Delta Virtual Airlines

Boeing 757-200/300
Aircraft Operations Manual

7th Edition
August 2013

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Welcome

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Welcome to the "Rocket", the Boeing 757. As a replacement for the aging 707 and 727 fleets, the unique, fuel efficient and quiet 757 has become the most widely used narrow-body 200-seat aircraft in operation today. And, it's the only narrow-body aircraft to be used by the large fleets of all four U.S. legacy carriers: American Airlines, Delta Air Lines, United Airlines, and US Airways. For both domestic and medium haul international routes, the Boeing 757's versatility will impress you. With a Service Ceiling of 42,000 feet, its two Rolls-Royce or Pratt & Whitney engines will take you there quickly too. So I encourage you to get comfortable, put your seat back and tray table in the upright position and enjoy all the "Rocket" has to offer.

We are always seeking to improve the accuracy of this AOM. Should you have questions about the specifics of this airplane, this manual or aviation in general, you should create a help desk issue at our website, www.deltva.org

If you would like to receive virtual flight training that is modeled after real world training, go to the Pilot Center on our website, www.deltva.org where you can sign up for flight instruction in the DVA Virtual Flight Academy.

It is our hope that you will enjoy your time in the program.

B757 Chief Pilot

History and Overview

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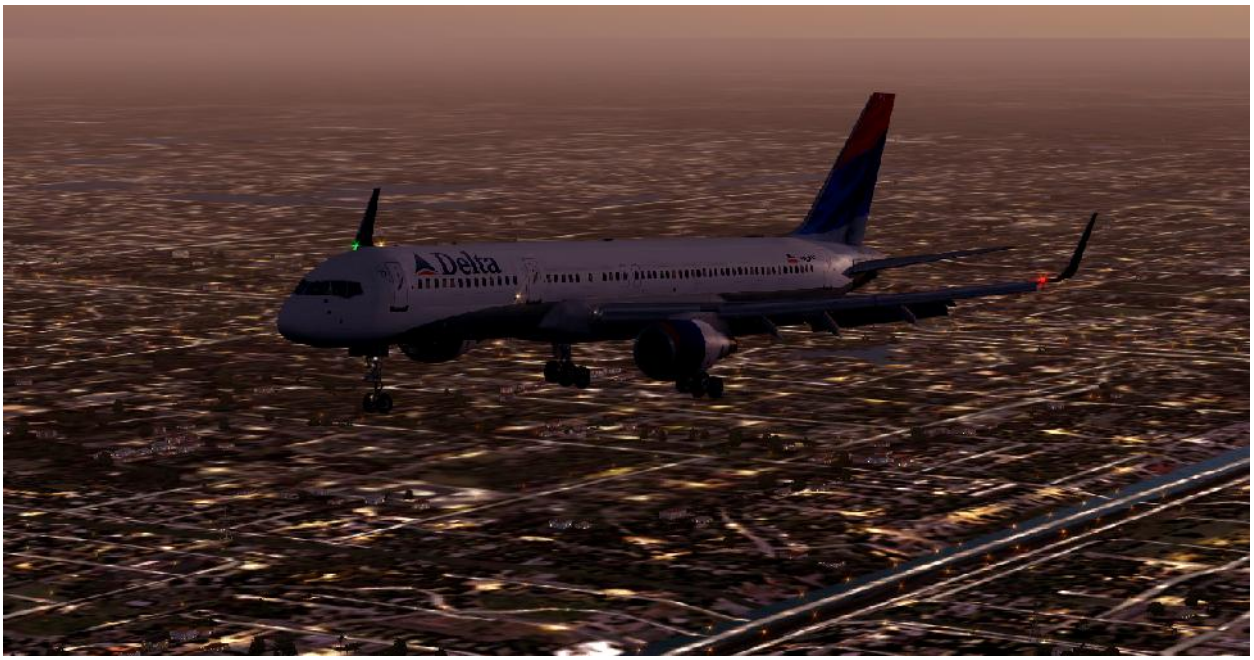
During the mid to late 1970s, Boeing was starting to explore replacements for its extremely successful medium-range 727 transport aircraft. Despite its unquestioned lead in jet transports, the Boeing product line had several gaps – most notably between the 727 and the 747. An expanding market with differing flight lengths and capacities required more variation in aircraft type.

Simultaneously, Boeing developed both 7X7 and 7N7 prototypes. The Boeing 7X7 was designed as an all-new twin-engine wide body aircraft that was larger than a 727 and smaller than the Lockheed L-1011 or McDonnell-Douglas DC-10 wide body aircraft. The 7N7 prototype was a twin-engine variant of the 727 designed for increased capacity, range and economics. The 7X7 became the Boeing 767. The 7N7 design was ultimately scrapped in favor of an all-new narrow-body design. Abandoned were the t-tail and tail-mounted engine configuration of the 727, replacing them with more powerful and efficient under-wing engines. This new aircraft became the Boeing 757.



Since the 757 and 767 were designed at the same time, both aircraft were fitted with identical cockpits, allowing pilots to easily obtain qualifications on both aircraft types. In this sense, the 757 and 767 are precursors to the similar cockpit configured Airbus Industries aircraft that followed. The 757 was also designed in the era after the 'steam gauges' of the 727 and early model 747s, but before the advent of fully automated 'fly by wire' aircraft such as the Airbus A320 series or the Boeing 777. Boeing 757's were the first American manufactured aircraft to feature full CRT displays. The 757's engines and super-critical wing provided the airline with a shorter take-off run, quieter experience, and longer range than the 727.

There were two principle variants of the 757 put into production. The original 757-200 was first introduced into the marketplace in 1979 making its first official flight Feb 19, 1982. By the end of 1989 over 600 757-200's had been sold. The second of the two variants, the 757-300, entered production in 1996 and flew for the first time in 1999. Because the airplane is longer, Boeing made several modifications to protect against possible damage from tail strikes during takeoffs and landings. A retractable tail skid similar to that on the 777-300 was added as a well as a body-contact skid indicator. In addition, different model variations were constructed to fill special niches around the world. The 757-200PF and 757-200SF are variations of the 757-200 that serve in the cargo airline industry, the primary differences between them being the locations and sizes of the cargo doors. As of 2012, Delta Air Lines has 157 757-200's and 16 757-300's in service. Delta Airlines typically uses the 757 for Domestic and International Medium routes. 757's are also used for shorter high volume routes if necessary.

In July 1990 the FAA granted a 180 minute extended-range twin engine operation (ETOPS) certification for 757-200's, first for those equipped with Rolls Royce RB211 engines and then later for those equipped with PW2000 engines. Boeing added backup hydraulic-motor generators and an auxiliary fan to cool equipment for further ETOPS reliability. These improvements increase the 757's range to 4,500 statute miles.

The final Boeing 757-200 was delivered in April 2005 to Shanghai Airlines. The final Boeing 757-300 was delivered to Continental Airlines April 2004. While the 737-900 aircraft was eventually Boeing's attempt to replace the 757, the 737-900 does not have the payload capacity of the 757. It is anticipated that ultimately the 757 will be replaced with the new 787 model that is currently in production. Currently, the 757 is the most economical aircraft per seat-mile in use today.

Power Plant

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The Boeing 757 family comes in two primary airframe versions, the Boeing 757-200 and a longer Boeing 757-300 version. Both versions use the same variants of engines. For the purposes of this AOM, only the PW2000 series of engines will be discussed. The original 727 was developed with Rolls-Royce RB.211 engines. Delta was the launch customer for the more powerful Pratt & Whitney engine variant in 1980. This version entered service with Delta exactly two years after the launch of the 767.

Pratt & Whitney Series PW2000 Turbofans

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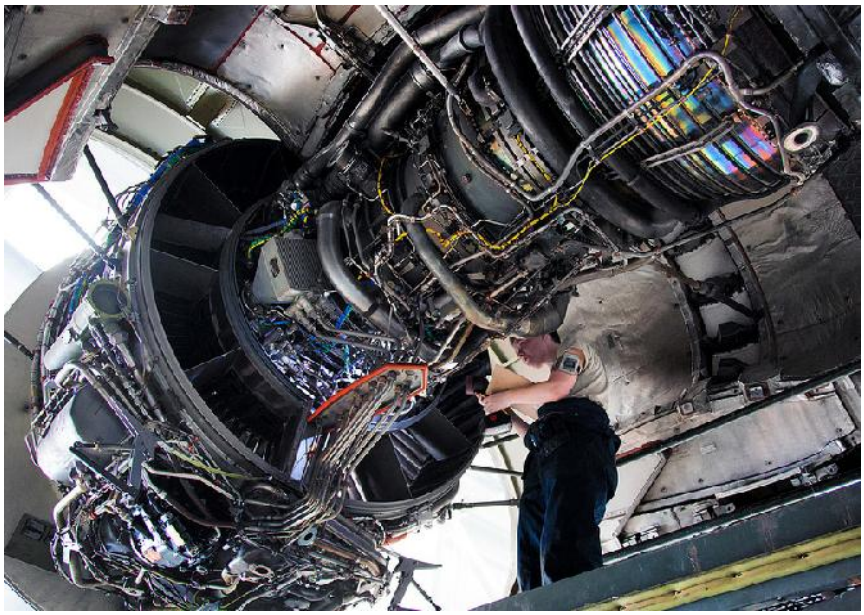

The PW2000 family, covering from 37,000 to 43,000 pounds of thrust, meets the rugged demands of airlines for both short flights and long hauls. It is also this series of engines used on the Boeing C-17 cargo aircraft. Delta Virtual Airlines uses the PW2037 with the exception of two aircraft that use the PW2040. The PW2037 has 37,000lbs of thrust and the PW2040 has 40,100 lbs of thrust.

The PW2000's technical innovation provides unparalleled performance, environmental advantages, high reliability and low maintenance costs. The engine was the first to offer Full-Authority Digital Electronic Control (FADEC), an electronic engine control scheme. Like the PW4000 family, the PW2000 is certified to operate 180-minute ETOPS flights, giving 757 operators the ability to cross both oceans and continents.

The engine entered service in 1984 on the 757, accumulating more than 16 million hours of service.

