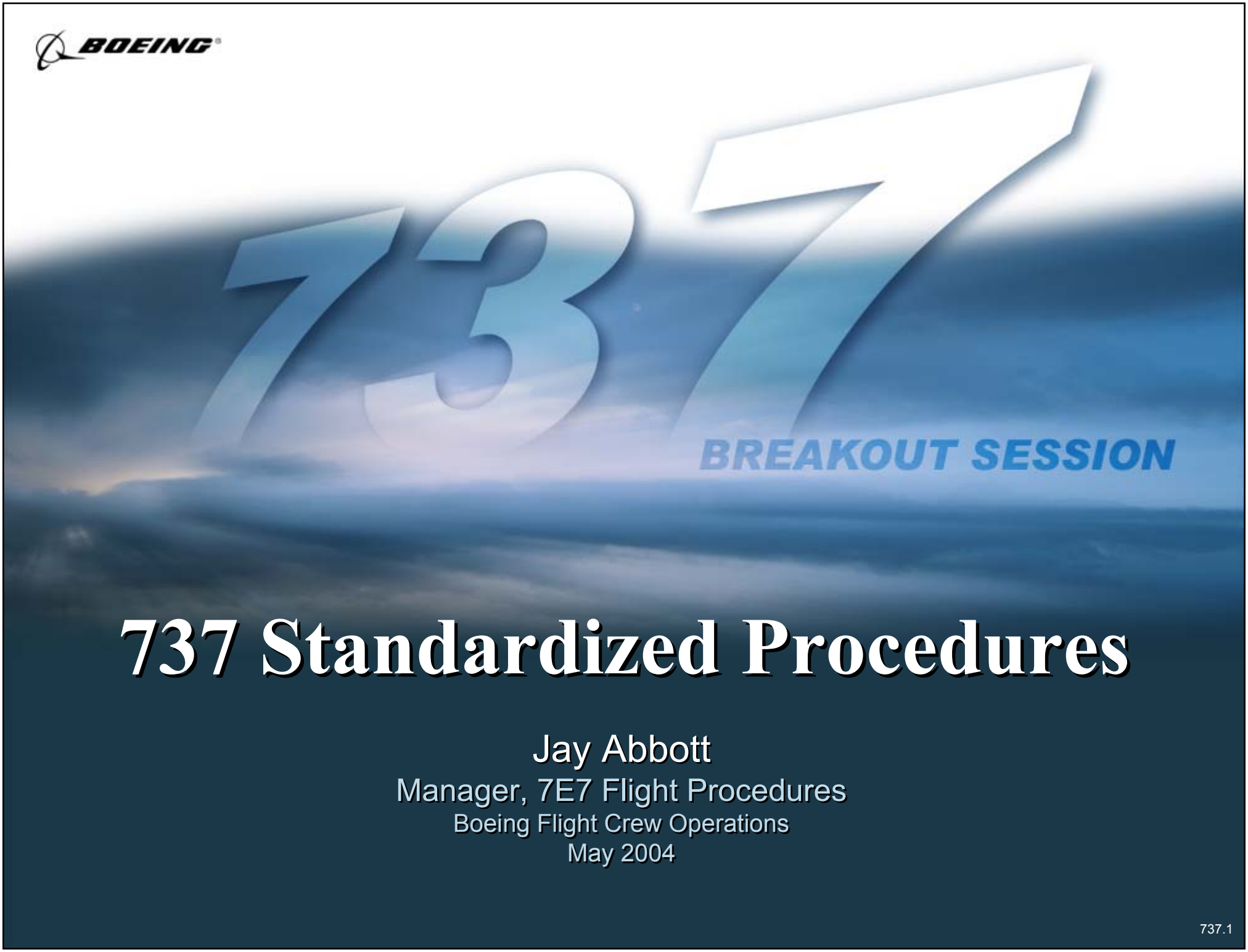


737 Standardized Procedures

Jay Abbott
Manager, 7E7 Flight Procedures
Boeing Flight Crew Operations
May 2004

Standardized Normal Procedures

Why change?

- Incorporating lessons learned
- Standard scan-flow across models promotes transfer of knowledge
- Reduces training ⇒ Saves money
- Improves operational usability
  - Observations of our customer's techniques
  - Suggestions from our customers
  - Reduction of "superfluous" preflight tests
  - Fewer checklist steps through use of Master Caution "recall"
  - Reduction of runway incursions
  - Accommodate worldwide operations

Standardized Normal Procedures (737)

Significant Changes

To help aircrews where English is a second language

- Standardize word usage
- Simpler English
  - Shorter sentences
  - Single subject in a paragraph

Standardized Normal Procedures (737)

Significant Changes

- Exterior inspection – added more detail
- Standardized scan flow based on 777
  - 737 First Officer has overhead panel
- New preliminary preflight procedure
- CDU preflight – separate procedure
- Pushback procedure built into ‘Before Start’
- Pilot not flying now called *Pilot Monitoring*
- ‘After Start’ changed to ‘Before Taxi’
- Flight control checks in ‘Before Taxi’

Standardized Normal Procedures (Exterior Inspection)

Exterior Inspection

Prior to each flight, the flight crew must accomplish or verify that the maintenance crew has accomplished the following checks.

Note: Alert ground personnel before pressurizing hydraulic system.

ELECTRIC HYDRAULIC PUMP switches ..... ON

System A and B pressure – 2800 PSI minimum

Parking brake ..... Set

Parking brake warning light – Illuminated

Exterior lights ..... Check

General airplane condition ..... Check

Check airplane free of damage and fluid leakage.

Probes, sensors, ports, vents and drains ..... Unobstructed

Doors, latches and access panels (not in use) ..... Properly secured

Tires, brakes and wheels ..... Check

If brake wear indicator pins are even with brake housing, check with maintenance.

Gear struts and doors ..... Check

Verify door seals secure, impact fittings intact, and struts not fully compressed.

Ground locking pins ..... Removed

Nose gear steering lockout pin ..... Check

Installed if pushback or tow out will be accomplished, otherwise removed.

Nose wheel snubbers ..... In place

Wheel well light switches ..... NORMAL

Oxygen pressure relief green disc ..... In place

Cargo compartments ..... Check

Check condition of compartments, tie–downs and lights.

Ram air deflector door ..... Extended

Flight control surfaces ..... Unobstructed

Check all surfaces clear of ice, snow, or frost.

Fuel measuring sticks ..... Check

Verify measuring sticks agree with alignment marks.

Wing Surfaces ..... Check

A & B hydraulic reservoir quantity indicators ..... RF or above

Brake accumulator indicator ..... 2800 psi minimum

APU fire control handle ..... UP

Outflow valve ..... Full open

[737-800/900]

Tail skid ..... Check

Replace shoe if worn to wear dimple.

Replace cartridge assembly if warning decal is red.

Engine fire extinguishers ..... Check

Verify pressure adequate per bottle data plate.

ELECTRIC HYDRAULIC PUMP switches ..... OFF

Exterior lights ..... As required

Standardized Normal Procedures (Exterior Inspection)

Exterior Inspection

Before each flight the captain, first officer, or maintenance crew must verify that the airplane is satisfactory for flight.

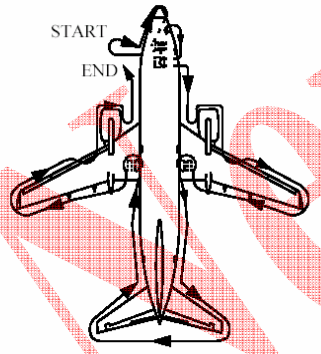
Items at each location may be checked in any sequence.

Use the detailed inspection route below to check the following items:

- surfaces and structures clear and undamaged, no missing parts and no fluid leaks
- tires free of excessive wear, tread separation and damage
- gear struts not fully compressed
- engine inlets and tailpipes clear, access panels secured, no exterior damage, reversers stowed
- doors and access panels (not in use) latched
- probes, vents and static ports undamaged and clear
- skin area adjacent to static ports and pitot probes not wrinkled
- antennas undamaged
- light lenses clean and undamaged

For cold weather operations see Supplementary Procedures.

Inspection Route



Left Forward Fuselage

Probes, sensors, ports, vents, and drains (as applicable) ..... Check

Nose

Radome ..... Check

Conductor straps - Secure

Forward E and E door ..... Secure

Nose Wheel Well

Tires and wheels ..... Check

Exterior light ..... Check

Gear strut and doors ..... Check

Nose wheel steering assembly ..... Check

Nose gear steering lockout pin ..... As needed

Gear pin ..... As needed

Nose wheel spin brake (snubbers) ..... In place

Right Forward Fuselage

Probes, sensors, ports, vents, and drains (as applicable) ..... Check

Oxygen pressure relief green disc ..... In place

Doors and access panels (not in use) ..... Latched

Right Wing Root, Pack, and Lower Fuselage

Ram air deflector door ..... Extended

Pack and pneumatic access doors ..... Secure

Probes, sensors, ports, vents, and drains (as applicable) ..... Check

Exterior lights ..... Check

Leading edge flaps ..... Check

Standardized Normal Procedures (737)

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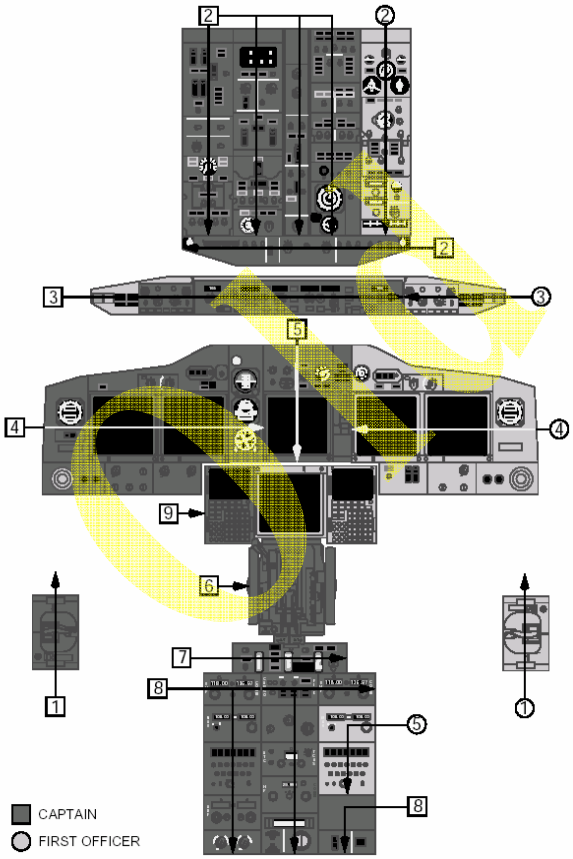
Standardized Normal Procedures (Scan Flow)

DO NOT USE FOR FLIGHT

737 Flight Crew Operations Manual

Panel Scan Diagram

The diagram below describes each crew member's area of responsibility and scan flow pattern for each panel when the airplane is not moving under its own power.



