy ..... 02.01.09 - 1
9.1. Introduction ..... 02.01.09 - 1
9.2.Stabilization criteria ..... 02.01.09 - 1
9.3. Deviations ..... 02.01.09 - 1
10. Conventional radio-navigation policy ..... 02.01.10 - 1
10.1. Task sharing ..... 02.01.10 - 1
10.2. Methodology ..... 02.01.10 - 1
11. APM management ..... 02.01.11 - 1
11.1. APM cockpit interface ..... 02.01.11 - 1
11.2. Normal procedures ..... 02.01.11 - 1
11.2.1. Take-off weight selection ..... 02.01.11 - 1
11.2.2. APM Testing ..... 02.01.11 - 1
12. Radio-communication ..... 02.01.12 - 1
13. Exterior lights management ..... 02.01.13 - 1

02.02. STANDARD OPERATING PROCEDURES

1. Flight preparation ..... 02.02.01 - 1
2. Long and short transit ..... 02.02.02 - 1
3. External inspection ..... 02.02.03 - 1
4. Preliminary cockpit preparation ..... 02.02.04 - 1
4.1. Long transit ..... 02.02.04 - 2
4.2. Short transit ..... 02.02.04 - 6
5. Final cockpit preparation ..... 02.02.05 - 1
6. Before propeller rotation ..... 02.02.06 - 1
7. Before taxi ..... 02.02.07 - 1
8. Taxi ..... 02.02.08 - 1
9. Before take-off ..... 02.02.09 - 1
10. Take-off ..... 02.02.10 - 1
11. After take-off ..... 02.02.11 - 1
12. Climbing through FL100 ..... 02.02.12 - 1
13. Cruise ..... 02.02.13 - 1
14. Before descent ..... 02.02.14 - 1
15. Descending through FL 100 ..... 02.02.15 - 1
16. Approach ..... 02.02.16 - 1
17. Before landing ..... 02.02.17 - 1
17.1. ILS Precision Approach ..... 02.02.17 - 1
17.2. Non Precision Approach ..... 02.02.17 - 3
17.3. Circle-to-land ..... 02.02.17 - 5
17.4. Standard traffic pattern ..... 02.02.17 - 6
18. Landing ..... 02.02.18 - 1
19. Go-around ..... 02.02.19 - 1
20. After landing ..... 02.02.20 - 1
21. Parking ..... 02.02.21 - 1
22. Leaving the aircraft ..... 02.02.22 - 1

02.03. ADDITIONAL SOP

1. Hotel Mode Operations ..... 02.03.01 - 1
1.1. Preliminary Cockpit Preparation ..... 02.03.01 - 1
1.1.1. Long transit in Hotel mode ..... 02.03.01 - 1
1.1.2. Short transit in Hotel mode ..... 02.03.01 - 3
1.2. Leaving the aircraft procedure ..... 02.03.01 - 3
2. Power back and push-back operations ..... 02.03.02 - 1
2.1. Power back ..... 02.03.02 - 1
2.2. Push-back with tug ..... 02.03.02 - 1
3. Noise abatement procedures ..... 02.03.03 - 1
4. Operations in icing conditions ..... 02.03.04 - 1
5. Wet and contaminated runways operations ..... 02.03.05 - 1
6. Low visibility operations ..... 02.03.06 - 1
7. Performance Based Navigation operations ..... 02.03.07 - 1

03. ABNORMAL & EMERGENCY PROCEDURES

03.01. ABNORMAL SITUATIONS

1. Wake Turbulence ..... 03.01.01 - 1
1.1. Description ..... 03.01.01 - 1
1.2. ICAO recommendations ..... 03.01.01 - 2
1.3. Reporting procedure ..... 03.01.01 - 3
2. Windshear ..... 03.01.02 - 1
2.1. Description ..... 03.01.02 - 1
2.2. Detection ..... 03.01.02 - 2
2.3. Defence ..... 03.01.02 - 2
2.4. Procedures ..... 03.01.02 - 2
2.4.1. Take-off procedure ..... 03.01.02 - 2
2.4.2. Approach procedure ..... 03.01.02 - 3
2.4.3. Reporting procedure ..... 03.01.02 - 3
3. Approach to stall and stall recovery ..... 03.01.03 - 1
3.1. Description ..... 03.01.03 - 1
3.2. Detection ..... 03.01.03 - 1
3.3. Procedures ..... 03.01.03 - 1
3.3.1. Stall procedure ..... 03.01.03 - 1
3.3.2. Stick pusher procedure ..... 03.01.03 - 2
3.3.3. Procedure at lift-off ..... 03.01.03 - 2
3.3.4. Reporting procedure ..... 03.01.03 - 2
4. Unusual attitude recovery ..... 03.01.04 - 1
4.1. Bounce landing ..... 03.01.04 - 1
4.1.1. Description ..... 03.01.04 - 1
4.1.2. Defence ..... 03.01.04 - 1
4.1.3 Procedure ..... 03.01.04 - 1
4.2. Upset ..... 03.01.04 - 1
4.2.1 Description ..... 03.01.04 - 1
4.2.2. Nose Up ..... 03.01.04 - 2
4.2.3. Nose Down ..... 03.01.04 - 2
4.3. Reporting procedure ..... 03.01.04 - 3

5. Crew member incapacitation ..... 03.01.05 - 1
5.1. Description ..... 03.01.05 - 1
5.2. Detection ..... 03.01.05 - 1
5.3. Procedure ..... 03.01.05 - 1
6. Rudder Use ..... 03.01.06 - 1
6.1. General ..... 03.01.06 - 1
6.2. Rudder good practices ..... 03.01.06 - 1
7. Managing TAWS ..... 03.01.07 - 1
8. Managing TCAS warnings ..... 03.01.08 - 1
8.1. Traffic Advisory ..... 03.01.08 - 1
8.1.1. Description ..... 03.01.08 - 1
8.1.2. Procedure ..... 03.01.08 - 2
8.2. Resolution Advisory ..... 03.01.08 - 2
8.2.1. Description ..... 03.01.08 - 2
8.2.2. Procedure ..... 03.01.08 - 3
8.3. Reporting procedure ..... 03.01.08 - 4
9. Managing APM advisories ..... 03.01.09 - 1

03.02. EMERGENCY PROCEDURES

1. On ground engine fire ..... 03.02.01 - 1
2. Engine fire at take-off ..... 03.02.02 - 1
3. Engine Flame Out at take-off ..... 03.02.03 - 1
4. Single Engine Operation ..... 03.02.04 - 1
5. Single Engine Go-around ..... 03.02.05 - 1
6. Emergency Descent ..... 03.02.06 - 1

04. FLIGHT PATTERNS

04.01. AIRCRAFT CONFIGURATION MANAGEMENT ..... 04.01 - 1

04.02. NORMAL PROCEDURES

1. Take-off ..... 04.02.01 - 1
2. ILS Precision Approach ..... 04.02.02 - 1
3. Non Precision Approach ..... 04.02.03 - 1
4. Circle-to-Land ..... 04.02.04 - 1
5. Go-around ..... 04.02.05 - 1
6. Standard traffic pattern (1500 ft AAL) ..... 04.02.06 - 1

04.03. ABNORMAL & EMERGENCY PROCEDURES

1. On ground engine fire ..... 04.03.01 - 1
2. Engine fire at take-off ..... 04.03.02 - 1
3. Engine flame out at take-off ..... 04.03.03 - 1
4. Single Engine Non Precision Approach ..... 04.03.04 - 1
5. Single Engine Go-around ..... 04.03.05 - 1

1. Crew

CM1 is the Captain, sat in the left hand seat and **CM2** is the first officer, in the right hand seat.

PF is the Pilot Flying. **PM** is the Pilot Monitoring.

2. Procedure

Each flight phase is associated with a specific list of action designated as “procedure” and performed by crew from memory.

A procedure is triggered by **“XXX procedure’’** callout. It is performed before the relevant checklist.

Example: Before take-off procedure

3. Checklist

Normal checklists are used to check main actions were correctly performed.

NOTE: Procedures and checklists contained in this manual comply with all relevant sections of AFM, FCOM and QRH.

4. Emergency & abnormal situation

4.1. Emergency situation

ICAO definition

A condition of being threatened by serious and/or imminent danger and requiring immediate assistance.

It’s generally triggered by **Master Warning** + Continuous Repetitive Chime + red light on CAP, and refers to an Emergency C/L (red).

Example: Engine fire, Smoke

4.2. Abnormal situation

ICAO definition

A condition involving an aircraft or other vehicle safety, or some onboard or insight person but not requiring immediate assistance.

It’s generally triggered by **Master Caution** + Single Chime + amber light on CAP, and refer to a Following failure C/L (amber). If no immediate action is required, PF may delay crew actions or C/L, if necessary.

Example: Pack valve fault

4.3. Standard communication

Distress (Emergency) message	Urgency (Abnormal) message
(a) MAYDAY; MAYDAY; MAYDAY;	(a) PAN PAN; PAN PAN; PAN PAN;
(b) Addressed station identification (when appropriate, with permitting time and circumstances); (c) Callsign; (d) Type of aircraft; (e) Nature of problem; (f) In-charge crew member intentions.	

1. Task sharing

Final decision always belongs to Captain.

When it comes to procedures, general task sharing as stated below is applicable:

PF is in charge of:	PM is in charge of:
• Flight Path	• Flight path, navigation & systems monitoring
• Navigation	• Communication
• Aircraft configuration	• Checklist reading
• Procedure initiation	

During Emergency or abnormal C/L, PF is in charge of communication

2. Function assignment

FLIGHT PHASES		CM1	CM2
ON THE GROUND < 70Kt		PF(1)	PM
ON THE GROUND > 70Kt or IN FLIGHT	1st situation(2)	PF	PM
	2nd situation(2)	PM	PF

(1) Captain is **PF** for any action, except engine start which is performed by **CM2**.

(2) **CM1** & **CM2** take turns for **PF** & **PM**, as decided in the Captain's briefing.

IMPORTANT: Pilot actually flying keeps his function throughout emergency and/or abnormal procedures. Following emergency or abnormal events, PF assesses the situation then suggests a decision, ratified by the Captain.

Transferring flight controls

PF function may be transferred, due to external factors, with the following callout:

"YOUR CONTROL" or **"YOU HAVE CONTROL"**

Pilot being assigned PF functions calls back:

"MY CONTROL" or **"I HAVE CONTROL"**

Following PF / PM functions transfer, crew must reassign and check AFCS's coupling side to the new PF.

Whenever possible and prior to transfer, PF must call back main flight path parameters to PM.

3. Safety recommendations

3.1. Executing given commands

Crew members must keep each other informed of any performed action. PF commands, PM performs and calls completed action.

3.2. Collision avoidance

Crew must always avoid distractions, paper work (logging flight related forms...) and FMS inputs between ground and Flight Level 100 (except for noting and acknowledging ATC clearances).

Crew members are both held responsible of anti collision monitoring tasks (outside by appropriate and specific visual scans and inside by permanently listening and monitoring ATC frequencies and TCAS displays).

3.3. Communicating in the cockpit

Unnecessary chats must be banned while requests and call outs must be limited to pertinent and relevant technical communications between ground and Flight Level 100.

3.4. Headset operations

Crew members must wear headsets:

- Before engine start up to FL 100.
- From FL 100 to engine shut down.
- On any necessary occasion, following Captain's decision.

3.5. Safety belts and harnesses

EU-OPS 1.320

(a) Crew members

*1. During take-off and landing, and whenever deemed necessary by the commander in the interest of safety, each crew member shall be properly secured by all **safety belts** and **harnesses** provided.*

*2. During other phases of the flight each flight crew member on the flight deck shall keep his/her **safety belt** fastened while at his/her station.*

3.6. Cabin crew

Pilots must inform cabin crew of all significant flight phase initiation.

- Take-off
- Starting in-flight service
- Entering turbulence area
- Descent
- Before landing
- Technical problem(s) influencing cabin procedures

Following appropriate announcement, cabin crew must:

- Secure loose servicing materials, and stay on service seat
- Start a technical or commercial action
- Apply a specific procedure

4. Cross control

Cross check is a key safety factor.

Any pilot action which influences flight parameters (flight path, speed or a system status) must be called out loud by any pilot and cross-checked by the other one.

To allow an efficient cross check:

- Each pilot must be familiar with the other crew member procedures.
- Procedures must be entirely and accurately followed.

If an indication is not in compliance with a performed action, crew members must check that involved system is correctly set and/or take any necessary action to correct the applicable discrepancy.

PM can be temporarily busy (ATC message, listening to weather, reading operating manuals, performing related procedure action, etc). Any significant status change (AFCS, FMA, systems...) must be reported to PM when his attention is restored.

1. AFM, FCOM and QRH

AFM

Procedures are developed in the Aircraft Flight Manual, which takes precedence as the only certified manual.

ATR 72 A	PROCEDURES FOLLOWING FAILURES	5_04	
		PAGE : 9	001
AFM	SYSTEMS	EASA APPROVED	JUL 08

▶ PACK VALVE FAULT
PACK VALVE affected . . . . . OFF
MAX FL . . . . . 200 / MEA
AVOID LARGE QUICK POWER CHANGES AT HIGH ALTITUDES

FCOM

Flight Crew Operating Manual provides developed information relevant to related procedures. Once QRH procedure is completed, if required, on workload basis, it can be used in flight.

ATR72 F.C.O.M.	PROCEDURES FOLLOWING FAILURE	2.05.08		
		P 4	001	
AA	AIR			SEP 10

PACK VALVE FAULT
PACK VALVE affected side . . . . . OFF MAX FL . . . . . 200 / MEA AVOID LARGE QUICK POWER CHANGES AT HIGH ALTITUDES

COMMENTS
- If both bleeds are available, no special procedure has to be applied. In case of bleed failure, associated pack must be selected OFF.

QRH

Quick Reference Handbook is used in flight and only deals with procedures and checklists.

ATR 72	FOLLOWING FAILURES AIR	2.26	
		APR 08	001

PACK VALVE FAULT
PACK VALVE affected side ..... OFF MAX FL .....200 / MEA AVOID LARGE QUICK POWER CHANGES AT HIGH ALTITUDES

2. Preconditions

■ Preconditions are highlighted through black squares. PM will question **"YES or NO?"** following related item, to know whether related precondition applies to relevant scenario.

If PF answers **"YES"**, apply following actions.

If answer is **"NO"**, skip to following black square.

● Black dots are more dealing with "when" do the relevant actions must be applied.

NO NH DURING START

Note: On BAT only, OIL PRESS IND is not available.

ENG START ROTARY SELECTOR.....START A or START B

START PB ..... ON

When... ← ● **After 10 seconds**

■ **If OIL pressure increases**

CL .....FTR

Continue START procedure, being informed NH indicator is inoperative.

Yes or no? ← ■ **If OIL pressure does not increases**

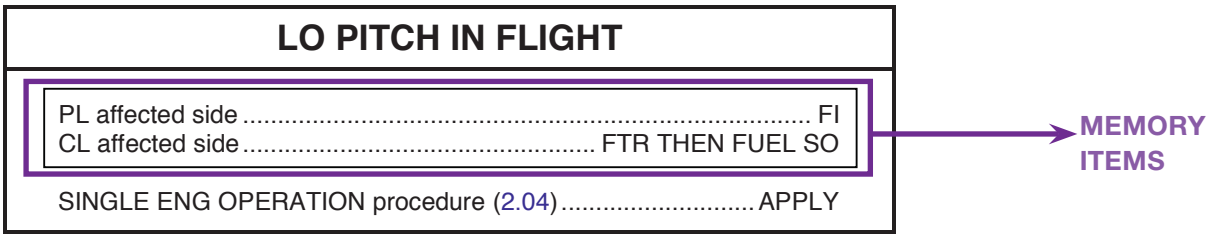
ENG START ROTARY SELECTOR ..... OFF / START ABORT

Suspect starter motor failure. Maintenance action is due.

3. Memory items

They are flow of actions known by heart that must be performed by crew. Memory items are boxed inside relevant checklists. They need to be read back when related checklists are performed.

As soon as aircraft and flight path are under control, when emergency and/or abnormal statuses are entailed, PF commands **"xxx MEMO ITEMS"**.



PM	PF
	Following event confirmation: ▶ CALL "XXX MEMO ITEMS"
Act and crosscheck accordingly by memory	Act and crosscheck accordingly by memory
After completion of all items ▶ CALL "XXX MEMO ITEMS COMPLETE"	▶ CALL "XXX CHECKLIST"
Following title crosscheck, continues reading back boxed items and performs relevant checklist.	

1. Dark cockpit philosophy

During normal operations, all lights, excepting blue or green ones for transients, are extinguished.

No light = normal operation

Remember lights philosophy:

Dark (no light)	normal operation
Amber	caution
Red	emergency
White	System is OFF
Blue	status (switched temporary ON by crew)
Green	backup (switched temporary ON by system)

2. Checklist priorities

Procedures in QRH are classified in three parts: Emergency, Normal and following failures (Abnormal).

While performing procedures, crew will comply with the following hierarchy:

- EMERGENCY
- NORMAL
- ABNORMAL

3. Normal Procedures

3.1. Initiating Procedures

On the ground

Procedures are triggered by

CM1 or a specific event.

In flight

Procedures are triggered by

PF or a specific flight event

3.2. Procedures methodology

A procedure always stands before a checklist, regarding the corresponding flight phase. Every pilot must know the other pilot's procedure items.

Example: Approach procedure

PF and PM task sharing must comply with the following commands and callouts:

Flight events	PM	PF
CLEARED TO AN ALTITUDE OR PASSING TRANSITION LEVEL	▶ **DO & CALL** **"XXX SET"** Captain also checks standby altimeter setting. ▶ **CALL** **"CHECK"** or **"PLUS OR MINUS XXX FT"** If deviation >50 ft, check altimeter setting. If deviation <50 ft, altimeter setting is correct.	▶ **COMMAND & DO** **"SET QNH"** ▶ **CALL** **"PASSING XXX FT, NOW!"**
APPROACH PROCEDURE COMPLETE	▶ **CALL & READ** **"APPROACH CHECKLIST"** Refer to QRH 6.01 ▶ **CALL** **"APPROACH CHECKLIST COMPLETE"**	▶ **REQUIRE** **"APPROACH CHECKLIST"**

SCANS enables panel's PB, switches & lights checks. They are performed from memory, following a typical flow pattern.

Example: Preliminary cockpit preparation

FLOW PATTERNS enable a predetermined sequence of actions. They are performed from memory, following specific patterns. Flow pattern is a reminder of a given task sequence.

Example: Before Landing flow pattern

3.3. Checklist methodology

On the ground	In flight
C/L is requested by **CM1**	C/L is requested by **PF**
C/L is read by **CM2**	C/L is read by **PM**

CHALLENGE AND RESPONSE

Concept: After procedure completion, PF calls C/L, PM reads C/L, PF answers.

PM announces C/L title, reads the C/L, asking questions.

The PF answer must be in compliance with the C/L and the present situation.

PM must receive the correct answer before reading the next item. If not, PM must repeat the same item.

When C/L is completed, PM calls **"XXX C/L COMPLETE"**

If a checklist is interrupted, reading must be resumed one step before the last read item.

PF and PM task sharing must comply with following orders and callouts:

Flight events	PM	PF
APPROACH PROCEDURE COMPLETE	▶ CALL & READ **"APPROACH CHECKLIST"**	▶ REQUIRE **"APPROACH CHECKLIST"**
	Approach checklist 6.01 ▶ READ **"SEAT BELTS"** **"ALTIMETERS"** **"CABIN ALTITUDE"**	▶ REPLY **"ON"** **"SET AND CHECK"** **"CHECK"**
APPROACH CHECKLIST COMPLETE	▶ CALL **"APPROACH CHECKLIST COMPLETE"**	

3.4. Procedures chronology

For a normal flight, here are the achieved normal course of events, corresponding procedures and co-related task sharing:

FLIGHT EVENTS	PROCEDURES	CHECKLIST	TRIGGERED BY
Arrival at the dispatch	Flight preparation procedure		CM1 / CM2
Arrival at the aircraft	External inspection procedure		CM1
Arrival at the aircraft	Preliminary cockpit preparation procedure		CM2
Preliminary cockpit preparation procedure complete		Preliminary cockpit preparation checklist	CM1 / CM2
Preliminary cockpit preparation C/L complete	Final cockpit preparation procedure		CM1
Final cockpit preparation procedure complete		Final cockpit preparation checklist	CM1
Ready to start engine 2 in Hotel mode	Before propeller rotation procedure		CM1
Before propeller rotation procedure complete		Before propeller rotation checklist	CM1
Start up clearance received	Before taxi procedure		CM1
Before taxi procedure complete		Before taxi checklist	CM1
Taxi clearance received	Taxi procedure		CM1
Taxi procedure complete		Taxi checklist	CM1
Approaching holding point and "cabin ok" received	Before take-off procedure		CM1
Before take-off procedure complete		Before take-off checklist	CM1
Passing acceleration altitude	Climb procedure		PF
After altimeter standard setting		After take-off checklist	PF

FLIGHT EVENTS	PROCEDURES	CHECKLIST	TRIGGERED BY
Climbing through FL 100	Climbing through FL 100 procedure	No C/L	PF
Approaching cruise FL	Cruise procedure	No C/L	PF
Landing data available	Before descent procedure		PF
Arrival briefing complete		Descent checklist	PF
Descending through FL 100	Descending through FL 100 procedure	No C/L	PF
Cleared to an altitude or passing transition level	Approach procedure		PF
Approach procedure complete		Approach checklist	PF
Cleared for approach	Before landing procedure		PF
Aircraft stabilized		Before landing checklist	PF
Runway vacated	After landing procedure		CM1
Engine 1 shut down		After landing checklist	CM1
Marshaller in sight	Parking procedure		CM1
Parking procedure complete		Parking checklist	CM1
All documentation filled	Leaving the aircraft procedure		CM1
Leaving the aircraft procedure complete		Leaving the aircraft checklist	CM1

NOTE: During some flight phases, procedures are triggered by events and are organized in a chronological sequence. It is not necessary to call for the procedure because all actions are already completed. PF will directly call for relevant checklist.

Example:

- *Approach procedure is triggered by altimeters setting and checking.*
- *Before landing procedure is triggered by setting flaps for landing.*

4. Abnormal and emergency procedures

IMPORTANT: Never rush up, take all necessary time to analyse situation before acting. No actions (except memo items), no checklists to be performed before acceleration altitude is reached.

4.1. Failure identification

In case of CCAS or MFC notification, crew must clearly and undoubtedly identify involved or failed systems.

1 - CREW ALERTING

WARNING + **CRC** (Continuous repetitive chime)

or

CAUTION + **SC** (Single chime)

2 - SYSTEM IDENTIFICATION

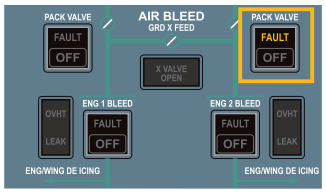
CAP

QRH Following Failures AIR

The crew refers to the relevant subsection.

3 - ISOLATION

LOCAL ALERT



PACK VALVE FAULT

Local alert notifies crew on relevant checklist to be performed.

PM	PF
PM checks involved flasher and illuminated CAP legend. ▶ **CALL** **"MASTER XXX, XXX ON CAP"**	
PM cancels flashing **WARNING** and / or **CAUTION**, then checks lit local alert and: ▶ **CALL** **"XXX FAULT (OR TYPE OF EVENT)"**	▶ **CALL** **"CHECK"** PF acknowledges failure or event identification and when able: ▶ **COMMAND** **"CHECK SYSTEM"**

4.2. Failure analysis: system check

Six checks must be performed for failure confirmation. They are triggered by PF, calling **"SYSTEM CHECK"** and executed by PM:

Control

Is the system control in a relevant position?

Indicator

Is the indication relevant? Is the indication in compliance with the control?

Supply

Are the supply source(s) available?

Circuit breakers

Flight Crew may reengage a tripped circuit breaker only if he/she judges it necessary for a safe continuation of the flight. In this case only one reengagement should be attempted.

If the failure alert disappears, continue normal operation and record the event in the maintenance log. If not, apply the associated failure procedure.

On the ground, a pilot may re-engage a tripped circuit breaker provided the action is coordinated with the maintenance team.

Lighting

Are the bulb(s), digit(s) working?

Reset

At PF discretion, one reset of a push button of a failed system, associated with an amber caution, may be performed by selecting system related push button OFF for 3 seconds and then ON.

EXCEPTIONS: BLEED LEAKS, LO LEVEL, EEC, PEC, BUS, CAB PRESS MAN, DC GEN, ACW GEN.

4.3. Checklist methodology

Red tab: Emergency

Contained in this section are all emergency procedures and checklists.

Amber tab: Following Failures

Contained in this section are all abnormal procedures and checklists linked either to amber or red alarms. An illuminated CAP label depicts either origin of failure ELEC or an abnormal configuration LDG GEAR NOT DOWN.

Before executing checklist crew must **confirm** it is the appropriate one:

PM	PF
▶ CALL "SYSTEM CHECKED, XXX FAILURE CONFIRMED" (OR NOT)	▶ CALL "PACK VALVE FAULT CHECKLIST"
PM submits checklist title to PF. ▶ CALL "PACK VALVE FAULT CHECKLIST?"	▶ CHECK AND REPLY "CONFIRMED"

READ AND DO, CROSSCHECKS

Concept: PM reads out the item loudly and performs the required action AFTER PF confirmation.

PM	PF
PM reading the C/L. ▶ READ AND CALL "PACK VALVE AFFECTED....OFF" PM points out the PACK VALVE PB. ▶ CALL "PACK VALVE 2?"	▶ CHECK AND CALL "CONFIRMED"
After PF confirmation, PM depresses PACK VALVE 2 PB. ▶ CALL "OFF"	

EXCEPTION: Once **on the ground**, with aircraft stopped and parking brake set, CM1 performs required actions as stated in the emergency procedure. No crosscheck procedure is required. Once all procedures are completed, CM1 calls out checklist. In this case, *Challenge and response* methodology is used (refer to 01.04 p5).

Once checklist is completed, PM calls out:

PM	PF
After checklist completion: ▶ CALL "PACK VALVE FAULT C/L COMPLETE "	

NOTE:

- When a C/L refers to another one, the first one is only completed when the second is all done.
- When checklists are completed, all CAP lights status are checked, and then PM clears the CAP.

4.4. Assessments / decision / information

4.4.1. Assessment

Once checklist is completed, PF summarizes the situation, taking into account the three following aspects: T-O-C

- Technical assessment: consider consequences of related failure on systems by scanning the overhead panel (fuel, DC/AC, anti-/de-icing, ACW, hydraulic, air).
- Operational assessment: consider possibility to land at destination, divert / alternate, depending on failure, operational limitations, weather conditions, fuel status.
- Commercial assessment: consider passengers or crew casualties (e.g.: depressurization) and in case of diversion, possibility to allow passengers to proceed to destination airport (transportation, feeding, lodging accommodations...), in accordance with operator policy.

4.4.2. Decision

Once assessment is performed, PF is able to suggest a decision, endorsed by Captain.

Crew must settle a consensus before making a decision.

4.4.3. Information

PF and PM plan together the consequences of failures encountered. Then PM informs, if necessary:

- ATC
- Flight attendant
- Passengers
- Dispatch

4.5. Example

Follows a PACK VALVE FAULT troubleshooting example:

Flight events	PM	PF	
MC + SC + AIR ON CAP + PACK VALVE FAULT (LOCAL ALERT)	▶ **CALL AND DO** **"MASTER CAUTION, AIR ON CAP"** MASTER CAUTION PB.....DEPRESS		**Failure Identification**
AFTER ASSOCIATED PANEL CHECK	▶ **CALL** **"PACK VALVE 2 FAULT"**	▶ **CALL** **"CHECK"**	
	▶ **DO** PACK VALVE PB.. CHECK DEPRESSED SUPPLY.....ENG OK CIRCUIT BREAKER..... CHECK LIGHTING ..... OK	▶ **COMMAND** **"CHECK SYSTEM"**	**Failure Analysis**
IF NO ABNORMAL CONDITION IS NOTED	▶ **CALL** **"PACK VALVE 2 RESET?"** ▶ **DO AND CALL** PACK VALVE 2.....POINTED AT WITH FINGER **"PACK VALVE 2?"** ▶ **DO AND CALL** PACK VALVE 2..... OFF (for 3 sec) **"OFF"** PACK VALVE 2.....ON **"ON"**	▶ **COMMAND** **"RESET PACK VALVE 2"** ▶ **DO AND REPLY** ITEM POINTED AT BY PM....CHECK **"CONFIRMED"**	
PACK VALVE 2 FAULT CONFIRMED	▶ **CALL** **"SYSTEMS CHECKED, PACK VALVE 2 FAILURE CONFIRMED"** ▶ **DO AND CALL** PACK VALVE FAULT C/L... POINTING AT TITLE WITH FINGER **"PACK VALVE FAULT C/L?"**	▶ **COMMAND** **"PACK VALVE FAULT CHECKLIST, RADIO RIGHT SIDE"** ▶ **DO AND REPLY** C/L POINTED AT BY PM..... CHECK **"CONFIRMED"**	**Failure Confirmation**
PM EXECUTES C/L UNDER PF CONTROL	▶ **READ, DO AND CALL** **"PACK VALVE AFFECTED SIDE OFF"** PACK VALVE 2.....POINTED AT WITH FINGER **"PACK VALVE 2?"** ▶ **DO AND CALL** PACK VALVE 2..... OFF **"OFF"** ▶ **CALL** **"MAXIMUM FLIGHT LEVEL 200/MEA"**	▶ **DO AND REPLY** C/L POINTED AT BY PM...CHECK **"CONFIRMED"** ▶ **REPLY** **"CHECK"**	**Checklist Completion**

Flight events	PM	PF	
PM EXECUTES C/L UNDER PF CONTROL (CONT'D)	▶ CALL **"AVOID LARGE & QUICK POWER CHANGES AT HIGH ALTITUDES"** ▶ CALL **"PACK VALVE FAULT C/L COMPLETED"** ▶ DO AND CALL CLR PB ..... DEPRESS **"CAP CLEARED"**	▶ REPLY **"CHECK"** ▶ DO AND CALL AMBER LIGHT ON CAP..... CHECK **"WE HAVE AIR ON CAP DUE TO PACK VALVE 2 OFF, CLEAR CAP"**	**Checklist Completion**
WHEN ABLE, PF ASSESSES THE SITUATION	▶ CALL **"GO AHEAD"**	▶ CALL **"READY FOR ASSESSMENT?"** ▶ CALL **TECHNICAL** **"WE HAVE A PACK VALVE 2 FAILURE. FUEL OK, DC/AC OK, HYD OK, AIR: REMAINING ONLY LEFT SIDE CIRCUIT."** **OPERATIONAL** **"FL LEVEL IS LIMITED, LARGE & QUICK POWER CHANGES AVOIDED. DESTINATION AIRPORT IS MAINTAINED".** **COMMERCIAL** **"TEMPERATURE CABIN MAY INCREASE"**	**Assessments**
PF SUGGESTS A DECISION TO CM1		▶ CALL **"I SUGGEST THAT WE CONTINUE TO DESTINATION AND WRITE IT DOWN IN MAINTENANCE LOG."**	**Decision**
		"NOBODY NEEDS TO BE INFORMED EXCEPT COMPANY, IF YOU AGREE. CONTACT DISPATCH TO INFORM ABOUT MALFUNCTION."	**Information**
	CAPTAIN ▶ CALL **"I AGREE"**		
		▶ CALL **"RADIO LEFT SIDE"**	

5. Flows

During their mission, crew members have several sequences of tasks to perform. These sequences are defined by the manufacturer to:

- Fit the design of the aircraft,
- Prioritize the tasks,
- Organize the workload on board.

When a sequence of tasks is necessary to complete the requirements of a flight phase, they are organized in Standard Operational Procedures (SOPs).

Example: Before Take-Off Procedure

In order to achieve the procedures, the SOPs tasks are organized in an ergonomic and logical order with regard to the instruments and the systems the pilots have to use. The physical progression to achieve this procedure is called “Flow”.

The completion of these flows facilitates the pilot activity and the memorization of the procedures.

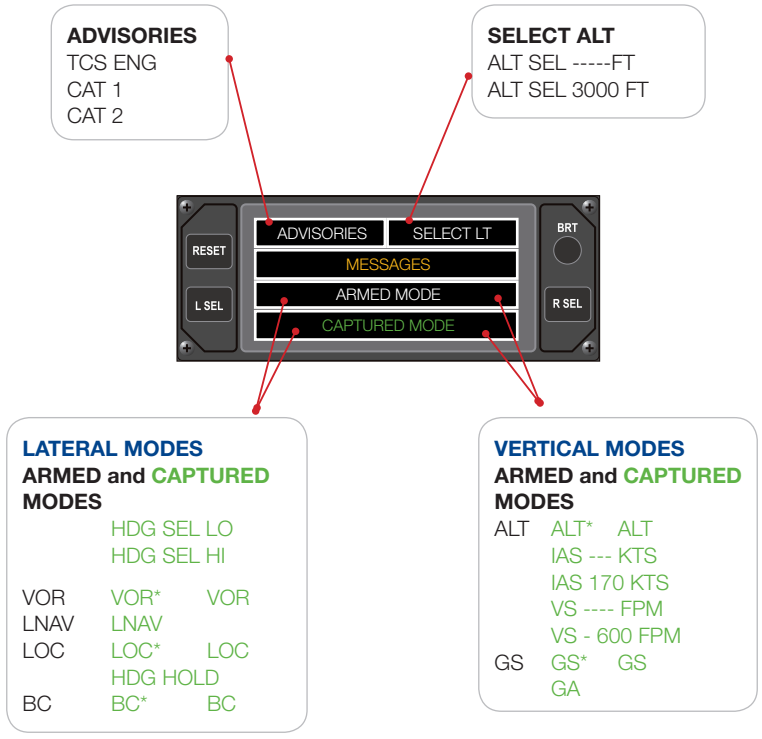
Example: Please refer to the Preliminary Cockpit Preparation flow described in 02.02.04.

1. Fly
2. Navigate
3. Understand problem before acting & assess situation
4. One head up at all times
5. Know and understand your FMA at all times
6. Practice task sharing and back up each other
7. Respect Stabilisation Criteria in Approach
8. Monitor navigation accuracy
9. No major reprogramming below FL 100
10. Use the proper level of automation
11. Respect checklists priority
12. Use team resources to build up decisions

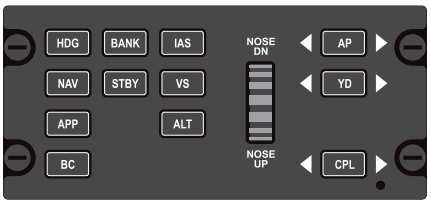
1. Auto Flight Control System (AFCS)

1.1. General

1.1.1. Advisory Display Unit (ADU)



1.1.2. AFCS control panel



Mode selection is achieved by acting on the corresponding PB on the AFCS control panel except for ALT SEL and GO AROUND modes.

Simultaneously armed modes are limited to one lateral mode and two vertical modes. Therefore vertical armed modes are working in the following priority sequence:

1. ILS GS ARMED
2. ALT SEL ARMED

Climb or descent action must be done with the entire following sequence:

1) Adjust ALT SEL
2) Select and adjust vertical mode; usually IAS for climb and VS for descent(1)
3) Adjust power as required.
4) Change altimeter setting and crosscheck
5) Adjust speed bug.

(1) IAS mode must be used during climb for stall protection. VS mode must be used during descent (except in emergency descent & Drift Down for which IAS mode is used). The basic pitch mode may be used in accordance with current operator's policy.

NAV (VOR, LOC and LNAV) and APP modes must be associated with High Bank speeds.

1.1.3. Task Sharing

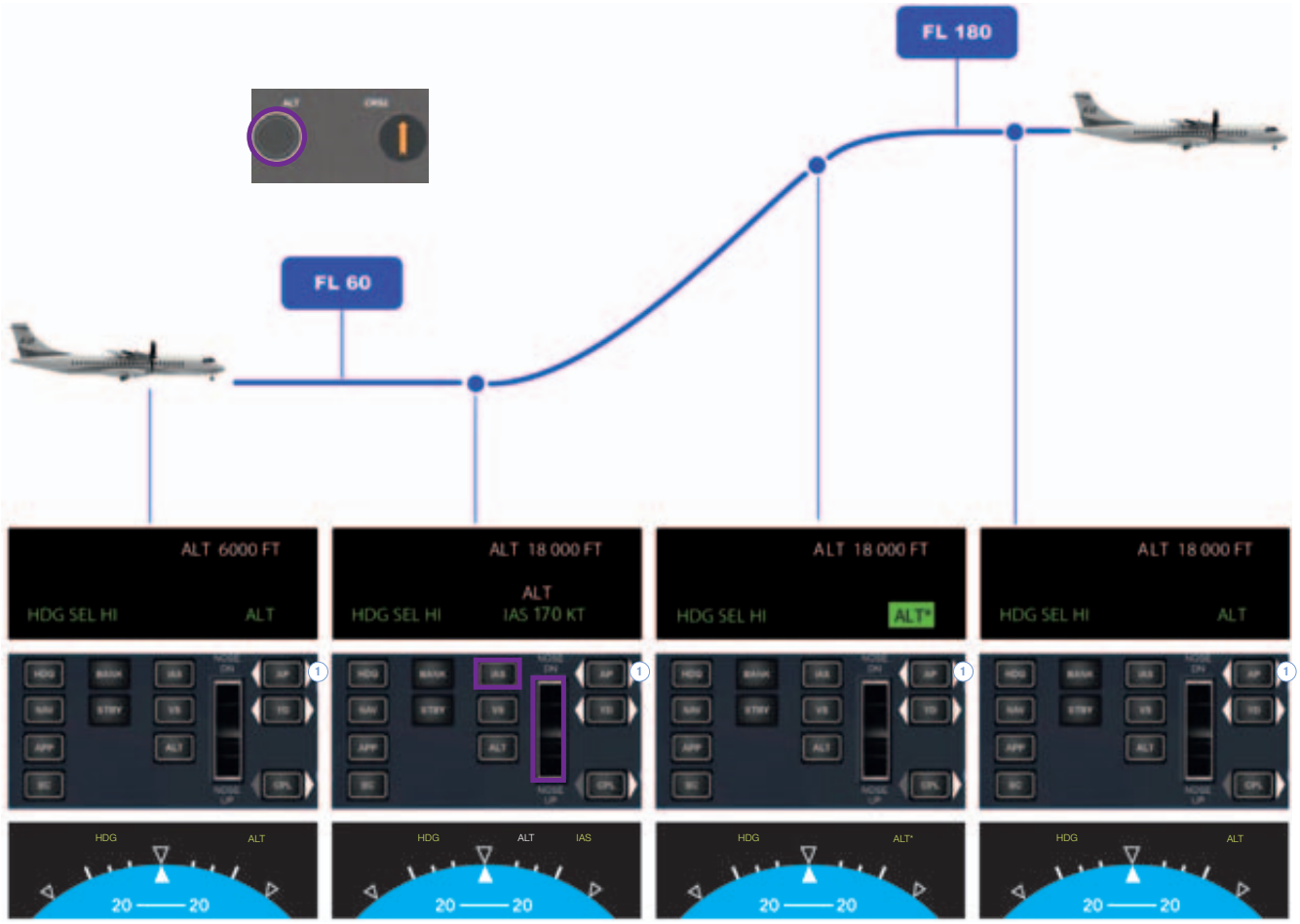
AP engaged	AP disengaged
PF acts on AFCS...	PM acts on AFCS on PF request...
	...with the following phraseology:
	PF commands relevant action, starting callout with **"SET..."**
PF informs PM, upon selection completion, ending callout with **"...SET"**	PM informs PF, upon selection completion, ending callout with **"...SET"**
Following FMA's crosscheck, PM calls **"CHECK"**	Following FMA's crosscheck, PF calls **"CHECK"**

Any ADU mode status change from armed condition (white) to captured one (star) or from a captured condition (star) to tracking one (green) must trigger a crew crosscheck on Flight Mode Announciator (FMA); any FMA status change must be called out.

Modes status are displayed on FMA.

1.2. Flight modes arming sequence

1.2.1 Climb mode



(1) When AP is OFF, the 2 arrows are extinguished.