Today's PW2000 engines feature a number of durability enhancements to provide longer life and even lower maintenance costs. The improved model is known as the PW2000 RTC, for Reduced Temperature Configuration. The PW2043, with 43,000 pounds of thrust, is the latest offering in the series to power the 757 and its stretched version, the 757-300. Besides providing an efficient fuel burn, the PW2043 features additional thrust to serve airports in high altitudes and hot climates.

Economics of the 757

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The Boeing 757 has the lowest seat per mile cost for a single aisle aircraft. It has both short and long-range performance from all types of fields including those in high altitudes and in hot weather. It meets all noise restrictions and passes international emissions tests to the highest standard. When asked, passengers indicated they would prefer to fly on a 757 as opposed to an A321. The 757-300 has 60% more economy seats but still costs only 16% more to operate than an A321. For this reason, some airlines have chosen not to replace their 757's with A321's.

Boeing B757 Technical Specifications

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Dimensions	Boeing 757-200	Boeing 757-300
Length	155 Ft 3 In	178 Ft 7 In
Height	44 Ft 6 In	44 Ft 6 In
Wingspan (w/o winglets)	124 Ft 10 In	124 Ft 10 In
Wing Area	1,951 Sq Ft (181.25 M^2)	1,951 Sq Ft (181.25 M^2)
Powerplants		
Engine Type	2 ea PW 2037	2 ea PW 2040
Maximum Thrust	37,000 Lbs/Engine	40,210 Lbs/Engine
Weights		
Empty Weight	125,750 Lbs	142,350 Lbs
Max Zero Fuel Weight	184,000 Lbs	210,000 Lbs
Max Taxi Weight	256,000 Lbs	271,000 Lbs
Max Takeoff Weight (MTOW)	255,000 Lbs	270,000 Lbs
Max Landing Weight	198,000 Lbs	224,000 Lbs
Payloads		
Maximum Payload	58,250 Lbs	68,211 Lb
Typical Payload	32,220 Lbs	32,220 Lbs
Takeoff Runway Length	6,500 Ft	6,500 Ft
Landing Runway Length – ISA, SL Flaps 30 deg.	5,000 Ft	5,000 Ft
Gross Weights		
Max Gross Weight	258,000 Lbs	271,000 Lbs
80% Payload Zero Fuel Wt.	122,404 Lbs	196,470 Lbs
Capacity		
Typical Passengers	158 Econ + 22 First	231 Econ + 12 First
Max Seating Capacity	162 Econ	279 Econ
Cockpit Crew	2	2
Service Ceiling	42,000 Ft	42,000 Ft
Maximum Range	3,115 Nm	3,115 Nm
Range Fully Loaded	3,910 Nm	3,060 Nm
Cruising Speed Range	300-522 Kts	300-522 Kts
Typical Crz Spd @FL350	458 KTAS (Mach 0.80)	458 KTAS (Mach 0.80)
Maximum Fuel Capacity	75,540 Lbs	75,540 Lbs

Cockpit Checkout – FSX and FS2004

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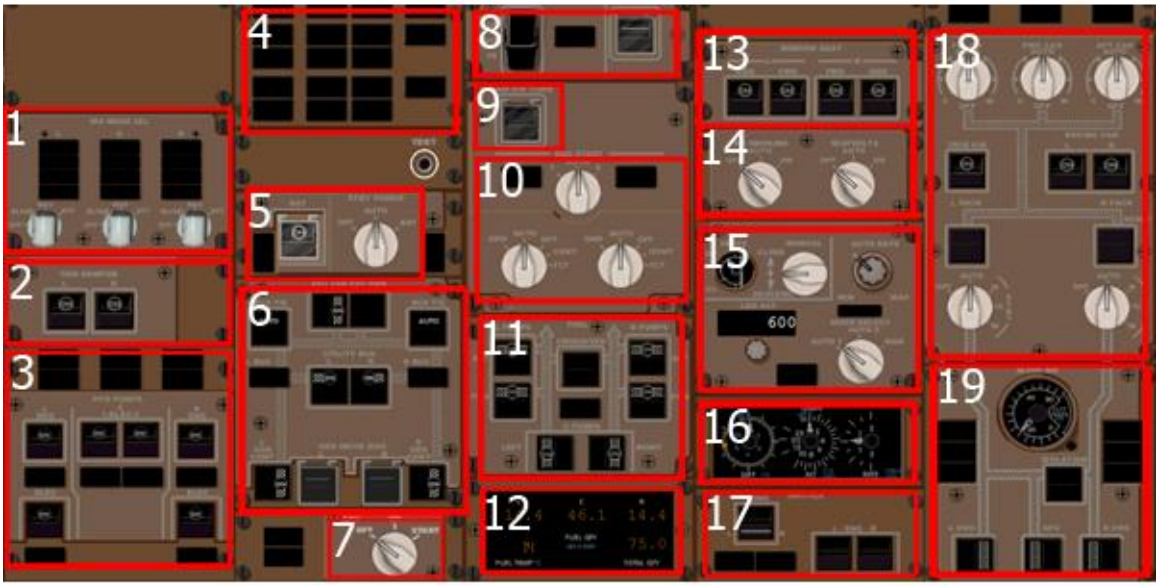
This cockpit checkout reflects the current panel used on the DVA 757 installer, keep in mind this is a freeware panel.

This is a general description of the 757 systems, you can check Lonny Payne's panel manual (included when you install DVA 757) for more information.

Overhead Panel – General Description

1. IRS
2. Yaw Damper
3. Hydraulics
4. Warning & Caution Annunciators
5. Battery & Standby Power
6. Electrics
7. APU Controls
8. Emergency Lights & Passenger Oxygen



9. Ram Air Turbine
10. Engine Start Controls
11. Fuel Controls
12. Fuel Indicators
13. Window Heat
14. Passenger Signs
15. Cabin Altitude Control
16. Pressurization Indicator
17. Wing & Engine Anti-Ice
18. Air Conditioning
19. Pneumatic Control

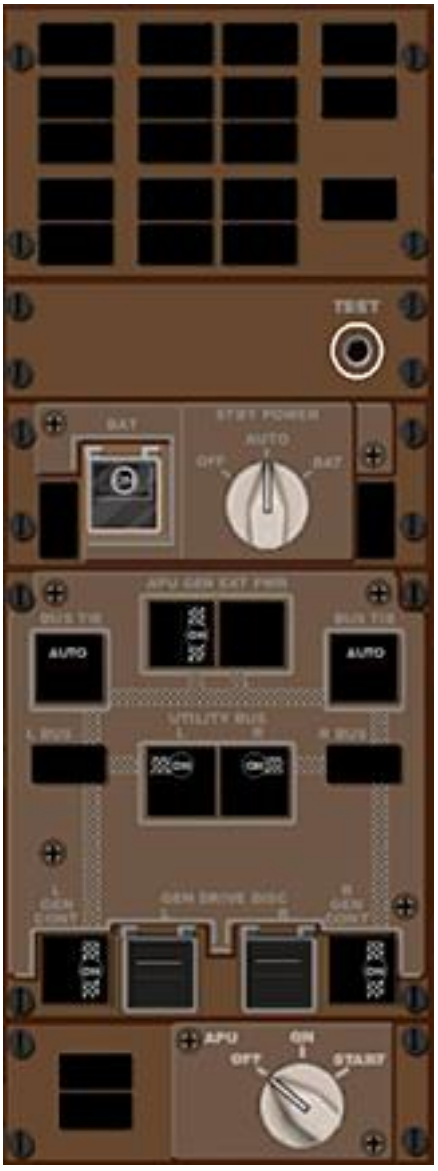
The overhead panel is divided into five columns, and houses controls for most of the aircraft systems. The panel is structured so as to provide an efficient interface between the crew and the systems architecture of the aircraft.

Most indicator switches on the overhead panel contain amber fault indicators to alert the crew when the actual systems status disagrees with the status of the system as selected by the switch position. For example if an engine generator switch is in the OFF position, and the associated engine is not running, an amber OFF indicator will illuminate within the switch.

IRS (Inertial Reference System)

Three systems installed, provides accurate navigation information for flight management.

Switches must be in NAV position to provide inertial data to the Electrical Flight Instruments; these systems will not operate with switch positions out of NAV.



Fault lights:

- Align: alignment mode
- ON DC: operating from battery DC power
- DC FAIL: battery power not available for IRS

Yaw Dampers

Switches activate associated Yaw Dumper system (Left & Right).

Normally ON position all the time.

INOP indicates switch in OFF position, or required hydraulic pressure or IRS NAV information not available.

Hydraulic systems

Consist of six hydraulic pumps

2 engine driven hydraulic pumps require engine operation to run

2 electric hydraulic pumps require AC power

2 electric hydraulic pumps require electric power

Pressure lights:

- SYS PRESS: low hydraulic pressure the system (below 1500 PSI)
- RSVR: low quantity of hydraulic fluid or no engine bleed air to provide pressurization for the hydraulic reservoir
- PRESS: low pressure
- OVHT: overheat, light go out when fluid cools.

Battery Switch

Enable battery to provide power to battery and standby power buses

Standby Power selector

Provides power to standby power bus. AUTO position manages standby power thorough automatic logic.

Battery lights:

- OFF: battery switch is off OR battery switch is on but the standby system in not powered.

- DISCH: battery switch is on and the battery is being discharged.

