www.airbusdriver.net - A 330 Approach Briefing/Flows Guide – 7/21/2018

W — Weather – Obtain ATIS

A — Automation Flows

1. MCDU

	PROG	PERF
F-PLN	RAD NAV	

MCDU Reverse "Z"

F-PLN	• Re-do if Return (auto if EOSID) or Divert (2L lateral revision) • Select ARRIVAL page and enter RWY, APPR, STAR, TRANS, and APPR VIA (Access by lateral revision at destination) • On vectors, clean up flight plan(Direct, radial in),FAF as "TO" Waypoint
RAD NAV	• VOR: Check for proper NAVAID tuning, either auto or manual.
PROG	• Insert runway under 4R for situational awareness (technique) • Check navigation accuracy • If RNAV approach (NOT VOR): o GPS PRIMARY or NAV ACCURACY HIGH must be present on both PROG pages (may be confirmed on ND) o Set .3 RNP
PERF APPR	• Activate / Confirm Approach (when in SELECTED SPEED Mode, technique - ask other pilot) • Enter Landing Data QNH, Temp, MAG WIND V_{APP} (if required) DH/MDA (DH/DA - CAT II/III, DA/DDA - CAT I, RNAV, VOR) LDG CONF
PERF GO-AROUND	• Leave default values unchanged

2. ILS pb (if ILS Approach) / PM VOR sel switch to VOR (if VOR Approach)

3. Seat Belt Sign – ON (Descending through 18,000' Flow)

4. Set AUTO BRK (if desired)

5. Check ECAM STATUS

6. Check GW < MLW and landing performance

R — Report – Brief Approach

1.Threats	• Relevant threats/concerns
1. Approach Chart	• Highest MSA • Approach name and runway * • Approach chart date * • TDZE * • Required visibility *
2. PFD	• Primary navaid Frequency * • Final approach course * • DA (DH), AH, or DDA/MAP *
3. F-PLN page	• Final approach verification altitude * • Missed approach *
4. All Approaches	• MEL items • Planned runway turnoff and taxi route • Landing performance – Standard Assesment? • Autobrake setting • Landing flap setting • Any applicable special considerations such as: o Unique airport advisory approach information o Unique noise abatement procedures o Unique engine failure during missed approach procedures o Significant terrain or obstacles in terminal area relative to approach routing o Significant weather conditions (windshear, icing, runway conditions) o LAHSO o ECAM status that may affect approach & landing capabilities o Any other known risks and intentions

* If in night conditions or weather less than 2000/3 Note: Blue colored text required for ALL briefings.

If in day conditions with weather 2000/3 or greater:
State the electronic or visual means to identify the landing runway in the following order of priority:
- ILS or FMS LNAV/VNAV approaches
- Other non precision approaches
- VASI/PAPI or visual reference

D — Descent - Approach Checklist

A330 Callouts

Takeoff to Flap Retraction		
Trigger	**PF**	**PM**
Commencing takeoff roll	• Advance thrust levers to approximately 1.1 EPR • Advance thrust levers to FLX or TOGA • Check MAN FLX or MAN TOGA on FMA **"FLEX" or "TOGA"**	• Verify takeoff thrust on E/WD **"FLEX SET" or "TOGA SET"**
	• Captain assumes/maintains control of thrust levers	
80 kts	**"CHECKED"**	**"80"** • Check STBY airspeed
V_1		**"V1"**
	• Captain removes hand from thrust levers	
V_R	• Rotate at 3º / sec to 15º	**"ROTATE"**
After liftoff	• Verify positive rate of climb **"GEAR UP"** • Maintain F/D commanded attitude • Establish initial climb speed of not less than V_2 + 10 knots	• Verify positive rate of climb on VSI **"POSITIVE RATE"** **"GEAR UP"** • Position gear lever UP • Monitor speed and altitude
Above 100' AFL	**"AUTOPILOT 1"** or **"AUTOPILOT 2"**, as appropriate	• Select autopilot ON, if requested
At or above 400' AFL	• Select/Request "**HEADING ___**" if appropriate	• Select HDG, if requested
At the THR RED ALT **LVR CLB** ***flashing***	• Move thrust levers to the CL detent **"CLIMB"**	
	• Verify **CLB** annunciations on FMA	
		"CLIMB SET"
	Normal Climb Profile (NADP 2). When LVR CLB flashes (1000 feet), select CL thrust and adjust the pitch attitude to maintain a climb rate while accelerating to 250 KIAS. Retract the flaps at the appropriate "F" or "S" speed.	**Noise Abatement Profile (NADP 1).** When LVR CLB flashes (1,500 feet), select CL thrust and follow the F/D commands to maintain V2 + 10 to 15 knots until 3000 feet AFL (see special nation state procedures), then adjust the pitch attitude to maintain a slight climb rate while accelerating.
At ACCEL ALT (SRS changes to **CLB** ***or*** **OP CLB** ***)***	• Follow F/D commands to reduce pitch and accelerate	
F ***speed*** ***(only displayed when FLAPS 2 or 3 were used for takeoff)***	• Check airspeed **"FLAPS 1"**, (if appropriate)	• Check airspeed **"FLAPS 1"**, if requested • Select FLAPS 1, if requested
S ***speed***	• Check airspeed **"FLAPS UP,** **AFTER TAKEOFF CHECKLIST"** • Monitor acceleration to appropriate speed	• Check airspeed **"FLAPS UP"** • Select FLAPS 0 • Disarm spoilers • Accomplish After Takeoff Flow and Checklist

Loss of Thrust At or Above V_1

Trigger	PF	PM
	• Pilot first recognizing engine failure **"ENGINE FAILURE"**	
Loss of thrust	**"MY AIRCRAFT"** **"TOGA"**, if desired • Advance thrust levers to TOGA, if desired	• Ensure thrust levers at TOGA, if requested **"TOGA SET"**, if requested
V_R	• Rotate at 3° / sec to 12.5°	**"ROTATE"**
After liftoff	• Verify positive rate of climb **"GEAR UP"** • Maintain F/D commanded attitude • Trim rudder to maintain a centered β target	• Verify positive rate of climb on VSI **"POSITIVE RATE"** **"GEAR UP"** • Position gear lever UP • Monitor speed and altitude
Above 100' AFL	**"AUTOPILOT 1"** or **"AUTOPILOT 2"**, as appropriate	• Select autopilot ON, as requested
At or above 400' AFL (or altitude as specified on applicable route manual "Engine Failure – Takeoff" procedure)	• Comply with runway specific "Engine Failure - Takeoff" procedure (if published), otherwise, fly runway heading	
	• Select/request "**HEADING ___**" or "**NAV**" for EOSID, as appropriate	• Select runway heading, engine failure heading, or NAV, if requested • Advise ATC, when able
Climbing through Engine Out Acceleration Altitude	• Push ALT pb or request **"ALTITUDE HOLD"**	• Push ALT pb, if altitude hold requested • Verify level off
F ***speed (only displayed when FLAPS 2 or 3 were used for takeoff)***	• Check airspeed **"FLAPS 1"**, if appropriate	• Check airspeed **"FLAPS 1"**, if requested • Select FLAPS 1, if requested
S ***speed***	• Check airspeed **"FLAPS UP"** • Monitor acceleration to green dot speed	• Check airspeed **"FLAPS UP"** • Select FLAPS 0 • Disarm spoilers
Green dot speed (V_{FTO})	• Select/request **"OPEN CLIMB"**, if desired • Select/request **"SPEED ___"**, • Maintain green dot speed • Select MCT, if thrust levers are at FLX/MCT, move lever to CL, then back to MCT **"MCT"**	• Select Open Climb, if requested • Select green dot speed, if requested • Verify thrust levers at MCT **"MCT SET"**
	• Accomplish ECAM and/or Non-Normal procedure(s) as appropriate	

