Flying the Boeing 737-800 NG

Procedures & checklists for flight simulation pilots including CDU programming of the FMC

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Flight Simulation Australia

Another practical publication from Flight Simulation Australia

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Version 2.1, October 2016

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About this manual

This manual is a revision of the previous popular publication *Flying the NGX* (2013). Procedures and checklists in this manual are based primarily on a Boeing flight crew operations manual (FCOM) and other resources to meet flight simulation needs. Amendments have been made in consideration of the IOS functionality of the PMDG 737-800 NGX, ProSim737, iFly and X-Plane. CDU programming has been added to this iteration.

No two checklists are the same. Yet, for pilots they all contain the essential procedures required to be acted upon in identifiable flows of action, to efficiently and safely operate an aircraft. In this publication, color-coded procedure checklists enable the learning of the functionality of the overhead panel (OHP). Normal checklists are also provided for use once you have mastered switch locations and uses.

CONTENTS

OPERATIONAL LIMITATIONS

Limitations**,** Normal Procedures and Supplementary Procedures in this manual are based on a Boeing FCOM.

Operational Limitations

Maximum Takeoff and land tailwind component	15 knots
Maximum takeoff and landing crosswind component	33 knots (winglets) 36 knots (no winglets)
Maximum Operating Altitude	41,000 feet
Maximum takeoff and landing altitude	8,400 feet

Weight Limitations

Maximum Taxi Weight (MTW)	133,500 pounds
Maximum Takeoff Weight (MTOW)	133,000 pounds
Maximum Landing Weight (MLW)	128,000 pounds
Maximum Zero Fuel Weight (ZFW)	120,500 pounds

Autopilot/Flight Director System

Do not engage the autopilot below 400 feet.

The autopilot will disengage below 50 feet AGL

The maximum wind speeds for landing with autopilot are:

- Headwind**,** 25 knots
- Crosswind, 20 knots
- Tailwind 10 knots

Engines and APU

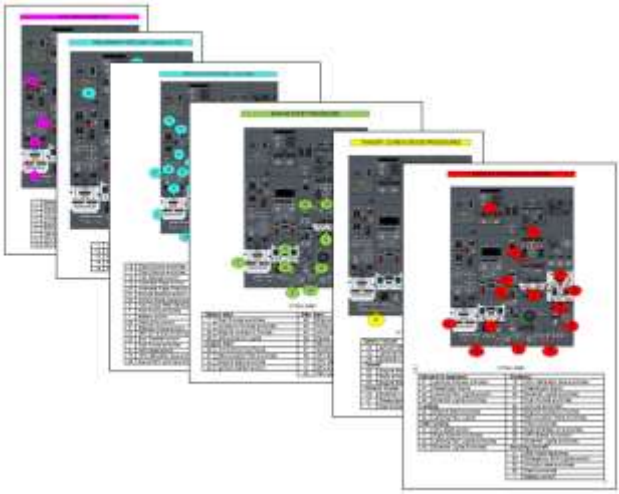
Maximum and minimum limits are shown in red in the displays. Engine Ignition must be used for takeoff, landing, operating in heavy rain and anti-ice operation. Maximum altitude for using APU is 10,000 feet.

ANNOTATED PANELS

For many, the operation of the overhead panel (OHP) with its array of switches, lights and dials is a challenge to be mastered. A series of colour-coded overhead panels are provided in this manual to assist with learning. The colours correspond to the fourty-seven coloured numbers which appear in the seventeen separate and related checklists which follow. These are provided to enable flight sim pilots to become familiar with the location and function of switches on the OHP and learn the flow of actions to operate the Boeing 737, from cold and dark to secure shut-down.

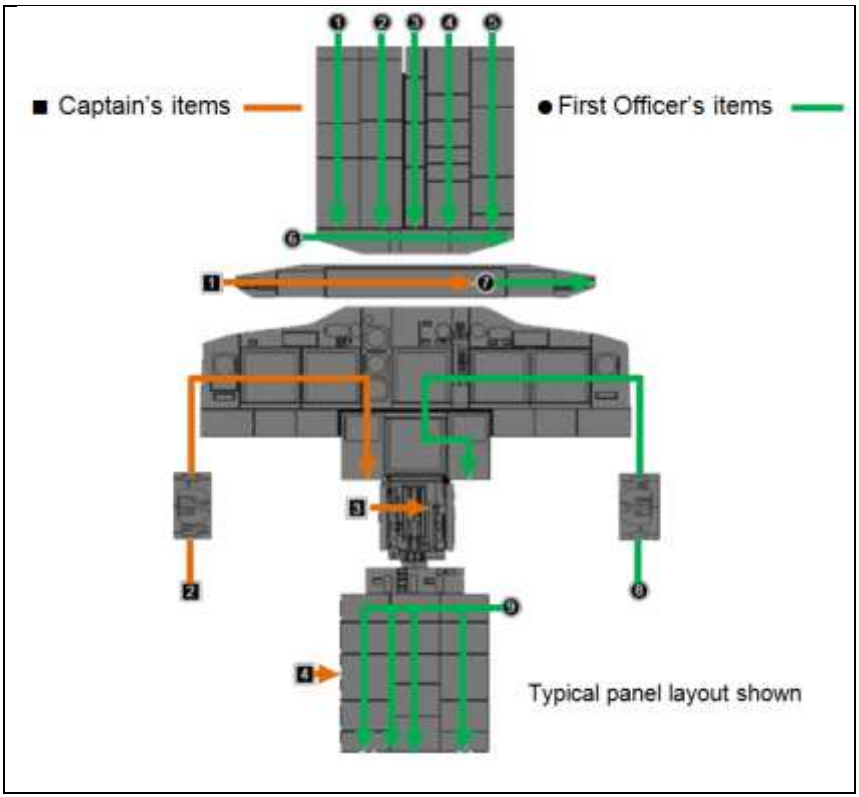
For those who are familiar with the OHP and flow procedures, non-annotated, normal checklists are also provided.

A complete set of A4-size annotated flash cards, in checklist flow order for the overhead panel can be located in the Tutorials page of the Flight Simulation Australia website.

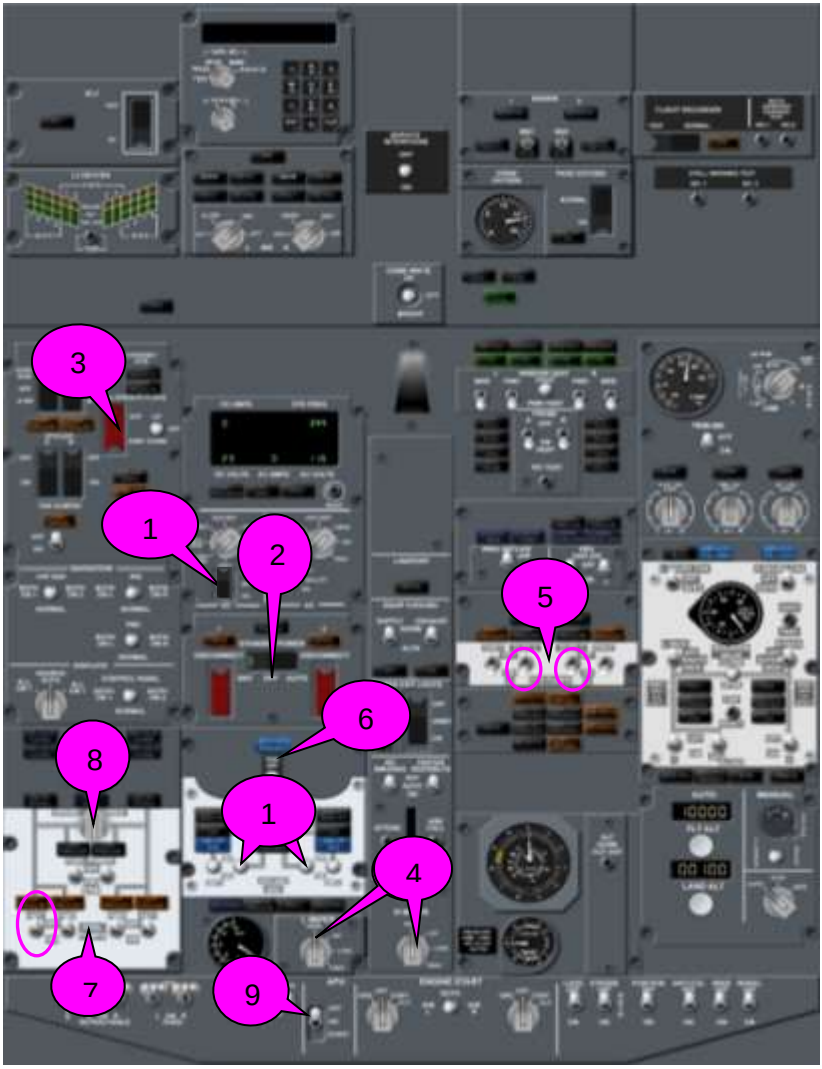


PROCEDURES AND CHECKLISTS

The diagram below illustrates the flow of preflight and post flight checklist procedures performed by the Captain and First Officer. In the flight simulation context when you are the only pilot flying, both Captain and First Officer actions are required. The workload then increases, adding intensity and complexity to the individual. A working knowledge of the OHP is therefore desirable for realistic simulation.



