

NORMAL PROCEDURES

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NORMAL PROCEDURES

OVERVIEW: The following sets of procedures follow step by step through the processes required to fly the Next Generation 737. These normal procedures are divided by major flight phase and should provide a basic guideline for accomplishing the major procedures required during flight. Although these checklists do not need to be removed from the manual and followed on a step by step basis, crews are encouraged to develop a pattern of behavior which ensures that all of the following steps are accomplished in the correct order and format. Use of the **In Flight Use** Checklist (located on pages 17/18 of this chapter) is required of crewmembers. (We recommend that you print page 17/18 for use in flight!)

In the interest of containing operating costs, external ground power should be used during the initial cockpit preparation. This will allow the crew to delay APU start until immediately before departure. In circumstances where the quality of an external power connection is an issue, or when ground based aircraft cooling is not available, crews may elect to start the APU at their discretion in the interest of preserving an on-time departure and passenger climate comfort.

In Cold Weather Operations crews should ensure that the cockpit has not been set up for aircraft deicing operations by ground crew. If this is determined to be the case, crews are advised not to begin cockpit preparation until clearing their actions with the ground crew in order to prevent damage to the aircraft or injuries to ground personnel.

Exterior Safety Inspection

SURFACES AND CHOCKS	IN
Visually check that all moveable surfaces are clear and the chocks are in place.	
MAINTENANCE STATUS	CHECKED

Cockpit Acceptance Check

BATTERY SWITCH	ON
ELECTRICAL HYDRAULIC PUMP SWITCHES	OFF
LANDING GEAR LEVER	DOWN
GROUND POWER (If Available)	ON
LEFT/RIGHT TRANSFER BUS 'SOURCE' LIGHTS	OFF
OVERHEAT/FIRE PROTECTION (Center Pedestal)	
OVERHEAT DETECTOR SWITCHES	NORMAL
TEST SWITCH.....	Hold to FAUL/INOP
Verify the FAULT lights illuminate.	
FIRE/OVERHEAT WARNING	CHECK
EXTINGUISHER TEST SWITCH	CHECK
APU	START IF NECESSARY
APU START SELECT SWITCH	START

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APU GENERATOR SWITCHES	ON
APU PNEUMATIC BLEED VALVE	ON
FLAP POSITION INDICATOR AND FLAP LEVER	AGREE
EVACUATION ACTIVATION SWITCH	OFF
REVERSER LIGHTS	EXTINGUISHED
PASSENGER OXYGEN switch	NORMAL / Light OFF
SERVICE INTERPHONE SWITCH	AS REQUIRED
IRS MODE SELECTORS	NAV

Exterior Pre-Flight Inspection

ELECTRICAL HYDRAULIC PUMP switches	ON
System A and B pressure should equal 2800PSI approximately	
PARKING BRAKE	SET
EXTERIOR LIGHTS	ON/FUNCTIONAL
General Airplane Condition	Check
Probes, sensors, ports, vents and drains	Unobstructed/Undamaged
Doors latches and access panels	Closed/Secure
Tires, brakes and wheels	Check/Undamaged
Gear struts and doors	Check
Gear Pins	Removed
Nose gear steering lockout pin	As Required
Oxygen Pressure Relief Disc	Check
Cargo compartments	Check
Ram Air deflector door	As Required
Flight Control Surfaces	Unobstructed/Free of fluid leaks
Fuel Measuring Sticks	Stowed
Wing Surfaces	Check
A and B hydraulic reservoir quantity indicators	RF or higher
APU fire control handle	UP
Outflow valve	Open
Tail Skid (800/900)	Check
ELECTRICAL HYDRAULIC PUMP switches	OFF
External Lights	As Required