Electrical Systems

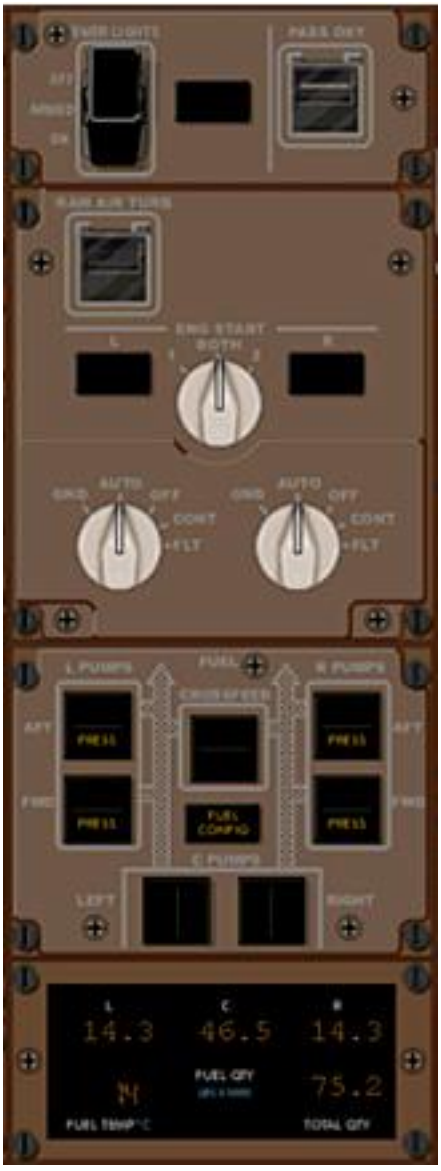
APU Gen: Arms APU generator for operation when APU is running

L/R Bus Tie: AUTO selects automatic management of bus systems, ISLN illuminates when switch off or bus tie locked open due system fault

L/R Utility Bus: Enable power to non-essential systems like galley power, pax entertainment, etc

L/R Engine Generator Contactor: arms engine generator for output when engine is running

L/R Engine Generator Drive Disconnect: Disconnects engine generator from mechanical drive shaft. Prevents damage to generator on drive failure.



APU (Auxiliary Power Unit) Control

Battery must be on for the APU to operate.

Starter switch: enables APU start motor.

APU lights:

- RUN: APU running
- FAULT: APU not running.

Engine Starters

L/R engine start switches: rotate the switch to GND to start the engine. Bleed pressure from APU or external air is required for engine start.

VALVE light illuminates to indicate start valve open. Switch returns to AUTO after engine start.

Both engines can't be started at the same time.

Rotate the switch to FLT to start the engine once airborne in case of an engine shutdown.

Fuel Systems

Left and Right engines have both forward and aft fuel pumps. Center tank contains two pumps.

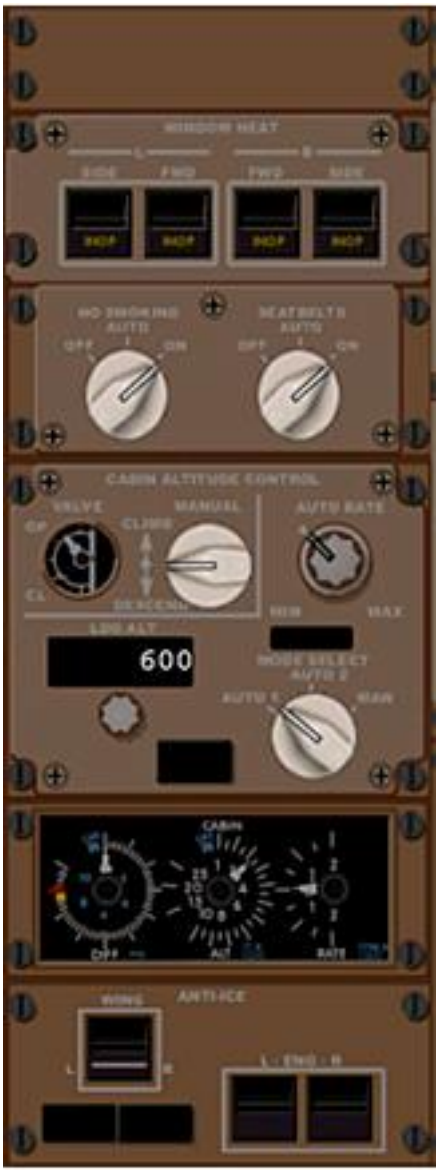
When the center tank has fuel, the engines are fed from the center tank. When the center tank is empty and the cross feed valve is closed (dark) then the engines are fed from the respective tank. To cross feed push the cross feed switch and turn the pumps off on the low fuel side. You are not transferring fuel; the tank with the pumps on is supplying fuel to both engines.

Forward left pump will operate when APU is running regardless of the position of the switch.

Fuel lights:

- ON: fuel pump switch on position
- PRESS: indicates pump pressure. PRESS lights illuminates on the Center tank when it's out of fuel. PRESS lights don't illuminate on the Center tanks when switch is off.
- FUEL CONFIG: illuminates when Center tank have more than 1,200 lbs of fuel and Center tanks pumps are off OR fuel imbalance greater than 1,900 lbs on the L/R tanks

Fuel Quantity indicator: provides measurement of actual fuel in the Left, Center and Right tanks. Units expressed as pounds.



Window Heat

Provides ice protection to cockpit windows

INOP: switch turn off

Pax cabin annunciations

Turns on/off the No Smoking and Seatbelts cabin signs.

AUTO position turns signs ON when gear handle is down.

Pressurization

VALVE: indicates valve position (open or closed)

Cabin altitude control switch: Controls cabin valve position when Altitude Mode Selector in manual

LDG ALT: indicates the selected landing altitude in feet.

Mode Select switch: selects either automatic or manual valve position

CABIN ALTITUDE red light appears when cabin altitude is above 11,000 ft

Ice Protection Systems

WING: provides anti-ice protection to the wings leading edge surfaces

ENG L/R: routes engine bleed air to provide anti-ice protection to the engines cowling.

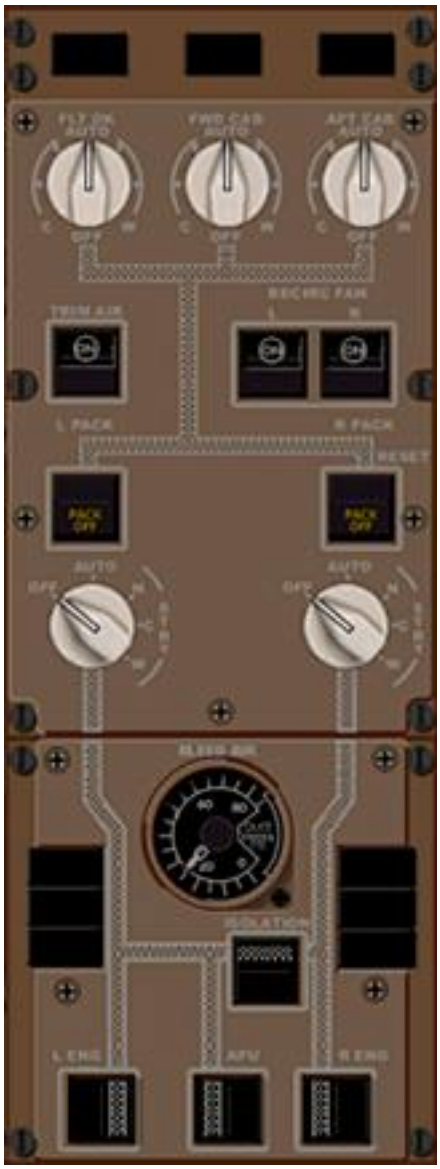
When engine anti-ice is active TAI (thermal anti–ice) flag appears in green on the EICAS

Cabin Air Conditioning / Heat

TRIM AIR: allows trim air system to modulate temperature between zones. OFF deactivate temperature controls.

RECIRC FAN: turns on/off L/R recirculation fans

Temperature controls knobs on AUTO = 75 F cabin temperature



Pneumatic Air Systems

Provides air to many systems on the aircraft, this air is used by the air conditioning system and is used to start the engines.

L/R Pack selectors:

- OFF: pack valve closed
- AUTO: pack automatically controlled

Packs must be off prior to engine start

APU: arms APU bleed air system to provide high-pressure bleed air

L/R ENG: left & right engine bleed air switches arms engine air pressure bleed air system to provide high pressure pneumatic air

ISOLATION: turns on/off a valve that connects the left and right systems

Main Panel – General description

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1. Airspeed Indicator
2. RDMI
3. EADI
4. EHSI
5. Autoland Status
6. Altimeter
7. VSI
8. Clock/Chrono
9. EICAS Control
10. Annunciator
11. Standby Engine Indicator
12. Autobrakes

13. Upper EICAS
14. Lower EICAS
15. TRP
16. Gear Panel
17. Flaps Indicator & Alternate Flaps Panel

The Six Instruments – Main Panel

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Close-up view of the main six-instrument panel

Top Left – Air Speed Indicator

Bottom Left – VOR-DME Indicators (RDMI)

1. Dash Lined Arrow indicates VOR/DME-L (NAV1 Radio tuned)
2. Open Double Arrow indicates VOR/DME-R (NAV2 Radio Tuned)

Center Top – Attitude Indicator (Artificial Horizon). This photo shows Glide Slope indicator (GS) and Decision Height selected (DH100)

Center Bottom – Horizontal Situation Indicator (EHSI). Note heading bug is set to HDG360. Aircraft currently on heading 343.

Right Top – Altimeter. Instrument displaying 1013 millibars (European-standard) and 29.92 (American-standard). Aircraft at height of 440 feet.

Right Center – Vertical Speed Indicator (VSI) displays rate of climb or descent.

Autopilot Control Panel

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1. Flight Director
2. Auto Throttle
3. EPR (toga)
4. Speed hold (knots)
5. GPS nav
6. MACH hold (mach)
7. Heading select
8. Vertical speed
9. Altitude select
10. Localizer back course
11. NAV hold
12. Approach hold
13. Autopilot master switch
14. Autopilot number 2. Use only for autoland
15. VOR receiver frequency
16. Course selector

1. Flight Director Switch

ON: Displays the flight director command bars on the associated ADI

Turn on the F/D switch on the ground with no autopilots engaged. If no autopilot is engaged, the flight director defaults to heading hold and vertical speed mode.

OFF: Disarms the autothrottle.

2. Autothrottle Switch

ON: Arms the autothrottle for engagement.

Engagement requires you to push the EPR or SPD switch.

Off: Disarms the autothrottle.

3. EPR Switch

Pushing the EPR switch will cause the autothrottle to maintain the reference EPR displayed on the EICAS, subject to maximum limit.

4. SPD Switch

Pushing the SPD switch will cause the autothrottle to hold speed/mach displayed in the airspeed indicator, subject to maximum speeds.

Speed is displayed in ADI

5. GPS Nav Switch

Holds the aircraft of the GPS Route entered into the GPS System

6. Mach Hold

Pushing switches between air speed setting and Mach number. Twisting knob adjusts for both.

