



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

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Attachment 7 – A320 Standard Operating Procedures

OPERATIONAL FACTORS

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Chapter SOPs: Standard Operating Procedures

Purpose. The purpose of this information is to provide a time-ordered sequence of events for a *normal* flight. Each pilot's duties are outlined and integrated with the duties of the other pilot. These Standard Operating Procedures (SOPs) are not intended to supply detailed systems or component operating information, but primarily to

- establish a sequence the designated items are normally accomplished and
- designate which crew member normally accomplishes each item.

• **Note** •

Emergency, non-normal, and supplemental normal procedures are not included in SOPs.

Detailed explanation of a given item or policy will be found in the following flight phase chapters (i.e., Chapter 2a - Preflight, Chapter 2b - Start, etc.) and/or the Flight Operations Manual (FOM).

• **Note** •

Additional information may also be found in the applicable aircraft Training Manual.

SOPs.1 General

SOPs.1.1 Adherence. Pilots should follow SOPs during normal operations and if circumstances dictate, can deviate in the interest of safety, passenger comfort, schedule, and efficiency.

The following is an example of deviating from the SOPs in the interest of schedule and/or efficiency:

If the new ATIS information is not available, you can still request the clearance and when the flight paperwork is received, even enter the FMS routing before obtaining the ATIS information.

SOPs.1.2 Structure. SOPs define normal phases of flight (preflight, before start, etc.) and describes procedures that will accomplish required tasks prior to verification with checklists.

If a flow or checklist is preceded by the diamond symbol (◆), that item is accomplished only on the first flight of the day (i.e., the first flight entered into the FDML under the current day using local time).

SOPs.2 Preflight

Captain	First Officer
<i>After assembling the crew no later than 40 minutes (domestic) and 50 minutes (international) before departure</i>	
<ul style="list-style-type: none"> • Accomplish Crew Briefing when originating trip or a cabin crew change 	<ul style="list-style-type: none"> • Participate in Crew Briefing
<i>If electrical power is <u>not</u> established on the aircraft</i>	
<ul style="list-style-type: none"> • Read and do the "Safety & Power On Checklist" 	
<i>If the first flight of the day, after a crew change, or when the flightdeck has been left unattended and not in view of a pilot crewmember.</i>	
	<ul style="list-style-type: none"> • Accomplish Flightdeck Equipment Flow • FDML, Forms, Manuals, Flight Kits - Checked • CA Life Vest - Checked • CA EFB (as installed) - On • Escape Rope - Checked • Overhead CBs (49 VU) - Checked • Escape Rope - Checked • FO EFB (as installed) - On • Landing Gear Ctrl Hdl - Down • ECAM - Checked • Flaps & Spoilers - Checked • Aircell Handset (as installed) - On • FO Life Vest - Checked • PBE - Checked • Fire Extinguisher - Checked • Gear Pins - Stowed • Crash Axe - Stowed • Circuit Breakers - Checked

Captain	First Officer
	<ul style="list-style-type: none"> • Observers' Life Vests - Chkd • Compartmentalized Areas - Checked ◆ Flightdeck Door - Checked
<i>Every flight</i>	
• Accomplish IRS Alignment	
	• Accomplish Exterior Inspection
<p><i>If first flight of the day, after a crew change, prior to flights farther than 162 NM from the nearest shoreline, after maintenance has been performed in the flightdeck or when the flightdeck has been left unattended and not in view of a pilot crewmember.</i></p>	
• Accomplish Flightdeck Preparation Flow	
<ul style="list-style-type: none"> • Cabin Book - Checked • FDML - Checked • ELT Panel (as installed) - Checked • ADIRS Panel - Checked • FLT CTL Panel - Checked • EVAC Panel - Checked • EMER ELEC PWR Panel - Checked • GPWS Panel - Checked ◆ RCDR Panel - Checked • OXYGEN Panel - Checked • CALLS Panel - Checked • RAIN RPLNT/WIPER Panel - Checked • AUDIO SWITCH Pnl - Chkd • FIRE Panel - Checked • HYD Panel - Checked • FUEL Panel - Checked • ELEC Panel - Checked • AIR COND Panel - Checked • ANTI ICE Panel - Checked 	<ul style="list-style-type: none"> • MAINTENANCE Pnl - Chkd • Third Occupant ACP - Chkd • Third Occupant RMP - Chkd • FLT CTL Panel - Checked • CARGO HEAT Panel - Chkd • CARGO SMOKE Pnl - Chkd • VENTILATION CTL Panel - Checked • ENG Pnl (Overhead) - Chkd • RAIN RPLNT/WIPER Panel - Checked • Glareshld, Right Side - Chkd • EFIS Control Panel - Chk • FCU - Checked • Center Instrument Pnl - Chk • EIS Switching Panel - Chkd • Thrust Levers - Fwd Idle • Pitch Trim Wheels - Checked • ATC/TCAS Ctrl Pnl - Chkd • Flood Light - Checked • ACP - Checked