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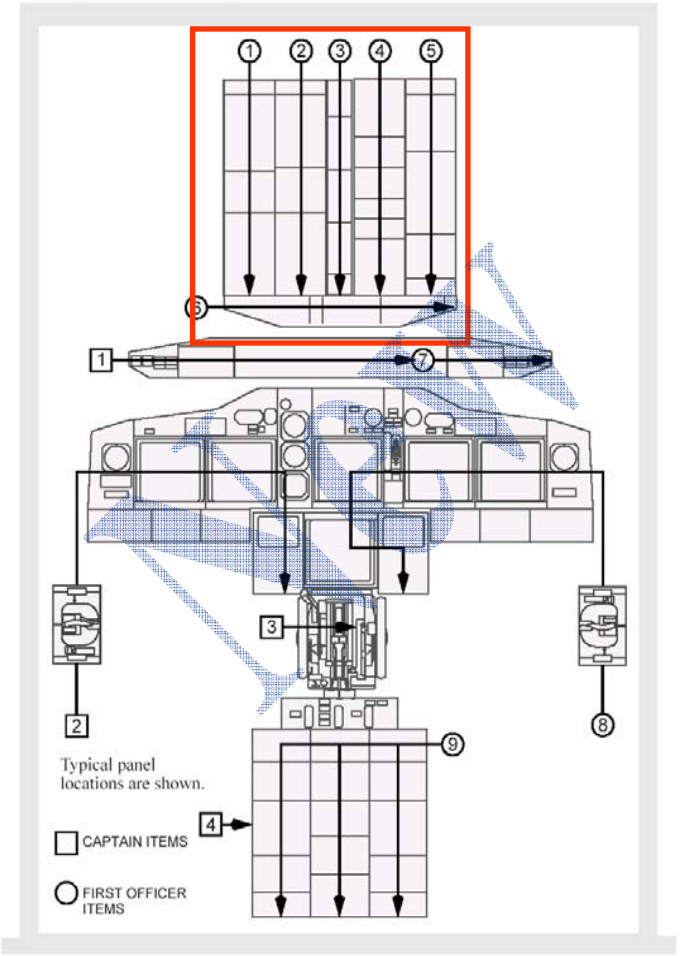
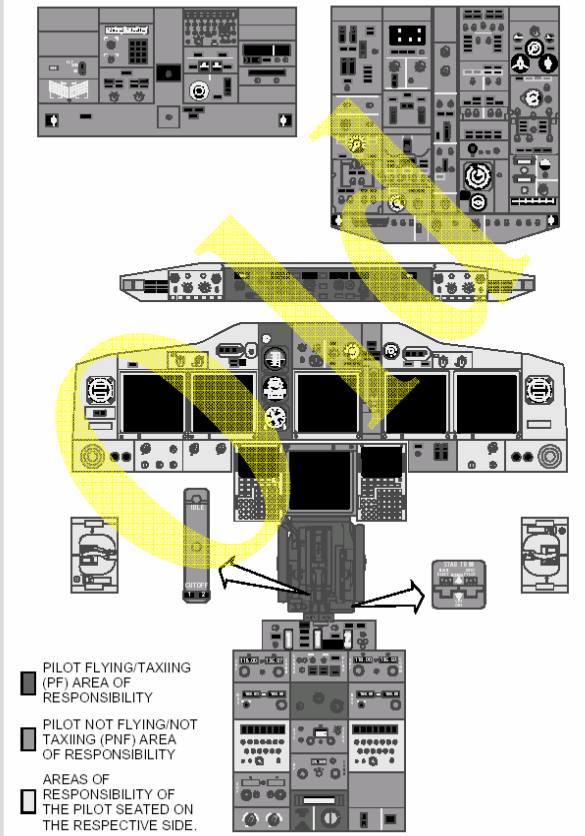
Preflight and Postflight Scan Flow



Standardized Normal Procedures (Area of Responsibility)

Pilot Flying/Taxiing and Pilot Not Flying/Not Taxiing Areas of Responsibility

The diagram below describes each crew member's area of responsibility for each panel when the airplane is moving under its own power.



Standardized Normal Procedures (Area of Responsibility)

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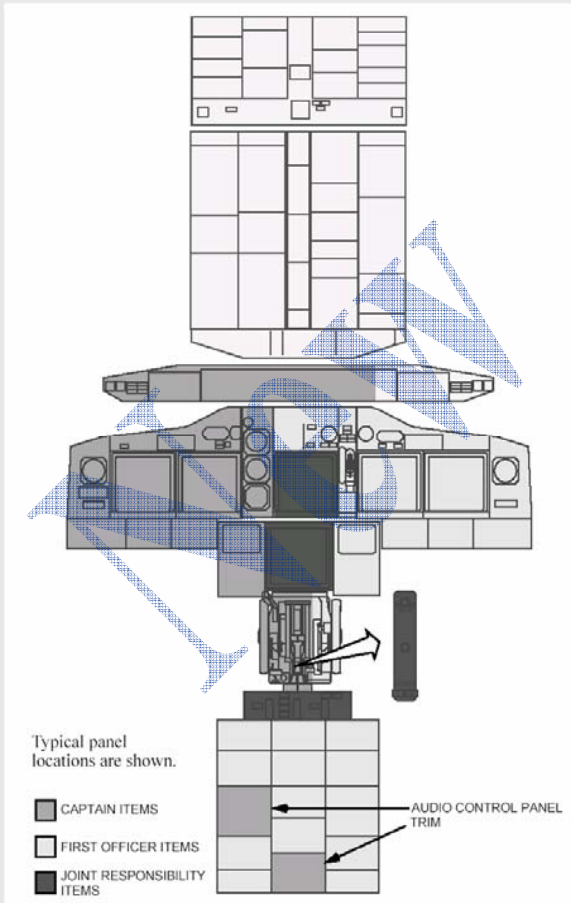
Normal Procedures - Introduction

Areas of Responsibility - Captain as Pilot Flying or Taxiing



Normal Procedures - Introduction

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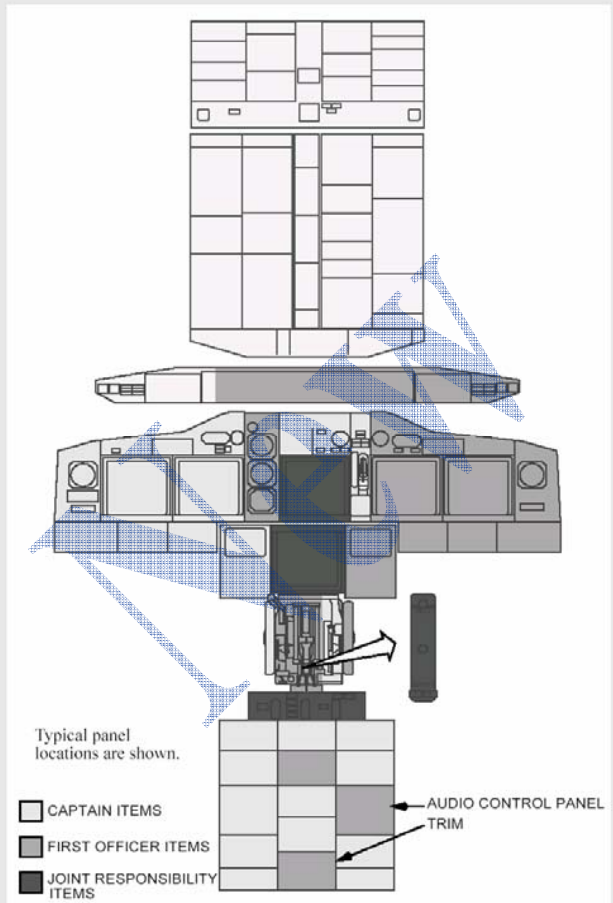
4/29/2004

Areas of Responsibility - First Officer as Pilot Flying or Taxiing



Standardized Normal Procedures (737)

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Standardized Normal Procedures (Preliminary Preflight)

DRAFT
4/27/2004

737 NG FCOM Draft

Supplementary Procedures — **Chapter SP**
Electrical — **Section 6**

Electrical Power Up

The following procedure is accomplished to permit safe application of electrical power.

BATTERY switch ..... Guard closed

[Option]

Note: Do not move the airplane until ISFD alignment is complete.

STANDBY POWER switch ..... Guard closed

Verify STANDBY POWER OFF light extinguished

ALTERNATE FLAPS master switch ..... Guard closed

Windshield WIPER selectors ..... OFF

ELECTRIC HYDRAULIC PUMP switches ..... OFF

LANDING GEAR lever ..... DN

Electrical Power ..... Establish

If external power is desired:

Verify GRD POWER AVAILABLE light illuminated

GRD POWER switch - ON

Verify SOURCE OFF lights extinguished

Verify TRANSFER OFF lights extinguished

If APU power is desired:

OVERHEAT DETECTOR switches – NORMAL

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4/29/2004

737 NG FCOM Draft

Normal Procedures — **Chapter NP**
Amplified Procedures — **Section 20**

Preliminary Preflight Procedure – Captain or First Officer

The Preliminary Preflight Procedure assumes that the Electrical Power Up supplementary procedure is complete.