Rejected Takeoff

Capt	FO
"REJECT, MY AIRCRAFT" • Retard thrust levers to IDLE • Use Autobrakes MAX or maximum manual braking • Select and maintain maximum reverse thrust until it can be assured the aircraft can stop on the runway[1] • Maintain slight forward pressure on sidestick *As soon as aircraft is stopped* • After immediately evaluating situation" o Make a PA announcement" **"THIS IS THE CAPTAIN, REMAIN SEATED, REMAIN SEATED, REMAIN SEATED"** o Advise cabin of intentions when able	**"YOUR AIRCRAFT"** • Monitor autobrakes **"NO AUTOBRAKES"**, if applicable • Monitor deceleration throughout reject • Notify tower, when able **"80"** **"60"**
Or • Call for and accomplish QRH Evacuation checklist (back cover)	• Accomplish QRH Evacuation checklist (back cover), if directed
• Check brake temperature indication	
[1] In case of complete loss of braking, accomplish "Loss of Braking" procedure in OM I, 2i.13	
NOTE: Autobrakes will not activate below 72 knots.	

Loss of Braking Procedure

IF AUTOBRAKE IS SELECTED:
1. BRAKE PEDALS ... PRESS

IF NO BRAKNG AVAILABLE:
1. REV ... MAX
2. BRAKE PEDALS ... RELEASE
   - *Brake pedals should be released when the A/SKID & N/W STRG selector is switched OFF, since pedal force produces more braking action in alternate mode than in normal mode.*
3. A/SKID & N/W STRG ... OFF
4. BRAKE PEDALS ... PRESS
   - *Apply brakes with care since initial pedal force or displacement produces more braking action in alternate mode than in normal mode.*
5. MAX BRK PR ... 1000 PSI
   - *Monitor brake pressure on BRAKES PRESS indicator. Limit brake pressure to approximately 1000 psi and at low ground speed adjust brake pressure as required.*

IF STILL NO BRAKING:
1. PARKING BRAKE ... SHORT AND SUCCESSIVE APPLICATION
   - *Use short and successive brake applications to stop the aircraft. Brake onset asymmetry may be felt at each parking brake application. If possible delay use of parking brake until low speed to reduce the risk of tire burst and lateral control difficulties.*

ILS CAT I

Trigger		PF	PM
Prior to starting the approach		• Ensure waypoints are sequenced properly • Confirm the approach phase has been activated	
Initial approach		• Check airspeed (below VFE Next-10 knots and not accelerating) **"FLAPS 1"** • Verify **S** speed	• Check airspeed (below VFE Next-10 knots and not accelerating) **"FLAPS 1"** • Select FLAPS 1
		• Check airspeed below VFE Next-10 knots and not accelerating (205 max) **"FLAPS 2"** • Verify **F** speed	• Check airspeed below VFE Next-10 knots and not accelerating (205 max) **"FLAPS 2"** Select FLAPS 2
Cleared for the approach		• Select APPR on FCU (Check LOC identifier on PFD	
		• Verify both AP1 and AP2 engaged, if an autopilot approach • Verify **GS** and **LOC** annunciate blue on FMA	
LOC alive		• Verify LOC deviation display	**"COURSE ALIVE"**
		• Verify **LOC*** annunciates green on FMA	
G/S alive		• Verify G/S Deviation Display	**"GLIDESLOPE ALIVE"**
1½ dots or 3 nm from FAVA		• Check airspeed **"GEAR DOWN"**	• Check airspeed **"GEAR DOWN"** • Position gear lever DOWN • Check Triple Indicator
½ dot or 2 nm from FAVA		• Check airspeed **"FLAPS 3, LANDING CHECKLIST"** • Spoilers Arm	• Check airspeed **"FLAPS 3"** • Select FLAPS 3 • Accomplish Landing Checklist
On GS Or 1 nm from FAVA	**2 ENG**	• Check airspeed **"FLAPS FULL"**, (if desired)	• Check airspeed **"FLAPS FULL"**, if requested • Select FLAPS FULL, if requested • Complete Landing Checklist • Monitor speed
		• Verify **GS** annunciates green on FMA	
		"SET MISSED APPROACH ALTITUDE"	• Set missed approach altitude on FCU
	1 ENG	• Verify **GS** annunciates green on FMA	
		"SET MISSED APPROACH ALTITUDE"	• Set missed approach altitude on FCU
Final Approach Verification Altitude Fix		• Verify Final Approach Verification Altitude	
1,000' RA		• Verify altitude **"STABLE"**	**"1000"** (auto callout)
		• Verify autothrust in **SPEED** mode	
500' RA		• Verify altitude, speed, and sink rate	**"500"** (auto callout) **"STABLE, TARGET, SINK ___"** or **"STABLE, ± ____, SINK ____"**

ILS CAT I (Cont'd)		
100' above DA(H)	• Verify altitude **"CONTINUING"**	**"100 ABOVE"**[1] (auto callout) • Divide time between monitoring instruments and scanning outside for runway environment
DA(H) Runway NOT in sight	**"GO AROUND, TOGA"**[3] • Execute go around procedure	**"MINIMUMS"** (auto callout) **" NO CONTACT"**
or		
DA(H) Runway in sight	**"LANDING"**	**"MINIMUMS"**(auto callout) **" <VISUAL CUES> IN SIGHT"**[1]
	• Verify A/P disengaged prior to: o 80 feet AGL if CAT 2, CAT 3 SINGLE, or CAT 3 DUAL annunciated on FMA o 160 feet AGL if CAT I annunciated on FMA	
[1]Not required if "LANDING" callout has been made by PF. [2]NAV should be promptly engaged unless the desired missed approach path cannot be flown in NAV (e.g. visual approach, dual FMGC failure, etc) or ATC assigns a heading. If HDG is used, maintain the current heading until reaching 400' AFL. [3]NAV should be promptly engaged. If the desired missed approach path cannot be flown in NAV (e.g. visual approach, dual FMGC failure, etc) or ATC assigns a heading, use HDG and maintain the current heading until reaching 400' AFL.		

Visual Approach Callouts		
Trigger	**PF**	**PM**
1,000' RA	• Verify altitude **"STABLE"**	**"1000"** (auto callout)
	• Verify autothrust in **SPEED** mode	
500' RA (auto callout)	• Verify altitude, speed, and sink rate	**"500"** (auto callout) **"STABLE, TARGET, SINK ___"** or **"STABLE, ± ____, SINK ____"**
If FD is inoperative of not being used, the FPV should be displayed		

Communication During Manual Flight	
Autopilot	**"AUTOPILOT OFF"** or **"AUTOPILOT 1(2)"**
Flight Directors	**"FLIGHT DIRECTORS OFF"**[1] or **"FLIGHT DIRECTORS ON"** *Ensure **both** F/Ds are OFF or ON*
Speed	**"SPEED ___"** or **"MANAGED SPEED"**
Heading/Nav	**"HEADING ___"** or **"NAV"**
Managed/Open Climb (Descent)	**"OPEN CLIMB (DESCENT)"** or **"MANAGED CLIMB (DESCENT)"**
Vertical Speed	"**VERTICAL SPEED PLUS (MINUS) ____"** or **"ALT HOLD"**
[1]If the Flight Directors are selected off, the use of the Flight Path Vector (FPV) is recommended.	