Captain	First Officer
<ul style="list-style-type: none"> • PROBE/WINDOWHEAT Panel - Checked • CABIN PRESS Panel - Chkd • EXT LT Panel - Checked • INT LT Panel - Checked • SIGNS Panel - Checked • Glareshield, Left Side - Chkd • EFIS Control Panel - Chkd • FCU - Checked • Center Instrument Pnl - Chkd • EIS Switching Panel - Chkd • ECAM Control Panel - Chkd • Pitch Trim Wheels - Chkd • Thrust Levers - Fwd Idle • ENG Panel - Checked • Flaps - Checked • RUDDER TRIM Panel - Chkd • Parking Brake - Checked ◆ Alternate Brakes - Checked • EMERGENCY GEAR EXTN - Stowed • SPEED BRAKE - RET & Disarmed • WX Radar Control Pnl - Checked • Light Panel - Checked • ACP - Checked • RMP - Checked • MCDU - Set • Instrument Panel - Checked • EFB (as installed) - Checked • Oxygen & Interphone - Checked • Flight Kits Contents/Dates - Checked 	<ul style="list-style-type: none"> • RMP - Checked • MCDU - Set • Instrument Panel - Checked • EFB (as installed) - Checked • Oxygen & Interphone - Chkd • Flight Kits Contents/Dates - Checked

SOPs.3 Before Start

Captain	First Officer
<i>Every flight</i>	
	<ul style="list-style-type: none"> • Record the ATIS information • Request clearance • Set the initial altitude • Set the assigned transponder code
<i>After the assigned transponder code is set</i>	
<ul style="list-style-type: none"> • Verify the assigned transponder code is set 	
<i>When the flight paperwork is received</i>	
<ul style="list-style-type: none"> • Cabin Crew Leg Brief • Review the Flight Release, TPS, weather package, and all pertinent Jeppesen pages • Set communication/navigation frequencies/courses (if required) for departure 	
<ul style="list-style-type: none"> • Accomplish FMS initialization if PF 	
<i>After the FMS routing is loaded</i>	
<ul style="list-style-type: none"> • Complete ATC Route Clearance Verification 	
	<ul style="list-style-type: none"> • Ensure GMT correct and enter into ATSU/ACARS the following: <ul style="list-style-type: none"> – flight number – departure/destination – enroute flight time – payroll numbers

Captain	First Officer
<i>Approximately 15 minutes prior to departure and after Route Verification completed</i>	
• Start the APU (if not already running)	
• Accomplish Before Start Flow	
<ul style="list-style-type: none"> • FDML - Checked • ADIRS - NAV • RCDRGND CTL - ON • FUEL Panel - Set • AIRCOND Panel - Set • NO PORTABLE ELEC DEVICE/NO SMOKING (as installed) - ON • EFIS Control Pnl - Set • FCU - Checked • Standby Altimeter/ISIS (as installed) - Set QNH • TERR ONND - As required • DDRMI (as installed) - Checked • ECAM - Checked • PARK BRK - ON • ACP - Set • RMP - Set • MCDU - Set • ND - Checked • PFD - Checked • Window - Closed/Locked • Oxygen - Checked 	<ul style="list-style-type: none"> • EFIS Control Panel - Set • FCU - Checked • TERR ONND - As required • ECAM - Checked • Transponder - Set • ACP - Set • RMP - Set • MCDU - Set • ND - Checked • PFD - Checked • Window - Closed/Locked • Oxygen - Checked
• Departure Briefing - Brief if PF	
<i>After fuel slip received.</i>	
<ul style="list-style-type: none"> • Fuel Slip - Reviewed • SEAT BELTS signs - ON • Call for "Before Start Checklist" 	<ul style="list-style-type: none"> • Accomplish Before Start Checklist

Captain	First Officer
<i>Approximately 10 minutes prior to departure</i>	
<ul style="list-style-type: none"> • Accomplish Flight Release Electronic Acceptance (accept the release) or If the message is not received or if the Flight Release is not accepted, notify the controlling dispatcher • Make Welcome Aboard Announcement • Accomplish Jumpseat Briefing (if applicable) 	
<i>When ready to disconnect the air and / or power</i>	
<ul style="list-style-type: none"> • EXT PWR - Off • Give the POWER OFF/OUT command/signal 	
<i>Approximately 6 minutes prior to departure</i>	
<ul style="list-style-type: none"> • Establish communication with ground personnel 	
<i>After receiving the cabin ready notification and all doors are closed and armed</i>	
• Accomplish Before Pushback Flow	
<ul style="list-style-type: none"> • BEACON - ON • NW STRG DISC Memo - Checked 	<ul style="list-style-type: none"> • NW STRG DISC Memo - Checked • Pushback/Start Clearance - Obtain
• Accomplish Pushback Operation (if required)	