ELECTRICAL POWER UP



ELECTRICAL POWERUP

BATTERY SWITCH [1]	ON / GUARD CLOSED
STANDBY POWER [2]	GUARD CLOSED
ALTERNATE FLAPS [3]	GUARD CLOSED
WIPER SELECTORS [4]	PARK
ELEC HYD PUMPS [5]	OFF
LANDING GEAR LEVER	DOWN
*If **External Power** is needed, verify GRD Power Available Light is illuminated*	
GND PWR SWITCH [6]	ON
*If **APU Power** is needed:*	
LEFT AFT FUEL PUMP [7]	ON
APU [9	START
APU GEN BUS SWITCHES [10]	ON
ENGINE/APU FIRE SYSTEM & EXTINGUISHERS	TEST
OVERHEAT DETECTOR SWITCHES	NORMAL
TEST SWITCH Hold to FAULT/INOP ○ Verify MASTER CAUTION LIGHT illuminated ○ Verify OVHT/DET light illuminated ○ Verify FAULT & APU DET INOP lights illuminated	
TEST SWITCH Hold to OVHT/FIRE ○ Verify fire bell ○ Verify left & right red FIRE WARN lights illuminated ○ Verify left & right yellow MASTER CAUTION lights illuminated	
Master FIRE WARN Light & Bell	PUSH TO CANCEL

○ Verify both FIRE WARN lights are extinguished ○ Verify fire warning bell cancels ○ Verify Engine 1, APU, Engine 2 fire switches remain illuminated ○ Verify ENG 1 OVERHEAT and ENG 2 OVERHEAT lights are illuminated. ○ Verify WHEEL WELL lights stay illuminated	
TEST SWITCH (cancel)	CENTRE
EXTINGUISHER TEST SWITCH	POSITION 1 and HOLD Verify test lights are green illuminated
EXTINGUISHER TEST SWITCH	Position 2 and HOLD

PRELIMINARY PREFLIGHT (Captain or FO)

PRELIMINARY PREFLIGHT (Captain or FO)		
IRS MODE SELECTORS	[11]	OFF, then NAV
PSEU LIGHT	[12]	Verify EXTINGUISHED

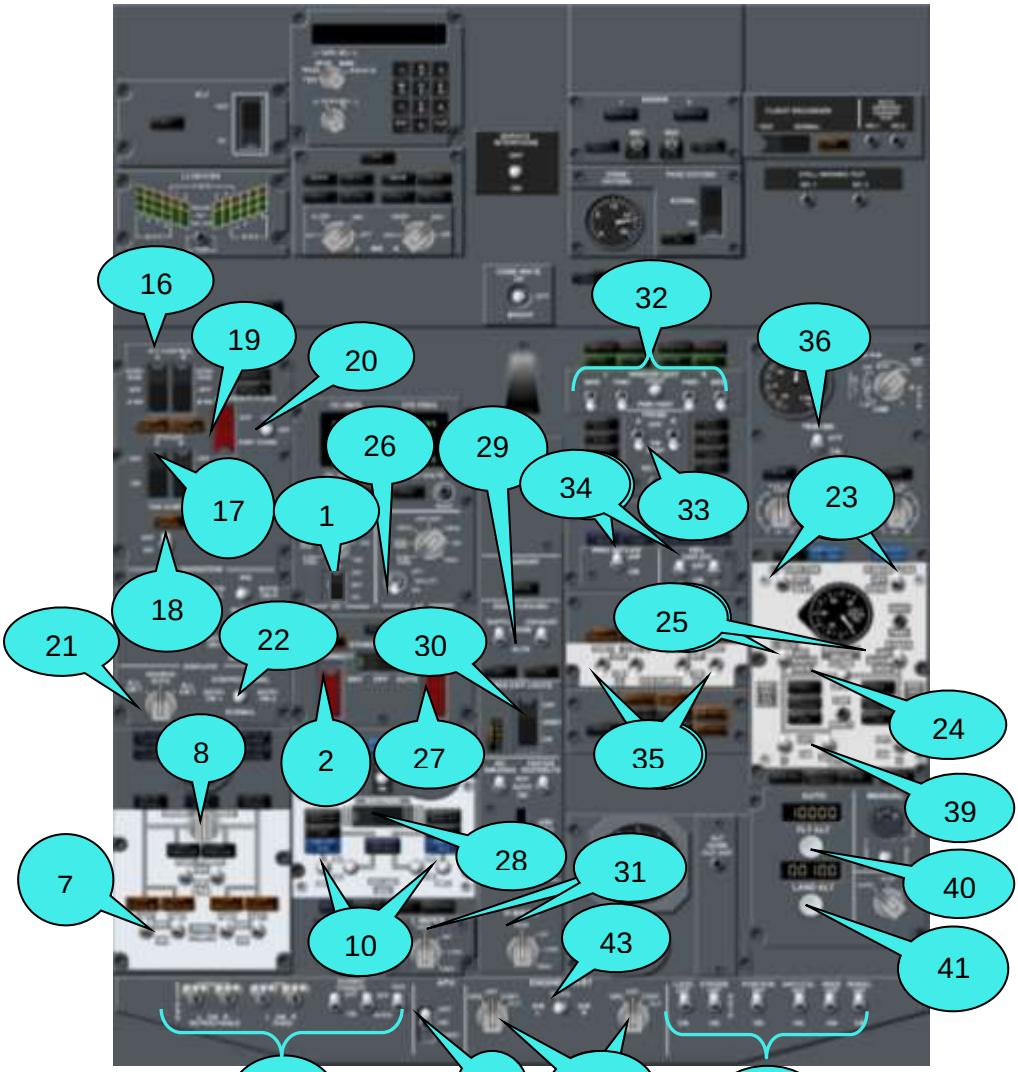
GPWS LIGHT	Verify EXTINGUISHED
SERVICE INTERPHONE SWITCH [13]	OFF
ENGINE PANEL	SET
○ Verify Reverser Lights are extinguished ○ Verify Engine Control Lights are extinguished	
PASSENGER OXYGEN [14]	SET:
○ Verify Passenger Oxygen switch GUARD CLOSED ○ Verify PASS OXY light is extinguished	
FLIGHT RECORDER SWITCH [15]	GUARD CLOSED
LANDING GEAR LIGHTS	VERIFY ILLUMINATED
PARKING BRAKE	ON

CDU PREFLIGHT PROCEDURE	
The **Initial Data** and **Nav Data** entries must be completed before the Preflight Procedures.	
CDU PREPARATION	ENTER DATA

See pages 55 to 73 for CDU entry procedures

Flying with the FMC makes for a more realistic experience

PREFLIGHT PROCEDURE – First Officer



PRE-FLIGHT PROCEDURE – First Officer	
FLIGHT CONTROL PANEL **FLIGHT CONTROL SWITCHES** [16]	GUARDS CLOSED

FLIGHT SPOILER SWITCHES [17]	GUARDS CLOSED
YAW DAMPER SWITCH [18]	ON
ALTERNATE FLAPS MASTER SWITCH [19]	GUARD CLOSED
ALT FLAPS POSITION SWITCH [20]	OFF Verify all lights extinguished
NAVIGATION PANEL **VHF NAV TRANSFER SWITCH**	NORMAL
IRS TRANSFER SWITCH	NORMAL
DISPLAYS PANEL **SOURCE SELECTOR** [21]	AUTO
CONTROL PANEL SELECT SWITCH 22]	NORMAL
FUEL PANEL ○ Verify ENG VALVE CLOSED lights are illuminated ○ Verify SPA VALVE CLOSED lights are illuminated ○ Verify FILTER BYPASS lights are extinguished	
CROSS FEED SELECTOR [8]	CLOSED
○ Verify VALVE OPEN light is extinguished	
FUEL PUMP SWITCHES [7]	OFF
○ Verify centre tank fuel pump LOW PRESSURE lights are extinguished. ○ Verify main tank fuel pump LOW PRESSURE lights are illuminated.	
ELECTRICAL PANEL **BATTERY SWITCH** [1]	GUARD CLOSED
CAB/UTILITY POWER SWITCH [26]	ON

STANDBY POWER SWITCH [2]	GUARD CLOSED
○ Verify centre tank fuel pump LOW PRESSURE LIGHTS are extinguished. ○ Verify main tank fuel pump LOW PRESSURE lights are illuminated.	
GEN DRIVE DISCONNECT [27]	GUARD CLOSED
BUS TRANSFER SWITCH [28]	GUARD CLOSED
OVERHEAT AND FIRE PROTECTION PANEL Do this check here only if an ELECTRICAL POWER UP procedure was NOT previously conducted	
APU POWER APU power can be established here if required if NOT established in a prior ELECTRICAL POWER UP procedure.	
LEFT CENTRE FUEL TANK [7]	ON
APU SWITCH [9]	START
APU GENERATOR BUS SWITCHES [10]	ON
○ Verify SOURCE OFF lights are extinguished ○ Verify TRANSFER BUS OFF lights are extinguished ○ Verify LAVATORY SMOKE light is extinguished	
EQUIPMENT COOLING [29]	NORM
EMERGENCY EXIT LIGHTS [30]	GUARD CLOSED
WINDSHIELD WIPERS SELECTORS [31]	PARK
○ Verify windscreen wipers are stowed	
WINDOW HEAT SWITCHES [32]	ON
○ Verify windscreen wipers are stowed ○ Verify OVERHEAT lights are extinguished	