Cockpit Preparation

FLIGHT CONTROL PANEL (OHD).....	CHECK
ALL 5 switch guards	Down
ALTERNATE FLAPS position switch	Off
YAW DAMPER switch	ON
FUEL SYSTEM (OHD)	CHECK
ENGINE VALVE CLOSED lights.....	Illuminated Dim
SPAR VALVE CLOSED lights.....	Illuminated Dim
FILTER BYPASS lights	OFF
CROSSFEED selector	CLOSED
CROSSFEED VALVE OPEN light.....	OFF
FUEL QUANTITY	CHECK
FUEL PUMP switches (for tanks containing fuel)	ON
LOW PRESSURE lights.....	OFF
CABIN/UTIL power switch	ON
IFE/PASS seat power switch	ON
ELECTRICAL SYSTEM	Check
STANDBY POWER switch	AUTO (Guard DOWN)
Generator Drive DISCONNECT switches	Guards DOWN
BUS TRANSFER switch	AUTO (Guard DOWN)
EQUIPMENT COOLING switches	NORMAL
OFF lights	Extinguished
EMERGENCY EXIT lights switch	ARMED (Guard DOWN)
PASSENGER SIGNS	ON
WINDSHIELD WIPER SELECTORS	PARK/OFF
WINDOW HEAT switches	ON
PROBE HEAT switches	OFF
WING and ENGINE ANTI ICE switches	OFF
VALVE OPEN lights	Extinguished
HYDRAULICS	CHECK
System A HYDRAULIC PUMP switches	ON
System B HYDRAULIC PUMP switches	ON
Electric Pump LOW PRESSURE lights	EXTINGUISHED
SYSTEM PRESSURE	2800 psi
PRESSURIZATION	CHECK
CABIN DIFFERENTIAL PRESSURE.....	ZERO
CABIN ALTITUDE	Field Elevation
CABIN RATE OF CLIMB	ZERO

FLIGHT ALTITUDE indicator	Set to Cruise Altitude
LANDING ALTITUDE	Set to landing field elevation
PRESSURIZATION MODE SELECTOR	AUTO
EXTERIOR LIGHT switches	AS REQUIRED
IGNITION SELECT switch	IGN L or R
ENGINE START SWITCHES	OFF
RAM DOOR FULL OPEN lights	ILLUMINATED
RECIRCULATION FAN switch	AUTO
AIR CONDITIONING PACK switches	AUTO
ISOLATION VALVE switch	OPEN
ENGINE BLEED AIR switches	ON
APU BLEED AIR switch	As Required
EFIS control panel	CHECK
MINIMUMS reference selector	As Desired
FLIGHT PATH VECTOR switch	As Desired
BAROMETRIC reference selector	SET Local Altimeter
VOR/ADF switches	As Desired
MODE Selector	MAP
CENTER switch	As Desired
RANGE Selector	As Desired
TRAFFIC Switch	As Desired
MAP Switches	AS Desired
MODE CONTROL PANEL	CHECK
COURSE	SET/VERIFY
FLIGHT DIRECTOR switches	ON
AUTOTHROTTLE switch	OFF
HEADING	Set to Runway Heading
BANK ANGLE LIMIT switch	Set as Desired
ALTITUDE	Set to Takeoff Climb Clearance
AUTOPILOTS	Disengaged
EFIS	Verify No Flags Showing on PFD/ND
AUTOBRAKE switch	RTO
AUTOBRAKE DISARM light	Extinguished
ANTISKID INOP light	Extinguished
ENGINE INSTRUMENTS	CHECK
SPEED BRAKE LEVER	DOWN
THRUST LEVERS	IDLE
START SWITCHES	CUTOFF
PARKING BRAKE	SET
STABILIZER TRIM	GREEN RANGE