7. Heading Selector Knob and Hold Buttons

Clicking on heading selector (left or right of bank limiter) caused heading bug to move to desired heading. Pushing “Hold” Button causes aircraft to hold the programmed heading and will rollout wings level when achieved.

8. Vertical Speed Switches

Top – changes the vertical speed which is displayed on the VSI

Bottom – press to engage vertical speed mode. V/S is displayed on each ADI. When pressed the autopilot/FD will maintain vertical speed displayed on VSI.

9. Altitude Selector and Hold Button

Cursor to left or right of knob to change altitude setting. Push “Hold” button to hold specified altitude.

10. Localizer Back Course Button

Holds back-course of established Localizer (NAV1 tuned)

11. Navigation Hold Button

When autopilot is engaged, causes the aircraft to track the VOR and radial input on the autopilot panel (left side). Hold must be on for the GPS switch to guide the aircraft to follow the pre-loaded flight plan.

12. Approach Hold

Armed the AFDS to capture and fly the localizer and glide slope. LOC and G/S are displayed in white on each ADI prior to localizer and G/S capture.

Glide slope will not capture if intercept angle is greater than 80 degrees.

Approach mode allows for multiple autopilots to be armed for autoland and rollout.

13. Autopilot Master Switch

Arms the autopilot for use with GPS, NAV, Altitude, and Speed.

14. Autopilot #2 Switch

Used for autoland feature only.

15. VOR Receiver Frequency (VOR-L).

Tune to desired VOR (or ILS Frequency)

16. VOR Course Selector

Can be tuned to VOR radial or ILS Localizer Headings

EICAS DISPLAY

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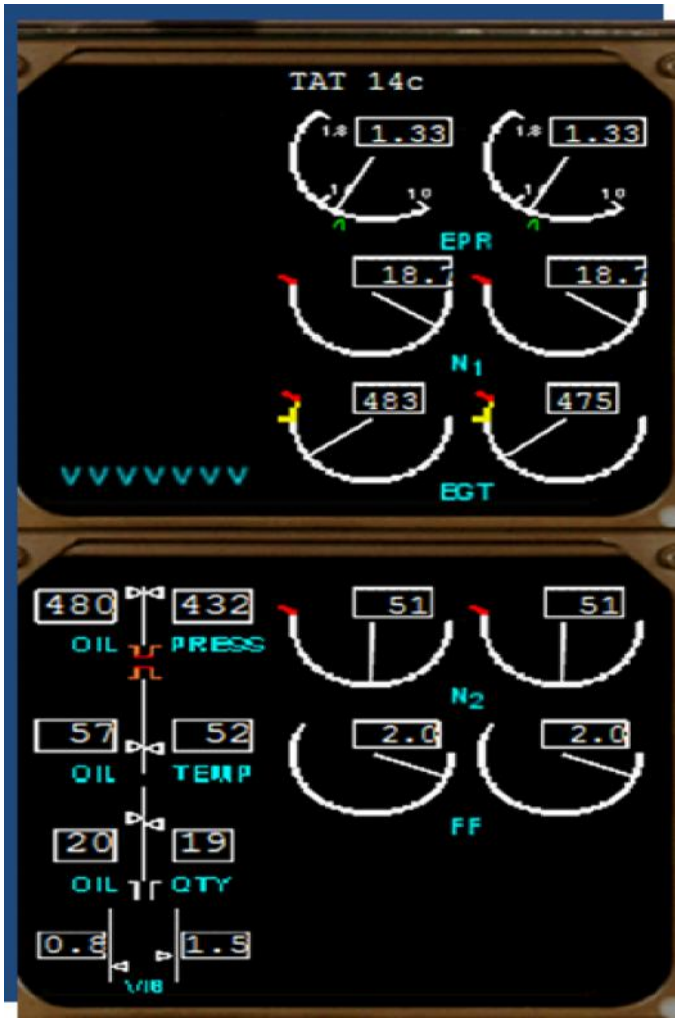
The Engine Indicating and Crew Alerting System (EICAS).

This top-left (blank) portion of this Screen will provide caution and warning indications to the crew.

Information contained on this Display from top to bottom Includes:



Top Section:

TAT – Total Air Temperature
EPR – Engine Pressure Ratio
N1 – Low Pressure Compressor Percentage
EGT – Engine Temperatures

Bottom Section:

N2 – High Pressure Compressor Percentage
FF – Fuel Flow Indicator

Oil conditions – Pressure, Temperature, Quantity (respectively)
VIB – Indicates “Engine Vibration”

Gear and Flaps

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The gear and flaps panel displays vital information concerning current flap settings (as well associated flap limitations in KIAS).

To the right of the flap indicator is the landing gear knob.

Standby Instruments

Standby instruments represent three of the six-instrument panel (Attitude/Horizontal Horizon, Airspeed, and Altimeter. These settings correspond with information displayed in the EHSI and can be used upon EHSI failure.

Radio Stack

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The 757-panel radio stack displays both COMM and NAV frequencies. Frequency changes are made by curse over and clicking on the desired frequency settings. Active and stand-by frequencies may be switched by clicking the transfer arrow between the numbers. The same technique is employed for the NAV1/2 radios, Transponder and ADF frequencies.

Illuminated (green) buttons under ADF indicate the “active” function for either COMM1, COMM2, Both, NAV1/NAV2, Marker Beacons, Distance Measuring (DME) or an automatic direction finder beacon (ADF).

Pedestal

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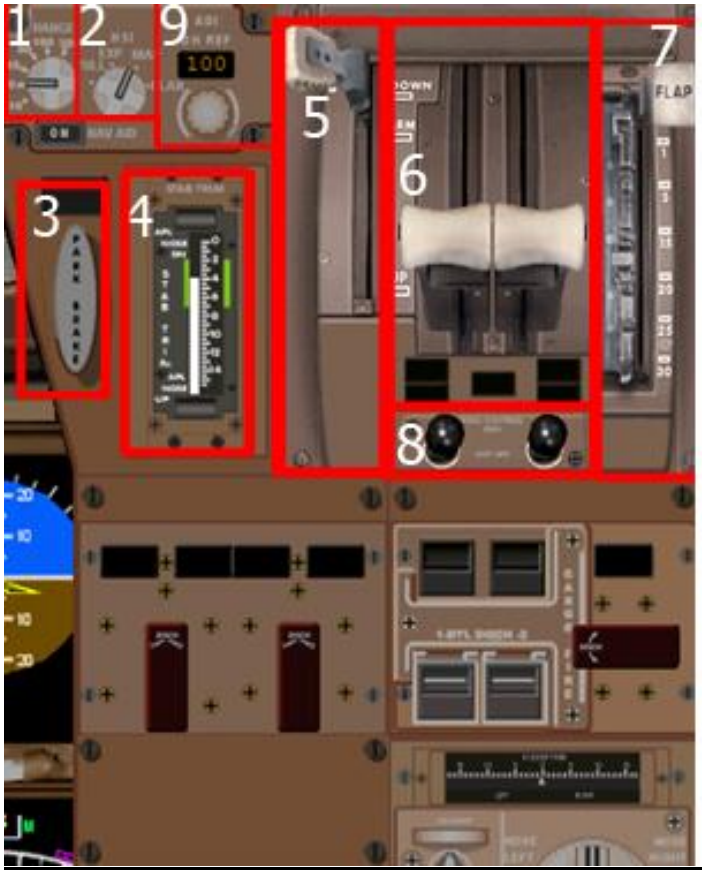

1. HSI range selector
2. HSI mode selector
3. Parking brake switch
4. Trim indcator
5. Speedbrake lever
6. Throttle levers
7. Flap level
8. Fuel control switches
9. ADF decision height selector

1. HSI Range Selector – Ranges the HIS picture between 10 and 160 miles from nose of aircraft.

2. HSI Mode Selector – Switches HIS display between full compass rose picture, expanded view, map, and flight plan.

3. Parking Brake – Self explanatory

4. Trim Indicator - Indicates level of trim (in degrees)

5. Speed Brake – Employs wing airbrakes

6. Throttle Levers – Self Explanatory

7. Flap Levers – deploys/retracts flaps

8. Fuel Control Switches – Controls fuel flow to left/right engines. Down for off, up position for operation.

9. ADF Decision Height Selector – Can be used to establish minima upon approach with known landing (touchdown zone) elevation.

Tutorial - Flying the aircraft

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The purpose of this tutorial is to demonstrate the proper procedures for flying the Delta Virtual Airlines 757. The starting point of this flight will be at the gate, with the airplane in a cold and dark configuration. The 757 is a Stage 3 aircraft at Delta Virtual Airlines, so we will assume that the pilot has basic knowledge of ATC communication and aircraft navigation.

Let's get started. Start up flight simulator, and load up the fleet 757. Make sure the proper payload and fuel is loaded into the aircraft. In order to properly fuel load, the ACARS fuel planner can be used, as well as the fuel planning information that is contained in this AOM. It is not recommended that the ACARS fuel planner be used for check rides as this may give inaccurate results. The first panel that we look at once we get into the aircraft is the captain's seat in the main panel. This is where the first start checks will begin. Go through the checklists elsewhere in this AOM to complete the preliminary flight checks. Now that the safety checks are complete it's time to power up the aircraft. This starts at the overhead panel.

Per the checklist, turn on the battery and go through the pre-engine start sequence. If you are flying online, obtain your necessary ATC clearance. Now that you have received your clearance, you should program the route into the flight simulator GPS. This can be done manually, or more easily the FS flight plan can be loaded directly into the GPS using the flight simulator flight planner. At this stage of flying, the use of SIDS and STARS should be well known to you and should be implemented. These can be programmed into the GPS by putting the correct waypoints into the flight planner, then loading the flight plan into the flight simulator GPS.

After the GPS is configured, preparations for pushback and start begin. Be sure the checklist items prior to pushback are completed. The aircraft is now configured for pushback and engine start. Obtain the proper clearance from ATC if flying online before pushback. Prior to pushback, turn on the RED Beacon light located on the overhead panel. Pushback using the method of your choice, typically Shift-P.