PROBE HEAT SWITCHES [33]	OFF
○ Verify all lights are ILLUMINATED	
WING ANTI-ICE [34]	OFF
ENGINE ANTI-ICE SWITCHES [34]	OFF
○ Verify cowl ANTI-ICE lights are extinguished ○ Verify cowl VALVE OPEN lights are extinguished	
ENGINE HYDRAULIC PUMPS [35]	ON
AIR CONDITIONING PANEL	
TRIM AIR SWITCH [36]	ON
○ Verify ZONE TEMP lights are extinguished	
RECIRCULATION FAN SWITCHES [23]	AUTO
PACK SWITCHES [25]	AUTO
ISOLATION VALVE SWITCH [24]	OPEN
ENGINE BLEED AIR SWITCHES [38]	ON
APU BLEED AIR SWITCH [39]	ON
○ Verify DUAL BLEED light is ILLUMINATED ○ Verify PACK lights are extinguished ○ Verify WING BODY OVERHEAT lights are extinguished ○ Verify BLEED TRIP OFF lights are extinguished	
CABIN PRESSURISATION PANEL	
○ Verify AUTO FAIL light is extinguished ○ Verify OFF SCHEDULED DESCENT light is extinguished	
FLIGHT ALTITUDE INDICATOR [40]	CRUISE ALTITUDE
LANDING ALT INDICATOR [41]	DESTINATION LEVEL
PRESSURISATION MODE SELECTOR [42]	AUTO
○ Verify ALT light is extinguished ○ Verify MANUAL light is extinguished	
LIGHTING PANEL	

LANDING LIGHT SWITCHES [43]	OFF
RUNWAY TURNOFF LIGHTS [43]	OFF
TAXI LIGHT SWITCH [43]	OFF
IGNITION SELECT SWITCH [44]	IGN L or R
ENGINE START SWITCHES [45]	OFF
LOGO LIGHT SWITCH [46]	ON (at night)
POSITION LIGHT SWITCH [46]	ON
ANTI COLLISION LIGHT SWITCH [46]	OFF
STROBE LIGHT SWITCH [46]	OFF
WING LIGHT SWITCH [46]	OFF
EFIS – FO side	
MINIMUMS REFERENCE SELECTOR	RADIO or BARO
MINIMUMS SELECTOR	Set DH or ALTITUDE
METERS SWITCH	AS NEEDED
BAROMETRIC REFERENCE SELECT	Set LOCAL ALT (QNH)
VOR/ADF SWITCHES	AS NEEDED
MODE SELECTOR	MAP
CENTRE SWITCH	AS NEEDED
RANGE SELECTOR	AS NEEDED
TRAFFIC SWITCH	AS NEEDED
WEATHER RADAR	OFF
DISPLAY SELECT PANEL & MAIN PANEL	
MAIN PANEL DISPLAY UNITS SELECTOR	NORM
CREW OXYGEN	TEST & SET

CLOCK – FO SIDE	SET
LOWER DISPLAY UNIT SELECTOR	NORM
DISENGAGE LIGHT TEST SWITCH	HOLD TO 1
○ Verify A/P light is illuminated steady amber ○ Verify A/T light is illuminated steady amber ○ Verify FMC light is illuminated steady amber	
DISENGAGE LIGHT TEST SWITCH	HOLD TO 2
○ Verify A/P light is illuminated steady red ○ Verify A/T light is illuminated steady red ○ Verify FMC light is illuminated steady amber	
FLIGHT DIRECTOR – FO (MOVE SWITCH FOR PILOT FLYING FIRST)	ON
FLIGHT INSTRUMENTS	CHECK

○ Verify flight instrument indicators are correct
○ Verify that only these flags are shown:
  ○ TCAS – OFF
  ○ Strobe Light Switch – OFF
  ○ No VSPD
  ○ Expected RMI lights
○ Verify flight mode annunciations are correct:
  ○ Autothrottle mode is blank
  ○ Role mode is blank
  ○ Pitch mode is blank
  ○ AFDS status is FD	

BRAKE TEMPERATURE LIGHT	VERIFY EXTINGUISHED

GROUND PROXIMITY PANEL	
FLAP INHIB SWITCH	GUARD CLOSED
GEAR INHIB SWITCH	GUARD CLOSED

TERRAIN INHIB SWITCH	GUARD CLOSED
○ Verify INOP light is extinguished	
LANDING GEAR PANEL	
LANDING GEAR LEVER	DN
○ Verify green gear indicator lights are ILLUMINATED ○ Verify read gear indicator lights are extinguished	
AUTO BRAKE SELECTOR	RTO
○ Verify AUTO BRAKE DISARM light is extinguished ○ Verify ANTISKID INOP light is extinguished	
ENGINE INSTRUMENTS	
ENGINE DISPLAY CONTROL PANEL	SET:
○ N1 SET Selector – AUTO ○ SPEED REFERENCE Selector – AUTO ○ FUEL FLOW switch - RATE	
ENGINE INSTRUMENTS	SET:
○ Verify the primary and secondary engine indicators show existing conditions ○ Verify that no exceedance is shown ○ Verify hydraulic quantity indicators do not show RF	
RADIO PANEL	
VHF COMMUNICATIONS RADIOS	SET
VHF NAVIGATION RADIOS	SET
ADF RADIOS	SET
WEATHER RADAR PANEL	SET
TRANSPONDER PANEL	SET

STABILIZER TRIM OVERRIDE SWITCH	GUARD CLOSED
SEAT, RUDDER PEDALS & HARNESS	ADJUST AS NEEDED
Tune ATIS and note details **Call ATC for departure clearance**	

Flight simmers learning to master the overhead panel
in a Boeing 737 home-built simulator

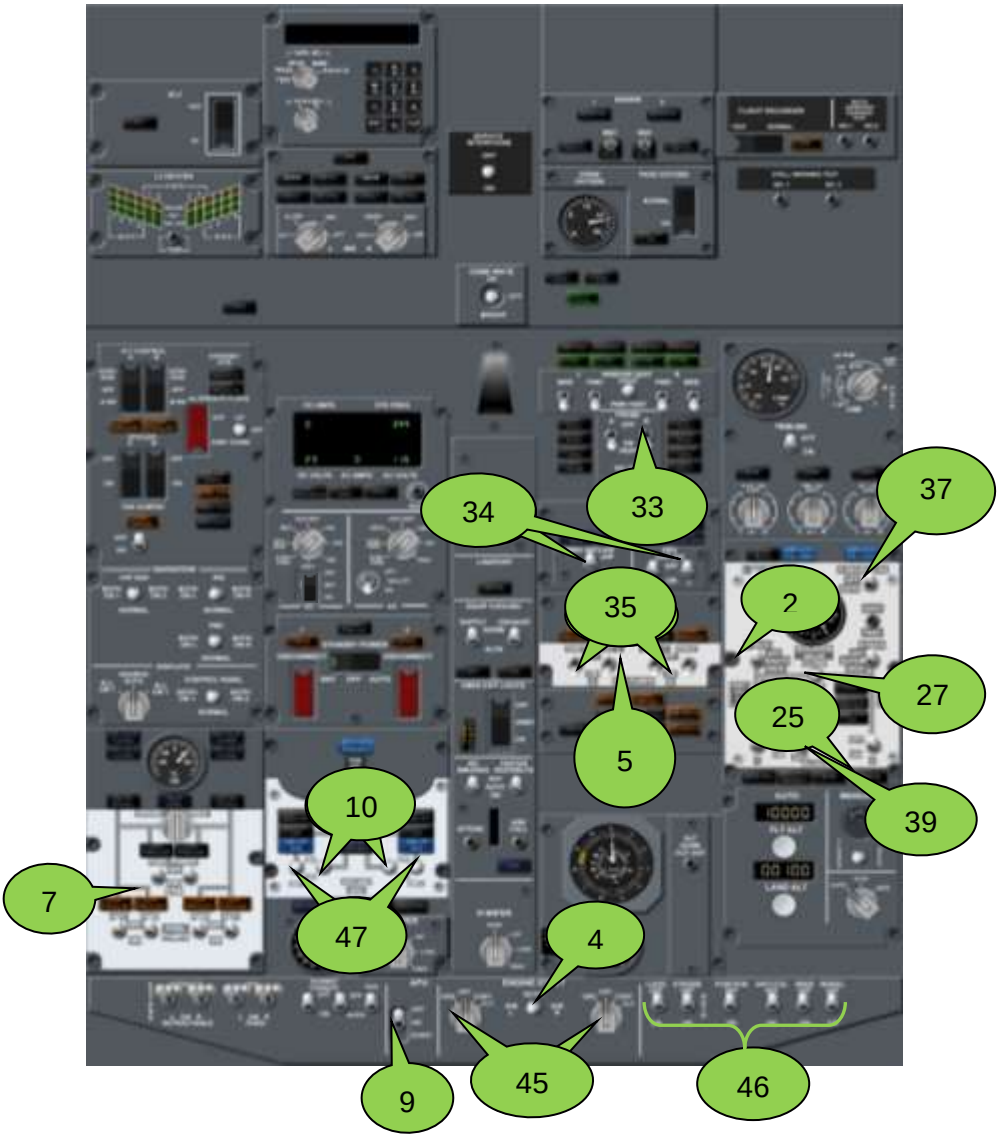
PREFLIGHT PROCEDURE - Captain	
LIGHTS	TEST
○ Master LIGHTS TEST and DIM switch – TEST ○ Master LIGHTS TEST and DIM switch – AS NEEDED	
EFIS – CAPTAIN'S SIDE **MINIMUMS REFERENCE SELECTOR**	SET: RADIO or BARO
MINIMUMS SELECTOR	Set DH or ALTITUDE
METERS SWITCH	AS NEEDED
BAROMETRIC REFERENCE SELECTOR	IN or HPA
BAROMETRIC SELECTOR	SET LOCAL QNH
VOR/ADF SWITCHES	AS NEEDED
MODE SELECTOR	MAP
CENTRE SWITCH	AS NEEDED
RANGE SELECTOR	AS NEEDED
TRAFFIC SWITCH	AS NEEDED
WEATHER RADAR	OFF
MODE CONTROL PANEL	
COURSE	SET
FLIGHT DIRECTOR SWITCH (MOVE SWITCH FOR PILOT FLYING FIRST)	ON
BANK ANGLE SELECTOR	AS NEEDED
AUTOPILOT DISENGAGE BAR	UP
OXYGEN	TEST AND SET