A full IRS alignment is recommended prior to each flight. If time does not permit a full alignment, accomplish the Fast Realignment supplementary procedure.

IRS mode selectors ..... OFF, then NAV

Verify that the ON DC lights illuminate momentarily followed by steady illumination of the ALIGN lights.

[Option - Required in Preliminary Preflight for JAA operators with this switch]
VOICE RECORDER switch ..... As needed

Verify that the following are sufficient for flight:
- hydraulic quantity
- engine oil quantity

Accomplish the remaining actions after a crew change or maintenance action.

Maintenance documents ..... Check

[Option]
FLIGHT DECK ACCESS SYSTEM switch ..... Guard closed

Emergency equipment ..... Check

Fire extinguisher – Checked and stowed

Crash axe – Stowed

Escape ropes – Stowed

Additional needed equipment – Checked and stowed

PSEU light ..... Verify extinguished

[Option]
GPS light ..... Verify extinguished

Standardized Normal Procedures (737)

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Standardized Normal Procedures (CDU Preflight)

Start the CDU Preflight Procedure anytime after the Preliminary Preflight Procedure. The Initial Data and Navigation Data entries must be complete before the flight instrument check during the Preflight Procedure. The Performance Data entries must be complete before the Before Start Checklist.

The captain or first officer can make CDU entries. The other pilot must verify the entries.

Enter data in all the boxed items on the following CDU pages.

Enter data in the dashed items or modify small font items that are listed in this procedure. Enter or modify other items at pilot's discretion.

Failure to enter enroute winds can result in inaccurate flight plan time and fuel burn.

[Option - FMC updates where ORIGIN is not boxed]
Enter the ORIGIN

Enter the route

[Option - airplanes with Mode S enhancements for ADS]
Enter the FLIGHT NUMBER

Activate and execute the route

Standardized Normal Procedures (737)

Significant Changes

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Standardized Normal Procedures (Before Start Procedure)

Exterior doors ..... Verify closed F/O

Flight deck windows ..... Closed and locked C, F/O

Start clearance ..... Obtain C, F/O

Obtain a clearance to pressurize the hydraulic systems and start the engines.

If pushback is needed:

Verify that the nose gear steering lockout pin is installed, or, if the nose gear steering lockout pin is not used, depressurize hydraulic system A during the hydraulic panel set step.

Fuel panel ..... Set F/O

If center tank fuel quantity exceeds 1000 lbs/460 kgs:

LEFT and RIGHT CENTER FUEL PUMPS switches – ON

Verify that the LOW PRESSURE lights are extinguished.

If the LOW PRESSURE lights remain illuminated:

LEFT and RIGHT CENTER FUEL PUMPS switches – OFF

AFT and FORWARD FUEL PUMPS switches – ON

Verify that the LOW PRESSURE lights are extinguished.

Hydraulic panel ..... Set F/O

If pushback is needed and the nose gear steering lockout pin is not installed:

WARNING: If hydraulic system A is pressurized and the nose gear steering lockout pin is not installed, unwanted tow bar movement can result.

System A HYDRAULIC PUMP switches – OFF

Verify that the system A pump LOW PRESSURE lights are illuminated.

System B electric HYDRAULIC PUMP switch – ON

Verify that the system B electric pump LOW PRESSURE light is extinguished.

Verify that the brake pressure is 2800 PSI minimum

[Option - not Over/Under Display]

Verify that system B pressure is 2800 PSI minimum.

[Option - Over/Under Display]

Display systems information on the lower display unit.

Verify that system B pressure is 2800 PSI minimum.

If pushback is not needed, or if pushback is needed and the nose gear steering lockout pin is installed:

Electric HYDRAULIC PUMP switches – ON

Verify that the electric pump LOW PRESSURE lights are extinguished.

Verify that the brake pressure is 2800 PSI minimum.

[Option - not Over/Under Display]

Verify that system A and B pressure is 2800 PSI minimum.

[Option - Over/Under Display]

Display systems information on the lower display unit.

Verify that system A and B pressure is 2800 PSI minimum.

ANTI COLLISION light switch ..... ON F/O

Trim ..... Set C

Check trim for freedom of movement and set:

Stabilizer trim – ___ UNITS

Set for takeoff.

Check in greenband.

Aileron trim – 0 units

Rudder trim – 0 units

Call "BEFORE START CHECKLIST." C

Accomplish the BEFORE START checklist. F/O

Pushback or Towing Procedure

The Engine Start procedure may be done during pushback or towing.

Establish communications with ground handling personnel. C

CAUTION: Do not hold or turn the nose wheel steering wheel or use airplane brakes to stop the airplane while the airplane is being pushed back or towed. This can damage nose gear components or the tow bar.

Set or release parking brake as directed by ground handling personnel. C

When pushback is complete:

Verify that tow bar is disconnected. C

Verify that the nose gear steering lockout pin is removed. C

System A HYDRAULIC PUMPS switches – ON. F/O

Standardized Normal Procedures (Engine Start Procedure)

Engine Start Procedure

CAPTAIN	FIRST OFFICER
Announce engine start sequence. Normal starting sequence is 2, 1.	
Call "STARTING ENGINE No. ___." Position ENGINE START switch to GRD.	
Verify increase in N2 RPM.	
Acknowledge first officer's report.	Verify increase in oil pressure by the time engine is stabilized at idle and call "OIL PRESSURE RISING" when observed.
Position engine start lever to IDLE detent when: • N1 rotation is observed and • N2 RPM reaches 25% or (if 25% N2 is not achievable) • at max motoring and a minimum of 20% N2. Max motoring occurs when N2 acceleration is less than 1% in approximately 5 seconds.	
Verify fuel flow and EGT indication.	
[Without automatic ignition] At 56% N2 RPM check ENGINE START switch moves to OFF; if not, position start switch to OFF. [Automatic ignition] At 56% N2 RPM check ENGINE START switch moves to AUTO; if not, position start switch to AUTO.	[Without automatic ignition] Verify START VALVE OPEN alert extinguishes as the ENGINE START switch moves to OFF and report "STARTER CUTOUT." [Automatic ignition] Verify START VALVE OPEN alert extinguishes as the ENGINE START switch moves to AUTO and report "STARTER CUTOUT."
Monitor N1, N2, EGT, fuel flow and oil pressure for normal indications as the engine accelerates and stabilizes at idle.	

Note: Standard day, sea level, approximate stabilized idle indications for the CFM56–7 engine.

- N1 RPM – 20%
- N2 RPM – 59%
- EGT – 410°C**
- Fuel Flow – 272 KGPH/600 PPH

** Idle EGT may vary from 320°C – 520°C depending on OAT, bleed configuration, and engine conditions.

Starter Duty Cycle

- Limit each start attempt to a maximum of 2 minutes
- A minimum of 10 seconds is required between start attempts

CAUTION: Normal engine start considerations:

- Advancing engine start lever to idle prematurely can cause a "HOT" start.
- Keep hand on engine start lever while observing RPM, EGT and fuel flow until stabilized.
- If fuel is shutoff inadvertently (by closing engine start lever) do not reopen engine start lever in an attempt to restart engine.
- Failure of ENGINE START switch to hold in GRD until starter cutout RPM is reached can result in a "HOT" start. Do not re–engage ENGINE START switch until engine RPM is below 20% N2.

Note: Accomplish the ABORTED ENGINE START checklist for one or more of the following conditions:

- No N1 rotation before the engine start lever is raised to IDLE.
- No oil pressure indication by the time the engine is stabilized at idle.
- No increase in EGT within 10 seconds of raising the engine start lever to IDLE.
- No increase in, or a very slow increase in N1 or N2 after EGT indication.
- EGT rapidly approaching or exceeding the start limit.

Standardized Normal Procedures (Engine Start Procedure)

Engine Start Procedure

[Over/Under Display]
Select the secondary engine display. F/O

Air conditioning PACK switches ..... OFF F/O

Start sequence ..... Announce C

Call "START ____ ENGINE" C

Position ____ START switch to GROUND F/O

Verify an increase in N2 RPM. C, F/O

When N1 rotation is observed and N2 reaches 25%, or (if 25% N2 is not achievable), at maximum motoring and a minimum of 20% N2:

Engine start lever ..... IDLE C

Observe fuel flow and EGT indications. Observe oil pressure by the time the engine is stabilized at idle. C, F/O

[Without automatic ignition]
At 56% N2 RPM verify that the ENGINE START switch moves to OFF; if not, position the start switch to OFF. C

[Automatic ignition]
At 56% N2 RPM verify that the ENGINE START switch moves to AUTO; if not, position the start switch to AUTO. C

[Without automatic ignition]
Verify that the START VALVE OPEN alert extinguishes as the ENGINE START switch moves to OFF and call: "STARTER CUTOUT". F/O

[Automatic ignition]
Verify that the START VALVE OPEN alert extinguishes as the ENGINE START switch moves to AUTO and call: "STARTER CUTOUT". F/O

Monitor N1, N2, EGT, fuel flow and oil pressure for normal indications as the engine accelerates and stabilizes at idle. F/O

After the engine is stabilized at idle, start the remaining engine.

Accomplish the ABORTED ENGINE START checklist for one or more of the following conditions:

- No N1 rotation before the engine start lever is raised to IDLE
- No increase in, or a very slow increase in N1 or N2 after EGT indication
- No oil pressure indication stabilized idle
- No increase in EGT within 10 seconds after the engine start lever is raised to IDLE
- EGT rapidly approaching or exceeding the start limit

Normal engine start considerations:

- advancing engine start lever to idle prematurely can cause a "HOT" start
- keep hand on engine start lever while observing RPM, EGT and fuel flow until stabilized
- if fuel is shutoff inadvertently (by closing engine start lever) do not reopen engine start lever in an attempt to restart engine
- failure of ENGINE START switch to hold in GRD until starter cutout RPM is reached can result in a "HOT" start. Do not re–engage ENGINE START switch until engine RPM is below 20% N2.

