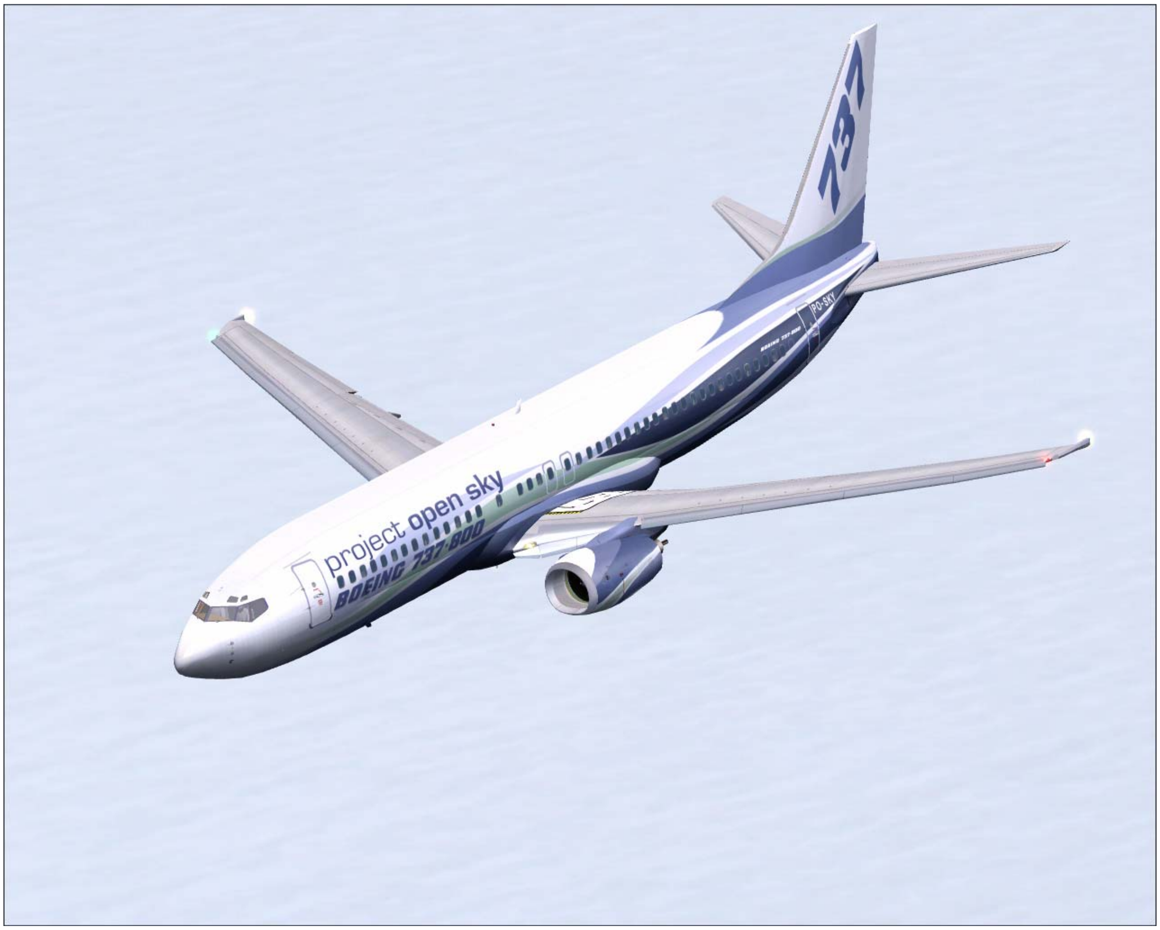
OPERATIONS MANUAL
FLT CREW TRAINING

PROJECT OPENSKY
B737NG

TAXI, TAKEOFF, CLIMB, CRUISE, DESCENT & LANDING



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Disclaimer

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Any exact similarities between this manual and Project Opensky aircraft to actually aircraft, procedures, or airline carriers are strictly coincidental.

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The procedures contained within are this author's interpretation of generic flight operations. These procedures are not always accurate in all situations.

All diagrams have been recreated to mimic actual procedures or scenarios, however, are not taken from actual materials whatsoever.

This manual is not intended for real world flight.

I have modeled this aircraft as accurately as possible to the best of my personal knowledge, experience and available documentation. The only way I could model this aircraft further is if I could arrange dedicated FAA Level D simulator time on this specific model and/or if I could obtain further information. If you can help, I'd be happy to hear from you at:
Warren@projectopensky.com

Project Opensky aircraft are intended as a freeware add-on for Microsoft Flight Simulator 2004.

Project Opensky Boeing 737-700, -800, -900 Series
Version 2005.9.2
Model Designer
Hiroshi Igami

Flight Dynamics, Scenario, Effects Designer
Warren C. Daniel

Test Pilots
Project Opensky Members

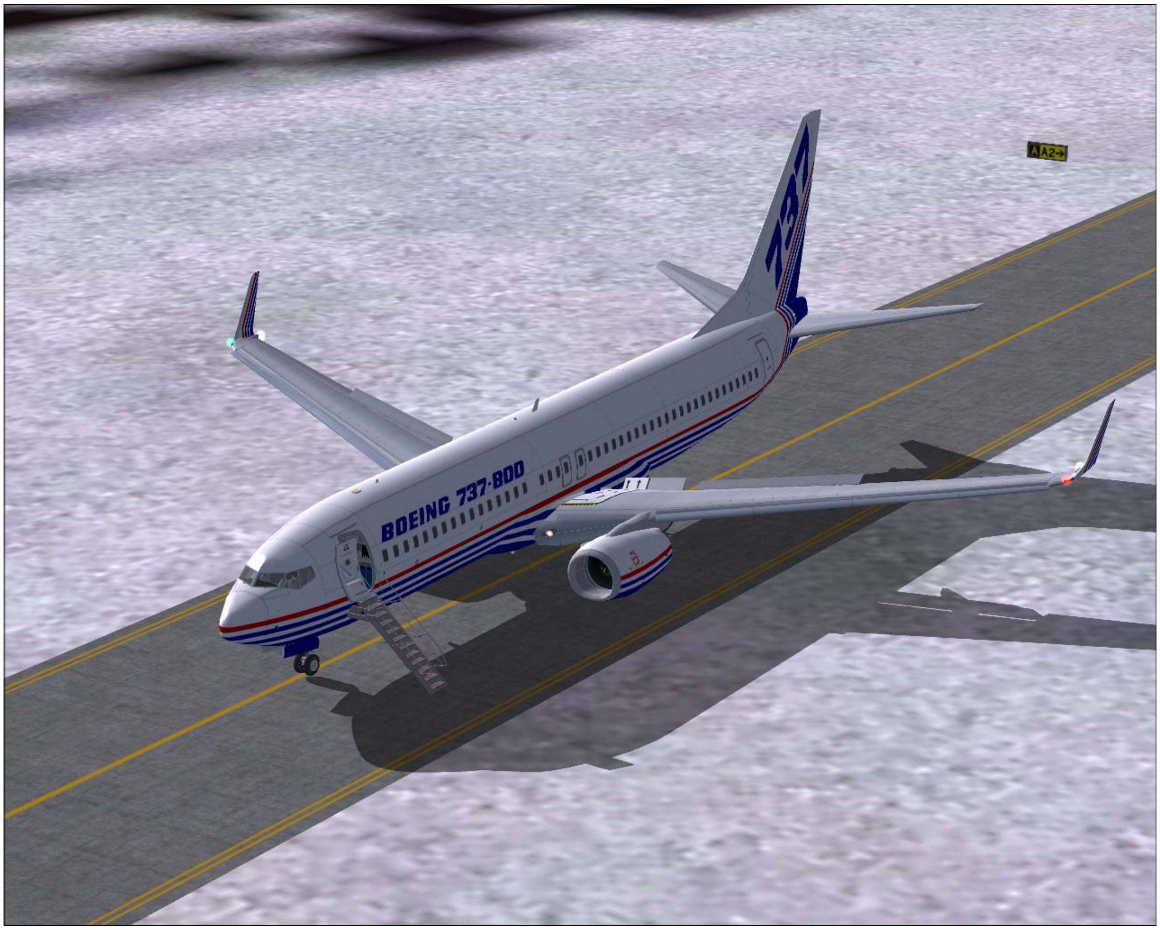
Flight model based on a full-flight training simulator used for pilots of a particular airline carrier, 737-700, -800, -900 data, as well as full-motion FAA simulator experience.

PREFACE

This manual serves as a reference for operating procedures and training maneuvers. The flight profiles show the basic recommended configuration during flight.