AP ON

Flight events	PM	PF
CLEARED TO FL 180	▶ CALL "CHECK"	▶ DO ALT SEL..... 18000 IAS ..... 170 (160) TQ / NP .....CHECK CLIMB SETTING ▶ CALL "FL 180, IAS 170 (160), ALT WHITE SET"(1)
ALT STAR	▶ CALL "CHECK"	▶ CALL "ALT STAR"
ALT GREEN	▶ CALL "CHECK"	▶ CALL "ALT GREEN"

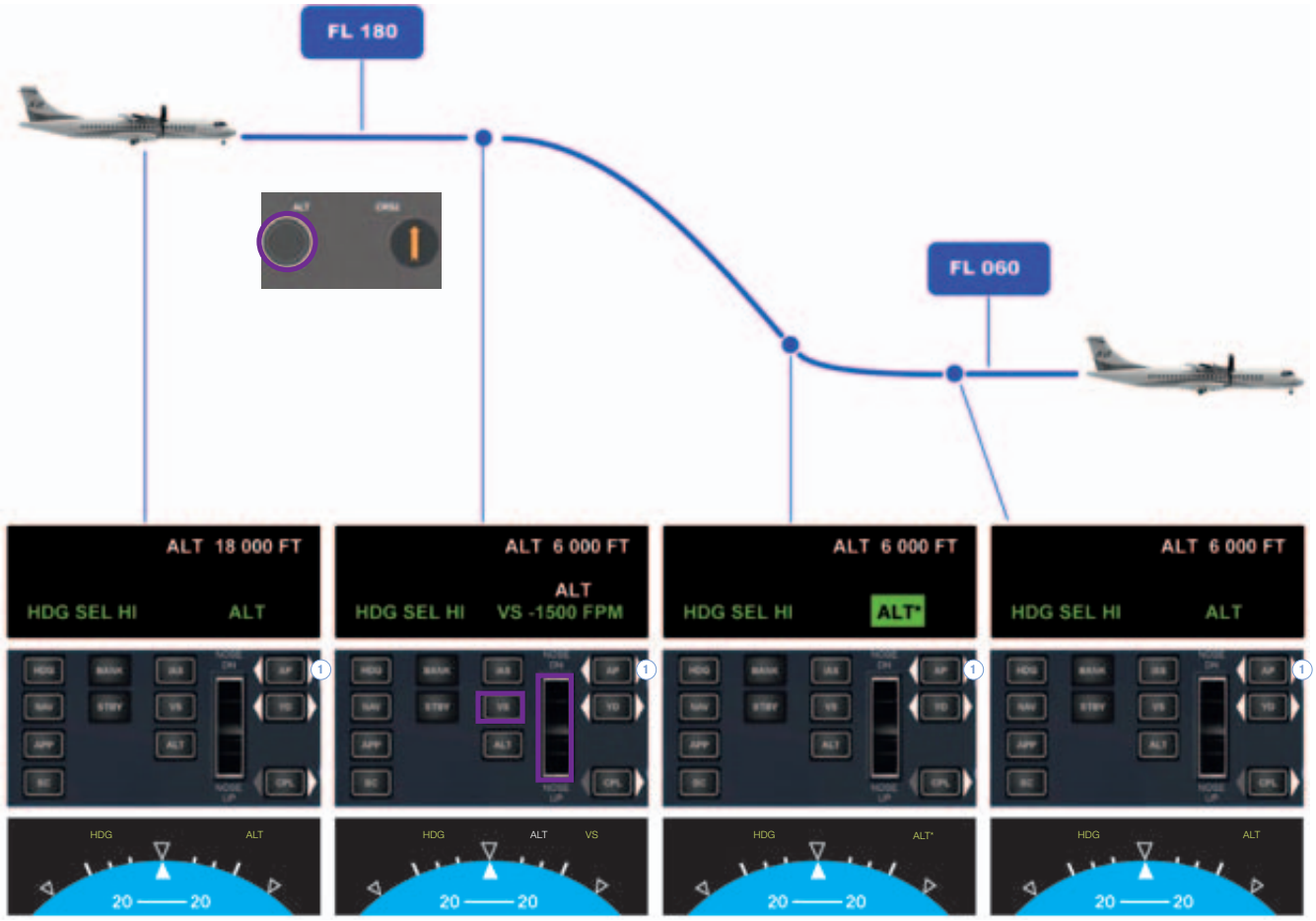
NOTE: In a simultaneous setting situation, only one call-out can be made.

AP OFF

Flight events	PM	PF
CLEARED TO FL 180	▶ DO ALT SEL..... 18000 IAS..... 170 (160) TQ/NP.....CHECK CLIMB SETTING ▶ CALL "FL 180, IAS 170 (160), ALT WHITE SET"(1)	▶ COMMAND "SET FL 180, IAS 170 (160)" ▶ CALL "CHECK"
ALT STAR	▶ CALL "CHECK"	▶ CALL "ALT STAR"
ALT GREEN	▶ CALL "CHECK"	▶ CALL "ALT GREEN"

(1) ALT white appears only when a vertical mode is armed and the aircraft is climbing or descending towards the preselected altitude / FL.

1.2.2. Descent mode



(1) When AP is OFF, the 2 arrows are extinguished.

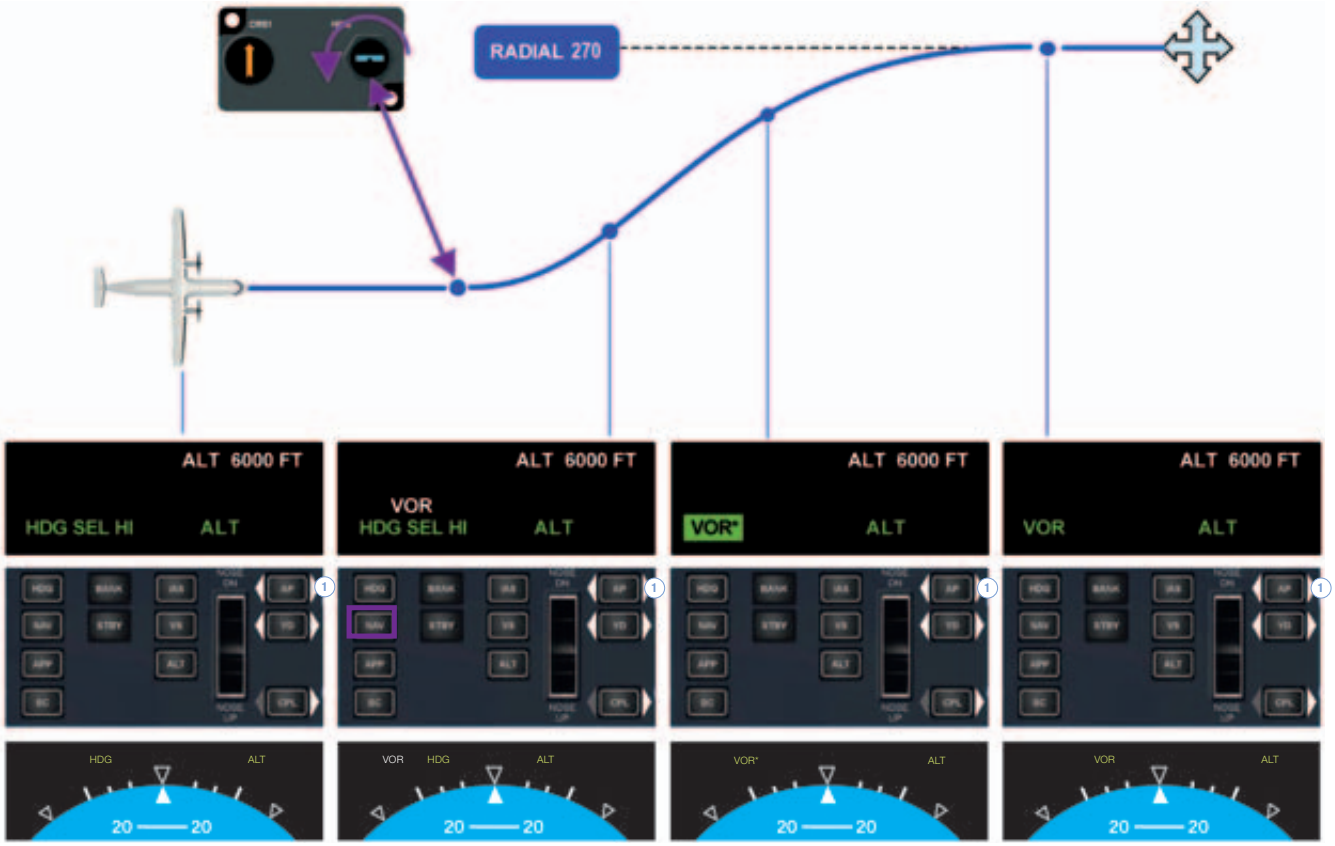
AP ON

Flight events	PM	PF
CLEARED TO 6000 FT	▶ CALL "CHECK"	▶ DO ALT SEL..... 6000 VS ..... -1500 ▶ CALL "6000 FT, VS -1500, ALT WHITE SET"
ALT STAR	▶ CALL "CHECK"	▶ CALL "ALT STAR"
ALT GREEN	▶ CALL "CHECK"	▶ CALL "ALT GREEN"

AP OFF

Flight events	PM	PF
CLEARED TO 6000 FT	▶ DO ALT SEL..... 6000 VS..... -1500 ▶ CALL "6000 FT, VS -1500, ALT WHITE SET"	▶ COMMAND "SET 6000 FT, VS - 1500" ▶ CALL "CHECK"
ALT STAR	▶ CALL "CHECK"	▶ CALL "ALT STAR"
ALT GREEN	▶ CALL "CHECK"	▶ CALL "ALT GREEN"

1.2.3. NAV mode



(1) When AP is OFF, the 2 arrows are extinguished.

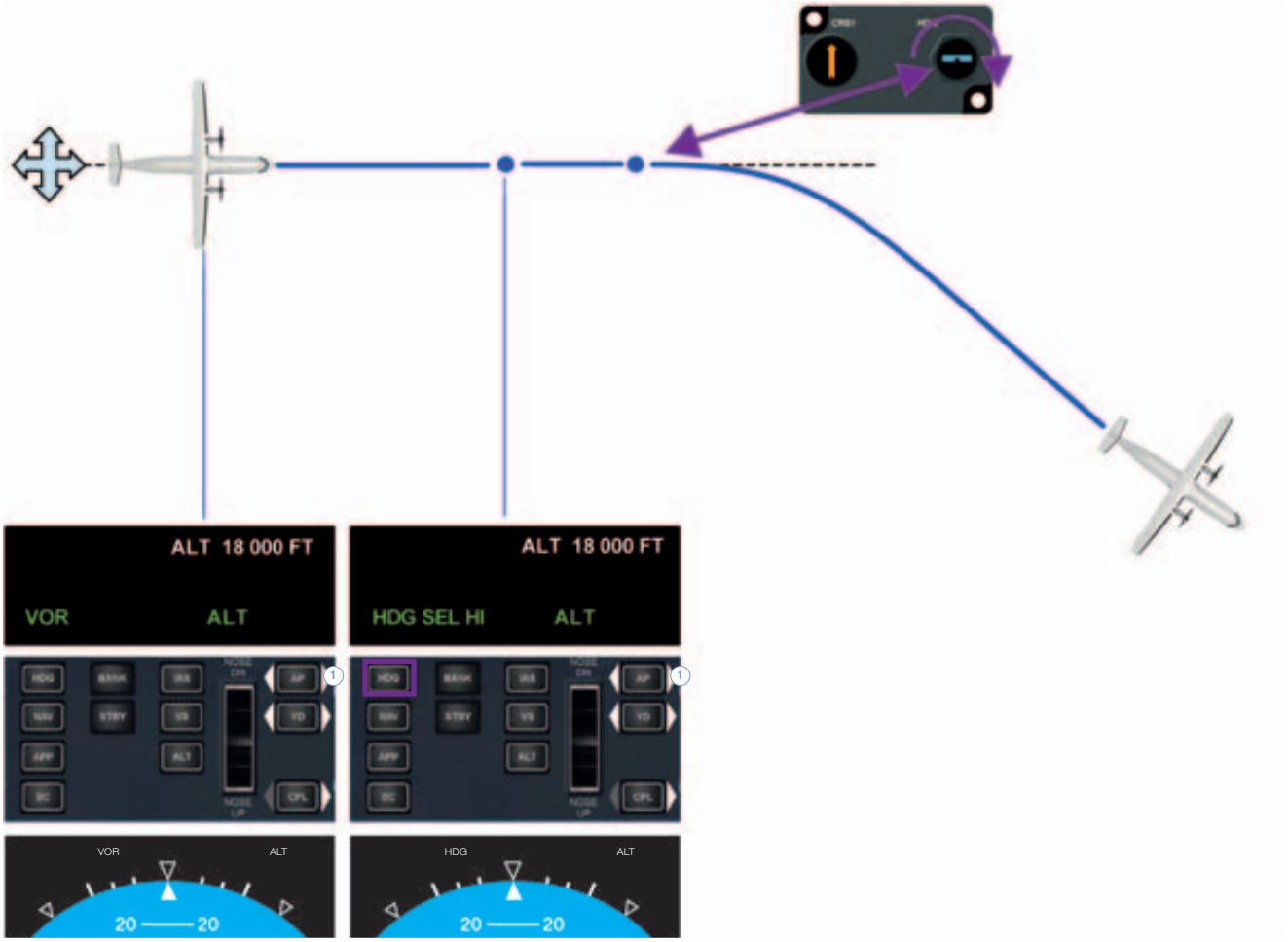
AP ON

Flight events	PM	PF
CLEARED TO INTERCEPT RADIAL 270 INBOUND	▶ CALL "CHECK"	▶ DO HDG BUG..... SET 045 ▶ CALL "HDG BUG LEFT 045 SET"
ESTABLISHED ON INTERCEPTION HEADING	▶ CALL "CHECK"	▶ DO NAV MODE.....ENGAGE ▶ CALL "NAV MODE SET, VOR WHITE"
VOR STAR	▶ CALL "CHECK"	▶ CALL "VOR STAR"
VOR GREEN	▶ CALL "CHECK"	▶ CALL "VOR GREEN"

AP OFF

Flight events	PM	PF
CLEARED TO INTERCEPT RADIAL 270 INBOUND	▶ DO HDG BUG..... SET 045 ▶ CALL "HEADING BUG 045 SET"	▶ COMMAND "SET HEADING BUG LEFT 045" ▶ CALL "CHECK"
ESTABLISHED ON INTERCEPTION HEADING	▶ DO NAV MODE.....ENGAGE ▶ CALL "NAV MODE SET, VOR WHITE"	▶ COMMAND "SET NAV MODE" ▶ CALL "CHECK"
VOR STAR	▶ CALL "CHECK"	▶ CALL "VOR STAR"
VOR GREEN	▶ CALL "CHECK"	▶ CALL "VOR GREEN"

1.2.4. HDG mode



(1) When AP is OFF, the 2 arrows are extinguished.

AP ON

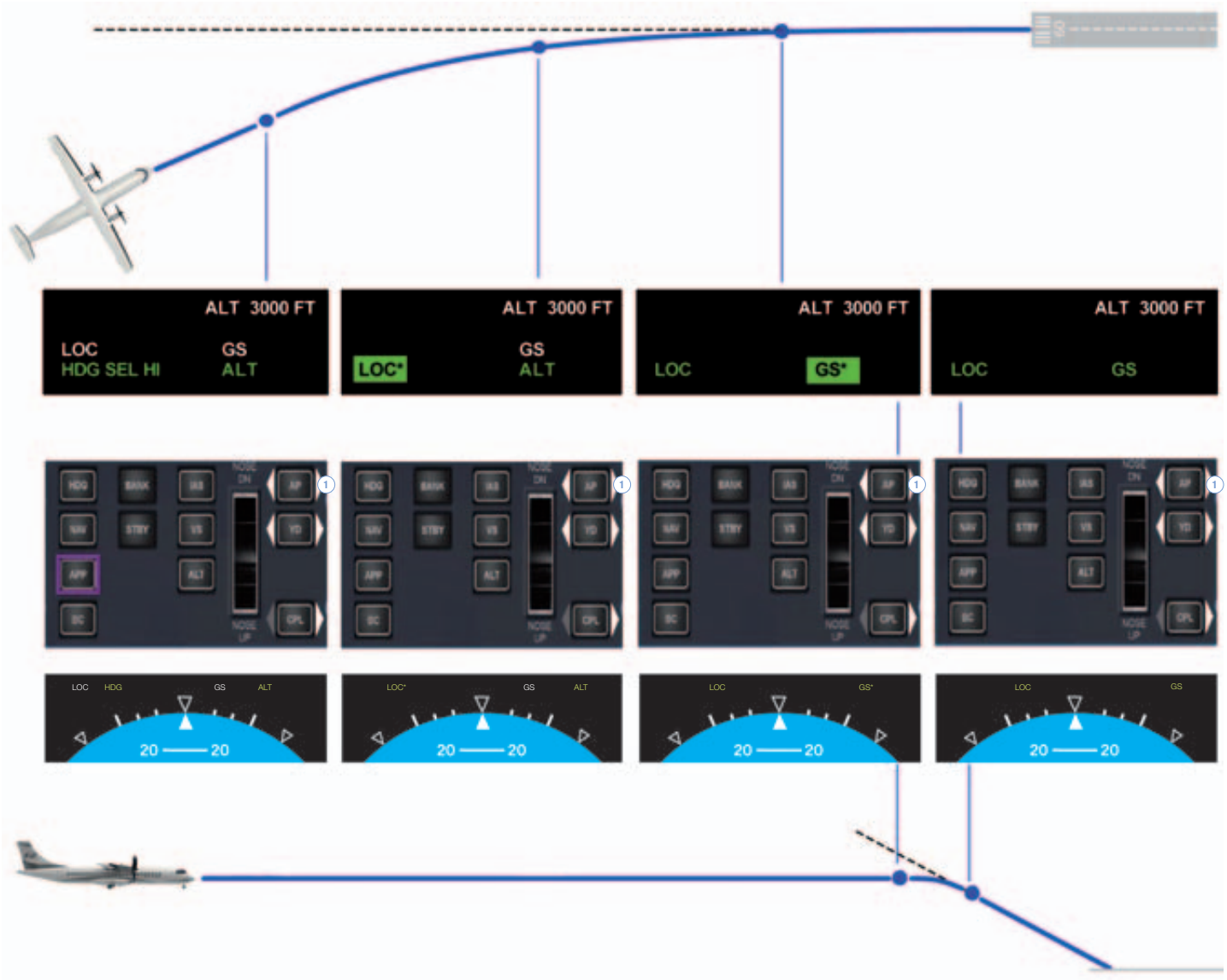
Flight events	PM	PF
CLEARED TO HEADING 130	▶ CALL "CHECK"	▶ DO HDG MODE ..... SELECT ▶ CALL "HDG MODE, LO (OR HI) BANK SET"(1)
HEADING SELECTION	▶ CALL "CHECK"	▶ DO HDG BUG..... SELECT 130 ▶ CALL "HDG BUG RIGHT 130 SET"

AP OFF

Flight events	PM	PF
CLEARED TO HEADING 130	▶ DO HDG MODE ..... ENGAGE ▶ CALL "HDG MODE LOW (OR HI) BANK SET"(1)	▶ COMMAND "SET HEADING MODE" ▶ CALL "CHECK"
HEADING SELECTION	▶ DO HDG BUG..... SELECT 130 ▶ CALL "HDG BUG RIGHT 130 SET"	▶ COMMAND "SET HEADING BUG RIGHT 130" ▶ CALL "CHECK"

(1) HI or LO according to speeds.

1.2.5. APP mode



(1) When AP is OFF, the 2 arrows are extinguished.

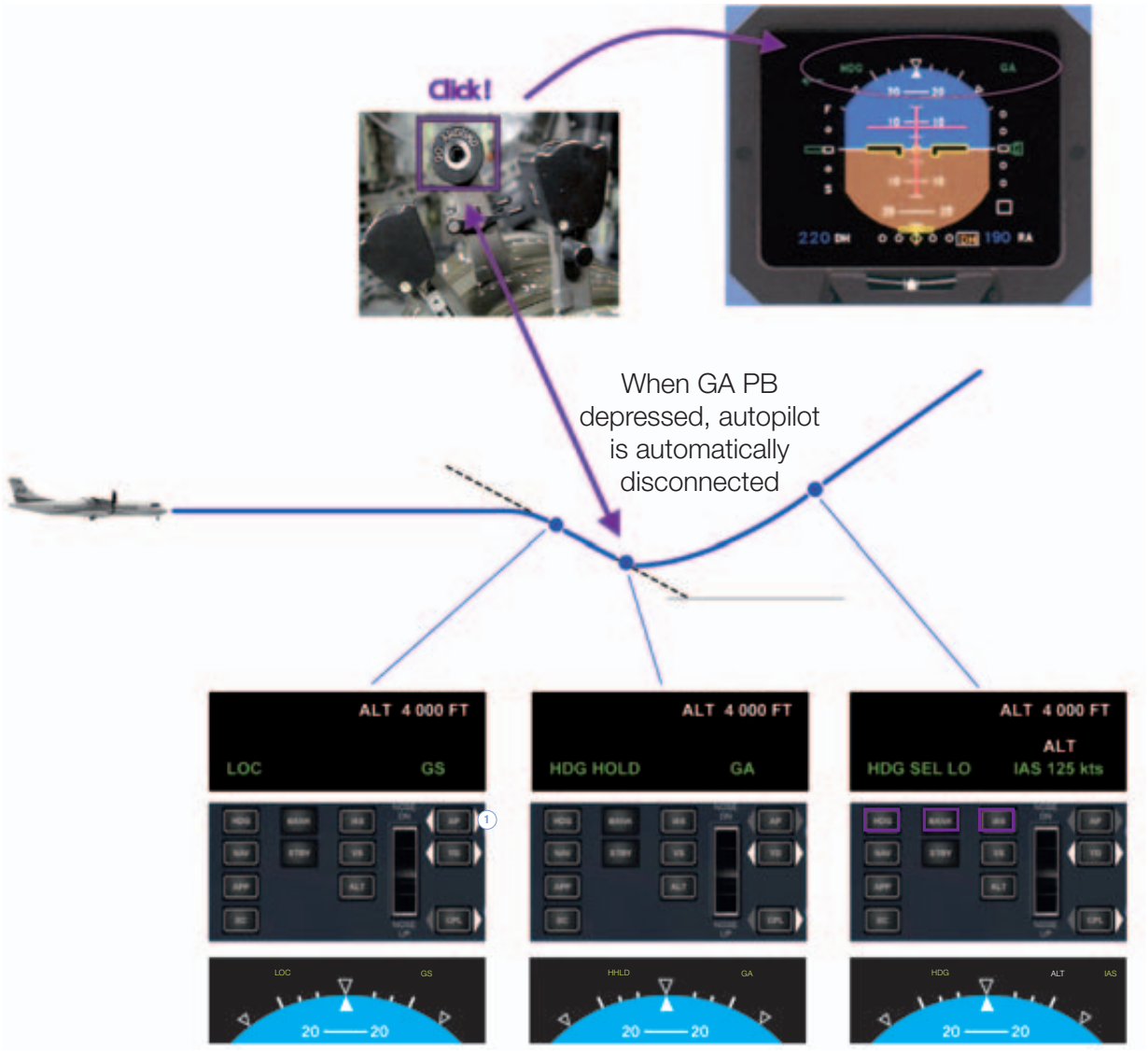
AP ON

Flight events	PM	PF
CLEARED TO PERFORM AN ILS APPROACH	▶CALL "CHECK"	▶DO APP MODE..... ENGAGE ▶CALL "APPROACH MODE SET, LOC AND GS WHITE"
LOC STAR	▶CALL "CHECK"	▶CALL "LOC STAR"
LOC GREEN	▶CALL "CHECK"	▶CALL "LOC GREEN"
GS STAR	▶CALL "CHECK"	▶CALL "GS STAR"
GS GREEN	▶CALL "CHECK"	▶CALL "GS GREEN"

AP OFF

Flight events	PM	PF
CLEARED TO PERFORM AN ILS APPROACH	▶DO APP MODE.....ENGAGE ▶CALL "APPROACH MODE SET, LOC AND GS WHITE"	▶COMMAND "SET APPROACH MODE" ▶CALL "CHECK"
LOC STAR	▶CALL "CHECK"	▶CALL "LOC STAR"
LOC GREEN	▶CALL "CHECK"	▶CALL "LOC GREEN"
GS STAR	▶CALL "CHECK"	▶CALL "GS STAR"
GS GREEN	▶CALL "CHECK"	▶CALL "GS GREEN"

1.2.6. GA mode

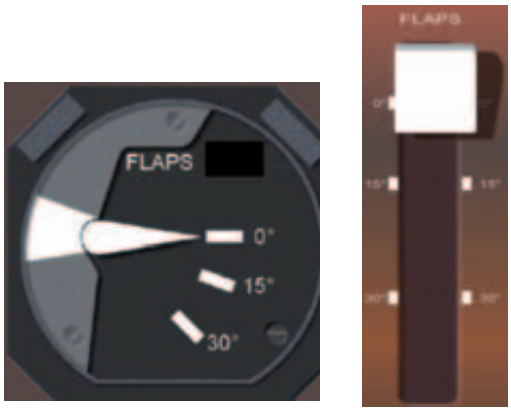


(1) When AP is OFF, the 2 arrows are extinguished.

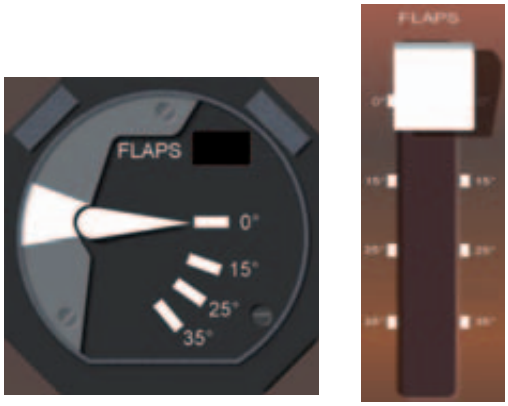
For the associated task sharing, please refer to 02.02.19. *Go-around.*

2. Flaps operation

ATR 72



ATR 42



For system use in normal operations, any setting change must be performed through the cross control concept:

PF: orders system action.

PM: performs the action and announces the configuration when the setting is in compliance with the system indicator

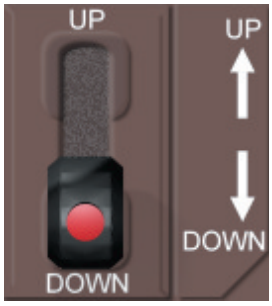
Flaps manoeuvers are always performed by the PM under PF order. PM checks the speed before each configuration change then performs the task and announces the new configuration.

Example:

Flight events	PM	PF
FLAPS EXTENSION	▶ CALL "SPEED CHECK" ▶ DO FLAPS ..... 15°	▶ COMMAND "FLAPS 15"
FLAPS 15° INDICATED	▶ CALL "FLAPS 15"	▶ CALL "CHECK"

NOTE: During deceleration, select new speed only when the new configuration is obtained.

3. Landing gear operation



For system use in normal operations, any setting change must be performed through the cross control concept:

PF: orders system action.

PM: performs the action and announces the configuration when the setting is in compliance with the system indicator

Gear manoeuvers are always performed by the PM under PF order. PM checks the speed before each configuration change then performs the task and announces the new configuration.

Example:

Flight events	PM	PF
LANDING GEAR EXTENSION	▶ CALL "SPEED CHECK" ▶ DO LANDING GEAR.....DOWN PWR MGT .....TO TAXI & T.O LIGHTS..... ON	▶ COMMAND "GEAR DOWN"
LDG GEAR 3 GREEN LIGHTS	▶ CALL "GEAR DOWN"	▶ CALL "CHECK"

4. Altimeter and radioaltimeter management

4.1. Altimeter setting

PF and PM altimeter settings must be identical. Any change must be performed with a specific call and cross control.

Example: cleared down to an altitude with QNH 1015

Flight events	PM	PF
QNH SETTING	▶ DO QNH 1015.....SET ▶ CALL "1015 SET"	▶ COMMAND "SET QNH" ▶ DO QNH 1015.....SET
DESIRED ALTITUDE	▶ CALL "CHECK" If difference less than 50 ft or "± XX FT" If difference more than 50 ft	▶ CALL "XXXX FT, NOW"

The altimeter value is:
- expressed in feet for QNH setting.
- expressed in Flight Level for standard setting.

For each flight phase, the altimeter setting must be in compliance with the following table.

FLIGHT PHASE	ALTIMETERS		
	CAPTAIN	STANDBY	FIRST OFFICER
From ground until cleared to FL	QNH (departure airport)	QNH (departure airport)	QNH (departure airport)
From climb to cruise FL until cleared down to altitude	STANDARD	QNH Regional	STANDARD
Cleared to altitude	QNH (arrival airport)	QNH (arrival airport)	QNH (arrival airport)

4.2. Radioaltimeter setting

DH policy

Used for CAT II approach only.

5. Speed bugs policy

Fixed bugs

The PF and PM speed bug settings must be identical.

Any setting change must be performed with a specific call out and cross control.

Example: After filling the landing data card, ready to set speed bug.

Flight events	PM	PF
LANDING DATA CARD PROCEEDING	▶ **DO** YELLOW BUG..... SELECT ▶ **CALL** **"116 SET"** ▶ **DO** WHITE BUG..... SELECT ▶ **CALL** **"139 SET"** ▶ **DO** RED BUG ..... SELECT ▶ **CALL** **"165 SET"**	▶ **CALL** **"VGA 116"** ▶ **DO** YELLOW BUG..... SELECT ▶ **CALL** **"WHITE BUG 139"** ▶ **DO** WHITE BUG..... SELECT ▶ **CALL** **"RED BUG 165"** ▶ **DO** RED BUG ..... SELECT

Speed bug

When aircraft configuration is obtained, PF orders new speed bug setting according to flight phase, on both sides. Speed bug manages Fast / Slow EADI speed scale and must be considered also as a cross-check tool.

Example:

Flight events	PM	PF
ACCELERATING TO 170 (160) KT	▶ **DO** SPEED BUG ..... 170 (160) ▶ **CALL** **"170 (160) SET"**	▶ **CALL** **"SET SPEED BUG 170 (160)"** ▶ **DO** SPEED BUG 170 (160)

5.1. Take-off speed bugs

OAT (DC)	TOW(KG) CODES V1 VR V2(IAS KT)		QNH=1013.25(HPA) WIND (KT)		DRY RUNWAY SCREEN HEIGHT 35 FT
	-10	-5	0	10	20
10.0	23000 1-1 96 111 115	23000 1-1 101 111 115	NL	NL	NL
15.0	23000 1-1 96 111 115	23000 1-1 101 111 115	NL	NL	NL
20.0	23000 1-1 96 111 115	23000 1-1 100 111 115	NL	NL	NL
25.0	22955 6-6 97 111 115	23000 1-1 100 111 115	NL	NL	NL
30.0	22703 6-6 96 110 114	23000 1-1 100 111 115	23000 1-1 101 111 115	NL	NL
35.0	22474 6-6 96 109 114	23000 1-1 101 111 115	23000 1-1 102 111 115	NL	NL
40.0	22070 6-6 96 108 113	22655 2-6 105 115 119	22999 2-1 114 123 127	23000 2-1 116 123 127	23000 2-1 115 123 127

Limiting runway

23 t	PW127F / PW127M		
Never exceed certified weight limitations			
	Speeds	Normal	Icing
NON LIMITING RWY TAKE-OFF FLAPS 15	V1 = VR V2	114 117	123 126
FINAL TAKE OFF		141 (Flaps 0)	132 (Flaps 15)
DRIFT DOWN	VmLB	141 (Flaps 0)	135 (Flaps 15)
MINI EN ROUTE			169 (Flaps 0)

Non limiting runway

V1 — Set when V1≠VR (limiting runway)
Set at 12 o'clock when not used (non limiting runway)

VR — When limiting runway

V1/VR — When non limiting runway

V2

Green bug

Yellow bug

Speed bug

White bug

White bug + 10 kt

Icing bug

Icing bug + 10 kt

NORMAL CONDITIONS

White Bug (flaps 0°)
– Final Take-Off Speed (VFTO)
– Flaps retraction speed
– Low Bank manoeuver
– Best climb **gradient** speed
– Single engine climb speed

VmHB(2) flaps 0°
– High Bank manoeuver
– Best climb **rate** speed

ICING CONDITIONS

White Bug (flaps 15°)
– Final Take-Off Speed (VFTO)
– Low Bank manoeuver
– Single engine climb speed

VmHB(2) flaps 15°
– High Bank manoeuver

Icing Bug
– VmLB(1) flaps 0°
– Flaps retraction speed
– Low Bank manoeuver

VmHB(2) flaps 0°
– High Bank manoeuver

(1) VmLB: minimum speed LOW BANK (HDG SEL LO on ADU)
(2) VmHB: minimum speed HIGH BANK (HDG SEL HI on ADU)

5.2. Cruise speed bugs

22.5 t	PW127F / PW127M		
Never exceed certified weight limitations			
	Speeds	Normal	Icing
NON LIMITING RWY TAKE-OFF FLAPS 15	V1 = VR V2	112 115	122 125
FINAL TAKE OFF		140 (Flaps 0)	130 (Flaps 15)
DRIFT DOWN	VmLB	140 (Flaps 0)	133 (Flaps 15)
MINI EN ROUTE			167 (Flaps 0)
FINAL APPROACH	VmHB (Flaps 30)	113	122

	NORMAL CONDITIONS	ICING CONDITIONS
White bug	Drift Down Speed Mini En Route Speed VmLB flaps 0°	Drift Down Speed VmLB flaps 15°
Icing bug		Mini En Route Speed VmLB flaps 0°
Speed bug	Cruise speed	

MAX CRUISE 2 ENGINES							
FLIGHT LEVEL	Δ ISA						
	-10	-5	0	+5	+10	+15	+20
80	94.5 459 **248** 271	94.5 461 **247** 272	94.5 464 **246** 274	89.3 446 **239** 269	84.2 428 **233** 263	79.7 412 **226** 258	75.2 396 **220** 253
100	94.5 453 **246** 276	94.5 456 **245** 278	90.2 440 **239** 274	85.6 424 **232** 269	80.8 408 **226** 264	76.3 392 **219** 258	72.1 377 **213** 253
120	93.5 446 **242** 280	89.9 433 **237** 277	86.0 418 **232** 273	82.1 404 **226** 269	77.9 390 **220** 265	73.7 375 **213** 259	69.6 361 **207** 254
140	89.2 427 **235** 280	86.0 412 **230** 277	82.7 401 **225** 274	79.0 387 **219** 270	75.4 374 **214** 266	71.4 360 **208** 260	67.5 346 **201** 254
160	84.6 406 **227** 279	81.9 394 **223** 277	78.8 381 **218** 274	75.7 369 **213** 270	72.3 356 **207** 265	68.9 345 **201** 260	65.1 331 **194** 254
180	79.2 381 **218** 277	76.6 370 **213** 274	74.1 359 **209** 271	71.2 347 **204** 267	68.2 336 **198** 263	65.0 324 **192** 257	61.8 313 **185** 250

PW127F / PW127M									
1.1 VMCA IAS *									
OAT °C / ZP (ft)	-30	-20	-10	0	+ 10	+ 20	+30	+ 40	+ 50
0	111	110	109	108	108	107	106	104	100
2000	109	108	108	107	106	105	104	101	97
4000	108	107	106	105	105	104	100	97	94
6000	106	106	105	104	103	100	97	94	91
8500	104	104	103	100	98	96	93	90	88

* Conservative values calculated for the maximum landing weight.

21.5 t	PW127F / PW127M		
	Speeds	Normal	Icing
NON LIMITING RWY TAKE-OFF FLAPS 15	V1 = VR V2	109 113	119 122
FINAL TAKE OFF		138 (Flaps 0)	126 (Flaps 15)
DRIFT DOWN	VmLB	138 (Flaps 0)	129 (Flaps 15)
MINI EN ROUTE			163 (Flaps 0)
FINAL APPROACH	VmHB (Flaps 30)	109	119

5.3. Approach speed bugs

Yellow bug

VGA
Max { VmHB(1) flaps 30 (35)+5kt
1.1 VMCA

Speed bug

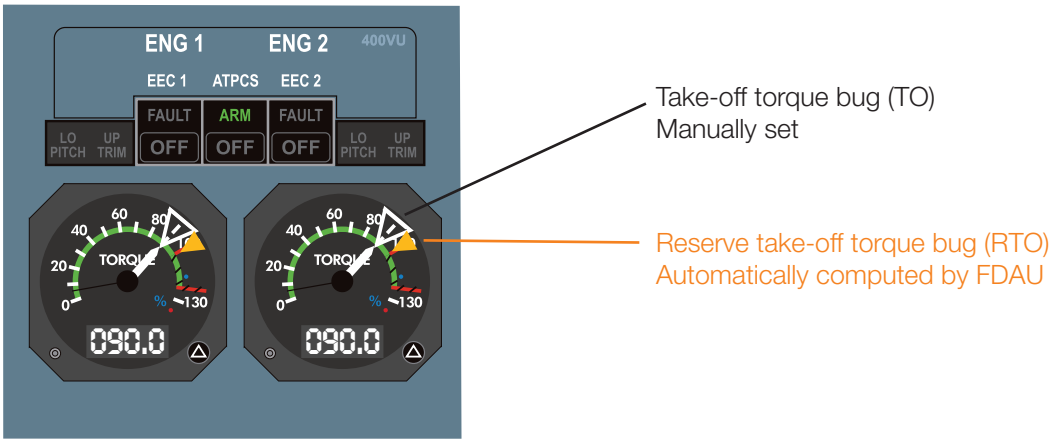
VAPP
VmHB flaps 30 (35) + wind factor(3)

	NORMAL CONDITIONS	ICING CONDITIONS
White bug	**White Bug** (flaps 0°) – Final Take-Off Speed (VFTO) – Flaps retraction speed for go-around – Low Bank manoeuver – Best climb **gradient** speed – Single engine climb speed	**White Bug** (flaps 15°) Max { Final Take-Off Speed (VFTO) Drift down speed – Low Bank manoeuver – Single engine climb speed
White bug + 10 kt	VmHB(2) flaps 0° – High Bank manoeuver – Best climb **rate** speed	VmHB(2) flaps 15° – High Bank manoeuver
Icing bug		**Icing Bug** – VmLB(1) flaps 0° – Flaps retraction speed for go-around – Low Bank manoeuver
Icing bug + 10 kt		VmHB(2) flaps 0° – High Bank manoeuver

(1)VmLB: minimum speed LOW BANK (HDG SEL LO on ADU)
(2)VmHB: minimum speed HIGH BANK (HDG SEL HI on ADU)
(3)Wind factor = max {1/3 Head Wind component or full gust } limited to 15 Kt.

6. Torque bugs policy

6.1. Take-off torque bugs



The take-off and reserve take-off torques are read in the QRH, Ops Data part.

PW127F / PW127M - BOOST OFF

TAKE OFF TORQUE COMPUTED FOR VC = 50. KT

SAT (°C)			PROPELLER SPEED 100 %										
AIR COND OFF	NORMAL AIR COND ON	HIGH AIR COND ON	PRESSURE ALTITUDE (FT)										
			-1000.	0	1000.	2000.	3000.	4000.	5000.	6000.	7000.	8000.	8500.
- 40.	- 63.		90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0
- 10.	- 27.		90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	89.7
- 8.	- 24.		90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	88.7
- 6.	- 22.		90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	89.7	87.8
- 4.	- 19.		90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	88.7	86.8
- 2.	- 17.		90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	87.7	85.8
0.	- 14.		90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	86.7	84.9
2.	- 12.		90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	89.3	85.7	83.9
4.	- 10.		90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	88.3	84.7	82.9
6.	- 7.		90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	87.2	83.6	81.9
8.	- 5.		90.0	90.0	90.0	90.0	90.0	90.0	90.0	89.9	86.2	82.6	80.9
10.	- 2.		90.0	90.0	90.0	90.0	90.0	90.0	90.0	88.8	85.2	81.7	79.9
12.	0.		90.0	90.0	90.0	90.0	90.0	90.0	90.0	87.7	84.1	80.7	79.0
14.	3.		90.0	90.0	90.0	90.0	90.0	90.0	90.0	86.5	83.0	79.5	77.9
16.	5.		90.0	90.0	90.0	90.0	90.0	90.0	88.9	85.2	81.7	78.4	76.7
18.	8.		90.0	90.0	90.0	90.0	90.0	90.0	87.5	83.9	80.5	77.1	75.5
20.	10.		90.0	90.0	90.0	90.0	90.0	89.6	86.0	82.5	79.1	75.8	74.2
22.	13.		90.0	90.0	90.0	90.0	90.0	88.1	84.5	81.0	77.7	74.5	72.9
24.	15.		90.0	90.0	90.0	90.0	90.0	86.5	83.0	79.6	76.3	73.2	71.7
26.	18.		90.0	90.0	90.0	90.0	88.5	85.0	81.5	78.2	75.0	71.9	70.4
28.	20.		90.0	90.0	90.0	90.0	86.9	83.4	80.0	76.7	73.6	70.5	69.1
30.	23.		90.0	90.0	90.0	88.8	85.2	81.8	78.5	75.3	72.2	69.2	67.7
32.	25.		90.0	90.0	90.0	87.1	83.6	80.2	77.0	73.8	70.8	67.9	66.4
34.	28.		90.0	90.0	88.9	85.4	81.9	78.6	75.4	72.4	69.4	66.5	65.1
36.	30.		90.0	90.0	87.1	83.7	80.3	77.0	73.9	70.9	68.0	65.2	63.8
38.	33.		90.0	88.9	85.4	82.0	78.7	75.5	72.4	69.5	66.6	63.8	62.5
40.	36.		90.0	87.1	83.6	80.3	77.1	73.9	70.9	68.0	65.2		
42.	38.		88.8	85.3	81.9	78.6	75.4	72.4	69.4	66.6			
44.	41.		86.9	83.5	80.1	76.9	73.8	70.8	68.0				
46.	43.		85.0	81.6	78.4	75.3	72.2	69.3					
48.	46.		83.1	79.8	76.6	73.6	70.6						
50.	48.		81.2	78.0	74.9	71.9							
52.	51.		79.3	76.2	73.2								
54.	53.		77.5	74.4									
55.	54.		76.5	73.5									

The part in bolt is the flat rated zone; engine mechanical limit.

The part below is the area where the thermodynamical limit is reached first.