Standardized Normal Procedures (737)

Significant Changes

- Exterior inspection – added more detail
- Standardized scan flow based on 777
  - 737 First Officer has overhead panel
- New preliminary preflight procedure
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- Pushback procedure built into 'Before Start'
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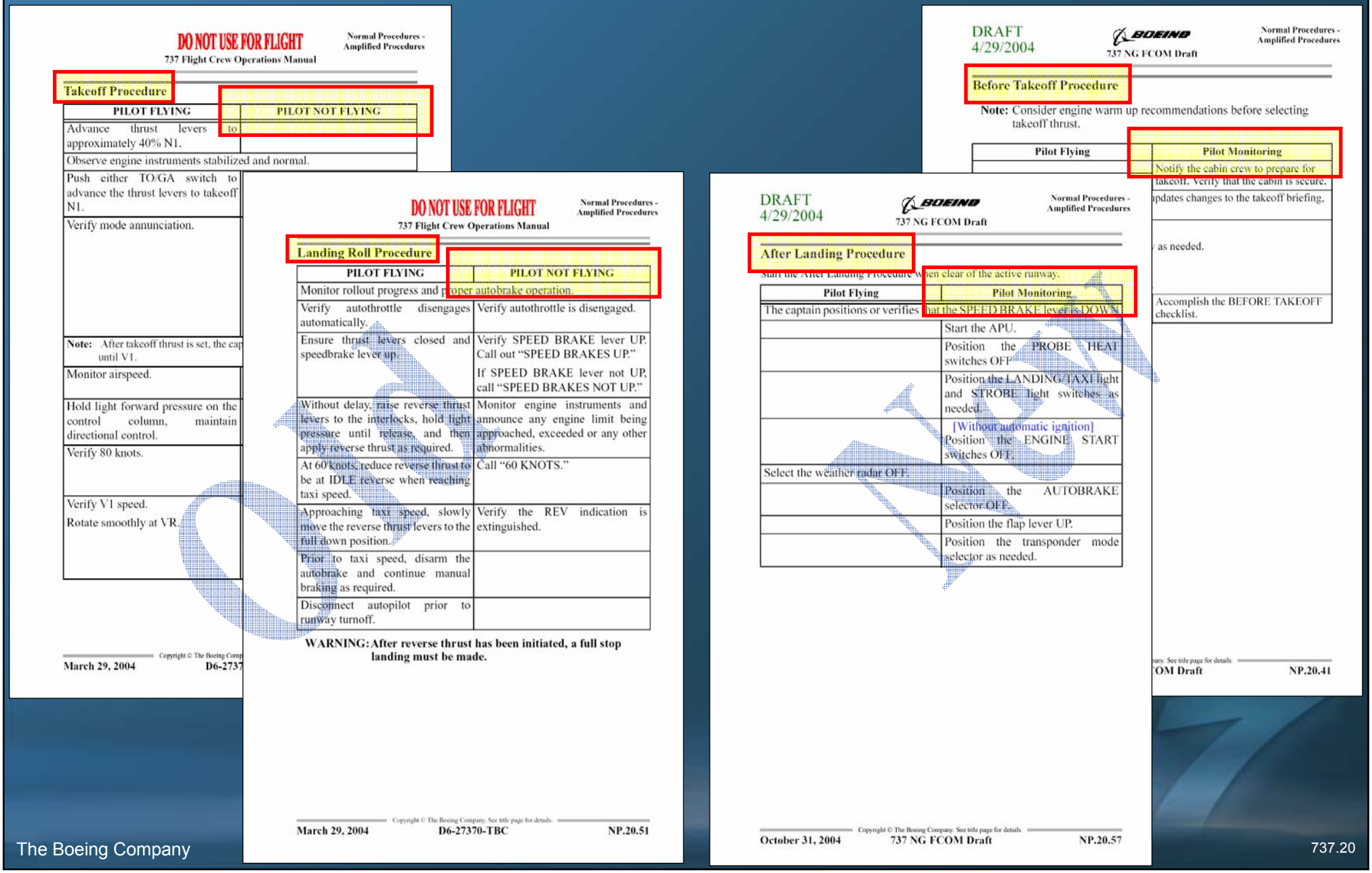
Standardized Normal Procedures (PF/PNF)



DO NOT USE FOR FLIGHT

737 Flight Crew Operations Manual

Normal Procedures - Amplified Procedures

Takeoff Procedure

PILOT FLYING	PILOT NOT FLYING
Advance thrust levers to approximately 40% N1.	
Observe engine instruments stabilized and normal.	
Push either TO/GA switch to advance the thrust levers to takeoff N1.	
Verify mode annunciation.	
Note: After takeoff thrust is set, the cap until V1.	
Monitor airspeed.	
Hold light forward pressure on the control column, maintain directional control.	
Verify 80 knots.	
Verify V1 speed. Rotate smoothly at VR.	

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March 29, 2004 D6-2737

DO NOT USE FOR FLIGHT

737 Flight Crew Operations Manual

Normal Procedures - Amplified Procedures

Landing Roll Procedure

PILOT FLYING	PILOT NOT FLYING
Monitor rollout progress and proper autobrake operation.	
Verify autothrottle disengages automatically.	Verify autothrottle is disengaged.
Ensure thrust levers closed and speedbrake lever up.	Verify SPEED BRAKE lever UP. Call out "SPEED BRAKES UP." If SPEED BRAKE lever not UP, call "SPEED BRAKES NOT UP."
Without delay, raise reverse thrust levers to the interlocks, hold light pressure until release, and then apply reverse thrust as required.	Monitor engine instruments and announce any engine limit being approached, exceeded or any other abnormalities.
At 60 knots, reduce reverse thrust to be at IDLE reverse when reaching taxi speed.	Call "60 KNOTS."
Approaching taxi speed, slowly move the reverse thrust levers to the full down position.	Verify the REV indication is extinguished.
Prior to taxi speed, disarm the autobrake and continue manual braking as required.	
Disconnect autopilot prior to runway turnoff.	

WARNING: After reverse thrust has been initiated, a full stop landing must be made.

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March 29, 2004 D6-27370-TBC NP.20.51

DRAFT 4/29/2004

BOEING 737 NG FCOM Draft

Normal Procedures - Amplified Procedures

Before Takeoff Procedure

Note: Consider engine warm up recommendations before selecting takeoff thrust.

Pilot Flying	Pilot Monitoring
	Notify the cabin crew to prepare for takeoff. Verify that the cabin is secure.
	pdates changes to the takeoff briefing.
	as needed.
	Accomplish the BEFORE TAKEOFF checklist.

DRAFT 4/29/2004

BOEING 737 NG FCOM Draft

Normal Procedures - Amplified Procedures

After Landing Procedure

Start the After Landing Procedure when clear of the active runway.

Pilot Flying	Pilot Monitoring
The captain positions or verifies that the SPEED BRAKE lever is DOWN.	
	Start the APU.
	Position the PROBE HEAT switches OFF.
	Position the LANDING/TAXI light and STROBE light switches as needed.
	[Without automatic ignition] Position the ENGINE START switches OFF.
Select the weather radar OFF.	
	Position the AUTOBRAKE selector OFF.
	Position the flap lever UP.
	Position the transponder mode selector as needed.

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October 31, 2004 737 NG FCOM Draft NP.20.57

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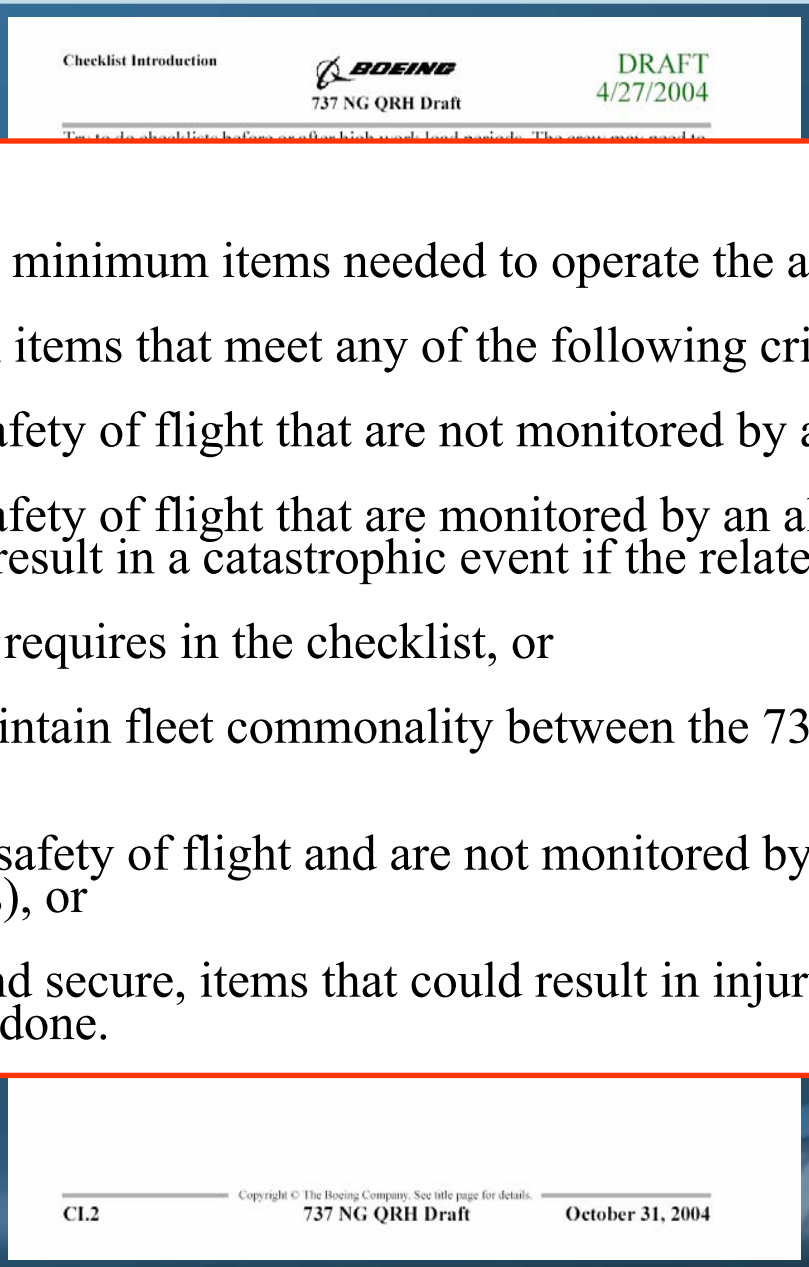
Standardized Normal Procedures (Normal Checklist)



Checklist Content

The checklist contains the minimum items needed to operate the airplane safely.