The maneuvers should normally be accomplished as illustrated. However, due to airport traffic, ATC distance separation requirements, and radar vectoring, modifications may be necessary.

Exercise good judgment.



PRINCIPLE DIMENSION AND AREAS

Boeing 737-700, -800, -900 – Aircraft Reference Manual

Flight Simulator 2004 Professional Edition

1) Height – 52 ft and 0 in

2) Length -- 159 ft and 2 in

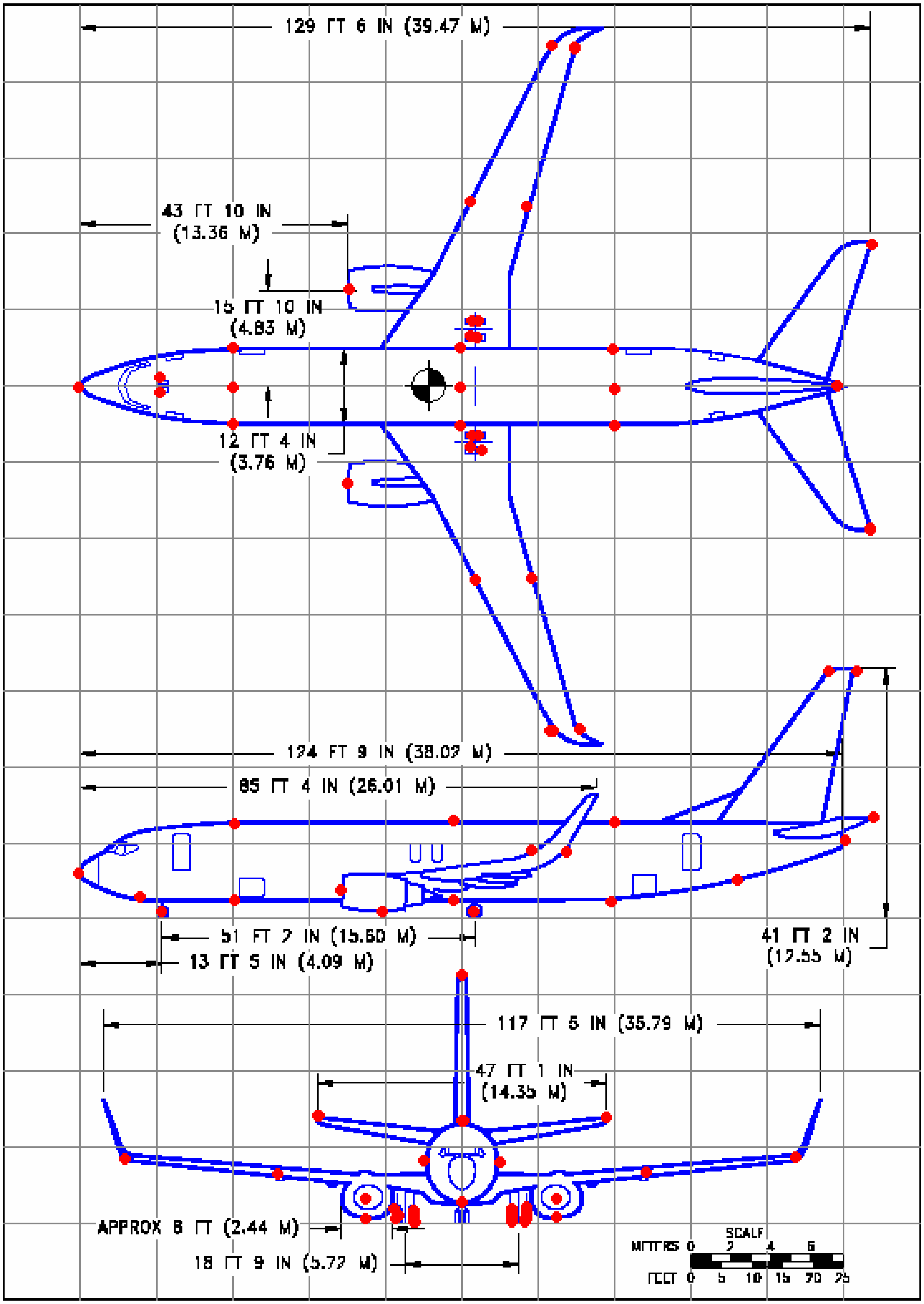
3) Width -- 156 ft and 1 in

4) Engine to Ground Distance:
Minimum -- 2 ft and 5 in
Maximum -- 2 ft and 10 in

5) Fuselage to Engine Distance: (fuselage centerline to engine centerline)
28 ft and 8 in (255 in)

6) Landing Gear:
Track -- 15 ft 3 in
Wheelbase -- 64 ft and 7 in

There are 40 physical damage strike points on the 737NG model, as follows:

