Checklist MS FSX incl. Wilco E-Jet Series

IVAO:
Member-#: _____
Website-PW: _____
Network-PW: _____

Flight Planning:
Recommend: Asalink Route Finder Website (free)

Parking Position:

- Dark & Cold (at Configurator) — Set
- Load (at Configurator) — Set
- FSX — start & create E-Jet Series flight at airport of choice
- Parkingbreak — Set
- Load (inside FSX) — Check
- Fuel (inside FSX) — Set (see attached fuel table)
- IVAP-Connection — Activate
- Dep-Metar — Check & note
- Arr-Metar — Check & note
- Flight –Plan — Create at website / program of choice
- Door 1 — Open (Shift + E)
- Gangway — Enable (if available) (Ctrl + J)
- Pedestal:
  - Start/Stop Selectors — Stop (Engine Ignition Selectors)
- Overhead-Panel:
  - Battery 1 — On
  - Battery 2 — Auto
  - Master Warning — Press (on Glareshield)
  - Cockpit-Light — On (if needed)
  - Ground Power — On (if available)
  - Battery Voltage — Check 28V (MFD ➔ Systems)
  - NAV Light — On
  - Generator 1 — Auto
  - Generator 2 — Auto
  - “Black-Panel-Logic” — Press all buttons illuminated
  - AC Fuel Pumps — Auto / On
  - Cross Feed — Off
  - DC Pump — Auto
  - TRU 1 — Auto
  - TRU 2 — Auto
  - TRU Essential — Auto
  - DC Bus Tie — Auto
  - Passenger Emergency Lights — Armed
  - No Smoking — On
  - Seat Belts — On

- FMC
  - Com1-frequency ➔ Set (active ATC or 122.800 UniCom)
  - NAV Page ➔ NAV button
  - NAV Ident ➔ LSK L1
  - POS INIT ➔ LSK R6
  - GPS1 POS ➔ Double-Click LSK R3
    --- Check “Loaded” is displayed ---
    --- Check “No Position entered” extinguished ---
  - FLT PLAN ➔ LSK R6
  - Load flight plan:
    - Enter FPL name ➔ LSK R3
    - FPL SEL ➔ LSK R6
    - Activate ➔ LSK R1
  - Create new flight plan:
    - Enter FPL name ➔ LSK R3
      ---It is recommend to name your flightplans “XXXXYYYY” with XXXX being the ICAO code for the departure airport and YYYY being the arrival airport.---
    - Enter DEP-Arpt 4-letter-code ➔ LSK L1
    - Enter ARR-Arpt 4-letter-code ➔ LSK R2
    - Enter Route:
      - 1st Waypoint ➔ LSK L2
      - 2nd Waypoint ➔ LSK L3

      --- Continue entering all waypoints, after Line 5, you have to change to the next page with the NEXT button. ---
      - Enter Destination Airport as last waypoint !!!
      - FPL SEL ➔ LSK L6
      - Activate ➔ LSK R1

    --- next step is optional ---
  - Enter Spd or Mach for each Waypoint ➔ LSK Rx (x = 1 – 5)
    --- next steps mandatory again ---
  - Activate ➔ LSK R6
  - Departure page ➔ LSK L6
  - Choose DEP Arpt runway ➔ LSK L/Rx (x = 1 – 5)
  - Choose SID (Standard Instrument Departure) ➔ LSK L/Rx
  - Insert ➔ LSK R6
  - Check FPL for discontinuities and delete them ➔ DEL ➔ LSK Lx
  - Check Arr Airport set as last waypoint, if not enter ➔ LSK Lx
  - Activate Route ➔ LSK R6
  - Perf Init ➔ LSK R6
  - Choose Climb, Cruise & Descent Speeds ➔ LSK R3/4/5
  - Next Page ➔ NEXT
  - Enter Strep Increment in ft. (or leave at default) ➔ LSK L1
  - Enter Fuel Reserve in LBS ➔ LSK L2 (for recommendations see attachments)
  - Enter Contingency Fuel ➔ LSK L4 (for recommendations see attachments)
  - Next Page ➔ NEXT
  - Enter Trans. Alt ➔ LSK L1
  - Enter Climb Speed Limit (and to which Alt.) ➔ LSK R1
  - Enter Cruise Flight Level ➔ LSK L2
    --- ZFW = Gross Weight / Planned Takeoff Weight minus Fuel ---
  - Enter Zero Fuel Weight (ZFW) ➔ LSK L4
    --- Next steps are optional ---
  - Enter True Air Temperature minus ISA ➔ LSK R2
  - Enter Temp / Wind at Cruise Flight Level and direction ➔ LSK L3

