Boeing 737 NG
Aircraft Operating Manual (AOM)

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This document provides guidance on Southwest Virtual Airlines Procedures with the intent to guide members with operating the Boeing 737 aircraft in a simulated environment like that of the real-world Airline.

All flight and aeronautical information found within is for simulated use only.

This is an operational guide for members of Southwest Virtual Airlines

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Aircraft Preflight (Originating Flight)

The order of the following flight deck preparation items may vary due to operational needs and conditions. The following steps in Aircraft Preflight are agnostic of duty position and is conducted by the first pilot on the aircraft.

Aircraft Logbook ..... **Check**
Landing Gear Pins ..... **Verify 3 Aboard**
Circuit Breakers ..... **Check**
DC Meter Selector ..... **BAT**
Battery Switch ..... **ON/Guarded**
Fuel Panel ..... **1 Pump ON**
Hydraulic Pump ELEC Switches ..... **OFF**
Air Conditioning Panel ..... **Check**
Landing Gear Lever ..... **DOWN**
Fire/Overheat Warning System ..... **Test**
AC Meter Selector ..... **GRD POWER**
GRD PWR Switch ..... **ON**
APU Switch ..... **START**

Delayed APU Start – If ground power is connected and the APU is not needed for environmental conditions, or if preconditioned air is available, delay APU start until no earlier than 5 minutes prior to expected pushback.

APU Generator Bus Switches ..... **ON**
(MAX) APU DOOR Light ..... **Extinguished**
IRS L and R ..... **NAV**
(MAX) MAINT Light ..... **Extinguished**
Electrical Panel ..... **Set**

- GALLEY Power (as installed) — ON
- CAB/UTIL (as installed) — ON
- IFE/PASS SEAT (as installed) — ON
- STANDBY POWER — AUTO/guarded
- Generator Drive DISCONNECT Switches — Guarded and safetied
- Bus Transfer Switch — AUTO/guarded

Emergency Exit Lights Switch ..... **ARMED/Guarded**
Environmental Controls ..... **As Required**
CDU ..... **Check FMC Configuration**
CDU ..... **Enter Present Position**
Flap Lever ..... **Verify Position**
Parking Brake ..... **Verify Set**
Wheel Well Fire Warning ..... **Check**
Exterior Lights ..... **Check**
Exterior Inspection ..... **Complete**

Flight Deck Preparation (Originating Flight)

The order of the following flight deck preparation items may vary due to operational needs and conditions.

(CA) Registration/Certificates ..... **Check**
(CA) Flight Deck Door ..... **Check**
(CA) Aircraft Logbook/Maintenace Status ..... **Check**
(CA/FO) Circuit Breakers ..... **Check**
(FO) Exterior Lights ..... **Set**
(FO) Crash Axe ..... **Stowed**

(CA/FO) Landing Gear Pins ..... **Verify 3 Aboard**
(FO) Life Vests ..... **Check**
(FO) Protective Breathing Equipment (PBE) ..... **Check**
(FO) Fire Extinguisher ..... **Check/Secured**
(CA/FO) EFB Preflight ..... **Accomplish**
(CA) LE Devices Annunciator Panel ..... **Test**
(CA) ELT (as installed) ..... **ARM/ELT Light Out**
(CA) GPS, ILS, and GLS Lights (as installed) ..... **Extinguished**
(FO) IRS Mode Selectors ..... **NAV**
(CA) Service Interphone Switch ..... **OFF**
(CA) (NG) Reverser Lights ..... **Extinguished**
(CA) (MAX) REVERSER COMMAND/AIR GROUND/LIMITED Lights ..... **Extinguished**
(CA) EEC Switches ..... **ON, ALTN Lights Out**
(CA/FO) Crew Oxygen Pressure ..... **Check**
(CA) Passenger Oxygen Switch ..... **NORMAL/Guarded**
(CA) Flight Recorder Test Switch ..... **Test**
(CA) MACH AIRSPEED WARNING Button(s) ..... **Press**
(CA) STALL WARNING TEST Buttons ..... **Press**
(CA) (NG) PSEU Light ..... **Extinguished**
(CA) (MAX) MAINT Light ..... **Extinguished**
(CA) (MAX) ELEVATOR JAM LANDING ASSIST Switch ..... **OFF/Guarded/Light Out**
(CA/FO) Seat ..... **Adjust**
(CA/FO) Rudder Pedals ..... **Adjust**
(CA/FO) Flight Deck Lighting ..... **Set as Desired**
(CA) Master Lights Test and Dim Switch ..... **Test**
(CA/FO) Escape Strap ..... **Connected**
(CA) Flight Control Panel ..... **Check**

- FLT CONTROL Switches — ON/Guarded
- ALTERNATE FLAPS Master Switch — OFF/Guarded
- ALTERNATE FLAPS Position Switch — OFF
- SPOILER Switches — ON/Guarded

(CA) Yaw Damper Switch ..... **ON**
(CA) Navigation Panel ..... **Check**

- VHF NAV, IRS, and FMC Switches — NORMAL
- Display Switches — AUTO/NORMAL

(CA) Fuel Panel ..... **Set**
(CA) Electrical Panel ..... **Check**
(CA) EQUP COOLING Switches ..... **Normal**
(CA) (MAX) EQUIP SMOKE Light ..... **Extinguished**
(CA) Passenger Signs ..... **ON**
(CA) Window Heat Switches ..... **ON**

During high ambient temperatures, the ON lights may not illuminate.

