



AIRBUS 320F

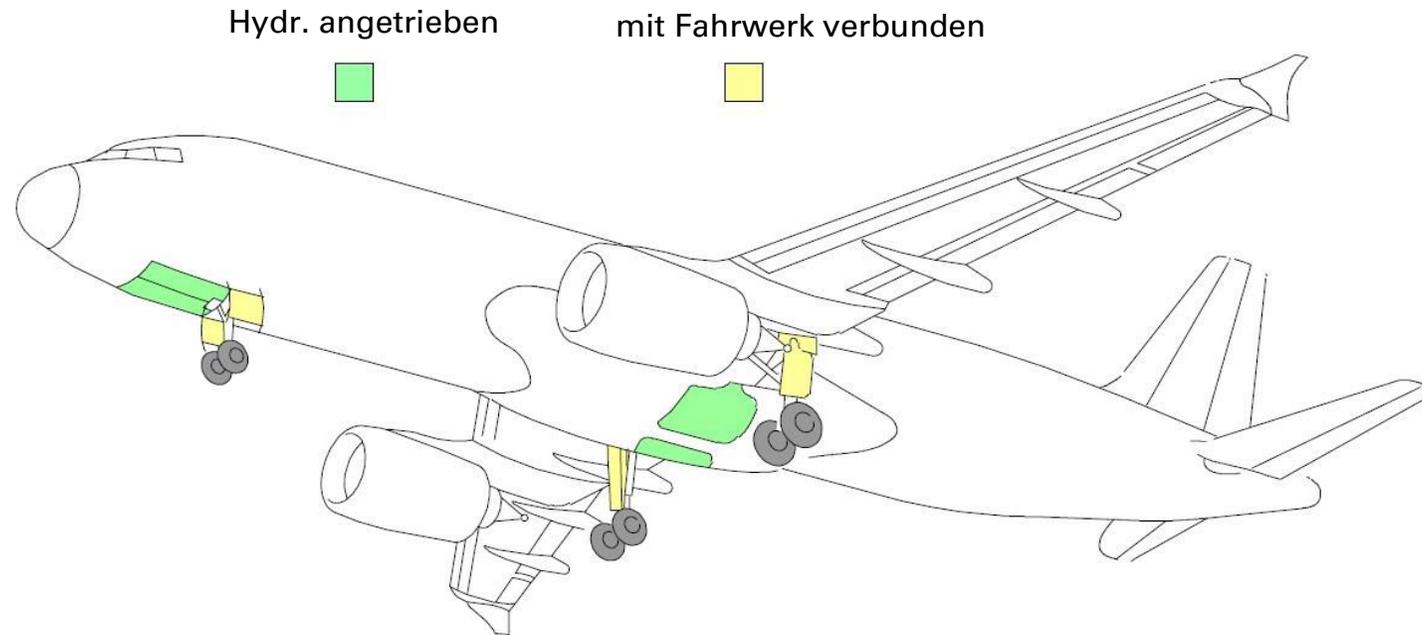
SYS5

Landing Gear, Flight Director, SOPs

Landing Gear



Fahrwerkstüren - Gear doors





LGCIU –

Landing Gear Control and Interface Unit

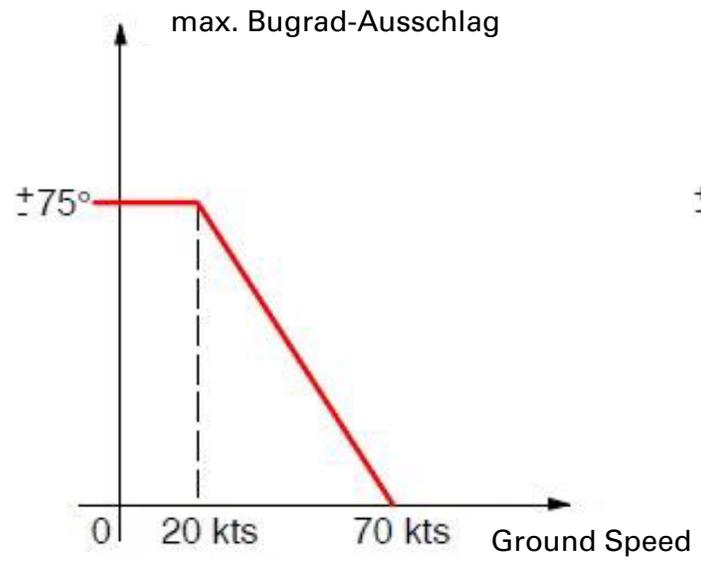
- 2 LGCIUs
- Wechsel nach jedem Einfahren des Fahrwerks oder bei einer Störung.
- Steuert die Sequenzen ein-/ausfahren
- Verhindert das Ausfahren > 260 kts IAS
- Signalgeber für die „Air / Ground Logic“