ILS CAT II / III

Trigger		Captain (PF)	FO (PM)
Prior to starting approach		• Ensure waypoints are sequenced properly • Confirm that the approach phase has been activated	
Initial approach		• Check airspeed below VFE Next-10 knots and not accelerating **"FLAPS 1"** • Verify **S** speed	• Check airspeed below VFE Next-10 knots and not accelerating **"FLAPS 1"** • Select FLAPS 1
		• Check airspeed below VFE Next-10 knots and not accelerating • (205 max) **"FLAPS 2"** Verify **F** speed	• Check airspeed below VFE Next-10 knots and not accelerating (205 max) **"FLAPS 2"** Select FLAPS 2
Cleared for the approach		Check correct LOC identifier displayed on the PFD	
		• Select APPR on FCU • Select second autopilot ON **"CAT 3 DUAL"** or **"CAT 3 SINGLE"** or **"CAT 2"**	• Verify both AP1 and AP2 engaged • Verify approach capability
		• Verify **GS** and **LOC** annunciate blue on FMA	
LOC alive		• Verify LOC deviation display	**"COURSE ALIVE"**
		• Verify **LOC*** annunciates green on FMA	
G/S alive		• Verify G/S Deviation Display	**"GLIDESLOPE ALIVE"**
1½ dots or 3 nm from FAVA		• Check airspeed **"GEAR DOWN"**	• Check airspeed **"GEAR DOWN"** • Position gear lever DOWN • Check triple Indicator
½ dot or 2 nm from FAVA		• Check airspeed **"FLAPS 3, LANDING CHECKLIST"** • Spoilers Arm	• Check airspeed **"FLAPS 3"** • Select FLAPS 3 • Accomplish Landing Checklist
On G/S or 1 nm from FAVA	**2 ENG**	• Check airspeed **"FLAPS FULL"**	• Check airspeed **"FLAPS FULL"** • Select FLAPS FULL, if requested • Complete Landing Checklist • Monitor speed
		• Verify **GS** annunciates green on FMA	
		"SET MISSED APPROACH ALTITUDE"	• Set missed approach altitude on FCU
(1 ENG - CONFIG 3)	**1 ENG**	• Verify **GS** annunciates green on FMA	
		"SET MISSED APPROACH ALTITUDE"	• Set missed approach altitude on FCU
Final Approach Verification Altitude Fix		• Verify Final Approach Verification Altitude	
1,000' RA		• Verify altitude **"STABLE"**	**"1000"** (auto callout)
		• Verify autothrust in **SPEED** mode	
500' RA		• Verify altitude, speed, and sink rate	**"500"** (auto callout) **"STABLE, TARGET, SINK ___"** or **"STABLE, ± ____, SINK ____"**

ILS CAT II / III (Cont'd)

Below 400' RA	• Verify **LAND** annunciates green on FMA	
	• Monitor the approach	**"LAND GREEN"** or **"NO LAND GREEN"** **"AUTOLAND WARNING"**, if red light illuminated
100' above minimums	• Verify altitude **"CONTINUING"** • Divide time between monitoring auto flight system and scanning outside for runway environment	**"100 ABOVE"** (auto callout)[1] • Verify altitude
DH Runway <u>not</u> in sight	**"GO AROUND, TOGA"**[2] • Execute go around procedure	**"MINIMUMS"** (auto callout)[1] • Verify altitude
	or ...	
DH Runway in sight	**"LANDING"**	**"MINIMUMS"** (auto callout)[1] • Verify altitude
AH (Electronically verified aircraft will land in touchdown zone)	**"LANDING"**	**"MINIMUMS"** (auto callout)[1] • Verify altitude
RETARD (auto callout) 10 ft RA	• Verify thrust levers at idle	• **"NO FLARE"**, if FLARE not annunciated • Monitor altitude on PFD • **"PITCH"**, if pitch altitude reaches 7.5° • **"BANK"**, if bank reaches 7°
Touchdown	• Select idle reverse Select Max Reverse as required	• Verify spoiler extension and **REV** green on Ecam **"SPOILERS"** or **"NO SPOILERS"**, if applicable **"ONE REVERSE"** or **"NO REVERSE"**, as applicable **"NO ROLLOUT"** if applicable
Nosewheel touchdown	• Apply brakes, as required	• Monitor autobrakes, if selected **"NO AUTOBRAKES"** if applicable • Monitor deceleration
80 Kts	• Begin to modulate toward idle reverse	**"80"**
60 Kts	• Ensure idle reverse thrust or less • Disconnect autopilot	**"60"**

[1] Auto callout will not occur on CAT II RA/NA approaches because minimums are entered into the PERF APPR page MDA field. The PM should make this callout for all aircraft on CAT II RA/NA approaches.
[2] NAV should be promptly engaged. If the desired missed approach path cannot be flown in NAV (e.g. visual approach, dual FMGEC failure, etc) or ATC assigns a heading, use HDG and maintain the current heading until reaching 400' AFL.

NOTE: During ILS CAT II RA/NA approaches, the first officer (PM) calls "Minimums" based on the first indication of:
- Aural tone (crews must select ACP/MKR audio to ON), or
- AWY displayed in white on PFD displayed on the PFD.

Non-ILS Approach

Trigger		PF	PM
Prior to starting approach		• Ensure waypoints are sequenced properly • Confirm that the approach phase has been activated	
Initial approach		• Check airspeed below VFE Next-10 knots and not accelerating **"FLAPS 1"** • Verify **S** speed	• Check airspeed below VFE Next-10 knots and not accelerating **"FLAPS 1"** • Select FLAPS 1
		• Check airspeed below VFE Next-10 knots and not accelerating (205 max) **"FLAPS 2"** • Verify **F** speed	• Check airspeed below VFE Next-10 knots and not accelerating (205 max) **"FLAPS 2"** • Select FLAPS 2
Cleared for the approach		• Select APPR on FCU	
		• Verify **FINAL** and **APP NAV** annunciate blue on FMA	
Final approach course intercept		• Verify **APP NAV** annunciates green on FMA	
Approx 3 miles prior to FAF		• Check airspeed **"GEAR DOWN,"**	• Check airspeed **"GEAR DOWN"** • Position gear lever DOWN • Check Triple Indicator
Approx 2 miles prior to FAF		• Check airspeed **"FLAPS 3, LANDING CHECKLIST"** • Spoilers Arm	• Check airspeed **"FLAPS 3"** • Select FLAPS 3 • Accomplish Landing Flow and Checklist
Approx 1 mile prior to FAF	**2 ENG**	• Check airspeed **"FLAPS FULL"**, (if desired)	• Check airspeed **"FLAPS FULL"** • Select FLAPS FULL, if requested • Complete Landing Checklist • Monitor speed
	1 ENG	No actions – maintain Flap 3 configuration & airspeed	
Glidepath intercept / capture (FINAL APP)		• Verify **FINAL APP** annunciates green on FMA	
		"SET MISSED APPROACH ALTITUDE"	• Set missed approach altitude on FCU
1,000' RA		• Verify altitude **"STABLE"**	**"1000"** (auto callout)
500' RA		• Verify altitude, speed, and sink rate	**"500"**[1] (auto callout) **"STABLE, TARGET, SINK ___"** or **"STABLE, ± ___, SINK ___"**
100' above DA or DDA		• Verify altitude **"CONTINUING"**	**"100 ABOVE"**[2] • Divide time between monitoring instruments and scanning outside for runway environment
DA or DDA (Runway environment <u>not</u> in sight)		**"GO AROUND, TOGA"**[3] • Execute go around procedure	**"MINIMUMS"** (auto callout), **"NO CONTACT"**
or			
DA or DDA (Runway environment <u>is</u> in sight)		**"LANDING"**	**"MINIMUMS"** (auto callout),**" <VISUAL CUES> IN SIGHT"**[2]
		• Verify A/P disengaged no later than DA/DDA	