(CA) Probe Heat ..... **Test**
(CA) Wing Anti-Ice Switch ..... **OFF**
(CA) Engine Anti-Ice Switches ..... **OFF**
(CA) Hydraulic Pump Switches ..... **System A—OFF, System B—ON**
(CA) EQUIP Light ..... **Extinguished**
(CA) Voice Recorder ..... **Test**
(CA) Pressurization Indicators ..... **Check**

- Cabin Differential Pressure — Zero
- Cabin Altitude — Field Elevation
- Cabin Rate Indicator — Zero

(FO) Cabin Temperature ..... **Monitor and Adjust**
(FO) Wing-Body OVHT ..... **Test**
(FO) Pressurization Panel ..... **Set**

(FO) Ignition Selector Switch ..... IGN R

The right ignition is used to start the engines on the first flight of the day in that aircraft. Alternate right and left on subsequent flights.

(FO) ATIS ..... Acquire
(FO) FMC ..... Program
(FO) CPDLC (as installed) ..... Log On
(FO) ACARS Initialization (as installed) ..... Program, As Required
(CA/FO) Clearance ..... Acquire
(CA/FO) PWB ..... Program Takeoff Conditions
(CA) Autothrottle Arm Switch ..... OFF
(FO) Mode Control Panel ..... Set

- Heading — Verify that the expected departure runway heading or assigned heading is set.
- Altitude — Verify the initial level off altitude. Verify the SID restriction or ATC clearance altitude, whichever is lower, is set.
- Flight Director Switches — ON (Do not select TO/GA).
- Course — Set the departure course or engine-out turn procedure, as appropriate.

(FO) EFIS Control Panel ..... Set
(CA/FO) Autopilot Indicators Panel ..... Test
(CA/FO) Display Select Panels ..... NORM
(CA/FO) Flight Instruments ..... Check
(CA/FO) Clock ..... Check Day, Month, Year/Set to UTC
(CA/FO) (MAX) Auxiliary Display ..... Check UTC, XPDR, Month, Year, Nose Number
(CA) (MAX) Integrated Standby Flight Display (ISFD) ..... Set/Check
(CA) Nose Wheel Steering Switch ..... NORM/Guarded
(CA) N1 Set Knob ..... AUTO
(CA) SPD REF Selector ..... AUTO
(CA) Autobrake Select Switch ..... RTO
(CA) Fuel Flow Switch ..... RESET
(CA/FO) Engine Instruments ..... Check
(CA/FO) Fuel Quantity Indicators ..... Check
(CA/FO) Oil Quantity ..... Check
(CA/FO) Hydraulic Quantity ..... Check
(FO) GPWS ..... Test
(FO) CDU ..... RTE 2/2 Page
(CA) Radar ..... Test
(CA) Speedbrake Lever ..... Verify Down Detent
(CA) Reverse Thrust Levers ..... Verify Down
(CA) Thrust Levers (One at a Time) ..... Full Forward, then Full Closed

Verify activation of the takeoff warning horn and TAKEOFF CONFIG warning light when each thrust lever is moved forward.

(CA) Parking Brake ..... Set
(CA) Start Levers ..... Cutoff
(CA) Stabilizer and Autopilot Trim Cutout Switches ..... NORMAL
(CA) Fire/Overheat Warning System ..... Test
(CA) Cargo Fire Detection System ..... Test
(CA) HGS Control Panel ..... As Required
(FO) Transponder ..... Test/Set, Select TA/RA
(CA/FO) VHF NAVIGATION Radios ..... Set
(CA/FO) VHF Communications Radio and Audio Control Panel ..... Set
(CA/FO) Crew Oxygen System ..... Check
(CA/FO) Smoke Goggles (as installed) ..... Check
(CA) Aileron and Rudder Trim ..... Centered
(CA) Stabilizer Trim Override Switch ..... NORM/Guarded
(CA/FO) Sun Visor ..... Check
(CA/FO) Flight Deck Sliding Window/Handle ..... Closed and Locked

Through Flight Procedure

Amplifying comments are only listed if they are different from Flight Deck Preparation — Originating Flight. The order of the following Through Flight Preparation items may vary due to operational needs and conditions.

(CA) Circuit Breakers ..... **Check**

(FO) IRS L and R ..... **ALIGN, then NAV**

The IRS position must be entered within 30 seconds to realign the IRSs and zero out the ground speed. Do not move the aircraft with the ALIGN lights illuminated. Verify ALIGN lights extinguish within 30 seconds.

(FO) FMC/CDU ..... **Enter Present Position**

(CA/FO) (MAX) MAINT Light ..... **Extinguished**

(CA) Instrument Transfer Switches ..... **Normal**

(CA) Fuel Panel ..... **Set**

(CA) Electrical Panel ..... **Check**

(CA) Passenger Signs ..... **ON**

(CA) Window Heat Switches ..... **ON**

(CA) Hydraulic Pump Switches ..... **System A—OFF, System B—ON**

(CA) EQUIP Light ..... **Extinguished**

(FO) Pressurization Panel ..... **Set**

(FO) Ignition Selector Switch ..... **As Required**

Alternate left and right on subsequent flights.