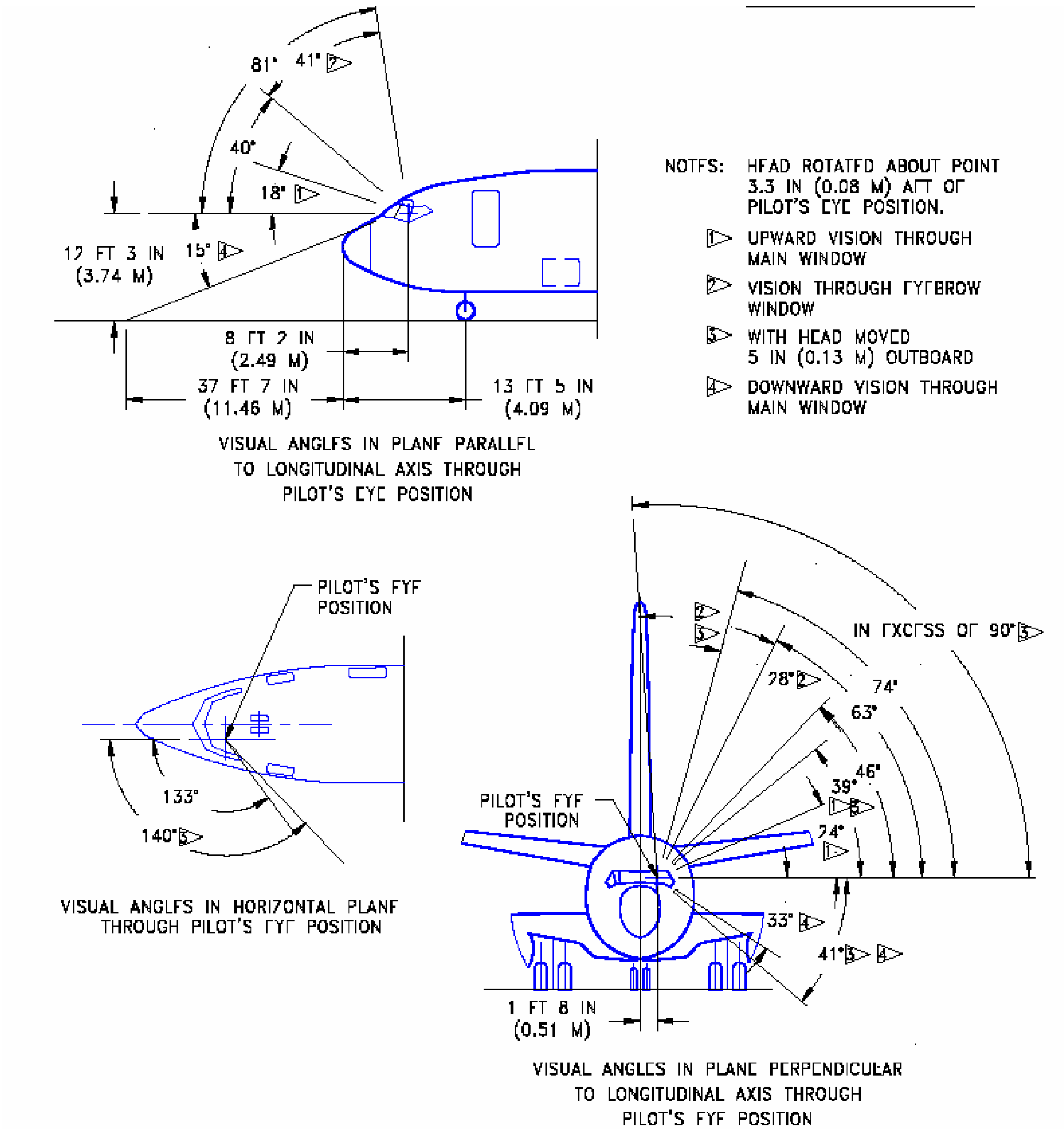


2.2.2 GENERAL DIMENSIONS

MODEL 737-800 WITH WINGLETS

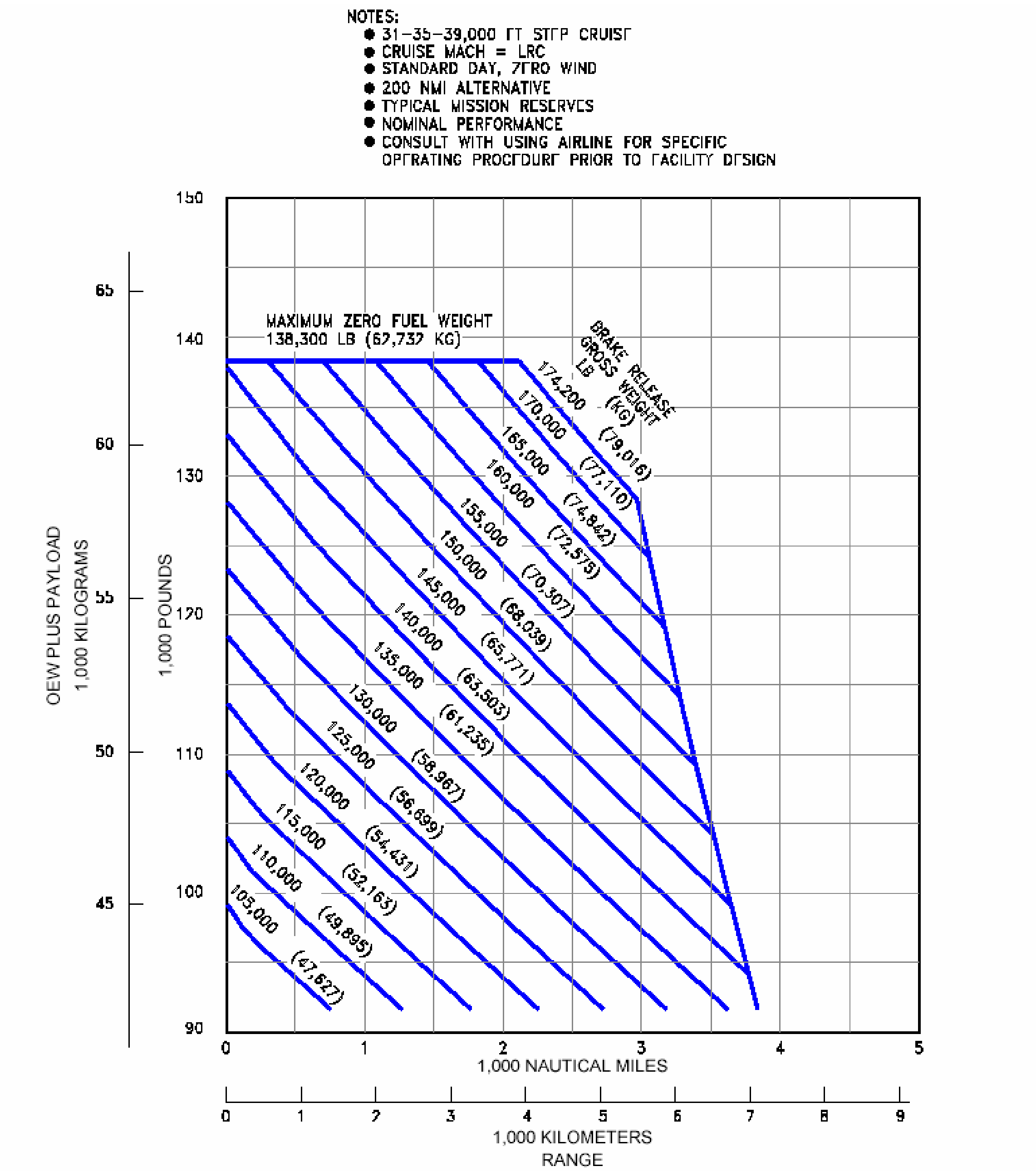
BASIC PILOT INFORMATION

Pilot’s view reference point is approximately 12 feet 3 inches from the ground, with ground visibility limited to 37 feet 7 inches looking down at an angle of 15 degrees. For proper engine and aircraft operations, the captain must view the EICAS as the engines and wings **are not** visible from the flight deck. Pilot’s rearward view is based on the captain’s eye reference point with 130 degrees of travel.



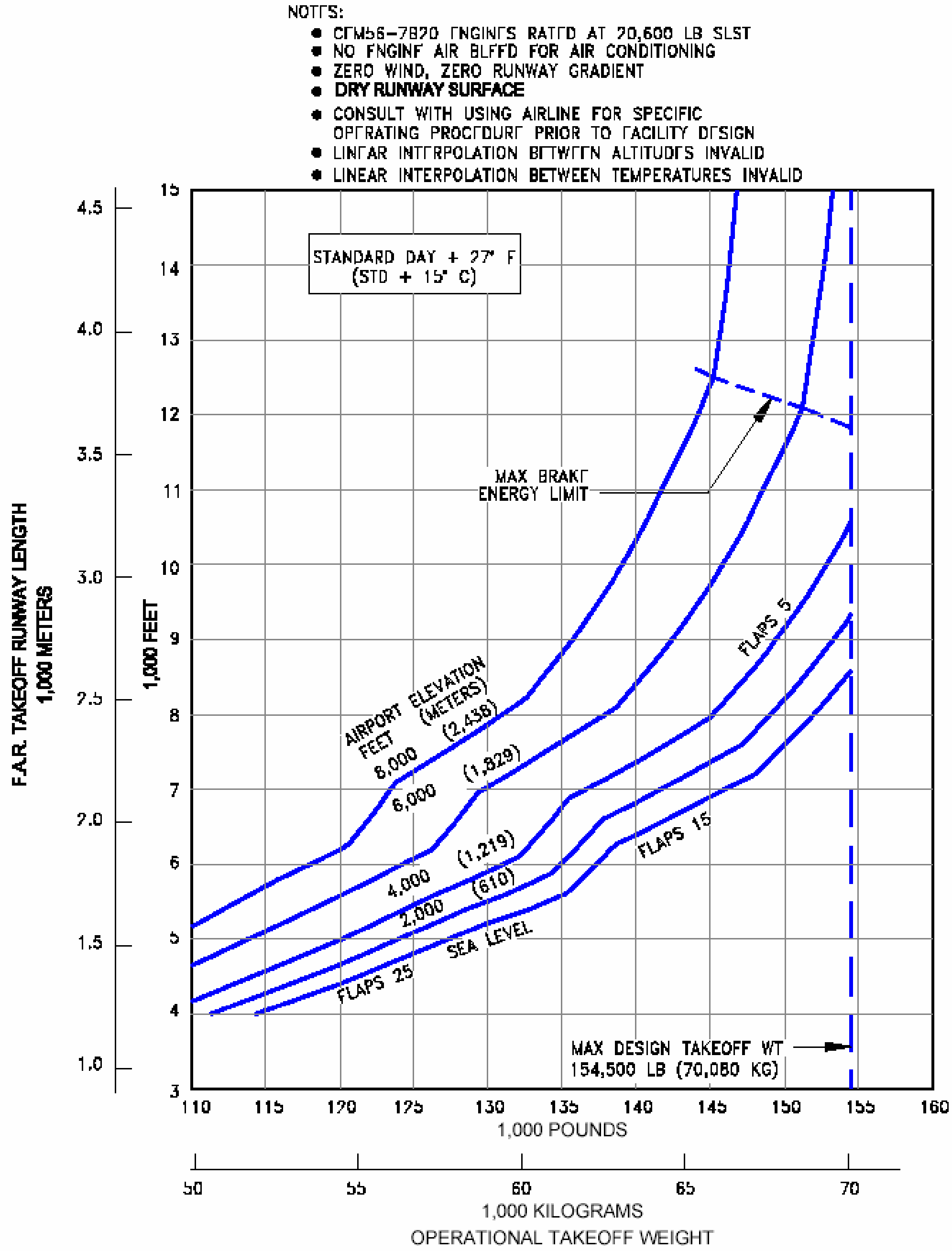
Payload/Range for Long Range Cruise

Review the payload and range for long range cruise for the trip gross weight.