The "500" callout is not required on a non-precision approach.
[2]Not required if "LANDING" callout has been made by PF.
[3]NAV should be promptly engaged. If the desired missed approach path cannot be flown in NAV (e.g. visual approach, dual FMGEC failure, etc) or ATC assigns a heading, use HDG and maintain the current heading until reaching 400' AFL.

Stabilized Approach Callouts

If …	*and…*	*then …*
At 1,000 ft RA	Stabilized	The PF calls **"STABLE"**
	Unstabilized in IMC	The PF calls **"UNSTABLE"** and performs a go-around.[1]
	Unstabilized in VMC	Compliance with the flight parameters shown below (not rate of descent) may be delayed until 500 ft RA as long as "unstable" is called out along with the deviation is verbalized (e.g., "Unstable, slightly high – correcting", etc.), otherwise the PF calls out "UNSTABLE" and performs a go-around[1].
At 500 ft RA[2]	Stabilized	The PM calls **"STABLE, Target or ± ___ , SINK ___"**
	Unstabilized	The PM calls **"UNSTABLE"** and the PF performs a go-around.[1]

[1]If non-normal conditions require deviation and are briefed the approach can be continued.
[2]Callout not required during non-precision approach unless "Landing" callout is made about 500 feet.

Stabilized Approach Notes

Policy: Pilots will plan to be stabilized on all approaches by 1,000 ft RA in both IMC and VMC.

Rate of Descent: By 1,000 ft RA, the descent rate is transitioning to no greater than 1000 FPM.

Flight Parameters: Below 1,000 ft AFL, the aircraft is:

- On a proper flight path (visual or electronic) with only small changes in pitch and heading required to maintain that path,
- At a speed above V_{LS}, no less than Target – 5 kts and not greater than Target + 10 kts allowing for transitory conditions, with engines spooled up,
- In trim, and in an approved landing configuration

Landing

Trigger	PF	PM
If Autoland: (RETARD auto callout) 10' RA or If Manual landing: 20-30 feet RA	• Verify thrust levers at idle	• Monitor attitude on PFD • **"PITCH"**, if pitch attitude reaches 7.5° • **"BANK"**, if bank reaches 7°
Touchdown	• Select Idle Reverse • Select Max Reverse, as required	• Verify spoiler extension and **REV** green on ECAM **"SPOILERS"** or **"NO SPOILERS"** as applicable **"ONE REVERSE" or "NO REVERSE"** as applicable **"NO ROLLOUT"** If applicable
Nose wheel touchdown	• Apply brakes, as required	• Monitor autobrakes if selected **"NO AUTOBRAKES"**, if applicable • Monitor deceleration
80 kts	• Begin to modulate toward idle reverse	**"80"**
60 kts	• Ensure idle reverse thrust or less • If Autoland, disconnect autopilot	**"60"**

Go-Around

Trigger	PF	PM
Go-around	**"GO-AROUND, TOGA"** • Advance thrust levers to TOGA • Simultaneously rotate to F/D commanded attitude • Retard thrust levers to CL detent **"CLIMB"** (If TOGA req'd, delay climb thrust until LVR CLB flashing) **"GO-AROUND FLAPS"**	• Verify MAN TOGA – SRS on FMA **"TOGA SET"** • Check THR CLB on FMA **"CLIMB SET"** **"FLAPS ___"** • Retract Flaps to the go-around setting (e.g. Flaps **3**)
	• Verify **MAN TOGA | SRS |** annunciated on FMA	
Positive rate of climb	• Verify positive rate of climb **"GEAR UP"** • Execute published missed approach or proceed as instructed by ATC	• Verify positive rate of climb on VSI **"POSITIVE RATE"** **"GEAR UP"** • Position gear lever UP • Advise ATC
Above 100' AFL	**"AUTOPILOT 1"**, or **"AUTOPILOT 2"**, if appropriate	• Select autopilot on, if requested
At or above 400' AFL	• Select/request **"NAV"** or **"HEADING ___"** if appropriate	• Select/adjust NAV or HDG, if requested
At the THR RED ALT **LVR CLB** ***flashing***	• Move thrust levers to the CL detent if not previously selected **"CLIMB"**	
	• Verify **CLB** annunciations on FMA	
	• Follow F/D commands to reduce pitch and accelerate	**"CLIMB SET"**
F ***speed***	Check airspeed **"FLAPS 1"**	• Check airspeed **"FLAPS 1"** • Select FLAPS 1
S ***speed***	• Check airspeed **"FLAPS UP,** **AFTER TAKEOFF CHECKLIST"** • Monitor acceleration to green dot speed	• Check airspeed **"FLAPS UP"** • Select FLAPS 0 • Disarm Spoilers • Accomplish After Takeoff Flow and Checklist

[1] NAV should be promptly engaged unless the desired missed approach path cannot be flown in NAV (e.g. visual approach, dual FMGEC failure, etc) or ATC assigns a heading. If HDG is used, maintain the current heading until reaching 400' AFL.

Above 1000 feet RA, thrust usage and configuration requirements are at the pilot's discretion. Normally, however, the best course of action is to initially move the thrust levers to the TOGA detent and then return them to the CL detent when TOGA thrust is not required