Note: Applicable for 0 < VC < 60 kt

PW127F / PW127M - BOOST OFF

RESERVE TAKE OFF TORQUE COMPUTED FOR VC = 50. KT

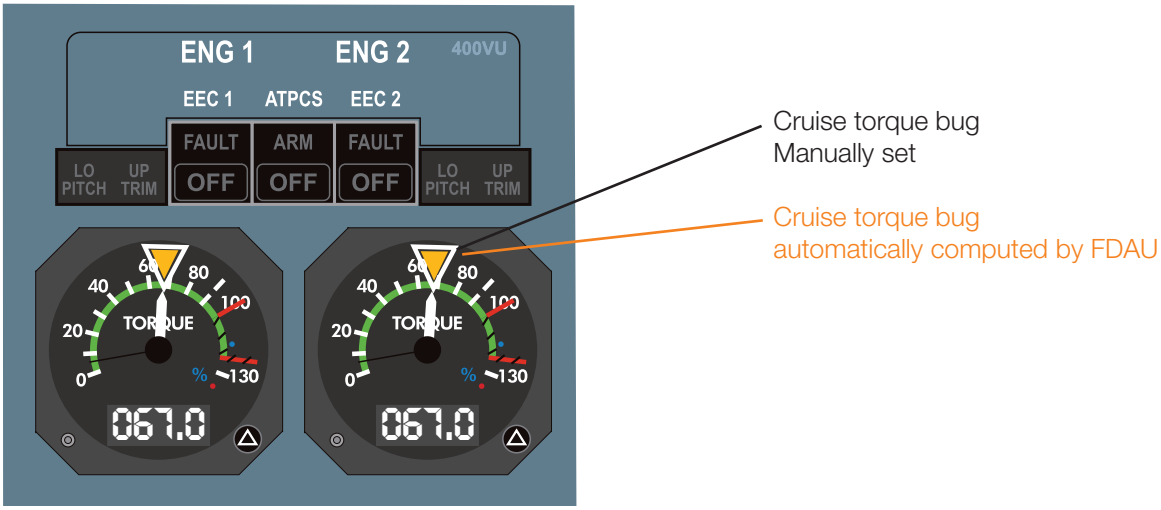
SAT (°C)			PROPELLER SPEED 100 %										
AIR COND OFF	NORMAL AIR COND ON	HIGH AIR COND ON	PRESSURE ALTITUDE (FT)										
			-1000.	0	1000.	2000.	3000.	4000.	5000.	6000.	7000.	8000.	8500.
- 40.	- 63.	- 71.	100.	100.	100.	100.	100.	100.	100.	100.	100.	100.	100.
- 10.	- 27.	- 35.	100.	100.	100.	100.	100.	100.	100.	100.	100.	100.	99.7
- 8.	- 24.	- 32.	100.	100.	100.	100.	100.	100.	100.	100.	100.	100.	98.6
- 6.	- 22.	- 30.	100.	100.	100.	100.	100.	100.	100.	100.	100.	99.6	97.5
- 4.	- 19.	- 27.	100.	100.	100.	100.	100.	100.	100.	100.	100.	98.5	96.5
- 2.	- 17.	- 25.	100.	100.	100.	100.	100.	100.	100.	100.	100.	97.4	95.4
0.	- 14.	- 22.	100.	100.	100.	100.	100.	100.	100.	100.	100.	96.3	94.3
2.	- 12.	- 19.	100.	100.	100.	100.	100.	100.	100.	100.	100.	99.3	95.2	93.2
4.	- 10.	- 17.	100.	100.	100.	100.	100.	100.	100.	100.	100.	98.1	94.1	92.1
6.	- 7.	- 14.	100.	100.	100.	100.	100.	100.	100.	100.	100.	96.9	92.9	91.0
8.	- 5.	- 12.	100.	100.	100.	100.	100.	100.	100.	100.	99.9	95.8	91.8	89.9
10.	- 2.	- 9.	100.	100.	100.	100.	100.	100.	100.	100.	98.7	94.6	90.7	88.8
12.	0.	- 7.	100.	100.	100.	100.	100.	100.	100.	100.	97.5	93.5	89.6	87.8
14.	3.	- 4.	100.	100.	100.	100.	100.	100.	100.	100.	96.1	92.2	88.4	86.5
16.	5.	- 1	100.	100.	100.	100.	100.	100.	100.	100.	98.7	94.7	90.8	87.1	85.3
18.	8.	2.	100.	100.	100.	100.	100.	100.	100.	100.	97.2	93.2	89.4	85.7	83.9
20.	10.	4.	100.	100.	100.	100.	100.	100.	100.	99.6	95.5	91.6	87.9	84.3	82.5
22.	13.	7.	100.	100.	100.	100.	100.	100.	100.	97.9	93.9	90.0	86.4	82.8	81.1
24.	15.	10.	100.	100.	100.	100.	100.	100.	100.	96.1	92.2	88.5	84.8	81.3	79.6
26.	18.	13.	100.	100.	100.	100.	100.	100.	98.4	94.4	90.6	86.9	83.3	79.9	78.2
28.	20.	16.	100.	100.	100.	100.	100.	100.	96.6	92.7	88.9	85.3	81.8	78.4	76.7
30.	23.	18.	100.	100.	100.	100.	100.	98.7	94.7	90.9	87.2	83.6	80.2	76.9	75.3
32.	25.	21.	100.	100.	100.	100.	100.	96.8	92.9	89.1	85.5	82.0	78.6	75.4	73.8
34.	28.	24.	100.	100.	100.	96.8	94.9	91.1	87.4	83.8	80.4	77.1	73.9	72.4
36.	30.	27.	100.	100.	96.8	93.0	89.2	85.6	82.1	78.8	75.5	72.4	70.9
38.	33.	30.	100.	98.8	94.9	91.1	87.4	83.9	80.5	77.2	74.0	70.9	69.5
40.	36.	32.	100.	96.8	92.9	89.2	85.6	82.2	78.8	75.6	72.5		
42.	38.	35.	98.7	94.8	91.0	87.3	83.8	80.4	77.2	74.0			
44.	41.	38.	96.6	92.7	89.0	85.5	82.0	78.7	75.5				
46.	43.	41.	94.4	90.7	87.1	83.6	80.2	77.0					
48.	46.	43.	92.3	88.7	85.2	81.8	78.5						
50.	48.	46.	90.3	86.7	83.2	79.9							
52.	51.	49.	88.2	84.7	81.3								
54.	53.	52.	86.1	82.7									
55.	54.	53.	85.0	81.7									

The part in bolt is the flat rated zone; engine mechanical limit.

The part below is the area where the thermodynamical limit is reached first.

Note: Applicable for 0 < VC < 60 kt

6.2. Cruise torque bugs

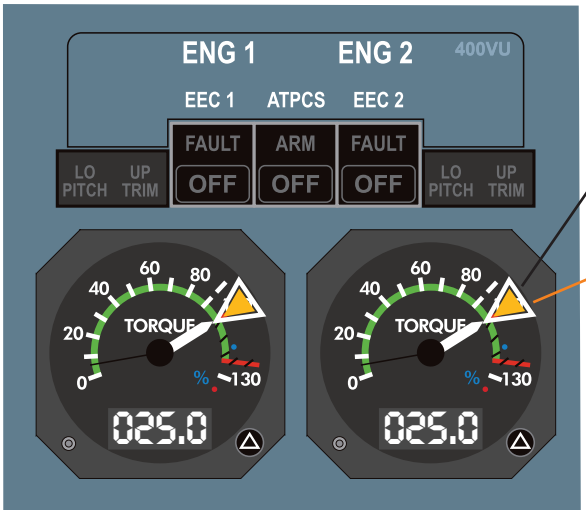


The cruise torque is read in the QRH, Ops Data part.

MAX CRUISE 2 ENGINES

FLIGHT LEVEL	Δ ISA -10	-5	0	+5	+10	+15	+20
80	94.5 459 **250** 273	94.5 461 **249** 274	94.5 464 **248** 276	85.5 447 **241** 271	84.4 429 **235** 266	79.9 412 **229** 262	75.4 396 **223** 257
100	94.5 453 **247** 278	94.5 455 **246** 280	90.4 441 **241** 276	85.8 425 **235** 272	81.0 409 **229** 267	76.5 392 **222** 262	72.3 377 **216** 257
120	93.8 446 **244** 283	90.2 433 **240** 280	86.3 419 **234** 277	82.4 405 **229** 273	78.1 390 **223** 268	73.9 376 **217** 263	69.8 361 **211** 258
140	89.6 428 **237** 283	86.3 413 **233** 281	83.0 401 **228** 278	79.3 387 **223** 274	75.7 374 **217** 270	71.7 361 **211** 265	67.7 347 **205** 260
160	85.0 407 **230** 283	82.3 396 **226** 281	79.2 382 **221** 278	76.1 370 **216** 275	72.6 357 **211** 270	69.3 345 **206** 266	65.5 332 **199** 261
180	79.7 383 **221** 281	77.1 372 **217** 279	74.6 361 **213** 276	71.7 348 **208** 273	68.7 337 **203** 269	65.5 325 **198** 264	62.3 314 **192** 259
200	74.0 357 **212** 278	71.7 346 **208** 276	69.4 336 **204** 273	67.0 326 **199** 270	64.4 316 **194** 266	61.6 305 **189** 261	58.7 295 **183** 255
220	68.4 331 **202** 274	66.4 322 **198** 271	64.3 313 **194** 268	62.2 303 **189** 265	60.0 294 **185** 261	57.5 285 **179** 256	54.9 276 **172** 249
240	63.0 306 **191** 268	61.1 297 **187** 265	59.3 289 **183** 262	57.3 281 **178** 257	55.3 272 **172** 252	53.2 265 **166** 246	50.9 256 **159** 238
250	60.4 294 **186** 265	58.5 285 **181** 261	56.7 277 **176** 257	54.8 269 **171** 252	52.9 261 **165** 246	50.9 254 **158** 238	48.7 246 **149** 227
	TQ % NP = 82 % KG/H/ENG IAS TAS					NOT THERMO LIMITED	

6.3. Final approach torque bugs



The go-around torque is read in the QRH, Ops Data part.

PW127F / PW127M - BOOST OFF

GO AROUND TORQUE APPLICABLE FOR 0 ≤ VC ≤ 125 kt

TAT (°C)			PROPELLER SPEED 100. %									
			PRESSURE ALTITUDE (FT)									
AIR COND OFF	NORMAL AIR COND ON	HIGH AIR COND ON	-100.0	0	100.0	2000.	3000.	4000.	5000.	6000.	7000.	8000.	8500.
- 40.	- 63.	- 71.	100.	100.	100.	100.	100.	100.	100.	100.	100.	100.	100.
- 10.	- 27.	- 35.	100.	100.	100.	100.	100.	100.	100.	100.	100.	100.	99.9
- 8.	- 24.	- 32.	100.	100.	100.	100.	100.	100.	100.	100.	100.	100.	98.8
- 6.	- 22.	- 30.	100.	100.	100.	100.	100.	100.	100.	100.	100.	99.8	97.8
- 4.	- 19.	- 27.	100.	100.	100.	100.	100.	100.	100.	100.	100.	98.7	96.7
- 2.	- 17.	- 25.	100.	100.	100.	100.	100.	100.	100.	100.	100.	97.6	95.6
0.	- 14.	- 22.	100.	100.	100.	100.	100.	100.	100.	100.	100.	96.5	94.5
2.	- 12.	- 19.	100.	100.	100.	100.	100.	100.	100.	100.	99.5	95.4	93.4
4.	- 10.	- 17.	100.	100.	100.	100.	100.	100.	100.	100.	98.3	94.3	92.3
6.	- 7.	- 14.	100.	100.	100.	100.	100.	100.	100.	100.	97.2	93.2	91.2
8.	- 5.	- 12.	100.	100.	100.	100.	100.	100.	100.	100.	96.0	92.1	90.1
10.	- 2.	- 9.	100.	100.	100.	100.	100.	100.	100.	98.9	94.9	91.0	89.1
12.	0.	- 7.	100.	100.	100.	100.	100.	100.	100.	97.7	93.7	89.9	88.0
14.	3.	- 4.	100.	100.	100.	100.	100.	100.	100.	96.4	92.5	88.7	86.8
16.	5.	- 1.	100.	100.	100.	100.	100.	100.	99.0	95.0	91.1	87.4	85.5
18.	8.	2.	100.	100.	100.	100.	100.	100.	97.5	93.6	89.7	86.0	84.3
20.	10.	4.	100.	100.	100.	100.	100.	99.9	95.9	92.0	88.2	84.6	82.8
22.	13.	7.	100.	100.	100.	100.	100.	98.2	94.2	90.4	86.7	83.1	81.4
24.	15.	10.	100.	100.	100.	100.	100.	96.5	92.6	88.8	85.2	81.7	79.9
26.	18.	13.	100.	100.	100.	100.	98.7	94.7	90.9	87.2	83.6	80.2	78.5
28.	20.	16.	100.	100.	100.	100.	96.9	93.0	89.2	85.6	82.1	78.7	77.1
30.	23.	18.	100.	100.	100.	99.0	95.1	91.2	87.5	84.0	80.5	77.2	75.6
32.	25.	21.	100.	100.	100.	97.1	93.2	89.5	85.9	82.4	79.0	75.7	74.2
34.	28.	24.	100.	100.	99.2	95.2	91.4	87.7	84.2	80.7	77.4	74.3	72.7
36.	30.	27.	100.	100.	97.2	93.3	89.6	86.0	82.5	79.1	75.9	72.8	71.2
38.	33.	30.	100.	99.2	95.2	91.4	87.8	84.2	80.8	77.5	74.3	71.3	69.8
40.	36.	32.	100.	97.1	93.3	89.6	86.0	82.5	79.2	75.9	72.8	69.8	68.4
42.	38.	35.	99.0	95.1	91.3	87.7	84.2	80.8	77.5	74.4	71.3		
44.	41.	38.	96.9	93.1	89.4	85.8	82.4	79.1	75.9	72.8			
46.	43.	41.	94.8	91.1	87.5	84.0	80.6	77.4	74.2				
48.	46.	43.	92.7	89.1	85.5	82.1	78.8	75.7					
50.	48.	46.	90.6	87.1	83.6	80.3	77.0						
52.	51.	49.	88.5	85.0	81.7	78.4							
54.	53.	52.	86.4	83.0	79.7								
56.	54.	54.	84.4	81.0									

6.4. Torque preset

For the following conditions, this table shows the best torque presets.

Precise torque values will vary depending on aircraft weight and outside conditions but differences will be very minimal.

Do not forget that Np modifies the torque for a given PL angle.

NP = 82%			Level flight				Approach 3° (1)
Speed (kt)			180	160	140	120	VAPP
Gear			UP	UP	DOWN	DOWN	DOWN
Flaps		42 PEC	0	0	15	30	30
		72 PEC	0	0	15	35	35
All engines	Torque (%)		50	40	40	50	25
	Pitch (°)	42 PEC	+1	+4	0	0	–1
		72 PEC	+1	+4	+1	0	–3
Single engine	Torque (%)		90	75	75	90	50
	Pitch (°)	42 PEC	+1	+4	0	0	–1
		72 PEC	+1	+4	+1	0	–3

(1) For flight profiles other than standard 3° approach, use following corrections to maintain the required flight path angle:

±3% TQ <=> ±1% slope

±5% TQ <=> ±1° slope

±5% TQ <=> ±10 Kt wind component

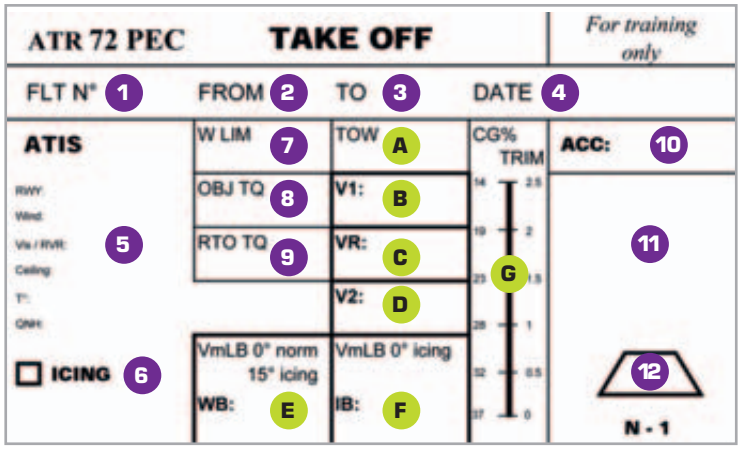
7. Data cards processing

7.1. Take-off data card

CM2 fills in take-off data card:

- during *Final Cockpit Preparation* procedure: purple labels
- prior to *Before Propeller Rotation* procedure: green labels

All operational data shall be crosschecked by crew using relevant documentation (QRH, Take-off limitations chart (e.g. FOS), Load & Trim sheet…).
Information from the take-off data card will help the crew members to prepare departure and take-off briefings.



Filling Data Card (CM2)

Proceeding Data Card (PF)

1 FLT N°

Write down flight number.

Call out flight number and store it in the FDEP or/and MCDU.

2 3 FROM / TO

Write down departure & destination airports' ICAO codes.

Call out departure & destination airports ICAO codes.

4 DATE

Write down current date.

Call out current date.

5 ATIS

Copy down ATIS or airport weather information.

Review airport weather information and:

- Match RVR/Visibility versus airport minima.
- discuss possibility to fly back to departure airport in case of engine contingency.
- check and call out take-off wind limitations and Hotel mode implications.
- set altimeter setting on the 3 altimeters and cross-check indications consistency
- check temperature and moisture to anticipate take-off conditions (normal, icing)

6 ICING

Tick the box when icing conditions prevail at take-off.

If the box is ticked, remember icing conditions prevail for take-off.

7 W LIM

Write down lowest weight limitation between structural and operational limitations.

Call out relevant weight limitation.

8 9 OBJ TQ / RTO TQ

Write down Objective / RTO torques as read in QRH 4.11 / 4.12 versus actual Outside Air Temperature and Pressure Altitude and Air Cond. selection.

Call out Objective torque and set white bugs on both torque indicators.
Call out RTO torque and check amber bugs consistency.

10 ACC

Write down take-off acceleration altitude (400ft AAL minimum.)

Call out take-off acceleration altitude.

11 SINGLE ENGINE PROCEDURE

Draw single engine procedure's first segments to be flown (heading, altitude, turns...).

Confirm single engine procedure according to weather conditions.

12 RWY

Write down runway in use for take-off.

Check intended runway matches ATIS runway in use.

Once Load and Trim sheet processing is completed:

A TOW

Write down TOW from Load & Trim sheet and match it versus W LIM for consistency (TOW W LIM.)

Check TOW is less than or equal to W LIM.

B C D V1 / VR / V2

Copy down V1 / VR / V2 as read in FOS chart. If the conditions are NL, V1 / VR / V2 are read from the QRH, matching conservative actual TOW.

Call out V1 / VR / V2, set green / yellow / amber bugs on both airspeed indicators and crosscheck.
NOTE: If V1 = VR, only use yellow bugs. Stow green bug to 12 o'clock position.

E WHITE BUG

Write down final take-off speed's value as read from QRH according to prevailing normal (VmLB0) or icing conditions (VmLB15).

Call out final take-off speed, set white bug on both airspeed indicators and crosscheck.

F ICING BUG

Write down VmLB0 icing's value as read from QRH.

Call out relevant value, set icing bug accordingly on both airspeed indicators and crosscheck.

G CG / TRIM SCALE

Copy down CG %MAC as read from Load & Trim sheet and get corresponding trim setting.

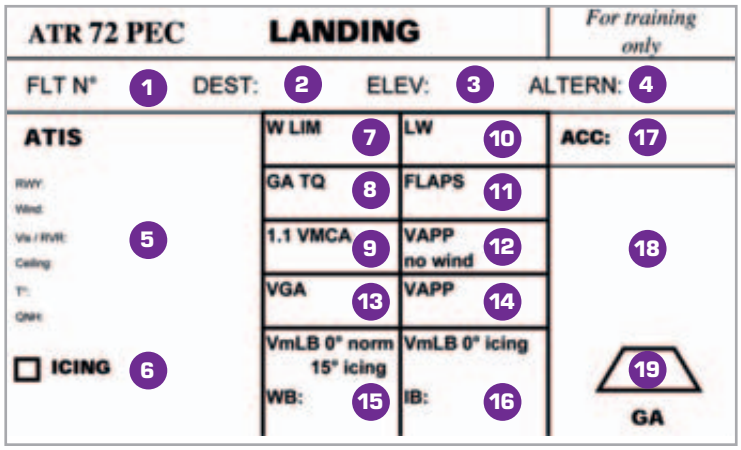
Set elevator's pitch trim accordingly and check that pointer stands within green arc.

Example: **"Flight number 9617, from LFBO to LFBD, 1st July 2011. Information Delta, recorded at 08.00 UTC, runway 32R in use, wind from 320/15 kt, ceiling 1500 ft and visibility 2000 m, temperature is +25°, QNH is 1015 hPa set on the 3 altimeters, normal conditions, W LIM is 22.3 tons, OBJ TQ is 90%, RTO TQ is 100%, acceleration altitude is 1000 ft and single engine procedure is runway heading until 1000 ft then right turn tracking TOE climbing to 4000 ft".**
Once Load and Trim sheet processing is completed: **"TOW is 22 tons, V1 & VR are 111 kt, V2 is 114 kt, white bug is 139 kt, icing bug is 165 kt. Pitch trim is +1.2."**

7.2. Landing data card

PM fills-in and PF proceeds Landing data card prior *Before Descent procedure* is initiated.

All operational data shall be crosschecked by crew using relevant documentation (QRH, Landing limitations chart (e.g. FOS)…).
Informations from landing data card will help crew members to prepare arrival briefing.



Filling Data Card (PM)

1 FLT N°
Write down flight number.

2 3 DEST / ELEV
Write down destination airport's ICAO code and elevation.

4 ALTERN
Write down alternate airport's ICAO code.

5 ATIS
Copy down ATIS or airport weather information.

6 ICING
Tick the box when icing conditions prevail at landing.

7 W LIM
Write down limiting weight for landing.

8 GA TQ
Write down GA torques as read from QRH 4.13 versus Outside Air Temperature and Pressure Altitude.

Proceeding Data Card (PF)

Call out flight number.

Call out destination airport's ICAO code, elevation and set landing elevation in AUTO PRESS.

Call out alternate airport's ICAO code.

Review airport weather information and:
- Match RVR/Visibility versus airport minima.
- set QNH on standby altimeter
- check temperature and moisture to anticipate landing conditions (normal, icing)
- call out instrument approach in use
- check out landing wind limitations

If the box is ticked, remember icing conditions prevail for landing, thus icing speeds must be used.

Call out weight limitation.

Call out GA torque and set white bugs accordingly on both torque indicators.

9 1.1 VMCA

Write down speed as read from QRH 4.64 versus Outside Air Temperature and Pressure Altitude.

Call out 1.1 VMCA's value.

10 LW

Write down computed landing weight and check consistency versus W LIM (LW ≤W LIM.)

Check out LW is less than or equal to W LIM.

11 FLAPS

Write down flaps setting.

Call out landing flaps setting.

12 VAPP no wind

Write down final approach speed, VmHB, as read from QRH versus actual LW.

Call out VAPP no wind's value.

13 VGA

Write down VGA, as highest value between 1.1 VMCA and VAPP no wind + 5kt.

Call out VGA, set yellow bug on both airspeed indicators and crosscheck.

14 VAPP

Write down computed VAPP = VAPP no wind + wind factor.

NOTE: Wind factor = max {1/3 Head Wind component or full gust} limited to 15 Kt.

Call out VAPP.

15 WHITE BUG

Write down the highest value between Final take-off and Drift-down speed, according to prevailing normal (VmLB0) or icing conditions (VmLB15).

Call out final take-off speed, set white bug on both airspeed indicators and crosscheck.

16 ICING BUG

Write down VmLB0 icing's value as read from QRH.

Call out Icing bug's value, set red bug on both airspeed indicators and crosscheck.

17 ACC

Write the missed-approach procedure's acceleration altitude, {1000 ft AAL, or published altitude}.

Call out missed-approach acceleration altitude.

18 MISSED APPROACH PROCEDURE

Draw missed approach procedure's first segments to be flown (heading, altitude, turns...).

Confirm missed approach procedure according to weather conditions.

19 RWY

Write down runway in use for landing.

Check intended runway matches ATIS runway in use.

Example:

"We'll be landing at LFBD, elevation 166 ft, alternate is LFBA. Information Golf recorded at 09.00 UTC, runway in use 23, wind from 200/10 kt, ceiling 2000 ft and visibility 3000m, temperature is + 20°, QNH is 1020 hPa set on the 3 altimeters, non icing conditions, W LIM is 22 tons, LW is 21.6 tons, GA TQ 100% set, VGA is 114 kt, white bug is 138 kt, Icing bug is 163 kt. Landing flaps 30°, VAPP will be 112 kt.

Missed approach procedure is climb straight ahead D4 outbound, then turn right heading 042 following published track up to 4000 ft, and acceleration altitude is 1000 ft."

8. Briefings

8.1. Departure briefing

1 All departure settings must be ready before PF performs the briefing.

2 General Conditions
- Actual and expected weather for departure, cruise and arrival. Hazardous phenomena (Icing, thunderstorm, turbulence…)
- NOTAMs
- Aircraft status: daily check, documentation, MEL items…

3 Taxi
- Taxi out description
- Restrictions: contamination, closed Taxiway…
- Runway in use and expected holding point
- Anticipate de-icing holdover times.

4 Take-off Performance
- Limitations, bleeds ON or OFF, power setting (Boost, RTO).

Departure chart

5 Jeppesen chart n° and date

6 Departure procedure name

7 MSA

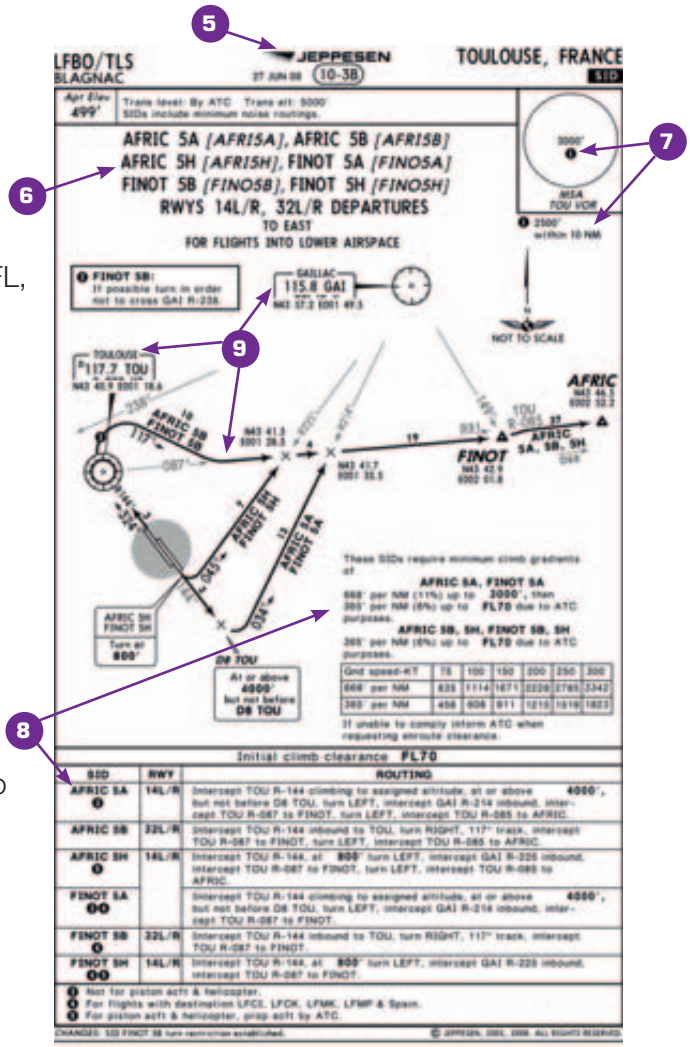
8 Flight path description: routing, 1st altitude or FL, climb gradient

9 NAVAIDS settings:
Active frequencies & associated courses
Standby frequencies (if necessary)
DME hold (if necessary)
RMI: VOR
EHSI: ADF

10 GNSS setting: Check SID inserted in FPL for cross check operation

11 Single engine flight path description: routing, acceleration altitude, return to departure airport and expected approach, or diversion to take-off alternate.

12 Open questions



Example: CM2 is PF.

1. **"ARE YOU READY FOR THE DEPARTURE BRIEFING?"**
2. **"VISIBILITY IS 2000M, CEILING AT 1500FT, WIND FROM 320/15 KT, QNH 1012, NORMAL CONDITIONS. NO MEL, NO NOTAM."**
3. **"WE'LL TAXI OUT VIA PAPA, HOLDING POINT N1, FOR RUNWAY 32R."**
4. **"TAKE-OFF WITH BLEEDS ON, ANTI-ICING OFF."**
5. **"CHART 10-3B, VALID FROM JUNE 27TH."**
6. **"EXPECTED DEPARTURE IS AFRIC5B."**
7. **"MSA IS 3000 FT, 2500 FT WITHIN 10NM."**
8. **"324 INBOUND TO TOU THEN RIGHT TURN TO HEADING 117 TO INTERCEPT 087 OUTBOUND RADIAL FROM TOU TO FINOT. THEN INTERCEPT 085 OUTBOUND RADIAL TO TOU TO AFRIC. CLIMB GRADIENT IS 11% UP TO 3000FT, WHICH WE CAN COMPLY ON BOTH ENGINES."**
9. **"NAV 2: TOU, CRS 324, STBY ILS**
   NAV 1: TOU, CRS 087, STBY GAI
   ADF1 & 2: TOE
   KEYS: RMI ON VOR AND EHSI ON ADF."
10. **"FINOT SID IS SET IN THE GNSS...**
    VNAV PAGE CHECKED, AND PROG PAGE CHECKED."
11. **"IN CASE OF ENGINE FAILURE, PROCEED STRAIGHT AHEAD CLIMBING 3000 AND REPORT ATC."**
12. **"ANY QUESTIONS? DEPARTURE BRIEFING COMPLETE."**

8.2. Departure clearance

When departure clearance is obtained from ATC, you must check its consistence and compliance with expected SID:

– Is cleared SID in compliance with prepared one?
– Altitude clearance selected and crosschecked on ADU.
– Set transponder code.

If no clearance amendment is received, PF calls: **"NO CHANGE"**

If clearance is amended, reorganize NAVAIDS and perform new briefing.

8.3. Take-off briefing

1. PF calls: **"ARE YOU READY FOR TAKE-OFF BRIEFING?"**
2. Take-off parameters: runway QFU reminder, TOW, V1
3. Procedure in case of failure: take-off abort & continuation description
4. Open questions

Example: CM2 is PF.

1. **"ARE YOU READY FOR TAKE-OFF BRIEFING?"**
2. **"TAKE-OFF RUNWAY 32R, WEIGHT 22 TONS, V1 111 KT, NORMAL CONDITIONS."**
3. **"ANY FAILURE BEFORE V1, YOU CALL "STOP" AND STOP AIRCRAFT**

IF FAILURE AT OR AFTER V1, WE CONTINUE TAKE-OFF, RUNWAY HEADING TO 3000 FT, THEN RIGHT TURN TRACKING TOE CLIMBING TO 4000 FT, ACCELERATION ALTITUDE IS 1000 FT, MSA IS 3000 FT."

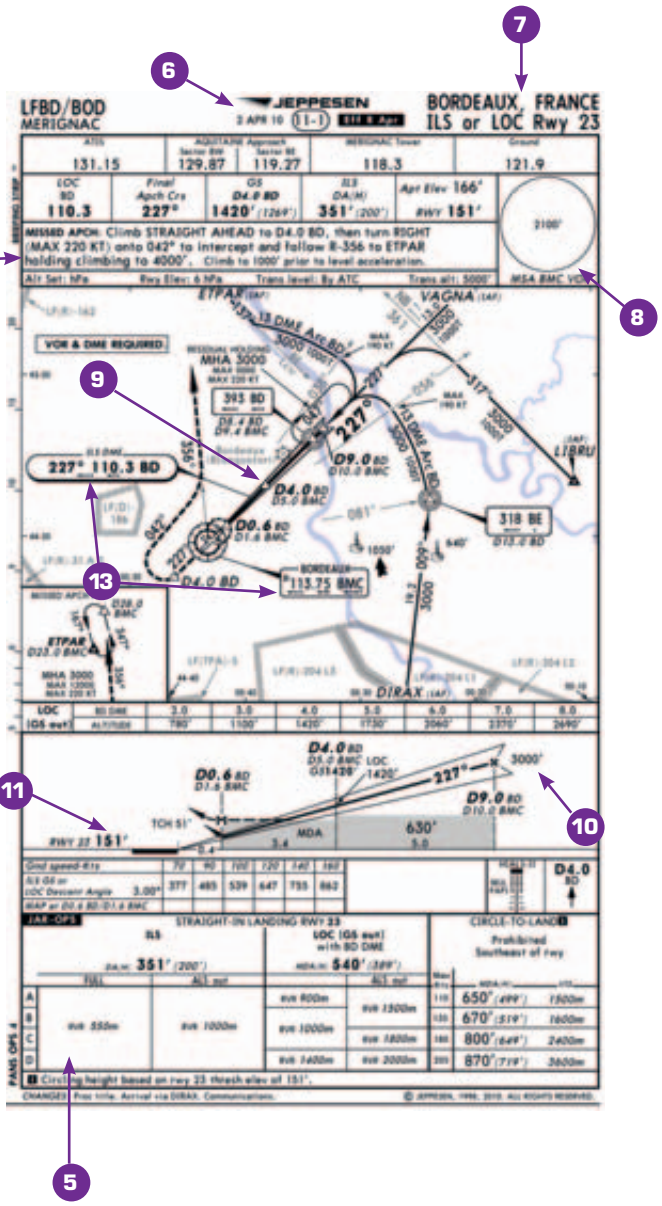
4. **"ANY QUESTIONS? TAKE-OFF BRIEFING COMPLETE."**

8.4. Arrival briefing

1. All settings must be performed before PF's arrival briefing.
2. **Top Of Descent (TOD)**
   - Expected remaining distance and MSA
3. **Approach conditions**
   - Actual and forecast weather, normal or icing atmospheric conditions
   - Aircraft status: MEL items, En-route failure(s)
   - NOTAMs / ATIS: airport equipments failures, anticipate runway assignments changes & unexpected closure.
   - Landing weight, runway in use: landing limitation and approach climb limitation if any.
4. **Alternate & Holding time**
   - Quote holding time before diversion. For computation details refer to 2.01.08 p5 *Holding Time*.

Approach chart

5. Actual and forecast weather at destination: visibility / RVR compared to minima
6. Jeppesen chart n° and date
7. Type of approach procedure
8. MSA according to inbound sector



9 Flight path description

10 Final Approach Segment: procedure minimum altitude, distance and stabilization point

11 Minima

12 Missed approach procedure, and acceleration altitude

13 NAVAIDS settings:
Active frequencies & associated courses
Standby frequencies (if necessary)
DME hold (if necessary)
RMI: VOR
EHSI: ADF

14 **Taxi**
- Taxi in description

15 Open questions

Example: CM2 is PF.

1 **"ARE YOU READY FOR ARRIVAL BRIEFING?"**

2 **"TOP OF DESCENT IS 50 NM DME FROM BMC, MEA IS 5000 FT."**

3 **"LANDING IN BORDEAUX IN NORMAL CONDITIONS, APPROACH LIGHTS ARE INOPERATIVE."**

4 **"20 MN HOLDING TIME BEFORE DIVERTING TO LFBA"**

5 7 **"RWY IN USE 23, LANDING WEIGHT 20 T, NO LIMITATION, REGARDING WEATHER ILS 23 IS SUITABLE."**

6 **"CHART 11-1, VALID APRIL 2ND, EFFECTIVE 8TH."**

8 **"MSA IS 2100FT WITHIN 25 NM OF BMC."**

9 **"FROM LIBRU, STAR DOWN TO 3000 FT & INTERCEPT LOCALIZER."**

13 **"WE LEAVE 3000 FT AT D9 TO CROSS D4 AT 1420 FT. STABILIZATION ALTITUDE IS 1200 FT."**

13 **"DECISION ALTITUDE IS 360 FT. SET ON BOTH SIDES."**

13 **"IN CASE OF A GO-AROUND WE CLIMB STRAIGHT AHEAD D4 INBOUND / OUTBOUND DB, THEN TURN RIGHT HEADING 042 FOLLOWING PUBLISHED TRACK UP TO 4000 FT. ACCELERATION ALTITUDE IS 1000 FT"**

13 **"NAV 2: BD, CRS 228, STBY BMC**
NAV 1: BMC, CRS 228, STBY BD
ADF 1&2: BD
KEYS: RMI ON VOR AND EHSI ON ADF."

13 **"AFTER LANDING WE VACATE SECOND LEFT."**

13 **"ANY QUESTIONS? ARRIVAL BRIEFING COMPLETE."**

8.5. Holding time

- Fuel Used versus distance

FU vs. Dist = FF / GS (in Kg/Nm)

- Fuel to destination

Fuel to Dest = actual FU + Distance to go × FU vs. Dist (in Kg)

- Remaining Fuel at Destination

RF = FOB (Fuel On Board) – Fuel to Dest (in Kg)

- Holding Fuel

HF = RF – (Alternate + Final Reserve Fuel) (in Kg)

- Estimated maxi Holding time

HT = HF/10 [1] (in min)

[1] Assuming fuel consumption is 600 kg/h. Exact value must be checked in FCOM 3.06.

9. Stabilization policy

9.1. Introduction

Worldwide Flight Safety Community studies show that 50% of public transport accidents:
- Occur during **approach or landing phase**
- Are direct or indirect consequence of an **unstabilized approach**

ATR Training Centre established procedures to ensure each approach letdown to an airport is accomplished using stabilized approaches, matching industry standard criteria.

9.2.Stabilization criteria

Approaches must be stabilized:
- 1000 ft AAL in IMC conditions
- 500 ft AAL in VMC conditions
- 300 ft AAL following circle-to-land

An approach is considered stabilized when all of the following criteria are met:
- **Lateral path** (Loc, Radial or RNAV path) is tracked
- **Landing configuration** is established
- **Energy management:**
  - **Vertical path** (Glide, Altitude versus Distance or RNAV path) is tracked
  - **Power setting** is consistent with appropriate aircraft weight, Head/Tail wind component and vertical guidance requirements
  - **Speed and pitch attitude** are relevant to actual conditions
- **Briefing and checklists** are completed

9.3. Deviations

Only small deviations are allowed if immediately called out and corrected:
- Altitude during initial approach: ± 100 ft
- Lateral guidance on final approach segment: half LOC scale deviation for precision or ± 5° on radial on non precision approach
- Vertical path on final approach segment: half GS scale deviation or + 200/–0 ft for non precision approaches
- Altitude deviation at DA or MDA: 0 ft
- Speed +5/–0 kt

Only small adjustments in pitch and/or heading are allowed to stay on track:
- Maximum sink rate is 1000 ft per minute
- Maximum rate of descent adjustments are ±300 ft per minute from target rate
- Bank angles are no more than 15°
- Localizer guidance adjustments are done within heading bug width
- GS guidance adjustments must be within ±2° of pitch change

All deviations must be called out loud by PM or PF (whoever identifies deviation first) using the following Call-outs:

"SPEED" **"LOC"** **"GLIDE"** **"VERTICAL SPEED"**

After immediate correction, PF must answer **"CORRECTING ..."**

Flight events	Situation	PM call outs	PF orders
1000 FT AAL IMC	STABILIZED	**"1000 FT, STABILIZED"**(1)	**"WE CONTINUE"**
	UNSTABILIZED	**"1000 FT, GO AROUND"**(1)	**"GO-AROUND, SET POWER, FLAPS ONE NOTCH"**
500 FT AAL VMC	STABILIZED	**"500 FT, STABILIZED"**(1)	**"WE CONTINUE"**
	UNSTABILIZED	**"500 FT, GO AROUND"**(1)	**"GO-AROUND, SET POWER, FLAPS ONE NOTCH"**
300 FT AAL CIRCLE-TO-LAND	STABILIZED	**"300 FT, STABILIZED"**(1)	**"WE CONTINUE"**
	UNSTABILIZED	**"300 FT, GO AROUND"**(1)	**"GO-AROUND, SET POWER, FLAPS ONE NOTCH"**

(1) This value is read on the altimeter when passing 1000/ 500/ 300 ft AAL.

10. Conventional radio-navigation policy

10.1. Task sharing

CM2 initiates power up, set up and verifications of the navigation equipments during the *Preliminary Cockpit Preparation procedure*.
PF performs flight plan and performance data insertion in GNSS, and VOR, DME, ADF settings during *Final Cockpit Preparation procedure*. Crosscheck is performed during departure briefing.
PF shall perform every new navigation entries, waypoints selection applying cross check procedure.
PF is responsible for the selection of the appropriate sources (RNAV or VOR/LOC) and the application of the navigation display policy (MAP or ARC/ROSE) for each flight phase.

10.2. Methodology

VOR or ADF frequency setting requires flight crew callouts to identify:

- Radio navigation station Name and Frequency,
- Course selected (VOR and ILS).

Radio identification listening is conducted by PM after each new frequency setting.

IMPORTANT: The VOR mode can be engaged only when High Bank speeds are reached. Indeed, in VOR mode, the bank angle order (within a 30° limit) is computed independently from the current speed of the aircraft.

On ground or preparing approach

Example: AFRIB5B SID from LFBO.