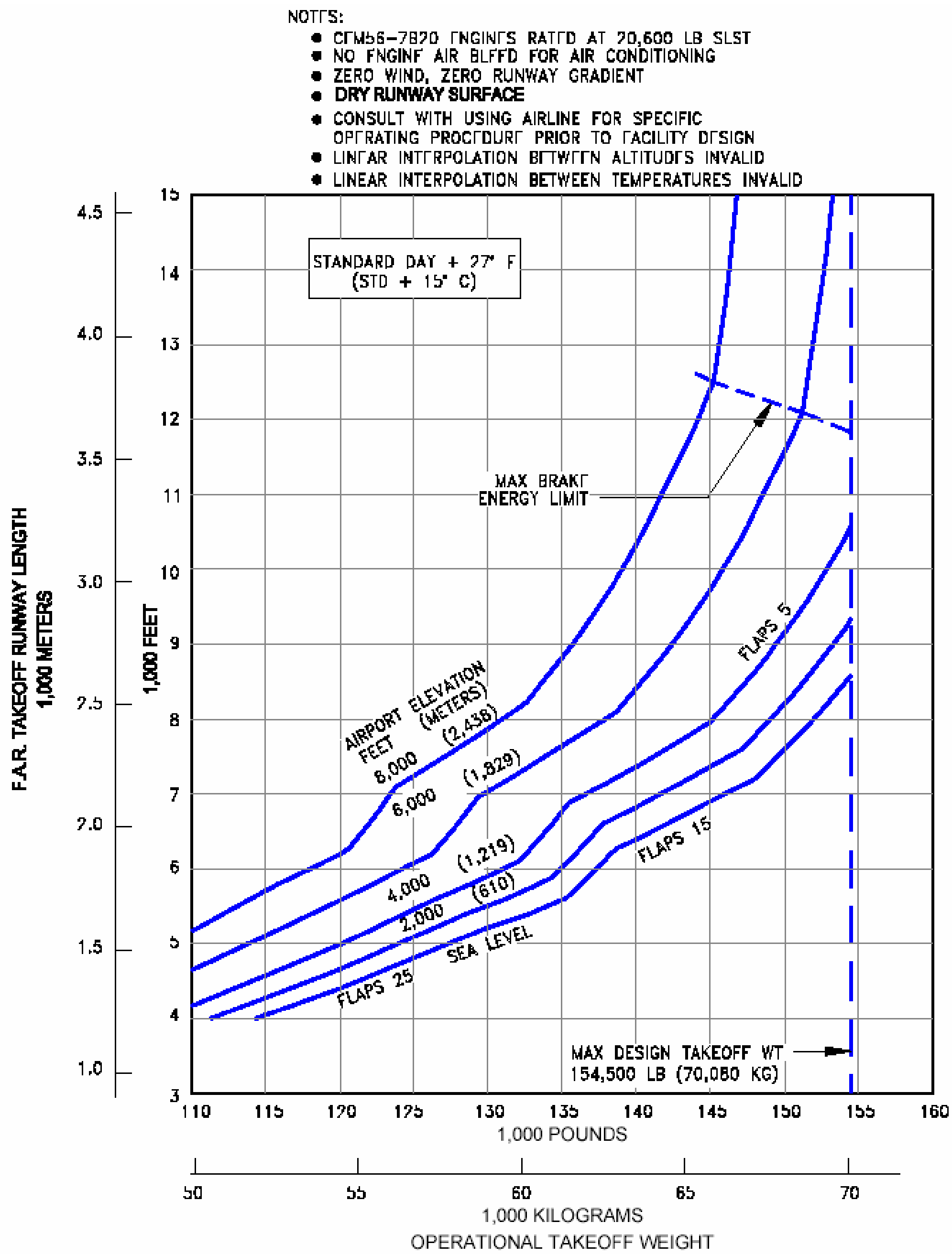
Takeoff Runway Length Requirement

Review the required takeoff runway length requirement for the aircraft at the trip gross weight.



Landing Runway Length Requirements

Review the landing runway length requirements for the trip gross weight.



737NG V-speed calculation table

Review the 737-800 v-speed calculation table. Recommended Opensky takeoff flap position is Flaps 15. Please see the 737NG documentation by Matt Zagoren:

WEIGHT (1000 KG)	FLAPS 1			FLAPS 5			FLAPS 10			FLAPS 15			FLAPS 25		
	V1	VR	V2	V1	VR	V2	V1	VR	V2	V1	VR	V2	V1	VR	V2
72	147	147	150	144	144	147									
68	143	143	147	139	140	143									
64	138	138	142	134	135	139	128	128	133						
60	132	133	138	129	130	135	123	124	128	121	121	126	120	120	
56	126	127	133	123	125	130	118	118	124	116	116	122	115	115	121
52	120	121	128	118	119	125	113	113	120	111	111	118	110	110	117
48	114	115	123	112	113	120	107	108	115	106	106	114	104	105	112
44	108	109	118	105	107	115	102	102	111	100	101	109	99	100	108
40	101	102	112	99	100	110	96	97	106	94	95	105	93	94	103
Check V1 (MCG)															

737NG Takeoff N1 Speeds

AIRPORT OAT		AIRPORT PRESSURE ALTITUDE (FT)										
°C	°F	-2000	0	1000	2000	3000	4000	5000	6000	7000	8000	9000
60	140	84.0	84.7	86.1	87.3	88.1	89.1	89.3	89.5	88.8	88.2	87.9
55	131	84.8	85.8	87.0	88.1	89.0	90.0	90.1	90.3	89.6	88.8	88.1
50	122	85.8	86.8	87.9	88.9	89.8	90.8	90.9	91.0	90.3	89.6	88.7
45	113	86.8	87.7	88.8	89.7	90.7	91.7	91.7	91.7	91.1	90.4	89.5
40	104	87.7	88.6	89.7	90.6	91.6	92.5	92.4	92.4	91.8	91.2	90.3
35	95	88.4	89.5	90.6	91.5	92.4	93.4	93.3	93.2	92.6	91.9	91.0
30	86	88.2	90.1	91.1	92.1	93.0	94.0	94.0	94.0	93.4	92.7	91.8
25	77	87.5	89.7	90.7	91.8	92.7	93.7	94.2	94.3	94.1	93.5	92.6
20	68	86.8	89.0	90.0	91.1	91.9	93.0	93.4	93.9	94.5	94.2	93.4
15	59	86.0	88.3	89.3	90.3	91.2	92.2	92.6	93.1	93.7	94.2	94.0
10	50	85.3	87.5	88.5	89.6	90.4	91.4	91.9	92.3	92.9	93.4	93.7
5	41	84.6	86.8	87.7	88.8	89.6	90.7	91.1	91.6	92.1	92.6	92.9
0	32	83.8	86.0	87.0	88.0	88.9	89.9	90.3	90.8	91.3	91.8	92.1
-5	23	83.1	85.2	86.2	87.2	88.1	89.1	89.5	90.0	90.5	91.0	91.3
-10	14	82.3	84.5	85.4	86.4	87.3	88.3	88.7	89.2	89.7	90.2	90.5
-15	5	81.6	83.7	84.6	85.6	86.5	87.5	87.9	88.3	88.9	89.3	89.7
-20	-4	80.8	82.9	83.8	84.8	85.7	86.7	87.0	87.5	88.1	88.5	88.8
-25	-13	80.0	82.1	83.0	84.0	84.8	85.8	86.2	86.7	87.2	87.7	88.0
-30	-22	79.2	81.3	82.2	83.2	84.0	85.0	85.4	85.8	86.4	86.8	87.2
-35	-31	78.4	80.5	81.4	82.4	83.2	84.1	84.5	85.0	85.6	86.0	86.3
-40	-40	77.6	79.6	80.5	81.5	82.3	83.3	83.7	84.1	84.7	85.1	85.4
-45	-49	76.8	78.8	79.7	80.7	81.5	82.4	82.8	83.3	83.8	84.2	84.5
-50	-58	76.0	78.0	78.9	79.8	80.6	81.6	81.9	82.4	82.9	83.3	83.7
-55	-67	75.2	77.1	78.0	79.0	79.8	80.7	81.1	81.5	82.1	82.5	82.8

TAXI

1) The nose wheel steering and the engine thrust are used to taxi the airplane.

2) Make sure you have the necessary clearance when you go near a parked airplane or other structures.

3) Set takeoff flaps. Opensky recommended setting is Flaps 15.

4) When the APU in the taxi airplane or the parked airplane is on you must have a minimum clearance of 50 feet between the APU exhaust port and the adjacent airplane's wingtip (fuel vent).

5) The taxi speed must not be more than approximately 30 knots. Speeds more than 30 knots added to long taxi distances would cause heat to collect in the tires. Recommended speed is 20 knots. Beware of changing GS numbers due to tailwinds during taxi.

6) Before making a turn, decrease the speed of the airplane to a speed of approximately 8 to 12 knots. Make all turns at a slow taxi speed to prevent tire skids.