(CA) Autothrottle Arm Switch ..... **OFF**

(CA) Mode Control Panel ..... **Set**

(CA) Nose Wheel Steering Switch ..... **NORM/Guarded**

(CA/FO) Flight Instruments ..... **Check**

(CA) (NG) Standby Altimeter and Airspeed Indicator ..... **Set/Check**

(CA) (NG) Standby Compass and RDMI Switches ..... **Check/Set**

(CA) (MAX) ISFD ..... **Set/Check**

(CA) Fuel Flow Switch ..... **RESET**

(CA) Autobrake Select Switch ..... **RTO**

(CA) Speedbrake Lever ..... **Verify Down Detent**

(CA) Reverse Thrust Levers ..... **Verify Down**

(CA) Thrust Levers ..... **Full Forward, then Full Closed**

(CA) Parking Brake ..... **Set**

(CA) Start Levers ..... **Cutoff**

(CA) HGS Control Panel ..... **As Required**

(CA) Aileron and Rudder Trim ..... **Centered**

(CA) ACARS Initialization (as installed) ..... **Program, As Required**

(FO) ATIS ..... **Acquire**

(FO) FMC ..... **Program**

(FO) CPDLC (as installed) ..... **Log On**

(CA/FO) Clearance ..... **Acquire**

(CA/FO) PWB ..... **Program Takeoff Conditions**

(FO) Transponder ..... **Set, Select TA/RA**

(CA) VHF NAVIGATION Radios ..... **Set**

(CA) VHF Communications Radio and Audio Control Panel ..... **Set**

(CA/FO) Smoke Goggles (as installed) ..... **Check**

(CA/FO) Crew Oxygen System ..... **Check**

(CA/FO) Flight Deck Sliding Window/Handle ..... **Closed/Locked**

(CA/FO) EFB Preflight ..... **Accomplish**

(CA) Aircraft Logbook ..... **Check**

Before Start - Originating Checklist

(CA) *Call, "Before Start Originating Checklist," or "Before Start Checklist."*

Logbook ..... **Aboard**
Landing Gear Pins ..... **3 Aboard**
Fire Warning and Overheat ..... **Checked**
Start Levers ..... **CUTOFF**
Stab Trim Cutout Switches ..... **NORMAL**
Lights Test ..... **Checked**

Before Start Checklist

FMC ..... **Programmed**
Briefings ..... **Complete**
Oxygen Masks and Quantity ..... **Checked**
EECs ..... **ON**
Navigation Switches ..... **NORMAL**
Display Switches ..... **AUTO and NORMAL**
Fuel ..... **_____ Cleared with _____**
Center Pumps ON/OFF
Passenger Signs ..... **ON**
Window Heat ..... **ON**
Hydraulic Pumps ..... **As OFF, B's ON**
In this configuration, nosewheel steering will be inoperative while allowing the operation of the flaps (B system electric pump) in case of the need for deicing prior to engine start.
Pressurization ..... **Set, AUTO**
Flight Instruments ..... **, Set**
Auto Brake ..... **RTO**
Takeoff Warning Horn ..... **Checked**
Parking Brake ..... **Set**
Transponder ..... **TA/RA**
Aileron and Rudder Trim ..... **Centered**

(FO) *Announce, "Before Start Originating Checklist Complete," or "Before Start Checklist Complete."*

Before Push Checklist

(CA) *Call, "Before Push Checklist."*

Zero Fuel Weight ..... **____, Set**
- Call, **"Zero Fuel Weight"**
- Verify the FMC and Weight and Balance Report agree (e.g., '105.5 Set').

Gross Weight ..... **____, Crosschecked**
- Call, **"Gross Weight"**
- Verify the following values are in agreement (e.g., '120.5 Crosschecked'): FMC gross weight (GW on the ACT PERF INIT page) minus taxi fuel, Weight and Balance Report takeoff weight, and PWB takeoff weight.

PWB Remarks ..... **Reviewed**
- Verify that the PWB Remarks page information is reviewed.

N1s . . . . . _____/_____, Reduced Set or _____, MAX Set
- Select the N1 LIMIT page. Call, **"N1s."**
- Verify the FMC and PWB agree. Read the values directly as they appear on the CDU: '39/15, Reduced Set' or '15 MAX Set.' (for '/', instead of calling "**Slash**", call "**Over**")

Runway . . . . . _____/_____, Set
Call, "**Runway."**
Verify that the PWB and FMC Runways agree. Respond **"___/_____, Set."** (I.E. "**One Three Right set." (13R)** or **"Two eight at Uniform 1 set" (U1/28)**

Flaps..... PWB _____, CDU _____
- Call, "**Flaps."**
- Verify that the PWB and FMC flap settings agree. Respond "**PWB____**" when reading the flap setting displayed on the PWB, and "**CDU_____**" when reading the flap setting displayed on the CDU TAKEOFF REF Page 1/2.

V Speeds..... _____, _____, _____, Set
- Call, **"V speeds."**
- Verify the PWB and FMC V speeds agree. Verify the V1 and VR speeds are set as desired and V2 is set in the MCP, and respond with the three speeds (e.g., '125, 132, 140, Set').

Stab Trim ..... _____, Set
- Call, **"Stab Trim."**
- Verify the STAB TRIM is set to the PWB value (e.g., '5.7 Set').
- Set the CDUs to appropriate pages for takeoff. At least one CDU should be set to TAKEOFF REF 1/2 to display V speeds and takeoff N1s.

Min Cleanup Altitude ..... _____, Set or _____, _____, Set
- Call, **"Min Cleanup Altitude."**
- Select TAKEOFF REF Page 2/2.
- Verify the PWB values, altimeter markers, BARO reference (PFD), and thrust reduction height agree. If the PWB thrust reduction height is 1,000 ft AGL, call the minimum cleanup altitude (e.g., '1047 Set'). If the PWB thrust reduction height is not 1,000 ft, call the minimum cleanup altitude and thrust reduction height (e.g., '1147, 1100, Set').

Note: The default thrust reduction height is 1,000 ft AGL.

Note: For PFD displays, the altimeter reference marker at minimum cleanup altitude may not be visible. Ensure both Captain and First Officer "BARO" references are properly set.