Normal checklists contain items that meet any of the following criteria:

- items essential to safety of flight that are not monitored by an alerting system, or
- items essential to safety of flight that are monitored by an alerting system but if not done, would likely result in a catastrophic event if the related alerting system fails, or
- items that the FAA requires in the checklist, or
- items needed to maintain fleet commonality between the 737, 747-400, 757, 767, and 777, or
- items that enhance safety of flight and are not monitored by an alerting system (for example autobrakes), or
- during shutdown and secure, items that could result in injury to personnel or damage to equipment if not done.

Standardized Normal Procedures (Normal Checklist)

Before Taxi

DO NOT USE FOR FLIGHT

737 Flight Crew Operations Manual

Normal Checklists — **Chapter NC**

BEFORE START

~~FLIGHT DECK PREPARATION ..... COMPLETED~~
~~LIGHT TEST ..... CHECKED~~
OXYGEN & INTERPHONE ..... CHECKED
~~YAW DAMPER ..... ON~~
NAVIGATION TRANSFER & DISPLAY SWITCHES ..... NORMAL & AUTO
~~FUEL ..... KGS/LBS & PUMPS ON~~
~~CAB/UTIL & IFE/PASS SEAT POWER SWITCHES ..... ON~~
~~EMERGENCY EXIT LIGHTS ..... ARMED~~
PASSENGER SIGNS ..... SET
WINDOW HEAT ..... ON
~~HYDRAULICS ..... NORMAL~~
~~AIR COND & PRESS ..... PACK(S), BLEEDS ON, SET~~
~~AUTOPILOTS ..... DISENGAGED~~
INSTRUMENTS ..... X-CHECKED
AUTO BRAKE ..... RTO
~~SPEED BRAKE ..... DOWN DETENT~~
PARKING BRAKE ..... SET
~~STABILIZER TRIM CUTOUT SWITCHES ..... NORMAL~~
~~WHEEL WELL FIRE WARNING ..... CHECKED~~
~~RADIOS, RADAR, TRANSPONDER & HUD ..... SET~~
RUDDER & AILERON TRIM ..... FREE & ZERO
~~PAPERS ..... ABOARD~~
FMC/CDU ..... SET
N1 & IAS BUGS ..... SET

DRAFT
4/27/2004

BOEING
737 NG QRH Draft

Normal Checklists — **Chapter NC**

PREFLIGHT

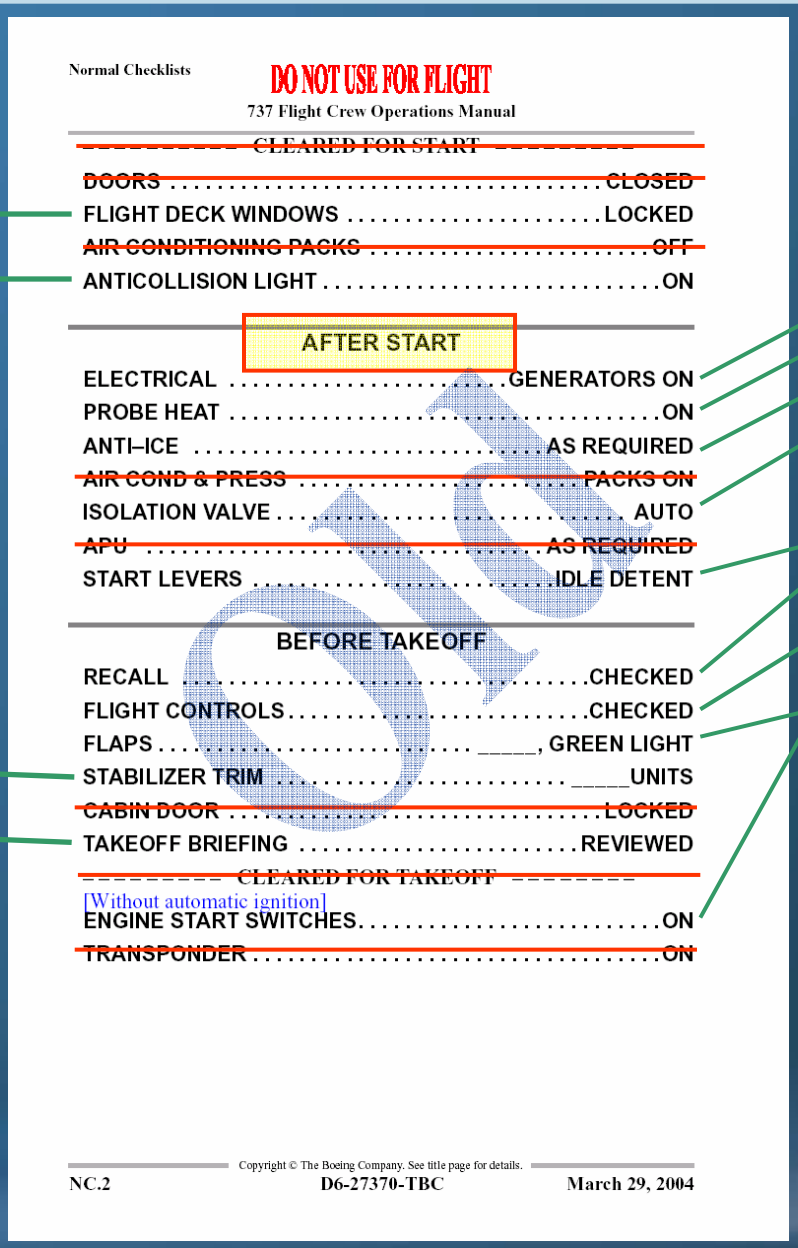
Oxygen ..... TESTED, 100%
Navigation transfer and display switches ..... NORMAL, AUTO
Window heat ..... ON
Flight instruments ..... HEADING___, ALTIMETER___
Parking brake ..... SET
Engine start levers ..... CUTOFF

BEFORE START

Passenger signs ..... ____
Windows ..... LOCKED
MCP ..... V2___, HEADING___, ALTITUDE___
Takeoff speeds ..... V1___, VR___, V2___
CDU preflight ..... COMPLETED
Trim ..... ___ UNITS, 0, 0
Taxi and takeoff briefing ..... COMPLETED
ANTI COLLISION light ..... ON

Standardized Normal Procedures (Normal Checklist)

Before Start



Normal Checklists

DO NOT USE FOR FLIGHT

737 Flight Crew Operations Manual

~~CLEARED FOR START~~

~~DOORS ..... CLOSED~~

FLIGHT DECK WINDOWS ..... LOCKED

~~AIR CONDITIONING PACKS ..... OFF~~

ANTICOLLISION LIGHT ..... ON

AFTER START

ELECTRICAL ..... GENERATORS ON

PROBE HEAT ..... ON

ANTI–ICE ..... AS REQUIRED

~~AIR COND & PRESS ..... PACKS ON~~

ISOLATION VALVE ..... AUTO

~~APU ..... AS REQUIRED~~

START LEVERS ..... IDLE DETENT

BEFORE TAKEOFF

RECALL ..... CHECKED

FLIGHT CONTROLS ..... CHECKED

FLAPS ..... _____, GREEN LIGHT

STABILIZER TRIM ..... _____UNITS

~~CABIN DOOR ..... LOCKED~~

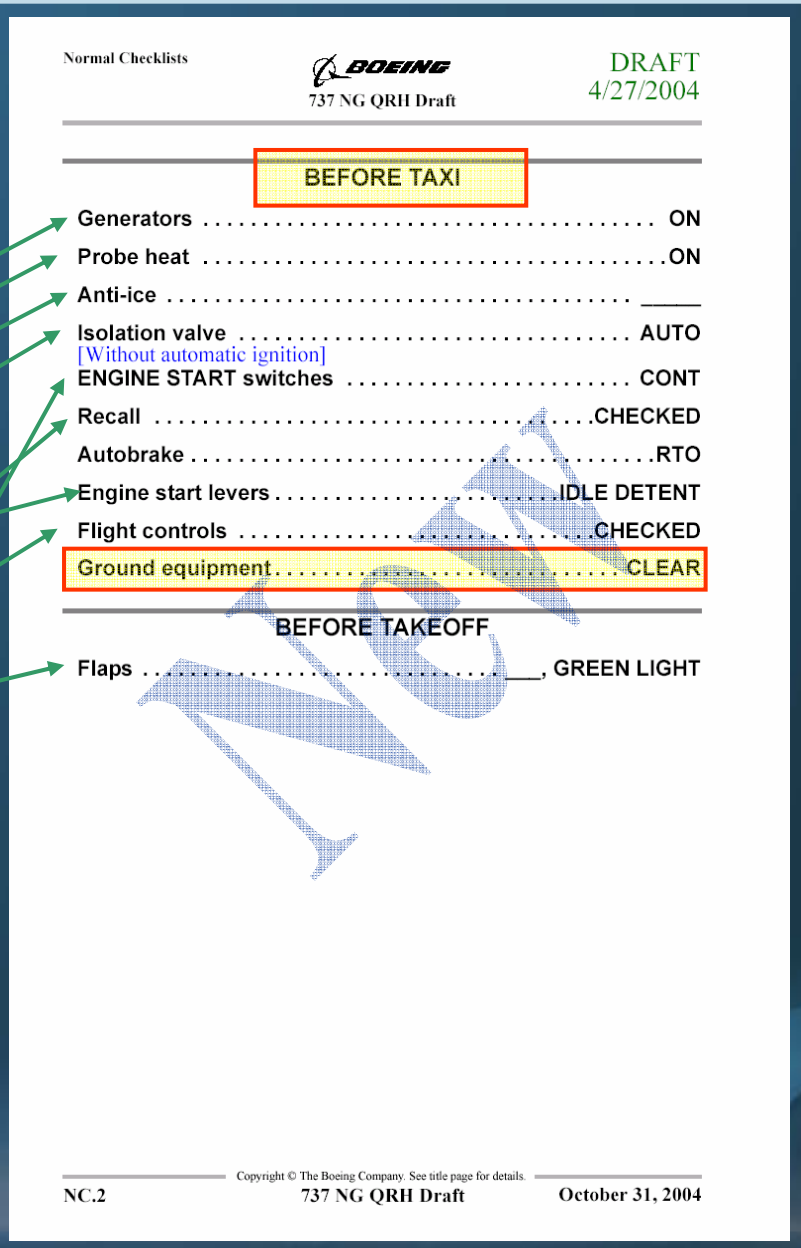
TAKEOFF BRIEFING ..... REVIEWED

~~CLEARED FOR TAKEOFF~~

[Without automatic ignition]