Engine-out Go-Around

Trigger	PF	PM
Go-around	**"GO-AROUND, TOGA"** • Advance thrust lever to TOGA • Rotate to F/D commanded attitude • Engage/Ensure NAV[1] **"GO-AROUND FLAPS"**	• Verify MAN TOGA on FMA **"TOGA SET"** • Engage/Ensure NAV[1] **"FLAPS ___"** • Retract Flaps to the go-around setting (e.g. Flaps **2**)
	• Verify **MAN TOGA | SRS | GA TRK** annunciated on FMA	
Positive rate of climb	• Verify positive rate of climb **"GEAR UP"** • Maintain F/D commanded attitude	• Verify positive rate of climb on VSI **"POSITIVE RATE"** **"GEAR UP"** • Position gear lever UP • Advise ATC • Monitor speed and altitude
Above 100' AFL	**"AUTOPILOT 1"**, or **"AUTOPILOT 2"**, if appropriate	• Select autopilot on, if requested
At or above 400' AFL (or altitude as specified on published "Engine Failure – Missed Approach")	• Comply with runway specific "Engine Failure – Missed Approach procedure (if published); otherwise, fly runway heading	
	• Select/request **"HEADING ___"**	• Select runway heading, engine failure heading, if requested • Monitor missed approach procedure
At or above 1000' AFL (or altitude as specified on published "Engine Failure – Missed Approach")	• Push V/S knob or request **"ALTITUDE HOLD"**	• Push ALT pb, if altitude hold requested • Verify ALT annunciates green on FMA
F ***speed***	• Check airspeed **"FLAPS 1"**	• Check airspeed **"FLAPS 1"** • Select FLAPS 1
S ***speed***	• Check airspeed **"FLAPS UP, AFTER TAKEOFF CHECKLIST"** • Monitor acceleration to green dot speed	• Check airspeed **"FLAPS UP"** • Select FLAPS 0 • Disarm Spoilers • Accomplish After Takeoff Flow and Checklist
Green dot speed	• Select/request **"OPEN CLIMB"** if desired • Select/request **"SPEED ___"** • Maintain green dot speed • Select MCT **"MCT"**	• Select Open Climb, if requested • Select green dot speed, if requested • Verify thrust levers at MCT **"MCT SET"**
	• If necessary, accomplish ECAM and/or QRH procedure(s) as appropriate	

[1]NAV should be promptly engaged unless the desired missed approach path cannot be flown in NAV (e.g. visual approach, dual FMGEC failure, etc) or ATC assigns a heading. If HDG is used, maintain the current heading until reaching 400' AFL.

Reactive Windshear Alerts and Crew Actions

When the aircraft is CONFIG 1 or more, the windshear detection function is operative during:
Takeoff: from after rotation up to 1,300 feet
Approach: from 1,300 feet to 50 feet
In all cases when windshear is encountered, notify ATC.

Crew Actions

Windshear System Inactive (Prior to Rotation)	
Aligned for Takeoff	• Refer to QRH SEVERE WEATHER / WINDSHEAR Decision Aid in OPS DATA tab for possible delay of takeoff.
Prior to V1	• If windshear is encountered, reject the takeoff if sufficient runway remains.
At or Above V1	• If windshear is encountered, continue the takeoff and execute Windshear Recovery Maneuver. • Rotate no later than 2,000 feet of runway remaining.
Windshear System Active (After Rotation)	
	Red **"WINDSHEAR, WINDSHEAR, WINDSHEAR"** • Execute Windshear Recovery Maneuver (see below)

Windshear Escape Maneuver

In some cases, barometric instruments (altimeter/VSI) can indicate a climb even though the aircraft is descending toward the terrain or the terrain is rising. In all cases it is critical to callout the trend (i.e. "Descending", "Climbing") as determined from the Radio Altimeter. The Barometric Altimeter and VSI are supporting instruments.

PF	PM
Recovery	
"Escape TOGA" *Simultaneously:* **THRUST** • **THRUST - TOGA** **ROLL** • **Roll wings level** **PITCH** • If on takeoff roll, rotate no later than 2,000 feet of runway remaining • Rotate at a normal takeoff rotation rate (2-3°/sec) to SRS commanded attitude (including full back sidestick), or … • **If SRS not available, use 17.5° with full back sidestick, if required** • Utilize autopilot if engaged, but be aware that automatic disengagement may occur if alpha > alpha prot	• Ensure all actions have been completed and • Call out any OMISSIONS • Call out alititude and trend information based on radio altimeter e.g., **"300 FEET DESCENDING, 400 FEET CLIMBING"**)
Configuration	
• Do not change gear/flap configuration or regain lost airspeed until windshear is no longer a factor	• Verify all actions have been completed and call out any omissions
After Windshear Recovery	
• Resume normal flight • Retract gear/flaps as required	• Issue PIREP to ATC

Predictive Windshear Alerts

Indications	Advisory	Caution	Warning
ND	**Windshear Icon**		
PFD	**N/A**	Amber **W/S AHEAD**	Red **W/S AHEAD**
AURAL	**N/A**	**"Monitor Radar Display"**	"**Windshear Ahead**" (Twice on Takeoff) **"Go Around Windshear Ahead"** (On Approach)

Predictive Windshear Crew Actions

Phase Of Flight	Advisory	Caution	Warning
Aligned for Takeoff	Delay the takeoff until the alert no longer exists.		
Prior to V1	TOGA. Continue the takeoff	Reject the takeoff if sufficient runway remains.	
At or Above V1	• TOGA • Rotate normally no later than 2,000 feet of runway remaining • Follow SRS commands • Maneuver as required to avoid windshear If a PWS Warning perform Windshear Escape Maneuver (see above).		
During Approach	Continue the approach	• "Go around. Windshear ahead" - Execute a normal go around or Windshear Escape Maneuver (see above).	

EGPWS Warning Recovery Maneuver

If a "PULL UP" or TERRAIN, TERRAIN PULL UP" alert occurs at night or in IMC, use this Maneuver

Step	PF	PM
1 Accomplished Simultaneously	**THRUST** **"TOGA"** • Set TOGA thrust **PITCH** • Autopilot – disconnect • Roll wings level • Rotate to full back sidestick	• Verify all actions have been completed and call out any omissions • Monitor *radio altimeter* and call out information on flight path[1] (e.g., **"300 FEET DESCENDING, 400 FEET CLIMBING"** • Monitor attitude, airspeed, and altitude • Call out the safe altitude (e.g., **"MSA IS 3,400 FEET"**) • Advise ATC
2	**CONFIGURATION** • Speedbrakes - retract • Do not alter gear/flap configuration until terrain clearance is assured	
3	• Climb to safe altitude	
4	**AFTER RECOVERY** • Resume normal flight • Retract gear/flaps as required	

[1] Radio altimeter is primary flight path indicator. In some cases barometric instruments (altimeter/VSI) can indicate a climb even though terrain elevation may be increasing faster than the climb rate of the airplane. In these cases it is critical to call out the trend "Descending" as determined from the radio altimeter.

Nose High Recovery Actions and Callouts

Nose High Recognition: A nose high pitch attitude is recognized by a pitch attitude unintentionally greater than 25°, airspeed decreasing rapidly, and possibly excessive bank.

Step	PF	PM
1	**Recognize and confirm the situation**	
2	**Autopilot – OFF** (if required) **A/THR – OFF** (if required)	• Verify all actions have been completed and call out any omissions • Monitor attitude, airspeed and altitude • Monitor radio altimeter, and call out information on flight path (e.g., **"300 Feet Descending; 400 Feet Climbing"**, etc.)
	Pitch • Apply as much as full nose down elevator to reduce pitch	
	Roll • Roll to obtain a nose down pitch<60°[1]	
	Thrust • Apply thrust proportional to airspeed degradation[2]	
3	• Roll to wings-level when approaching the horizon • Check airspeed and adjust thrust • Establish pitch attitude	• Advise ATC if required

[1] Bank aids in lowering pitch while maintaining a positive load factor to avoid zero or negative G-forces. Depending upon the degree and rate of pitch change, bank angles from 35° to 60° (in the direction of any initial roll) may be required. For bank angles exceeding 90° focus on the sky pointer (bank pointer) of the attitude indicator. Roll the aircraft in the direction of the bank indicator. This is the shortest direction toward an upright wings-level attitude.