7) Do not try to turn the airplane until it has started to move.

8) Make sure you know the taxi turning radius.

9) Monitor the wingtips and the horizontal stabilizer carefully for clearance with buildings, equipment, and other airplanes.

10) When a left or right engine is used to help make a turn, use only the minimum power possible.

11) Do not let the airplane stop during a turn.

12) Do not use the brakes to help during a turn. When you use the brakes during a turn, they will cause the main and nose landing gear tires to wear.

13) When it is possible, complete the taxi in a straight-line roll for a minimum of 10 feet.
NOTE: This will remove the tensional stresses in the landing gear components, and in the tires.

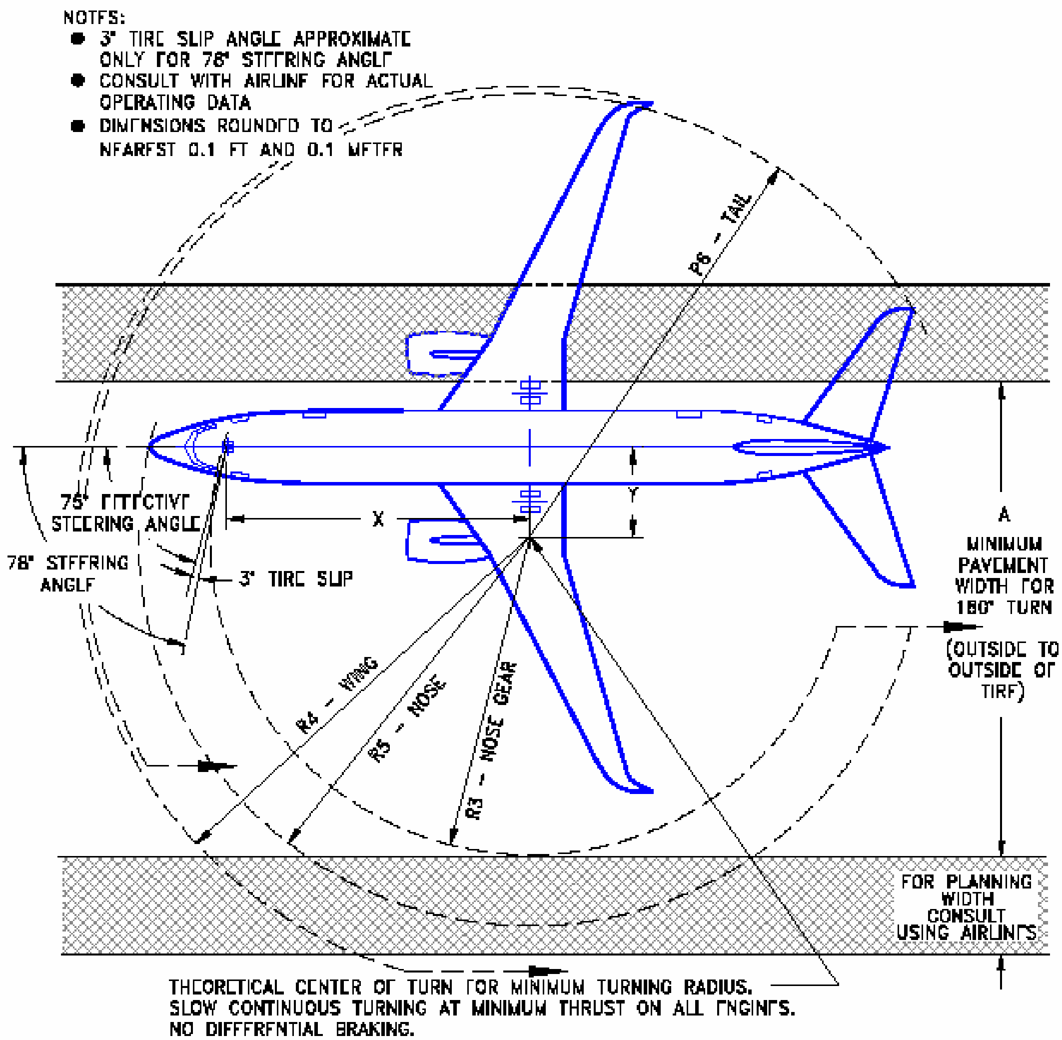
14) Use the Inertial Reference System (IRS) in the ground speed (GS) mode to monitor the taxi speed.

15) If the airplane taxi speed is too fast (with the engines at idle), operate the brakes slowly and smoothly for a short time. NOTE: This will decrease the taxi speed.

16) If the taxi speed increases again, operate the brakes as you did in the step before.

17) Always use the largest radius possible when you turn the airplane. NOTE: This will decrease the side loads on the landing gear, and the tire wear will be decreased.

18) Extra care must be given to turn the aircraft due to the fuselage length and wingspan. A minimum distance from the edge of the pavement must be maintained to reverse the aircraft’s direction. Minimum distance is 75.2 FT.:



AIRPLANE MODEL	EFFECTIVE TURNING ANGLE (DEG)	X		Y		A		R3		R4		R5		R6	
		FT	M	FT	M	FT	M	FT	M	FT	M	FT	M	FT	M
737-700	75	41.3	12.6	11.1	3.4	66.7	20.3	44.1	13.3	72.6	22.1	55.9	17.0	65.5	20.0
737-800	75	51.2	15.6	13.7	4.2	79.6	24.1	54.4	16.4	75.2	22.9	65.9	20.1	74.9	22.8
737-900	75	56.3	17.2	15.1	4.6	86.2	26.2	59.6	18.1	76.6	23.3	71.3	21.7	78.0	23.8

19) Operate the brakes to stop the airplane.

20) Set the parking brake after the airplane has stopped.

TAKEOFF

1) Align aircraft with runway centerline.

2) Increase power to approximately 55% N1, pause briefly to verify that engines have stabilized.

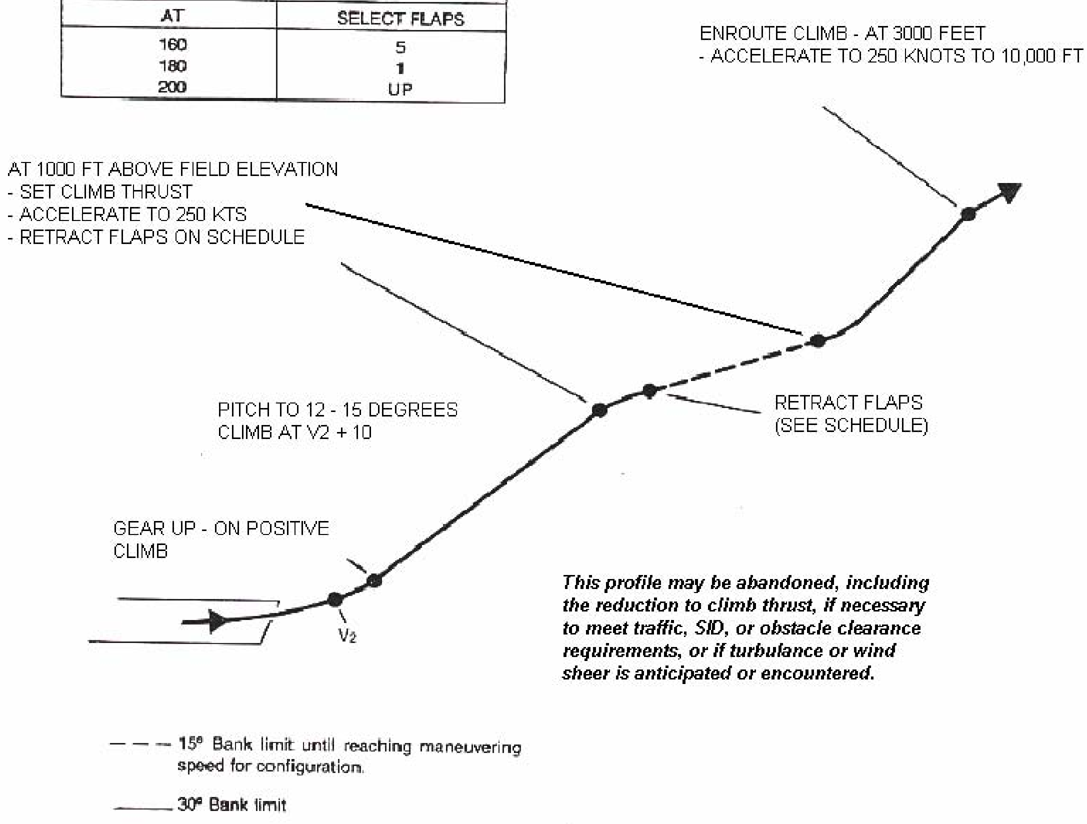
3) Watch EICAS indicator for engine problems or aircraft alarms.