RADIOS	TUNED As Required
TRANSPONDER	Code Entered
FMC/CDU	SET
IDENT page	CHECK
Verify airplane and engine MODEL and NAV DATA ACTIVE dates are correct.	
POS INIT page	SET
Verify GMT is correct.	
RTE page	SET
Enter route by company route load function or by origin/destination entry.	
DEPARTURES page	SET
Select the active runway and departure/transition procedures if know.	
RTE page	SET
Verify selected departure and route. Correct discontinuities.	
ACTIVATE and EXECUTE	
PERF INIT page	SET
Verify total fuel quantity is displayed on the CDU.	
Validate Weight Figures, Cost Index and Cruise Altitude.	
EXECUTE.	
N1 LIMIT page	SET
Enter OAT	
Select Desired Takeoff and Climb thrust modes	
TAKEOFF REF page	SET
Verify Preflight is complete	
Enter takeoff flaps and V-speeds (click on 1R, 2R, 3R to populate...)	

Pushback and Engine Start

ENGINE START CLEARANCE	OBTAIN
Captain calls for "BEFORE START CHECKLIST TO THE LINE"	
First Officer Accomplishes BEFORE START CHECKLIST to the line using	
The IN-FLIGHT-USE-CHECKLIST.	
>>>-----CLEARED FOR START -----<<<<	
DOORS	CLOSED
AIR CONDITIONING PACK switches	OFF
ANTI-COLLISION light switch	ON
Captain calls for "BEFORE START CHECKLIST BELOW THE LINE"	
First Officer completes the BEFORE START checklist	

After Start

ELECTRICAL SYSTEM	SET
BOTH GENERATOR switches	ON
GEN OFF BUS lights	Extinguished
SOURCE OFF lights	Extinguished
PROBE HEAT switches	ON
All Probe Heat lights	Extinguished
ANTI-ICE	As Required
AIR CONDITIONING	SET
PACK switches	AUTO
APU BLEED AIR switch	OFF
ISOLATION VALVE switch	AUTO
HYDRAULIC PUMP switches	ON

Before Takeoff

RECALL SWITCH	CHECK
FLIGHT CONTROLS	CHECK/FREE
FLAPS	SET _____
STABILIZER TRIM	SET _____
TAKEOFF BRIEFING	Review
<p>Captain calls for "BEFORE TAKEOFF CHECKLIST TO THE LINE"</p> <p>First Officer accomplishes BEFORE TAKEOFF checklist to the line.</p>	
>>>>-----CLEARED FOR TAKEOFF -----<<<<	
ENGINE START SWITCHES	CONT
LANDING LIGHTS	ON
STROBE LIGHTS	ON
AUTOTHROTTLE	ARM
TRANSPONDER	ON
<p>Captain calls for "BEFORE TAKEOFF CHECKLIST BELOW THE LINE"</p> <p>First Officer completes BEFORE TAKEOFF checklist</p>	

Takeoff Procedure Explained:

Advance thrust levers to approximately 40% N1.

Observe engine instruments stabilized and normal.

Push TO/GA switch to advance the thrust levers to takeoff N1.

Verify mode annunciation.

Note: After takeoff thrust is set, the captain's hand must be on the thrust levers until V1.

Hold light forward pressure on the control column, maintain directional control.

Monitor engine instruments. Verify oil pressure is not in the amber band.

Verify 80 knots.

Monitor airspeed, noting V1, and rotate smoothly.

When positive rate of climb is indicated, call "GEAR UP" and position landing gear lever UP.

Continue rotation to takeoff pitch.

Check flight instrument indications.

After Takeoff Procedure Explained:

Maintain a minimum of $V_2 + 15$ knots during initial climb. At light gross weight a higher speed (up to $V_2 + 25$) may be selected.

Above 400 feet, select appropriate roll mode, if required. Verify proper mode annunciation.

Above 1,000 feet, set flaps up maneuvering speed. Verify climb thrust is set and proper mode is annunciated.

When above minimum altitude for autopilot engagement, engage A/P. Verify flight mode annunciation.

Retract flaps on takeoff flap retraction speed schedule and monitor flaps and slats retraction.

Position landing gear lever OFF, APU and engine start switches as required. Verify air conditioning and pressurization operating normally.