Air Ground Logic

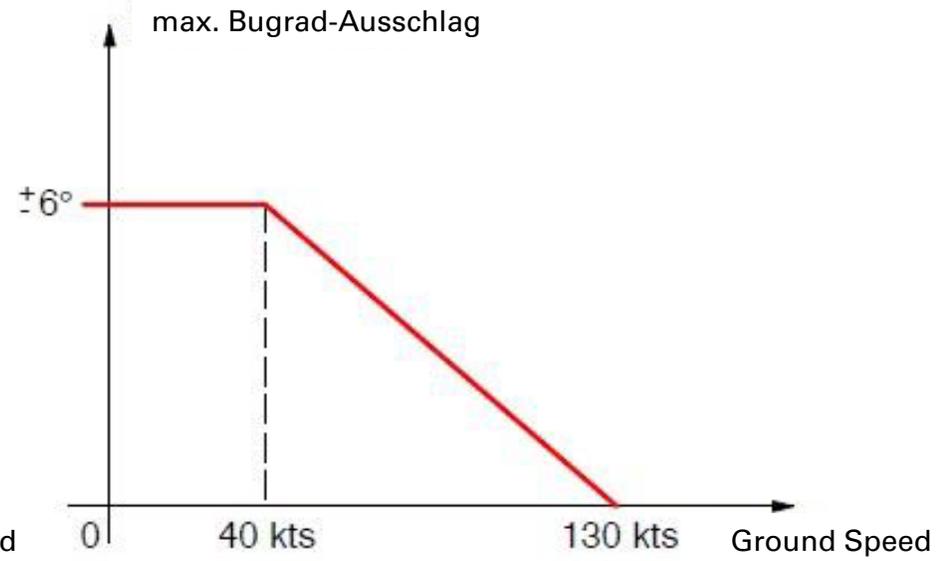
	SYSTEM	LGCIU 1 OUTPUT	LGCIU 2 OUTPUT	A/C IN FLT	A/C ON GRND
GENERAL	STROBE lts		5	On when AUTO selected	Off when AUTO selected
	LOGO lts		5	Off when flaps retracted	On
	AIRSTAIRS 	3	1	Control inhibited ⁽¹⁾	Control not inhibited ⁽²⁾
	CARGO DOOR ⁽³⁾		5	Normal control not available	Normal control available
	WATER FILLING		5	Preselect water servicing inhibited	Preselect water servicing available
AIR COND	AVNCS COOLING	5	5	<ul style="list-style-type: none"> Skin temp. < 35 °C : The system is in closed conf.⁽¹⁾ Skin temp. > 35 °C : The system is in intermediate conf.⁽¹⁾ 	<ul style="list-style-type: none"> Skin temp. < 5 °C : The system is in closed conf.⁽²⁾ Skin temp. > 5 °C : The system is in open conf.⁽²⁾
	GRND COOLING 	1 3	1 3	Inhibited ⁽¹⁾	Not inhibited ⁽²⁾
	FWD CARGO VENT		5	Extract fan stopped when ΔP > 1 PSI	Extract fan on
	CAB PRESS	5	5	Climb mode active ⁽⁴⁾	<ul style="list-style-type: none"> Prepressurization active before TO⁽⁵⁾ Depressurization active after LDG⁽⁵⁾
	PACK 1(2) TEMP CONTROL		3 (1)	Pack air inlet flaps opened.	Pack air inlet flap fully closed at TO and LDG
APU	APU AUTO SHUTDOWN	5		In case of oil low press, automatic shutdown is delayed by 15.5 s	<ul style="list-style-type: none"> In case of oil low press, the automatic shutdown is delayed by 45 s 15.5 s if the oil temp < -4 °C 0.05 s if oil temp > -4 °C
	APU SPEED CONTROL			Speed is controlled at 100 %	Speed is controlled at 99 % (100 % for ENG start or when ambient temp is below -18 °C or above 35 °C)