PM	PF
▶ CALL "CHECK"	▶ DO & CALL NAV 1 ..... TOU COURSE 1 ..... 087° NAV 1 ..... STBY FRQ GAI NAV 2 ..... TOU COURSE 2 ..... 324° NAV 2 ..... STBY FRQ ILS ADF ..... TOE ADF ..... STBY FRQ BE EHSI KEYS ..... ADF/ ADF RMI KEYS ..... VOR/ VOR

An example of NAVAIDS settings is the following:

NAV control box

EHSI

ADF control box

RMI

11. APM management

The APM is an onboard system for detecting ice effects on aircraft, developed to enhance the aircraft safety and protection. It acquires the aircraft performance parameters in real time and compares them to the expected values. The monitored performance parameters are the IAS and the drag. Any abnormal increase on one of those parameters leads to an alarm to alert the flight crew. There are three different levels of alarms, depending on the severity of the discrepancy found.

11.1. APM cockpit interface

The interface is composed of :

- a twelve position rotary selector
- 3 indicators placed in front of the captain and co-pilot to display the performance degradation information
- a FAULT/OFF pushbutton to inform the crew of a problem with APM or to select the APM OFF
- a Push To Test button to test the APM indicators

11.2. Normal procedures

11.2.1. Take-off weight selection

To determine the aircraft theoretical and “in flight” performance, the aircraft weight must be known.

The crew must enter the take-off weight value in the system with a twelve-position rotary selector.

To take into account the new take-off weight value:

- the rotary selector must be moved (even if actual weight is the same as the previous flight) to the minimum TO weight and then back to the nearest TO weight
- the selection must be done before the IAS reaches 30 kt
- the selection must be done with both engines running. Indeed, some micro cuts can occur on the DC EMER BUS during the start phase.

IMPORTANT: If the selected weight is higher than the real one, spurious alerts may be triggered at speeds higher than necessary. Inversely, if a lower weight is selected, alerts may be hidden, and more specifically, cases of severe icing may be not detected.

NOTE: Any change of the rotary selector in flight will have no effect

If the crew does not select the take-off weight before take-off with the rotactor, the APM will perform its own take-off weight computation. Computation is performed during the first minutes of the flight and before the APM begins the drag analysis.

APM calculation is less accurate than the flight crew manual selection: analyses of several hundreds of revenue flight have shown that the APM maximum deviation is around ±1500kg for take-off weight computation.

11.2.2. APM Testing

APM testing is activated by the crew daily, to check all APM components work properly.

12. Radio-communication

PM is responsible for radio-communication.

Radio-communication may be transferred to PF (if available), on PM request:

Example: CM2 is PF.

PM	PF
▶ REQUEST "MONITOR VHF 1 WITH TOULOUSE CONTROL"	▶ ANNOUNCE "RADIO IS RIGHT SIDE"
Resuming normal task sharing ▶ ANNOUNCE "COMING BACK, I HAVE VHF 1"	▶ ANNOUNCE "WE ARE NOW WITH PARIS CONTROL INBOUND TO XXX, RADIO IS LEFT SIDE"

Listen before transmitting, write down the newly assigned frequency.

VHF receivers standard setting

	VHF 1	VHF 2
ACTIVE	ATC FREQUENCY	ATIS / 121.5 MHZ (CRUISE)
STBY	NEXT ATC FREQUENCY	OPS FREQUENCY

Audio control panel policy

Headset not used	Headset used
VHF 1 key depressed, volume adjusted. VHF 2 volume adjusted on request.	
LOUDSPEAKER knob: 3 o'clock.	LOUDSPEAKER knob: minimum.
INT / RAD switch in neutral position.	INT / RAD switch in INT position.
Handmike used to transmit.	Boomset used: to transmit, press PTT on control wheel or select INT / RAD switch on RAD position.
If INT key set, adjust INT volume: interphone function enabled (flight attendant or mechanic).	INT key must remain in up position.

13. Exterior lights management

NAV	Airplane electrically suplied.
WINGS	Engine 2 running in hotel mode.
BEACON	Propeller rotating.
TAXI & T.O.	Airplane taxiing.
LAND	Line up to FL 100.
	FL 100 to runway vacated.
STROBES	Lining up and flight up to runway vacated.
LOGO	Company advertisement.

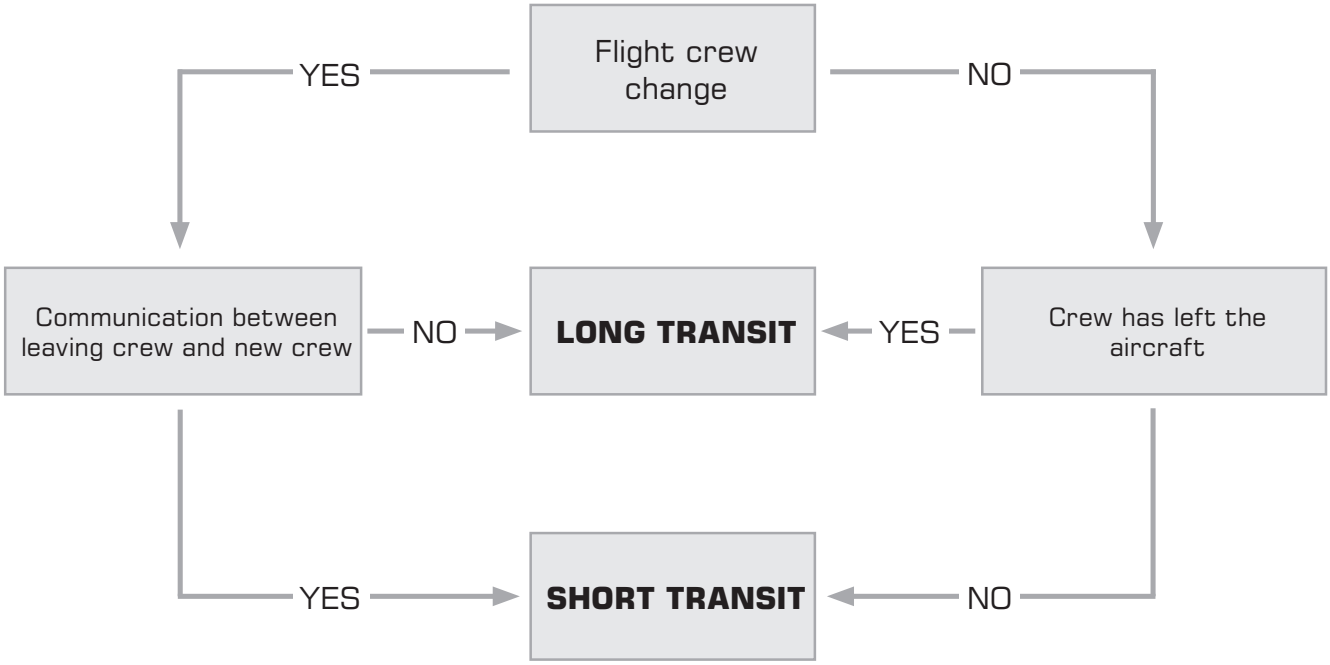
1. Flight preparation

Crew members shall check or perform the following items, before accessing to the aircraft:

- Aircraft condition
- NOTAMs
- Weather briefing
- Particularities
- Flight planning, including fuel planning
- Flight attendant briefing

2. Long and short transit

It is the Captain's responsibility to determine whether to perform long or short transit regarding the criteria described hereafter:



Only the *Preliminary Cockpit Preparation* will differ whether the transit is long or short, and whether a GPU is connected, or the Hotel Mode is used. In the following, the GPU is assumed to be connected. For Hotel Mode procedures, refer to *02.03.01. Hotel Mode operations.*

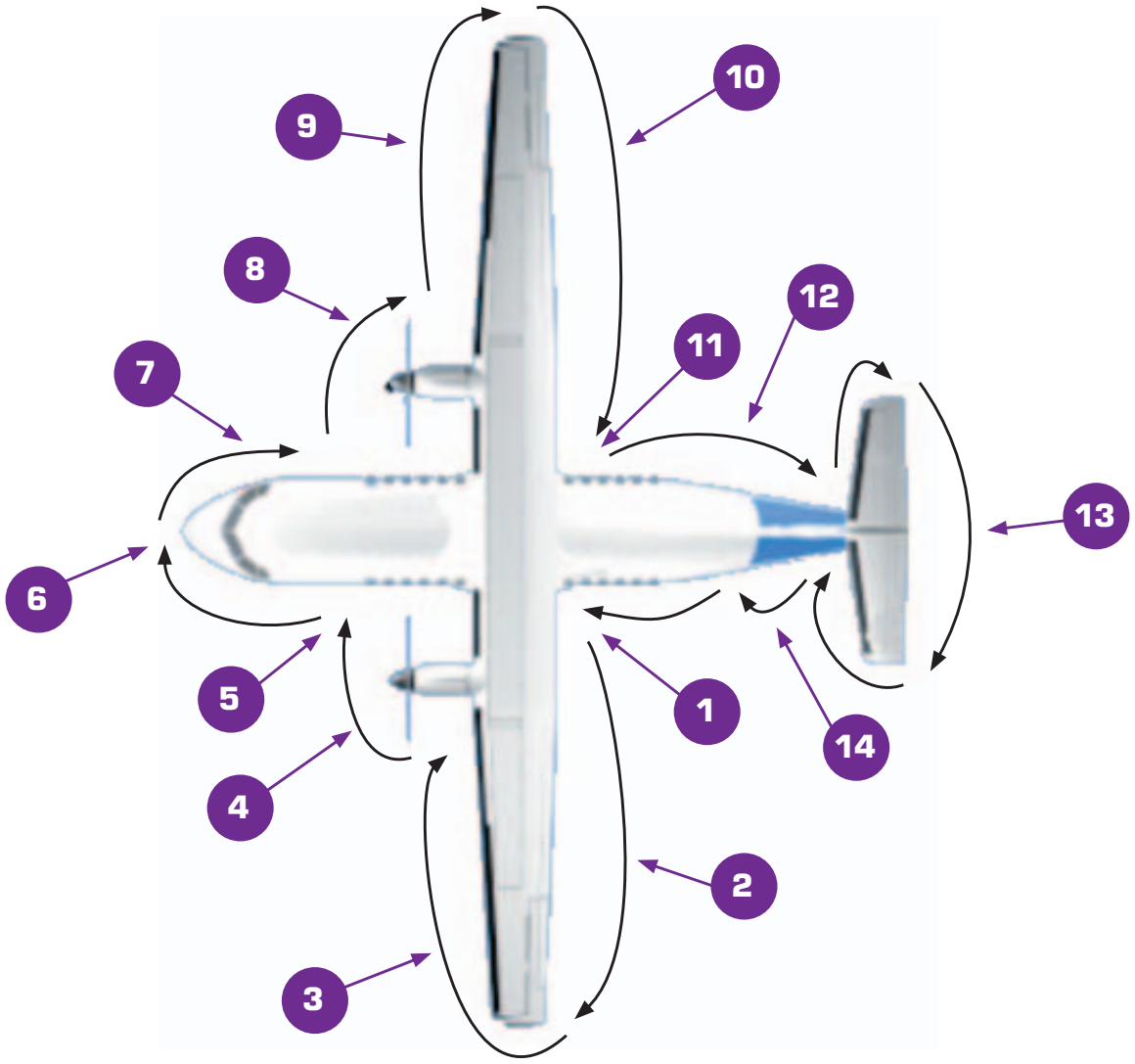
NOTE: For the first flight of the day, perform the Long Transit procedure.

3. External inspection

During this inspection, the CM1 must perform and check the following:

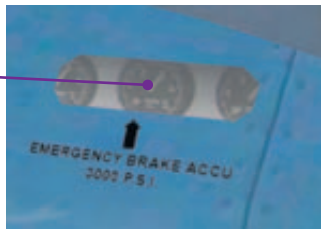
- Cabin inspection (safety devices, emergency exits, holds, smoke detectors, doors).
- Overall condition of the aircraft.
- Visible components.
- Flight equipment.
- Aircraft clear of frost, ice, and snow.
- Memorization of surfaces position to compare with command levers position.
- Hydraulic, oil or fuel leaks (check for puddles on the ground).
- Tires condition, brakes and shock absorbers.
- Access doors closed and latched.

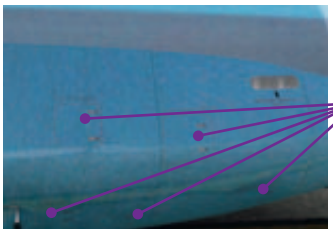
Upon completion of inspection, CM1 returns to the cockpit.



1 – Main left landing gear and fairing

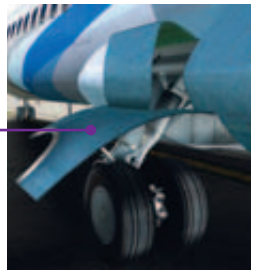
Parking brake accumulator pressure: check above 1600 PSI





5 maintenance doors: closed

Gear doors: check, fixed, no impact

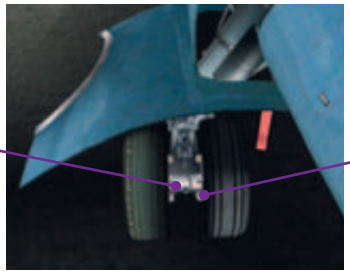


Landing gear structure: check, no crack, no oil

Wheels and tires: condition, no crack, inflation

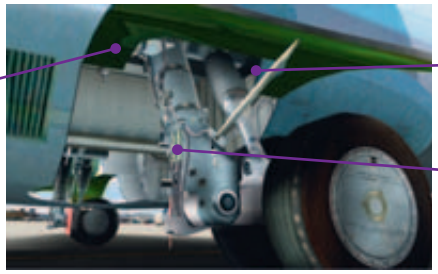
Hydraulic lines: check, no leak

Brake wear detectors: check indicator out of bolt



Brake temperature sensors: check plugging in

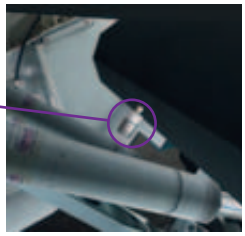
Uplock box: open



Wheel well: condition, no leak

Safety pin: removed

Free fall assister: check the red marker of the pressure indicator is not visible



Beacon: condition, glass not broken and flashing if selected ON

Landing light: condition, glass not broken

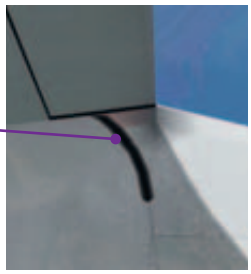
Pack ram air inlet: check unobstructed

Magnetic fuel level: in

TAT probe: check

2 – Left wing trailing edge

Flaps rail seal: check unobstructed and not damaged



Exhaust nozzle: unobstructed

Flaps position: check the position in accordance with the flaps lever

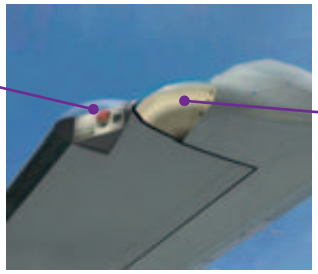
Flaps: condition, fixed, no impact

5 static dischargers: check they are in place, not broken

Aileron and tab: check, fixed, no impact

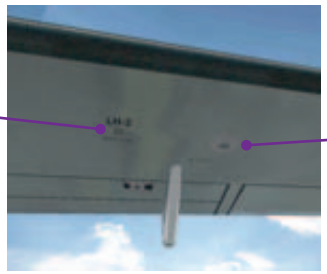
3 – Left wing leading edge

NAV and strobe lights: condition, glass not broken and NAV illuminated if ON



Horn: condition

Magnetic fuel level in, wing de-icing boots: no tear, no blister, no peeling



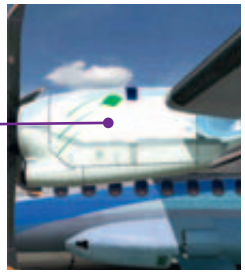
Fuel vent NACA inlet: clear, unobstructed

Ice detector: check, in place

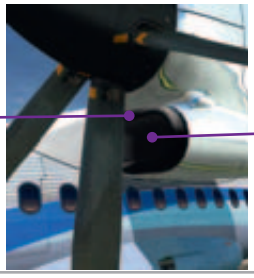
Wing de-icing boots: no tear, no blister, no peeling, varnish

4 - Left engine

Left cowlings: 4 latches closed and latched



Engine de-icing boots: no tear, no oil



Engine air intake: clear, unobstructed

Oil cooling flaps: clear, unobstructed

Propeller: feathered, condition, free rotation, no impact, no oil, de-icer condition

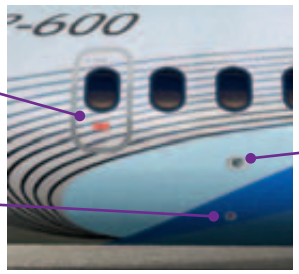
Spinner: secure, spinner indicator aligned with propeller indicator, no impact

Inner wing leading edge and fairing: condition

5 – Left forward fuselage

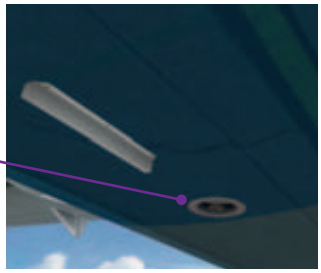
Emergency exit: check closed

Emergency light: condition, glass not broken



Wing light: condition, glass not broken

Avionics vent overboard valve: open

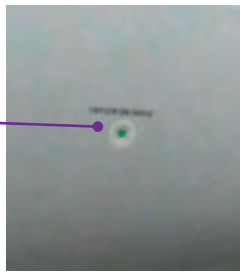


Antennas: check in place, no impact

Cargo door: closed, latched

Cargo door operating panel: closed

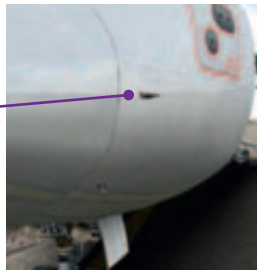
Bottle overboard discharge indicator: green in normal status

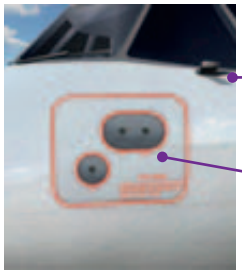


Cockpit communication hatch: closed/open

Angle of attack probe: condition

Pitot probes and covers: check, removed



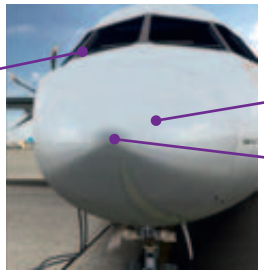


Icing evidence probe: condition

Static ports: clear

6 – Nose

Wipers: condition, in place, position



Static dischargers: check

Radome and latches: check, fixed, no impact

Nose wheel steering: condition

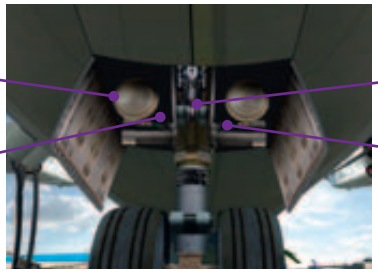
Nose gear wheels and tires: condition, no crack, inflation

Nose gear doors: 2 closed, fixed, no impact

Nose gear structure: check, no crack

Taxi & T.O. lights: condition, glass not broken

Wheel well: condition, no leak



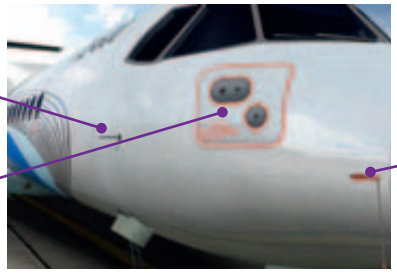
Safety pin: removed

Hydraulic lines: condition, no leak

7 – Right forward fuselage

Angle of attack probe: condition

Static ports: clear

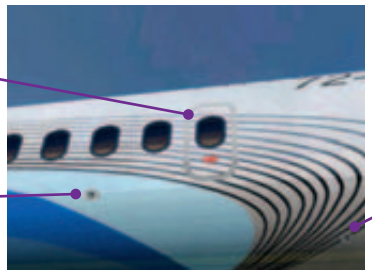


Pitot probe and cover: check, removed

Ext DC and AC electrical power access doors: check

Emergency exit: check closed

Wing light: condition, glass not broken



Emergency light: check, glass not broken

8 – Right engine

Same checks as left engine

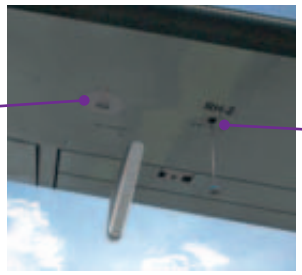
9 – Right wing leading edge

Refuelling point access door: closed

42 PEC

Wing de-icing boots: no tear, no blister, no peeling, varnish

Fuel vent NACA inlet: clear, unobstructed



Magnetic fuel level: in

Horn: condition

NAV and strobe lights: condition, glass not broken, and NAV illuminated if ON

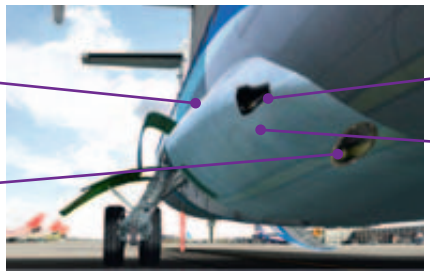
10 – Right wing trailing edge

Same checks as left wing trailing edge.

11 – Main right landing gear and fairing

Refuelling control panel access door

Landing light: condition, glass not broken



Pack ram air inlet: check unobstructed

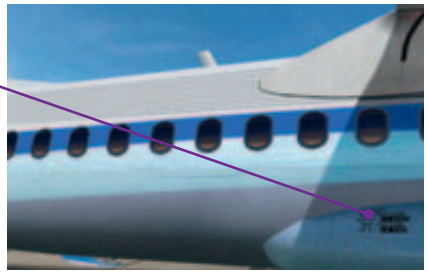
Air conditionning ground connection: check

Magnetic fuel level: in

TAT probe: check

Refuelling point access door: closed

72 PEC



Wheel and tires: condition, no creek, inflation

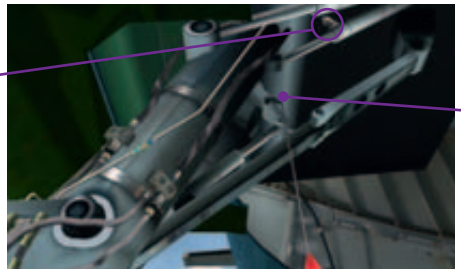
Gear doors: check, fixed, no impact

Hydraulic lines: check, no leak

Uplock box: open

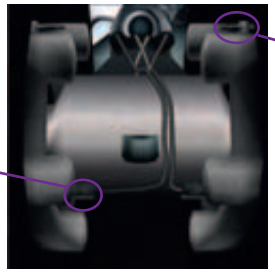
Wheel well: condition, no leak

Free fall assister: check the red marker of the pressure indicator is not visible



Safety pin: removed

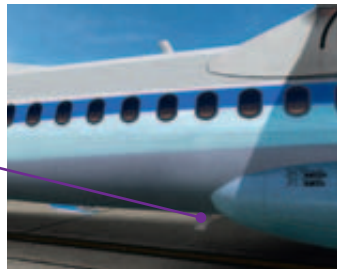
Brake temperature sensor: check plugging in



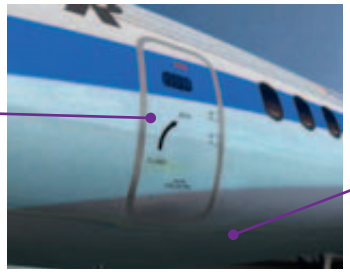
Brake wear detector: check indicator out of bolt

12 – Right aft fuselage

VHF antennas: check in place

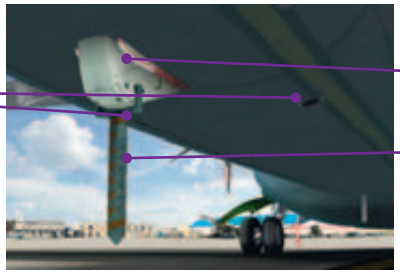


Service door: closed/ secured open, no impact



Emergency exit light: condition, glass not broken

2 outflow valves: unobstructed



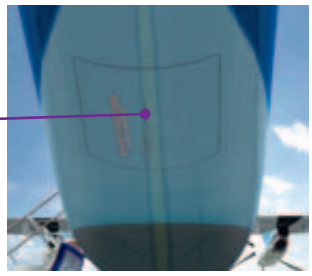
Tail skid: check

Tail prop: check

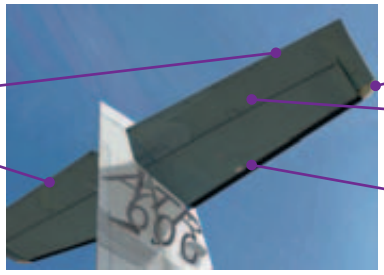
72 PEC

13 – Tail

Flight controls access door: closed



8 static dischargers: check, in place, no break, no burn



Horns: condition

Stabilizers, elevators and trim tabs: check, no impact

Logo lights: condition, glass not broken

Stabilizer de-icing boots: condition, no tear, no blister, no peeling, varnish

VOR antennas: check in place, no impact

Vortex generators: check no impact

5 static dischargers, fin, rudder, tab: check, no impact

2 static dischargers, NAV and strobe lights: condition, glass not broken

14 – Left aft fuselage

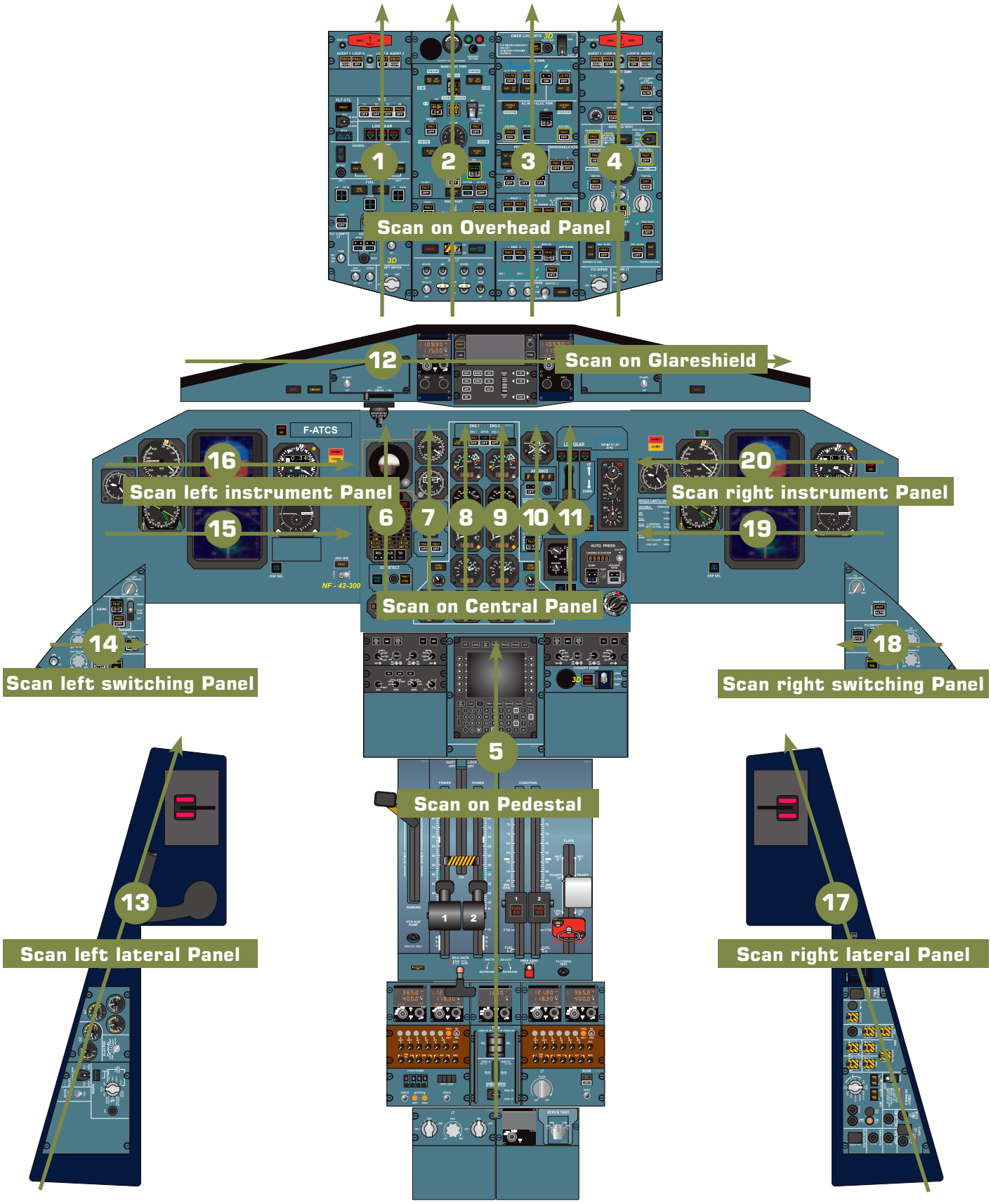
Toilet service door: closed

Cabin door: check

Entry emergency light: condition, glass not broken

Water service door: closed

4. Preliminary cockpit preparation



This procedure (different for long or short transit) is done by CM2 while CM1 is performing the external inspection. In the following, **GPU** is assumed **connected**.(1)

The main approach is to extinguish all white lights, to test all systems and to prepare the cockpit for the flight.

(1) In case of *Preliminary Cockpit Preparation* done with Engine 2 in Hotel mode, apply the procedure detailed in *02.03.01.Hotel Mode operations.*

4.1. Long transit

EMERGENCY EQUIPMENTS CHECK
FCOM 2.03.06 p1

MFC AUTOTEST CHECK
MFC1A/2A fault lights check flashing then extinguished.
MFC1B/2B fault lights check flashing then extinguished.

NOTE: If cargo door control panel is opened, the MFC1A/2Aauto test is automatically done, in this case, check that MFC1A/2A fault lights are extinguished.

DC EXT PWR ON
FCOM 2.03.06 p2

CM2

▶ DO

EMER EQUIPMENTS ..... CHECK
GEAR PINS & COVERS..... ON BOARD
DOCUMENTATION..... ON BOARD
CB LAT & OVHD PANELS ..... CHECK
PL 1 & 2 ..... CHECK GI
GUST LOCK..... CHECK ON
CL 1 & 2 ..... CHECK FUEL S.O.
FLAPS LEVER & INDICATOR..... CHECK CONSISTENCY
LANDING GEAR LEVER..... CHECK DOWN
EEC 1 & 2 ..... CHECK DEPRESSED IN / NO LIGHT
WIPERS ..... OFF
STBY HORIZON ERECTION KNOB ..... PULL
BATTERY..... ON
STBY HORIZON ERECTION KNOB ... RELEASE / CHECK NO FLAG
MFC AUTOTEST..... CHECK
EMER & ESS BUS SUPPLY IND..... CHECK ARROWS ILLUMINATED
UNDV ..... CHECK NO LIGHT
DC EXT PWR..... ON

ANNUNCIATOR LIGHT TEST
Check all lights are illuminated, except for fuel LO LEVEL and engine gauges.

FUEL PUMPS & X-FEED TEST
FCOM 2.03.06 p2 & p3

DOORS TEST
FCOM 2.03.06 p3

ENG FIRE PROTECTION TEST
FCOM 2.03.06 p3

PROP BRK ON
Check the PROP BRK blue light is illuminated.
If not, depress HYD AUX PUMP PB on the pedestal.
When the READY green light illuminates, select PROP BRK ON.
Check the UNLK red light is extinguished.

CVR & DFDR RECORDERS TEST
FCOM 2.03.06 p4

HYD PWR CHECK
Blue and green PUMP LO PR illuminated and no other light.

OXYGEN PANEL CHECK
Check oxygen high pressure indication.
Check the oxygen duration chart in FCOM 2.01.05 to determine if there is sufficient quantity for the scheduled flight.
Select MAIN SUPPLY ON: check no light.
Check PAX SUPPLY OFF.

COMPT SMK TEST
FCOM 2.03.06 p5

CM2

▶ DO

SCAN ON OVERHEAD PANEL

ANNUNCIATOR LIGHT ..... TEST
DOME LIGHT ..... CHECK / AS RQRD
STANDBY COMPASS LIGHT..... CHECK / OFF
STORM LIGHT ..... CHECK / OFF
CALL & SELCAL (if installed)..... CHECK NO LIGHT
MIN CAB LIGHT ..... OFF
FUEL PUMPS & X-FEED ..... TEST
FUEL PUMPS ..... CHECK ON
DOORS ..... TEST
SPOILERS ..... CHECK NO LIGHT
LDG GEAR INDICATOR ..... CHECK 3 GREEN / NO RED LIGHTS
TLU ..... CHECK AUTO
SELCAL (if installed)..... CHECK CODE
FLT CTL FAULT ..... CHECK NO LIGHT
ENG 1 FIRE ..... TEST
EXTERIOR LIGHTS ..... AS RQRD
NAV lights must be ON any time the aircraft is electrically powered.
PROP BRK..... CHECK ON / LOCKED
ENG ROTARY SELECTOR..... OFF & START ABORT
MAIN ELEC PWR..... CHECK NO AMBER LIGHT
Except DC GEN FAULT lights.
CVR & DFDR ..... TEST
SIGNS PANEL (NO SMKG & SEAT BELTS)..... ON
Check also the memo panel.
EMER EXIT LT TOGGLE SW ..... ARM
EMER EXIT LT DISARM ..... CHECK NO LIGHT
DE- /ANTI-ICING..... CHECK NO LIGHT
Except AFR AIR BLEED amber light illuminated.
PROBES HEATING ..... CHECK OFF
To avoid any injury to ground staff.
WINDSHIELD HEATING ..... CHECK ON
AC WILD ELEC PWR ..... CHECK NO WHITE LIGHT
HYD PWR ..... CHECK
EMER LOC XMTR..... CHECK GUARDED AUTO / NO LIGHT
ANNUNCIATOR LIGHT SWITCH ..... AS RQRD
AIR BLEED/ COMPT TEMP..... NO WHITE LIGHT
OVBD VALVE SWITCH..... GUARDED AUTO
AVIONICS VENT FAULT..... CHECK NO LIGHT
OXYGEN PANEL ..... CHECK
COMPT SMK..... TEST
AVIONICS VENT EXHAUST MODE ..... RESET
To restart the extract fan.
ENG 2 FIRE ..... TEST

ATPCS STATIC TEST
FCOM 2.03.06 p5 & p6

PITCH, ROLL AND YAW TRIMS TEST
FCOM 2.03.06 p6

IDLE GATE CHECK PULLED
No IDLE GATE FAIL amber light, and red band on the lever visible.

PARKING BRAKE ON
Check ACCU BRAKE pressure & use HYD AUX PUMP PB if required.

EFIS CONTROL PANELS TEST
FCOM 2.03.06 p7

COCKPIT DOOR LOCKING SYSTEM DAILY TEST
FCOM 2.03.24 p2

CM2

▶ DO

SCAN ON PEDESTAL

ATPCS ..... STATIC TEST
TCAS ..... STBY / TEST
TRIMS..... TEST / SET NEUTRAL
FDEP OR MCDU..... FLIGHT NUMBER + DATE
Check FDAU time base, adjust if necessary.
VHF 1&2..... ON / TEST
ADF 1&2..... ON / TEST
TRANSPONDER..... STBY / TEST
System 1 on odd days & system 2 on even days.
IDLE GATE..... CHECK PULLED
EMER AUDIO CANCEL ..... CHECK GUARDED
PARKING BRAKE ..... ON
AIL LOCK ..... CHECK NO LIGHT
EFIS CONTROL PANELS.....TEST / SET
WEATHER RADAR .....STBY
CDLS.....DAILY TEST

FUEL QUANTITY PANEL TEST
FCOM 2.03.06 p8

ENG BOOST TEST (if installed)
FCOM 2.03.24 p3

ENGINE INDICATORS CHECK
OIL PRESS=0
OIL TEMP=relevant indication
FF / FU=0
NH=0
ITT=relevant indication
NP=0
TQ=0

CAB PRESS PANEL CHECK
No light & rotary selector in green zone.

AUTO PRESS TEST
FCOM 2.03.06 p8

CAB PRESS INDICATORS CHECK
FCOM 2.03.06 p8

CM2

▶ DO

SCAN ON CENTRAL PANEL

FUEL QTY ..... TEST / CHECK
CAP..... CLEAR
PEC 1& 2 .....DEPRESSED IN / NO LIGHT
BOOST (if installed) ..... CHECK
PWR MGT .....TO
STBY INSTRUMENTS.....CHECK NO FLAG
FUEL USED.....RESET
ENG INDICATORS ..... CHECK
EEC 1 & 2 .....DEPRESSED IN/ NO LIGHT
ATPCS .....DEPRESSED IN / NO LIGHT
MEMO PANEL ..... NO SMKG/ SEAT BELTS /PROP BRK
CAB PRESS PANEL ..... CHECK
AUTO PRESS..... TEST / LDG ELEVATION
CAB PRESS INDICATORS ..... CHECK
STICK PUSHER..... CHECK NO LIGHT
RUD TLU.....LO SPD ILLUMINATED
FLAPS ASYM ..... CHECK NO LIGHT
PITCH TRIM ASYM..... CHECK NO LIGHT
BRK TEMP HOT..... CHECK NO LIGHT
ANTISKID.....DEPRESSED IN / NO LIGHT
HYD SYST..... CHECK
LDG GEAR INDICATOR ..... CHECK 3 GREEN / NO RED LIGHTS

SCAN ON GLARESHIELD

FD BARS..... ON
NAV 1&2.....TEST / ON
ADU BRT..... ADJUST

STICK PUSHER / SHAKER DAILY TEST
FCOM 2.03.24 p1

OXYGEN MASK DAILY TEST
FCOM 2.03.06 p9 /p10

SWITCHING PANEL SCAN
Reset PBs and check no light.

AIRSPEED INDICATOR CHECK
No flag, airspeed pointer to zero, VMO pointer to 250 kt.

RMI/EHSI CHECK
RMI set VOR bearing. EHSI set ADF bearing (can be adjusted if needed).

EGPWS TEST
FCOM 2.03.06 p11

VSI CHECK
No flag and pointer to zero.

APM DAILY TEST
FCOM 2.03.24 p3

CM2

▶ DO

SCAN ON LEFT LATERAL PANEL
COCKPIT COM HATCH ..... OPEN
Kept open until ENG1 start to avoid pressurization bumps.
STICK PUSHER / SHAKER ..... DAILY TEST
ROTARY SELECTOR ..... NORMAL FLIGHT
NW STEERING ..... CHECK GUARDED ON
OXYGEN MASK ..... DAILY TEST

SCAN ON LEFT SWITCHING PANEL
MRK ..... LO
AUDIO 1 SEL ..... CHECK NO LIGHT
AHRS 1 ..... CHECK NO LIGHT
ATT/HDG, VOR/ILS, EFIS SG ..... CHECK NO LIGHT
EGPWS ..... CHECK GUARDED NORM
EGPWS ASSOCIATED LIGHT ..... CHECK NO LIGHT
TERR ..... CHECK GUARDED / NO LIGHT
STEEP APP (if installed) ..... CHECK

SCAN ON LEFT INSTRUMENT PANEL
CLOCK ..... SET
ASI ..... CHECK
RMI/EHSI ..... CHECK
EADI ..... CHECK ATTITUDE
EGPWS ..... TEST
GPWS G/S PB ..... CHECK NO LIGHT
ALTIMETER ..... CHECK NO FLAG
VSI ..... CHECK
TAT / SAT / TAS PANEL ..... CHECK
ADC SWITCH ..... SET
System 1 on odd days & system 2 on even days.
DISPLAY SEL ..... CHECK

CM2

▶ DO

SCAN ON RIGHT LATERAL PANEL
EXTRACT AIR FLOW ..... OPEN
OXYGEN MASK ..... DAILY TEST

SCAN ON RIGHT SWITCHING PANEL
ATT/HDG, VOR/ILS, EFIS SG ..... CHECK NO LIGHT
AUDIO 2 SEL ..... CHECK NO LIGHT
AHRS 2 ..... CHECK NO LIGHT

SCAN ON RIGHT INSTRUMENT PANEL
APM ..... DAILY TEST
GPWS G/S PB ..... CHECK NO LIGHT
ALTIMETER ..... CHECK NO FLAG
VSI ..... CHECK
DSP SEL ..... CHECK
RMI/EHSI ..... CHECK
EADI ..... CHECK ATTITUDE
ASI ..... CHECK
CLOCK ..... SET
Once completed, refer to QRH 3.01 & 3.02.