CLOCK - CAPT	SET
NOSE WHEEL STEERING	GUARD CLOSED
DISPLAY SELECT PANEL	SET: ○ MAIN PANEL DISPLAY UNITS selector - NORM ○ LOWER DISPLAY UNIT selector - NORM
TAKEOFF CONFIG LIGHT	VERIFY EXTINGUISHED
CABIN ALTITUDE LIGHT	VERIFY EXTINGUISHED
DISENGAGE LIGHT TEST	HOLD TO 1 ○ Verify A/P light is illuminated steady amber ○ Verify A/T light is illuminated steady amber ○ Verify FMC light is illuminated steady amber
DISENGAGE LIGHT TEST SWITCH	HOLD TO 2 ○ Verify A/P light is illuminated steady red ○ Verify A/T light is illuminated steady red ○ Verify FMC light is illuminated steady amber
STAB OUT OF TRIM	VERIFY EXTINGUISHED
FLIGHT DIRECTOR	ON

FLIGHT INSTRUMENTS	SET:
	○ Verify flight instrument indications are correct
	○ Verify that only these flags are showing:
	  ○ TVAS OFF
	  ○ NO VSPD
	  ○ Expected RMI flags
	○ Verify flight mode annunciations are correct:
	  ○ Autothrottle mode is blank
	  ○ Role mode is blank
	  ○ Pitch mode is blank
	  ○ AFDS status is FD

STANDBY INSTRUMENTS	SET:
○ Standby horizon – SET ○ Gyro caging control – PULL then RELEASE	
○ Approach mode selector – AS NEEDED ○ Verify flight instruments are correct ○ Verify no flags are shown	
STANDBY ALTIMETER	SET
SPEED BRAKE LEVER	DOWN DETENT
○ Verify SPEED BRAKE ARMED light extinguished ○ Verify SPEED BRAKE DO NOT ARM light extinguished	
REVERSE THRUST LEVERS	DOWN
FORWARD THRUST LEVERS	CLOSED
FLAP LEVER	SET
○ Set the flap lever to agree with flap position	
PARKING BRAKE	SET
ENGINE START LEVERS	CUTOFF
○ Verify parking brake warning light is ILLUMINATED	
STABILISER TRIM CUTOUT SWITCHES	NORMAL
RADIO TUNING PANEL	SET
○ Verify OFF light is extinguished	
VHF COMMUNICATION RADIOS	Set
VHF NAVIGATION RADIOS	SET FOR DEPARTURE
SEAT & RUDDER PEDALS	ADJUST
SEAT BELT	ADJUST
Call "BEFORE START CHECKLIST"	

ENGINE START PROCEDURE



BEFORE START PROCEDURE	
FLIGHT DECK DOOR	CLOSED & LOCKED

Do the **Performance Data** steps in the CDU before proceeding with this procedure	
CDU DISPLAY	TAKEOFF PAGE & LEGS PAGE
N1 & IAS BUGS	CHECK & SET
MAIN Control Panel (MCP)	SET V2 ARM LNAV/VNAV SET RWY HDG SET INIT ALTITUDE
TAXI & TAKEOFF BRIEF	COMPLETE
EXTERIOR DOORS	VERIFIED CLOSED
FUEL PUMPS [7]	ON: Centre Fuel Pump ON if <460K kg
ELECTRIC HYDRAULIC PUMPS [5]	ON
ENGINE HYDRAULIC PUMPS [35]	ON
ANTI COLLISION LIGHTS [46]	ON
TRIM	ZERO, ZERO SET ___ UNITS
Obtain PUSH & START CLEARANCE	
PARKING BRAKE	OFF

ENGINE START PROCEDURE
Call "Start engine ____"

ENGINE DISPLAY	SELECT
PACKS [25]	OFF
RECIRC FANS [37]	AUTO
CALL	"START ___ ENGINE"
ENG START SWITCH [45]	GND (L or R)
IGN SELECT SWITCH [44]	L or R
N2 RPM	VERIFY INCREASING
ENGINE START LEVER	IDLE AT 25% N2
FUEL FLOW & EGT	MONITOR
Call "Start Engine ____"	
Repeat Start Procedure for 2nd Engine	

AFTER START PROCEDURE	
GENERATOR 1 & 2 [47	ON
PROBE HEAT [33]	ON
WING ANTI-ICE [34]	AS REQUIRED
ENGINE ANTI-ICE [34]	AS REQUIRED
PACKS [25]	AUTO
RECIRC FANS [37]	AUTO
ISOLATION VALVE [27]	OPEN
APU BLEED AIR [39]	OFF
APU GEN SWITCHES [10]	OFF
APU SWITCH [9]	OFF
ENG START SWITCHES [45]	CONTINUOUS

ENG START LEVERS	IDLE DETENT
Verify ground equipment is clear	
FLAPS	SET FOR T/O
FLIGHT CONTROLS	CHECK
LOWER CONTROLS	CHECK BLANK
TAXI LIGHTS [43]	ON (LOGO at night)
TRANSPONDER	T/A R/A
RECALL	CHECK
Call for TAXI CLEARANCE Note taxi directions	

T/O BRIEFING – REVIEWED AS REQUIRED
Taxi to runway as designated
Call "TAXI CHECKLIST"

TAKEOFF, CLIMB & CRUISE PROCEDURES

TAXI PROCEDURE	
CENTER FUEL TANK	<2300 kg

CABIN CREW	SIGNAL
WTHR RADAR DISPLAY	AS REQUIRED
TERRAIN DISPLAY	AS REQUIRED

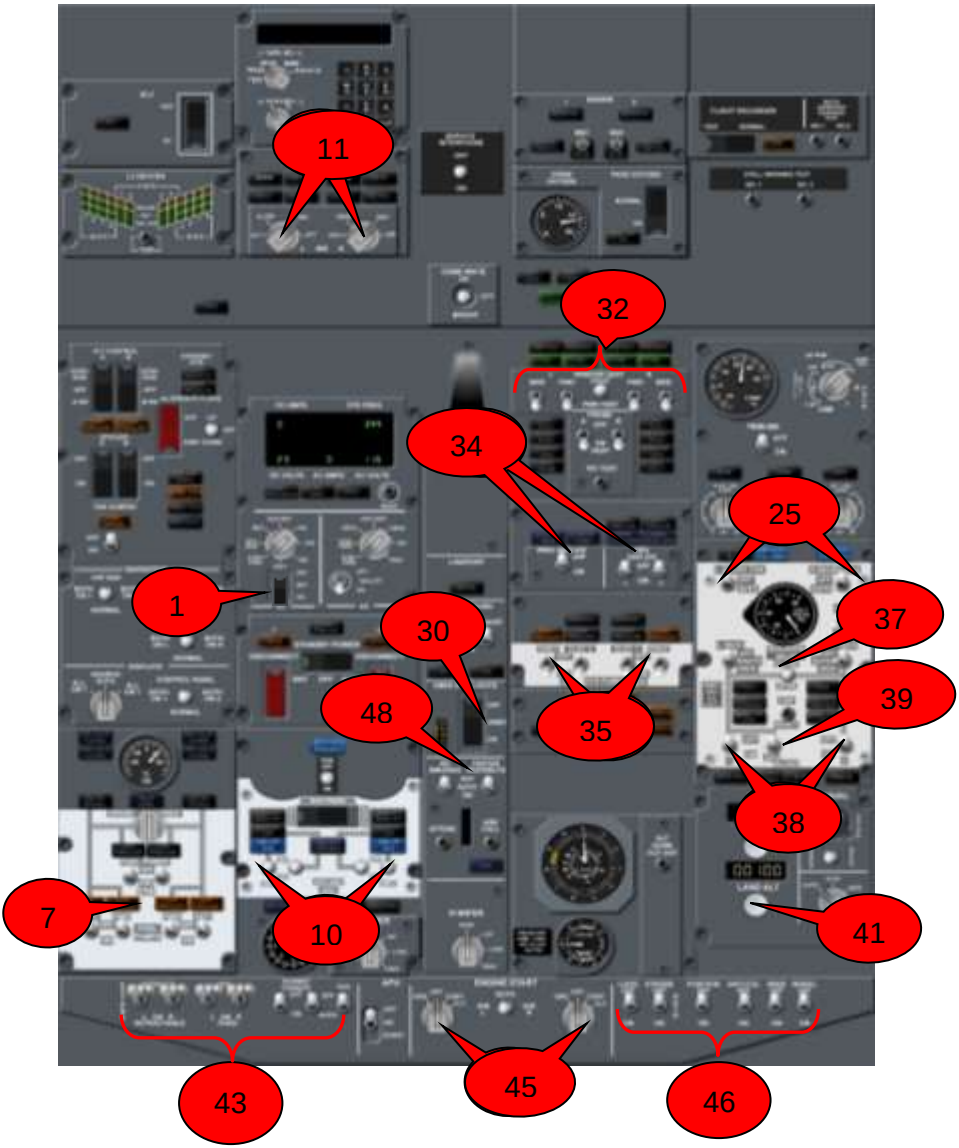
CALL "BEFORE TAKEOFF CHECKLIST"	
BEFORE TAKEOFF	
IGN SELECT SWITCH [44	BOTH
–AT THE LINE–	
TAXI LIGHTS [43]	OFF
LANDING LIGHTS [43	ON
STROBE LIGHTS [46]	ON
TRANSPONDER	ON
AUTOTHROTTLE	ARMED
Call ATC for Takeoff clearance	