Flight Deck Door..... Lights Out

(FO) *Announce, "Before Push Checklist Complete."*

Pushback Procedure

Ensure all prerequisites are met prior to continuing with procedure.
- The Before Start Originating / Before Start Checklist is completed.
- The aircraft is fueled with at least MINIMUM PLANNED fuel.
- All doors are closed with the Parking Brake set.
- APU is running, supplying both air and electrical power to the aircraft.
- The Before Push Checklist is complete.
- LuvCARS is running with the correct flight selected. You want credit, don't you?

(CA) Pushback Tug/Driver .....Confirm Connected/Ready to push
(CA/FO) Pushback Clearance.....Confirm
(CA/FO) Call for Pushback Clearance with ATIS, if required. This is important if operating at a controlled field on a live network (such as VATSIM), especially during an ATC event.
(CA) Pushback Driver.....Notify to commence pushback
(FO) Pushback Time..... Noted
(FO) ANTI-COLLISION Light..... ON

(FO) ISOLATION VALVE .....Confirm AUTO
(FO) Recirculation Fan(s) .....AUTO
(FO) Air Conditioning.....Packs OFF
(FO) Start Pressure ..... Adequate for Engine Start
(FO) Engine Start Procedure .....Complete

Engine Start Procedure

(FO) (NG) Set the engine displays to the compact format.
(FO) (MAX) Set the engine displays to the Captain's inboard DU.
(CA) Announce, "Start number _____." Start Engine #2, then Engine #1
(FO) Repeat "Start number _____." Ensure the correct pack and bleed configuration.
L/R Packs ..... OFF
ISOLATION VALVE.....AUTO
APU + ENGINE BLEEDS .....ON
(FO) Start Switch ..... GRD
Use right ignition for the first flight of the day, then alternate left and right ignition for subsequent flights.
(FO) Observe oil pressure rise.....Call "Oil Pressure"
(FO) At 25% N2 or Max Motoring, observe N1 rotation
Maximum motoring is less than 1 percent N_2 rise in approximately 5 seconds. Minimum N_2 for start is 20 percent.
(FO) Start Lever ..... Idle
(MAX) Observe MOTORING Indication. The LEAP-1B will "motor" for approximately 1 minute. Do not move the Start Lever to IDLE until the MOTORING Indication blanks.
(FO) Observe the EGT increase .....Call "Light off"
EGT increase should occur within 10 seconds (MAX 15 seconds).
(FO) Start Switch .....Verify Off
(FO) Start Valve Open Light.....Extinguished
(FO) When EGT redline indication disappears.....Call "Rollback"
(FO) Start Switch .....CONT
After the #2 engine is started (through rollback), configure the air conditioning panel as appropriate. "ISOLATE THEN VENTILATE"
(FO) ISOLATION VALVE .....CLOSE
(FO) R PACK.....AUTO
Accomplish above flow for engine # 1 start
(FO) Ignition switch..... Left (L)
After the #1 engine is started (through rollback), configure the air conditioning panel as appropriate.
(FO) APU BLEED..... OFF
(FO) L/R PACK + ISOLATION VALVE.....AUTO

Pushback Complete

When the Pushback Crew informs you that the pushback is complete:

(CA) Parking Brake.....SET
Announce, "Parking Brake set."
Clear the Pushback Crew off

(CA) Visually confirm the removal of the following:
- Hydraulic bypass pin
- Communications bag (if wireless headset was used)

After Start Procedure

After one or both of the engines are started (through rollback) and the Pushback Crew has departed, the FO will complete the After Start Flow.

(FO) Clock / Timer .....Start
For the first flight of the day, ensure engines run at or near idle for a minimum of 5 minutes prior to takeoff. On subsequent flights, prior to takeoff, ensure engines run at or near idle for a minimum of (NG) 2 minutes / (MAX) 3 minutes.
(FO) Electrical .....Generators ON
For dual engine taxi, position both engine generator switches to ON, and verify that the SOURCE OFF lights are extinguished. For single engine taxi, position the APU generator switch and operating engine generator switch to ON.
(CA/FO) APU Switch.....As required
If taxiing single engine, be sure to leave the APU ON for the delayed engine start.
(FO) PROBE HEAT Switches.....ON
(FO) Engine and Wing Anti-Ice.....As required
(FO) System A Hydraulic Pumps..... ON
(FO) Air Conditioning and Pressurization.....Set
(FO) WHEEL WELL Light ..... OFF
(FO) Oil Quantity..... Check
(FO) Start Lever(s).....Verify IDLE detent

(FO) Announce, “Standing By Flaps.”
(CA) Command the planned flap setting (e.g., 'Flaps 5’).
(FO) Restate the flap setting (e.g., ‘Flaps 5’) and set the flaps.
(CA) Verify that the flap lever is moved into the proper detent and the flaps are in transit. Call, “Control Check.”
(FO) Respond, “Control Check.”

Before Taxi Checklist

Do not move the aircraft for any reason until the flaps are set and the Before Taxi Checklist is complete. Once the flight control check is completed,

(CA) *Call, “Before Taxi Checklist.”*

Electrical.....Generators ON
Probe Heat..... ON
Anti-Ice.....As Required
Flight Controls.....Free
Flight Deck Windows.....Closed and Locked
Flaps.....CDU ____, Indicates ____, Green Light
Point to the Takeoff FLAPS setting displayed on the CDU TAKEOFF REF Page 1/2, and to the flap position indicator while reading the indicated flap setting. ‘CDU 5, Indicates 5, Green Light.’