4) Increase power smoothly to pre-determined N1 speeds based on aircraft takeoff weight, (85% - 105% N1). This can either be done manually or using the autothrottle with the autopilot engaged.

5) At Vr, smoothly rotate aircraft 8 degrees upwards at a pitch rate of 2 – 3 degrees per second. DO NOT rotate more than 8 degrees to avoid tail strike. Tail strike will occur at 9 degrees rotation.

6) Hold nose at +12 - 15 degrees after positive rate of climb is confirmed, then raise landing gear after V2 (see below).

TAKEOFF FLAP RETRACTION SCHEDULE WHILE ACCELERATING	
AT	SELECT FLAPS
160	5
180	1
200	UP



NORMAL TAKEOFF
FLAPS 5 OR 15

7) Set initial climbout speed to V2+10 KTS.

8) Maintain +15 degrees climb to 1000 FT, or obstacle clearance, whichever is higher. +10 degrees climb after 1000 FT.

9) At 1000 FT above field elevation, begin slat retraction per retraction table. Maximum slat speed limits are:

Flaps degrees	KIAS
1	**230**
2	**230**
5	**225**
10	**210**
15	**195**
25	**190**
30	**185**
40	**158**

10) Increase speed to 230 – 250 in accordance with ATC instructions (max 250 KTS below 10,000 FT).

11) For full maneuverability beneath 10,000 FT, slats must be fully retracted with aircraft at minimum safe airspeed.

CLIMB

1) Select highest CLB N1 setting. Once climb thrust or airspeed is set, the autopilot will compensate for environmental condition changes automatically during the climb.

2) It is recommended that the aircraft be flown manually up to 15,000 FT, weather and ATC traffic conditions permitting. However, in high traffic conditions, to easy the workload of the pilot, the autopilot MCP altitude intervention may be engaged above a minimum altitude of 80 FT with the landing gear up.

3) Climb settings use a 10 – 20% derate of thrust up to 10,000 FT, then increases linearly to max thrust at 30,000 FT.

4) For **enroute climb**, climb at a rate of 1800 - 3000 FPM, pursuant to ATC and traffic conditions. If there is no altitude or airspeed restriction, accelerate to the recommended speed. The sooner the aircraft can be accelerated to the proper climb speed, the more fuel and time efficient the flight.

5) As **engine and wing icing** may occur during the climb and descent, the engine anti-icing system should be in the AUTO or ON position whenever icing is possible. NOTE: Failure to do so may result in engine stall, overheating, or engine damage.

6) **For normal economy climb**, follow ATC speed restrictions of 250 KTS below 10,000 FT. If permitted by ATC and no speed restriction below 10,000 FT, increase speed to 280 KTS. Above 10,000 FT, climb at 300 KTS or .785 MACH. Climb speed table is as follows:

ALTITUDE	**SPEED**
Sea Level to 10,000 FT	250 KTS
Above 10,000 FT	300 KTS/.785 MACH

7) **Max climb speed** is 300 knots until reaching .785 MACH at initial cruise altitude.

8) **For engine out climb**, speed and performance various with gross weight and altitude, however 260 knots at 1000 – 1500 FPM may be used.

9) Set **standard barometer** above airport transition level (depends on local airport geography).

CRUISE

1) **Cruise** at .785 - .80 MACH.

2) **Headwinds** will increase engine power, reduce cruise speed and decrease range.

3) **Tailwinds** will decrease engine power, increase cruise speed and increase range.

4) Follow previously entered FMC waypoints.

5) **Fuel Freeze --** Extended operation at cruise altitude will lower fuel temperature. Fuel cools at a rate of 3 degrees C per hour, with a max of 12 degrees C in extreme conditions. Fuel temperatures tend to follow TAT (total air temperature). To raise fuel temperature/TAT, a combination of factors can be employed:

   - Descend into warmer air.
   - Deviate to warmer air.
   - Increase Mach speed.

   An increase of 0.01 MACH will increase TAT by 0.5 – 0.7 degrees C.

6) **Increased fuel burn** can result from:
   - High TAT
   - Lower cruiser altitude than originally planned.
   - More than 2,000 FT above the optimum calculated altitude.
   - Speed faster or slower than .80 MACH cruise.
   - Strong headwind.
   - Unbalanced fuel.
   - Improper aircraft trim.

7) **Fuel penalties** are:

- 2000 FT above optimum – 3 percent increase in fuel usage
- 4000 FT below optimum – 5 percent increase in fuel usage
- 8000 FT below optimum –12 percent increase in fuel usage
- M.01 above M.80 – 3 percent increase in fuel usage
- Higher climb rates, 3000 fpm over 29,000 – increased fuel usage

8) In the case of **engine out cruise**, it may be necessary to descend. NOTE: For 737 **ETOPS (Extended Twin-engine Operations)** limitations, divert to the nearest available airfield within **180 minutes** (3 hr) to avoid overstressing engines and unnecessary risk. Use good judgement to select an airfield that can accommodate an aircraft of this size. Consideration must also be giving to ground facilities to accommodate number of passengers on board.

9) Trim aircraft for proper elevator alignment.

10) In case of engine out cruise, trim rudder for directional alignment.

11) Deviate from flight plan for weather, turbulence, or traffic as necessary after receiving clearance from ATC.

DESCENT

1) Descent at pre-determined TOD (Top of Decent)

2) Descend at 300 KT above 10,000 FT.

3) Use speedbrakes or thrust to minimize vertical path error.

4) Proper descent planning is necessary to ensure proper speed and altitude at the arrival point. Distance required for descent is 3NM/1000FT. Descent rates are as follows:

Intended Speed	**Decent Rate**	
	CLEAN	WITH SPEEDBRAKES
.785 MACH/300 KTS	2300 FPM	5500 FPM
250 KTS	1400 FPM	3500 FPM
VREF 30 + 80 KTS	1100 FPM	2400 FPM

5) Plan to descend so that aircraft is at approximately 10,000 FT above ground level, 250 KTS, 30 miles from airport.

6) At average gross weights, it requires 60 seconds and 5 NMs to decelerate from 290 KTS to 250 KTS for level flight without use of the speedbrakes. It requires 100 seconds to slow from 290 KTS to minimum clean airspeed. Using speedbrakes will reduce the times and distances by half.

7) Arm speedbrakes and autobraking to position 2 or 3 on initial descent.

8) Set airport altimeter below transition level.

9) Avoid using the landing gear for drag above 180-200 KTS to avoid damage to doors or passenger discomfort.

10) **Recommended approach planning**, ATC and airport rules permitting:

- 250 KTS below 10,000 FT, 30 miles from airport.
- 180-230 KTS, 23 miles from airport.
- 160 KTS, 16 – 17 miles from airport.
- VREF, 5 – 7 miles from airport.

11) **In case of rapid descend due to depressurization**, bring aircraft down to a safe altitude as smoothly as possible. Using the autopilot is recommended. Check for structural damage. Avoid high load maneuvering.

12) **Bank Angle Protection (BAP)** is not available on the 737. Over 36 degrees of bank, an audio “bank angle” alarm will sound.

13) **Stall recovery** can be accomplished by lowering the aircraft’s nose and increasing power at once to gain airspeed. Beware of terrain. Accelerate to VREF 30 + 80 KTS. Do not retract gear until confirmed stall recovery and positive rate of climb. Keep nose at 5 degrees above the horizon or less.

14) If deployed, do not retract slats during the recovery, as it will result in altitude loss.

15) In the event of engine out approach, approach at VREF+5 @ flaps 20.

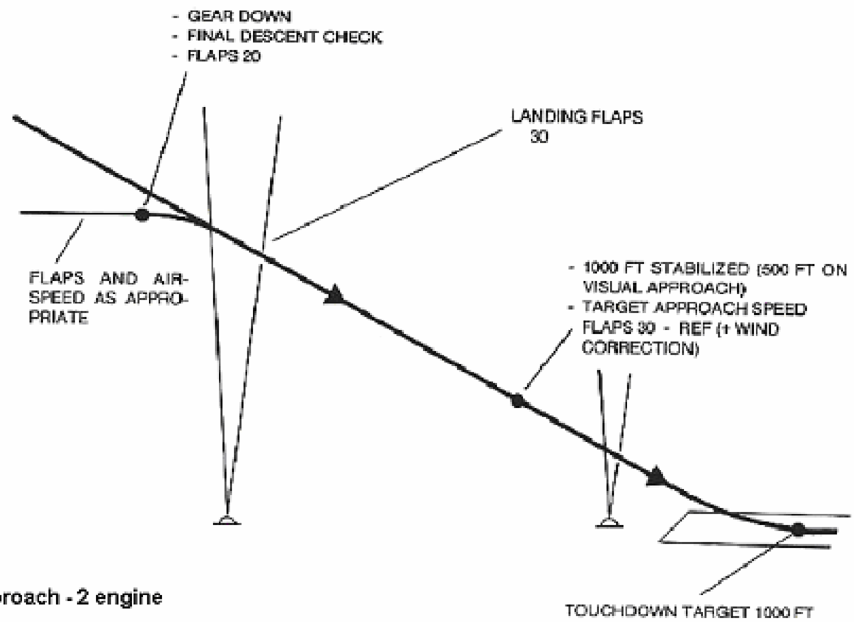
16) Under normal conditions land at VREF @ flaps 30.