SOPs.4 Start

Captain	First Officer
<i>When cleared to start engine</i>	
• Acknowledge clearance to start	• Start appropriate engine
<i>After ground equipment is clear, first officer verbally acknowledges the captain's wands up signal statement, and engine(s) are stabilized</i>	
• Accomplish After Start Flow	
<ul style="list-style-type: none"> • Spoilers - ARM • ACP - Set • ENGANTIICE - Ensure ON or Off 	<ul style="list-style-type: none"> • ENG MODE Selector - NORM or IGN/START • YELEC PUMP - ON or Off • GEN2 - On or OFF • APUBLEED - ON or Off • ENGANTIICE - ON or Off • APUMASTER SW - ON or Off • ECAM - Checked • Flaps - Set
<i>After completing the After Start Flows</i>	
• Call for " Flaps ____, Taxi "	• Flaps - Ensure Commanded Position

SOPs.5 Taxi

Captain	First Officer
<i>After departing the gate, final weight and balance received, and both engines running</i>	
• Accomplish Taxi Flow	
<ul style="list-style-type: none"> • Flight Controls - Checked • THRUST BUMP (IAE) (if required) - Engaged • Takeoff Data/Flex - Checked 	<ul style="list-style-type: none"> • Flight Controls - Checked • AUTOBRK - MAX • Takeoff Data/Flex - Checked • Pitch Trim - Set • Flaps - Set • Rudder Trim - Reset • WINDSHEAR/PWS (as installed) - AUTO • T.O. CONFIG - Checked
• Call for “Taxi Checklist”	• Accomplish Taxi Checklist (To the Line)
<i>Approximately 1-3 minutes prior to taking the runway</i>	
• Accomplish Before Taking the Runway Flow	
<ul style="list-style-type: none"> • Runway & FMS - Check 	<ul style="list-style-type: none"> • Flight Attendants - Notified • RADAR - WX or OFF • ENG MODE - NORM or IGN • TCAS - TA/RA • Runway & FMS - Check
• Call for “Below the Line”	• Accomplish Taxi Checklist (Below the Line)

SOPs.6 Takeoff

Takeoff to Flap Retraction		
Trigger	PF	PM
<i>Commencing takeoff roll</i>	<ul style="list-style-type: none"> Advance thrust levers to approximately 50% N_1 (CFM) or 1.05 EPR (IAE) Advance thrust levers to FLX or TOGA <p>“FLEX” or “TOGA”</p> <ul style="list-style-type: none"> Capt assumes/maintains control of thrust levers 	<ul style="list-style-type: none"> Verify takeoff thrust <p>“FLEX Set” or “TOGA Set”</p>
80 kts	“Checked”	<p>“80”</p> <ul style="list-style-type: none"> Check STBY airspeed
$V_1 - 5$ knots		<p>“V₁”</p> <ul style="list-style-type: none"> Capt removes hand from thrust levers
V_R	<ul style="list-style-type: none"> Rotate at 3 degrees/sec to 15 degrees 	“Rotate”
<i>After liftoff</i>	<ul style="list-style-type: none"> Verify positive rate of climb <p>“Gear Up”</p> <ul style="list-style-type: none"> Maintain F/D commanded attitude Establish initial climb speed of not less than $V_2 + 10$ kts 	<ul style="list-style-type: none"> Verify positive rate of climb on VSI <p>“Positive Rate”</p> <p>“Gear Up”</p> <ul style="list-style-type: none"> Position gear lever UP Monitor speed and attitude
<i>Above 100 ft. AFE</i>	“Autopilot 1” or “Autopilot 2,” as appropriate	<ul style="list-style-type: none"> Select autopilot on, if requested

Takeoff to Flap Retraction (Continued)		
Trigger	PF	PM
At or above 400 ft. AFE	<ul style="list-style-type: none"> Select/request "Heading ___", if appropriate 	<ul style="list-style-type: none"> Select HDG, if requested
At the THR RED ALT (LVR CLB flashing)	<ul style="list-style-type: none"> Move thrust levers to the CL detent "Climb" Verify THR CLB annunciated on FMA 	<ul style="list-style-type: none"> "Climb Set"
At ACCEL ALT (SRS changes to CLB or OP CLB)	<ul style="list-style-type: none"> Follow F/D commands to reduce pitch and accelerate 	
F speed (only displayed when flaps 2 or 3 were used for takeoff)	<ul style="list-style-type: none"> Check airspeed "Flaps 1," if appropriate 	<ul style="list-style-type: none"> Check airspeed "Flaps 1," if requested Select FLAPS 1, if requested
S speed	<ul style="list-style-type: none"> Check airspeed "Flaps Up, After Takeoff Checklist" Monitor acceleration to green dot speed 	<ul style="list-style-type: none"> Check airspeed "Flaps Up" Select FLAPS 0 Disarm Spoilers Accomplish After Takeoff Flow and Checklist
At or above 3000 ft. AFE	<ul style="list-style-type: none"> Select/request managed or assigned speed 	<ul style="list-style-type: none"> Select managed or assigned speed, if requested