ENGINE START SWITCHES ..... ON

~~TRANSPONDER ..... ON~~



Normal Checklists

BOEING

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BEFORE TAXI

Generators ..... ON

Probe heat ..... ON

Anti-ice ..... _____

Isolation valve ..... AUTO

[Without automatic ignition]

ENGINE START switches ..... CONT

Recall ..... CHECKED

Autobrake ..... RTO

Engine start levers ..... IDLE DETENT

Flight controls ..... CHECKED

Ground equipment ..... CLEAR

BEFORE TAKEOFF

Flaps ..... ___, GREEN LIGHT

Standardized Normal Procedures (Normal Checklist)

AFTER TAKEOFF

AIR COND & PRESS . . . . . SET
[Without automatic ignition]
~~ENGINE START SWITCHES . . . . . OFF~~
LANDING GEAR . . . . . UP & OFF
FLAPS . . . . . UP, NO LIGHTS

DESCENT – APPROACH

~~ANTI-ICE . . . . . AS REQUIRED~~
~~AIR COND & PRESS . . . . . SET~~
ALTIMETER & INSTRUMENTS . . . . . SET & X–CHECKED
N1 & IAS BUGS . . . . . CHECKED & SET

LANDING

[Without automatic ignition]
ENGINE START SWITCHES . . . . . ON
RECALL . . . . . CHECKED
SPEED BRAKE . . . . . ARMED, GREEN LIGHT
LANDING GEAR . . . . . DOWN, 3 GREEN
FLAPS . . . . . ____, GREEN LIGHT

AFTER TAKEOFF

Engine bleeds . . . . . ON
Packs . . . . . AUTO
Landing gear . . . . . UP AND OFF
Flaps . . . . . UP, NO LIGHTS

DESCENT

Recall . . . . . CHECKED
Autobrake . . . . . _____
Landing data . . . . . VREF ___, MINIMUMS ___
Approach briefing . . . . . COMPLETED

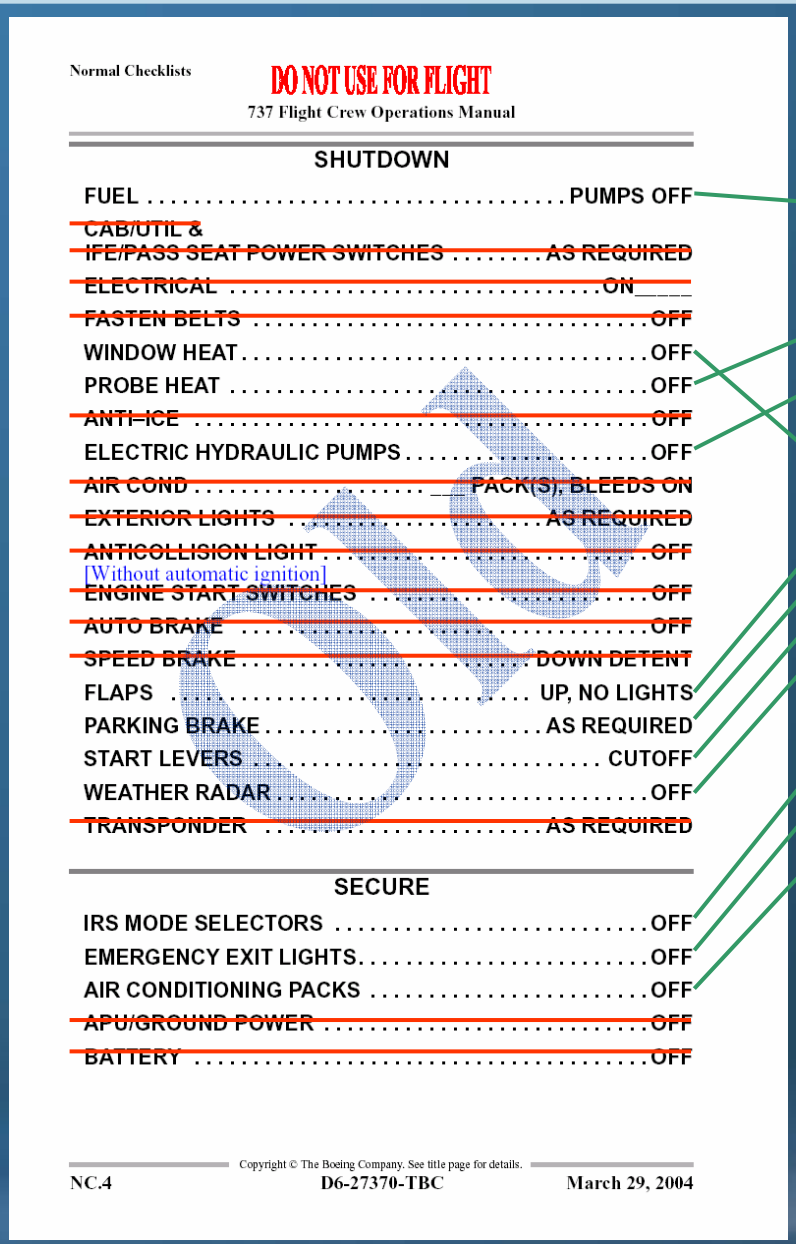
APPROACH

Altimeters . . . . . _____

LANDING

[Without automatic ignition]
ENGINE START switches . . . . . CONT
Speedbrake . . . . . ARMED
Landing gear . . . . . DOWN
Flaps . . . . . ___, GREEN LIGHT

Standardized Normal Procedures (Normal Checklist)