(FO) *Announce, “Before Taxi Checklist Complete.”*

Taxi

(FO) Call for Taxi Clearance, with ATIS information. This is important if operating at a controlled field on a live network (such as VATSIM), especially during an ATC event. Taxi to runway per ATC instructions.

(CA) Taxi Light ..... ON

Any time we intend to move the aircraft on the airport surface the taxi light should be on. This also signals our intent to taxi to other aircraft.

Speed Limitations:

- Straight/turns <90 = 30kts MAX
- Turns >90 degrees = < 15 kts

N_1 Limits during Taxi:

- Congested ramps - 35% N_1
- Non-congested ramps - 40% N_1
- Taxiways - 45% N_1

Departure Plan Checklist

The Departure Plan Checklist is only required if any changes are made to FMC programming or performance data AFTER pushback has commenced and following accomplishment of the Before Taxi Checklist. If a runway change occurs after push, stop the aircraft (at an appropriate location), set the parking brake, accomplish performance calculations and FMC programming (e.g., runway, performance, routing) and make configuration changes as necessary. Complete the required briefings and complete the Departure Plan Checklist.

Approaching the Departure Runway

Do not stop at the approach hold short or ILS hold short lines/signs unless instructed to do so by ATC.

Approximately 1 minute (roughly 2,000 feet of taxi distance remaining) before departure:

(CA) Aircraft Configuration ..... Check

(CA) ATTEND BUTTON ..... Push

Single press of the ATTEND BUTTON to notify the FAs that we have been cleared for departure. Monitor the Flight Attendant acknowledgment through the PA audio.

(CA) Thrust Lever ..... Check

Advance one thrust lever past midrange and back. Check that the takeoff configuration warning horn and configuration warning lights do not activate.

(FO) Air Conditioning/Pressurization Panel ..... Configure for Takeoff

With Engine Bleed Switches ON, do not operate the air conditioning packs in HIGH for takeoff, approach or landing.

(FO) Weather Radar or Terrain Display ..... Set for Departure

(CA) APU ..... As Required

For ETOPS flights, the APU will be ON. The APU will be ON and the left pack operating in AUTO off the APU bleed for an Engine Bleeds Off Takeoff.

(CA) MCP ..... Verify/Set

Engage LNAV, VNAV, Autothrottle as required for departure.

Before crossing the hold short line, complete the Before Takeoff Checklist.

Before Takeoff Checklist

(CA) *Call, "Fuel verified, Before Takeoff Checklist."*

Min Takeoff Fuel ..... **Verified**
Departure Plan ..... **Not Reqd/Complete**
Attendant Notification ..... **Complete**
Electrical ..... **Generators ON**
Anti-Ice ..... **As Required**
Packs ..... **As Required**
The normal response to "Packs" is "Auto."
Bleeds ..... **As Required**
Respond with the actual switch positions. The typical response is "Engines On, APU Off." For an Engine Bleeds Off Takeoff, the response would be "Engines Off, APU On."
Start Switches ..... **Left, CONT**
APU ..... **As Required**
Flaps ..... **CDU _____, indicates _____, Green Light**
An example response is 'CDU 1, Indicates 1, Green Light.'
Start Levers ..... **IDLE**
Recall ..... **Checked**
All caution lights should extinguish on the recall panel. Complete the appropriate QRH checklist.

(FO) *Announce, "Before Takeoff Checklist Complete."*

(FO) Switch to tower frequency. Ensure departure frequency is preset in the standby position on the VHF #1 radio. Call for Takeoff Clearance. This is important if operating at a controlled field on a live network (such as VATSIM), especially during an ATC event.

Taxiing Onto the Departure Runway Procedures

(CA/FO) Runway ..... **Verify Runway and Clear**
"Runway _____ Verified. Final is clear."
(CA) Wing Anti-Ice ..... **Verify OFF**
LINE UP AND WAIT:
(CA/FO) Exterior Lights ..... **ON (Except Landing Lights)**
CLEARED FOR TAKEOFF:
(CA) Landing Lights ..... **ON**
(FO) Strobe Lights (if not already on) ..... **ON**

Takeoff Procedure

Normal Takeoff

(PF) Set 40% N_1. Allow the engines to stabilize at 40% N_1 then press TO/GA.
(PF) Call, "Set takeoff thrust, xx.x."
For example, when the takeoff N_1 is 95.5, the call is, "set takeoff thrust, 95.5."
After takeoff thrust is set the CAs hand remains on the thrust levers until V_1 in order to respond quickly to a rejected takeoff. After V_1 the CA removes his hand from the thrust levers.
(PM) Call, "80 kts"

(PM) At 5 kt prior to V_1, Call, "V_1."
(PM) At the computed V_R speed, call, "Rotate." (when the V_1 and V_R are the same, call "V_1, rotate.")
(PF) Caution: Rotation rates in excess of 2-3° per second can cause a tail strike.

Liftoff to Minimum Cleanup Altitude

(PF) When a positive rate of climb is indicated on the IVSI and the altimeter, call, "Landing Gear UP." Do not turn until above 400 ft AAE unless following RNAV SID guidance.
Normal climb speed is V_2 + 20 kt. After passing 400 ft AGL, call for or verify the appropriate MCP roll mode (e.g., 'LNAV' or 'Heading Select').
(PM) Call, "Positive Rate, Landing Gear Up." Move the landing gear lever to the up position.
(PF) Engage the autopilot, if desired.
Minimum altitude for autopilot engagement is 1,000 ft AAE.