4.2. Short transit

CM1

▶ DO

COCKPIT COM HATCH..... OPEN
Kept open until ENG1 start to avoid pressurization bumps.
EXTERNAL INSPECTION..... PERFORM

CM2

▶ DO

ENG 1 FIRE ..... TEST
ENG 2 FIRE ..... TEST
ATPCS ..... STATIC TEST
FDEP OR MCDU..... FLIGHT NUMBER & DATE
Check FDAU time base, adjust if necessary.
FUEL QTY ..... TEST / CHECK
FUEL USED..... RESET
AUTO PRESS ..... TEST / LDG ELEVATION

ENG FIRE PROTECTION TEST
FCOM 2.03.06 p3

ATPCS STATIC TEST
FCOM 2.03.06 p5 & p6

FUEL QUANTITY PANEL TEST
FCOM 2.03.06 p8

AUTO PRESS TEST
FCOM 2.03.06 p8

5. Final cockpit preparation

Flight events	CM1	CM2
PRELIMINARY COCKPIT PREPARATION COMPLETE	▶ **CALL** **"FINAL COCKPIT PREPARATION PROCEDURE"** ▶ **DO** FUEL QTY ..... CHECK / BALANCED QNH ..... SET OWN + STBY / CHECK PARKING BRAKE ..... ON/ PRESS CHECK	▶ **DO** ATIS..... OBTAIN TAKE-OFF DATA CARD ..... FILL 1ST PART(1) QNH ..... SET / CHECK

Flight events	PM	PF
		▶ **DO** NAVAIDS & GNSS..... SET According to expected SID. VHF 1&2..... SET
CREW READY FOR DATA CARD 1ST PART PROCEEDING	▶ **DO** SEAT, SEAT BELTS, HARNESS, RUDDER PEDALS..... ADJUST	▶ **READ & DO** TAKE-OFF DATA CARD... 1ST PART PROCEED(1) DEPARTURE BRIEFING..... PERFORM(2) SEAT, SEAT BELTS, HARNESS, RUDDER PEDALS..... ADJUST ▶ **CALL** **"FINAL COCKPIT PREPARATION PROCEDURE COMPLETE"**

(1) Refer to *02.01.07.1. Take-off data card.*

(2) Refer to *02.01.08.1. Departure Briefing.*

Flight events	CM1	CM2
FINAL COCKPIT PREPARATION PROCEDURE COMPLETE	▶ **REPLY & REQUIRE** **"FINAL COCKPIT PREPARATION CHECKLIST"**	▶ **CALL & READ** **"FINAL COCKPIT PREPARATION CHECKLIST"** Refer to QRH 6.01 **"FINAL COCKPIT PREPARATION CHECKLIST COMPLETE"**

6. Before propeller rotation

IMPORTANT: Engine 2 start in Hotel mode is decided in accordance with operational requirements and limitations. Before starting Engine 2 in Hotel mode, the *Preliminary Cockpit Preparation* Procedure for short or long transit must at least be completed.

Flight events	CM1	CM2
READY TO START ENG 2 IN HOTEL MODE	▶ CALL **"GROUND FROM COCKPIT READY TO START ENG 2 IN HOTEL MODE, CONFIRM SERVICE DOOR CLOSED AND AREA CLEAR"**	▶ DO OVERHEAD PANEL ..... CHECK[1] Check tailwind below 10 kt.
AFTER OUTSIDE VISUAL CHECK	▶ REPLY **"I AM READY"** ▶ DO TIMING..... START To monitor starter limitation.	▶ CALL **"RIGHT SIDE CLEAR, READY TO START ENG 2?"** ▶ DO & CALL ENG START ..... AS RQRD A & B for the 1st flight of the day, then A for odd days & B for even days, to detect ignition system hidden failure. START 2 ..... DEPRESS / CHECK ON **"STARTER ON"**
NH=10% For engine start in hot environment, refer to FCOM 2.03.09	▶ DO ENGINE PARAMETERS..... MONITOR	▶ DO & CALL CL2 ..... FEATHER TIMING..... START Ignition must occur within 10 s otherwise FUEL S.O. **"FUEL OPEN"** ▶ DO ENGINE PARAMETERS..... MONITOR
ITT INCREASING	▶ DO ENGINE PARAMETERS..... MONITOR	▶ CALL **"IGNITION"**
OIL PRESSURE INCREASING	▶ DO ENGINE PARAMETERS..... MONITOR	▶ DO & CALL ENGINE PARAMETERS..... MONITOR **"OIL PRESS"**
NH=45%	▶ DO & CALL START 2..... CHECK NO LIGHT **"STARTER OFF"** TIMING..... STOP	▶ CALL **"45%"** ▶ DO & CALL ITT MAX..... CHECK[2] **"ITT XXX °C"**

[1] **OVERHEAD PANEL CHECK**
– Service door: closed, no UNLK amber light
– Fuel Pump 2: RUN, no FEED LO PR
– Wing lights: ON, to visually inform that Hotel Mode started.
– Propeller brake: ON and PROP BRK blue light
If Prop brake is OFF, press HYD AUX PUMP, in order to get the READY green light, then place the Prop brake switch to ON.

[2] **ITT MAX CHECK**
– if ITT > 950°
– if 840° < ITT < 950° for more than 5s
– if 800° < ITT < 840° for more than 20s
CL ..... Fuel SO

Flight events	CM1	CM2
NH=61.5%		▶ **CALL** **"PARAMETERS STABILIZED"**
PARAMETERS STABILIZED	▶ **DO** DC GEN 2 VOLTAGE.....CHECK ▶ **CALL** **"GROUND FROM COCKPIT, YOU CAN DISCONNECT GPU"**	▶ **DO** ENG START ..... OFF & START ABORT DC EXT PWR ..... OFF DC GEN 2 FAULT..... CHECK NO LIGHT DC BTC..... CHECK CLOSED BLEED / PACKS / X VALVE..... OPEN
LOAD & TRIM SHEET ON BOARD	▶ **DO & CALL** LOAD & TRIM SHEET .....CHECK TOW ..... CALL CG (% MAC)..... CALL PITCH TRIM ..... CALL **"TOW XXX, CG (%MAC),TRIM XX"** ▶ **DO** TO SPEEDS & TRIM ..... CROSSCHECK Read in QRH.	▶ **DO** TAKE-OFF DATA CARD..... FILL 2ND PART(1)

Flight events	PM	PF
CREW READY FOR DATA CARD 2ND PART PROCEEDING		▶ **READ & DO(1)** TAKE-OFF DATA CARD... 2ND PART PROCEED(1) BOOST (if installed) ..... ON Select ON only when a gain in payload is necessary. GNSS WEIGHT & FUEL.....FILL

(1) Refer to *2.01.07.1. Take-off data card.*

Flight events	CM1	CM2
	CAPTAIN ▶ **DO** CABIN CREW REPORT..... RECEIVE Confirm pax number & tail prop on board (for ATR 72). CABIN ANNOUNCEMENT..... PERFORM	
PASSENGERS ON BOARD & CARGO LOADED	▶ **DO** DOORS ..... CHECK CLOSED BEACON .....ON NW STEERING (if push back) ..... OFF	▶ **DO** START UP CLEARANCE .....OBTAIN CDLS ..... ON
BEFORE PROPELLER ROTATION PROCEDURE COMPLETE	▶ **REQUIRE** **"BEFORE PROPELLER ROTATION CHECKLIST"**	▶ **CALL** **"BEFORE PROPELLER ROTATION PROCEDURE COMPLETE"** ▶ **CALL & READ** **"BEFORE PROPELLER ROTATION CHECKLIST"** Refer to QRH 6.01 **"BEFORE PROPELLER ROTATION CHECKLIST COMPLETE"**

COCKPIT DOOR LOCKING SYSTEM ON
The control switch located behind CM2 is set ON.
On the cockpit door control panel (pedestral), the toggle switch is in CLOSE position and the OPEN light is OFF.

7. Before taxi

Flight events	CM1	CM2
START UP CLEARANCE RECEIVED	▶ **COMMAND** **"BEFORE TAXI PROCEDURE"** ▶ **CALL** **"GROUND FROM COCKPIT PARKING BRAKE IS ON, READY TO RELEASE PROPELLER BRAKE, CONFIRM CHOCKS ON, AREA CLEAR"** ▶ **CALL** **"RIGHT SIDE CLEAR?"** ▶ **DO** HYD AUX PUMP ..... DEPRESS PROP BRAKE ..... CHECK READY LIGHT ON ▶ **DO** PROP BRAKE ..... OFF PROP BRAKE ..... CHECK NO BLUE LIGHT UNLOCK extinguished after 15 s max. NP..... CHECK STABILIZED ▶ **COMMAND** **"CL 2 AUTO"**	▶ **REPLY** **"RIGHT SIDE CLEAR"** ▶ **CALL** (after visual check) **"ROTATION"** ▶ **DO** NP..... CHECK STABILIZED ▶ **DO & CALL** CL 2 ..... AUTO PEC SGL CH AUTO TEST.....CHECK LO PITCH ..... ILLUMINATED **"SINGLE CHANNEL, LOW PITCH"**
NP STABILIZED AROUND 71%		▶ **DO** ACW GEN 2 FAULT ..... CHECK NO LIGHT ACW BTC..... CHECK CLOSED HYD PWR ..... CHECK NO LIGHT HYD SYST..... 3X3000 PSI PROBES HEATING ..... ON ANTI ICING..... AS RQRD ANTISKID..... TEST ICE DETECTOR ..... TEST FLAPS ..... 15°
READY TO START ENG 1	▶ **CALL** **"GROUND FROM COCKPIT PARKING BRAKE IS ON, READY TO START ENG 1"**	▶ **DO** OVERHEAD PANEL.....CHECK
AFTER OUTSIDE VISUAL CHECK	ENG 1 start procedure is the same as ENG 2. Refer to 2.02.06. Before Propeller Rotation.	

ANTI SKID TEST
FCOM 2.03.11 p1

ICE DETECTOR TEST
Push To Test for 3 seconds.
Check ICING amber flashes and MC + SC + ICING on CAP.

Flight events	CM1	CM2
NH=61.5%		▶ **CALL** **"PARAMETERS STABILIZED"**
PARAMETERS STABILIZED	▶ **COMMAND** **"CL1 AUTO"**	▶ **DO** ENG START ..... OFF & START ABORT DC GEN 1 FAULT.....NO LIGHT DC BTC..... CHECK NO LIGHT BLEED / PACKS / X VALVE .... CHECK NO LIGHT ▶ **DO & CALL** CL 1 ..... AUTO PEC SGL CH AUTO TEST.....CHECK LO PITCH ..... ILLUMINATED **"SINGLE CHANNEL, LOW PITCH"**
WHEN NP STABILIZED AROUND 71%	▶ **DO** COCKPIT COM HATCH.....CLOSE NW STEERING ..... ON	▶ **DO** ACW GEN 1 FAULT ..... CHECK NO LIGHT ACW BTC ..... CHECK OPEN XPDR..... AS RQRD OVHD PANEL ..... CHECK NO LIGHT Except exhaust mode FAULT light for 2 min.
BEFORE TAXI PROCEDURE COMPLETE	▶ **REQUIRE** **"BEFORE TAXI CHECKLIST"**	▶ **CALL** **"BEFORE TAXI PROCEDURE COMPLETE"** ▶ **CALL & READ** **"BEFORE TAXI CHECKLIST"** Refer to QRH 6.01 **"BEFORE TAXI CHECKLIST COMPLETE"**

8. Taxi

Flight events	CM1	CM2
TAXI CLEARANCE RECEIVED	▶ CALL **"GROUND FROM COCKPIT READY TO TAXI, YOU CAN REMOVE CHOCKS AND DISCONNECT"**	
READY TO TAXI	▶ COMMAND **"REQUEST TAXI CLEARANCE"**	▶ DO TAXI CLEARANCE..... OBTAIN
WHEN GROUND STAFF IN SIGHT	▶ DO & CALL BLOCK TIME..... CALL OUT LEFT SIDE AREA..... CHECK CLEAR **"LEFT SIDE CLEAR"** TAXI & T.O. LIGHTS..... ON BRAKES.....CHECK	▶ DO & CALL BLOCK TIME.... WRITE DOWN ON NAV LOG RIGHT SIDE AREA..... CHECK CLEAR **"RIGHT SIDE CLEAR"** BRAKES.....CHECK
ON TAXIWAY	▶ COMMAND **"TAXI PROCEDURE"**	▶ DO HEADING MODE..... ENGAGE LO BANK..... SELECT IAS MODE..... ENGAGE IAS..... V2+5 KT SET COUPLING ..... PF SIDE TO CONFIG..... TEST
PF AND PM READY		▶ DO ATC CLEARANCE.....OBTAIN ALT SEL..... SET NAVAIDS SETTING (if necessary)..... REVISE Confirm that ATC clearance matches with GNSS & VOR/ADF settings.

BRAKES CHECK
FCOM 2.03.12 p1

Flight events	PM	PF
		▶ DO TO BRIEFING ..... PERFORM[1]

[1] Refer to *02.01.08.3. Take-off Briefing.*

Flight events	CM1	CM2
AFTER TO BRIEFING	**CAPTAIN** ▶ DO CABIN CREW REPORT..... RECEIVE	
TAXI PROCEDURE COMPLETE	▶ REQUIRE **"TAXI CHECKLIST"**	▶ CALL **"TAXI PROCEDURE COMPLETE"** ▶ CALL & READ **"TAXI CHECKLIST"** Refer to QRH 6.01 **"TAXI CHECKLIST COMPLETE"**

9. Before take-off

Flight events	CM1	CM2
APPROACHING HOLDING POINT AND CABIN OK RECEIVED	▶ **COMMAND** **"BEFORE TAKE-OFF PROCEDURE"** ▶ **DO** FLT CTL.....CHECK RUDDER Check full travel and freedom movement in pitch, roll and yaw. For roll, check spoiler light illuminated. ▶ **DO** CCAS ..... RCL RCL must done before TO INHI to make sure there are no degraded systems for take-off. TO INHI ..... DEPRESS OVERHEAD PANEL.....CHECK	▶ **DO & CALL** GUST LOCK.....RELEASE **"FLIGHT CONTROLS?"** FLT CTL.....CHECK ROLL & PITCH TCAS ..... AUTO TA ONLY appears on VSI on ground. XPDR..... ALT ▶ **DO** WEATHER RADAR .....STBY OR WX To activate the EGPWS terrain clearance floor mode. APM ROTARY SELECTOR ..... TOW AIR FLOW ..... NORM
LINE-UP CLEARANCE RECEIVED	▶ **DO** LAND LIGHTS & STROBE..... ON	▶ **DO** LINE UP CLEARANCE .....OBTAIN BLEED VALVES ..... AS RQRD
LINED UP	▶ **DO** RUDDER CAM .....CENTER	▶ **DO** LATERAL FD BARS.....CENTER
BEFORE TAKE OFF PROCEDURE COMPLETE	▶ **REPLY & REQUIRE** **"BEFORE TAKE OFF CHECKLIST"**	▶ **CALL** **"BEFORE TAKE OFF PROCEDURE COMPLETE"** ▶ **CALL & READ** **"BEFORE TAKE OFF CHECKLIST"** Refer to QRH 6.01 **"BEFORE TAKE OFF CHECKLIST COMPLETE"**

APM ROTARY SELECTOR: TAKE-OFF WEIGHT
Set rotactor to TOW, once both engines are running.
NOTE: Even if the correct value is already selected, the rotactor must be reset before re-selecting the current weight.

10. Take-off

Flight events	CM1	CM2
CLEARED FOR TAKE-OFF	▶ **CALL** **"TAKE-OFF AT XX.XX, V1 XXX KT"** ▶ **DO** TIMING..... START FUEL USED.....CHECK NW STEERING..... HANDLE BRAKES.....RELEASE ▶ **DO & CALL** PL 1 & 2 ..... IN THE NOTCH **"POWER LEVERS SET"**	▶ **DO** TIMING..... START CONTROL WHEEL..... HOLD INTO WIND ▶ **DO & CALL** ATPCS ARM ..... CHECK ILLUMINATED TO TQ (WHITE BUG).....CHECK / ADJUST ENGINE PARAMETERS.....MONITOR Check NP 100%, ITT. **"ATPCS ARMED, POWER SET"**
REACHING 70KT	▶ **CALL & DO** **"CHECK"** NW STEERING.....RELEASE **"YOUR CONTROL"** only if PM	▶ **CALL** **"70 KT"**

Flight events	PM	PF
		▶ **CALL** **"MY CONTROL"** Control through rudder pedals and control wheel & column.
REACHING V1	▶ **CALL** **"V1"** **CM1** ▶ **DO** PL 1 & 2 .....RELEASE	
REACHING VR	▶ **CALL** **"ROTATE"**	▶ **DO** PITCH .....ROTATE TO 8° FD BARS..... FOLLOW
POSITIVE RATE	▶ **CALL** **"POSITIVE RATE"** ▶ **DO** LANDING GEAR.....UP YAW DAMPER ..... ENGAGE Check white arrows illuminated. TAXI & T.O. LIGHTS..... OFF	▶ **COMMAND** **"GEAR UP"**
ALL LDG GEAR LIGHTS EXTINGUISHED	▶ **CALL** **"GEAR UP"**	

11. After take-off

Flight events	PM	PF
PASSING ACCELERATION ALTITUDE (mini 400 ft AAL or higher if requested)	▶ **CALL** **"ACCELERATION ALTITUDE"** ▶ **DO & CALL** IAS ..... 170 (160)[2] PL 1 & 2 ..... CHECK IN THE NOTCH PWR MGT ..... CLB TQ / NP ..... CHECK CLIMB SETTING BLEEDS ..... CHECK ON **"CLIMB PROCEDURE COMPLETE"** ▶ **DO & CALL** SPEED BUG ..... 170 (160) **"170 (160) SET"**	▶ **DO** PL 1 & 2 ..... IN THE NOTCH[1] ▶ **COMMAND** **"CLIMB PROCEDURE"** ▶ **CALL & DO** **"SET SPEED BUG 170 (160)"** SPEED BUG 170 (160)
REACHING WHITE OR ICING BUG	▶ **CALL** **"WHITE BUG"** Normal conditions **"ICING BUG"** Icing conditions ▶ **DO** FLAPS ..... 0°	▶ **COMMAND** **"FLAPS 0"**
FLAPS 0° INDICATED	▶ **CALL** **"FLAPS 0"**	
REACHING WHITE OR ICING BUG +10	▶ **CALL** **"WHITE BUG + 10"** Normal conditions **"ICING BUG +10"** Icing conditions ▶ **DO & CALL** HI BANK ..... SET **"HIGH BANK SET"**	▶ **COMMAND** **"SET HIGH BANK"** ▶ **CALL** **"CHECK"**
CLEARED TO A FLIGHT LEVEL OR PASSING TRANSITION ALTITUDE	▶ **DO & CALL** ALTIMETER ..... SET STANDARD **"STANDARD SET"** ▶ **CALL** **"CHECK"** or **"PLUS OR MINUS XXX FT"**	▶ **COMMAND** **"SET ALTIMETER STANDARD"** ▶ **DO** ALTIMETER ..... SET STANDARD ▶ **CALL** **"PASSING FL XXX, NOW!"**
AFTER ALTIMETER STANDARD SETTING[3]	▶ **CALL & READ** **"AFTER TAKE-OFF CHECKLIST"** Refer to QRH 6.01 **"AFTER TAKE-OFF CHECKLIST COMPLETE"**	▶ **REQUIRE** **"AFTER TAKE-OFF CHECKLIST"**

(1) To prevent overtorques, PF checks PL are in the notch before moving the PWR MGT. This is to standardize with the go-around procedure, and the optional 100% TQ take-off.

(2) 170 (160) kt or Icing Bug + 10 (in icing conditions), whichever is higher.

(3) In case of high transition altitude, perform the After Take-off checklist except the last action concerning the altimeters setting. Once the transition altitude is passed, set the altimeters to finalize the procedure and the checklist.

12. Climbing through FL100

Flight events	PM	PF
CLIMBING THROUGH FL 100	▶ **DO** LANDING LIGHTS .....OFF PRESSURIZATION ..... CHECK Cabin ALT, RATE and ΔP.	▶ **COMMAND** **"FL 100"** No C/L for FL 100.

CAPTAIN

▶ **DO**
SEAT BELTS..... AS RQRD

13. Cruise

Flight events	PM	PF
APPROACHING CRUISE FL	▶ DO SAT.....CHECK DELTA ISA.....COMPUTE CRUISE PARAMETERS.....DETERMINE TQ, FF, IAS & Single-engine gross ceiling.	▶ COMMAND **"COMPUTE CRUISE PARAMETERS"**
ALT*	▶ CALL **"CHECK"**	▶ CALL **"ALT STAR"**
ALT GREEN	▶ CALL **"CHECK"**	▶ CALL **"ALT GREEN"** ▶ COMMAND **"SET CRUISE PARAMETERS"**(1)
REACHING CRUISE SPEED	▶ DO PWR MGT .....CRZ CRUISE PARAMETERS.....CHECK ▶ CALL **"CRUISE PROCEDURE COMPLETE"**	▶ CALL **"CRUISE PROCEDURE"**
DURING CRUISE	▶ DO FLIGHT LOG .....FILL SYSTEMS/FUEL.....MONITOR WAYPOINTS EXPECTED TIME.....COMPUTE REMAINING FUEL & HOLDING TIME.....COMPUTE(2) EXPECTED LANDING WEIGHT ....COMPUTE	▶ DO TOP OF DESCENT.....COMPUTE REMAINING FUEL & HOLDING TIME.....CHECK

(1) Refer to *02.01.05.2. Cruise speed bugs* and *02.01.06.2. Cruise torque bugs*.
(2) Refer to *02.01.08.5. Holding time*.

14. Before descent

Flight events	PM	PF
LANDING DATA AVAILABLE (approx. 10 min before TOD)	▶ DO ATIS..... OBTAIN LANDING DATA CARD..... FILL[1] LANDING ELEVATION..... CHECK **CAPTAIN** CABIN CREW..... ADVISE	▶ DO LANDING DATA CARD..... PROCEED
BEFORE DESCENT (approx. 5 min before TOD)		▶ DO CCAS..... RCL Crew review all aircraft status. NAVAIDS & GNSS..... SET According to expected STAR & APP. ARRIVAL BRIEFING ..... PERFORM[2]
APPROACHING TOD	▶ DO DESCENT CLEARANCE..... OBTAIN ▶ CALL & READ **"DESCENT CHECKLIST"** Refer to QRH 6.01 **"DESCENT CHECKLIST COMPLETE"**	▶ DO ASSIGNED ALTITUDE..... SELECT VS MODE..... ENGAGE ▶ REQUIRE **"DESCENT CHECKLIST"**

[1] Refer to *2.01.07.2. Landing data card.*
[2] Refer to *2.01.08.4. Arrival Briefing.*

15. Descending through FL 100

Flight events	PM	PF
DESCENDING THROUGH FL 100	▶ DO LANDING LIGHTS ..... ON PRESSURIZATION.....CHECK Cabin ALT, RATE and ΔP.	▶ COMMAND **"FL 100"** No C/L for FL 100.
	CAPTAIN	
	▶ DO SEAT BELTS..... ON	

16. Approach

Flight events	PM	PF
CLEARED TO AN ALTITUDE OR PASSING TRANSITION LEVEL	▶ **DO & CALL** ALTIMETER ..... SET QNH And standby altimeter setting. **"XXXX SET"**	▶ **COMMAND** **"SET QNH"** ▶ **DO** ALTIMETER ..... SET QNH
	▶ **CALL** **"CHECK"** or **''PLUS OR MINUS XXX FT''** ▶ **DO** PRESSURIZATION.....CHECK	▶ **CALL** **"PASSING XXXX FT, NOW!"**
	CAPTAIN CABIN CREW REPORT.....RECEIVE	
APPROACH PROCEDURE COMPLETE	▶ **CALL & READ** **"APPROACH CHECKLIST"** Refer to QRH 6.01 **"APPROACH CHECKLIST COMPLETE"**	▶ **REQUIRE** **"APPROACH CHECKLIST"**

17. Before landing

17.1. ILS Precision Approach

Flight events	PM	PF
CLEARED FOR APPROACH	▶ DO & CALL SPEED BUG ..... 170 "170 SET" ▶ DO NAV SOURCE ..... IDENTIFY ▶ CALL "CHECK"	▶ COMMAND & DO "SET SPEED BUG 170"(1) SPEED BUG ..... 170 ▶ DO APP MODE..... ENGAGE ▶ CALL "APPROACH MODE SET, LOC WHITE, GS WHITE"
VOR ALIVE	▶ CALL "VOR ALIVE"	
LOC*	▶ CALL "RWY AXIS CONFIRMED"(2) ▶ DO & CALL HDG ..... SET DUAL ILS..... SET "HEADING, DUAL ILS SET"	▶ CALL "LOC STAR" ▶ COMMAND "SET HEADING, DUAL ILS"
LOC GREEN	▶ CALL "CHECK"	▶ CALL "LOC GREEN"
G/S ALIVE	▶ CALL "GLIDE SLOPE ALIVE" ▶ CALL & DO "SPEED CHECK" FLAPS ..... 15°	▶ COMMAND "FLAPS 15"
FLAPS 15° INDICATED	▶ CALL "FLAPS 15" ▶ DO & CALL SPEED BUG ..... WHITE BUG+10 "WHITE BUG + 10 SET"	▶ COMMAND & DO "SET SPEED BUG WHITE BUG + 10"(3) SPEED BUG ..... WHITE BUG+10
G/S ONE DOT	▶ CALL "ONE DOT" ▶ CALL "SPEED CHECK" ▶ DO LANDING GEAR..... DOWN PWR MGT ..... TO TAXI & T.O. LIGHTS ..... ON	▶ COMMAND "GEAR DOWN"
LDG GEAR 3 GREEN LIGHTS	▶ CALL "GEAR DOWN"	

(1) 170 or Icing Bug + 10 (in icing conditions), whichever is higher.
(2) Runway axis is confirmed when VOR is centered and / or RMI pointeron final CRS.
(3) White Bug+10 is conservative for High Bank with flaps 15°, in normal and icing conditions.

Flight events	PM	PF
	▶ CALL & DO "SPEED CHECK" FLAPS ..... 25°	▶ COMMAND "FLAPS 25"
FLAPS 25° INDICATED	▶ CALL "FLAPS 25"	
G/S HALF DOT	▶ CALL "HALF DOT" ▶ CALL & DO "SPEED CHECK" FLAPS ..... 30° (35°)	▶ COMMAND "FLAPS 30 (35)"
FLAPS 30° (35°) INDICATED	▶ CALL "FLAPS 30 (35)" ▶ DO & CALL SPEED BUG ..... VAPP "XXX SET"	▶ COMMAND & DO "SET SPEED BUG V APPROACH" SPEED BUG ..... VAPP
G/S*	▶ CALL "CHECK" ▶ CALL "TOP OF DESCENT XX DME, CHECK" ▶ DO & CALL GA ALTITUDE ..... SET "XXXX FT SET"	▶ CALL "GLIDE STAR" ▶ COMMAND "SET GO-AROUND ALTITUDE" ▶ CALL "CHECK"
AIRCRAFT STABILIZED	▶ CALL & READ "BEFORE LANDING CHECKLIST" Refer to QRH 6.01 "BEFORE LANDING CHECKLIST COMPLETE"	▶ REQUIRE "BEFORE LANDING CHECKLIST"
G/S GREEN	▶ CALL "CHECK"	▶ CALL "GLIDE GREEN"
1000 FT AAL IMC STABILIZED	▶ CALL "1000 FT, STABILIZED"	▶ COMMAND "WE CONTINUE"
1000 FT AAL IMC UNSTABILIZED	▶ CALL "1000 FT, GO-AROUND"	▶ COMMAND "GO-AROUND, SET POWER, FLAPS ONE NOTCH" Continue with Go-around procedure.
REACHING DA+500 FT	▶ CALL "FIVE HUNDRED ABOVE"	
REACHING DA+100 FT	▶ CALL "ONE HUNDRED ABOVE"	
REACHING DA	▶ CALL "MINIMUM"	▶ CALL "LAND" Continue with Landing procedure, or "GO-AROUND, SET POWER, FLAPS ONE NOTCH" Continue with Go-around procedure.

42 PEC

17.2. Non Precision Approach

There are different types of Non Precision Approaches: LOC, LOC/DME, VOR, VOR/DME, RNAV, ADF.
Lateral guidance is done via NAV mode for LOC, VOR, RNAV and via HDG mode for ADF.
Vertical guidance is done via the Vertical Speed mode.

Flight events	PM	PF
CLEARED FOR APPROACH	▶ DO & CALL SPEED BUG ..... 170 "170 SET" ▶ DO NAV SOURCE ..... IDENTIFY ▶ CALL "CHECK"	▶ COMMAND & DO "SET SPEED BUG 170"(1) SPEED BUG ..... 170 ▶ DO NAV MODE (OR HDG MODE) ..... ENGAGE ▶ CALL "NAV MODE SET LOC WHITE (OR VOR WHITE)"
VOR ALIVE	▶ CALL "VOR ALIVE"	
LOC*	▶ DO & CALL HEADING ..... SET "HEADING SET"	▶ CALL "LOC STAR (OR VOR STAR)" ▶ COMMAND "SET HEADING"
LOC GREEN	▶ CALL "CHECK"	▶ CALL "LOC GREEN (OR VOR GREEN)"
4 NM BEFORE FAP/FAF	▶ CALL & DO "SPEED CHECK" FLAPS ..... 15°	▶ COMMAND "FLAPS 15"
FLAPS 15° INDICATED	▶ CALL "FLAPS 15" ▶ DO & CALL SPEED BUG ..... WHITE BUG+10 "WHITE BUG+10 SET"	▶ COMMAND & DO "SET SPEED BUG WHITE BUG+10"(2) SPEED BUG ..... WHITE BUG+10
1 NM BEFORE FAP/FAF	▶ CALL "SPEED CHECK" ▶ DO LANDING GEAR ..... DOWN PWR MGT ..... TO TAXI & T.O. LIGHTS ..... ON	▶ COMMAND "GEAR DOWN"
LDG GEAR 3 GREEN LIGHTS	▶ CALL "GEAR DOWN"	
	▶ CALL & DO "SPEED CHECK" FLAPS ..... 25°	▶ COMMAND "FLAPS 25"

42 PEC

(1) 170 or Icing Bug+10 (in icing conditions), whichever is higher.

(2) White Bug+10 is conservative for High Bank with flaps 15°, in normal and icing conditions.

Flight events	PM	PF
FLAPS 25° INDICATED	▶ CALL **"FLAPS 25"**	
	▶ CALL & DO **"SPEED CHECK"** FLAPS ..... 30° (35°)	▶ COMMAND **"FLAPS 30 (35)"**
FLAPS 30° (35°) INDICATED	▶ CALL **"FLAPS 30 (35)"** ▶ DO & CALL SPEED BUG ..... VAPP **"XXX SET"** ▶ DO & CALL GA ALTITUDE ..... SET **"XXXX FT SET"**(1) ▶ DO & CALL VS ..... 0 **"VS 0 FT/MIN SET"**	▶ COMMAND & DO **"SET SPEED BUG V APPROACH"** SPEED BUG ..... VAPP ▶ COMMAND **"SET GO-AROUND ALTITUDE"** ▶ CALL **"CHECK"** ▶ COMMAND **"SET VS 0 FT/MIN"** ▶ CALL **"CHECK"**
0.3 NM BEFORE FAP/FAF	▶ DO & CALL VS ..... -XXX **"VS -XXX SET, TOP OF DESCENT"**	▶ COMMAND **"SET VS -XXX"** ▶ CALL **"CHECK"**
STARTING DESCENT	▶ DO TIMING ..... START FLIGHT PATH ..... MONITOR ▶ CALL & READ **"BEFORE LANDING CHECKLIST"** Refer to QRH 6.01 **"BEFORE LANDING CHECKLIST COMPLETE"**	▶ DO TIMING ..... START FLIGHT PATH ..... MONITOR(2) ▶ REQUIRE **"BEFORE LANDING CHECKLIST"**
1000 FT AAL IMC STABILIZED	▶ CALL **"1000 FT, STABILIZED"**	▶ COMMAND **"WE CONTINUE"**
1000 FT AAL IMC UNSTABILIZED	▶ CALL **"1000 FT, GO-AROUND"**	▶ COMMAND **"GO-AROUND, SET POWER, FLAPS ONE NOTCH"** Continue with Go-around procedure.
REACHING MDA+500 FT	▶ CALL **"FIVE HUNDRED ABOVE"**	
REACHING MDA+100 FT	▶ CALL **"ONE HUNDRED ABOVE"**	
REACHING MDA+30	▶ CALL **"MINIMUM"**	▶ CALL **"LAND"** Continue with Landing procedure. or **"GO-AROUND, SET POWER, FLAPS ONE NOTCH"** Continue with Go-around procedure.

42 PEC

(1) Set only if present altitude below GA altitude. If not set present altitude +300 ft to avoid ALT*. Set GA altitude when passing GA alt –300 ft.

(2) PM calls out altitude versus distance, and altitude deviation above or below the desired one. PF corrects by adjusting VS.

NOTE: When PF has the runway in sight and calls out **"LAND"**, PM does not perform anymore the minima call-outs.

17.3. Circle-to-land

For initial configuration, refer to *02.02.17.2. Non Precision Approach*, or *02.02.17.1. ILS Precision Approach* and then proceed as described below:

- Flaps remain at 15°
- Speed is maintained to White Bug+10[1]
- Before landing C/L must be initiated during descent with flaps 15° and completed when flaps 30° (35°)
- Go-around altitude must be set during descent with flaps 15°

[1] White Bug+10 is conservative for High Bank with flaps 15°, in normal and icing conditions.

Flight events	PM	PF
REACHING MDA	▶ **CALL** **"CHECK"**	▶ **DO & CALL** ALT MODE..... ENGAGE **"ALT SET, ALT GREEN"**
LEVEL OFF	▶ **CALL & DO** **"CHECK"** TIMING..... START	▶ **DO & CALL** TQ ..... AROUND 40% HDG / HI MODE..... ENGAGE HEADING BUG..... ±45° **"HEADING, HIGH BANK, HEADING XXX SET, START TIMING"** TIMING..... START
AFTER 30 SEC	▶ **CALL** **"CHECK"**	▶ **DO & CALL** HEADING BUG.....DOWNWIND Adjust heading accordingly to crosswind component. **"HEADING XXX SET"**
ABEAM THRESHOLD	▶ **DO** TIMING..... START	▶ **CALL & DO** **"START TIMING"** TIMING..... START
ABEAM THRESHOLD	▶ **DO** TIMING..... START FLAPS ..... 25°	▶ **CALL & DO** **"FLAPS 25, START TIMING"** TIMING..... START
FLAPS 25° INDICATED	▶ **CALL** **"FLAPS 25"**	
REACHING OUTBOUND TIME[2]	▶ **CALL** **"CHECK"**	▶ **DO & CALL** HDG ..... SET VS..... - XXX FT/MIN **"HEADING XXX, VS -XXX SET"**
ON FINAL	▶ **CALL & DO** **"SPEED CHECK"** FLAPS .....30° (35°)	▶ **COMMAND** **"FLAPS 30 (35)"**

42 PEC

[2] Outbound time (in sec)= $\frac{\text{Height}}{20}$ ±1 sec/1 kt head/tailwind

Flight events	PM	PF
FLAPS 30° (35°) INDICATED	▶ CALL "FLAPS 30 (35), BEFORE LANDING CHECKLIST COMPLETE" ▶ DO & CALL SPEED BUG ..... VAPP "XXX SET"	▶ COMMAND & DO "SET SPEED BUG V APPROACH" SPEED BUG ..... VAPP ▶ CALL & DO "AUTOPILOT OFF" AP ..... OFF
300 FT AAL STABILIZED	▶ CALL "300 FT, STABILIZED"	▶ COMMAND "LAND" Continue with Landing procedure.
300 FT AAL UNSTABILIZED	▶ CALL "300 FT, GO-AROUND"	▶ COMMAND "GO-AROUND, SET POWER, FLAPS ONE NOTCH" Continue with Go-around procedure.

17.4. Standard traffic pattern

From take-off to 1500 ft AAL, refer to SOPs until *After Take-off* procedure. In the following procedure, AP is set OFF, and FD is ON.

Flight events	PM	PF
REACHING 1500 FT AAL	▶ CALL "CHECK" ▶ CALL "CHECK"	▶ CALL "ALT STAR" ▶ CALL "ALT GREEN" ▶ DO TQ ..... 40% SPEED ..... MAINTAIN 170 (160)
READY TO TURN	▶ DO & CALL HEADING BUG ..... SET "HEADING XXX SET"	▶ COMMAND "SET HEADING XXX" ▶ CALL "CHECK"
DOWNWIND	▶ CALL & DO "SPEED CHECK" FLAPS ..... 15°	▶ COMMAND "FLAPS 15"
FLAPS 15° INDICATED	▶ CALL "FLAPS 15" ▶ DO & CALL SPEED BUG ..... WHITE BUG+10 "WHITE BUG+10 SET" ▶ DO & CALL YELLOW BUG ..... VGA TQ BUG ..... XXX% "VGA XXX, TQ XXX% SET"	▶ COMMAND "SET SPEED BUG WHITE BUG+10"(1) SPEED BUG ..... WHITE BUG+10 ▶ COMMAND & DO "SET YELLOW BUG VGA, TQ BUG XXX%" YELLOW BUG ..... VGA TQ BUG ..... XXX%

(1) White Bug+10 is conservative for High Bank with flaps 15°, in normal and icing conditions.

Flight events	PM	PF
MID RUNWAY	▶ CALL & DO "SPEED CHECK" LANDING GEAR..... DOWN	▶ COMMAND "GEAR DOWN"
LDG GEAR 3 GREEN LIGHTS	▶ CALL "GEAR DOWN"	
ABEAM THRESHOLD	▶ DO TIMING..... START	▶ CALL & DO "START TIMING" TIMING..... START
ABEAM THRESHOLD	▶ DO & CALL TIMING..... START FLAPS ..... 25° "FLAPS 25"	▶ CALL & DO "FLAPS 25, START TIMING" TIMING..... START
FLAPS 25° INDICATED	▶ CALL "FLAPS 25"	
REACHING OUTBOUND TIME[1]	▶ DO & CALL HEADING BUG..... SET VS ..... –700 "HEADING XXX, VS –700 SET"	▶ COMMAND "SET HEADING XXX, VS –700"
BASE TURN / LEG	▶ DO ADU.....STANDBY	▶ COMMAND "SET ADU STANDBY"
ON FINAL	▶ CALL & DO "SPEED CHECK" FLAPS ..... 30° (35°)	▶ COMMAND "FLAPS 30 (35)"
FLAPS 30° (35°) INDICATED	▶ CALL "FLAPS 30 (35)" ▶ DO & CALL SPEED BUG ..... VAPP "XXX SET" ▶ CALL & READ "BEFORE LANDING CHECKLIST" Refer to QRH 6.01 "BEFORE LANDING CHECKLIST COMPLETE"	▶ COMMAND & DO "SET SPEED BUG V APPROACH" SPEED BUG ..... VAPP ▶ REQUIRE "BEFORE LANDING CHECKLIST"
500 FT AAL STABILIZED	▶ CALL "500 FT, STABILIZED"	▶ COMMAND "LAND" Continue with Landing procedure.
500 FT AAL UNSTABILIZED	▶ CALL "500 FT, GO-AROUND"	▶ COMMAND "GO-AROUND, SET POWER, FLAPS ONE NOTCH" Continue with Go-around procedure.

42 PEC

[1] Outbound time (in sec) = $\frac{\text{Height}}{20}$ 1 sec / 1 kt head/tailwind

NOTE: When performing a visual pattern below 1500 ft AAL flaps have to be kept extended at 15° after take-off.

18. Landing

Flight events	PM	PF
PF DISCONNECTS AP AT DA/MDA		▶ **CALL & DO** **"AUTOPILOT OFF"** CAVALRY CHARGE.....CANCEL
RA CALL-OUTS	**"80"** **"50"** **"20"** ▶ **DO** PITCH .....MONITOR FLARE CONTROL WHEEL.....HOLD INTO WIND	▶ **DO** (at 20 ft) PL 1 & 2 ..... FI
ON GROUND, TWO LOW PITCH ILLUMINATED	▶ **DO** IDLE GATE AUTOMATIC RETRACTION.....CHECK ▶ **DO & CALL** LOW PITCH .....CHECK BOTH ILLUMINATED **"2 LOW PITCH"**	▶ **DO** PL 1 & 2 ..... GI ▶ **DO** BRAKES..... AS RQRD PL 1 & 2 .....REVERSE AS RQRD[1]
REACHING 70 KT	▶ **CALL** **"70 KT"**	

Flight events	CM1	CM2
BELOW 70 KT	▶ **CALL** **"MY CONTROL"** ▶ **DO** NW STEERING..... HOLD BRAKES..... AS RQRD	▶ **DO** CONTROL WHEEL.....HOLD INTO WIND

[1] Use reverse at high speeds and prefer use of brakes at low speeds. It is recommended to return to GI position at 40 kt to avoid flight control shaking.