- Enter Flight Level for Winds entered ➔ LSK R3
  --- Next steps mandatory ---
- Confirm Init ➔ LSK R6
- Check Perf Data Page ➔ Next ➔ Next ➔ Takeoff ➔ LSK R6
- Enter Wind Data ➔ LSK R2 (step is optional)
- Takeoff Page 2 ➔ Next ➔ Check ➔ Takeoff Page 3 ➔ Next
- Enter V-Speeds, refer to V-Speeds table ➔ LSK L1, L2, L3, R1
- Climb Page ➔ LSK R6
- Check, change entries if required and / or as desired
- Cruise Page ➔ LSK R6
- Enter Speed (Mach) ➔ LSK L2
- Check Page to for enough fuel ➔ Next
- Thrust Rating Page ➔ TRS
- Set Thrust Rating or leave as preselected

• IVAP-flightplan	Enter legs and other information
• Mach (or TAS) in flightplan	Enter
• Departure Time	Enter [UTC/Zulu (➔ CET -2 / winter -1)]
• Check FPL	MFD ➔ Plan Page
• IFR-Clrc.	Request
• FP correction	Correct (if needed)
• Clrc. data	Note (Squawk, First-Altitude, QNH ➔ Readback)
• Squawk	Set (FMC, RADIO Page)
• TCAS	On (TA/RA)
• Altimeter	Set to actual atmospheric pressure (B)
• Door 1	Close (shift + e)
• Gangway	Disable (Strg + j)
• Doors	Check all closed
• APU Selector	Start
• Hyd. / Elec. Pumps	On / Auto
• EICAS	Check for warnings
• Fuel Pumps	Check all on
• Ignition Knobs	Auto
• Anti-collision Red Beacon	On
• Thrust	Idle (check)

Engine s/u & Pushback:

• Engine s/u & p/b clrc	Request
• Parkingbreak	Release
• Pushback	Start
• Engine 2 Start Cover	Open
• Engine 2 Start Switch	Start
---wait till Engine 2 started and back to idle---	
• Engine 1 Start Cover	Open
• Engine 1 Start Switch	Start
• Flaps	Select (as filled in FMC / step 4)
• APU	Off
• Autobreak	RTO
• Pitch/Trimm	Check in Green Band
• Pushback	End

- Taxi- & Logo-Lights — On

Taxi:

- Taxi-Clrc — Request
- Taxiways — Note
- (Ground guidance — Request if needed)
- Taxi to h/p
  - T/O Config Button — Press
  - T/O Config — Check “takeoff okay”
  - F/D (Flight Director) — On
  - A/P Speed Selection — FMS (hidden button over speed control knob)
  - A/P Initial Altitude — Set
  - A/P FMS Button — Press (to select FMS as nav source)
  - A/P Heading — Select RWY heading

h/p:

- Hand-off GND to TWR — Change frequency
- Sterile Light — On
- l/u & t/o clrc — Request (rdy for dep h/p xx)
- Strobe — On
- Landing-Lights — On
- IVAP-Transponder — On
- Postion & hold — Taxi & stop on rwy

Ready to Takeoff:

- Parkingbreak — Set
- AT Engage — On
- Thrust Levers — Forward to t/o power
- Parkingbreak — Release
- TO/GA Button — Press (hidden button over AT Engage)
- Yoke (till 80 knots) — Press forward
- V1 — Abort of start not possible anymore
- VR — Lift nose up
- V2 — Lift-off