Normal Checklists

DO NOT USE FOR FLIGHT

737 Flight Crew Operations Manual

SHUTDOWN

FUEL ..... PUMPS OFF

~~CAB/UTIL &~~
~~IFE/PASS SEAT POWER SWITCHES ..... AS REQUIRED~~

~~ELECTRICAL ..... ON____~~

~~FASTEN BELTS ..... OFF~~

WINDOW HEAT ..... OFF

PROBE HEAT ..... OFF

~~ANTI-ICE ..... OFF~~

ELECTRIC HYDRAULIC PUMPS ..... OFF

~~AIR COND ..... ___ PACK(S), BLEEDS ON~~

~~EXTERIOR LIGHTS ..... AS REQUIRED~~

~~ANTICOLLISION LIGHT ..... OFF~~

[Without automatic ignition]
~~ENGINE START SWITCHES ..... OFF~~

~~AUTO BRAKE ..... OFF~~

~~SPEED BRAKE ..... DOWN DETENT~~

FLAPS ..... UP, NO LIGHTS

PARKING BRAKE ..... AS REQUIRED

START LEVERS ..... CUTOFF

WEATHER RADAR ..... OFF

~~TRANSPONDER ..... AS REQUIRED~~

SECURE

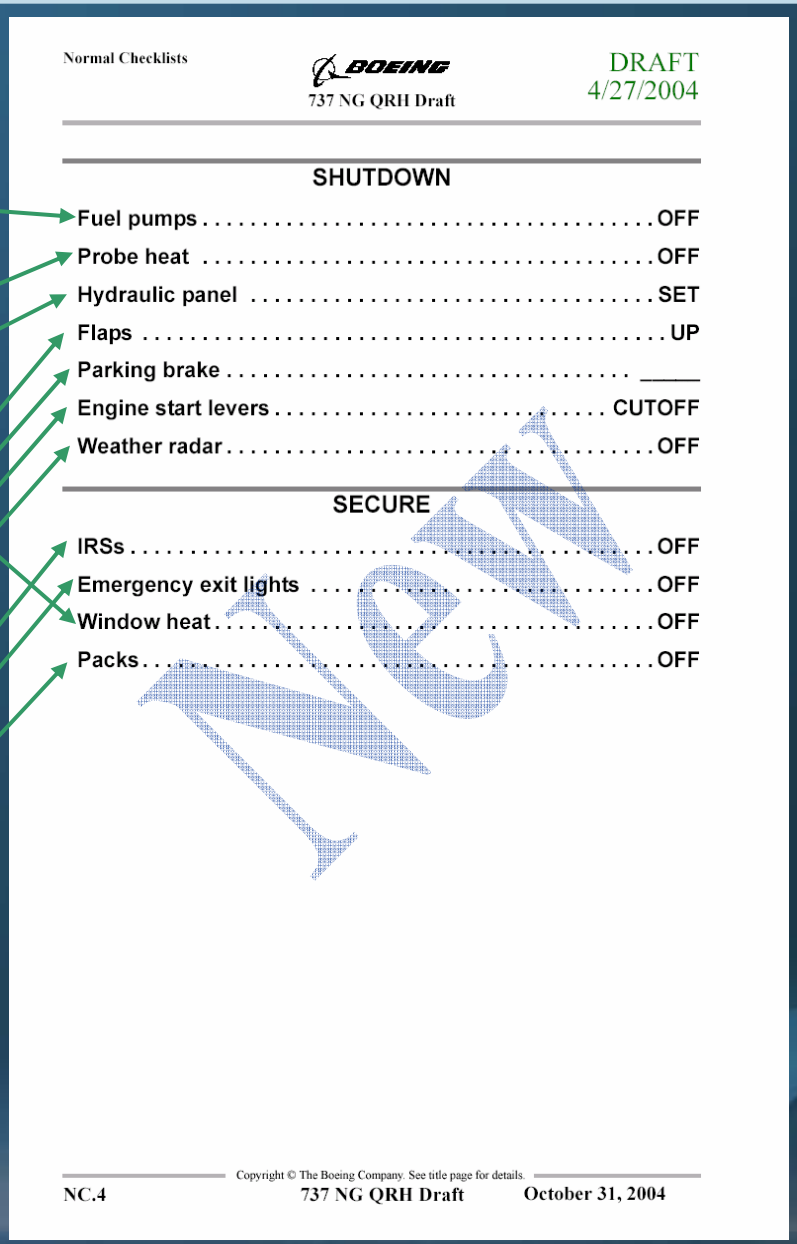
IRS MODE SELECTORS ..... OFF

EMERGENCY EXIT LIGHTS ..... OFF

AIR CONDITIONING PACKS ..... OFF

~~APU/GROUND POWER ..... OFF~~

~~BATTERY ..... OFF~~



Normal Checklists

BOEING

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SHUTDOWN

Fuel pumps ..... OFF

Probe heat ..... OFF

Hydraulic panel ..... SET

Flaps ..... UP

Parking brake ..... _____

Engine start levers ..... CUTOFF

Weather radar ..... OFF

SECURE

IRSs ..... OFF

Emergency exit lights ..... OFF

Window heat ..... OFF

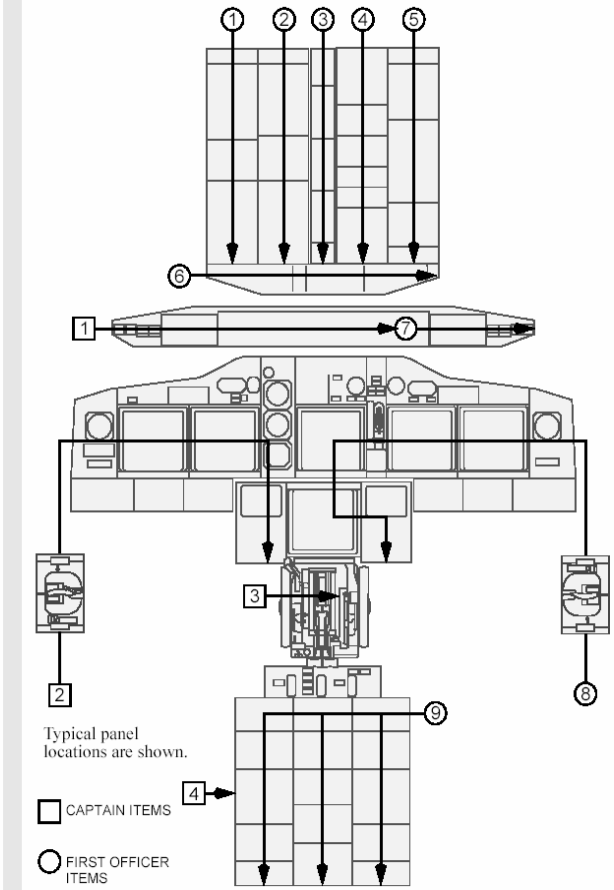
Packs ..... OFF

Standardized Normal Procedures

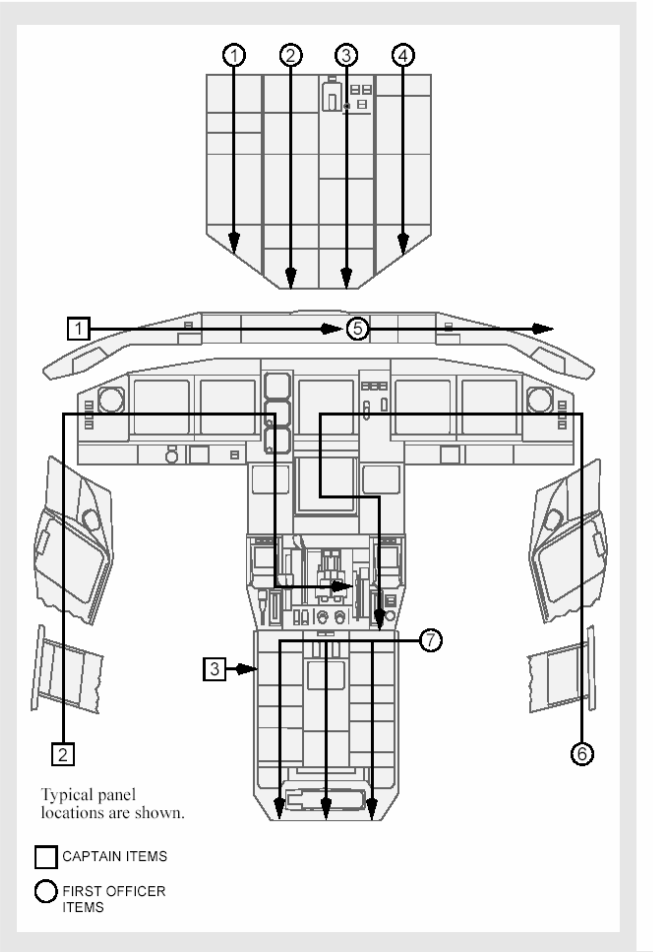
Are We Really Standard?

Standardized Normal Procedures Scanflow 737 vs. 777

Preflight and Postflight Scan Flow



Preflight and Postflight Scan Flow



Standardized Normal Procedures
Takeoff 737 vs. 777

Takeoff Procedure

Pilot Flying	Pilot Monitoring
	[Option - Runway position update with TO/GA activation] Enter the runway offset on the CDU TAKEOFF REF page. [Option - Runway position update with the CDU only] Update to runway threshold on the CDU TAKEOFF REF page.
	When entering the departure runway, position the STROBE light switch ON. Use other lights as needed.
Verify that the brakes are released. Align the airplane with runway	When cleared for takeoff, position the FIXED LANDING light switches ON. [Without TCAS] Position the transponder ON. [With TCAS] Position transponder mode selector to TA/RA.
Advance the thrust levers to approximately 40% N1 and allow engines to stabilize.	
Push the TO/GA switch.	
Verify that correct takeoff thrust is set.	
	Monitor engine instruments throughout takeoff and call out any abnormalities. Adjust takeoff thrust prior to 60 knots, if needed. • During strong headwinds, if the thrust levers have not advanced to planned takeoff thrust by 60 knots, manually advance the thrust levers.
After takeoff thrust is set, the captain's hand must be on the thrust levers until V1.	

Takeoff Procedure

Pilot Flying	Pilot Monitoring
	When entering the departure runway, position the STROBE light switch ON. Use other lights as needed.
Verify that the brakes are released. Align the airplane with runway	When cleared for takeoff, position the LEFT and RIGHT LANDING light switches ON. Position transponder mode selector to TA/RA
[GE Engines] Advance the thrust levers to approximately 55% N1 and allow the engines to stabilize. [PW, RR Engines] Advance the thrust levers to approximately 1.05 EPR and allow the engines to stabilize.	
Push the TO/GA switch.	
Verify that correct takeoff thrust is set.	
	Monitor engine instruments throughout takeoff and call out any abnormalities. Adjust takeoff thrust prior to 80 knots, if needed. • During strong headwinds, if the thrust levers have not advanced to planned takeoff thrust by 80 knots, manually advance the thrust levers.
After takeoff thrust is set, the captain's hand must be on the thrust levers until V1.	
Monitor airspeed. Maintain light forward pressure on the control column.	Monitor airspeed indications and call out any abnormalities.
Verify 80 knots and call "CHECK".	Call "80 KNOTS".

Standardized Normal Procedures
Takeoff 737 vs. 777

Pilot Flying	Pilot Monitoring
	After flap retraction is complete: • Position landing gear lever OFF after landing gear retraction is complete [Without automatic ignition] • Position engine start switches as needed • Set or verify engine bleeds and air conditioning packs operating
Call "AFTER TAKEOFF CHECKLIST"	Accomplish the AFTER TAKEOFF checklist.

CAUTION: Do not allow the shoulder harness straps to retract quickly. Buckles can pull or damage circuit breakers.

Pilot Flying	Pilot Monitoring
Verify V1 speed.	[Without Automatic V1 callout] Call "V1". [Automatic V1 callout] Confirm automatic V1 callout or call "V1".
At VR rotate toward 15° pitch attitude. After liftoff, follow F/D commands. Establish a positive rate of climb.	At VR call "ROTATE". Monitor airspeed and vertical speed
Verify a positive rate of climb on the altimeter and call "GEAR UP".	Verify a positive rate of climb on the altimeter and call "POSITIVE RATE". Position the landing gear lever UP.
Above 400 feet radio altitude, call for an appropriate roll mode, if needed.	Select or verify the roll mode.
Verify that climb thrust is set	
Verify acceleration at the acceleration height. Call "FLAPS____" according to the flap retraction schedule.	Position the flap lever as directed.
Engage the autopilot when above minimum altitude for autopilot engagement.	
	After flap retraction is complete: • Position Engine Anti-Ice Selectors to AUTO.
Call "AFTER TAKEOFF CHECKLIST"	Accomplish the AFTER TAKEOFF checklist.