[2] It may be necessary to reduce thrust to prevent the angle of attack from continuing to increase.

Nose Low Recovery Actions and Callouts

Nose Low Recognition: A nose-low pitch attitude is recognized by low pitch attitude, high rate of descent, increasing airspeed, and possibly excessive bank angle.

Step	PF	PM
1	**Recognize and confirm the situation**	
2	**Autopilot – OFF** (if required) **A/THR – OFF** (if required)	• Verify all actions have been completed and call out any omissions • Monitor attitude, airspeed and altitude • Monitor radio altimeter, and call out information on flight path (e.g., **"300 Feet Descending; 400 Feet Climbing"**, etc.)
	Recover from stall (if required)	
	Roll – Adjust (if required) • Roll in the shortest direction toward wings-level attitude[1]	
	Thrust and Drag – Adjust (if required)	
3	**Recover to Level Flight**	• Advise ATC if required

[1] During recovery from nose-low, high bank angle attitudes, focus on the sky pointer (bank pointer) of the attitude indicator. Roll the aircraft in the direction of the bank indicator. This is the shortest direction toward an upright wings-level attitude.

[2] The primary concern is to decrease bank angle (if present) to prevent overloading the aircraft when the pitch is raised to the horizon.

Stall Recovery

Step	PF	PM
1	**Recognize and confirm the situation**	
2	**Autopilot - Disconnect** **Pitch** • Apply nose down elevator with the sidestick to reduce the angle of attack until buffet and/or aural stall warning stops • Nose down stabilizer trim may be needed[1] • In case of insufficient pitch down authority, reducing thrust may be necessary **Roll** • Roll in the shortest direction to wings level if needed[2] **Thrust** • Adjust as needed	• Verify all actions have been completed and call out any omissions • Monitor attitude, airspeed, and altitude • Monitor *radio altimeter* and call out information on flight path (e.g., **"300 FEET DESCENDING, 400 FEET CLIMBING" etc.)**
3	**Configuration** • SPEED BRAKE – retract • Do not alter gear/flap configuration	
4	**After Stall Recovery** • Resume normal flight • If below 20,000 feet and in clean configuration request FLAPS 1	• Select FLAPS 1 if requested

[1] If the sidestick does not provide the needed response, stabilizer trim may be necessary. Excessive use of pitch trim may aggravate the condition, or may result in loss of control or in high structural loads.

[2] Excessive use of pitch trim or rudder may aggravate the condition, or may result in loss of control or in high structural loads.

Note - A spurious stall warning may sound in NORMAL law, if an angle of attack probe is damaged.

Stall Warning at Lift-Off

Step	PF	PM
1	**THRUST** • **"TOGA"** Set TOGA thrust	• "TOGA SET"
	PITCH • Autopilot – disconnect Pitch attitude – 15°	• Verify all actions have been completed and call out any omissions • Monitor attitude, airspeed, and altitude
	ROLL • Roll wings level	
2	When a safe flight path and speed are achieved and maintained, if stall warning continues, consider it spurious	

ILS/LDA PRM *Climbing* Breakout		
Trigger	**Capt (PF)**	**FO (PM)**
Alert	Simultaneously: **"BREAKOUT, TOGA"** • Disconnect Autopilot • Advance thrust levers to TOGA • Turn to heading • Establish climb (follow RA, if received) • Select thrust levers to CL when able **"CLIMB"**	• If RA procedure, turn both FDs OFF **"TOGA SET"** • Set and select heading on FCU • Set (do not select) altitude on FCU • Verify CL limit on E/WD **"CLIMB SET"** • Monitor flight path and speed; call out deviations
Established on heading	• Reestablish automation • Reconfigure aircraft, as desired	• Reconfigure aircraft, as desired
ILS/LDA PRM *Descending* Breakout		
Trigger	**Capt (PF)**	**FO (PM)**
Alert	Simultaneously: **"BREAKOUT"** • Verify thrust levers remain in CL detent • Disconnect autopilot • Turn to heading • Establish descent (follow RA, if received), not exceed 1,000 FPM (unless directed by RA)	• If RA procedure, turn both FDs OFF • Set and select heading on FCU • Set (do not SELECT) altitude on FCU • Monitor flight path and speed; call out deviations
Leveled off and established on heading	• Reestablish automation • Reconfigure aircraft, as desired[1]	• Reconfigure aircraft, as desired
[1]After a descending breakout, the GA phase will not have been automatically sequenced. Unless TOGA is subsequently selected, it will be necessary to re-insert the anticipated approach into the flight plan.		

Emergency Descent (Quick Action Item)

- This maneuver is designed to provide a smooth descent to a safe altitude, in minimum time, with the lowest possible passenger discomfort.
- If structural damage is suspected, limit airspeed as much as possible, and avoid high maneuvering loads.
- The autopilot and A/THR should remain engaged and used to accomplish the descent. If the autopilot is not available manually fly the maneuver.

Pilot Flying

"EMERGENCY DESCENT."

Altitude:
- Descend to 10,000 ft or minimum safe altitude[1] (whichever is higher)
- Continue descent to 10,000 ft when able

Heading:
- Select a turn or proceed straight ahead.

Airspeed:
- SPD … V_{mo}/M_{mo} (limit speed and avoid G load if damage suspected)

Wait minimum of 10 seconds then slowly:
- Speedbrakes … Extend after 10 second delay

(ensure V_{ls} does not exceed indicated airspeed)

1000 feet prior to Level Off:
- Speedbrakes … Retract
- SPD … LRC (CI 0) or as appropriate

Pilot Monitoring

Apply the Emergency Descent checklist on the QRC, 2-QA

- PA – **"Emergency descent, be seated"**
- Notify ATC and obtain descent clearance
  - **"PAN-PAN" or "MAYDAY"** (3 times)
  - present position
  - intentions
- Cabin Signs … ON
- Engine Mode … IGN
- External Lights…all ON
- Obtain altimeter setting
- Check safe altitude (MEA, MOCA, MORA, MSA)
- TCAS Selector – BELOW

If not in contact with ATC, also:
- Transmit on 121.5
  - **"PAN-PAN" or "MAYDAY"** (3 times)
  - present position
  - intentions

When cabin has descended below 14,000 feet:
- Flight Attendants … Notify

[1]Minimum Safe altitude is:
- On airway: Minimum Enroute Altitude (MEA), or Minimum Obstacle Clearance Altitude (MOCA), whichever is higher, or
- Off airway: Minimum Off-Route Altitude (MORA), or any other altitude based on terrain clearance, navigation aid reception, or
- Within terminal area: Highest Minimum Safe Altitude (MSA)

Expanded Discussion

Don oxygen masks and establish crew communications, if required. If CAB ALT > 14,000 ft, select PAX OXY MASKS to MAN ON.

Select OP DES and VMO/MMO if appropriate. If A/THR is not available retard thrust levers to idle. Initiate a turn, if necessary. Smoothly extend the speedbrakes after 10 seconds, and lower the nose to initial descent attitude (approximately 10° nose-down).

Wait at least 10 seconds after the aircraft starts descent before fully extending the speedbrakes. Rapid deployment of the speedbrakes at high altitude/slow speed will cause VLS to be greater than the existing speed and may cause autopilot disconnection and speedbrakes auto retraction if angle of attack protection is activated.