Perform AFTER TAKEOFF CHECKLIST when flaps are up.

Above 3,000 feet AGL, engage VNAV or select normal climb speed and verify annunciation.

Takeoff Flap Retraction Speed Schedule		
T/O FLAPS	SELECT FLAPS	AT: (for all weights)
25	15	V2 + 15
	5	"15"
	1	"5"
	UP	"1"
15	5	V2 + 15
	1	"5"
	UP	"1"
10	5	V2 + 15
	1	"5"
	UP	"1"
5	1	V2 + 15
	UP	"1"
1	UP	"1"

- "UP" – Flaps up maneuvering speed
- "1", "5", "10", "15", "25" – Number corresponding to flap maneuvering speed.

Note: Limit bank angle to 15 degrees until reaching V2 + 15.

Climb and Cruise

CLIMBING THROUGH 10,000	.....SET
Alert Cabin crew	
Turn off non-essential external lighting	
TRANSITION ALTITUDE	.....Set Altimeters to STANDARD
FUEL MANAGEMENT	.....MONITOR
When Center Fuel Tank LOW PRESSURE lights illuminate	.....CENTER PUMPS OFF
Ensure Fuel Balance during cruise flight	
PRIOR TO REACHING Top of Descent	.....Set MCP altitude selector for descent
At Top of Descent	.....Verify descent initiated

Climb and Cruise Procedure Explained:

Position landing lights OFF passing through 10,000 feet.

Set altimeters to standard at transition altitude.

Approaching selected FMC cruise altitude, verify level off and proper mode/N1 limit annunciation.

Position center tank fuel pump switches OFF when both pump LOW PRESSURE lights illuminate.

During the last hour of cruise on all extended range (ETOPS) flights, perform Fuel Crossfeed Valve check.

Prior to top of descent, select and verify the planned arrival procedure on the FMC.

Set MCP altitude selector for descent.

At top of descent point observe descent initiated and verify proper mode annunciation.

Descent and Approach

FMC/CDU	.....SET
DEP/ARR page to set procedures and VREF speeds	
ANTI-ICE	.....As Required
PRESSURIZATION	.....Verify Cabin Descent
AUTOBRAKE	.....As Desired
TRANSITION ALTITUDE	.....Set Altimeters to local altimeter setting
FINAL APPROACH COURSE	.....Set COURSE as needed
MINIMUMS	.....Set DA as required
VHF NAV RADIOS	.....Set as required for final approach
DESCENDING THROUGH 10,000	.....EXTERNAL LIGHTS ON
Pilot Flying calls for "Descent Approach Checklist"	
Pilot Not Flying accomplishes Descent Approach Checklist	

Descent and Approach Procedure Explained:

Position center tank fuel pump switches OFF when both pump LOW PRESSURE lights illuminate.

Check and set VREF and approach speeds as required.

Set anti-ice as required.

Verify pressurization set for destination airport elevation and system operating normally.

Set AUTO BRAKE select switch to desired brake setting.

Set and crosscheck altimeters at transition level.

Set and crosscheck course selection and RADIO/BARO minimums as required for approach.

Set and verify ADF and VHF NAV radios for approach.

Position fixed landing lights passing through 10,000 feet.

Accomplish the DESCENT-APPROACH checklist.

Call "FLAPS___" according to flap speed schedule and position FLAP lever. Monitor flap and slat extension.

Approaching selected FMC altitude verify level off and mode annunciation.

Approach Procedure Explained:

Using flaps as speed brakes is not recommended.

The following procedures are used for flap extensions:

- Select flaps 1 when decelerating through the flaps-up maneuvering speed, displayed on the airspeed display as "UP".
- Set airspeed cursor to the flap maneuvering speed displayed as "1".
- When appropriate, select the next flap position and then set the airspeed cursor to that flap maneuver speed.