	SYSTEM	LGCIU 1 OUTPUT	LGCIU 2 OUTPUT	A/C IN FLT	A/C ON GRND	
COMMUNICATIONS	SERVICE INTERPHONE	6	6	Inhibited ⁽⁶⁾	Available ⁽⁷⁾	
	PUBLIC ADDRESS	1 3	1 3	P.A. increased level ⁽⁶⁾	P.A. low level ⁽⁷⁾	
	ADIRU and AVIONICS ground warning	1 3	1 3	External horn and light inhibited ⁽⁶⁾	External horn and light not inhibited ⁽⁷⁾	
	FLT INTERPHONE	9		Communication with ground mechanic inhibited	Communication with ground mechanic available	
	COCKPIT CALL LIGHT	9		Inhibited	Not inhibited	
	ACARS (ACARS MU or ATSU)	7		Available	Available	
	CVR	1 3 7	1 3	Runs ⁽⁶⁾	Runs : ⁽⁷⁾ - During the first 5 min following energization - With at least one engine running Stops : ⁽⁷⁾ 5 min after second engine shutdown	
	CVR		5	<ul style="list-style-type: none"> ERASE function inhibited No low frequency signal in the loudspeakers if test performed 	<ul style="list-style-type: none"> ERASE function not inhibited Low frequency signal in the loudspeakers if test performed 	
	ELEC	DC generation	5		APU start on batteries only, is delayed by 45 s	No APU start delay when on batteries only
		GALLEY supply		5	Main galley not supplied when APU GEN only is supplying	Main galley supplied when APU GEN only is supplying
EIS	EIS	5		Display test inhibited when ANN LT TEST is selected	Display test not inhibited	
FIRE	APU	5		No APU fire automatic extinguishing	Automatic extinguishing not inhibited	
FLT CTL	SFCC 1(2)	5	(5)	<ul style="list-style-type: none"> For SFCC 1(2): Slats alpha/speed lock function active For SFCC (2): No flaps movement inhibition if the cargo door is opened 	<ul style="list-style-type: none"> For SFCC 1(2): Slats alpha/speed lock function active if speed > 60 kt For SFCC (2): Flaps movement inhibition if cargo door is opened 	
FLT INST	<ul style="list-style-type: none"> DFDR QAR 	1 3 7	1 3	Runs ⁽⁶⁾	Runs : ⁽⁷⁾ • During the first 5 min following energization • With one engine running Stops : ⁽⁷⁾ 5 min after second engine shut down	
FUEL	FQI	5		FQI uses flight attitude correction due to wing bending	FQI uses ground attitude correction	

HYD	BLUE and GREEN pumps	1 3		Blue or green pump "FAULT" light not inhibited when related pump is stopped ⁽⁸⁾	Blue or green pump "FAULT" light inhibited when related pump is stopped ⁽⁷⁾
	BLUE pump	7		Runs when electrical power is available	Runs when at least one engine is running
	BLUE and YELLOW pumps		1 3	Blue or yellow pump "FAULT" light not inhibited when related pump is stopped ⁽⁸⁾	Blue or yellow pump "FAULT" light inhibited when related pump is stopped ⁽⁷⁾
	PTU		7	PTU runs if green/yellow diff. press > 500 PSI	PTU runs if green/yellow diff. press > 500 PSI and • Both MASTER LEVERS are at OFF or • Both MASTER LEVERS are at ON or • Nose wheel steering is not in towing position with parking brake released. PTU is inhibited during the use of the cargo door hand-pump and for 40 s after its use.
ICE RAIN PROT	CAPT, (F/O), ((STBY)) probes and CAPT, (F/O) windows heating	4, (2) (8)	4, (2) (8)	<ul style="list-style-type: none"> CAPT, (F/O), ((STBY)) pitots and CAPT, (F/O) windows : high heating level applied All other probes and windows are heated⁽⁸⁾ 	<ul style="list-style-type: none"> With engines stopped: no heating⁽⁸⁾ With at least one engine running: CAPT, (F/O), ((STBY)) pitots and CAPT, (F/O) windows are heated at low level⁽⁸⁾
	WING ANTI ICE	3	1	Wing anti ice valves open for 30 s when the WING ANTI ICE pb is at ON ⁽⁸⁾	Wing anti ice valves open for 30 s when the WING ANTI ICE pb is at ON ⁽⁸⁾
	RAIN REPELLENT	1 3	1 3	Not inhibited ⁽⁸⁾	Inhibited if engines are stopped ⁽⁷⁾
	DRAIN MAST ⁽¹⁰⁾		9	High heating level is applied	Low heating level is applied
LANDING GEAR	L/G SAFETY VALVE	6		Safety valve closes if aircraft speed > 260 kt	Safety valve opened
	L/G control	10	10	Retraction not inhibited ⁽⁸⁾	Retraction inhibited ⁽⁸⁾
	TIRE PRESS 		5	"TYRE LO PRESS" warning threshold set to its flight level	"TYRE LO PRESS" warning threshold set to its ground level
NAVIGATION	STAND BY ALTI	5		VIBRATION function active	VIBRATION function inhibited
	ATC 1(2)	3	(1)	ATC 1(2) available in AUTO mode	ATC 1(2) inhibited in AUTO mode
	ADIRU 1 ⁽¹⁰⁾	7		No external horn when ADIRU supplied from batteries only	External horn not inhibited
POWER PLANT	FADEC 1(2)	1 3 8	(1) (3) (8)	On ENG 1(2): ⁽⁸⁾ • Reverse inhibited • No automatic start abort • FADEC always supplied • FLEX not available • If installed, BUMP not selectable	On ENG 1(2): ⁽⁸⁾ • Reverse available • Automatic start abort available • 5 min after eng-shut down FADEC 1(2) no more supplied • FLEX available • If installed, BUMP selectable
		1 3 8	(1) (3) (8)	Modulated idle and approach idle are available ⁽⁸⁾	Modulated idle only available ⁽⁷⁾