Reverse policy

ENGINE STATUS	LO PITCH LIGHTS	PM CALLS	PF ACTION ON REVERSE
2 ENGINES	TWO ILLUMINATED	**"TWO LOW PITCH"**	NORMAL USE
	ONLY ONE ILLUMINATED	**"NO REVERSE"**	NO USE, MAXI YAW EFFECT
1 ENGINE	ONE ILLUMINATED	**"ONE LOW PITCH"**	USE WITH CARE, YAW EFFECT

19. Go-around

Flight events	PM	PF
DA/MDA +30	▶ **CALL** **"MINIMUM"**	
RUNWAY OR APPROACH LIGHTS NOT IN SIGHT OR ANY OTHER UNEXPECTED EVENTS	▶ **DO** FLAPS ..... 15° (25°) PL 1 & 2 ..... ADJUST GA TQ	▶ **CALL & DO** **"GO-AROUND, SET POWER, FLAPS ONE NOTCH"** GA PB ON PL..... DEPRESS PITCH ..... ROTATE TO +8° NOSE UP PL 1 & 2 ..... ADVANCE TO RAMP CAVALRY CHARGE.....CANCEL
FLAPS 15° (25°) INDICATED	▶ **CALL** **"POWER SET, FLAPS 15 (25)"**	
POSITIVE RATE	▶ **CALL** **"POSITIVE RATE"** ▶ **DO & CALL** LANDING GEAR.....UP YAW DAMPER ..... ENGAGE Check white arrows illuminated. TAXI & T.O. LIGHTS..... OFF HEADING MODE..... ENGAGE LOW BANK..... SET IAS .....VGA **"HEADING LOW, IAS XXX SET"** ▶ **DO & CALL** SPEED BUG .....VGA **"XXX SET"**	▶ **COMMAND** **"GEAR UP, HEADING, LOW BANK, IAS VGA"** ▶ **CALL** **"CHECK"** ▶ **COMMAND & DO** **"SET SPEED BUG VGA"** SPEED BUG .....VGA
ALL LDG GEAR LIGHTS EXTINGUISHED	▶ **CALL** **"GEAR UP"**	▶ **CALL** **"CHECK"**
PASSING ACCELERATION ALTITUDE (mini 1000 ft AAL or higher if requested)	▶ **CALL** **"ACCELERATION ALTITUDE"** ▶ **DO & CALL** IAS ..... 170 (160) PL 1 & 2 ..... CHECK IN THE NOTCH PWR MGT ..... CLB TQ / NP ..... CHECK CLIMB SETTING **"CLIMB PROCEDURE COMPLETE"** ▶ **DO & CALL** SPEED BUG..... 170 (160) **"170 (160) SET"**	▶ **DO** PL 1 & 2 ..... RETARD TO THE NOTCH ▶ **COMMAND** **"CLIMB PROCEDURE"** ▶ **CALL & DO** **"SET SPEED BUG 170 (160)"** SPEED BUG 170 (160)
REACHING WHITE BUG OR VGA +15, WHICHEVER LOWER	▶ **CALL** **"WHITE BUG / VGA +15"** ▶ **DO** FLAPS ..... 15°	▶ **COMMAND** **"FLAPS 15"**
FLAPS 15° INDICATED	▶ **CALL** **"FLAPS 15"**	

42 PEC

Continue with "Reaching white or icing bug" event of After Take-off procedure.

20. After landing

Flight events	CM1	CM2
RUNWAY VACATED	▶ **COMMAND & DO** **"AFTER LANDING PROCEDURE"** LANDING LIGHT & STROBES..... OFF	▶ **DO** GUST LOCK..... ENGAGE Pull control column backwards to lock ailerons and elevator. FLIGHT CONTROLS..... CHECK LOCKED TRIMS..... RESET TCAS ..... STBY XPDR..... AS RQRD FLAPS ..... 0° WEATHER RADAR ..... STBY ADU..... STBY PROBES/WINDSHIELD HEATING..... OFF DE- /ANTI-ICING..... OFF ▶ **CALL** **"AFTER LANDING PROCEDURE COMPLETE"**
IF LAST FLIGHT OF THE DAY	▶ **COMMAND** **"ATPCS TEST"**	▶ **DO & CALL** ATPCS .....DAILY DYNAMIC TEST Do not perform while taxiing. **"ATPCS TEST PERFORMED"**
AFTER 1 MIN IN GROUND IDLE	▶ **COMMAND** **"CL1 FEATHER"** Wait 20 seconds in feather for last flight of the day (for maintenance oil level check). ▶ **COMMAND** **"FUEL SHUT-OFF"**	▶ **DO** CL1..... FEATHER ▶ **DO** CL1..... FUEL S.O. ACW BTC..... CHECK CLOSED
ENG 1 SHUT DOWN	▶ **REQUIRE** **"AFTER LANDING CHECKLIST"**	▶ **CALL & READ** **"AFTER LANDING CHECKLIST"**(1) Refer to QRH 6.01 **"AFTER LANDING CHECKLIST COMPLETE"**

ATPCS DAILY DYNAMIC TEST
FCOM 2.03.21 p1 & p2

(1) After landing checklist is performed as a do-list: CM2 reads loudly and acts without CM1 confirmation.

21. Parking

Flight events	CM1	CM2
MARSHALLER IN SIGHT	▶ **DO** TAXI & T.O. LIGHTS ..... OFF	▶ **DO & CALL** HYD SYST..... CHECK 3X3000 PSI **"HYDRAULIC PRESSURE CHECK"**
AT THE GATE	▶ **DO & CALL** PARKING BRAKE ..... ON **"PARKING BRAKE SET"** ▶ **DO** CL2 ..... FEATHER Wait 20 seconds in feather for last flight of the day (for maintenance oil level check). PROP BRAKE ..... CHECK READY LIGHT PROP BRAKE ..... ON Unlock illuminated then extinguished. PROP BRAKE ..... CHECK ILLUMINATED ▶ **DO** BEACON ..... OFF	▶ **CALL** **"CHECK"** ▶ **DO & CALL** XPDR..... STBY PROP 2..... CHECK STOPPED **"PROPELLER STOPPED"**
	CAPTAIN ▶ **DO** SEAT BELTS..... OFF CABIN CREW REPORT ..... RECEIVE Check tail prop installed for ATR 72.	
GPU AVAILABLE	▶ **DO** DC EXT PWR..... DEPRESS Check voltage on the lateral panel first. CL2 ..... FUEL S.O.	▶ **DO**
ENG 2 SHUT DOWN	▶ **REQUIRE** **"PARKING CHECKLIST"**	▶ **CALL & READ** **"PARKING CHECKLIST"** Refer to QRH 6.01 **"PARKING CHECKLIST COMPLETE"**

22. Leaving the aircraft

Flight events	CM1	CM2
ALL DOCUMENTATION FILLED	▶ COMMAND **"LEAVING THE AIRCRAFT PROCEDURE"**	▶ DO & CALL OXYGEN MAIN SUPPLY..... OFF DE- /ANTI-ICING..... OFF EXTERIOR LIGHTS ..... OFF EMER EXIT LT TOGGLE SW ..... DISARM FUEL PUMPS ..... OFF WEATHER RADAR ..... OFF EFIS..... OFF CDLS..... OFF NAVAIDS..... OFF COMS..... OFF XPDR..... OFF TCAS ..... OFF DC EXT PWR..... OFF BATTERY..... OFF **"LEAVING THE AIRCRAFT PROCEDURE COMPLETE"**
LEAVING THE AIRCRAFT PROCEDURE COMPLETE	▶ REQUIRE **"LEAVING THE AIRCRAFT CHECKLIST"**	▶ CALL & READ **"LEAVING THE AIRCRAFT CHECKLIST"** Refer to QRH 6.01 **"LEAVING THE AIRCRAFT CHECKLIST COMPLETE"**

1. Hotel Mode Operations

1.1. Preliminary Cockpit Preparation

In the following, no GPU is available. The start of Engine 2 in Hotel mode is done with the flight crew in the cockpit then, the *Preliminary Cockpit Preparation* procedure (different for long or short transit) is done by CM2 while CM1 is performing the external inspection (refer to *02.02.03. External inspection*). When Hotel mode is running, at least one crew member must remain in the cockpit.

The main approach is to extinguish all white lights, to test all systems and to prepare the cockpit for the flight.

Refuelling in Hotel mode is prohibited.

1.1.1. Long transit in Hotel mode

EMERGENCY EQUIPMENTS CHECK
FCOM 2.03.07 p1

MFC AUTOTEST CHECK
MFC 1A, 2A flashing (only if cargo door control panel is closed), then MFC 1B, 2B.

ENG FIRE PROTECTION TEST
FCOM 2.03.07 p2 / p6

ATPCS STATIC TEST
FCOM 2.03.07 p2

PROP BRK ON
Check the PROP BRK blue light is illuminated.
If not, depress HYD AUX PUMP PB on the pedestal.
When the READY green light illuminates, select PROP BRK ON.
Check the UNLK red light is extinguished.

CM2

▶ **DO**

EMER EQUIPMENTS ..... CHECK
GEAR PINS & COVERS..... ON BOARD
DOCUMENTATION..... ON BOARD
CB LAT & OVHD PANELS ..... CHECK
PL 1 & 2 ..... CHECK GI
GUST LOCK..... CHECK ON
CL 1 & 2 ..... CHECK FUEL S.O
FLAPS LEVER & INDICATOR... CHECK CONSISTENCY
LANDING GEAR LEVER..... CHECK DOWN
EEC 1 & 2..... CHECK DEPRESSED IN / NO LIGHT
WIPERS ..... OFF
STBY HORIZON ERECTION KNOB ..... PULL
BATTERY..... ON
STBY HORIZON ERECTION KNOB ..... RELEASE / CHECK NO FLAG
MFC AUTOTEST..... CHECK
EMER & ESS BUS SUPPLY IND..... CHECK ARROWS ILLUMINATED
UNDV ..... CHECK NO LIGHT
ENG 2 FIRE ..... TEST
PROP BRAKE ..... ON / LOCKED
VHF1 ..... ON

Once completed, refer to QRH 3.01.A

Flight events	CM1	CM2
READY TO START ENG 2 IN HOTEL MODE	▶ **CALL** **"GROUND FROM COCKPIT READY TO START ENG 2 IN HOTEL MODE, CONFIRM SERVICE DOOR CLOSED AND AREA CLEAR"**	▶ **DO** OVERHEAD PANEL .....CHECK
AFTER OUTSIDE VISUAL CHECK	▶ **REPLY** **"I AM READY"** ▶ **DO** TIMING..... START To monitor starter limitation.	▶ **CALL** **"RIGHT SIDE CLEAR, READY TO START ENG 2?"** ▶ **DO & CALL** ENG START ..... AS RQRD A & B for the 1st flight of the day, then A for odd days & B for even days, to detect ignition system hidden failure. START 2 .....DEPRESS / CHECK ON **"STARTER ON"**
NH=10% For engine start in hot environment, refer to FCOM 2.03.09	▶ **DO** ENGINE PARAMETERS.....MONITOR	▶ **DO & CALL** CL2 ..... FEATHER TIMING..... START Ignition must occur within 10s otherwise FUEL S.O. **"FUEL OPEN"** During engine start using battery, there is no FF and oil press indication. ▶ **DO** ENGINE PARAMETERS.....MONITOR
ITT INCREASING	▶ **DO** ENGINE PARAMETERS.....MONITOR	▶ **CALL & DO** **"IGNITION"** TIMING..... STOP
NH=45%	▶ **DO & CALL** START 2..... CHECK NO LIGHT **"STARTER OFF"** TIMING..... STOP	▶ **CALL** **"45%"** ▶ **DO & CALL** ITT MAX.....CHECK **"ITT XXX °C"**
NH=61.5%		▶ **CALL** **"PARAMETERS STABILIZED"** Check FF and oil press indicators.
PARAMETERS STABILIZED		▶ **DO** ENG START ..... OFF & START ABORT DC GEN 2 FAULT..... CHECK NO LIGHT DC BTC..... CHECK CLOSED BLEED / PACKS / X VALVE..... OPEN

OVERHEAD PANEL CHECK
– Service door: closed, no UNLK amber light
– Fuel Pump 2: RUN, no FEED LO PR
– Wing lights: ON, to visually inform that Hotel Mode started.
– Propeller brake: ON and PROP BRK blue light
If Prop brake is OFF, press HYD AUX PUMP, in order to get the READY green light, then place the Prop brake switch to ON.

For the rest of the procedure, refer to *02.02.04. Preliminary Cockpit Preparation (Long transit)* –starting from **Scan on overhead panel** – except for actions concerning Engine 2 fire test, Propeller brake and Fuel pump 2, which are already performed.

1.1.2. Short transit in Hotel mode

Refer to *02.02.04, Preliminary Cockpit Preparation (Short Transit)* except that:

– service door remains closed

– during the ATPCS Static test, CM1 liaises with CM2 and monitor Propeller 2 from the outside. CM2 has to make sure that PL2 is in Ground Idle position during the test.

1.2. Leaving the aircraft procedure

This procedure follows the Parking procedure in case no GPU is available at the stand.

Flight events	CM1	CM2
ALL DOCUMENTATION FILLED	▶ COMMAND **"LEAVING THE AIRCRAFT PROCEDURE"**	▶ DO & CALL OXYGEN MAIN SUPPLY..... OFF DE- /ANTI-ICING..... OFF EXTERIOR LIGHTS ..... OFF EMER EXIT LT TOGGLE SW ..... DISARM WEATHER RADAR ..... OFF EFIS..... OFF CDLS..... OFF NAVAIDS..... OFF COMS..... OFF XPDR..... OFF TCAS ..... OFF CL2 ..... FUEL S.O. FUEL PUMPS ..... OFF BATTERY..... OFF **"LEAVING THE AIRCRAFT PROCEDURE COMPLETE"**
LEAVING THE AIRCRAFT PROCEDURE COMPLETE	▶ REQUIRE **"LEAVING THE AIRCRAFT CHECKLIST"**	▶ CALL & READ **"LEAVING THE AIRCRAFT CHECKLIST"** Refer to QRH 6.01 **"LEAVING THE AIRCRAFT CHECKLIST COMPLETE"**

2. Power back and push-back operations

2.1. Power back

Before power back, both propellers are running and are unfeathered.
Power back is done after ATC clearance has been received. Ground staff area is checked clear before and during power back by using conventional signs and/or headphones. Safety glasses have to be used by the ground staff, because of the possibility of projection during power back operation.
Nose wheel steering remains ON.
To avoid moving forward, apply slight power back just before releasing parking brake.
Each crew member keeps his feet on the floor. Never uses brakes during power back (to avoid tail strike).
Power back is performed at low speed. Use Ground Idle or positive power to decrease speed and stop.

IMPORTANT: NAC OVHT and ENG FIRE can be triggered, if a prolonged power-back is maintained with a tail wind greater than 10kts. Avoid orientating aircraft in the tailwind direction.

2.2. Push-back with tug

Push-back is done after ATC clearance. Ground staff remains connected with the aircraft by using conventional signs and/or headphones.
Parking brake is released and steering OFF.
Each crew member keeps his feet on the floor. Never uses brakes during push-back (to avoid tail strike and/or strain on towing system).

IMPORTANT: Wait for disconnection of the tow bar before switching the steering ON.

IMPORTANT: NAC OVHT and ENG FIRE can be triggered during push-back in Hotel mode, with a tail wind greater than 10kts. Avoid orientating aircraft in the tailwind direction. If the tail wind is above this limit, the push-back has to be done with the propeller(s) running and unfeathered.

The following phraseology is used:

Flight events	CM1	GROUND STAFF
CLEARED FOR PUSH-BACK	▶ **DO** NW STEERING..... OFF PARKING BRAKE..... OFF ▶ **CALL** **"GROUND FROM COCKPIT, I CONFIRM CLEAR TO PUSH, FACING XXX, PARKING BRAKE IS RELEASED, NOSE WHEEL STEERING IS OFF"**	▶ **CALL** **"STARTING PUSH"**
PUSH-BACK COMPLETE	▶ **DO & CALL** PARKING BRAKE..... ON **"GROUND FROM COCKPIT, PARKING BRAKE ON"**	▶ **CALL** **"COCKPIT FROM GROUND, PUSH-BACK COMPLETE, PARKING BRAKE ON"**
TOW BAR DISCONNECTED AND VISUALLY CONFIRMED BY CREW	▶ **DO & CALL** NW STEERING..... ON **"YOU CAN DISCONNECT, GOOD BYE"**	▶ **CALL** **"TOW BAR IS DISCONNECTED"**
	CM2 TAXI CLEARANCE..... OBTAIN	

3. Noise abatement procedures

The noise abatements procedures contained in ICAO PANS-OPS (Vol 1 Part I section 7) have been designed for application to turbojet aeroplanes only.

Even if not required for turbopropeller aeroplanes, ATR recommends the following procedures for noise reduction **on the ground.**

– Do not use reverse while taxiing

– Minimize the use of reverse at landing

No particular noise abatement procedures are recommended in flight.

Local aerodrome procedures: Refer to published airport manuals (In Jeppesen charts, the Noise Abatement page is usually in chapter 10-4).

4. Operations in icing conditions

Please refer to **Cold Weather Operations** guide.

5. Wet and contaminated runways operations

Please refer to the **Performance** guide.

6. Low visibility operations

Please refer to the **All Weather Operations** guide.

7. Performance Based Navigation operations

Performance Based Navigation guide under development.

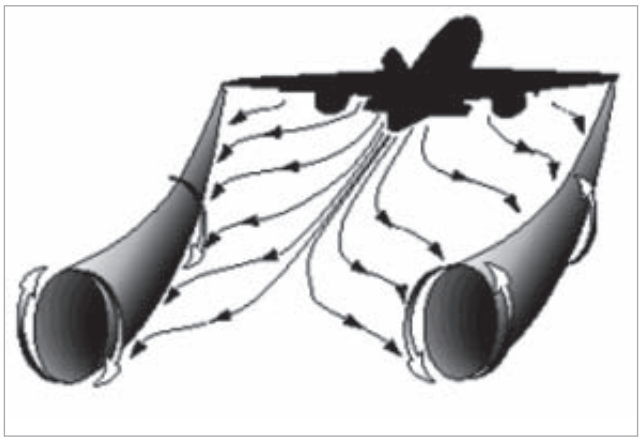
1. Wake Turbulence

1.1. Description

Wake turbulence is the leading cause of aircraft upsets.

Vortex Generation

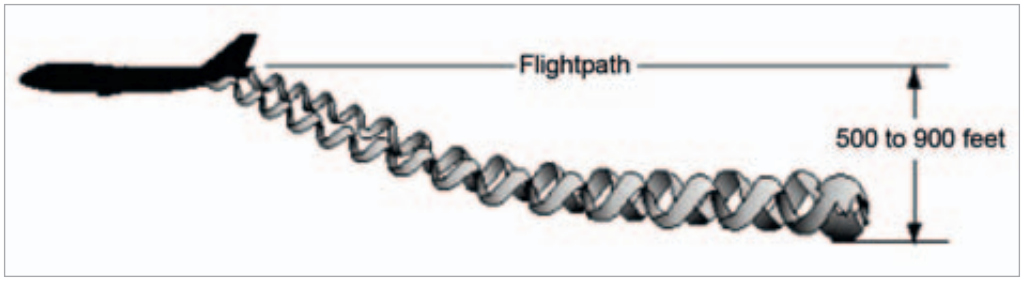
The phenomenon that creates wake turbulence results from the forces that lift airplanes. High-pressure air from the lower surface of the wings flows around the wingtips to the lower pressure region above the wings. A pair of counter rotating vortices is thus shed from the wings: the right wing vortex rotates counterclockwise, and the left wing vortex rotates clockwise. The region of rotating air behind the airplane is where wake turbulence occurs.



Vortex Strength

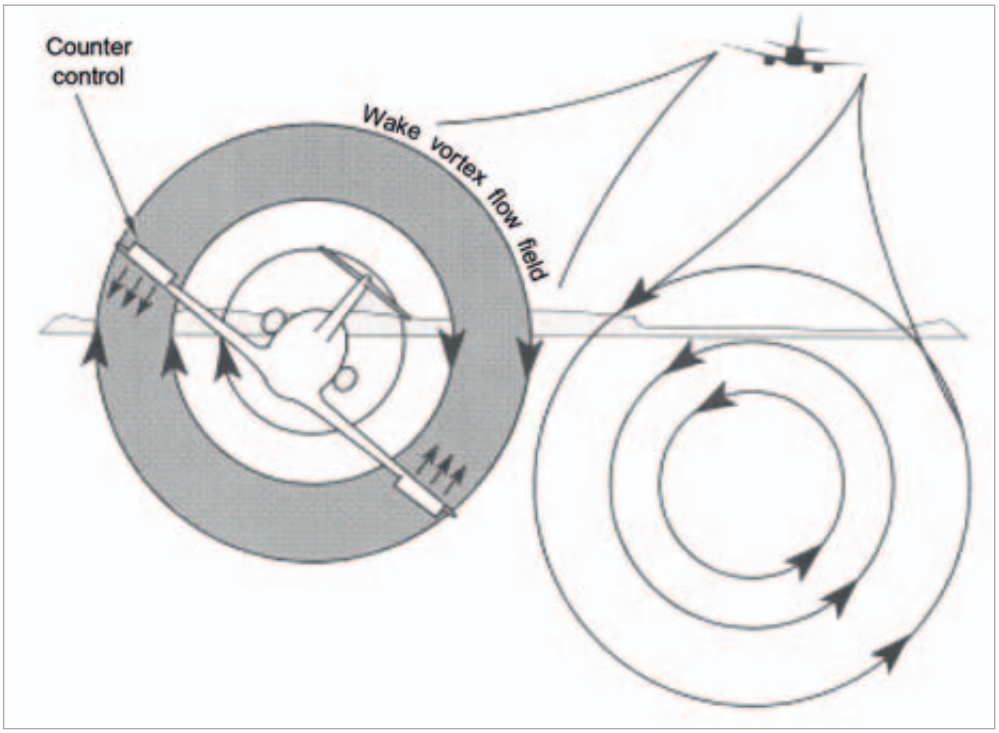
The strength of the turbulence is determined predominantly by the weight, wingspan, and speed of the airplane. The greatest vortex strength occurs when the generating aircraft is heavy-clean-slow.

Generally, vortices descend at an initial rate of about 300 to 500 ft/min for about 30 sec. The descent rate decreases and eventually approaches zero between 500 and 900 ft below the flight path. Flying at or above the flight path provides the best method for avoidance. Maintaining a vertical separation of at least 1000-ft when crossing below the preceding aircraft may be considered safe.



Induced Roll

An encounter with wake turbulence usually results in induced rolling or pitch moments; however, in rare instances an encounter could cause structural damage to the airplane. In more than one instance, pilots have described an encounter to be like “hitting a wall.” The dynamic forces of the vortex can exceed the roll or pitch capability of the airplane to overcome these forces. During test programs, the wake was approached from all directions to evaluate the effect of encounter direction on response. One item was common to all encounters: without a concerted effort by the pilot to check the wake, the airplane would be expelled from the wake and an airplane upset could occur.



1.2. ICAO recommendations

ICAO Aircraft Category

ICAO has classified the aircraft in three Wake Turbulence categories. Refer to ICAO Doc 4444 *Air Traffic Management*, §4.9 *Wake Turbulence Categories*. ATR aircraft are classified as “Medium”.

MTOW	Wake Turbulence Category
>136 tons	Heavy
7 tons < MTOW < 136 tons	Medium
<7 tons	Light

ICAO separation minima

ICAO has specified wake turbulence separation minima -the main ones are reminded below. Refer to ICAO Doc 4444 *Air Traffic Management*, §5.8 *Time-Based Wake Turbulence Longitudinal Separation Minima* for additional information.

ATR behind…	Departing	Arriving
Heavy	3 min reduced to 2 min (under specific circumstances)	2 min

In case of ATS surveillance systems, the following minima apply. Refer to ICAO Doc 4444 *Air Traffic Management*, §8.7.3 *Separation minima based on ATS surveillance systems*.

ATR behind…	
Heavy	5 Nm
Light / medium	3 Nm reduced to 2.5 (under specific circumstances)

NOTE: For additional information regarding good practices to avoid wake turbulence, you may refer to FAA publication *AC 90-23F Aircraft Wake turbulence (2002)*.

1.3. Reporting procedure

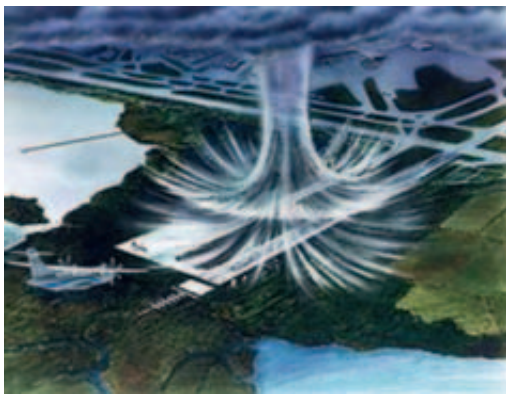
If significant wake turbulence is encountered, it must be reported to Air Traffic Control immediately and an air safety report must be completed after the flight.

2. Windshear

NOTE: ATR operational documentation reference is FCOM 2.02.08 p22.

2.1. Description

Windshear is a notable change in wind direction and/or speed over a short distance.

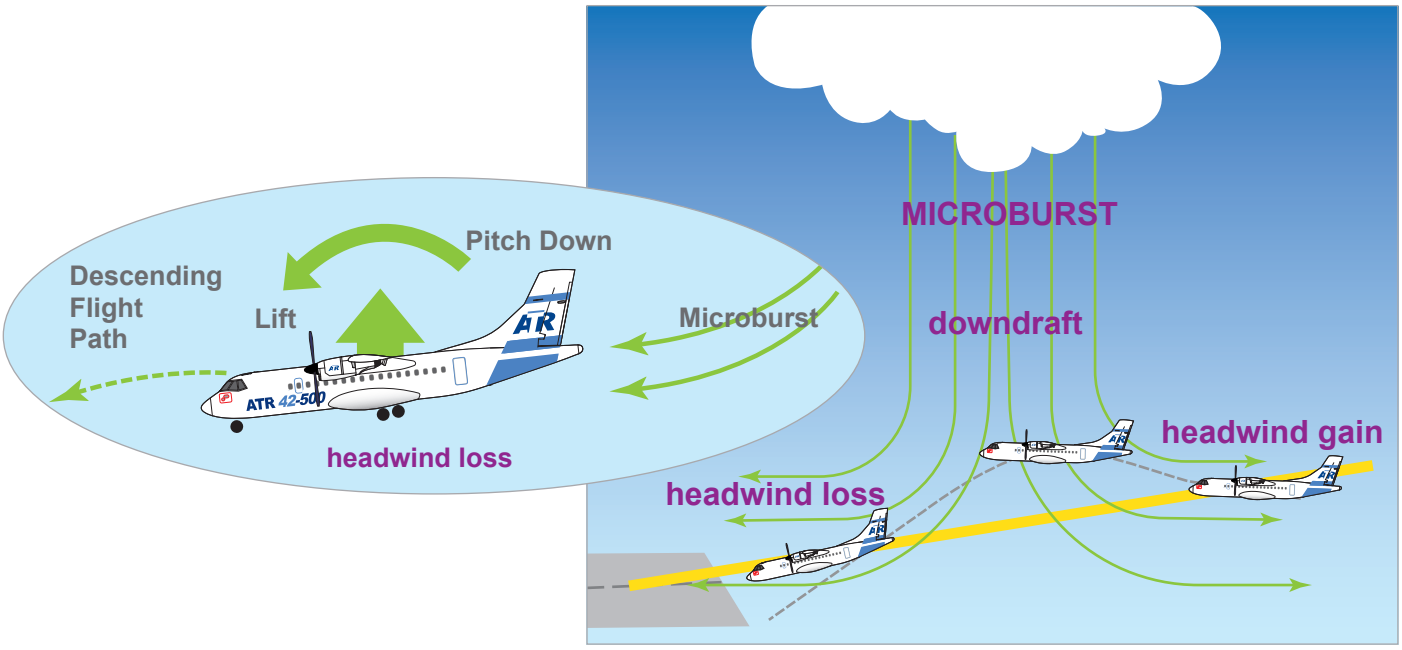


NOTE: The air moves downwards until it hits ground level and then spreads outward in all directions.

Windshear can be encountered in the vicinity of thunderstorms, into rain showers (even without thunderstorms), during a frontal passage or on airports situated near large areas of water (sea breeze fronts).

Severe windshear encountered above 1000 feet, whilst unpleasant, can generally be negotiated safely. However if it is encountered below 500 feet on take off or approach/landing it is potentially dangerous. If a slow moving airplane passes through windshear, the winds can cause it to lose control and plunge toward the ground.

Here is an example of the windshear effects during approach:



2.2. Detection

The following are indications that the aircraft is encountering windshear conditions.

On ground

- Unusual lack of speed acceleration during rolling phase
- Unusual time to reach V1/VR

In flight

Unacceptable flight path deviations recognized as uncontrolled changes from normal steady state flight conditions below 1,000 feet AGL:

- Indicated airspeed variations in excess of 15 kts;
- Groundspeed variations (decreasing head wind or increasing tail wind, or a shift from head wind to tail wind);
- Vertical-speed excursions of 500 ft/mn or more;
- Pitch attitude excursions of 5° or more;
- Glide slope deviation of one dot or more;
- Heading variations of 10° or more; and,
- Unusual Power Lever activity or unusual Power Lever position for a significant period of time;
- Or a combination of all these effects.

2.3. Defence

Effective defence against windshear is performed by:

- Forecasting, recognizing and avoiding windshear,
- Correctly reacting to windshear encountered during the takeoff, initial climb, approach and landing.

2.4. Procedures

2.4.1. Take-off procedure

If a windshear is forecasted or reported, delay the take off.

If a risk of a low-level windshear is expected:

- Calculate VR, V2 for the maximum limiting take-off weight for the day
- Closely monitor the airspeed and airspeed trend during the take-off roll to detect any evidence of impending windshear.

If a windshear is experienced before V1, the take-off must be rejected if unacceptable airspeed variations occur (not exceeding the target V1) and if there is sufficient runway remaining to stop the aircraft.

If a windshear is experienced after lift-off,

PM	PF
Verify power setting. Verify all required actions have been completed and call any omissions. Monitor vertical speed and altitude.(4)	Increase pitch to 10°(1), disregarding FD indication. Apply maximum power.(2) Do not change the configuration until out of windshear condition.(3) When positively climbing, retract the gear and return to normal climb profile.(4)

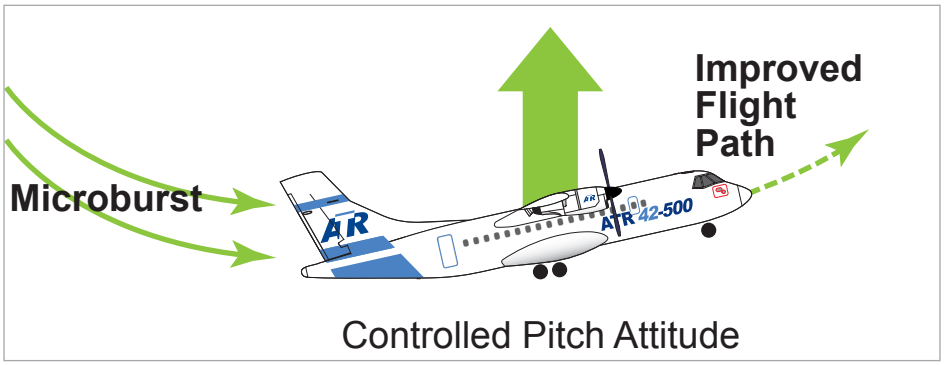
2.4.2. Approach procedure

If a windshear is forecasted or reported, delay the approach.

If a windshear is experienced, abort approach:

PM	PF
Verify power setting. Verify all required actions have been completed and call any omissions. Monitor vertical speed and altitude.(4)	Increase pitch to 10°(1), disregarding FD indication. Apply maximum power. (2) Do not change the configuration until out of windshear condition.(3) When positively climbing, retract flaps one notch and landing gear then return to normal climb profile.(4)

(1) Microburst reduces airspeed and lift at normal attitude which results in a pitch down tendency to regain airspeed. Flight path must be controlled with pitch attitude.
10° pitch attitude is the best compromise, making it to ensure a climbing slope while respecting acceptable high value of AOA. If necessary, increase power to the ramp and increase pitch up to the limit of stick shaker activation.



(2) Advance the Power Levers to the Ramp, or to the Wall if necessary.

(3) Leaving the gear down until the climb is established will allow absorbing some energy impact, should a microburst exceed the aircraft capability to climb.

(4) Positive rate of climb must be verified on at least two instruments.

NOTE: For additional information regarding good practices to cope with windshear, you may refer to FAA publication *AC 00-54 Pilot Windshear Guide (1988).*

2.4.3. Reporting procedure

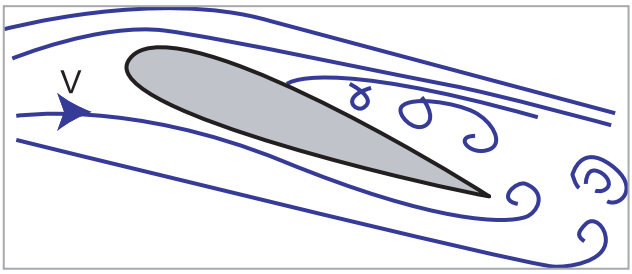
If significant windshear is encountered, it must be reported to Air Traffic Control immediately and an air safety report must be completed after the flight.

3. Approach to stall and stall recovery

NOTE: ATR operational documentation references are AFM 4.05 p7 and FCOM 2.02.12 p3.

3.1. Description

Stall occurs when the wing's critical angle of attack is exceeded and lift is reduced substantially due to the airflow separation over the upper surface of the wing.



The secondary stall is a premature increase in angle of attack that results in another stall event during stall recovery, prior to establishing stable flight conditions.

When approaching the stall, there is no noticeable change in the ATR behavior; that is the reason why the aircraft is equipped with two "artificial" devices -stick shaker and stick pusher- based on the angle of attack measurement to detect the approach to stall.

3.2. Detection

Natural or artificial clues may be detected as a consequence of an approaching or imminent stall:
- buffeting
- reduced roll stability and aileron effectiveness
- low airspeed visual or aural indications
- reduced elevator (pitch) authority
- inability to maintain altitude or rate of descent
- stick shaker that warns the pilot on approaching the stall
- stick pusher if angle of attack continues increasing despite stick shaker alerts

3.3. Procedures

3.3.1. Stall procedure

At the first indication of stall (see detection clues above) or in case of effective stall, during any flight phases (except at lift-off), immediately apply the following:

Flight events	PM	PF
AT 1ST STALL INDICATION OR IN CASE OF EFFECTIVE STALL	▶ **DO** FLAPS ..... 15°	▶ **DO** CONTROL COLUMN ..... NOSE DOWN UNTIL OUT OF STALL [1] ▶ **COMMAND** **"FLAPS 15"**[2] ▶ **DO** CONTROL WHEEL..... ROLL TO WINGS LEVEL[3] PL ..... INCREASE AS NEEDED
OUT OF STALL		▶ **DO** APPLY GENTLE ACTION FOR RECOVERY[4]
RECOVERY COMPLETE		▶ **DO** RETURN TO THE DESIRED FLIGHT PROFILE[5]

[1] The priority is to reduce the angle of attack.
Crew members must accept to lose altitude. To recover from a stall or approach to stall and maintaining the altitude at the same time is not possible.

[2] If the aircraft is in flaps 0° configuration, extend flaps to 15° during the recovery.
In all other configuration and for any flight phase maintain the current configuration for the recovery.

[3] To correctly orientate the lift vector for recovery.

[4] To avoid secondary stall.

[5] Fly the aircraft first and then when it is under control, fly the trajectory.

NOTE: Use of rudder is not recommended during stall recovery as it can worsen the situation.

3.3.2. Stick pusher procedure

If angle of attack continues increasing up to the stick pusher angle of attack threshold, the control column is suddenly and abruptly pushed forward. This initiates the stall recovery.

Apply the stall procedure previously described.

Never counteract the stick pusher action.

3.3.3. Procedure at lift-off

Incursion in stick shaker range during lift-off can be generated by:
- Excessive pitch up during rotation
- Excessive rate of pitch rotation
- Turbulences
- Windshear situation

In this case, maintain 10° pitch and when out of the stall warning, follow FD bars.

3.3.4. Reporting procedure

If stall is experienced, it must be reported to Air Traffic Control immediately and an air safety report must be completed after the flight.

4. Unusual attitude recovery

4.1. Bounce landing

4.1.1. Description

Bounce landing results from either too much speed or too high slope, or both of them, on final approach.

4.1.2. Defence

To avoid bounce landing, decide to go-around if the plane is not stabilized. Refer to *02.01.09. Stabilization policy* for detailed stabilization criteria.

4.1.3 Procedure

- Apply a immediate go-around
- Never try to land
- Never push the control column forward

4.2. Upset

4.2.1 Description

An upset is generally defined as unintentionally exceeding the following conditions:
- pitch attitude greater than 25° nose up, or
- pitch attitude greater than 10° nose down,
- bank angle greater than 45°,
- or within the above parameters but flying at airspeeds inappropriate for the conditions,
- or a combination of the above events,
- or a spatial disorientation.

IMPORTANT: Crew members have to recover from an upset anytime the aircraft is diverging from what it was expected to do.

Such situations rarely occur, but may be encountered when flying into a large aircraft wake vortex, a rotor downwind of a mountain, severe turbulence or mechanical failure…

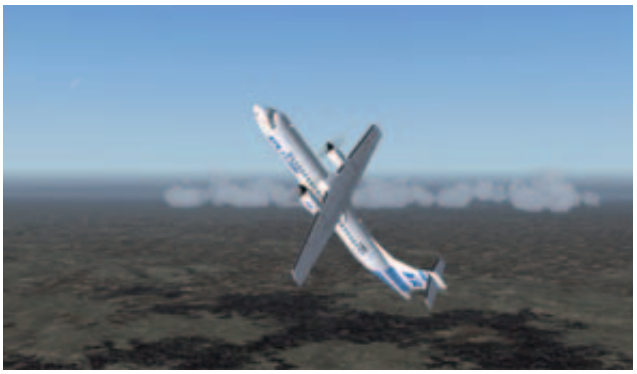
The following procedures give a logical process to recover the aircraft. They are guidelines that have to be considered and used depending on the situation.

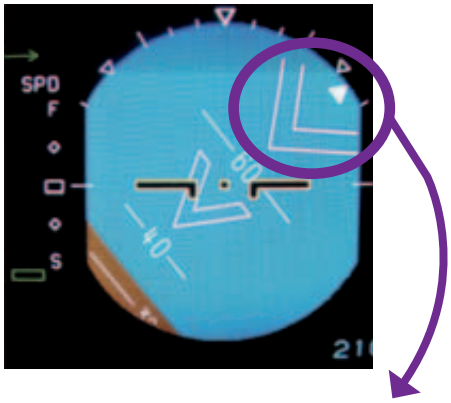
Roll may be controlled through a careful use of the rudder only if the wing roll control is inefficient and the aircraft not stalled.

IMPORTANT: Excessive use of rudder may worsen an upset situation or may result in a loss of control and/or high structural loads.

If the aircraft is stalled, recovery from the stall must be performed at first. Refer to *03.01.03. Approach to stall and stall recovery.*

4.2.2. Nose Up





Detection

Steep nose up and possible high bank

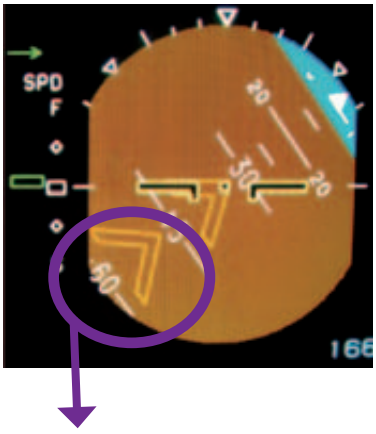
Speed reducing rapidly

Eyebrow: guidance to nose down

Procedure

Flight events	PM	PF
	MONITOR ATTITUDE, AIRSPEED AND ALTITUDE THROUGHOUT THE RECOVERY. VERIFY ALL REQUIRED ACTIONS HAVE BEEN COMPLETED AND CALL ANY OMISSIONS.	CONTROL COLUMN ..... PUSH FOLLOW EYEBROW IF IT APPEARS PL..... ADVANCE TO RAMP
WHEN NOSE IS BELOW THE HORIZON		CONTROL WHEEL.....ROLL TO WINGS LEVEL STOP DESCENT PL..... ADJUST

4.2.3. Nose Down



Detection

Steep nose down and possible high bank

Speed increasing rapidly

Eyebrow: guidance to nose up

Procedure

Flight events	PM	PF
	MONITOR ATTITUDE, AIRSPEED AND ALTITUDE THROUGHOUT THE RECOVERY. VERIFY ALL REQUIRED ACTIONS HAVE BEEN COMPLETED AND CALL ANY OMISSIONS.	PL..... FLIGHT IDLE CONTROL WHEEL.....ROLL TO WINGS LEVEL PULL BACK SMOOTHLY FOLLOWING EYEBROW IF IT APPEARS
WHEN NOSE IS ON THE HORIZON		STABILIZE THE TRAJECTORY PL..... ADJUST

4.3. Reporting procedure

If unusual attitude is experienced, it must be reported to Air Traffic Control immediately and an air safety report must be completed after the flight.

5. Crew member incapacitation

5.1. Description

Crew member incapacitation is defined as any condition which affects the health of a crew member during the flight phase and which decreases his skill for the assigned tasks.

Incapacitation is a real air safety hazard, which occurs more frequently than many of the other emergencies, which is the subject of routine training. Incapacitation can occur in many forms varying from obvious sudden death to subtle, partial loss of function. It occurs in all age groups and during all phases of flight and may not be preceded by any warning.

5.2. Detection

The critical operational problem is early recognition of the incapacitation. The keys for immediate recognition of incapacitation are:

- Routine monitoring and cross-checking of flight instruments, particularly during critical phases of flight, such as take-off, climb out, descent, approach, landing and go-around.

- If a crew member does not respond appropriately to two verbal communications, or if a crew member does not respond to a verbal communication associated with a significant deviation from a standard flight profile.

Other symptoms of the beginning of an active incapacitation are:
- incoherent speech
- strange behaviour
- irregular breathing
- pale fixed facial expression
- jerky motions that are either delayed or too rapid

NOTE: If a crew member feels sick, he must inform the other crew member and transfer the flying task.

5.3. Procedure

The recovery from any detected incapacitation of a crew member shall follow the following sequence.

Flight

The remaining pilot must ensure the control and resume the aircraft to a safe flight path. He has to call **"MY CONTROL"** and use Autopilot and headset.