Landing Procedure Explained:

When on localizer intercept heading, verify ILS tuned and identified, LOC and G/S pointer displayed, arm APP mode and engage second autopilot.

Verify mode annunciation.

At localizer capture verify proper mode annunciation and set appropriate heading.

At glide slope "alive", position landing gear lever DN, FLAP lever to 15 and arm speedbrakes.

Position engine start switches to CONT. Check RECALL.

Perform LANDING CHECKLIST down to FLAPS.

At glide slope capture, verify proper mode annunciation, check N1 reference bug at the go-around limit and set missed approach altitude.

Call "FLAPS ____" as required for landing and position FLAP lever accordingly. Set MCP speed selector at VREF + 5 knots.

At final approach fix, OM, verify crossing altitude.

Complete the LANDING CHECKLIST.

Monitor approach progress and guard the controls.

At 500 feet AGL, verify FLARE is armed.

At approximately 50 feet AGL, verify FLARE is engaged.

Ensure the autothrottle retards the thrust levers to idle by touchdown.

Go-Around Procedure Explained:

Push TO/GA button switch.

Call "FLAPS 15" and position FLAP lever to 15.

Confirm rotation to go-around attitude and monitor autopilot.

When positive rate of climb is indicated, position landing gear lever UP.

Check flight instruments indications.

Above 400 feet, select appropriate roll mode and verify proper mode annunciation.

Retract flaps on speed schedule.

Verify airplane levels off at selected altitude and maintain flaps maneuvering speed.

Accomplish AFTER TAKEOFF checklist.

Landing Roll Procedure Explained:

Ensure thrust levers at idle.

Disengage autopilot and control airplane manually. Verify autothrottle disengages automatically.

Verify SPEED BRAKE lever – UP.

Verify proper autobrake operation.

Without delay, apply reverse thrust as required.

At 60 knots, reduce reverse thrust to be at IDLE reverse when reaching taxi speed.

Verify REV indication extinguished.

Prior to taxi speed, disarm, the autobrake and continue manual braking as required.

Taxi-In

SPEED BRAKE lever	DOWN
FLAP lever	UP
APU (if desired)	START
PROBE HEAT switches	OFF
ENGINE START switches	OFF
LANDING lights	OFF
TAXI Lights	As Desired
STROBE lights	OFF
FLIGHT DIRECTOR switches	OFF
TRANSPONDER	OFF
APU GENERATOR switches (if APU operating)	ON
APU GEN OFF BUS lights	OFF

Shutdown Procedures

PARKING BRAKE	SET
ELECTRICAL	SET AS DESIRED
FUEL CONTROL LEVERS	CUTOFF
FASTEN SEATBELTS switch	OFF
ANTI COLLISION light switch	OFF
FUEL PUMP switches	OFF
CAB/UTIL power switch	As Required
IFE/PASS seat power switch	As Required
WINDOW HEAT switchers	OFF
WING and ENGINE ANTI-ICE switches	OFF
ELECTRIC HYDRAULIC PUMP switches	OFF
RECIRCULATION FAN switch	As Desired
AIR CONDITIONING PACK switches	AUTO
ISOLATION VALVE switch	OPEN
ENGINE BLEED AIR switches	OFF
APU BLEED AIR SWITCH	As Required
EXTERIOR LIGHTS	As Required
AUTO BRAKE switch	OFF
SPEED BRAKE lever	DOWN
PARKING BRAKE	As Required
SHUTDOWN CHECKLIST	ACCOMPLISH

Secure Procedure

EMERGENCY EXIT LIGHTS switch	OFF
AIR CONDITIONING PACK SWITCHES	OFF
APU	SHUT DOWN
BATTERY SWITCH	OFF
SECURE CHECKLIST	ACCOMPLISH

INFLIGHT USE CHECKLISTS EXPLAINED:

The following pages comprise a two page In-Flight Use Checklist that should be printed and kept handy in the cockpit for use during flight.