TAKEOFF PROCEDURE	
BRAKES	OFF
RUNWAY HDG	VERIFY WITH A/C HDG
CLOCK/TIMER	START

TAKEOFF TIME & FUEL	NOTE
Advance thrust levers to approx 40% N1 Allow engines to stabilize **Press the TO/GA switch** Verify T/O thrust and monitor	
AT 80 KNOTS	CALL “CHECK”
AT V1	CALL “V1”
AT VR	CALL “ROTATE”
Rotate gently to 15° nose up	
AT POSITIVE RATE	CALL “GEAR UP”
CLIMB OUT	V2 + 20
ABOVE 400 FT RADIO	VERIFY ROLE MODE
At acceleration height verify CLIMB THRUST	
1500 FEET	FLAPS, INCR. UP
Retract FLAPS when within 20 kts of flap speed marker	
AFTER FLAPS UP	CALL ‘VERTICAL MODE’
ENG BLEED SWITCHES [38]	ON
PACKS [25]	AUTO
ENG START SWITCHES [45]	CONT
AUTOBRAKE	OFF
LANDING GEAR	OFF
CLIMB & CRUISE PROCEDURE	
Above 10,000 feet (MSL or AGL)	
Regular monitoring of instruments and fuel reserves required	
LANDING LIGHTS [43	OFF

PASSENGER SIGNS [48]	AS REQUIRED
CENTER FUEL TANK [7]	OFF < 460 KG
AT TRANSITION ALTITUDE	SET STD AND X-CHECK
At least 10 mins prior to TOD	
FMS/CDU	LOAD STAR, RWY, MAP

DESCENT APPROACH & LANDING


11
32
34
25
1
37
30
48
35
39
38
7
10
41
43
45
46

DESCENT PROCEDURE	
ATC clearance obtained before descent	
MCP ALTITUDE	SET & CHECKED
DESCENT	SET AS COMPUTED
CENTER FUEL TANKS	OFF < 1400 KG
DE-ICING	AS REQUIRED
PRESSURIZATION [41]	CHECK LANDING ALTITUDE
VREF	SELECT IN CDU
DECISION HEIGHT	SET
NAVAIDS	TUNE & SET APP COURSE
HEADING	SET
STAR / TRANSITION	SET IN CDU
AT TRANSITION ALTITUDE	SET QNH & X-CHECK
APPROACH BRIEFING	CONDUCT

APPROACH PROCEDURE	
Approaching10,000 feet (MSL or AGL)	
CABIN CREW	NOTIFIED
PASSENGER SIGNS [48]	ON
MISSED APPROACH	PREPARE
LIGHTS [43 & 46]	AS REQUIRED
AUTOBRAKE	SET AS REQUIRED
RNP & APP PROCEDURE	UPDATE AS REQUIRED

LANDING PROCEDURE – ILS	
CABIN CREW	SEATED FOR LANDING
FLAPS	LOWER ON SCHEDULE
AUTOBRAKES	AS REQUIRED
ON LOC INTERCEPT	VERIFY ILS TUNED VERIFY LOC & G/S MARKERS SHOWN
APPROACH MODE	ARM
SPEEDBRAKE	ARM Verify light illuminated
SECOND AUTOPILOT	ENGAGE IF REQUIRED
If necessary use HDG SEL to intercept final app course and verify LOC is captured	
AT GLIDESLOPE ALIVE	Call “GLIDESLOPE ALIVE”
GEAR	DOWN – 3 GREENS
ENG START SWITCHES [45]	CONT
AT GLIDESLOPE CAPTURE	SET FLAPS FOR LANDING
AT MINIMUMS	CHECK RUNWAY INSIGHT Call “CONTINUE” (PF)
MISSED APPROACH	SET ALT IN MCP
At FAF or OM, verify crossing altitude. Verify autoland status at 500 ft radio alt.	

LANDING ROLL PROCEDURE	
AUTOPILOT	DISENGAGE

THRUST LEVERS	CLOSED
SPEEDBRAKE LEVER	VERIFY UP
REVERSE THRUST	APPLY
AUTOBRAKE	VERIFY OPERATION
AT 60 KNOTS	LOWER REVERSERS
MANUAL BRAKING	AS NEEDED
AUTOBRAKES	DISARM

AFTER LANDING	
Start when clear of the runway	
SPEEDBRAKE	CONFIRM DOWN
APU [9]	START
PROBE HEAT [17]	OFF
LANDING LIGHTS [43]	OFF
STROBE LIGHTS [46]	OFF
TAXI LIGHTS [43]	ON
ENG START SWITCHES [45]	OFF
FLAP LEVER	UP
TRANSPONDER	AS REQUIRED

SHUTDOWN PROCEDURE	
PARKING BRAKE	SET

ELECTRICAL POWER [10]	APU GENS ON
ENGINE START LEVERS	CUTOFF
SEAT BELT SIGN [48]	OFF
ANTI COLLISION LIGHT [46	OFF
FUEL PUMP SWITCHES [7]	OFF
WING ANTI-ICE [34]	OFF
ENGINE ANTI-ICE [34]	OFF
ENGINE HYD PUMPS [35]	ON
ELEC HYD PUMPS [35]	ON
RECIRC FANS [37]	AS REQUIRED
PACKS [25]	AUTO
ENGINE BLEEDS [38]	ON
APU BLEED [39	ON
EXTERIOR LIGHTS [46]	AS REQUIRED
FLIGHT DIRECTORS	OFF
TRANSPONDER	STBY

SECURE PROCEDURE (If required)	
IRS MODE SELECTORS [11]	OFF
EMERGENCY LIGHTS [30]	OFF
WINDOW HEAT [32]	OFF
PACKS [25]	OFF
BATTERY [1]	OFF

737-800 NORMAL CHECKLISTS

Electrical Powerup Checklist	
Battery Switch……	ON / GUARD CLOSED
Standby Power……..	GUARD CLOSED
Alternate Flaps……..	GUARD CLOSED
Wiper Selectors……..	PARK
Electric Hydraulic Pumps……..	OFF
Landing Gear Lever……..	DOWN
Ground Power Switch……..	ON (if needed)
Left Aft Fuel Pump (for APU)……..	ON
APU……..	START
APU Gen Bus Switches……	ON
Fire System & Extinguishers……	TEST
Overheat Detector Switches……	NORMAL
Test Switch……	Hold to FAULT/INOP
Test Switch……	Hold to OVHT/FIRE
Master Fire Warn Light & Bell……..	PUSH TO CANCEL
Test Switch Cancel……	CENTRE
Extinguisher Test Switch……..	POSITION 1 & HOLD
Extinguisher Test Switch……..	POSITION 2 & HOLD

- CHECKLIST COMPLETE -

Preliminary Preflight Checklist (Captain or FO)	
IRS Mode Selectors……	OFF, then NAV
Voice Recorder Switch……	ON
Service Interphone Switch……	OFF
Engine Panel……	SET
Passenger Oxygen……	SET
Flight Recorder Switch……	GUARD CLOSED
Landing Gear Lights……	VERIFY ILLUMINATED
Parking Brake……	ON

- CHECLKLIST COMPLETE -

FMS / CDU Programming
The **Initial Data** and **Nav Data** entries must be completed before the Preflight Procedures.