After pushback has been completed, set the Parking breaks. It is now time for engine Start. As you go through the engine start sequence, you should see the N2 setting for the right engine of the airplane start increasing. Once the N2 has accelerated past 20% then the right fuel selector should be turned to on. Once the Engine has finished starting, the right ignition switch will automatically flip back into the AUTO position. Repeat this same process for starting the left engine.

Perform your post-engine startup checklist items, turn on the lights and you're ready to taxi. If flying online, obtain the necessary taxi clearance. Taxi the aircraft to the hold short line of the appropriate runway, and complete the before takeoff checklist.

Once holding short of the runway, obtain your takeoff clearance prior to crossing the hold short line and taxiing onto the active runway.

Line up on the runway centerline. Once aligned, activate the auto throttle and click the TO/GA button on the throttle pedestal. Maintain runway alignment and monitor engine performance during takeoff roll. Monitor your speed and at Vr apply backpressure and smoothly rotate to an approximate 10-degree nose up attitude. Rotation rate should be about 3 degrees per second. Maintain this attitude until liftoff and a positive rate of climb is achieved. Watch your airspeed and ensure you stay below 250 knots. Once a positive rate of climb is established and the altitude has increased beyond 35' AGL, retract the gear. You may also turn off the taxi light.

Once safely airborne, click the A/P button and engage the heading, speed, and altitude modes by pressing the specific knobs. Ensure that the airspeed continues to increase towards your selected airspeed and do not exceed the 250 knots speed restriction. Retract the flaps to 0 when passing 220 knots.

As your speed stabilizes at the target speed, you can increase the rate of climb. Don't be too aggressive or your speed will decay. Continue your climb out complying with any departure restrictions. Passing 10,000 feet set the target speed to 290 knots, unless your departure procedure dictates otherwise, and turn off the landing lights.

Once you are given clearance to proceed as filed, press the GPS button on the main panel and select LOC. The aircraft will begin to turn towards your first programmed waypoint. Although the GPS is now guiding the aircraft, be sure to monitor each waypoint segment to ensure proper navigation.

Cruise flight

As you pass through 18,000' MSL reset your altimeter to 29.92" (1013mb) and continue to monitor the enroute climb speed of 300 KIAS. Passing through FL270 reduce the climb rate to 500-1000 fpm and 88% N1. If you do not exceed Mmo you will find that the plane will settle at about .80 MACH in level cruise.

Now it is time to sit back, but do not relax too much! Keep an eye on those systems. Be sure to watch the engine instruments for any problems with the oil temperature and oil pressure. A drop in pressure and rise in temperature means you are on borrowed time. You will want to shut down the affected engine, declare an emergency and divert to an alternate. Watch the fuel flow as well. A rise in fuel flow that is much higher than the opposite engine or a sudden imbalance can mean a fuel leak. That is an emergency also.

You can turn off the seatbelt sign if your preflight briefing didn't show any forecasted turbulence, but advise the passengers to keep buckled up while they're sitting in their seats as turbulence can hit without warning.

Descent

At about 100 miles from your destination, turn on the fasten seatbelt sign and begin to review the STAR and complete the approach briefing. The briefing would include everything from forecasted weather, any dangerous terrain (manmade or natural), expected approach based on the prevailing wind and other airport conditions that you obtained in your preflight briefing and the all important decision height for the approach. Now would be a good time to make sure the decision height is set correctly. Look at the overhead panel and make sure the field elevation is set properly on the pressurization panel. Open the GPS and select the approach but do not activate it yet.

As you are cleared to descend, dial in the correct altitude on the altitude selector and set your descent rate in the VERT SPD window. Be sure to keep an eye on the airspeed so that you do not exceed Mmo. You should know by now that in large jets you can either get down quick or have a higher airspeed or you can slow the airspeed but have a much slower descent rate. You cannot do both so advise ATC if they give you descent instructions that you cannot follow. Alternatively, you can manually disengage A/P and A/T, cut your throttle back and descend at about 285 KIAS and 2,500fpm. This equates to about 3nm per 1,000 feet of altitude change.

Passing FL180

Set your altimeter to the destination airport's altimeter setting. Start to slow your speed to 280 KIAS. As you pass 15,000 MSL slow to 250 KIAS, and below 12,000 MSL slow to 240 KIAS. Turn on the landing lights as you pass 10,000 MSL. Open the FMS and set the approach speed, or Vref. If you are not sure how to set the Vref speed refer to the panel manual that was downloaded with the 757.

Approach

ATC will advise which runway you can expect to land on so make sure you have the same runway selected in your GPS. Double check the ILS/LOC frequency and set NAV1 to the correct frequency and set the approach course on NAV1. Either activate the approach in the GPS using vectors to final or from the initial approach point, which ever ATC has advised to you expect. Arm the spoilers and auto brakes. As you get to within about 20 miles of the field begin to slow to 190 KIAS and set flaps to 5. A speed of 190 KIAS is ideal for intercepting the final approach course when you are about 10-15 miles out. Once the autopilot captures the glide slope (assuming you are flying an ILS approach) set your missed approach altitude in the altitude selector. Begin to slow your airspeed to about 170 KIAS and lower flaps to 15. When the glide slope is 1-½ dots above select the gear down. Make sure you check for 3 green gear indications! As the glide slope is one dot above select flaps 25 and slow to about 150 KIAS. At glide slope intercept the autopilot will begin to descend on the glide path. Set flaps 30 and slow to your Vref speed. You should also see the appropriate auto land annunciation. Again, if you have any questions on performing auto land procedures consult the manual.

Landing

After touchdown the auto brakes will activate and the spoilers will deploy of they were armed. If they were not armed they will deploy once reverse thrust is set. Slow the aircraft on the centerline of the runway to 80 KIAS then stow the reversers. Focus on the runway! You are still flying this plane until you park at the gate and walk away! Once you are cleared from the runway then you can clean things up. Stow the spoilers, retract the flaps, turn off the landing lights and strobes and turn on the taxi light and start the APU and turn off the autopilot. Contact ground control for your taxi instructions and keep your eyes outside the cockpit looking for ground traffic and obstructions. Now taxi to the gate and complete the after-landing checklist items.

Parking

As you approach the gate be nice to the ground personnel and turn off the taxi light. Once at the gate set the parking brake and shut down the engines. The APU should be running now and will take over the bleed air that powers the packs and the electrics. After you shut down the engines turn off the beacon and the fasten seatbelt sign. Open the door and greet the happy passengers as they make their way out after having a great flight. Secure the aircraft per the checklist.

Congratulations on your first flight in the magnificent Boeing 757-200!

B757-200 Fuel Planning and Weight and Balance

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Detailed instructions on fuel planning are covered in the Flight Encyclopedia in the DVA Document Library.

Fuel Burn Charts – PPH/Engine

Altitude	Indicated Airspeed	True Airspeed	Fuel Burn PPH/Eng
Ground	12-20 KIAS	0 KTAS	2,670
12,000	300 KIAS	372 KTAS	2,733
FL180	300 KIAS	408 KTAS	2,733
FL240	300 KIAS	444 KTAS	2,897
FL300	310 KIAS	496 KTAS	3,344
FL360	272 KIAS	468 KTAS	2,823

*Indicated Mach 0.80.

These burn numbers were taken from the DVA fleet 757-200 in clear skies and no wind. As shown, cruise from 12,000 ft to FL240 was 300 knots. Mach .80 was used between FL300 and FL360. These numbers are averages from a couple minutes spent at each altitude. They are just to give an estimate to your expected burn rate in pounds per hour. It is up to the pilot to ensure the aircraft has enough fuel to complete the flight. Fuel requirements for normal IFR operations require fuel to reach your destination plus reserves of 45 extra minutes. If an alternate is required, then fuel the aircraft to reach your destination, alternate, then an extra 45 minutes. Further information can be found in FAR 91.167. Never exceed Vmo which is 350 kts IAS.

Zero Fuel Weight (ZFW)

ZFW is the fully loaded airplane weight less fuel weight. ZFW will remain constant throughout the flight as the gross weight and fuel weight decrease by the same amount. However, ZFW will change with Payload and must be recalculated whenever passenger or cargo weight changes.

- Max Gross Wt = Empty Wt + Max Fuel Wt + Max Payload
- = 125,750 lbs + 71,000 lbs + 58,250 lbs
- = 255,000 lbs

- ZFW = Fully loaded Wt (Including Payload) – Fuel Wt
- Example 1: Max Gross Wt And Max Payload
  - ZFW = 255,000 – 71,000 = 184,000 lbs

Fuel Loading Example

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Total Flight Distance: 1,000 nm
Alternate Airport Distance: 232 nm
Cruise Altitude: FL360 @ Mach 0.80
Typical Payload: 46,570 Lbs
Zero Fuel Weight: 172,320 Lbs
Takeoff and Landing Outside Air Temperature: 59 deg F
Winds Aloft: 0

Calculations:

- There is no unusable fuel calculation in this example. Enough reserves and contingencies are built into the calculation to account for any unusable fuel.

- A B757-200 typically burns 2,670 PPH/ENG on the ground. This includes startup, taxi + misc ramp time + hold at runway, etc. We will assume 1/2 hr total ground time at both Departure and Arrival Airports. This amounts to: 0.5 hr x 2,670 PPH/ENG or 1,335 Lbs/ENG.

- The Enroute Fuel Burn Rate of 2,823 PPH/ENG is shown in the Burn Rate Table FL360 column. This value will be greater during climb out and less in descent and should average out to the published value during the course of the flight.

- The formula for True Airspeed is KTAS = KIAS + (.02 x KIAS x Altitude/1,000).