Steering Tiller



Ruderpedale



Pedal disconnect



Unterbindet die Nose Wheel Steuerung durch die Ruderpedale.

-> Flight Control Check

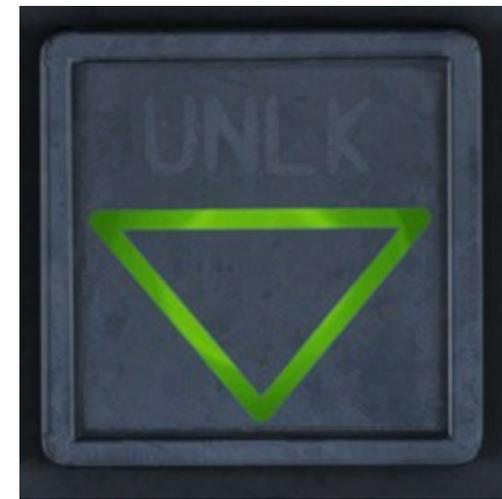




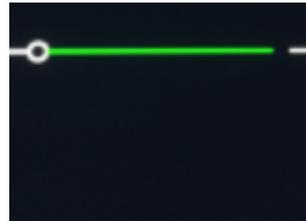
Fahrwerk nicht verriegelt



Fahrwerk ausgefahren und verriegelt



Fahrwerk eingefahren



Auto Brake

LO

sendet Bremsdruck 2 Sek. nachdem die Ground Spoiler ausgefahren sind.
Verzögerung mit **2 m/s²**

MED

sendet Bremsdruck 2 Sek. nachdem die Ground Spoiler ausgefahren sind.
Verzögerung mit **3 m/s²**

MAX

nur für den Takeoff

Beim Startabbruch (RTO):

max. Bremsdruck, sobald Ground Spoiler ausfahren



AUTO BRK armed



>80% der gewählten Verzögerung erreicht

Auto Brake DISARM



Verzögerung auf 0 kts

Landung (V_{ref} 140 kts)

LO	2 m/s ²	36,0 Sekunden	2594 m
MED	3 m/s ²	24,0 Sekunden	865 m

RTO bei 130 kts

MAX	ca. 4 m/s ²	16,6 Sekunden	558 m
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> 300°C



ACCU PRESS = Akkumulatordruck YELLOW HYD (max. 7 Betätigungen)

BRAKES = YELLOW HYD Bremsdruck der linken/rechten Bremse

„Parkbremse gesetzt?“

YELLOW
GREEN

Alternate- und Parkbremse
Normale Bremse

Parkbremse ACCU PRESS hält ≈12 h -> CHOCKS! -> ELEC Pump



FLIGHT DIRECTOR

Flight Director

Der Flight Director ist ein **Kommandoinstrument** und zeigt, in welche Richtung, mit wie viel Input, gesteuert werden muss.