About 10 knots before reaching target speed (VMO/MMO) slowly reduce the pitch attitude to maintain target speed. If VMO/MMO is inadvertently exceeded, change pitch smoothly to decrease speed.

Approaching level off altitude, smoothly adjust pitch attitude to reduce rate of descent. The speedbrake lever should be retracted approximately 1000 feet above the desired altitude. After reaching level flight, add thrust to maintain desired speed.

When turbulent air is encountered or expected, reduce to turbulent air penetration speed. Rapid descent is normally made with the landing gear up and speedbrakes FULL.

Level off at 10,000 feet or safe altitude, whichever is higher.

Approximately 1000 feet above the desired altitude, smoothly return the speedbrake to CLOSE during the level off maneuver. When approaching the selected altitude, the altitude capture will engage automatically. Adjusting the command speed to approximately LRC or 300 knots prior to level off minimizes thrust lever activity at altitude capture. The pitch mode will then control altitude and the thrust levers will increase to hold speed.

TCAS WARNINGS

Initial TCAS guidance is based on crew action with 5 seconds. Increase or reversal TCAS guidance is based on crew reaction with 2.5 seconds.
Avoid excessive maneuvers while aiming to keep the vertical speed outside the red area of the VSI and within the green area (if applicable). If necessary, use the full speed range between Alpha max and Vmax. Resolution Advisories are inhibited below 900 ft.

Trigger	*PF*	*PM*
Traffic Advisory - All		
"TRAFFIC, TRAFFIC" *Announcement*	• Do not maneuver based on TA alone.	
	• Attempt to see the reported traffic[1]	
Preventative Resolution Advisory - All		
"MONITOR VERTICAL SPEED" *Or Announcement twice*	• **"AUTOPILOT – OFF"** **"FLIGHT DIRECTORS – OFF"** • Maintain or adjust the vertical speed as required to avoid the red area of the vertical speed scale	• Select both FDs OFF • Verify all actions have been completed and coordinate with PF to accomplish omitted items.
	• Attempt to see reported traffic.[1]	
Corrective Resolution Advisory - All		
RA *(See Announcement list below)*	• Respond promptly and smoothly to an RA. • If not already accomplished, **"AUTOPILOT – OFF"** **"FLIGHT DIRECTORS – OFF"** • Adjust the vertical speed as required to avoid the red area. • Respect the stall, GPWS, or Windshear warning.	• If not already accomplished, Select both FDs OFF • Notify ATC • Verify all actions have been completed and coordinate with PF to accomplish omitted items.
	• Attempt to see reported traffic.[1]	
Corrective Resolution Advisory - Approach		
"CLIMB" or "INCREASE CLIMB" *Or Announcement twice*	• Go Around - Execute	• Notify ATC
Clear of Conflict Advisory - All		
"CLEAR OF CONFLICT" *Announcement*	• Expeditiously return to the previously assigned ATC clearance when the traffic conflict is resolved and resume normal navigation.	
	• AP and/or FD can be reengaged as desired.	
	• Attempt to see the reported traffic.	

Note 1: The traffic acquired visually may not be the same traffic causing the RA. When an RA occurs, the PF should respond immediately to RA displays and maneuver as indicated, unless doing so would jeopardize the safe operation of the flight or the flight crew can assure separation with help of definitive visual acquisition of the aircraft causing the RA.

Corrective Resolution Advisories Announcements (RAs)

RA Category	TCAS II Version 7
Climb	**"CLIMB, CLIMB"**
Descend	**"DESCEND, DESCEND"**
Altitude Crossing Climb	**"CLIMB, CROSSING CLIMB"** (twice)
Altitude Crossing Descend	**"DESCEND, CROSSING DESCEND"** (twice)
Reduce Climb	**"LEVEL OFF, LEVEL OFF"**
Reduce Decent	**"LEVEL OFF, LEVEL OFF"**
RA Reversal to a Climb RA	**"CLIMB, CLIMB NOW"** (twice)
RA Reversal to a Descend RA	**"DESCEND, DESCEND NOW"** (twice)
Increase Climb	**"INCREASE CLIMB"** (twice)
Increase Descent	**"INCREASE DESCENT"** (twice)
Maintain Rate	**"MAINTAIN VERTICAL SPEED, MAINTAIN"**
Altitude Crossing, Maintain Rate (Climb and Descend)	**"MAINTAIN VERTICAL SPEED, CROSSING MAINTAIN"**
Weakening of Initial RA	**"ADJUST VERTICAL SPEED, ADJUST"**

Note: If an initial RA is changed to a less aggressive advisory, pilots should respond to the changed RA and adjust the airplane's vertical speed accordingly, while keeping the pitch guidance symbol in the green arc, and/or out of the red arc.

Non-Normal Procedures – FIX Strategy

Crewmembers will follow the non-normal procedures located in the Quick Reference Card (QRC), in the Quick Reference Handbook (QRH) and electronic checklist (ECAM) to cope with or contain non-normal situations. The QRC is used to accomplish Quick Action checklists and identify ECAM Exceptions. The QRH contains non-normal checklists used by the flight crew to manage non-normal situations that are not contained on ECAM or are supplemental to ECAM. On the ground, the captain will perform PF duties and the first officer, PM duties, respectively.

1. PF – Maintain Aircraft Control – "MY AIRCRAFT"

The PF will devote total awareness to the control and navigation of the airplane and use automation as appropriate to help reduce workload.

2. Identify the Non-Normal - PM - Cancels the Warning or Caution, if applicable

The first crewmember recognizing the non-normal situation will clearly announce it (e.g., "Engine Fire"). Do not identify which engine has malfunctioned at this time. If not immediately obvious which procedure to use, additional analysis may be necessary. The captain will determine which procedure is appropriate.

3. PM - Determine the Procedure: Memory Items, then Reference QRC to determine if Quick Action or ECAM Exception.

Prioritize Procedures in the Following Order:	
1. Memory Items, if applicable 2. Quick Action Items, if applicable	
ECAM Procedure	Non-ECAM Procedure
3. ECAM Exception? a. Yes: QRH Procedure b. No: ECAM Procedure & QRH Follow Up (if applicable)	3. QRH Procedure

4. PM - Accomplish Quick Action Items, if applicable.

Accomplish any red items from memory, and then use the QRC/QRH to complete Quick Action items without delay as follows:

PF	PM
Accomplish each non-normal checklist item using "Challenge-Response-Response Concept"	
Maintain aircraft control	Read aloud the appropriate QRH or electronic checklist items: • checklist title • challenge and response for all numbered items (left margin items on an electronic checklist) • indented items, if necessary, and • notes, cautions, and warnings
Perform/request all items directly related to flying the aircraft (e.g., flight path control, autopilot, thrust management, etc.)	Position controls not directly related to flying the aircraft and items requested by the PF

Note: Refined guidance has been created in an effort to putting the most standardized methodology into practice when handling non-normal procedures. In review, it is now preferred to consult the index on the front of the QRC to determine whether a non-normal situation is an Quick Action or an ECAM Exception prior to the captain assigning PF duties. If the non-normal is an Quick Action item, its associated checklist should be conducted prior to any transfer of control. If the non-normal is an ECAM Exception, transfer of control should occur prior to conducting its associated checklist.
CONFIRM ITEMS: Thrust Levers (PF controls), Engine Masters, IR Rotary Selectors, All Red Guarded Controls

5. Captain - Assigns PF

In-flight, the captain should normally assign the flying duties to the first officer while non-normal checklists are completed unless conditions dictate otherwise. This allows the captain to direct full attention to the accomplishment of non-normal procedures and conduct communications with external resources. The captain should verbalize who will assume ATC communications.