Standardized Normal Procedures
Landing 737 vs. 777

Landing Procedure

Pilot Flying	Pilot Monitoring
	Notify the cabin crew to prepare for landing. Verify that the cabin is secure.
Call "FLAPS __" according to the flap extension schedule.	Position the flap lever as directed and monitor flap and slat extension.
When on localizer intercept heading: • verify that the ILS is tuned and identified • verify that the LOC and G/S pointers are shown	
Arm APP mode Engage the second autopilot.	
[Airplanes not requiring localizer capture before glide slope capture] **WARNING: When using LNAV to intercept the final approach course, LNAV might parallel the localizer without capturing it. The airplane can then descend on the glide slope with LOC not captured.**	
Use HDG SEL to establish an intercept heading to the final approach course, if needed.	
Verify that the localizer is captured.	
	Call "GLIDE SLOPE ALIVE".
At glide slope alive, call: "GEAR DOWN" "FLAPS 15"	Position the landing gear lever DN. Verify that the green landing gear indicator lights are illuminated. Position the flap lever to 15. [Without automatic ignition] Position engine start switches to CONT.
Position the speedbrake lever to ARM. Verify that the SPEEDBRAKE ARMED light is illuminated.	
At glide slope capture, call "FLAPS __" as needed for landing.	Position the flap lever as directed.
Set the missed approach altitude on the MCP.	
Call "LANDING CHECKLIST."	Accomplish the LANDING checklist.

Landing Procedure

Pilot Flying	Pilot Monitoring
	Notify the cabin crew to prepare for landing. Verify that the cabin is secure.
Call "FLAPS __" according to the flap extension schedule.	Position the flap lever as directed.
When on localizer intercept heading: • verify that the ILS is tuned and identified • verify that the LOC and G/S pointers are shown	
Arm APP mode	
[Airplanes not requiring localizer capture before glide slope capture] **WARNING: When using LNAV to intercept the final approach course, LNAV might parallel the localizer without capturing it. The airplane can then descend on the glide slope with LOC not captured.**	
Use HDG SEL/TRK SEL or HDG HOLD /TRK HOLD to establish an intercept heading to the final approach course, if needed.	
Verify that the localizer is captured.	
	Call "GLIDE SLOPE ALIVE".
At glide slope alive, call: "GEAR DOWN" "FLAPS 20"	Position the landing gear lever DN. Position the flap lever to 20
Position the speedbrake lever to ARM.	
At glide slope capture, call "FLAPS __" as needed for landing.	Position the flap lever as directed.
Set the missed approach altitude on the MCP.	
Call "LANDING CHECKLIST."	Accomplish the LANDING checklist.
At final approach fix or OM, verify the crossing altitude.	
Monitor approach progress. Verify the AUTOLAND status at 500 feet radio altitude.	

Standardized Normal Procedures
Go-Around 737 vs. 777

Go–Around or Missed Approach Procedure

Pilot Flying	Pilot Monitoring
Simultaneously push TO/GA switch and call "FLAPS 15"	Position the FLAP lever to 15 and monitor flap retraction
Verify the rotation to go–around attitude and the thrust increase.	
	Verify that the thrust is adequate for go-around; adjust if necessary.
Verify a positive rate of climb on the altimeter and call "GEAR UP".	Verify a positive rate of climb on the altimeter and call "POSITIVE RATE" Position the landing gear lever UP.
Above 400 feet radio altitude, select an appropriate roll mode.	Verify that the missed approach altitude is set.
Verify that the missed approach route is being tracked.	
At acceleration height, select LVL CHG and set the maneuvering speed for the desired flap setting.	
Call "FLAPS ____" according to the flap retraction schedule.	Position the FLAP lever as directed and monitor flaps and slats retraction.
After flaps are set and at or above the maneuvering speed for the desired flap setting call "CLIMB THRUST".	
Verify that climb thrust is set.	
Verify that the missed approach altitude is captured	
	Position the landing gear lever OFF after landing gear retraction is complete. [Without automatic ignition] Position the engine start switches as needed.
Call "AFTER TAKEOFF CHECKLIST."	Accomplish the AFTER TAKEOFF checklist.

Go–Around or Missed Approach Procedure

Pilot Flying	Pilot Monitoring
Simultaneously push the TO/GA switch and call "FLAPS 20"	Position the flap lever to 20.
Verify the rotation to go–around attitude and the thrust increase.	
	Verify that the thrust is adequate for go-around; adjust if necessary.
Verify a positive rate of climb on the altimeter and call "GEAR UP".	Verify a positive rate of climb on the altimeter and call "POSITIVE RATE" Position the landing gear lever UP.
Above 400 feet radio altitude, select an appropriate roll mode.	Verify that the missed approach altitude is set.
Verify that the missed approach route is being tracked.	
At acceleration height, select FLCH and set the maneuvering speed for the desired flap setting.	
Call "FLAPS ____" according to the flap retraction schedule.	Position the flap lever as directed.
After flaps are set and at or above the maneuvering speed for the desired flap setting call "CLIMB THRUST".	
Verify that climb thrust is set.	
Verify that the missed approach altitude is captured	
Call "AFTER TAKEOFF CHECKLIST."	Accomplish the AFTER TAKEOFF checklist.

Standardized Normal Procedures Checklists 737 vs. 777

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Normal Checklists **Chapter NC**

PREFLIGHT

Oxygen ..... TESTED, 100%
Navigation transfer and display switches ..... NORMAL, AUTO
Window heat ..... ON
Flight instruments ..... HEADING___, ALTIMETER___
Parking brake ..... SET
Engine start levers ..... CUTOFF

BEFORE START

Passenger signs ..... ____
Windows ..... LOCKED
MCP ..... V2___, HEADING___, ALTITUDE___
Takeoff speeds ..... V1___, VR___, V2___
CDU preflight ..... COMPLETED
Trim ..... ___ UNITS, 0, 0
Taxi and takeoff briefing ..... COMPLETED
ANTI COLLISION light ..... ON

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777 QRH Draft

Normal Checklists **Chapter NC**

PREFLIGHT

Oxygen ..... TESTED, 100%
Flight instruments ..... HEADING___, ALTIMETER___
Parking brake ..... SET
FUEL CONTROL switches ..... CUTOFF

BEFORE START

Passenger signs ..... ____
MCP ..... V2___, HDG/TRK___, ALT___
Takeoff speeds ..... V1___, VR___, V2___
CDU preflight ..... COMPLETED
Trim ..... ___ UNITS, 0, 0
Taxi and takeoff briefing ..... COMPLETED
BEACON ..... ON

BEFORE TAXI

Anti-ice ..... _____
Recall ..... CHECKED
Autobrake ..... RTO
Flight controls ..... CHECKED
Ground equipment ..... CLEAR

BEFORE TAKEOFF

Flaps ..... _____

Standardized Normal Procedures Checklists 737 vs. 777

BEFORE TAXI

Generators ..... ON
Probe heat ..... ON
Anti-ice ..... _____
Isolation valve ..... AUTO
[Without automatic ignition]
ENGINE START switches ..... CONT
Recall ..... CHECKED
Autobrake ..... RTO
Engine start levers ..... IDLE DETENT
Flight controls ..... CHECKED
Ground equipment ..... CLEAR

BEFORE TAKEOFF

Flaps ..... ___, GREEN LIGHT

PREFLIGHT

Oxygen ..... TESTED, 100%
Flight instruments ..... HEADING___, ALTIMETER___
Parking brake ..... SET
FUEL CONTROL switches ..... CUTOFF

BEFORE START

Passenger signs ..... ____
MCP ..... V2___, HDG/TRK___, ALT___
Takeoff speeds ..... V1___, VR___, V2___
CDU preflight ..... COMPLETED
Trim ..... ___ UNITS, 0, 0
Taxi and takeoff briefing ..... COMPLETED
BEACON ..... ON

BEFORE TAXI

Anti-ice ..... _____
Recall ..... CHECKED
Autobrake ..... RTO
Flight controls ..... CHECKED
Ground equipment ..... CLEAR

BEFORE TAKEOFF

Flaps ..... _____

Standardized Normal Procedures Checklists 737 vs. 777

AFTER TAKEOFF

Engine bleeds . . . . . ON
Packs . . . . . AUTO
Landing gear . . . . . UP AND OFF
Flaps . . . . . UP, NO LIGHTS

DESCENT

Recall . . . . . CHECKED
Autobrake . . . . . _____
Landing data . . . . . VREF___, MINIMUMS___
Approach briefing . . . . . COMPLETED

APPROACH

Altimeters . . . . . _____

LANDING

[Without automatic ignition]
ENGINE START switches . . . . . CONT
Speedbrake . . . . . ARMED
Landing gear . . . . . DOWN
Flaps . . . . . ___, GREEN LIGHT

AFTER TAKEOFF

Landing gear . . . . . UP
Flaps . . . . . UP

DESCENT

Recall and notes . . . . . CHECKED
Autobrake . . . . . _____
Landing data . . . . . VREF___, MINIMUMS___
Approach briefing . . . . . COMPLETED

APPROACH

Altimeters . . . . . _____

LANDING

Speedbrake . . . . . ARMED
Landing gear . . . . . DOWN
Flaps . . . . . _____

Standardized Normal Procedures Checklists 737 vs. 777

SHUTDOWN

Fuel pumps . . . . . OFF
Probe heat . . . . . OFF
Hydraulic panel . . . . . SET
Flaps . . . . . UP
Parking brake . . . . . _____
Engine start levers . . . . . CUTOFF
Weather radar . . . . . OFF

SECURE

IRSs . . . . . OFF
Emergency exit lights . . . . . OFF
Window heat . . . . . OFF
Packs . . . . . OFF

SHUTDOWN

Hydraulic panel . . . . . SET
Fuel pumps . . . . . OFF
Flaps . . . . . UP
Parking brake . . . . . _____
FUEL CONTROL switches . . . . . CUTOFF
Weather radar . . . . . OFF

SECURE

ADIRU . . . . . OFF
Emergency lights . . . . . OFF
Packs . . . . . OFF

737 Breakout Sessions