From Minimum Cleanup Altitude to 3,000 Ft AAE

The initial call after takeoff will be dependent upon the takeoff flap setting. In no case should the first flap retraction be made at a speed of less than V_2 + 15. The Pilot Flying **(PF)** will make one of the following calls:

Call "Set Speed, climb thrust" for a flaps 1 takeoff.
Call "Set speed, flaps 1, climb thrust" for a flaps 5 takeoff.
Call "Set speed, flaps 5, climb thrust" for a flaps 10 or 15 takeoff.
Call "Set speed, flaps 15, climb thrust" for a flaps 25 takeoff.

At minimum cleanup altitude, following the callout, the Pilot Monitoring **(PM)** will set the IAS speed bug to the flaps UP maneuvering speed (SDP INTV), set flaps as appropriate and verify / set climb thrust setting displayed on the FMC (CLB or N1 LIMIT page).

If acceleration of 3,000 ft AAE or higher has been loaded in the VNAV CLB page (LSK 2L/3L method) there is no need for the "set speed" call as the speed bug will automatically set to the flaps up maneuvering speed. Clear as mud? Thought so. This can be a tricky scenario for most to understand. Ask an instructor for clarification. The VA has a video on alternate use of VNAV for takeoff. In fact, there are quite a few training videos on the SWAVA TV Channel. Give them a look. Link to the page in the appendix of this document.

(PF) Continue flap retraction on schedule. For instance, at flaps 1 maneuvering speed and accelerating, call, "flaps up." See the table below for flap retraction schedule.

(PF) Maintain flaps up maneuvering speed until 3,000 ft AAE unless assigned a higher speed by ATC.

FLAP RETRACTION SCHEDULE

Takeoff Flaps	At Speed (Display)	At Speed (No Display)	Select Flaps
25	**V_2 + 15** **15** **5** **1**	**V_2 + 15** **170** **180** **200**	**15** **5** **1** **UP**
15 or 10	**V_2 + 15** **5** **1**	**V_2 + 15** **180** **200**	**5** **1** **UP**
5	**V_2 + 15** **1**	**V_2 + 15** **200**	**1** **UP**
1	**1**	**200**	**UP**
Limit bank angle to 15° until reaching V_2 + 15			

After the flaps indicate fully retracted:
(PM) (NG) Landing Gear ..... OFF
There is no OFF position on the MAX landing gear lever. Leave the lever in the UP position.
(PM) AUTO BRAKE..... OFF
(CA) Retractable Landing Lights (as installed) ..... Retracted
(CA) Taxi Light ..... OFF
(FO) Packs & Bleeds ..... Reconfigure (as required)
Reconfigure the Packs and Bleeds as required following an Engine Bleeds Off Takeoff. Verify the aircraft is cleaned up and pressurizing properly.

Follow all applicable noise abatement profiles and procedures as directed on the Station Information Page (SIP) or NOTAM.

Maintain flaps up maneuvering speed to 3,000 ft AAE. Comply with all Class B, C and D airspace speed restrictions.

En-Route

Climb: 3,000 ft AAE to 10,000 Ft

Set speed of 250 kts, and continue on course, or as assigned by ATC.
If in VNAV, call for “speed intervention”. Close the MCP speed window to revert to the VNAV CLB speed profile. Comply with all Class B, C and D airspace speed restrictions.

(NG) If climbing with a reduced CLB (CLB-1 or CLB-2), at 5,000 ft AAE, delete the CLB-1 / CLB-2 reduction. Verify CLB thrust setting on the Thrust Mode Display.
In the MAX, allow the thrust reduction to phase out automatically. When (NG and MAX) using a reduced CLB power setting the FMC automatically phases out the reduction by 15,000 ft MSL.

Leveling at or climbing through 10,000 ft

Call, "10,000 feet." Complete the Climb Flow:

(CA) ATTEND BUTTON.....Push
(CA/FO) Pressurization Panel ..... Check
(FO) Cabin Temperature.....Check
(CA) Start Switches ..... As Required
Respond with the actual switch positions. The normal response is "OFF". The Start Switches remain in CONT if using Engine Anti-Ice, or as required for rough air.
(CA) APU .....As Required
(CA/FO) Fuel System.....Monitor
VHF #2 Radio ..... Guard (121.5)

(PF) *Call, "Climb Checklist."*

Pressurization.....Checked
Start Switches..... As Required
APU.....As Required

(PM) *Announce, "Climb Checklist Complete."*

Climb at the FMC-computed ECON climb speed. If ATC restrictions require a temporary level-off below cruise altitude, maintain the climb airspeed/Mach. If ATC requires an expedited climb, fly the FMC-indicated climb speed.

Climbing through FL180 / 18,000 ft:

(PF) Call, "18,000 feet, Standard Set."

(CA/FO) Altimeters.....Set STD / 29.92
(CA) Landing Lights ..... OFF
(CA) Runway Turnoff Lights.....OFF
(FO) Wing/Logo Lights.....OFF

Cruise Flight Monitoring

Periodically, complete an aircraft cruise status flow.

Assess the following:

- Primary and secondary altimeters
  Note: Crosscheck hourly when in RVSM airspace.
- Electrical power
- Hydraulic system
- Cabin pressurization
- Cabin temperature
- Engine status
- Fuel usage
- Flight plan progress

The BAT DISCHARGE light should be extinguished.

Before Top of Descent Tasks

Complete the following:

- Acquire ATIS information
- Acquire gate information
- Ensure FMC programmed for arrival and approach
- Acquire and evaluate landing performance for intended runway
- Tune NAV radios for the approach
- Set approach speeds
- Set (BARO / RADIO) minimums for approach
- Complete arrival and approach briefings

Setting Approach Speeds

Check the FMC-computed flap V_{REF} and compare it with the performance-computed speeds. The performance system-computed V_{TARGET} is V_{REF} ½ headwind component plus full gust (V_{REF} + 5 minimum). The maximum final approach speed V_{TARGET} is V_{REF} + 15 kt.