Incapacitation

The remaining pilot must ensure that the incapacitated pilot cannot interfere with the aircraft control. He must call a cabin crew to lock the sick pilot on his flight crew seat. If the cockpit door is locked, the assisting cabin crew will apply the relevant procedure to unlock the system, and provide first aid.

Organization and communication

REMAINING PILOT

- AP ON
- Coupling on remaining pilot
- Resume to a safe flight path
- Headset ON
- Flight attendant call
- Message “MAYDAY” to ATC
- Situation assessment
- Decision
- Report decision to ATC

The remaining pilot must land as soon as possible on an suitable airport, taking into account incapacitated pilot state of health, airport equipments (prefer airport with ILS approach), weather and runway conditions, knowledge of airport by the remaining pilot (...), and request medical assistance:

“MAYDAY, MAYDAY, MAYDAY, (CALL SIGN) EXPERIENCING CREW INCAPACITATION, REQUEST MEDICAL ASSISTANCE ON LANDING”

The remaining pilot must:

- perform PF and PM tasks
- verify and calls loudly all actions
- perform all checklists loudly

6. Rudder Use

6.1. General

On February 8th, 2002, the National Transportation Safety Board (NTSB), in cooperation with the French “Bureau Enquêtes Analyse” (BEA), issued recommendations for aircraft manufacturers to re-emphasize the structural certification requirements of the rudder and vertical stabilizer, showing some maneuvers which can result in exceeding design limits and even lead to structural failures.

In this perspective, AFM 2.03 p1 and FCOM 2.01.03 p1 now states:

“Caution: Rapidly alternating large pedal applications in combination with large sideslip angles may result in structural failure at any speed”.

6.2. Rudder good practices

The rudder may be used:

- In normal operations, for directional control:
  - — During the take-off roll, when on ground, especially in crosswind conditions.
  - — During the landing flare with crosswind, for decrab maneuver.
  - — During the landing roll, when on the ground.
  - — The rudder may be used for turn coordination, as deemed necessary, to prevent excessive sideslip.

- In some other abnormal situations:
  - — Full rudder deflection can be used to offset the yawing moment of an asymmetric thrust.
  - — Runaway rudder trims: the rudder pedals may be used to move the rudder to the neutral position.
  - — Aileron jam: the rudder may be used to smoothly control the roll.
  - — Landing with unsafe indication: the rudder may be used to establish sideslip in an attempt to lock the landing gear down by aerodynamic side forces.
  - — Landing gear not locked down: the rudder can be used for directional control on the ground.

For the above mentioned maneuvers proper rudder usage will not affect the aircraft structural integrity.

The rudder must not be used:
- To induce roll, except for aileron jam.
- To counteract turbulence.
- During stall recovery as it can worsen the situation.

7. Managing TAWS

On the ATR, the Terrain Awareness Warning System (TAWS) is called the Enhanced Ground Proximity Warning System (EGPWS).

A pilot must never fly in a situation which may put his aircraft in jeopardy. An immediate reaction against activation of terrain avoidance alarm is vital regarding flight safety. Air disaster analysis shows that crew involved did not trust the terrain avoidance warnings and as a consequence did not take the proper action.

NOTE: Only when flying in daylight VMC, a warning may be ignored if due to specific terrain configuration and in sight of obstacles. The warning can be considered as a caution and the approach can be continued.

IMPORTANT: At night, in IMC or in daylight VMC if obstacles location is unknown, an immediate go-around must be initiated.

To have the details of the existing TAWS alerts and the associated procedures, refer to ATR operational documentation: AFM 3.07 p1 & p2 and FCOM 2.02.16 p1.

Reporting procedure

If a TAWS warning is experienced, it must be reported to Air Traffic Control immediately and an air safety report must be completed after the flight.

8. Managing TCAS warnings

NOTE: ATR operational documentation references are AFM 7.01.04 and FCOM 2.01.06.

Traffic alert and Collision Avoidance System is used for detecting and tracking aircraft in the vicinity of your aircraft. By interrogating their transponders, it analyzes the replies to determine range, bearing, and if reporting altitude, the relative altitude of the intruder. When the TCAS processor determines that a possible collision hazard exists, it issues visual and aural advisories to the crew for appropriate vertical avoidance maneuvers.

There are two types of cockpit displays:
- Traffic Advisory (TA)
- Resolution Advisory (RA)

NOTE: TCAS is unable to detect any intruding aircraft without an operating transponder or in case of transponder failure. In case of TCAS resolution, ATC is not responsible for aircraft separation until resuming the initial clearance.

8.1. Traffic Advisory

8.1.1. Description

Traffic Advisory informs the pilot of any surrounding traffic. The TA display shows the intruding aircraft's relative position and altitude with the trend arrow indicating if it is climbing or descending at a rate greater than 500 ft/mn. The TA display identifies the relative threat of each intruder by using various symbols and colors and provides appropriate synthetic voice call-outs.

Non-threat traffic advisory

Information about any non-threatening traffic in the vicinity.

Proximity intruder traffic advisory

Information about any traffic in the proximity.

"TRAFFIC TRAFFIC"

Information about intruding aircraft considered potentially hazardous. The crew should attempt to establish visual contact with the intruder and assess the potential collision risk.

8.1.2. Procedure

Flight events	PM	PF
"TRAFFIC, TRAFFIC"	CAPTAIN "TCAS, MY (YOUR) CONTROL"	
	▶ CALL "TRAFFIC IN SIGHT or "NO VISUAL" ▶ DO SEAT BELTS ..... ON	▶ DO & CALL VSI ..... CHECK "3 O'CLOCK, 500 FT BELOW"

IMPORTANT: At this step, the crew must take no evasive action, have to remain on the same route, maintain the autopilot ON, even if the opposite traffic is in sight.

NOTE: Traffic advisory may become a RA within 15 seconds.
If the intruder is Non-Altitude Reporting the traffic symbol appears without an altitude number or trend arrow. The type of symbol selected by TCAS is based on the intruder location and closing rate.

IMPORTANT: The crew must not turn his overall attention to establish the visual contact with the intruder. The crew must be available for a potential RA.

8.2. Resolution Advisory

8.2.1. Description

Resolution Advisory warns the pilot on the vertical maneuver to carry on to avoid collision with the surrounding traffic. Red and green areas are displayed around the VSI dial to indicate the required rate, or limitation of climb or descent to avoid a possible collision.

Resolution Advisories can be preventive or corrective:
- Preventive advisories require that NO action be taken to alter the flight path of the aircraft. Vertical Speed has to remain outside the red arc.
- Corrective advisories require the crew to act following the green arc indication on the VSI and escaping the red arc (when Vertical Speed is currently in the red arc).

Combined with the Resolution Advisory, the TCAS triggers an aural synthetic voice call-out describing the avoidance maneuver required.

RESOLUTION ADVISORY	DOWNWARD	UPWARD	VERTICAL SPEED REQUIRED (VS)
INITIAL PREVENTIVE RA	**"MONITOR VERTICAL SPEED"**	**"MONITOR VERTICAL SPEED"**	0
CORRECTIVE RA	**"DESCENT, DESCENT"**	**"CLIMB, CLIMB"**	Monitor
ANY STRENGTHENING OF AN RA	**"INCREASE DESCENT, INCREASE DESCENT"**	**"INCREASE CLIMB, INCREASE CLIMB"**	± 2500 ft / min
ANY WEAKENING OR SOFTENING OF AN RA	**"ADJUST VERTICAL SPEED, ADJUST"**	**"ADJUST VERTICAL SPEED, ADJUST"**	± 1500 ft / min
OPPOSITE RA	**"DESCENT, DESCENT NOW"**	**"CLIMB, CLIMB NOW"**	Adjust
CROSSOVER RA	**"DESCEND, CROSSING, DESCEND, DESCEND, CROSSING, DESCEND"**	**"CLIMB, CROSSING CLIMB, CLIMB, CROSSING CLIMB"**	± 2500 ft / min
MAINTAIN EXISTING VERTICAL SPEED RA	**"MAINTAIN VERTICAL SPEED, MAINTAIN"**	**"MAINTAIN VERTICAL SPEED, MAINTAIN"**	± 1500 ft / min
MAINTAIN EXISTING VERTICAL SPEED WHILE CROSSING THREAT'S ALTITUDE	**"MAINTAIN VERTICAL SPEED, CROSSING MAINTAIN"**	**"MAINTAIN VERTICAL SPEED, CROSSING MAINTAIN"**	Maintain ± 4400 ft / min >Vs > ± 1500ft / min
VERTICAL SPEED RESTRICTED	**"ADJUST VERTICAL SPEED, ADJUST"**	**"ADJUST VERTICAL SPEED, ADJUST"**	Adjust
END OF RA	**"CLEAR OF CONFLICT"**		0

IMPORTANT: Resolution Advisories commands are based on aircraft performance assumed within a flight envelope defined during the TCAS certification. When the current conditions are outside the flight envelope, the RA commands may not be appropriate. In any case, stall warning must take precedence above before RAs commands.

8.2.2. Procedure

In response to the Resolution Advisory, PF must maneuver the aircraft promptly (within 5 seconds) and smoothly. **The autopilot must be disconnected before responding to the RA.**

Flight events	PM	PF
RA COMMAND TRIGGERED	▶ **DO & CALL** ATC ..... CALL **"XXX CONTROL, CALL SIGN"** **"TCAS RESOLUTION"** or **"TCAS RA"** if climb ▶ **DO** PWR MGT ..... MCT ▶ **DO** SEAT BELTS ..... ON	▶ **DO & CALL** AP ..... OFF **"MY CONTROL"** ▶ **DO** PITCH ..... INITIALLY ±3° then VSI ..... FOLLOW GREEN ARC PL ..... AS RQRD
CLEAR OF CONFLICT	▶ **TCAS CALL** **"CLEAR OF CONFLICT"**	
	▶ **DO & CALL** ATC ..... CALL **"XXX CONTROL, CALL SIGN, CLEAR OF CONFLICT, RESUMING TO FL/ALT"**	▶ **DO** FLIGHT PATH RESUME TO INITIAL FL /ALT(1) AP ..... ON

(1) If initially in level flight, promptly but smoothly return to the previously assigned altitude unless otherwise directed by ATC. If previously climbing or descending resume the planned climb or descent unless otherwise directed by ATC.

IMPORTANT:

Do not follow the Flight Director and do not change the altitude selected on AFCS. Control the aircraft only with a pitch attitude to obtain the commanded vertical speed.

Average pitch attitudes are:
- ±5° for climb or descent orders
- ±8° for increase climb or increase descent orders
- ±1° for adjust vertical speed orders (following climb or descent initial orders)
- for all other cases follow green arc indication

Do not over react to a Resolution Advisory.

Two TCAS equipped aircraft will coordinate their Resolution Advisories using a Mode S transponder air-to-air data link. The coordination ensures that complementary advisories are issued in each aircraft. Since maneuvers are coordinated, the crew must never maneuver in the opposite direction of the advisory. TCAS resolution has absolute priority over ATC orders.

8.3. Reporting procedure

If a TCAS warning is experienced, it must be reported to Air Traffic Control immediately and an air safety report must be completed after the flight.

9. Managing APM advisories

The Aircraft Performance Monitoring (APM) function is to monitor the aircraft drag in icing conditions in order to alert the crew of a risk of severe icing conditions. The speed in cruise will be also monitored to alert the crew of an abnormal speed decrease in icing conditions. The APM will check also that the Minimum Severe Icing Speed (MSIS) is respected.

The APM allows improved ice accretion monitoring. Icing drastically decreases the aircraft performance: an abnormal increase in drag can be due to ice accretion on the aerodynamical surfaces of the aircraft. Monitoring the aircraft performance is thus an efficient means of ice detection.

The APM enables to compare the aircraft theoretical drag with the in-flight drag computed with the measured parameters, and therefore to detect if an abnormal loss of aircraft performance occurs.

The APM is activated in icing conditions, i.e. when ICING AOA is illuminated, or if the airframe deicing is activated, or if ice accretion has been detected, and aims at alerting the crew of a risk of severe icing conditions, through three different levels of alert:

- **CRUISE SPEED LOW**
- **DEGRADED PERF.**
- **INCREASE SPEED**

The associated C/L are found in the QRH, under MPC normal and following failures procedures.

The APM analysis is conducted if the aircraft is in icing conditions, that is to say if the ICING AOA is illuminated and/ or if the airframe de-icing is selected ON and/ or if ice accretion has been detected.

The APM is deactivated when gears and flaps are extended, if one engine is failed, or if the Outside Air Temperature is above 10°C.

To have more details on the alerts activation conditions, refer to the operational documentation: AFM 7.01.15 and FCOM 2.02.21 p5 to 13.

1. On ground engine fire

The procedure below starts at the controls transfer. For the beginning of the take-off procedure, please refer to *02.02.10. Take-off*.

Flight events	PM	PF
		▶ CALL **"MY CONTROL"** Control through rudder pedals and control wheel & column.
ENGINE FIRE	▶ CALL **"ENGINE FIRE"**	

Flight events	CM1	CM2
ENGINE FIRE	**CAPTAIN** ▶ CALL **"STOP!"**	
	▶ DO PL 1 & 2 ..... GI/REV AS RQRD BRAKES..... APPLY AS RQRD If possible, stop the aircraft to get the engine on fire headwind or to leeward.	▶ DO MASTER WARNING ..... CANCEL CONTROL COLUMN ..... HOLD AS RQRD ▶ **TRANSMIT** on VH1 **"MAYDAY, MAYDAY, MAYDAY, (CALLSIGN), ENGINE FIRE, ABORTED TAKE OFF"** ▶ **CALL** on Public Address **"PLEASE, REMAIN SEATED, CABIN CREW AT STATION"**

Flight events	CM1	CM2
AIRCRAFT STOPPED	▶ **DO** PARKING BRAKE ..... ON ▶ **CALL & DO** **"ON GROUND ENG FIRE OR SEVERE MECHANICAL DAMAGE MEMO ITEMS"** CL 1 & 2 ..... FTR THEN FUEL S.O. FIRE HANDLE affected side ..... PULL AGENT 1 affected side..... DISCHARGE TIMING ..... START ■ **IF FIRE AFTER FURTHER 30 SECONDS** AGENT 2 affected side..... DISCHARGE ▶ **CALL & REQUIRE** **"MEMO ITEM COMPLETE, ON GROUND ENG FIRE OR SEVERE MECHANICAL DAMAGE CHECKLIST"** ▶ **DO & CALL** C/L POINTED AT BY **CM2** ..... CHECK **"CONFIRM"**	▶ **DO** QRH..... OPEN to ON GROUND ENG FIRE C/L TIMING..... START ▶ **DO, CALL & READ** ON GROUND ENG FIRE OR SEVERE MECHANICAL DAMAGE C/L .....POINT **"ON GROUND ENG FIRE OR SEVERE MECHANICAL DAMAGE C/L?"** Refer to QRH 1.02 ■ **IF EVACUATION REQUIRED** **"YES OR NO?"**
EVACUATION NOT REQUIRED	▶ **REPLY** **"NO"**	▶ **CALL** **"ON GROUND ENG FIRE OR SEVERE MECHANICAL DAMAGE CHECKLIST COMPLETE"**
EVACUATION REQUIRED	▶ **REPLY & REQUIRE** **"YES, ON GROUND EMERGENCY EVACUATION CHECKLIST"** ▶ **DO & CALL** C/L POINTED AT BY **CM2**.....CHECK **"CONFIRM"**	▶ **DO, CALL & READ** ON GROUND EMER EVAC C/L.....POINT **"ON GROUND EMER EVACUATION C/L?"** Refer to QRH 1.02 *EVACUATION*..... *INITIATE*
	CAPTAIN ▶ **CALL** **"WE EVACUATE"** Then, on Public Address **"EVACUATION, EVACUATION, EVACUATION"**	
	▶ **DO & CALL** BATTERY..... OFF **"BATTERY OFF"**	▶ **READ** *BAT*..... *OFF* ▶ **CALL** **"ON GROUND EMERGENCY EVACUATION CHECKLIST COMPLETE"**

2. Engine fire at take-off

In the following, PF is seated on the right side. The procedure below starts at the controls transfer. For the beginning of the take-off procedure, please refer to *02.02.10. Take-off.*

Flight events	PM	PF
		▶ CALL "MY CONTROL" Control through rudder pedals and control wheel & column.
REACHING V1	▶ CALL "V1" CM1 ▶ DO PL 1 & 2 ..... RELEASE	
REACHING VR	▶ CALL "ROTATE"	▶ DO PITCH ..... ROTATE TO 8° FD BARS..... FOLLOW
POSITIVE RATE	▶ CALL "POSITIVE RATE" ▶ DO LANDING GEAR..... UP YAW DAMPER ..... ENGAGE Check white arrows illuminated. TAXI & T.O. LIGHTS..... OFF	▶ COMMAND "GEAR UP"
ENGINE FIRE	▶ CALL "ENGINE FIRE" ▶ DO MASTER WARNING ..... CANCEL	▶ CALL "CHECK" ▶ CALL "ENG FIRE AT TAKE-OFF MEMO ITEMS"
ALL LDG GEAR LIGHTS EXTINGUISHED	▶ CALL "GEAR UP"	

Flight events	PM	PF
PASSING ACCELERATION ALTITUDE (mini 400 ft AAL or higher if requested)	In case of high published acceleration altitude, Captain may decide to start Memory Items before reaching it but never below 400 ft AAL.	
	▶ **CALL** **"ACCELERATION ALTITUDE"** ▶ **DO & CALL** PWR MGT ..... MCT TQ / NP ..... CHECK / ADJUST **"MCT SET"** ▶ **DO & CALL** IAS ..... INCREASE TO WHITE BUG **"IAS XXX SET"** ▶ **DO & CALL** SPEED BUG ..... WHITE BUG **"WHITE BUG SET"**	▶ **COMMAND** **"SET MCT"** ▶ **COMMAND** **"INCREASE IAS TO WHITE BUG"** ▶ **COMMAND & DO** **"SET SPEED BUG WHITE BUG"** SPEED BUG ..... WHITE BUG
REACHING WHITE BUG	▶ **CALL** **"WHITE BUG"** ▶ **DO** FLAPS ..... AS RQRD	▶ **COMMAND** **"NORMAL CONDITIONS, FLAPS 0"** or **"ICING CONDITIONS, MAINTAIN FLAPS 15"**
FLAPS 0°/15° ON INDICATOR	▶ **CALL** **"FLAPS 0"** Normal conditions **"MAINTAIN FLAPS 15"** Icing conditions	
FLIGHT PATH STABILIZED	▶ **DO & CALL** PL POINTED AT BY **PF**..... CHECK **"CONFIRM"** ▶ **DO & CALL** CL 1 (or 2) ..... POINT **"CL 1 (OR 2)?"** ▶ **DO & CALL** CL 1 (or 2) ..... FTR then FUEL S.O. **"FEATHER, FUEL SHUT-OFF"** Shut-off step by step. Stay 1 sec in FTR position before setting CL to Fuel S.O. ▶ **DO & CALL** FIRE HANDLE 1 (or 2)..... POINT **"FIRE HANDLE 1 (OR 2)?"** ▶ **DO & CALL** FIRE HANDLE 1 (or 2)..... PULL **"PULLED"** TIMING..... START	▶ **DO & CALL** PL 1 (or 2) ..... POINT **"PL 1 (OR 2)?"** ▶ **DO & CALL** PL 1 (or 2) .....RETARD GENTLY TO FI **"FLIGHT IDLE"** ▶ **DO & CALL** CL POINTED AT BY **PM** ..... CHECK **"CONFIRM"** ▶ **DO & CALL** FIRE HANDLE POINTED AT BY **PM**.... CHECK **"CONFIRM"**

Flight events	PM	PF
10 SEC AFTER FIRE HANDLE PULLED	▶ **DO & CALL** AGENT 1 ..... POINT **"10 SECONDS, AGENT 1?"** ▶ **DO** AGENT 1 ..... DISCHARGE	▶ **DO & CALL** AGENT POINTED AT BY **PM** ..... CHECK **"CONFIRM"**
1ST DISCH AMBER LIGHT ON FIRE PANEL	▶ **CALL** **"DISCHARGED"** ▶ **MONITOR** TIME ..... MONITOR 30"	▶ **REQUEST** **"RADIO RIGHT SIDE"** ▶ **TRANSMIT** on VH1 **"MAYDAY, MAYDAY, MAYDAY, (CALL SIGN), ENGINE FIRE, I'LL CALL YOU BACK"**
IF FIRE REMAINS AFTER 30 SEC	▶ **DO & CALL** AGENT 2 ..... POINT **"30 SECONDS, AGENT 2?"** ▶ **DO & CALL** AGENT 2 ..... DISCHARGE **"DISCHARGED"** ▶ **CALL** **"BLEED ENGINE ALIVE OFF, YES OR NO?"**	▶ **DO & CALL** AGENT POINTED AT BY **PM** ..... CHECK **"CONFIRM"** ▶ **DO & CALL** BLEED POINTED AT BY **PM** ..... CHECK **"NO"** (or **"YES"**)
2ND DISCH AMBER LIGHT ON FIRE PANEL	▶ **CALL** **"MEMO ITEMS COMPLETE"**	▶ **REQUIRE** **"ENG FIRE AT TAKE-OFF CHECKLIST"**
	▶ **DO, CALL & READ** ENG FIRE AT TO C/L ..... POINT **ENG FIRE AT TAKE-OFF CHECKLIST?"** Refer to QRH 1.02A ▶ **CALL** **ENG FIRE AT TAKE-OFF CHECKLIST COMPLETE"**	▶ **DO & CALL** C/L POINTED AT BY **PM** ..... CHECK **"CONFIRM"**
	Any pilot shall call **"FIRE STOPPED"** as soon as the red light disappears on CAP/FIRE HANDLE	
ENGINE FIRE AT TAKE-OFF CHECKLIST COMPLETE	▶ **DO & CALL** CAP ..... CLEAR **"CAP CLEARED"** ▶ **CALL & READ** **"AFTER TAKE-OFF CHECKLIST"** Refer to QRH 6.01 **"AFTER TAKE-OFF CHECKLIST COMPLETE"**	▶ **DO & CALL** CAP..... CROSS-CHECK WITH LOCAL ALERTS **"CLEAR CAP"** ▶ **REQUIRE** **"AFTER TAKE-OFF CHECKLIST"** ▶ **REQUIRE** **"SINGLE ENG OPERATION CHECKLIST"** Continue with Single Engine operation.

3. Engine Flame Out at take-off

In the following, PF is seated on the right side. The procedure below starts at the controls transfer. For the beginning of the take-off procedure, please refer to *02.02.10. Take-off*.

Flight events	PM	PF
		▶ CALL **"MY CONTROL"** Control through rudder pedals and control wheel & column.
REACHING V1	▶ CALL **"V1"** **CM1** ▶ DO PL 1 & 2 ..... RELEASE	
REACHING VR	▶ CALL **"ROTATE"**	▶ DO PITCH ..... ROTATE TO 8° FD BARS..... FOLLOW
ENGINE FLAME OUT	First CM who detects the engine failure calls loudly **"ENGINE FAILURE"** The detection clues are: **PF**: Unexpected roll and dissymmetric handling **PM**: abnormal engine parameters (TQ decrease, rapid ITT decrease) And the other CM acknowledges with **"CHECK"**	▶ ORDER **"ENGINE FLAME OUT AT TAKE-OFF MEMO ITEMS"**
POSITIVE RATE	▶ CALL **"POSITIVE RATE"** ▶ DO & CALL LANDING GEAR..... UP TAXI & T.O. LIGHTS ..... OFF UPTRIM GREEN LIGHT ENG 2 (or 1) CHECK AUTOFEATHER ENG 1 (or 2) ..... CHECK BLEEDS FAULT..... CHECK ILLUMINATED **"UPTRIM, AUTOFEATHER, BLEEDS FAULT LIT"**	▶ COMMAND **"GEAR UP"** If no UPTRIM, **PF** orders PL 1 & 2 to the ramp. If bleed fault not illuminated, order BLEED 1 (or 2) OFF. ▶ CALL **"RADIO RIGHT SIDE"** ▶ TRANSMIT **"MAYDAY, MAYDAY, MAYDAY, (CALL SIGN), ENGINE FLAME OUT, I'LL CALL YOU BACK"**
PASSING ACCELERATION ALTITUDE (mini 400 ft AAL or higher if requested)	▶ CALL **"ACCELERATION ALTITUDE"** ▶ DO & CALL ALT..... ENGAGE **"ALT GREEN"** ▶ DO & CALL SPEED BUG ..... WHITE BUG **"WHITE BUG SET"**	▶ COMMAND **"SET ALT"** ▶ CALL **"CHECK"** ▶ COMMAND & DO **"SET SPEED BUG WHITE BUG"** SPEED BUG ..... WHITE BUG

Flight events	PM	PF
REACHING WHITE BUG	▶ **CALL** **"WHITE BUG"** ▶ **DO & CALL** PL 1 & 2 ..... CHECK IN THE NOTCH PWR MGT ..... MCT TQ / NP ..... CHECK / ADJUST **"MCT SET"** ▶ **DO & CALL** IAS MODE ..... ENGAGE **"IAS XXX SET"** ▶ **DO** FLAPS ..... AS RQRD	▶ **DO, CALL & COMMAND** PL 1 & 2 ..... CHECK IN THE NOTCH **"PL IN THE NOTCH, SET MCT"** ▶ **COMMAND** **"SET IAS"** ▶ **COMMAND** **"NORMAL CONDITIONS, FLAPS 0"** or **"ICING CONDITIONS, MAINTAIN FLAPS 15"**
FLAPS 0°/15° ON INDICATOR	▶ **CALL** **"FLAPS 0"** Normal conditions **"MAINTAIN FLAPS 15"** Icing conditions	
FLIGHT PATH STABILIZED	▶ **DO & CALL** PL POINTED AT BY **PF**..... CHECK **"CONFIRM"** ▶ **DO & CALL** CL 1(or 2) ..... POINT **"CL 1 (OR 2)?"** ▶ **DO & CALL** CL 1 (or 2) ..... FTR then FUEL S.O. **"FEATHER, FUEL SHUT-OFF"** Shut-off step by step. Stay 1 sec in FTR position before setting CL to Fuel S.O. ▶ **DO & CALL** BLEED 1 (or 2)..... POINT **"BLEED ENGINE ALIVE OFF, YES OR NO?"** If necessary, remaining BLEED can be deselected to increase climb performance. ▶ **CALL** **"MEMO ITEMS COMPLETE"** ▶ **DO, CALL & READ** ENG FLAME OUT AT TO C/L..... POINT **"ENGINE FLAME OUT AT TAKE-OFF CHECKLIST?"** Refer to QRH 1.03 ▶ **CALL** **" ENG FLAME OUT AT TAKE-OFF CHECKLIST COMPLETE"**	▶ **DO & CALL** PL 1 (or 2) ..... POINT **"PL 1 (OR 2)?"** ▶ **DO & CALL** PL 1 (or 2).... RETARD GENTLY TO FI **"FLIGHT IDLE"** ▶ **DO & CALL** CL POINTED AT BY **PM** ..... CHECK **"CONFIRM"** ▶ **DO & CALL** BLEED POINTED AT BY **PM** ..... CHECK **"NO"** (or **"YES"**) ▶ **REQUIRE** **"ENGINE FLAME OUT AT TAKE-OFF CHECKLIST"** ▶ **DO & CALL** C/L POINTED AT BY **PM** ..... CHECK **"CONFIRM"**
ENGINE FLAME OUT AT TAKE-OFF CHECKLIST COMPLETE	▶ **DO & CALL** CAP..... CLEAR **"CAP CLEARED"** ▶ **CALL & READ** **"AFTER TAKE-OFF CHECKLIST"** Refer to QRH 6.01 **"AFTER TAKE-OFF CHECKLIST COMPLETE"**	▶ **DO & CALL** CAP..... CROSS-CHECK WITH LOCAL ALERTS **"CLEAR CAP"** ▶ **REQUIRE** **"AFTER TAKE-OFF CHECKLIST"** ▶ **REQUIRE** **"SINGLE ENG OPERATION CHECKLIST"** Continue with Single Engine operation.

4. Single Engine Operation

In the following, PF is seated on the right side.

Flight events	PM	PF
AFTER TAKE-OFF CHECKLIST COMPLETE	▶ **CALL, READ & DO** SINGLE ENG OPERATION C/L ..... POINT **"SINGLE ENGINE OPERATION CHECKLIST?"**	▶ **REQUIRE** **"SINGLE ENGINE OPERATION CHECKLIST"**
	QRH 2.04 LAND ASAP PWR MGT ..... TO if necessary then MCT *FUEL PUMP affected side ..... OFF* FUEL PUMP 1 (or 2) ..... POINT **"FUEL PUMP 1 (OR 2)?"** FUEL PUMP 1 (or 2) ..... OFF **"OFF"** *DC GEN affected side ..... OFF* DC GEN 1 (or 2) ..... POINT **"DC GEN 1 (OR 2)?"** DC GEN 1 (or 2) ..... OFF **"OFF"** *ACW GEN affected side ..... OFF* ACW GEN 1 (or 2) ..... POINT **"ACW GEN 1 (OR 2)?"** ACW GEN 1 (or 2) ..... OFF **"OFF"** *PACK affected side ..... OFF* PACK 1 (or 2) ..... POINT **"PACK 1 (OR 2)?"** PACK 1 (or 2) ..... OFF **"OFF"** *BLEED affected side ..... OFF* BLEED 1 (or 2) ..... POINT **"BLEED 1 (OR 2)?"** BLEED 1 (or 2) ..... OFF **"OFF"** *APM ..... OFF* **"APM OFF"** *TCAS ..... TA ONLY* **"TCAS TA ONLY"** *OIL PRESSURE ON FAILED ENGINE ..... MONITOR*	▶ **DO & CALL** C/L POINTED AT BY **PM** ..... CHECK **"CONFIRM"** ▶ **DO & CALL** FUEL PUMP POINTED AT BY **PM** .... CHECK **"CONFIRM"** ▶ **DO & CALL** DC GEN POINTED AT BY **PM** ..... CHECK **"CONFIRM"** ▶ **DO & CALL** ACW GEN POINTED AT BY **PM**..... CHECK **"CONFIRM"** ▶ **DO & CALL** PACK POINTED AT BY **PM** ..... CHECK **"CONFIRM"** ▶ **DO & CALL** BLEED POINTED AT BY **PM** ..... CHECK **"CONFIRM"**

Flight events	PM	PF
	NOTE: Refer to QRH 2.04. ■ *If FUEL CROSSFIELD is required* **"YES OR NO?"**	▶ **DO & CALL** FUEL UNBALANCE ..... CHECK **"NO"** If Yes, follow checklist, using the methodology detailed previously.
APPROACH IS INITIATED (OR BEFORE, ON CAPTAIN'S DECISION)	▶ **CALL, READ & DO** ● *For approach* *BLEED not affected* ..... *OFF* BLEED 2 (or 1) ..... POINT **"BLEED 1 (OR 2)?"** BLEED 2 (or 1) ..... OFF **"OFF"** *CL live engine* ..... *100% OVRD* *VAPP* ..... *NOT LESS THAN 1.1 VMCA* **"SINGLE ENGINE OPERATION CHECKLIST COMPLETE"**	▶ **DO & CALL** BLEED POINTED AT BY **PM** ..... CHECK **"CONFIRM"**
SINGLE ENGINE OPERATION CHECKLIST COMPLETE	▶ **CALL** **"RADIO RIGHT SIDE"**	▶ **DO** RECALL ..... PRESS SITUATION ..... ASSESS Refer to 01.04.04. Assessment / Decision / Information ▶ **CALL** **"RADIO LEFT SIDE"**

5. Single Engine Go-around

Flight events	PM	PF
DA/ MDA +30	▶ CALL "MINIMUM"	
RUNWAY OR APPROACH LIGHTS NOT IN SIGHT OR ANY OTHER UNEXPECTED EVENTS	▶ DO FLAPS ..... 15° (25°) TQ ..... CHECK / ADJUST GA	▶ CALL & DO "GO-AROUND, SET POWER, FLAPS ONE NOTCH" GA PB ON PL ..... DEPRESS PITCH ..... ROTATE TO +8° NOSE UP PL ..... ADVANCE TO RAMP CAVALRY CHARGE ..... CANCEL
FLAPS 15° (25°) ON INDICATOR	▶ CALL "POWER SET, FLAPS 15 (25)"	
POSITIVE RATE	▶ CALL "POSITIVE RATE" ▶ DO & CALL LANDING GEAR.....UP HEADING MODE..... ENGAGE LOW BANK ..... ENGAGE IAS..... VGA TAXI & T.O. LIGHTS ..... OFF "HDG LOW, IAS XXX SET" ▶ DO & CALL SPEED BUG ..... VGA "XXX SET"	▶ COMMAND "GEAR UP, HEADING LOW BANK, IAS VGA" ▶ CALL "CHECK" ▶ COMMAND & DO "SET SPEED BUG VGA" SPEED BUG ..... VGA
ALL LDG GEAR LIGHTS EXTINGUISHED	▶ CALL "GEAR UP"	
PASSING ACCELERATION ALTITUDE (mini 1000ft AAL or higher if requested)	▶ CALL "ACCELERATION ALTITUDE" ▶ DO ALT ..... ENGAGE "ALT GREEN"	▶ COMMAND "SET ALT" ▶ CALL "CHECK"
REACHING WHITE BUG OR VGA +15, WHICHEVER LOWER	▶ CALL "WHITE BUG / VGA +15" ▶ DO FLAPS ..... 15°	▶ COMMAND "FLAPS 15"
FLAPS 15° ON INDICATOR	▶ CALL "FLAPS 15"	
	▶ DO & CALL SPEED BUG ..... WHITE BUG "WHITE BUG SET"	▶ COMMAND & DO "SET SPEED BUG WHITE BUG" SPEED BUG ..... WHITE BUG

42 PEC

Flight events	PM	PF
REACHING WHITE BUG	▶ **CALL** **"WHITE BUG"** ▶ **DO & CALL** PL 1 & 2 ..... CHECK IN THE NOTCH PWR MGT ..... MCT TQ / NP ..... CHECK / ADJUST **"MCT SET"** ▶ **DO & CALL** IAS MODE ..... ENGAGE **"IAS XXX SET"** ▶ **DO** FLAPS ..... AS RQRD	▶ **DO, CALL & COMMAND** PL 1 & 2 ..... RETARD TO THE NOTCH **"PL IN THE NOTCH, SET MCT"** ▶ **COMMAND** **"SET IAS"** ▶ **COMMAND** **"NORMAL CONDITIONS, FLAPS 0"** or **"ICING CONDITIONS, MAINTAIN FLAPS 15"**
FLAPS 0°/15° ON INDICATOR	▶ **CALL** **"FLAPS 0"** Normal conditions **"MAINTAIN FLAPS 15"** Icing conditions	

Continue with after take-off checklist.

6. Emergency Descent

In the following, PF is seated on the right side.

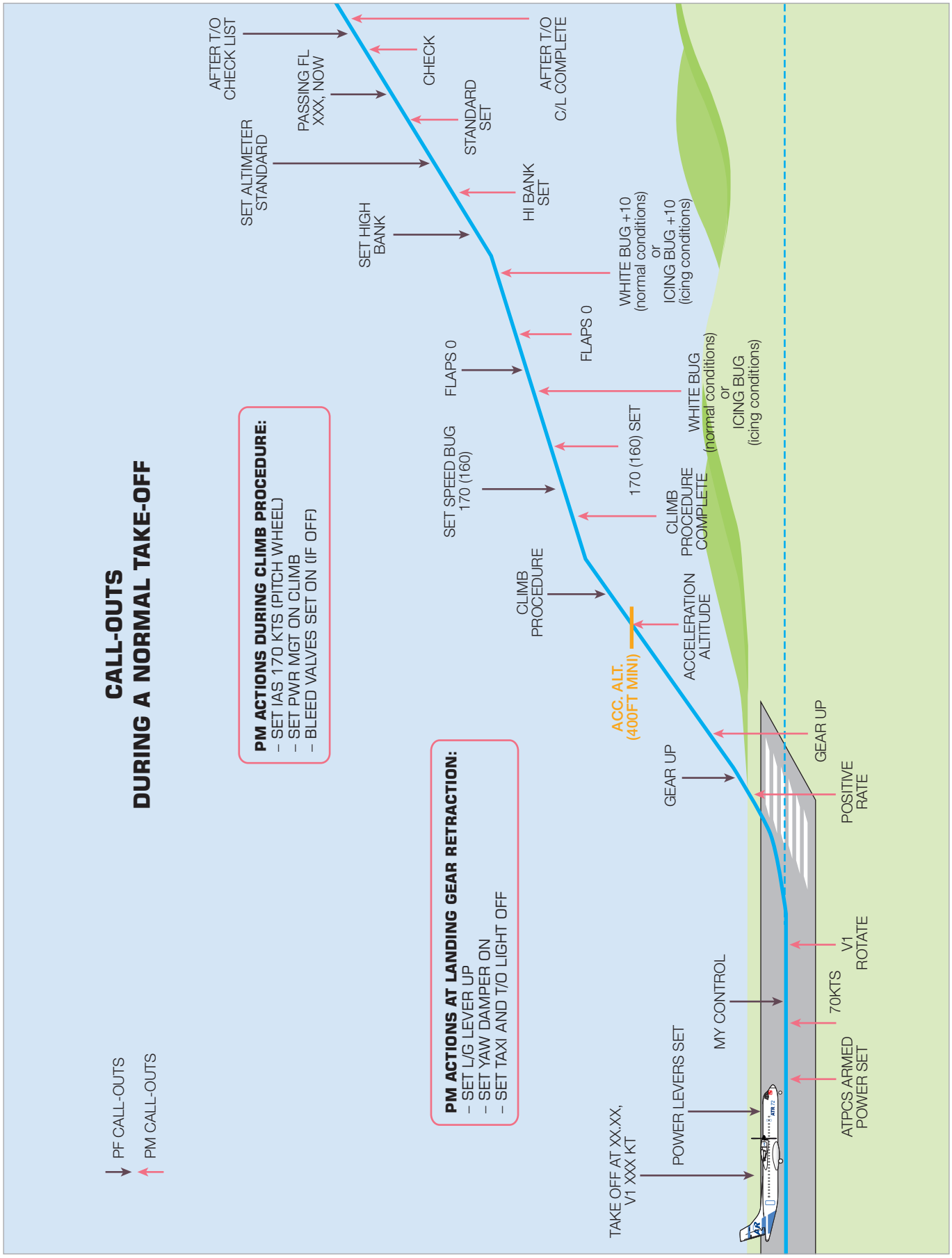
Flight events	PM	PF
LOSS OF PRESSURIZATION OR STRUCTURAL DAMAGE	**CAPTAIN** ▶ **COMMAND** **"EMERGENCY DESCENT MEMO ITEMS"** Autopilot remains engaged.	
	▶ **DO & CALL** OXYGEN MASK ..... WEAR Breathing 100% oxygen for a long period may cause alterations of understanding. So return to Normal setting if no smoke presence. GOGGLES (IF NECESSARY) ..... WEAR CREW COMMUNICATION..... ESTABLISH **"OXYGEN ON"** ▶ **DO** OXYGEN PAX SUPPLY..... ON SEAT BELTS..... ON XPDR..... 7700	▶ **DO & CALL** OXYGEN MASK ..... WEAR GOGGLES (IF NECESSARY) ..... WEAR CREW COMMUNICATION..... ESTABLISH **"OXYGEN ON"** ALT SEL..... LOWEST ALTITUDE IAS MODE..... 180/240 According to potential structural damages. HEADING MODE..... ENGAGE HEADING KNOB ..... TURN ± 45° PL 1 & 2 ..... FI CL 1 & 2 ..... 100% OVRD
	▶ **CALL** on Public Address **"EMERGENCY DESCENT, REMAIN SEATED"** ▶ **TRANSMIT** on VH1 **"MAYDAY, MAYDAY, MAYDAY, (CALLSIGN), EMERGENCY DESCENT, CONFIRM MSA"**	
	▶ **DO & CALL** MINIMUM SAFE ALTITUDE ..... CHECK ALT SEL..... MSA **"MEMO ITEMS COMPLETE"** ▶ **CALL & READ** **"EMERGENCY DESCENT CHECKLIST"** Refer to QRH 1.07A	▶ **COMMAND** **"EMERGENCY DESCENT CHECKLIST, RADIO RIGHT SIDE"** ▶ **DO** HEADING..... ADJUST According to flight path (airway, ATC).
PASSING FL100	▶ **DO** OXYGEN MASK ..... REMOVE OXYGEN HATCH ..... CLOSE OXYGEN TEST PB..... DEPRESS Enables normal headset use.	▶ **CALL** **"YOU CAN REMOVE OXYGEN MASK"** ▶ **DO** OXYGEN MASK ..... REMOVE OXYGEN HATCH ..... CLOSE OXYGEN TEST PB..... DEPRESS Enables normal headset use.
UNPRESSURIZED FLIGHT RATE OF DESCENT REACHED	**CAPTAIN** ▶ **DO** CABIN ATTENDANT REPORT..... RECEIVE	
		▶ **DO** SITUATION ..... ASSESS

Aircraft configuration management

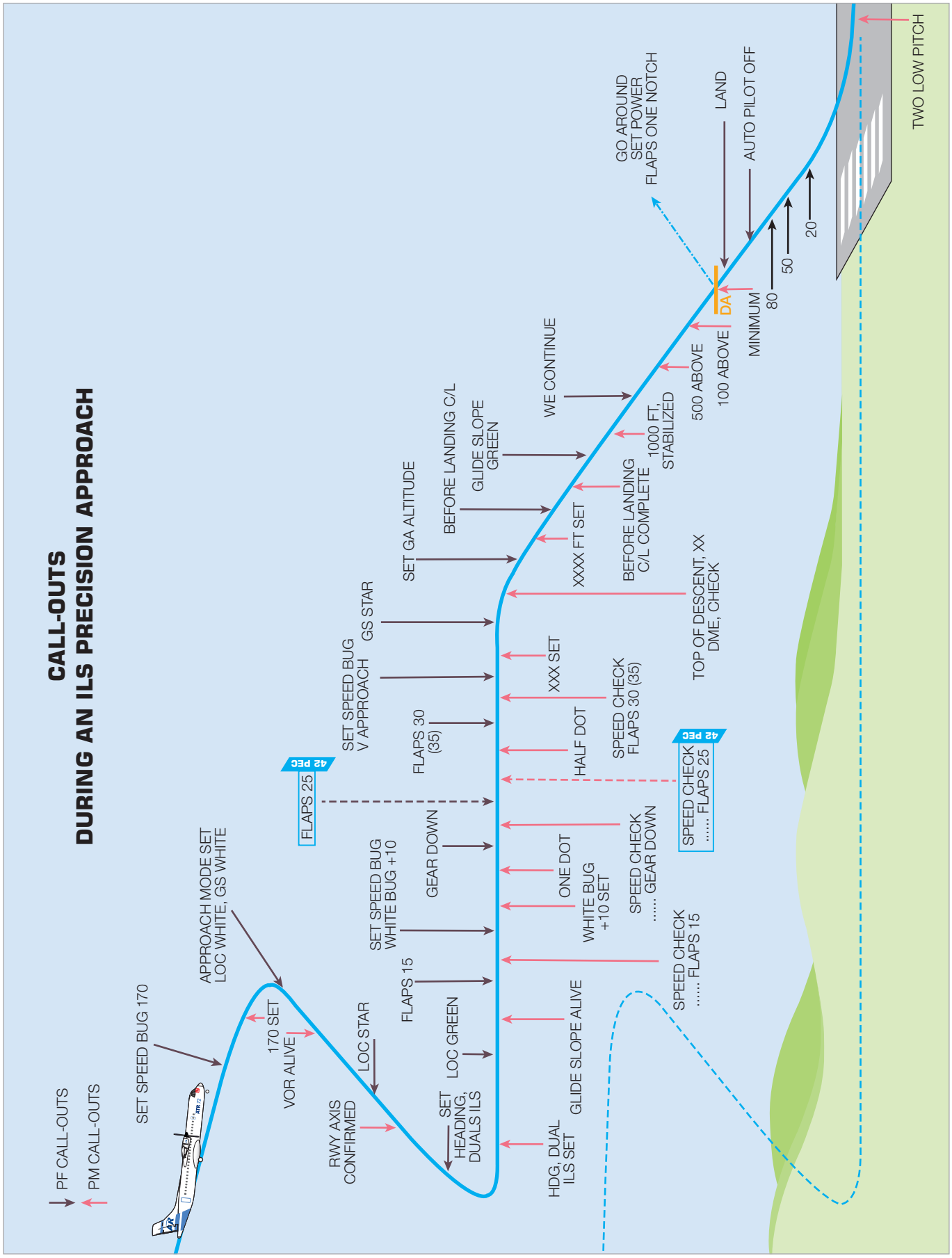
The aircraft configuration (flaps and gears position) in approach is detailed in the following for normal and single engine operations.