- Therefore the True Airspeed at FL360 = 272 + (.02 x 272 x 36,000/1,000) = 468 KTAS

- The Enroute Flight Time = Trip Distance / TAS = 1,000 / 472 + 10 min = 2.118 rounded up to the nearest half hour = 2.5 hr

- The Flight Time To Alternate = Distance / TAS = 232 / 472 = 0.5 hr

- The Enroute Fuel Used = Burn Rate x hrs = 2,823 PPH/ENG x 2.5 = 7,058 Lbs/Eng

- The Fuel To Alternate Allowance = Burn Rate x hrs = 2,823 x 0.5 = 1,411 Lbs/Eng

- The aircraft Zero Fuel Weight = 172,320 Lbs

- Gross Weight: Zero Fuel Weight + Fuel to Load (not including hold or reserve) x 2 engines = 172,320 Lbs + 2 * 9,804 Lbs = 191,928 Lbs

- In addition to fuel for the trip, it is necessary to plan for a 30 minute reserve and 45 minute hold. These can be determined similar to calculating the enroute fuel burn. Taking 30 minutes to be equal to 0.5 hours times 2,823 Lbs/hour per engine results in 1,411 Lbs/ENG. Perform a similar calculation for a 45 minute hold.

Fuel should be loaded in the wings first. Once 100% full then begin loading the center fuel tank. The center tank will drain out first. Before takeoff remember to check the center fuel pumps (on overhead panel). They should be turned off if no fuel is in the center tank.

Summarizing for both Engines:

Flight Event	Each Engine	Two Engines
Ground Operations	1,335	2,670
Enroute Consumption	7,058	14,116
Fuel to Alternate	1,411	2,822
30 Minute Hold	1,411	2,822
45 Min Reserve	2,117	4,234
Total Fuel to Load	13,332	26,664

Takeoff Weight:

The Takeoff Weight will be the Zero Fuel Weight + Fuel to Load or:

172,320 Lbs
26,664 Lbs

198,984 Lbs

Landing Weight:

The Landing Weight will be the Takeoff Weight – Enroute Consumption or:

198,984 Lbs
- 14,116 Lbs

184,868 Lbs

Note that only the “Enroute Consumption” and “Fuel To Alternate” change from flight to flight and this does not include the fuel burned when holding at an altitude to cross a STAR at an assigned altitude. Therefore, our non-changing “Base” fuel for every flight is the sum of

o	Ground Operations	2,670 Lbs
o	30 Min Hold	2,822 Lbs
o	45 Min Reserve	4,234 Lbs
	Total Base	9,726 Lbs

This quantity should be included in every flight, regardless of planned distance and route. Add to the above your enroute fuel to determine total fuel required for your actual flight. Your results may vary slightly based on the number of significant numbers used in calculation. Do not use the fuel calculated by the FS program in the route planner. These formulas may be programmed into an Excel spreadsheet if desired for easier reference.

B757 Checklist

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Note: Abbreviated checklists are included in Appendix B.

At Gate Parked-Before Engine Start

o All Charts/Flight Plan	On Board
o Weight/Balance	Verify Configuration
o V speeds/Flap Settings	Calculate V speed card page
o Parking Brakes	ON
o ACARS (Optional)	Connect Flight Start (Optional)
o All doors (Outside View)	VERIFY Closed / Locked
o Flight Controls (Outside View)	Demonstrate FREE & CLEAR
o Battery Master Switch	ON
o STBY Power	ON
o Left, Right, Bus Ties	AUTO
o Left, Right Utility Bus	ON
o Left, Right Gen	ON
o APU	ON
o Once APU Started, APU Gen	ON
o Hydraulic Pumps	ON
o Left, Right Yaw Damper	ON
o Left, Center, Right, IRS	NAV
o Engine Pos Switches	AUTO
o Fuel Cross-Feed	OFF (No lights)
o Passenger Signs ‘	ON
o Left, Right Air Packs	AUTO (No lights)
o APU Air Bleed	ON
o Isolation Valve	ON
o Left Eng, Right Eng, Air Bleed	ON
o Gear Lever	VERIFY Gear Lever Down
o Clock/Stopwatch	VERIFY SET
o Fuel on board	Document Left/Center/Right Amt
o COMM Radio	TUNE ATIS
o Altimeter	SET
o COMM Radio	SET
o NAV Radio’s	SET IDENT
o ADF	SET IDENT
o HSI/CDI	SET (CRS)
o Heading bug	SET (HDG)
o IAS	SET V2 (SPD)
o Altitude	SET (ALT)
o Vertical Speed	SET (VS)

ATC CLEARANCE- Call for IFR/VFR Departure-Push/Start Request

o Transponder	SET Code/VERIFY Squawk Standby
o Crew Takeoff Briefing	Completed

-BEFORE ENGINE START CHECKLIST COMPLETED-

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Engine Start

o Parking brakes	VERIFY ON
o Simulator time at start	Document
o Battery	ON
o Beacon	Verify ON
o Left, Right Air Packs	OFF

When Cleared to Start

o Throttle Power Levers	IDLE
o Engine Area	CLEAR
o Right Ignition Switch	GND
o Fuel Flow	CHECK
o N1 increasing as N2 incr.	CHECK
o Oil Pressure	CHECK
o Eng 2 Start Switch	GND
o Fuel Flow	CHECK
o N1 increasing as N2 incr.	CHECK
o Oil Pressure	CHECK
o MFD	EICAS

After Engine Start

o Parking brakes	VERIFY ON
o APU	OFF
o Left, Right Air Packs	AUTO
o APU Bleed Air	OFF (No light)
o Navigation, Tax Lights	ON
o De-Ice	ON
o Elevator Trim	SET
o Flap Selector	SET 5 degrees
o Standby Instruments	SET
o Avionics	SET For Departure
o Left, Right Taxi Lights	ON

Taxi

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ATC TAXI CLEARANCE- Request taxi to active runway

o Fasten Seat Belts	ON
o No Smoking Sign	ON
o Throttle Power Levers	IDLE
o Parking Brakes	Release
o Pushback	Shift+P
o Toe Brakes	VERIFY OPS
o Taxi Power	Speed Max 20 kts (straight away) 10 kts (in turns)
o Instrument Check-taxi	VERIFY Compass/HSI/Turn/Bank move
o Cabin Announcements	Perform during Taxi

-TAXI CHECKLIST COMPLETED-

Before Takeoff/Hold Short Line

o Parking Brakes	ON
o Flight Director	ON
o Landing Lights	ON
o Taxi Lights	OFF
o Strobe Lights	ON
o Spoilers	VERIFY Retracted

Document takeoff time-fuel amount Left/Center/Right

o Flap Selector & Trim	VERIFY Settings
o COM's, NAV's & ADF	VERIFY Settings
o Transponder	Squawk Normal

ATC Take off CLEARANCE – Request for takeoff

Takeoff-Cleared or Taxi to Line Up and Wait

o Cabin Crew Notify	2 chimes
o Runway	VERIFY Clear
o Toe Brakes	ON
o Heading bug	VERIFY Runway heading
o Throttle Power Levers	Advance 50% N1
o Engine Instruments	VERIFY Movement
o Toe Brakes	Release
o Throttles Power Levers	Advance to 89% N1
o Vr (as calculated)	Rotate to 10 degree pitch up
o Landing Gear	UP at V2 + positive rate of climb

-BEFORE TAKEOFF CHECKLIST COMPLETED-

Takeoff And Initial Climb

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o Autobrake	RTO
o Thrust	Smoothly to 40% N1, let spool up
o Takeoff Thrust	TOGA
o V1 (Typical)	141 KIAS
o Vr (Typical)	144 KIAS
o Rotate at Vr	+10 Degrees
o V2 (Typical)	142 KIAS (Safety Speed)
o Gear Up	35 ft AGL
o 220 KIAS	RETRACT FLAPS FULL UP
o Trim	ADJUST for <250kts
o MFD	ND

See Emergency Procedures for Abnormal Flight Conditions

Climb to Altitude

o Fuel flow rate-engine instruments	Monitor
o Autopilot/Autothrottle On	ARM & SET/GPS/LOC
o Autobrake/Taxi Lights	OFF
o Climb Profile	225 KIAS to 2,500 AGL <250 KIAS to 10,000 290 KIAS to 18,000 300 KIAS to FL270 300 KIAS to Cruise 500-1000fpm
o Landing Lights (10,000 ft)	OFF
o Cabin Crew Notify	1 chime
o Crossing 18,000 feet MSL	Reset Altimeter to 29.92 in.

Enroute

o Elevator Trim	ADJUST for Cruise
o Flight progress, fuel flow and engine ops	MONITOR
o Cruise speed	Mach 0.80
o Crew Approach Briefing	Completed

Descent

ATC Descent CLEARANCE – Descend

o Field Elevation (ovhd panel)	SET
o GPS	SET but not activated
o Throttle Power Levers	FLIGHT IDLE or A/T & A/P
o De-Ice	ON
o Landing Airport altimeter below FL180	SET
o Airspeed M 0.75 till FL240	SET
o Airspeed M 0.65 till FL180	SET

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o Airspeed 280 KIAS till 15,000 ft.	VERIFY
o Airspeed 250 KIAS till 12,000 ft.	VERIFY
o Airspeed 240 KIAS passing 10,000 ft	VERIFY
o Fuel Quantities & Balance	CHECK
o Vref	SET in FMS
o Airspeed 250 KIAS below 10,000 ft	VERIFY 1,500 fpm descent
o Flight Spoilers	As Required
o Landing lights (crossing 10,000 ft)	ON
o Cabin Crew Notify	2 chimes

Approach

ATC Approach CLEARANCE – Approach

Localizer Level Flight

o Fasten Seat Belts	ON
o No Smoking Sign	ON
o Avionics & Radios	SET
o Speed:	190 KIAS
o MFD	EICAS
o	
o Autobrakes	SET
o Flight Spoilers	ARM
o COMM Frequencies	SET
o ILS/LOC frequency	SET
o Navigation Radios	SET Freq/IDENT
o Flap Selector @20nm	Flaps 5, Speed 180-190

At ILS Capture

o Flap Selector	Flaps 15, Speed 170
o Altitude Selector	SET Missed app. altitude

1-1/2 dots above the glideslope

o Landing Gear	DOWN
o Flap Selector	Flaps 25, Speed 155
o Stabilized Approach	Flaps 30
o Final Approach	Speed Vref + 5 (10 max)

Landing

ATC Landing CLEARANCE - To Land

o Crossing Threshold	Flaps 30, Speed (Vref)
o Flight/Ground Spoilers (GLD)	Extended
o Engine Reverse	Reverse (> 80 KIAS – “F2”)
o Toe Brakes	APPLY (< 80 knots)