Preflight Checklist (First Officer)	
Flight Control Switches……	GUARDS CLOSED
Flight Spoiler Switches……	GUARDS CLOSED
Yaw Damper Switch……	ON
Alternate Flaps Master Switch……..	OFF
Alternate Flaps Position Switch…….	OFF
VHF NAV Transfer Switch……..	NORMAL
IRS Transfer Switch……	NORMAL
Source Selector……	AUTO
Control Panel Select Switch……..	NORMAL
Fuel Panel……..	CHECK
Cross Feed Selector……	CLOSED
Fuel Pump Switches……	OFF
Battery Switch……....	ON/ GUARD CLOSED
Cab/Utility Power Switch…….	ON
Gen Drive Disconnect……..	GUARD CLOSED
Bus Transfer Switch……	GUARD CLOSED
Overheat and Fire Protection Panel..	CHECK
Left Centre Fuel Tank Switch…….	ON
APU……	START
APU Gen Bus Switches……..	ON
Equipment Cooling……..	NORM
Emergency Exit Lights……	GUARD CLOSED
Windshield Wipers Selectors…….	PARK
Window Heat Switches……	ON

Probe Heat Switches……..	OFF
Wing Anti-ice…….	OFF
Engine Anti-ice Switches……	OFF
Engine Hydraulic Pumps…….	ON
Trim Air Switch…….	ON
Recirculation Fan Switches……	AUTO
Pack Switches……..	AUTO
Isolation Valve Switch……..	OPEN
Engine Bleed Air Switches…….	ON
APU Bleed Air Switch……..	ON
Flight Altitude Indicator……	SET
Landing Altitude Indicator……..	SET
Pressurisation Mode Selector……	AUTO
Landing Lights Switches…….	OFF
Runway Turnoff Lights……	OFF
Taxi Light Switch……..	OFF
Ignition select Switch……..	IGN L or R
Engine Start Switches…….	OFF
Logo Light Switch…….	ON (at night)
Position Light Switch……	ON
Anti Collision Light Switch……..	OFF
Strobe Light Switch……..	OFF
Wing Light Switch…….	OFF
Minimums Reference Selector……..	SET RADIO or BARO

Minimums Selector……	SET DH or ALTITUDE
Meters Switch……	AS NEEDED
Barometric Reference Selector……	SET LOCAL QNH
VOR/ADF Switches……	AS NEEDED
Mode Selector……	MAP
Centre Switch……	AS NEEDED
Range Selector……	AS NEEDED
Traffic Switch……	AS NEEDED
Weather Radar……	OFF
Main Panel Display Units Selector..	NORM
Crew Oxygen……	CHECK
Clock – FO Side……	SET
Lower Display Unit Selector…….	NORM
Disengage Light Test Switch……	HOLD TO 1
Disengage Light Test Switch……	HOLD TO 2
Flight Director – FO……	ON (PF side first)
Flight Instruments……	CHECK
Brake Temperature Light……	Verify EXTINGUISHED
Flap Inhibit Switch……	GUARD CLOSED
Gear Inhibit Switch……	GUARD CLOSED
Terrain Inhibit Switch……	GUARD CLOSED
Landing Gear Lever……	DOWN
Auto Brake Selector……	RTO

Engine Display Control Panel……	SET
Engine Instruments……..	SET
VHF Communications Radios……	SET
VHF Navigation Radios……..	SET
ADF Radios……..	SET
Weather Radar Panel……..	SET
Transponder Panel……..	SET STANDBY
Stabiliser Trim Override Switch……	GUARD CLOSED
Seat, Rudder Pedals & Harness…	ADJUST AS NEEDED

Tune ATIS and note details.

Call ATC for Departure Clearance.

- CHECKLIST COMPLETE -

Preflight Checklist (Captain)	
Lights……..	TEST
Minimums Reference Selector……..	SET RADIO or BARO
Minimums Selector……..	SET DH or ALTITUDE
Meters Switch……..	AS NEEDED
Barometric Reference Selector……..	SET IN or HPA
Barometric Selector……..	SET LOCAL QNH
VOR/ADF Switches……..	AS NEEDED
Mode Selector……..	MAP
Centre Switch……	AS NEEDED
Range Selector……..	AS NEEDED
Traffic Switch……	AS NEEDED
Weather Radar……..	OFF
Course……	SET
Flight Director Switch……..	ON (PF side on first)
Bank Angle Selector……	AS NEEDED
Autopilot Disengage Bar……	UP
Oxygen……..	TEST
Clock (Capt)……..	SET
Nose Wheel Steering……..	GUARD CLOSED
Display Select Panel……	SET
Takeoff Configuration Light……	Verify EXTINGUISHED
Cabin Altitude Light……..	Verify EXTINGUISHED
Disengage Light Test Switch…….	HOLD TO 1
Disengage Light Test Switch…….	HOLD TO 2

Stab Out of Trim……....	Verify EXTINGUISHED
Flight Instruments……	SET
Standby Instruments……	SET
Standby Horizon……...	SET
Standby Altimeter……	SET
Speed Brake Lever……..	DOWN DETENT
Reverse Thrust Levers……	DOWN
Forward Thrust Levers……	CLOSED
Flap Lever……..	SET
Parking Brake……...	SET
Engine Start Levers……	CUTOFF
Stabiliser Trim Cutout Switches…….	NORMAL
Radio Tuning Panel……	SET
VHF Communications Radios……	SET
VHF Navigation Radios……..	SET FOR DEPARTURE
Seat, Rudder Pedals & Harness……	ADJUST AS NEEDED

FMS / CDU Programming
Performance Data entries must be completed before the Before Start Checklist

- CHECKLIST COMPLETE –

Call “Before Start Checklist”

Before Start Checklist	
Flight Deck Door…….....	CLOSED
CDU Display……	TAKEOFF & LEGS PAGES
N1 & IAS Bugs……..	CHECK & SET
MCP……	SET
Taxi & Takeoff Briefing……	CONDUCT & COMPLETE
Exterior Doors……...	Verify CLOSED
Fuel Pumps……...	ON
Electric Hydraulic Pumps……	ON
Engine Hydraulic Pumps…….	ON
Anti Collision Lights…….	ON
Trim……..	SET ____ UNITS
Obtain ATC PUSH & START CLEARANCE	
Parking Brake……	OFF FOR PUSHBACK

- CHECKLIST COMPLETE -

Engine Start Checklist	
Engine Display……....	SELECT
Packs……..	OFF
Recirculation Fans…….	AUTO
Call…….....	START ENGINE ____
Engine Start Switch……...	GND (L or R)
Ignition Select Switch…….....	L or R
N2 RPM……..	Verify INCREASING
Engine Start Lever…….	IDLE AT 25% N2
Fuel Flow & EGT……	MONITOR
Call…….....	START ENGINE ____
Engine Start Switch……...	GND (L or R)
Ignition Select Switch…….....	L or R
N2 RPM……..	Verify INCREASING
Engine Start Lever…….	IDLE AT 25% N2
Fuel Flow & EGT……	MONITOR

- CHECKLIST COMPLETE -

After Start Checklist	
Generator 1 & 2……	ON
Probe Heat……	ON
Wing Anti-ice……	AS REQUIRED
Engine Anti-ice……..	AS REQUIRED
Packs……..	AUTO
Recirculation Fans……..	AUTO
Isolation Valve……..	OPEN
APU Bleed Air……..	OFF
APU Gen Switches……..	OFF
APU Switch……..	OFF
Engine Start Switches……	CONTINUOUS
Engine Start Levers……	IDLE DETENT
Ground Equipment……..	Verify CLEAR
Flaps……..	SET FOR T/O
Flight Controls……..	CHECK
Lower Controls……..	CHECK BLANK
Taxi Lights……..	ON
Logo Light……	ON (at night)
Transponder……..	T/A R/A
Call ATC for TAXI CLEARANCE	

- CHECKLIST COMPLETE -

Taxi Checklist	
Centre Fuel Tank……	CHECK <2300 kg
Cabin Crew……	Signal
Weather Radar Display……	AS REQUIRED
Terrain Display……	AS REQUIRED

- CHECKLIST COMPLETE –

Before Takeoff Checklist	
Ignition Select Switch……..	BOTH
– AT THE LINE –	
Taxi Lights……..	OFF
Landing Lights ……	ON
Strobe Lights……..	ON
Transponder……..	ON
Autothrottle……	ARMED
Call ATC for TAKEOFF CLEARANCE	

- CHECKLIST COMPLETE –

Takeoff Checklist	
Brakes……....	OFF
Runway HDG……..	Verify with A/C HEADING
Clock / Timer……	START
Takeoff Time & Fuel……...	NOTE
TOGA……..	IN
At 80 knots……...	CALL ’80 KNOTS’
At V1…….	CALL ‘V1’
At VR……	CALL ‘ROTATE’
At Positive Rate……..	Call ‘GEAR UP’
At 1500 feet…….	FLAPS INCR. UP
Engine Bleed Air Switches……	ON
Packs……	AUTO
Engine Start Switches……	CONTINUOUS
Autobrake…….	OFF
Landing Gear……...	OFF

- CHECKLIST COMPLETE -

Climb & Cruise Checklist Above 10,000 feet MSL or AGL	
Landing Lights…….....	OFF
Seat Belt Sign…….....	OFF
Centre Fuel Tank……	OFF <460 kg
At Transition Altitude…….	SET STD & X-CHECK

- CHECKLIST COMPLETE –

Descent Checklist	
At least 10 mins prior to TOD…	CDU SET
Before Descent……..	CLEARANCE OBTAINED
MCP Altitude……..	SET & CHECKED
Descent……	SET AS COMPUTED
Airspeeds…….	AS REQUIRED
Centre Fuel Tanks…….	OFF < 1400 kg
De-icing……	AS REQUIRED
Pressurisation…….	CHECK LANDING ALT.
Vref……	SELECT IN CDU
Decision Height……..	SET
Avionics……	NAVAIDS SET
Heading……	SET
STAR / Transition……...	SET IN CDU
At Transition Altitude…….	SET QNH & X-CHECK
Approach Briefing……..	CONDUCT