	Normal procedures	Single engine procedures
ILS	Glide Slope alive → Flaps 15 1 dot → Gear down ½ dot → Flaps 30 (35)	Glide Slope alive → Flaps 15 Glide Slope Star → Gear down Established in descent → Flaps 30 (35)
Non Precision Approach	4 Nm / 2 mn before FAP/FAF → Flaps 15 + Gear down 1 Nm before FAP/FAF → Flaps 30 (35)	4 Nm / 2 mn before FAP/FAF → Flaps 15 1 Nm before FAP/FAF → Gear down Established in descent → Flaps 30 (35)
Circle to Land	Flaps 15 + Gear down → Refer to ILS or NPA sequence Read "Before landing C/L" Aligned on final RWY → Flaps 30 (35)	Flaps 15 → Refer to ILS or NPA sequence End of Downwind → Gear down Read "Before landing C/L" Aligned on final RWY → Flaps 30 (35)

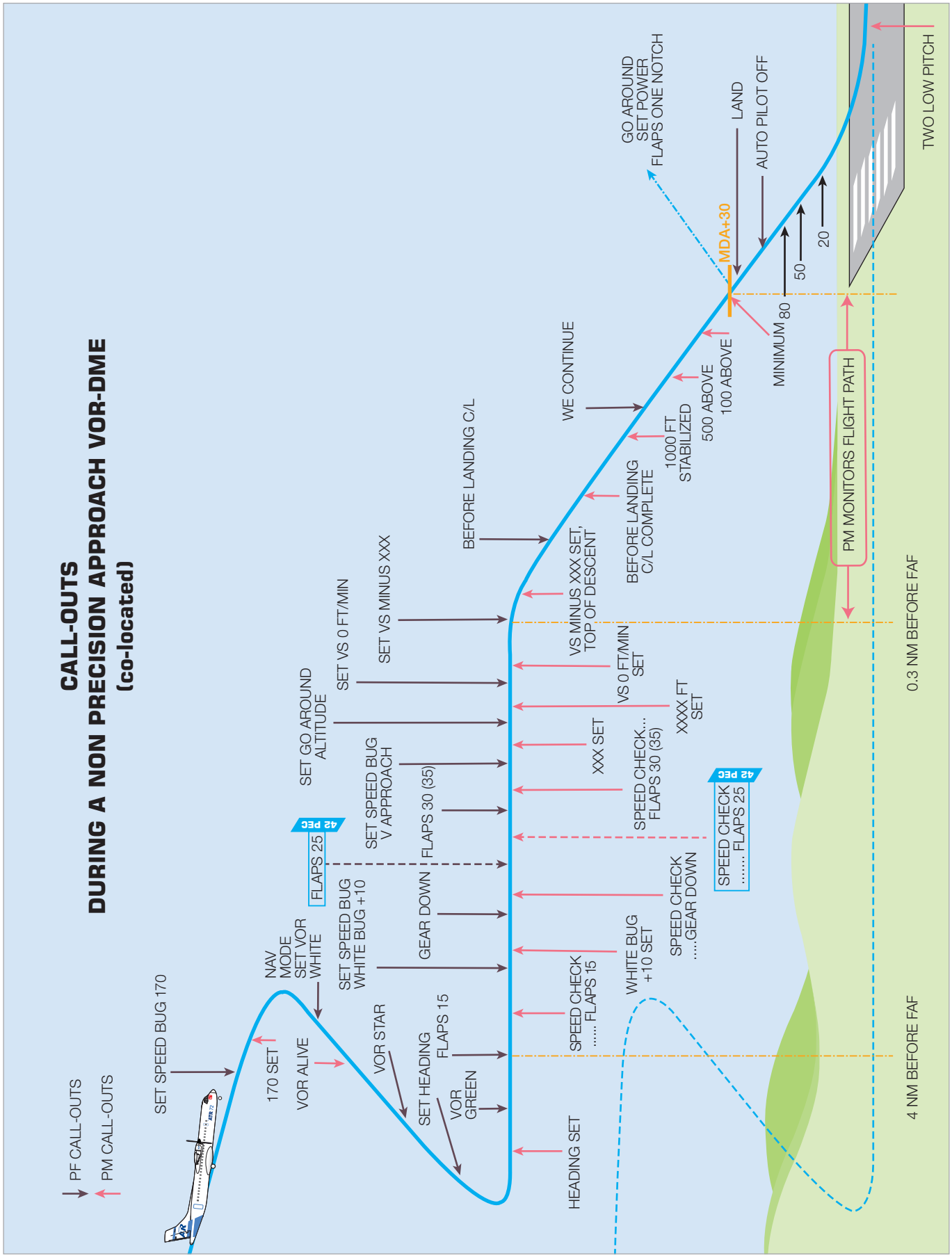
1. Take-off


CALL-OUTS
DURING A NORMAL TAKE-OFF
PF CALL-OUTS
PM CALL-OUTS
PM ACTIONS DURING CLIMB PROCEDURE:
– SET IAS 170 KTS (PITCH WHEEL)
– SET PWR MGT ON CLIMB
– BLEED VALVES SET ON (IF OFF)
PM ACTIONS AT LANDING GEAR RETRACTION:
– SET L/G LEVER UP
– SET YAW DAMPER ON
– SET TAXI AND T/O LIGHT OFF
AFTER T/O CHECK LIST
PASSING FL XXX, NOW
SET ALTIMETER STANDARD
SET HIGH BANK
SET SPEED BUG 170 (160)
FLAPS 0
CLIMB PROCEDURE
ACC. ALT. (400FT MINI)
ACCELERATION ALTITUDE
GEAR UP
TAKE OFF AT XX.XX, V1 XXX KT
POWER LEVERS SET
MY CONTROL
70KTS
V1 ROTATE
POSITIVE RATE
GEAR UP
ATPCS ARMED POWER SET
CLIMB PROCEDURE COMPLETE
170 (160) SET
FLAPS 0
WHITE BUG (normal conditions) or ICING BUG (icing conditions)
WHITE BUG +10 (normal conditions) or ICING BUG +10 (icing conditions)
HI BANK SET
STANDARD SET
CHECK
AFTER T/O C/L COMPLETE

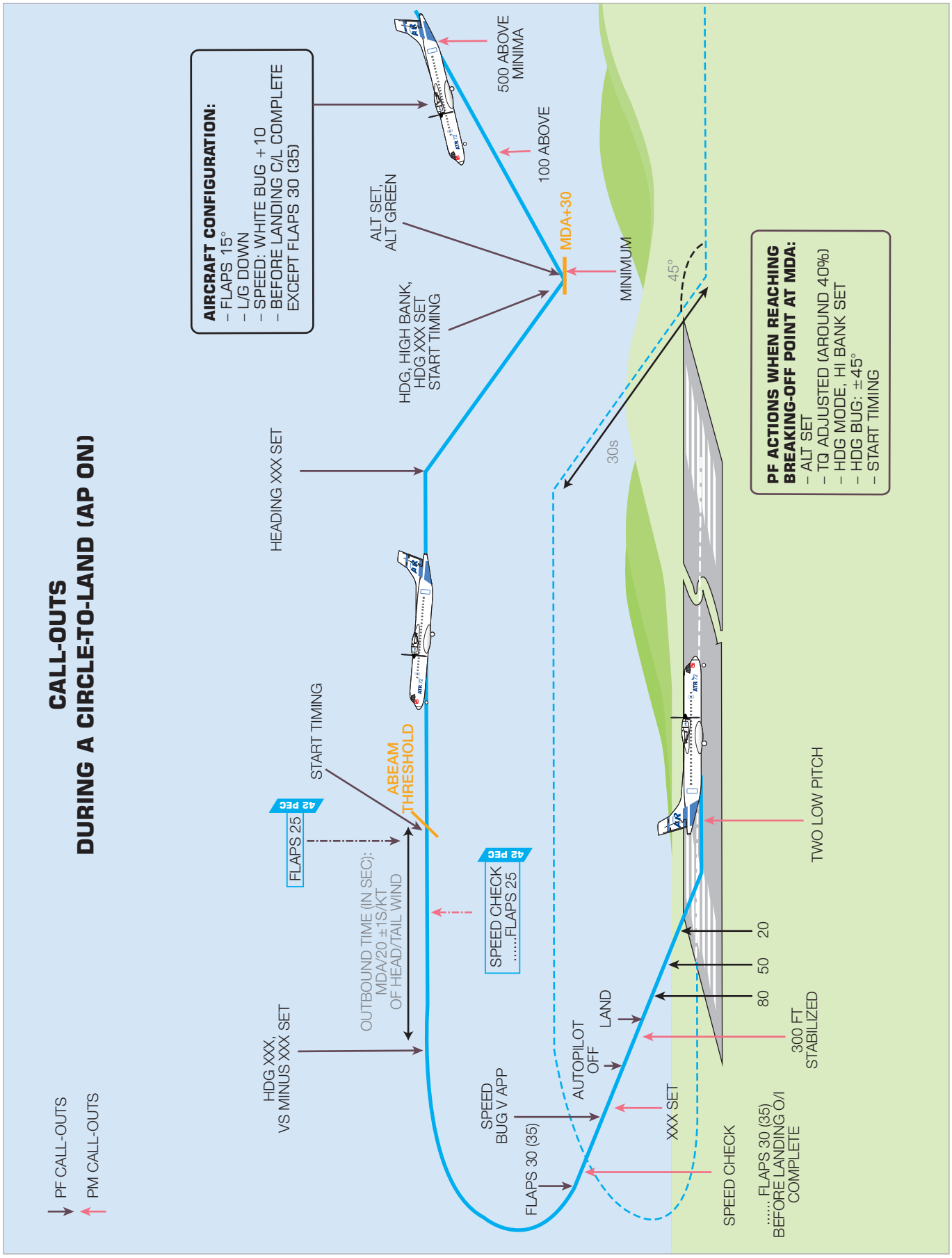
2. ILS Precision Approach



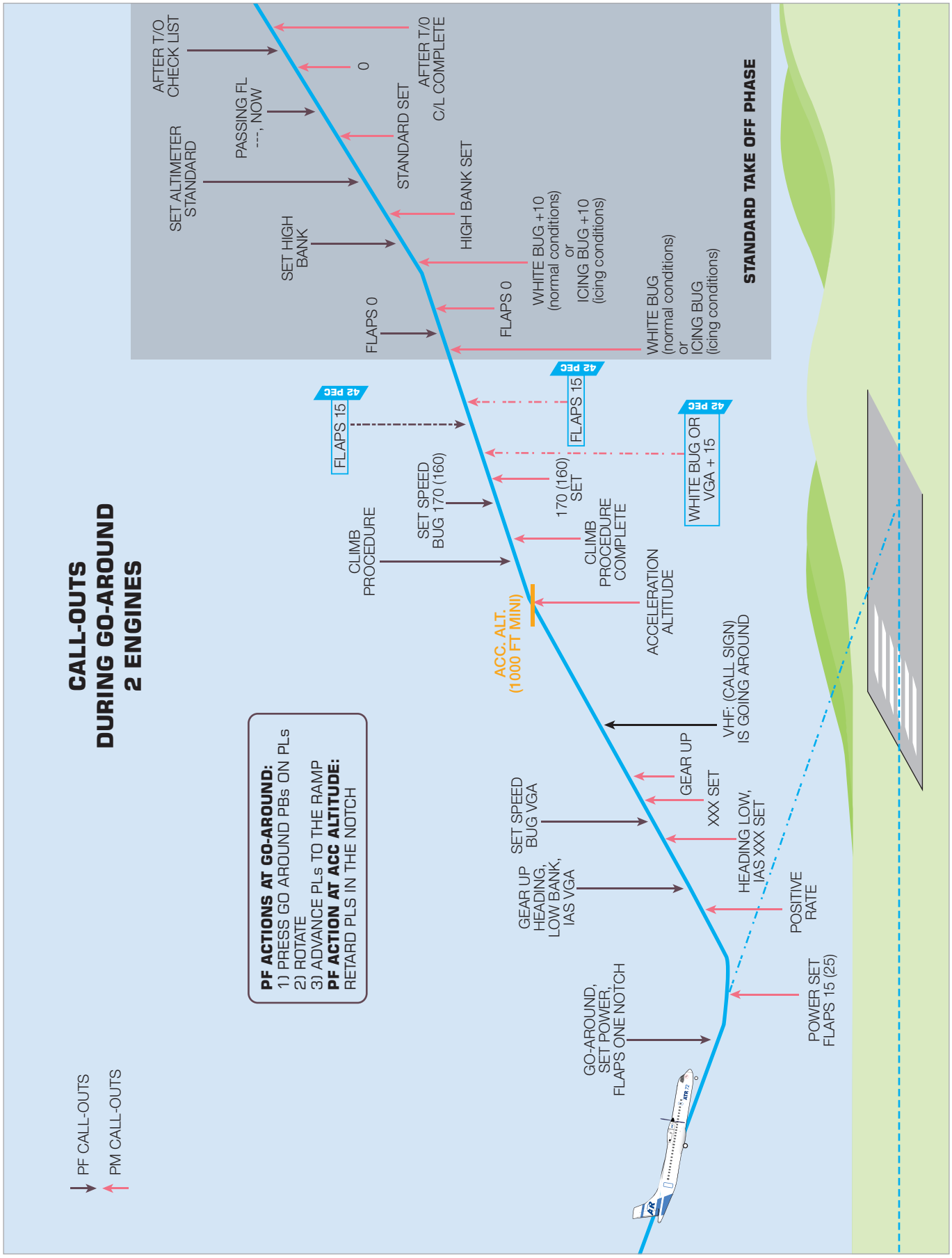
3. Non Precision Approach



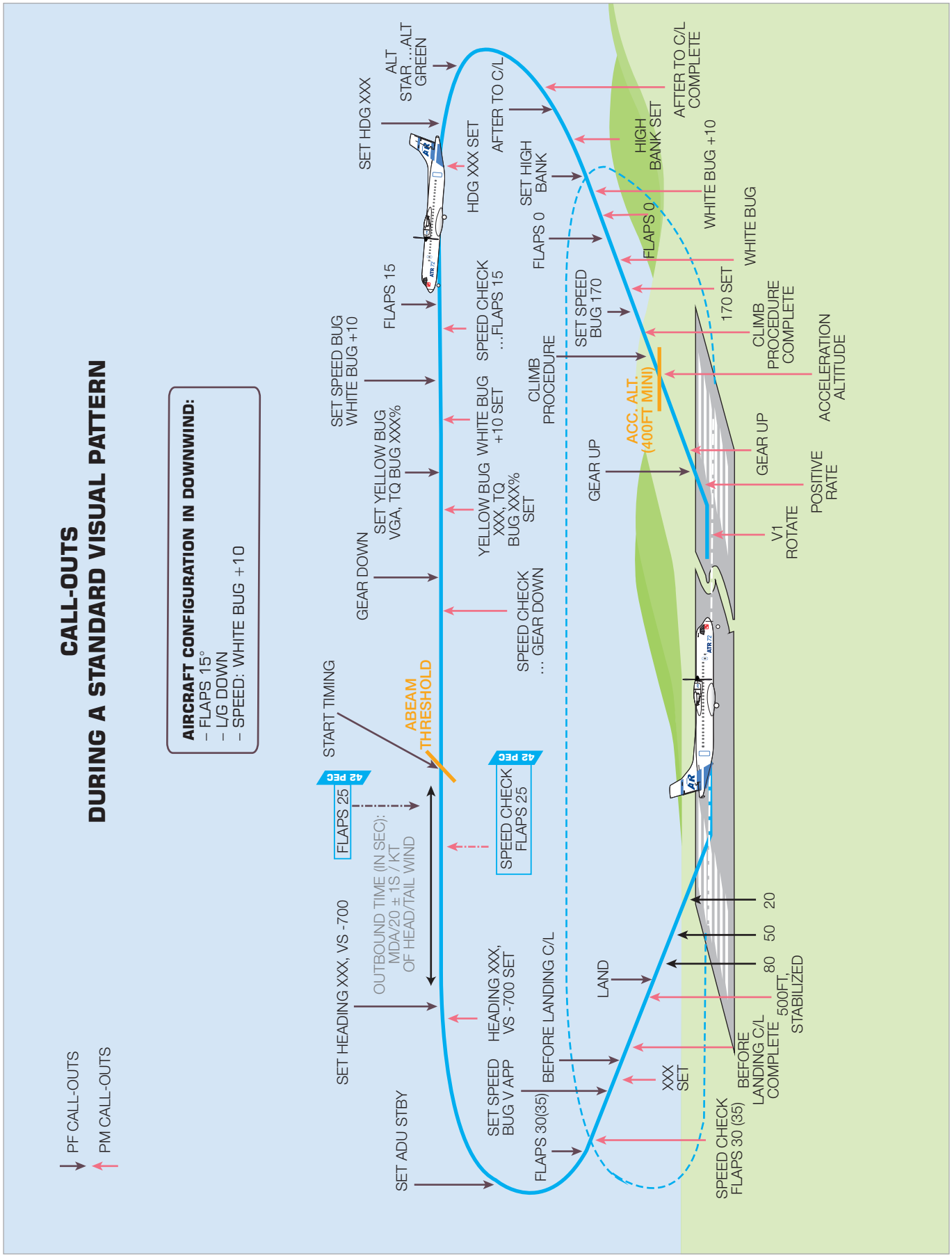
4. Circle-to-Land



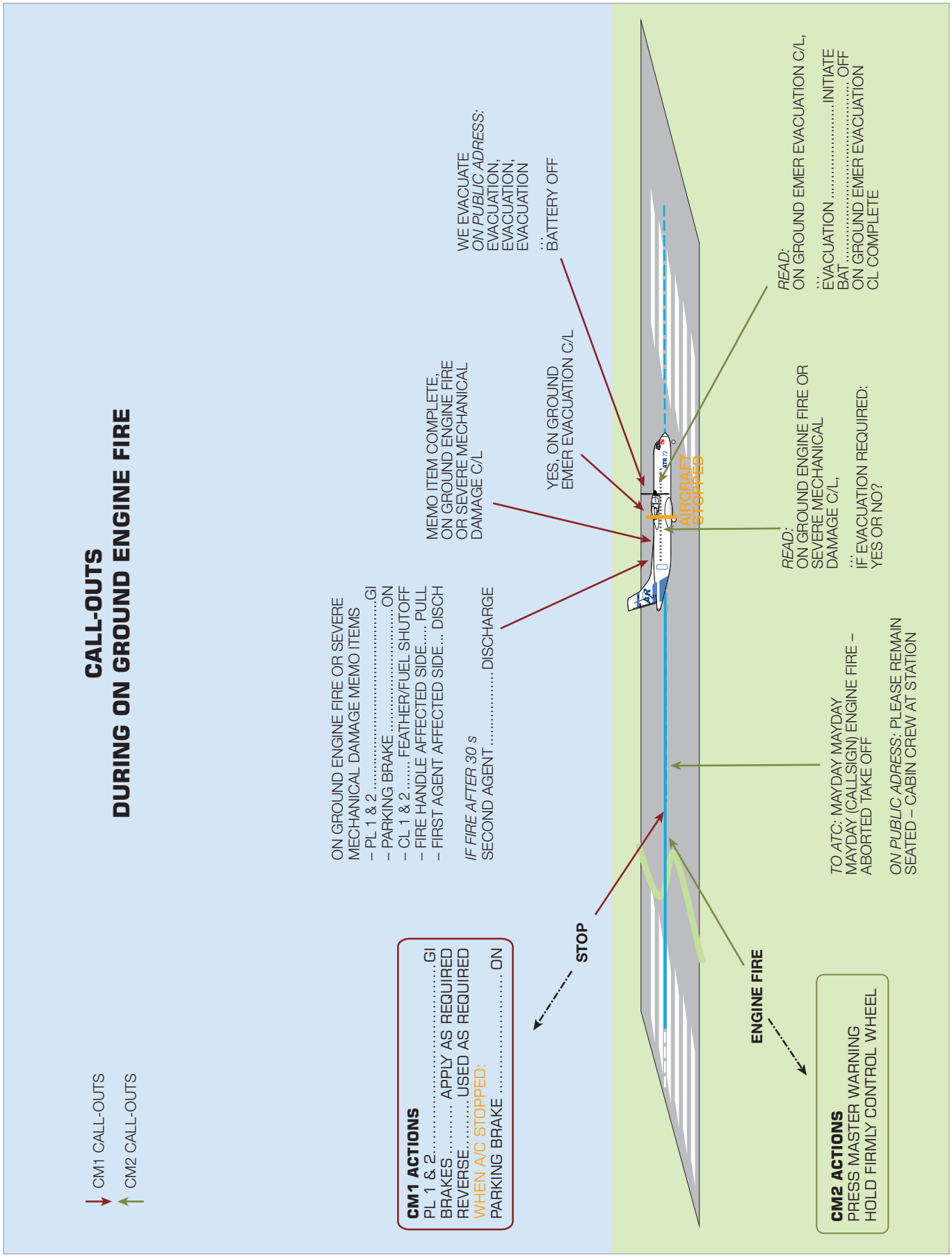
5. Go-around


CALL-OUTS
DURING GO-AROUND
2 ENGINES
PF CALL-OUTS
PM CALL-OUTS
PF ACTIONS AT GO-AROUND:
1) PRESS GO AROUND PBs ON PLs
2) ROTATE
3) ADVANCE PLs TO THE RAMP
PF ACTION AT ACC ALTITUDE:
RETARD PLS IN THE NOTCH
STANDARD TAKE OFF PHASE
AFTER T/O CHECK LIST
SET ALTIMETER STANDARD
PASSING FL ---, NOW
SET HIGH BANK
FLAPS 0
0
STANDARD SET
HIGH BANK SET
FLAPS 0
AFTER T/O C/L COMPLETE
WHITE BUG +10 (normal conditions) or ICING BUG +10 (icing conditions)
WHITE BUG (normal conditions) or ICING BUG (icing conditions)
42 PEC
FLAPS 15
42 PEC
FLAPS 15
42 PEC
WHITE BUG OR VGA + 15
SET SPEED BUG 170 (160)
170 (160) SET
CLIMB PROCEDURE
CLIMB PROCEDURE COMPLETE
ACCELERATION ALTITUDE
ACC. ALT. (1000 FT MINI)
VHF: (CALL SIGN) IS GOING AROUND
GEAR UP
XXX SET
SET SPEED BUG VGA
HEADING LOW, IAS XXX SET
GEAR UP HEADING, LOW BANK, IAS VGA
POSITIVE RATE
GO-AROUND, SET POWER, FLAPS ONE NOTCH
POWER SET FLAPS 15 (25)

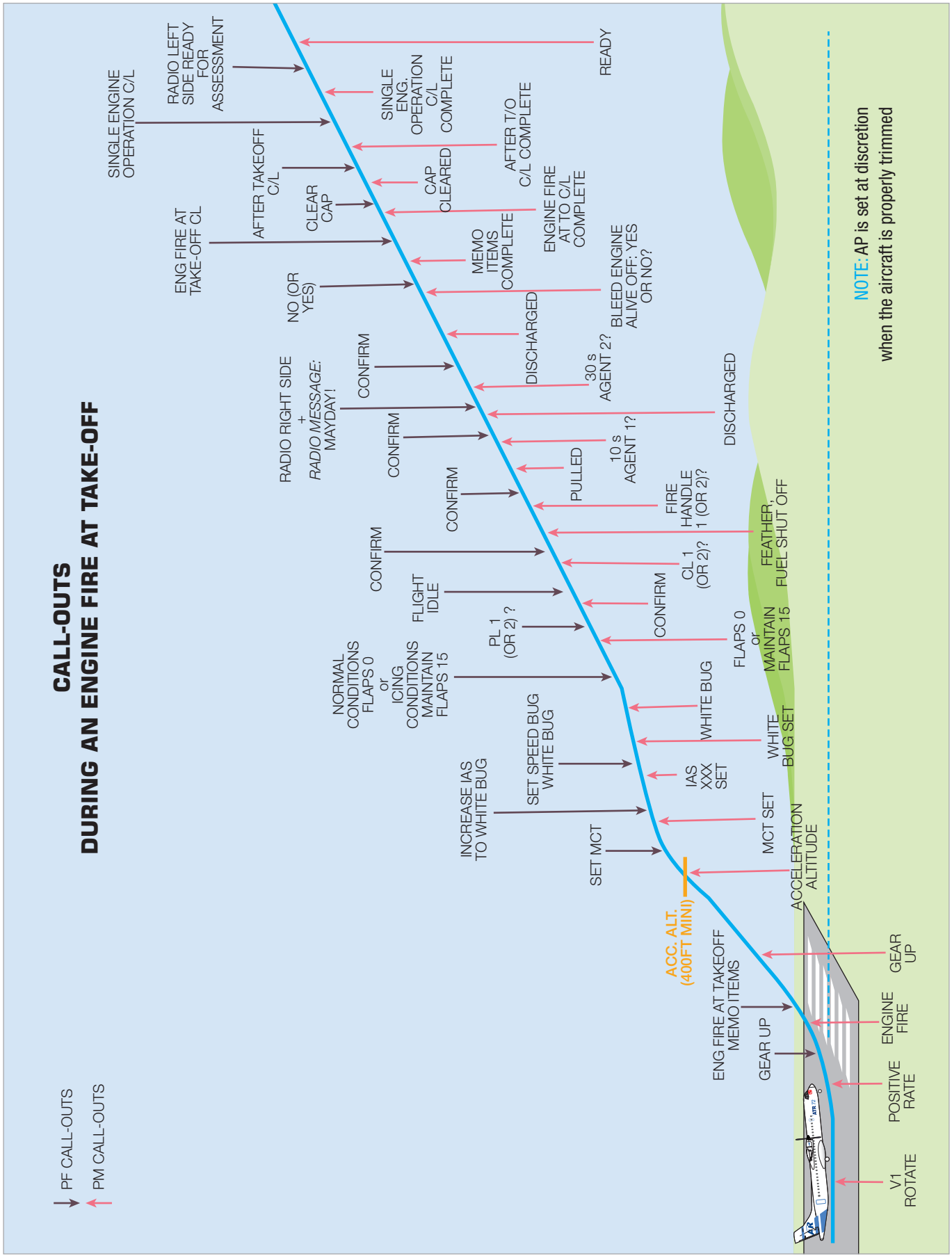
6. Standard traffic pattern (1500 ft AAL)



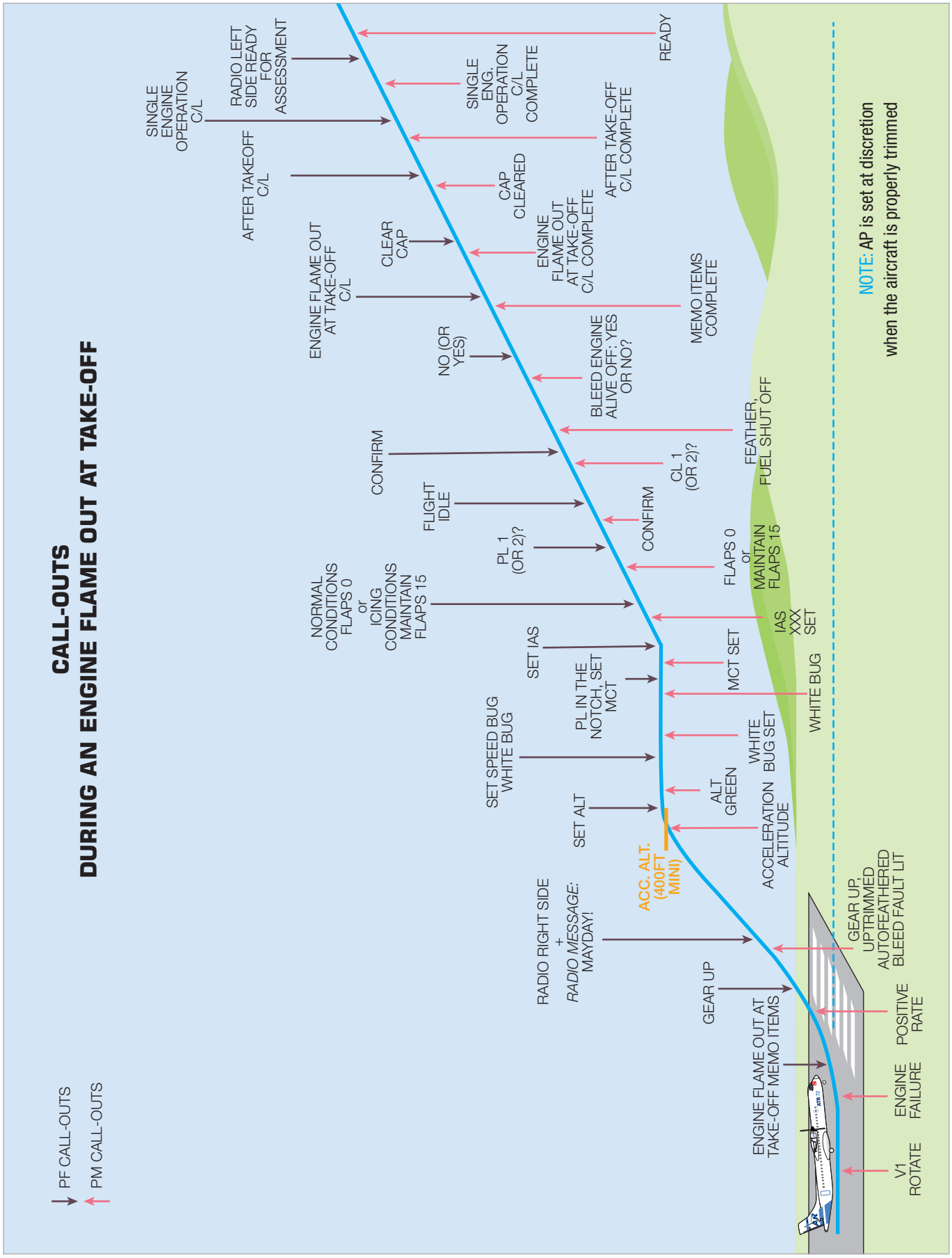
1. On ground engine fire



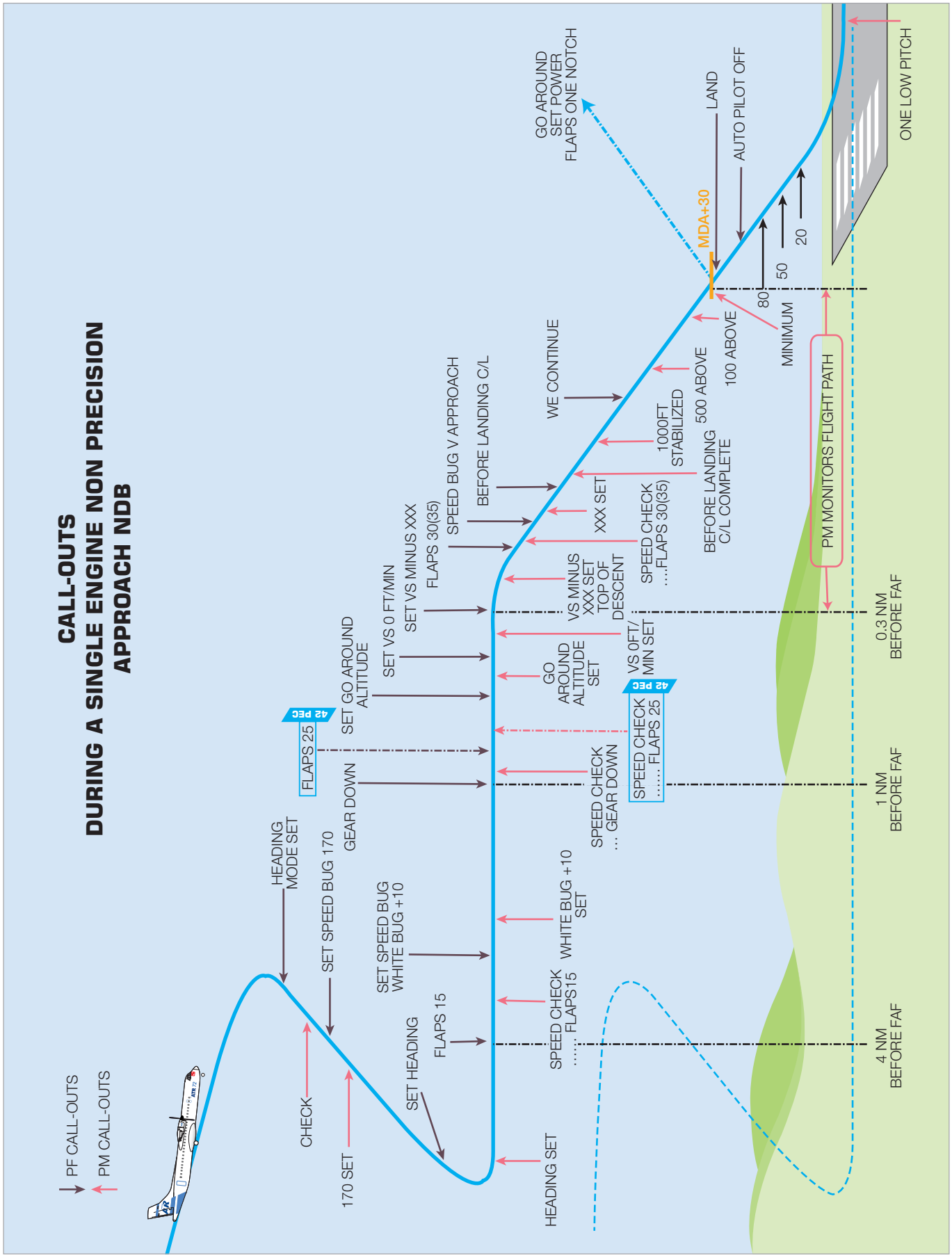
2. Engine fire at take-off



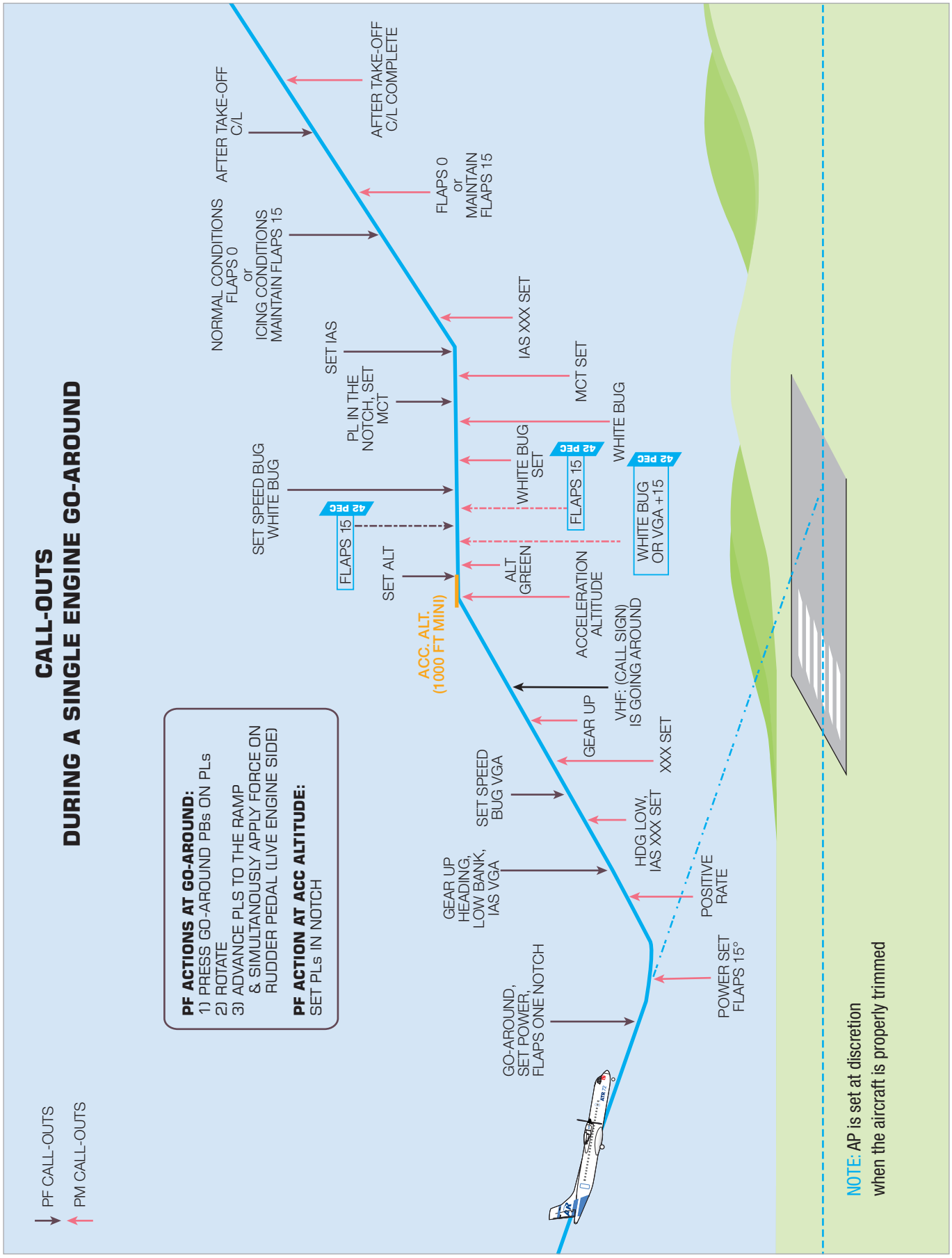
3. Engine flame out at take-off



4. Single Engine Non Precision Approach



5. Single Engine Go-around



Dear Readers,
Every effort has been made to ensure document quality.

However please do not hesitate to share your comments and information with us by using the following address: flight-ops-support@atr.fr

Yours faithfully

Your ATR Training and Flight Operations support team.

Contact

For ordering manuals, please contact us at:

- Phone: +33 (0)5 6221 6207
- e-mail: atc@atr.fr
- ATR Product Support & Services Portal: https://www.atractive.com

Avions de Transport Régional. 1, allée Pierre-Nadot 31712 Blagnac Cedex - France
Phone: +33 (0)5 62 21 62 07 - Fax: +33 (0)5 62 21 63 67 - https://www.atractive.com