6. Accomplish Non-normal procedure

The PF calls for the appropriate non-normal procedure as follows:
PF calls for the QRH (e.g. "QRH procedure") in case of:

- ECAM Exception. PM refers to the ECAM Exceptions Index on the front cover of the QRH for page reference.
- Non-Normal procedure that is not indicated by ECAM. PM refers to the Alphabetic Index for the page reference.

PF calls "ECAM Action" in case of:

- ECAM procedures that are not ECAM Exceptions. PM refers to the electronic checklist.

7. PM - Accomplish ECAM Follow-Up procedures, if applicable

ECAM cautions and warnings requiring QRH follow up are contained in a QRH index on yellow pages following the Quick Action Items. After completing the ECAM checklist, complete the associated QRH Follow-Up checklist if the ECAM caution or warning is listed in this index. If the ECAM checklist returns the system to normal, the associated Follow-Up procedures are not accomplished.

Additional Resources: The crew should refer to the ECAM Non-Normal Supplemental Manual, if time permits.
Crew Awareness ECAMs: In the event of a Crew Awareness ECAM (e.g., COND AFT CRG ISO VALVE) on the ground, dispatch may not be permitted or an MEL/CDL may apply. Comply "Discrepancies-After Dispatch Before Takeoff" procedure in OM v1, 2c.1.1, and MEL Page Intro-18 and Flowchart on MEL Page Intro-22.

ECAM Procedures

When performing ECAM Actions always start in **Box** 1, then 2,3,4. Complete ALL items before proceeding to the next box	
UPPER ECAM (Warning Display)	
Primary Failures **Box 1**	Secondary Failures **Box 2**
LOWER ECAM (Status Display)	
Procedures **Box 3**	Inop Systems **Box 4**

Example ECAM Procedures

ECAM SCREEN		PROCEDURES / CALLOUTS	
WARNING DISPLAY (Upper)		PF	PM
Box 1	**Box 2**		
HYD B RSVR OVHT BLUE ELEC PUMP ... OFF		Pilot first noting non-normal read ECAM action (e.g., **"HYDRAULIC B RESERVOIR OVERHEAT"**) ***Accomplish Non-Normal Procedures***, then Captain Assigns PF	
		"ECAM ACTION"[1]	• Confirm fault on SD • Read full line of ECAM action (e.g., **"BLUE ELECTRIC PUMP OFF"**) **Box 1** • Perform ECAM action(s)[2] or request execution by the PF • Repeat the response (e.g. **"OFF"**) • Review all affected equipment shown in amber on HYD page.
HYD B RSVR OVHT B SYS LO PR	* F/CTL	• Check ECAM action(s) completed • **"CLEAR <Name of System>" (e.g. "CLEAR HYDRAULICS")**	**"CLEAR <Name of System>?" (e.g. "CLEAR HYDRAULICS")**
SEAT BELTS	* F/CTL	**"CLEAR FLIGHT CONTROL"**	• Review all affected equipment shown in amber on F/CTL page **Box 2** **"CLEAR FLIGHT CONTROL?"**
STATUS DISPLAY (Lower)			
Box 3	**Box 4**		
STATUS APPR PROC IF BLUE OVHT OUT: BLUE ELEC PUMP ... ON CAT 2 ONLY SLATS SLOW	INOP SYS CAT 3 BLUE HYD SPLR 3	**"CLEAR STATUS"**	• Read STATUS line by line **Box 3** then **Box 4** **"CLEAR STATUS?"** **"ECAM ACTIONS COMPLETE"**

ECAM Procedure Notes

1. Unless conditions dictate otherwise, the captain should assign the flying duties to the F/O in accordance with the FOM.
2. Confirm correct thrust lever, engine master, engine fire pb, cargo smoke DISCH pb, IR pbs/selectors, and/or IDGs before performing ECAM action.

Procedures will be initiated on command of PF.
No action will be taken (except cancelling the audio warning through MASTER WARN light until:

- Flight path is stabilized
- The airplane is not in a critical phase of flight (e.g., takeoff, landing).

If an emergency or abnormal procedure calls for **LAND ASAP** written in red or amber on ECAM, comply with FOM procedures and land at nearest suitable airport.
Primary Failure – Failure of an item of equipment or system causing loss of others in the airplane. On the ECAM their title is boxed: **B SYS LO PR**
Crew Coordination – When carrying out a procedure displayed on the ECAM, it is essential that both pilots are aware of the present display. Before any CLEAR action, crosscheck that no blue message remains (except in case of no action feedback), that can be eliminated by a direct action. ***** NO CLEAR ACTION BEFORE CROSS EXAMINATION *****
Should it be necessary to stop ECAM actions for any reason, the PF will state: **"HOLD ECAM"**. ECAM actions will continue when the PF states **"CONTINUE ECAM"**.
ECAM Procedures, STATUS information, and a check of PFD/ND are sufficient for handling the fault. However, when ECAM actions have been performed, and ECAM STATUS has been reviewed, and ECAM Follow-Up procedures if applicable are complete, if time permits, the crew may refer to the ECAM Non-Normal Supplemental manual.
Common sense must be applied when using ECAM. For example, if the last remaining hydraulic system overheats, ECAM will indicate shutting the system OFF. For obvious reasons, don't.

ECAM Challenge-Response-Response Concept (THR LEVER)	
ECAM Example: **THR LEVER 1 .....IDLE**	
PF	**PM**
Fly the aircraft	Read aloud **"THRUST LEVER 1 IDLE"**
Touch but do not move THR LEVER 1	Ensure the PF is touching the correct thrust lever
	State "CONFIRMED"
Position thrust lever 1 to IDLE	
Repeat aloud **"IDLE"**	
Standard: PM reads aloud the checklist challenge and response, selects the proper control, accomplishes the action, then repeats the response aloud.	
THR LEVER Confirm: Accomplished the same as standard non-normal checklist items except the action will not be accomplished until the PM ensures the PF is touching the correct thrust lever and states "Confirmed".	
Verify: Accomplished the same as standard non-normal checklist items except the response is repeated by the PF.	

ECAM Challenge-Response-Response Concept (Other Confirmed Items)	
ECAM Example: **ENG MASTER1.....OFF**	
PF	**PM**
Fly the aircraft	Read aloud **"ENG MASTER 1 OFF"**
Ensure the PM is touching the correct engine master 1	Touch, but do not move the engine master 1
State "CONFIRMED"	
	Position engine master 1 OFF Repeat aloud **"OFF"**
Non-normal checklist notes:	
Standard: PM reads aloud the checklist challenge and response, selects the proper control, accomplishes the action, then repeats the response aloud.	
Confirm: Accomplished the same as standard non-normal checklist items except the action will not be accomplished until the PF ensures the PM is touching the correct control and states "Confirmed". (See above for THR LEVER Confirmed)	
Verify: Accomplished the same as standard non-normal checklist items except the response is repeated by the PF.	

Send corrections/comments to Bob Sanford, Email: busdriver@hky.com
Unofficial Airbus Study Site: www.airbusdriver.net