Setting Minimums for Approach

Set barometric altimeter minimums to one of the following:

- TDZE for visual approaches (Runway End Elevation from the *Jeppesen* 10-9 page if TDZE is not available)
- DA for precision approaches or DA/DDA for RNAV approaches
- DDA for non-precision approaches using vertical speed
- MDA for circling approaches (Set 1,000 ft AAE or MDA, whichever is greater)

Set the radio altimeter (RA) at 200 ft unless the approach minimums are based upon RA. For approaches with RA minimums, set the RA at the appropriate value.

The following approaches have RA minimums:

- Special Authorization CAT I approach with published RA minimums
- CAT II approach (minimums may be slightly above or below 100 ft RA due to the position of the aircraft over terrain)
- CAT IIIA approach (minimums are always 50 ft on the RA because the aircraft will be over the runway surface)

Note: The RA is used for minimums callouts for approaches with RA minimums.

Descent Checklist

Once all Top of Descent Tasks have been completed:

(PF) *Call, "Descent Checklist."*

Minimums ..... **Set**

V_{REF} and V_{TARGET} ..... _____, _____ **Set**

An example response is, '130, 135, Set.'

Autobrake ..... **As Required**

Minimum setting for Autobrake use per SWAVA policy is AB2.

Recall ..... **Checked**

All caution lights should extinguish on the recall panel. Complete the appropriate QRH checklist.

(PM) *Announce, "Descent Checklist Complete."*

Approach Checklist

Approaching FL180, set the altimeter setting assigned by ATC and complete the Descent Flow.

(CA) Landing Lights and Runway Turnoff Lights.....ON
(CA) Start Switches.....As required
(CA/FO) Altimeter(s).....Set primary and standby
(FO) Packs.....AUTO
(FO) Wing Illumination Light and (Night Only) Logo Lights.....ON

(PF) *Call, "Flight Level 180, _____, Approach Checklist."*

Altimeters.....Set
Packs.....AUTO
Start Switches.....As Required

(PM) *Announce, "Approach Checklist Complete."*

Approaching 10,000 Ft

(CA) ATTEND BUTTON.....Push
This directs the Flight Attendants to secure the cabin for arrival and make the Final Descent PA. Monitor the Flight Attendant acknowledgment through the PA audio.
(CA) Call, "10,000 Feet, Attendants notified."

Approach

All Southwest Airlines B737 aircraft use Approach Category "C" minima (121 kt to 140 kt). Use Approach Category "D" minima (141 kt to 165 kt) in the following situations:

- V_{REF} is greater than 140 kt for other than Flaps 30 and Flaps 40 landings.
- V_{TGT} is greater than 140 kt for RNAV (RNP) approaches with an RF leg on the final approach segment.

MCP altitude must be set to zero for all instrument approaches, except circle-to-land procedures. The setting of zero ensures that ALT ACQ does not interrupt the VNAV PATH or vertical speed descent to the DA/DDA.

Begin slowing from 250 kt to flaps up maneuvering speed:
When approximately 15 flying miles from the landing runway or when necessary to comply with speed constraints (displayed on the LEGS page in LARGE font).

When cleared for the approach, select / verify VOR LOC or LNAV. After VOR LOC capture (established on course if LNAV is used) and compliance with all altitude restrictions is assured, select APP.

On base leg, approximately 5 miles from the FAF if on a straight-in approach, configure as necessary to meet stabilized approach criteria. Configuration may be started earlier if required to meet charted speed constraints (displayed on the LEGS page in LARGE font) or assigned ATC-assigned speeds.
(PF) Call, "Flaps 5."
(PM) Flaps.....Set 5

(CA) Ensure that the speedbrake is out of the detent and the speedbrake armed light is illuminated.

(PF) When the localizer is captured by the flight director or autopilot, call, "VOR LOC Capture."

Set the airspeed bug to flaps 15 maneuvering speed if the IAS/MACH display is not blank. Approximately 3 miles from the FAF or when necessary to comply with speed constraints (displayed in the LEGS page in large font), continue to configure for landing.

(PF) Call, "Landing Gear Down, Flaps 15."
(PM) Landing Gear..... Down
(PM) Flaps ..... Set 15

After verifying glideslope capture, set the MCP altitude to zero.
(PF) Call the outer marker or named fix and crossing altitude.
Example callout is 'CITGO at 2400.'
(PM) Verify the outer marker or named fix, crossing altitude, respond, "Crosschecked."

After landing flaps are set and no later than 1,000 ft above TDZE, complete the Before Landing Checklist.
(PF) *Call, "Before Landing Checklist."*

Speedbrake .....ARMED, Green Light
Landing Gear.....DN, 3 Green
Flaps ..... _____, Green Light

(PM) *Announce, "Before Landing Checklist Complete."*

At 1,000 ft above TDZE:
(PF) Call, "1,000 feet, airspeed _____, sink rate ....."

At 500 ft above TDZE:
(PM) Call, "500."

FOR ILS APPROACHES:

(PM) At approximately 100 feet prior to approach minimums, call, "Approaching Minimums."
(PF) Call, "Going outside."
Expand your attention outside to obtain sufficient runway visual references.
(PM) Call, "Minimums." Continue to monitor the approach on flight instruments.

With sufficient visual references at DA
(PF) Call, "Landing."