The procedures listed above in this chapter are designed to be studied and to serve as a useful guide for setting up the cockpit and flight process. The In-Flight Use Checklist below is designed to assist crews in checking their work and validating that proper procedures have been accomplished prior to any critical phase of flight.

When following the Expanded Normal Procedures above you will notice that the process occasionally calls for the conduct of a checklist. For example:

ENGINE START CLEARANCE	OBTAIN
Captain calls for "BEFORE START CHECKLIST TO THE LINE	
First Officer Accomplishes BEFORE START CHECKLIST to the line using	
The IN-FLIGHT-USE-CHECKLIST.	

In such a situation, the BEFORE START CHECKLIST that is being referenced is the In-Flight-Use Checklist as described on pages 17/18 of this chapter.

It is recommended that the following two pages be printed and stapled back to back for ease of use!

BEFORE START

FLIGHT DECK PREPERATION	COMPLETED
YAW DAMPER	ON
FUEL	____ LBS/KGS PLANNED, ____ BOARDED, PUMPS ON
CAB/UTIL & IFE PASS SEAT POWER	ON
EMERGENCY EXIT LIGHTS	ARMED
CABIN SIGNS	ON
WINDOW HEAT	ON
HYDRAULICS	NORMAL
AIR CONDITIONING & PRESSURIZATION	____ PACKS, BLEEDS ON, SET
AUTOPILOT	DISENGAGED
INSTRUMENTS	CROSS CHECKED
AUTOBRAKE	RTO
SPEED BRAKE	DOWN
PARKING BRAKE	SET
STABILIZER TRIM	____ SET
FMC, RADIOS, TRANSPONDER	SET
TRIM	SET
FMC/CDU	SET
N1 & IAS BUGS	SET
>>>>>>>>-----THE LINE-----	
<<<<<<<<<	
DOORS/WINDOWS	CLOSED

BEFORE TAKEOFF

RECALL	CHECKED/CLEARED
FLIGHT CONTROLS	FREE
FLAPS	____ SET
TRIM	____ SET
TAKEOFF BRIEFING	REVIEWED
>>>>>>>>-----THE LINE-----	
<<<<<<<<<	
ENGINE START SWITCHES	ON

AFTER TAKEOFF

AIR CONDITIONING & PRESSURIZATION	SET
ENGINE START SWITCHES	OFF
LANDING GEAR	UP and OFF
FLAPS	UP

DESCENT APPROACH

ANTI-ICE	AS REQUIRED
AIR CONDITIONING & PRESSURIZATION	SET
ALTIMETER & INSTRUMENTS	SET / CROSS-CHECKED
N1 & IAS BUGS	CHECKED / SET

LANDING

ENGINE START SWITCHES	ON
RECALL	CHECKED / CLEARED
SPEED BRAKE	ARMED, GREEN LIGHT
LANDING GEAR	DOWN 3 GREEN
FLAPS	_____ SET

SHUTDOWN

FUEL PUMPS	OFF
CAB/UTIL & IFE/PASS SEAT POWER SWITCHES	AS REQUIRED
ELECTRICAL SOURCE	_____
FASTEN SEATBELTS SIGN	OFF
WINDOW HEAT	OFF
PROBE HEAT	OFF
ANTI-ICE	OFF
ELECTRIC HYDRAULIC PUMPS	OFF
AIR CONDITIONING	AS REQUIRED
ENGINE START SWITCHES	OFF
AUTOBRAKE SWITCH	OFF
SPEED BRAKE	DOWN
FLAPS	UP
PARKING BRAKE	AS REQUIRED
FUEL SHUTOFF LEVERS	CUTOFF
TRANSPONDER	OFF

SECURE CHECK

EMERGENCY EXIT LIGHTS	OFF
AIR CONDITIONING PACKS	OFF
APU / GROUND POWER	OFF
BATTERY	OFF