Sein Weg wird durch die **FCU** – Flight Control Unit vorgegeben.

(Flight Director Modes)

Der Autopilot ist eine Funktion, den Flight Director automatisch in der Mitte zu halten, also dem vorgegebenen Weg zu folgen.

Der Autopilot ändert NIEMALS die Flight Director Modes von sich aus. Diese werden entweder durch Tastendruck an der FCU vorgegeben oder durch einen automatischen Modewechsel des Flight Director Systems ausgelöst.



Standard Operating Procedures

SOP – Standard Operating Procedures

- Wer hat was, wann, wie zu tun?
- Berechenbarkeit der Abläufe
- „Jeder tut es auf die gleiche Art und Weise“
 - Crew-Kompatibilität (CRM!)
- Routine -> weniger wird vergessen
- Piloten „funktionieren“ auch unter Belastung besser.

SOP – Standard Operating Procedures

**SOPs sind keine Checklisten,
sondern Handlungsabläufe, die auswendig durchgeführt
werden sollen.**

**Checklisten prüfen „vital items“,
die nicht vergessen werden dürfen und für die
es keine weitere wirksame Safety-Barriere gibt.**

Sequence of Events (SOE)
Standard Operating Procedures (SOP)
COLD AND DARK – HOLDING POINT
Airbus A320
Rev. 1.1 [25.08.2023]

Planungs - Phase

- Simulator / Wettertool starten / AIRAC Update**
- Flugplanerstellung (z.B. Simbrief)**
- Briefingpaket durcharbeiten, 1. Seite ausdrucken**
 - Wetter
 - Beladung
 - NOTAMS
 - Runway Check
 - Approach Check
 - Flugzeit
- Treibstoff bestimmen**

- Cockpit Initial Check**
 - ENG MASTER 1 & 2 OFF
 - ENG MODE SEL NORM
 - Thrust Levers IDLE
 - Landing Gear Selector DOWN
 - Parkbrake SET
 - BAT VOLT > 25.5 V
- Aircraft *wake-up***
 - BAT 1 ON
 - BAT 2 after 5 sec ON
 - EXT POWER after 5 sec ON
- EFB Initialize**
 - PAX / FUEL ENTER and Start Boarding
- Preflight Overhead**
 - Crew Oxy supply ON
 - ADRs NAV
 - STROBES AUTO
 - NAV Lights on 1 (day) / 2 (night)
 - SIGNS ON
 - EMG EXIT Lights ARM
 - PACKS pushed in
 - FUEL PUMPS all ON
 - CHECK NO WHITES
- MCDU Setup [DIFRIP]**
 - DATA CHECK A/C STATUS
 - INIT ENTER
 - FROM / TO, ALTN, FLT NBR, COST INDEX
 - CRZ FL/TEMP
 - planned or actual ZFW/ZFWCG
 - BLOCK
 - FPL SELECT DEPARTURE
RTE ENTRY
SELECT ARRIVAL
 - RADNAV as required
 - INIT ENTER
 - actual ZFW/ZFWCG
 - PERF ENTER
 - T/O SPEEDS, FLAP / THS, FLEX

NORMAL CHECKLIST

? "Vital Items"?

BEFORE START CHECKLIST		LANDING CHECKLIST	
FUEL QTY	_____ kg	MISSED APP ALT	SET
ALTIMETERS	QNH _____ / _____ ft	ECAM MEMO	LDG, NO BLUE
TAKEOFF DATA & FLEX	CHECKED		
WINDOWS / DOORS	CLOSED	SHUTDOWN CHECKLIST	
BEACON	ON	PARK BRAKE	SET
		ENGINES	OFF
AFTER START CHECKLIST		SEAT BELTS	OFF
ANTI ICE	as required	APU BLEED	ON
ENGINE MODE SEL	NORMAL	RADAR	OFF
FLAPS	CONF _____		
TRIMS	UP/DN _____ / ZERO	SECURING CHECKLIST	
		FUEL PUMPS	OFF
TAXI CHECKLIST CHECKLIST		ADIRS	OFF
ECAM MEMO	T/O, NO BLUE	OXYGEN	OFF
PACKS	OFF	APU BLEED	OFF
		EMER EXIT Lights	OFF
DESCENT CHECKLIST		APU	OFF
APPROACH DATA	INSERTED	BAT 1 & 2	OFF