17) **ILS Approach** - During initial maneuvering for the approach, extend flaps to 5 and slow to 180-200kts. When the localizer is alive, extend flaps to 15 and slow to 170kts. At one dot below glideslope intercept, extend the landing gear and flaps to 20. Begin slowing to final approach speed. At the final approach fix, extend flaps to 30 and slow to Vref + 5. Be stabilized by 1000 feet above field level. This means, gear down, flaps 30, Vref +5 and engines spooled. Plan to cross the runway threshold at Vref.

18) **Visual Approach** - Similar to the ILS approach. The major difference is that aircraft must be stabilized by 500 feet above field level, as opposed to 1000 feet.

Normal ILS Approach

MINIMUM MANEUVERING SPEEDS	
SELECTED FLAPS	SPEED
UP	220
1	200
5	180
15/20	160



ILS Approach - 2 engine

19) A stabilized approach at Vref +5 will result in a pitch attitude of 2-3 degrees nose up. Cross the threshold at Vref. Begin the landing flare at about 30ft. Only about 1-2 degrees of pitch up is necessary. The tail will strike at approximately 9 degrees. Slowly reduce thrust to nearly idle. Landing with thrust at idle will result in a firm touchdown. Set thrust just above idle. At touchdown, fly the nosewheel on. At touchdown, autospoilers should deploy. Deploy reverse thrust. Normally, auto brakes 1 is sufficient stopping power. 2 is sufficient for short or wet runways. Be out of reverse thrust by 80kts to prevent foreign object damage to the engines.

20) For **wind correction**, add ½ the steady state wind plus all of the gust factor to the Vref. Do not add more than 20 kts. When landing in a crosswind, do not bank excessively as wingtip or engine pod strike may occur.

737NG Landing VREF Speed Chart

WEIGHT (1000 KG)	FLAPS		
	40	30	15
80	154	156	162
75	149	151	157
70	144	146	152
65	139	141	147
60	133	135	140
55	127	129	134
50	120	123	127
45	114	117	121
For approach speed add wind factor of 1/2 the headwind component + gust (max 20 knots).			

21) The Project Opensky 737NG is a CATII/III aircraft, meaning the aircraft is capable of landing on autopilot in conditions where visibility is down to 50ft AGL.

22) Land the aircraft.

23) Disengage (autopilot autothrottle will disengage) reverse thrust at 80 knots.

24) Disengage auto braking at 60 knots or as necessary.

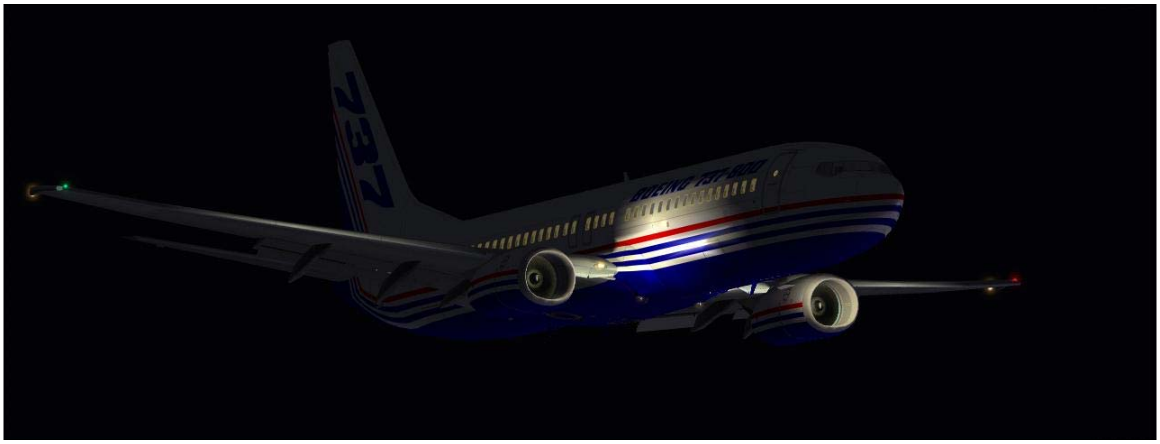
25) Turn off onto high-speed taxiways at 30 knots or less.

26) Reverse thrust is most effective at higher speeds. Slow to safe taxi speed with braking and exit the runway.

27) Decelerate to 8 – 12 knots for 90 degree turns.

28) Taxi to gate.

Project Opensky Boeing 737NG – Frequently Asked Questions



Q) OMG, the FDE is much harder to fly than before. The plane is more difficult to handle. What happened?

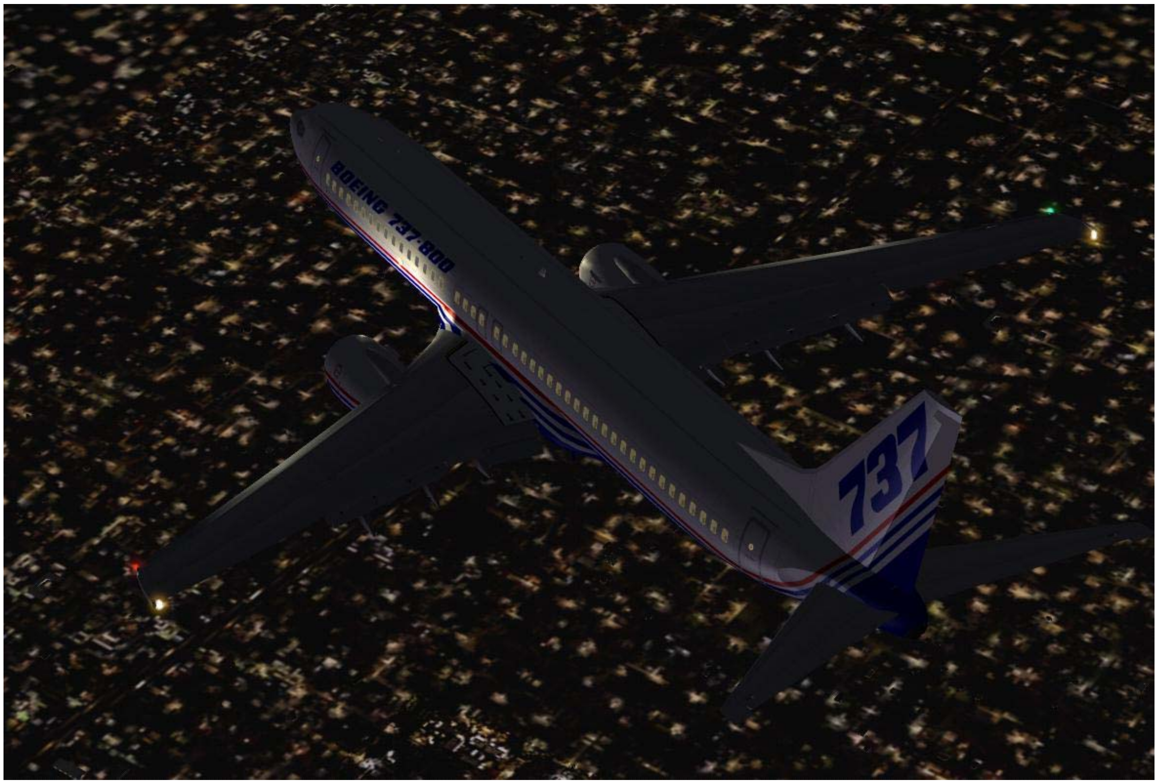
A) After spending time in DC-10, 737, 747-400, 757, 767, and 777 Level D simulators, I realized that the performance for the previous generation of FDEs was there, however, I grossly underestimated the actual "feel" of large aircraft. In large commercial airliners the control surfaces are effective, however, the sheer mass and inertia of the plane cause delays in how quickly the aircraft reacts to inputs.