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Exit high-speed taxiways at 30kts, or 8-12 knots at any other runway turn off

-LANDING CHECKLIST COMPLETED-

After Landing (When Clear of the Runway)

ATC Taxi CLEARANCE- To gate

o Transponder/TCAS	SET Standby
o Landing Lights	OFF
o Strobe lights	OFF
o Taxi Lights	ON
o Flap Selector	UP
o Flight/Ground Spoilers (GLD)	Retract
o APU	START
o Elevator Trim	SET to Zero

-AFTER LANDING CHECKLIST COMPLETE-

Gate Shutdown

o Parking brakes	ON
o Taxi Lights	OFF
o Fuel Flow	OFF (Ctrl –Shift-1)
o Engines	Shutdown
o Seat Belt Sign	OFF
o Beacon/Navigation/Panel Lights	OFF
o De-Ice	OFF
o Generators	OFF
o Battery	OFF

Emergency Procedures

Stall Recovery

- Pre-Stall Symptoms:
  - Airspeed slowing below Vr – 20Kts
  - Stall Warning Display Appears
  - Unable to Hold Autopilot Altitude
  - Aircraft Attitude above 30 degrees
- Stall Recovery Procedure
  - Disable Autopilot and Autothrottle
  - Apply Full Power
  - Push Nose to Horizon
  - Retract Landing Gear
  - Raise Flaps on Schedule
  - Reduce power to pre-stall speed when lost altitude regained

ATC Communications in emergency situations

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- Decide whether situation merits the declaration of an emergency.
- If so, call “Mayday, Mayday, Mayday, Delta Virtual Airlines (flight number) declaring an emergency. (State intentions)”
- Continue as instructed by procedures plus ATC if possible.
- By declaring an emergency, you will receive the right of way unless other aircraft has more serious emergency.

Missed Approach

- Execute Missed Approach if at minimums with no visual reference, or if uncomfortable with the landing. Never try to salvage a landing out of a poor final approach.
- Call for Max Thrust and flaps 20°.
- Engage autopilot missed approach course.
- Once positive rate of climb attained, select gear UP.
- At 1,500 feet AGL lower nose appropriately and continue with the take off procedure for cleaning the aircraft up.

Rejected Take-off (RTO)

Note: Procedure only used if problem occurs on the ground before V_1.

- Set Throttles Full Reverse Thrust (Autobrake should engage).
- Put Spoilers UP.
- Ensure Auto brake has engaged and if not engage manually.
- Call the Tower and inform you are aborting Take-off.

Single Engine Departure

Note: For use when Engine fails after V_1

- Compensate for lack of power by adding the appropriate rudder.
- Reduce climb rate to 1000 fpm as opposed to 3000 fpm.
- Reduce throttle to 75% N_1.
- Return to departure airport.

Engine Failure Mid-Flight

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- Cut-off fuel to Engine.
- Set Fuel Cross feed from tank on failed engine side.
- Reduce altitude to one where acceptable power setting can be established.
- Reduce cruise speed to Mach .65 or less.
- If possible continue to destination otherwise attempt to return to origin.

Engine Fire

- Pull fire extinguisher handle on appropriate engine.
- Cut off fuel to appropriate engine.
- Declare emergency.
- Cross feed fuel.
- Continue to Single engine Landing procedures (see below).

Single Engine Landing

- Use rudder to compensate for lack of power.
- Use flaps 30°.
- Stay on or above the glide slope at all times.
- Set Auto-brake FULL.
- Do NOT use Thrust reversers on rollout.
- Proceed as if normal landing with the exceptions listed above.

Total Power Loss

- Determine if possible to reach airfield, if not search for an appropriate field or clearing to land in.
- Stay on or above the glide slope at all times during approach. Once you get below it, you cannot get back up above it.
- Use flaps 30 for landing.
- Set Auto-Brake FULL.
- Continue as if normal landing.

Gear Stuck Up

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- Attempt to lower gear using backup hydraulic system.
- Inform Air Traffic Control of your situation.
- Follow ATC instructions on where to land. If options given, preferences are:
  1. 5000’ Smooth/flat field
  2. Grass beside runway (assuming no taxiways to be crossed)

3. Runway
4. Large lake or wide river
5. Bay
6. Open Ocean

- Use Flaps 30.
- Use lowest possible landing speed to minimize damage.
- Reduce landing impact to less than 200 ft per minute.
- Sound evacuation alarm on landing.

Crew Take-Off Briefing

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Captain to Co-pilot

We will be taking off on RWY (active runway), climbing to (altitude). If we encounter an engine malfunction, fire or other emergency before V1 (critical engine failure recognition speed) KIAS, the flying pilot will retard the throttles to flight idle and bring the aircraft to a complete stop on the runway. The non flying pilot will notify the proper ATC of our intentions and assist the flying pilot as requested or needed to operate the aircraft in a safe manner.

If the aircraft has reached Vr (rotate speed) KIAS, the flying pilot will fly the aircraft per company procedures and the non flying pilot will notify the appropriate ATC of our intentions and assist the flying pilot as requested or needed to operate the aircraft in a safe manner and land the aircraft as soon as possible.

Aircraft Weight is: _____ Taxi Instructions to Active: _____

V Speeds for this flight are (calculated) See prepared Flip Chart(s)

Flap Settings: Takeoff _____ Engine Failure Approach _____

Discuss the Departure Procedures for this flight (Ref Charts, SIDs)

Discuss Weather considerations (Ref ATIS, METAR, and TF)

Crew Approach/Landing Briefing

Captain to Co-pilot

Weather conditions are (obtain from ATIS, METAR and TAF).

Landing on RWY (active runway) at (airport) using the (???) approach (Ref STAR)

Descend at (???). Our Final Approach altitude will be (???)

V Speeds for this approach are (calculated) (See prepared Flip Chart(s))

Missed approach Procedures are (Ref Approach Plates)

Taxiway Turnoff _____ Taxi Route from Active _____

Parking at Gate (#)

APPENDIX A—Typical Configuration

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DVA 757-200 CAT III Aircraft

Standard Flight Setup

Empty Weight	125,750 lbs.
Payload	46,570 lbs
Gross Weight	172,320 lbs.
Max Gross Weight	258,000 lbs.

Note: The information included is for the DVA fleet installer B757. Your required speeds and weights may vary with other aircraft.

Charts

Boeing 757-200						
188,000 LBS						
Takeoff:						
Flaps 5			Flaps 15			
V1	135		V1	128		
Vr	138		Vr	131		
V2	144		V2	137		
Landing:						
Flaps	1	5	15	20	25	30
Maneuvering	169	160	154	150	131	129
Vref	218	200	180	150	140	134
Vapp	225	208	185	155	145	139

Ground Operations

Taxi - straight ahead 20 knots ground speed
Taxi - turning 15 knots ground speed

V Speed Template

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Prior to a flight, fill in all cells in the empty template below after completing the Fuel and Weight Calculations. Print this sheet.

Boeing 757-____ _____ LBS			
Takeoff Gross Weight _____			
Flaps 5		Flaps 15	
V1 (Vr –3)		V1	
Vr		Vr	
V2 (Vr+6)		V2	

Landing Gross Weight _____					
Flaps	0	5	15	30	40
Maneuvering					
Vref					
Vapp (Vref + 20K)					

Takeoff Speeds

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For the DVA fleet installer, a take-off speed is assumed to be V1=135, Vrotate=138, and V2=144 KIAS. Based on actual fuel carried, Boeing 757-200 aircraft with greater than 188,000 Take-off Weight should increase these speeds appropriately. For more information see OEM charts that were installed with the DVA fleet installer aircraft.

Climb and Descent Profiles

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DVA Boeing 757-200 CAT III Aircraft

Flap Position:	Maximum Speed:
1	240
5	220
15	210
20	195
25	190
30	162

Standard Climb Rate

FPM:	Altitude:
3,000	Below 10,000 ft.
1,800	10,000 to 17,000 ft.
800	17,000 to FL200
500	Above FL200

Climb Profile

Speed:	Altitude:
V2+10 KIAS	1,000ft AFE
200 KIAS	2,500ft AFE
250 KIAS	10,000 ft
290 KIAS	Cruise Alt
.80 mach	Level Cruise

Descent Rate:

Target Speed:	Descent Rate:	With Spoilers:
310 KIAS	2300 fpm	3200 fpm
250 KIAS	1400 fpm	3000 fpm
Vref 30 KIAS + 80 KIAS	1100 fpm	2200 fpm

Approach/Landing Speeds

Speed:	Altitude:	Distance from Airport:
210 KIAS	Below 10,000	30 nm
180-190 KIAS		24nm
170 KIAS		15 nm
Vref + 5	Varies	Final approach fix
Vref + 5 @ 30 flaps	Landing	Runway Threshold

Approach and Landing Speeds

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The Chart below is included in the OEM documentation that came with the DVA 757 fleet installer. The Flaps 30 Landing Flap Maneuvering Speed (LFMS) is the equivalent of Vref or REF in the Flight Manual.

MINIMUM MANEUVERING AND LANDING FLAP MANEUVERING SPEEDS (LFMS)
757

WEIGHT	FLAPS						
	0	1	5	15	20	25	30
230	227	188	178	171	165	147	144
228	227	186	176	171	164	146	144
226	225	185	176	169	164	146	143
224	224	185	175	168	162	144	143
222	223	183	174	168	162	143	142
220	223	183	174	167	161	143	140
218	221	182	172	167	161	142	140
216	220	182	172	165	160	142	139
214	218	181	171	165	158	140	139
212	218	181	171	164	158	140	138
210	217	179	169	162	157	139	137
208	216	178	169	162	157	138	137
206	214	178	168	161	155	138	135
204	214	176	167	161	155	137	135
202	213	175	167	160	154	137	134
200	211	175	165	158	153	135	134
198	210	174	165	158	153	135	133
196	209	174	164	157	151	134	131
194	207	172	162	157	151	133	131
192	206	171	162	155	151	133	130
190	206	171	161	154	150	131	129
188	204	169	160	154	150	131	129
186	203	168	160	153	148	130	127
184	202	168	158	153	147	129	127
182	200	167	157	165	147	129	126
180	199	165	157	150	146	127	126
178	199	165	155	150	146	127	125
176	197	164	154	148	143	126	124
174	196	162	154	147	143	125	124
172	195	162	153	147	141	125	122
170	193	161	151	146	140	124	121
168	192	160	151	144	140	124	121
166	192	158	150	144	139	122	120
164	190	158	148	143	137	121	118
162	189	157	148	141	137	121	118
160	188	157	147	141	136	120	117

Speeds above heavy line are above max structural landing weight.