- CHECKLIST COMPLETE –

Approach checklist – 10,000 feet	
Cabin Crew……..	NOTIFIED
Seatbelt Sign……..	ON
Landing Lights……..	ON
Missed Approach……	PREPARE
Autobrake…….	SET AS REQUIRED
Engine Starters……..	CONTINUOUS
Radio / Baro…….	CHECK
Anti-ice……..	AS REQUIRED
Speed……	250 KNOTS < 10,000 feet
Approach Procedure……..	UPDATE AS REQUIRED

- CHECKLIST COMPLETE –

Landing Checklist - Finals	
Cabin Crew …….	SEATED FOR LANDING
Speed……	AS COMPUTED or ASSIGNED
Flaps…….	SET FOR LANDING
Speedbrakes……	ARMED
Gear……..	DOWN
GS Alive Call……..….	‘GLIDESLOPE ALIVE’
At Minimums……	CHECK R/W IN SIGHT
Call……	‘CONTINUE’ (or ‘TOGA’)
Autothrottle……..	OFF
Autopilot……	OFF

Landing Roll Checklist	
Thrust Levers……....	CLOSED
Speedbrake Lever……..	Verify UP
Reverse Thrust……	APPLY
Autobrake…….	Verify OPERATING
At 60 knots……...	LOWER REVERSERS
Manual Braking……	AS REQUIRED
Autobrakes……...	DISARM

- CHECKLIST COMPLETE –

After Landing Checklist	
Speedbrake……..	CONFIRM DOWN
APU……..	START
Probe Heat……...	OFF
Landing Lights……....	OFF
Taxi Lights……	ON
Engine Start Switches……	OFF
Flap Lever……	UP
Transponder……	AS REQUIRED

- CHECKLIST COMPLETE –

Shutdown Checklist	
Parking Brake……..	SET
APU Gens……	ON
Engine Start Levers……	CUTOFF
Seat Belt Sign…….	OFF
Anti Collision Lights……	OFF
Fuel Pump Switches……...	OFF
Wing Anti-ice……	OFF
Engine Anti-ice……	OFF
Engine Hydraulic Pumps……	ON
Electric Hydraulic Pumps……...	ON
Recirculation Fans……..	AS REQUIRED
Packs……..	AUTO
Engine Bleeds……	ON
APU Bleeds……...	ON
Exterior Lights……...	AS REQUIRED
Flight Directors……..	OFF
Transponder……	STANDBY

Secure Aircraft Checklist (if required)	
IRS Mode Selectors……	OFF
Emergency Lights……...	OFF
Window Heat……	OFF
Packs……	OFF
Battery……..	OFF

FMC / CDU CONFIGURATION

The Flight Management Computer

The configuration procedures provided in this manual are based on the PMDG 737-800 NGX. The NGX has two **flight management computers (FMCs)** located in the avionics bay beneath the cockpit floor. The **control display units (CDUs)** are the pilot interfaces to the FMCs.

The CDU has a screen and keypad that can be used to enter and display information into the FMC. The bottom line of the screen is known as the **scratchpad** where various information and error messages can be displayed, and where information that you enter using the CDU keypad is shown. You can clear any messages in the scratchpad by pressing the CLR key in the lower-right corner of the keypad.

The six keys along each side of the CDU screen are called **Line Select Keys (LSKs).** It is common to see them referred to as, for example, LSK 2L. This stands for the 2nd line select key from the top on the left side of the CDU.

Pre-flight Preparations

Press Shift+3 to load a 2D popup window of the CDU.

The initial data and route setup data needs to be programmed prior to conducting the preflight checklists.

Fuel

Press LSK 5R [FS ACTIONS>]. The screen will change. Press LSK 1L [<FUEL] to select the **FUEL page** (Figures 1 & 2).

The prompts on the right side of the fuel page allow you to load preset fuel levels. The prompts on the left side allow you to type the total fuel level, a percentage, or the individual tank weights and then line select them into place.

Figure 1

Figure 2

Payload (passengers & cargo)

Press LSK 6L [<RETURN] to return to the root **FS ACTIONS page.** Press LSK 2L to select the **PAYLOAD page**. (Figure 3). The PAYLOAD page is like the FUEL page but for passengers and cargo weight. The prompts on the right side are quick-load presets and on the left side you can type and line select in the exact number of passengers and the weight of cargo (Figure 4).

To do this, click into the scratchpad and type a weight value (say 1500), then press LSK 5L to load the aft cargo compartment weight. Repeat this action to load forward cargo weight, only this time press LSK 4L (Figure 4). Make note of the zero fuel weight (ZFW) and the centre of gravity (CG) figures. We will need these numbers later.

Figure 3

Figure 4

Route Setup

Next you need to set up the flight plan's lateral route and program it into the FMC. The basic sequence to follow to accomplish is:

1. Position Initialisation
2. Airport Entry
3. Departure Entry (SID)
4. Enroute and SID Entry
5. STAR and Approach Entry
6. Route Activation.

Press MENU, which will take you back to the root menu.

Select the **IDENT page** by pressing the <FMC prompt [LSK 1L]. The IDENT page doesn't contain any fields for entry, but it does provide some valuable information such as aircraft type, engine thrust rating, the FMC software version, known as the Op Program and the currently installed navigation database and its valid dates. In the real world this aeronautical information is published on a 28-day cycle. Each 28-day period is known as an Aeronautical Information Regulation and Control (AIRAC) cycle. So the first cycle of the year 201EWM1 is AIRAC-1101, the second AIRAC-1102, and so on.

1. Position Initialisation

Press LSK 6R to select the **POS INIT page**.

The POS INIT page is used during a cold and dark start for aligning the inertial reference system (IRS) gyros.
When loading from Free Flight, the IRS is already aligned, so this page would not have any real function. For the purposes of this tutorial, however, we will load the relevant airport.

Enter the origin airport into the scratch pad and line select REF AIRPORT [LSK 2L]. Note how the airport's latitude and longitude is automatically displayed (Figure 5).

Figure 5

2. Airport Entry

Next enter the destination airport. Press LSK 6R to select the **RTE page**. The RTE page is the primary location for entering the enroute portion of your flight plan. As a result of having previously entered the current airport on the POS INT page, you will notice that the airport is already placed in the scratchpad (Figure 6).

Line select the current airport ICAO code into LSK 1L - the ORIGIN field (Figure 7).

Figure 6

Figure 7

Next, type the destination airport code into the scratchpad and line select it up to LSK 1R, the DEST field (Figure 8).

Type PMDG738 (or aircraft type) into the scratchpad and line select it with LSK 2R, the FLIGHT NO. field (Figure 9).

You could enter the runway now on the RTE page, but it's best to do that on the DEP ARR page instead to demonstrate another feature.

Figure 8

Figure 9

3. Departure Entry (SID)

Press the DEP ARR button to get to the **DEP ARR INDEX page** (Figure 10). The DEP ARR INDEX page contains a series of prompts that take you to the departure and arrival procedure selection pages for the two airports you have entered into the RTE page ORIGIN and DEST fields earlier on the RTE page. The reason you have both departure and arrival prompts for the origin airport is to enable a return to the airport after takeoff in the case of an emergency. At LSK 6L and 6R, you have two prompts that allow you access to any airport's departure or arrival page. You can type the ICAO airport identifier of the airport in question into the scratchpad and then line select it to the DEP or ARR field. This can be useful in the event of an enroute diversion.

Press LSK 1L to get back to the current airport **DEPARTURES page**. This page contains all of the runways and Standard Instrument Departures (SIDs) that exists in the FMC's navigation database.

Select the LSK for your departure runway . Notice the list of SIDs on the left side is filtered so that only the SIDs for your selected runway are displayed. This is the reason for not entering the runway on the RTE page 1 earlier - when you enter it there, it does not filter the SIDs unless you reselect the runway on the airport DEPARTURES page.

If your desired SID does not appear on the current display, press the NEXT PAGE button to go to the next list of SIDs for your takeoff runway. Press the appropriate LSK for your desired SID (Figure 11).

Figure 10

Figure 11

4. Route Entry

Press LSK 6R to get back to the **RTE page** (Figure 12). You go back to it because the RTE page is where enroute airways are entered.

Press the NEXT PAGE button to go to RTE page 2 (Figure 13). The RTE page 2 and further are where you actually enter route information. Note the VIA and TO columns on the left and right sides of the screen. The TO column is where you're going and the VIA column is how you are going to get there.

Figure 12

Figure 13

If you were to just enter a single waypoint into the TO column, you'd see DIRECT automatically appear in the VIA column, letting you know that there is no VIA routing, just a direct line from the previous TO column waypoint. The PMDG NGX RTE page functionality almost exactly mirrors the real life one.

You can actually enter just about anything into the VIA column including typing in the names of SIDs, STARs, waypoint intersections and approaches as well as airways and it will take them. So, now enter all your planned waypoints between the departure and arrival airports by typing them into the scratchpad and line selecting them to right LSKs (Figure 14).