No lower than 50 ft below DA
(PF) Autopilot/Auto Throttle.....Disengage

Landing

Touch down between 1,000 and 1,500 ft from the landing threshold on centerline. Avoid touching down with thrust above idle.

At touchdown,

(PM) Speedbrakes ..... Verify deployed
(PM) Call, "Extended."
If the SPD BRK lever is not in the up position, (PM) call, "no speedbrake."
(PF) If the SPD BRK lever does not move to the UP position, raise the SPD BRK lever manually.

(PF) Reverse Thrust ..... Initiate
VERIFY Green REV Light displayed above N1 dials
(PM) Call "Deployed."
If a green **REV** light(s) is not illuminated, (PM) call, "no reverse." However, the "no reverse call only applies to operating engines.
Transition to manual braking at an appropriate speed.
(PM) AUTO BRAKE DISARM Light illuminates, call, "Autobrake Disarm."
(PM) At 60 kt, call, "60 kt."
(PF) Reverse Thrust ..... Stow

Taxi In

Any time after the flight deck clears the runway side stripe marking, (CA) call, "Flaps up."

(CA) Speedbrake Lever ..... DOWN
(CA) Landing Lights ..... OFF
(CA) Runway Turnoff Lights ..... As Needed
(CA) Taxi Light ..... ON
(CA) HGS Combiner ..... Stow
(FO) Flap Lever ..... UP
(FO) Clock ..... Start
Prior to shutdown of either or both engines, operate engine(s) at or near idle for a minimum of (NG) 1 minute / (MAX) 3 minutes. When conditions permit, engines should be operated at or near idle for 3 minutes prior to shutdown.
(FO) Radar ..... TEST
(FO) Autobrake Select Switch ..... OFF
(FO) APU Switch ..... Start, As Required
(FO) Engine Start Switches ..... OFF
(FO) Strobe Lights and Wing Illumination Lights ..... OFF
(FO) Wheel Well Light ..... As Required
(FO) Engine and Wing Anti-Ice ..... As Required
(FO) Probe Heat Switches ..... AUTO/OFF
(FO) Window Heat Switches ..... OFF
(FO) APU Generator Bus Switches ..... ON
(FO) Station Operations ..... Contact, If Required

Engine Shutdown Flow

(CA) Parking Brake ..... **Set**
(CA) Start Lever(s) ..... **CUTOFF**
(CA) Fasten Seatbelt Switch ..... **OFF**
(CA) Fuel Pump Switches ..... **As Required**
With the APU operating, select either #1 main tank pump switch ON. The rest can be turned OFF.
With gate services (ground power and air) the APU should be shut down and all pumps OFF.
(FO) Anti-Collision Light Switch ..... **OFF**
(FO) Environmental Controls ..... **As Required**
(FO) Hydraulic Pump ELEC Switches ..... **OFF**
Operate the APU for 2 minutes before selecting APU Bleed.
(FO) Transponder ..... **STANDBY and Zeros**

(CA) Gate Services ..... **As Required**
Confirm status of ground power and preconditioned (PC) air from ground ops.

Parking Checklist

(CA) *Call, "Parking Checklist."*

Parking Brake ..... **As Required**
Start Levers ..... **CUTOFF**
Fuel Pumps ..... **As Required**
Window Heat ..... **OFF**
Probe Heat ..... **AUTO**
Anti-Ice ..... **OFF**
Hydraulic Pumps ..... **Electrics OFF**
Start Switches ..... **OFF**
Oil Quantity ..... **_____ %**
Hydraulic Quantity ..... **_____ %/Refill**
Radar ..... **TEST**
Transponder ..... **STANDBY and Zeros**

(FO) *Announce, "Parking Checklist Complete."*

Terminating Checklist

STAB TRIM ..... **Green Band**
IRSs ..... **OFF**
Do not remove AC power from the aircraft for at least 30 seconds after IRS shutdown or until ALIGN lights are extinguished, whichever occurs last.
Emergency Exit Lights ..... **OFF**
External Lights ..... **OFF**
Ground Power ..... **OFF**
APU ..... **OFF**
Battery ..... **OFF**

QUICK REFERENCE LIGHT USAGE

		Captain					FO					
		Landing Lights		Other								
		Retract *if installed*	Fixed	Turn-Off	Taxi		Logo Night Only 1	Strobe	Anti-Col	Position	Wing	Wheel Well Lights •
TAXI	*DAY*	OFF	OFF	OFF	*OPTIONAL*		OFF	OFF	ON	ON	OFF	OFF *AFTER START FLOW* GNDCREW CLEAR
	NIGHT	*ASREQ*	*ASREQ*	*ASREQ*	ON		ON	OFF	ON	ON	OFF	ON AFTER LANDING FLOW
RWY CROSSING		ON	ON	ON	ON		ON	ON	ON	ON	ON	ON
LINEUP & WAIT		OFF	OFF	ON	ON		ON	ON	ON	ON	ON	OFF
TAKEOFF/ LANDING		ON*	ON	ON	Takeoff - ON Landing - Optional		ON	ON*	ON	ON	ON	OPTIONAL
FLAPS UP TO FL180		OFF	ON	ON	OFF		ON	ON	ON	ON	ON	OFF
FL180 & ABOVE		OFF	OFF	OFF	OFF		OFF	ON	ON	ON	OFF	OFF

* CAUTIONS & Notes:

C On the ground, do not use landing or strobe lights when their use may be distracting to other pilots.

C (NG) Do not extend the retractable landing lights when the runway is contaminated with clutter.

N When weather conditions make certain lights distracting,discontinue their use.

N Wheel Well Lights ON for crew change (exterior inspection)