To date, all FDEs I have flown (including my own) have failed to capture this critical element – inertia. This new generation of FDEs is designed to show the average flight simmer exactly how difficult it is to fly a large aircraft, particularly in adverse weather or emergency conditions.

I have flown small aircraft, Level D simulators, and have been designing FDEs for nearly 10 years now. I can confidently say now, THIS is how the real aircraft FEELS and PERFORMS. I feel I have captured about 95% of how the actual aircraft feels in a Commercial Level D simulator and actual flight. The remaining 5% I could not capture are things such as airframe vibration through wing flap (fueled wings which are off-center have quite a lot of inertia of their own) and control surface slip (first the control surfaces "bite" into the air, then they begin to move the aircraft after some point in time– this feeling is difficult to mimic without an actual motion sim, although I have added more "slip).

The control surfaces are heavy, but effective. If you actually take the time and LOOK at a large aircraft, you will notice the control surface, say an aileron, has only a small surface area in relation to the rest of the plane. These surfaces must "push" the aircraft in the desired direction. As in the actual aircraft, you will find yourself often "overcompensating" and correcting when you fly manually until you become used to the feel.

If you find the aircraft a challenge to fly, imagine an engine out emergency, landing in gusty or side wind conditions, or on wet/icy runways. My goal is to show you what an actual commercial pilot experiences.



Q) But the controls are SO heavy. Are you sure this is right?

A) The control surfaces require 45 – 55 lbs of force to move the yoke, control wheel and rudders. This new generation of FDEs places emphasis on both performance AND feel. I am not trying to make a video game – I'm designing flight simulator dynamics.

Q) It's hard to keep her on the runway with a stiff crosswind. What do I do?

A) Typically, you will want to crab into the wind as you approach the airport. On reaching the threshold, you want to aim at the side of the runway into the wind. As you touchdown, use the rudder to yaw the aircraft straight. You will feel the tires scrubbing across the pavement as the wind and your momentum pushes you across the runway with the direction of the wind.

Q) It’s hard to stop. Reverse thrust is very un-effective. How do I stop more effectively?

A) The majority of stopping power when landing is from the brakes. The thrust reversers do almost nothing to stop the airplane. Set your auto brakes to position 2 on initial decent, but don’t be afraid to use position 3. On shorter fields and higher gross weights, it may be necessary to use position 4 or max braking.

Q) I can’t climb as high as I thought. What is wrong? Am I too heavy?

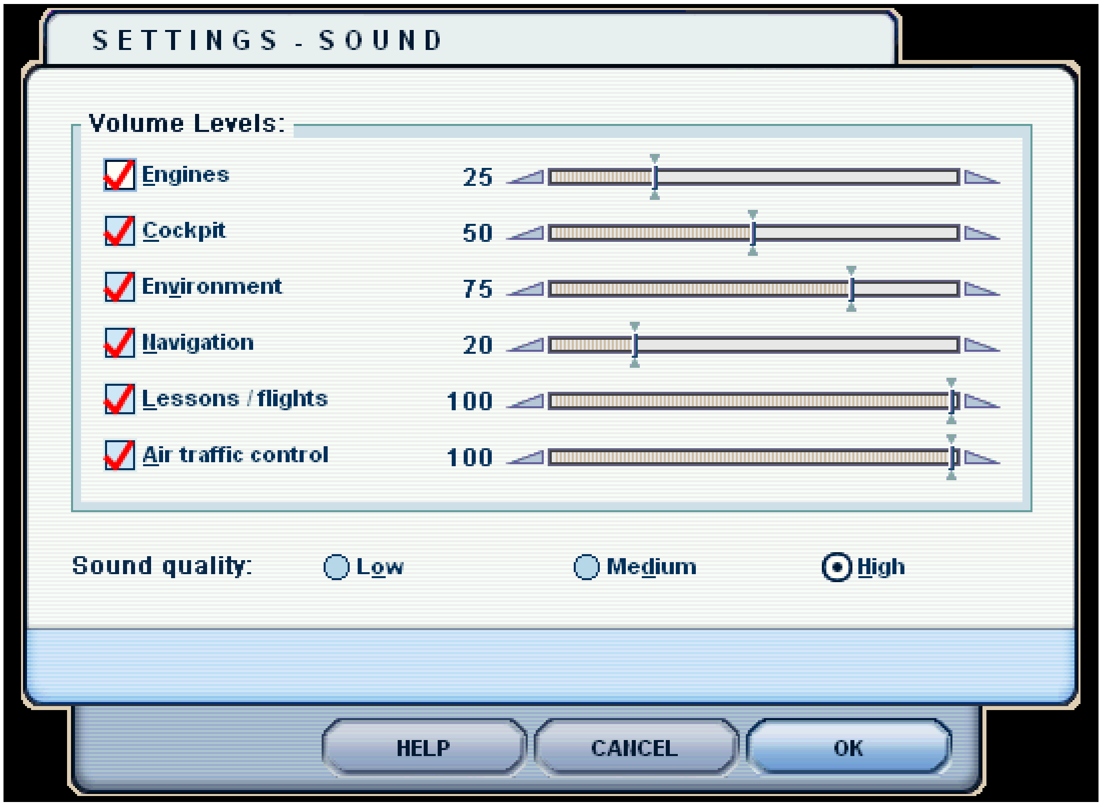
A) Most likely. **See Matt’s 737 performance document included in this package.**

Q) Why is it that when I load the aircraft in FS2004, it’s usually overweight?

A) Typically, when you load an aircraft into FS2004, it maximizes everything – both fuel and payload. I design the FDEs so that you know the MAXIMUM capacity of the payload or fuel tank on a typically route. It is up to you, the pilot, to REMOVE fuel for higher payload capacity. Conversely, for longer range, you must add fuel and REMOVE payload. I design the FDEs this way to eliminate questions on “what is my maximum or typical allowed capacities”.

Q) What sound settings do you recommend?

A) Set your sound options to the following:



For the most part, you mainly hear the hiss of pressurized air and the sounds of the flight deck. You practically don't hear the engines at all, except on takeoff, climb out, and when the thruster reverses engage. Other than that, the large PWs, RR Trents, or GEs are quiet as a mouse. My sound files are mixed for these settings. Not using these settings will not result in the desired effect.

Q) When I taxi, I can't turn. What's wrong?

A) You must slow down to 30 knots for high speed turnoff taxiways, 8 to 12 knots for 90 degree turns, and about 3 - 5 knots for turns over 120 degrees. Basically, the maximum turn angle of the 737NG nose gear is 78 degrees. Slip causes you to only achieve 75 degrees of effective steering. Attempting to turn at higher speeds will result in tire rollover and push, resulting in the airplane still going straight ahead.

Q) How can I perform trip/flight planning and fuel planning?

A) Use the default Microsoft flight planner and navigation log. When you plan your trip, then look at the navigation log for the fuel required for your trip. The value listed at the top includes your as trip block fuel. However, it does NOT include your taxi and reserve/deviation fuel quantities. For the 737, add 5,000 lbs of reserve fuel, plus 1,200 lbs taxi fuel, for a total of 6,200 extra lbs of fuel. To use the flight planner: 1) Load the aircraft, 2) download real-world weather or set your weather, 3) use the trip planner, then 4) review your navigation log. The 737 FDE is now adjusted for the default Microsoft Fuel Planner, however, you will notice on longer haul flights with real world wind, the Flight Planner does not take into account headwinds/tailwinds.

Q) The thrust reversers are very ineffective. I can't stop? Is this right?

A) The thrust reversers are very ineffective. 80% of the stopping power actually comes from the wheel brakes.

Q) What is the proper trim for takeoff?

A) It depends on your weight and station loading according to the MAC% of the plane for your flight. However, in general, it should be about neutral trim at 7 degrees, to nose up of 7.5 degrees. In flight, it may be necessary to adjust your trim up or down depending on your conditions. Note, if you takeoff and the plane either noses up too early, or is hard to lift the nose with excessive nose down attitudes, you are mis-trimmed and would need to adjust your trim settings.

Q) What is this Lesson you have included in the package?

A) This is a sample, real-world flight in the B737-800 from Chicago O'Hare to Boston Logan. Read the scenario for all the details of your flight. The goal is to present more real-world aviation knowledge to the Flight Simulator Community. Enjoy your flight.

Q) What are good sources of online information on the 737?

A) I cannot stress these links enough for 737 fans:

Boeing Website - 737 Family - Filled with official Information
http://www.boeing.com/commercial/737family/technical.html

The Boeing 737 Reference Website - Filled with procedures and information
http://www.737.org.uk/