Next you enter your SID (example SID shown is JCT7). Begin by pressing the DEP/ARR button. Next press the <DEP at LSK 1L. There could be a number of pages of DEPARTURES from your departing airport relative to your departing runway to choose from. Begin by pressing the appropriate Right LSK to select the departure runway (Figure 15) then press NEXT PAGE to select your preferred (or assigned) DEPARTURE.

Figure 14

Figure 15

5. STAR and Approach Entry

If flying with online ATC such as VATSIM, you may not know your STAR until some time into the flight and the approach at a point even closer to your destination If not flying with ATC, you could make these entries at this point. Either way, the CDU STAR entry should be made at least 10 minutes prior to top of descent (TOD).

To begin, press the DEP/ARR key then press LSK 2R to display a list of arrivals for your destination airport. Press a Right LSK to select your required STAR. This will display the STAR code on the ARRIVALS page of your destination airport. In the left column below the selected arrival a number of transition points will be listed. If you look at the STAR chart, you will probably see a particular waypoint, usually a VOR, as the transition point for the selected STAR Arrival. Press the corresponding Left LSK.

6. Route Activation

If you are not entering your STAR and Arrival data prior to departure, route activation for known data up to and including the SID and enroute details should be made prior to startup.

Press the RTE key on the CDU keypad to return to the RTE pages, followed by NEXT PAGE to display the second of three RTE pages currently in the FMC.

At this point you activate the route in the FMC by pressing LSK 6R next to the ACTIVATE> prompt, followed by the EXEC button.

Route Discontinuity

A common error that may occur when programming departures and arrivals is that of ROUTE DISCONTINUITY, shown opposite. However, this is quick and easy to fix:

Figure 16

1. Press the LEGS button on the CDU pad.
2. Press the NEXT PAGE button until you locate the blank section in the route. In Figure 16 opposite it is at LSK 2L.
3. Type the code for the following waypoint into the scratchpad (in this example, EWM).
4. Line select the waypoint (e.g. EWM) into the □□□□□ line (in this example LSK 2L). you will see the error message disappear and the route becomes complete.
5. Now you can activate the route by selecting ACTIVATE> at LSK 6R, then press the EXEC key on the CDU keyboard.

Performance Data and Vertical Path Initialisation

The performance data and vertical path initialisation must be programmed prior to commencing the before start checklist.

If the CDU is not currently displayed, press Shift+3 again. Press MENU on the CDU keypad then <FMC at LSK 1L. Display the **PERF REF page** by pressing INIT REF button on the keypad. The CDU should now look like Figure 17.

Figure 17

The PERF INIT page is where the FMC is told what the aircraft's weights are and where parameters that affect the performance and vertical path are established. This is also where the flight's cruise altitude is set.

A short cut on the PERF INIT page that doesn't exist in the real FMC to assist in entering weights has been built into this system.

Fuel Weights
Click LSK 3L next to the empty Zero Fuel Weight (ZFW) field. Something close to 122.7 should appear in the scratchpad. Click LSK3L again to enter it into the ZFW field. Notice that the gross weight (GW) is automatically calculated and entered at LSK 1L.

Enter a reserve fuel figure of 2.6 (2600lbs) in the scratchpad and line select it to RESERVES at LSK 4L. If the aircraft starts using this fuel a message will appear on the scratchpad saying USING RSV FUEL. If the destination fuel is predicted to be below 2000lbs, regardless of reserves, an INSUFFICINT FUEL message appears.

Cost Index
Cost Index is a measure of how much the FMC values fuel economy vs the overall speed of the flight. The valid range is 0 to 500. 25 is a common real worl value. For this tutorial we will set it at 20. Type 20 into the scratchpad and line select it to LSK 5L.

Cruise level
Next enter the cruise altitude for the flight (e.g. 360 for FL360) by typing it into the scratchpad and line selecting it to LSK 1R.

Press the EXEC button to execute the performance data initialisation.

N1 Limit and Takeoff Reference Data Setup

Next set the engine thrust rating for takeoff and climb.

Press the N1 LIMIT button to go to the **N1 LIMIT page**.
Press a left LSK to select your desired takeoff performance.

Type outside air temperature (OAT) into the scratchpad and line select it to LSK 1L.

The completed N1 REF Page should now look as shown in Figure 18.

Figure 18

The **TAKEOFF REF page** contains several required entries for calculating the aircraft's performance during takeoff.
Press LSK 6R to go to the TAKEOFF REF page.

Enter the desired flaps for takeoff (usually 5) and line select it into the LSK 1L FLAPS field. Click LSK 3L. It will place the current centre of gravity (CG) value into the scratch pad. Line select that back into LSK 3L. This will provide the calculated trim takeoff setting which should be noted.

CDU Quick Guide

Procedure	Action Required	Keypad Presses
Fuel and Payload		
Fuel Entry	Select FS ACTION> page	LSK 5R
	Select FUEL page	<Fuel [LSK 1L]
	Set FULL>, or	LSK 3R
	SET 2/3>, or	LSK 4R
	SET 1/3, or	LSK 5R
	Set by scratchpad entry	LSK L2 TANK 1 LSK 3L TANK 2 LSK 4L CTR TANK
Payload – Passengers	Return to root FS ACTIONS> page	<RETURN LSK 6L
	Select PAYLOAD page	<PAYLOAD LSK 2L
	Enter payload: SET FULL>, or	LSK 4R
	SET EMPTY>, or	LSK 5R
	SET RANDOM>, or	LSK 6R
	Set by scratchpad entry	FIRSTCLASS> LSK 1L, COACH> LSK 2L
Payload - Cargo	Return to root FS ACTIONS> page	<RETURN LSK 6L
	Select PAYLOAD page	<PAYLOAD LSK 2L
	Enter cargo weight	SET FULL> LSK 4R SET EMPTY> LSK 5R SET RANDOM> LSK 6R

Route Setup		
Position Initialisation Entry	Go to the root menu	MENU button
	Select POS INIT page	<FMC LSK 1L
	Select POS IDENT page	POS INT> LSK 6R
	Type origin airport code into scratchpad and line select to . . .	REF AIRPORT LSK 2L
Airport Entry	Select RTE page	RTE button
	Line select the departure airport code already in the scratchpad to . . .	ORIGIN LSK 1L
	Type destination airport code into scratchpad and line select to . . .	DEST LSK 1R
	Type flight number into scratchpad and line select to. . .	FLT NO. LSK 2R
Departure Entry	Select DEP ARR INDEX page	DEP ARR button
	Go back to airport DEPARTURES page	<DEP LSK 1L
	Select departure runway	Right LSKs
	Select required SID Use NEXT PAGE if required	Left LSKs
Route Entry	Select RTE page	ROUTE> LSK 6R
	Press NEXT PAGE button	
	Enter intermediate waypoints	Right LSKs
	Enter the SID	DEP/ARR button

	Select <DEP	LSK 1L
	Select departure runway	A Right LSKs
	Select SID Departure	NEXT PAGE
STAR & Approach Entry	Display ARRIVAL STARs	DEP/ARR button ARR> LSK 2R
	Select planned STAR	An LSK
	Select planned transition waypoint	An LSK (below STAR)
Route Activation	Select RTE page	ROUTE button
	Select RTE page 2	NEXT PAGE
	Activate route	ACTIVATE> LSK 6R
	Execute	EXEC key

Performance Data and Vertical Path Initialisation		
Open CDU & display page Fuel Weight Entry	Open CDU	Shift + 3
	Display PERF REF page	<FMC LSK 1L &INIT REF button
	Determine ZFW (a figure will appear in the scratchpad)	<ZFW
	Enter ZFW by line selection to. . .	<ZFW LSK 3L
	Enter RESERVE by line selecting <2.6> to. . .	RESERVES LSK 4L
Cost Index Entry (usually 25)	Enter COST INDEX by line selection to. . .	<COST INDEX LSK 5L
Cruise Altitude Entry	Enter cruise altitude by line selection to. . .	CRZ ALT LSK 1R
Execute	Execute PERF INT data	EXEC button

N1 Limit & Takeoff Data Setup		
Set N1 Limit	Open N1 LIMIT page	N1 LIMIT button
	Select desired fixed derate mode	An LSK
	Type OAT into scratchpad and line select to. . .	LSK 1L
Set Takeoff Reference	Open TAKEOFF REF page	LSK 6R
	Enter 5 (flaps 5) into scratchpad and line select to. . .	LSK 1L
	Obtain current CG	LSK 3L
	Enter CG value into scratchpad and line select to. . .	LSK 3L
	This will provide the takeoff trim setting which should be written down.	

You Tube video tutorials

How to start a Boeing 737-800 (FSX) by Piloytguy2011
https://www.youtube.com/watch?v=pZofY286FyQ

PMDG 737 NGX | Full Cold & Dark to start Tutorial by ReNewReViews https://www.youtube.com/watch?v=IbtY0rKBkRQ

PMDG 737 NGX | Full FMC/CDU Tutorial by ReNewReViews
https://www.youtube.com/watch?v=wqy9jBiD800

PMDG 737 NGX FULL FLIGHT TUTORIAL #1 by Lewis Morrison
https://www.youtube.com/watch?v=8FEaMYvQT60

How to Fly the PMDG NGX by Matt Davies
https://www.youtube.com/watch?v=WIr4GZZZ4bk

Boeing 737 -- From Cold and Dark to Ready for Taxiing by BAA Training https://www.youtube.com/watch?v=vEaVaXJsykY

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