Minimum Runway Landing Distances

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B757-200 Minimum Landing Runway Length @ Flaps 30					
Landing Wt	Pressure Altitude (see below)				
Lbs	0	2000	4000	6000	8000
155,000	3,800	4,100	4,300	4,400	4,700
160,000	4,000	4,200	4,400	4,600	4,800
165,000	4,100	4,300	4,500	4,600	4,900
170,000	4,200	4,400	4,600	4,750	5,200
175,000	4,300	4,500	4,750	4,900	5,200
180,000	4,400	4,700	4,850	5.100	5,400
185,000	4,500	4,700	5,000	5,250	5,500
190,000	4,700	4,850	5,200	5,300	5,600
195,000	4,750	5,000	5,250	5,450	5,750
200,000	4,800	5,100	5,400	5,600	5,800
205,000	4,950	5,200	5,500	5,700	6,000
210,000	5,150	5,750	5,600	5,800	6,300

Note: Data above is for a B752 under dry runway conditions for PW engines.

Climb and Descent Profiles

Note: The following are for a B752 CAT III aircraft

Maximum Flap Deployment Speeds

Flap Position	Maximum Speed
1	240 KIAS
5	220 KIAS
15	210 KIAS
20	195 KIAS
25	190 KIAS
30	162 KIAS

Climb Profile

Speed	Altitude
V_2 + 10 KIAS	1,000 ft AFE
200 KIAS	2,500 ft AFE
250 KIAS	10,000 ft
290 KIAS	Cruise Alt
.80 mach	Level Cruise

Standard Climb Rate

FPM	Altitude
3,000	Below 10,000 feet
1,800	10,000 to 17,000 feet
800	17,000 to FL200
500	Above FL200

Descent Rate

Target Speed	Descent Rate	With Flight Spoilers
310 KIAS	2300 fpm	3,200 fpm
250 KIAS	1400 fpm	3,000 fpm
Vref 30 + 80 KIAS	1100 fpm	2,200 fpm

Approach/Landing Speeds

Speed	Altitude	Distance from Airport
210 KIAS	Below 10,000 feet	30 nm
180-190 KIAS		24 nm
170 KIAS		15 nm
Vref + 5	Varies	Final Approach Fix
Vref + 5 @ Flaps 30	Landing	Runway Threshold

APPENDIX B – Printable Checklists For Easy Reference

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The following checklist found in Delta Virtual Airline's document library is formatted to fit on one double-sided sheet for printing and ease of reference on the following pages. This checklist is for handy reference and should not be used for testing purposes. The checklist in a prior section of this AOM is concise and accurate.

Boeing 757 Checklist for printing – page 1

At Gate	
All Charts/Flight Plan	On Board
Weight/Balance	Verify
V speeds/Flap Settings	Calculate V speed card page
Parking Brakes	ON
ACARS	Connect +Start
All doors	VERIFY Closed
Flight Controls	Demonstrate
Battery Master Switch	ON
STBY Power	ON
Left, Right Bus Ties	AUTO
Left, Right Utility Bus	ON
Left, Right Gen	ON
APU	ON
Once APU Started, APU Gen	ON
Hydraulic Pumps	ON
Left, Right Yaw Damper	ON
Left, Center, Right IRS	NAV
Engine Pos Switches	AUTO
Fuel Cross Feed	OFF (No Lights)
Passenger Signs	ON
Left, Right Air Packs	AUTO(No Lights)
APU Air Bleed	ON
Isolation Valve	ON
Left Eng, Right Eng, Air Bleed	ON
Gear Lever	VERIFY DOWN
Clock/Stopwatch	VERIFY SET
Fuel on board	Document
COMM Radio	TUNE ATIS
Altimeter	SET
COMM Radio	SET
NAV Radio's	SET IDENT
ADF	SET IDENT
HSI/CDI	SET (CRS)
Heading bug	SET (HDG)
IAS	SET V2 (SPD)
Altitude	SET (ALT)
Vertical Speed	SET (VS)
ATC	Call for Dep./Start
Transponder	SET
Crew Briefing	Completed
Engine Start	
Parking brakes	VERIFY ON
Simulator time at start	Document
Battery	ON
Beacon	Verify On
Left, Right Air Packs	OFF

Clear to Start	
Throttle Power Levers	IDLE
Engine Area	CLEAR
Right Ignition Switch	GND
Fuel Flow	CHECK
N1 increasing as N2 inc.	CHECK
Oil Pressure	CHECK
Eng 2 Start Switch	GND
Fuel Flow	CHECK
N1 increasing as N2 inc.	CHECK
Oil Pressure	CHECK
MFD	EICAS
After Engine Start	
Parking brakes	ON
APU	OFF
Left, Right Air Packs	AUTO
APU Bleed Air	OFF (No Light)
Nav/Taxi Lights	ON
De-Ice	ON
Elevator Trim	SET
Flap Selector	SET 5 Degrees
Standby Instruments	SET
Avionics	SET For Departure
Left, Right Taxi Lights	ON
Taxi	
ATC	Request taxi to active runway
Fasten Seat Belts	ON
No Smoking Sign	ON
Throttle Power Levers	IDLE
Parking Brakes	Release
Pushback	Shift+P
Toe Brakes	VERIFY OPS
Taxi Power	60 % N1
Instrument Check-taxi	VERIFY Compass/HSI/Turn/Bank
Cabin Announcements	Perform during Taxi
Before Take-off	
Parking Brakes	ON
Flight Director	ON
Autopilot	CYCLE ON-OFF-VERIFY OFF
Landing Lights	ON
Taxi Lights	OFF
Strobe Lights	ON
Spoilers	VERIFY Retracted
Document	Fuel/Time
Flap Selector & Trim	VERIFY
COM's, NAV's & ADF	VERIFY
Transponder	Squawk Normal
ATC	Request for takeoff

Boeing 757 Checklist for printing – page 2

Take-off or Taxi to Pos.	
Cabin Crew Notify	2 chimes
Runway	VERIFY Clear
Toe Brakes	ON
Heading bug	VERIFY Rwy heading
Throttle Power Levers	Adv to 50% N1
Engine Instruments	VERIFY Movement
Toe Brakes	Release
Throttles	Ad to 89% N1
Vr (as calculated)	ROTATE to 10 degree pitch up
Landing Gear	UP at V2 + positive rate of climb
Takeoff/Initial Climb	
Autobrake	RTO
Takeoff Thrust	Smooth to 40% N1
V1 (Typical)	141 KIAS
Vr (Typical)	144 KIAS
Rotate at Vr	+10 Degrees
V2 (Typical)	152 KIAS (Safety Speed)
Gear Up	30 Ft AGL
220 KIAS	RETRACT FLAPS FULL UP
Trim	ADJUST <250Kts
MFD	ND
Climb To Altitude	
Fuel flow/Instruments	Monitor
A/P & A/T	ON SET/GPS/LOC
Autobrake/Taxi Lights	OFF
Climb Profile	225 KIAS to 2500
	<250 to 10,000
	290 to 18,000
	300 to FL270
	300 to Cruise 500-1000fpm
Landing Lights	OFF
Cabin Crew Notify	1 Chime
Crossing 18,000 MSL	Altimeter 29.92
Enroute	
Elevator Trim	ADJUST for Cruise

Enroute – cont.	
Flight progress, fuel flow and engine ops	MONITOR
Cruise speed	Mach 0.80
Crew Approach Briefing	Completed
Descent	
ATC	Request clearance
Field Elevation	SET but no activated
Throttle Power Levers	FLIGHT IDLE
De-Ice	ON
Landing Airport altimeter below FL180	SET
Airspeed M.75 till FL240	SET
Airspeed M.65 till FL180	VERIFY
Airspeed M.65 till FL180	VERIFY
Airspeed M.65 till FL180 Airspeed M.65 til FL180	VERIFY
Fuel Quantities & Balance	CHECK
Vref	SET in FMS
Airspeed 250KIAS <10K	VERIFY 1500fpm
Flight Spoilers	As Required
Landing lights (crossing 10,000 ft)	ON
Cabin Crew Notify	2 chimes
Approach	
ATC	Request Clearance
Fasten Seat Belts	ON
No Smoking Sign	ON
Avionics & Radios	SET
Speed:	190 KIAS
MFD	EICAS
Autobrakes	SET
Flight Spoilers	ARM
COMM Frequencies	SET
Navigation Radios	SET Freq/IDENT
Flap Selector	Flaps 5, 180KIAS
At ILS Capture	
Flap Selector	Flaps 15, 170KIAS
Altitude Selector	SET Miss App.

Boeing 757 Checklist for printing – page 3

1-1/2 Dots above GS	
Landing Gear	DOWN
Flap Selector	Flaps 25, 155KIAS
Stabilized Approach	FLAPS 30
Final Approach	Speed Vref (+10 max)
Landing	
ATC	Clearance to Land
Crossing Threshold	Flaps 30, Speed Vref
Engine Reverse	Reverse (> 80 KIAS – “F2”)
Toe Brakes	APPLY (< 80 knots)
Aircraft exit speed	8-12 kts
After Landing	
ATC	Request Clearance to taxi to gate
Transponder/TCAS	SET Standby
Landing Lights	OFF
Strobe lights	OFF
Taxi Lights	ON
Flap Selector	UP
Spoilers	Retract
APU	START
Elevator Trim	SET to 0

Gate Shutdown	
Parking brakes	ON
Taxi Lights	OFF
Fuel Flow	OFF (Ctrl-Shift 1)
Engines	SHUTDOWN
Seat Belt Sign	OFF
Beacon/Nav/Panel Lights	OFF
De-Ice	OFF
Generators	OFF
Battery	OFF

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While we strive to mirror real-world operations, this manual is not designed for use in the operation of real-world aircraft.

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