Takeoff:

- Trim settings — Adjust (when needed)
- Gear — Up (at positive climb rate)

  ---at 1000ft AGL---
- A/P — On
- NAV (LNAV) — On

  --- Check LNAV indicated on PFD ---
- VNAV — On
- Flaps — Raise
- Airborne — Publish airborne when on Unicom (no ATC)
- Start time — Note (if needed)
- Hand-off TWR to APP(DEP) — Change frequency

Climb:

- Re-Set A/P Altitude — To next cleared FL / Final FL (repeat when needed)
- Landing-Lights — Off

- Taxi-Lights — Off
- Sterile Light — Off
- Seat Belts — Off

---do the following things if required---

- Hand-off APP to CTR — Change frequency
- Altimeter — Readjust (above 18000ft)

Cruise:

- Radio /ATC contact — Maintain (on UniCom watch TCAS)
- Autopilot / FMC — Check permanently
  - FMC — Check PROGress page for fuel consumption

---If fuel imbalance occurs---

- Cross-feed — On

Descent & Approach:

---before Top of Descent---

- Descent preparations — Begin 50nm before T/D (Top of Descent)
- Airport-/Meta-Information — Retrieve
- FMC
  - NAV-Page — NAV
  - FMC Arrival Page — LSK R6
  - Runway — LSK L1 ➔ Select Rwy ➔ Select Approach ➔ Arr-Page
  - STAR — LSK L3 ➔ Select STAR ➔ Select Transition ➔ ArrPage
  - Insert — LSK R6

  ---FMC should switch to FPL page (you might have to clear FMC messages)---
  - Discontinuities — Remove (by switching waypoint after Disc 1 place up)
  - Activate — LSK R6
- Request Descent — Request 5-10nm before T/D
- A/P Altitude — Reset to cleared descent altitude

---after T/D---

- FMC
  - PROG Page 2 ➔ Note Actual Gross Weight
  - PERF Page ➔ PERF
  - Landing ➔ LSK R4
  - Landing Page 3 ➔ NEXT ➔ NEXT

    --- Refer to V-Speeds chart (VAP is about half way between Vac & Vref) ---
  - Enter VAC, VAP & VREF speeds ➔ LSK L1, L2, L3
  - Correct VFS if needed ➔ LSK R1
- Altimeter — Readjust (under 18000ft)
- Monitor Descent — Vert. Profile on MFD
- Seat Belts — On
- Hand-off CTR to APP — Change frequency
- Landing / Taxi Lights — On
- Sterile Lights — On
- Autobreaks — Set
- RA / BARO Selector — RA
- Decision Height — Set (80 ft. RA or above)
- A/P Heading — Set to RWY heading
- NAV 1 & 2 — Set to LOC frequency (or Auto)
- A/P VOR/LOC — V/L or Preview button
- PFD 1 & 2 — Set to LOC inbound course

---PFD2 can be set via 3D cockpit & r-mouse-click on PFD2---

- A/P APP — On

---Note App mode should be switched on after STAR before beginning ILS (or other) approach. Rule of Thumb: One or two waypoints before runway; about 10-15 nm.---

- Flaps — Lower (as indicated on PFD)

Final approach & Landing (Autoland):

- Flaps — Check at least Flap 5
- Gear — Down
- ILS captured — Announce (on Unicom state final app)
- Hand-off APP to TWR — Change frequency
- Landing clrc — Request (or state intention on Unicom)

---Touchdown---

- Throttles — Idle
- Thrust reversers — Engage (if needed)
- Thrust reversers — Disengage (at 80kt) (Throttles idle)
- Autopilot (AP) — Disengage
- A/T (AP) — Off
- F/D (AP) — Off
- Runway — Vacate („rwy vacated“)

Final approach & Landing (w/o Autoland):

- Gear — Down
- ILS captured — Announce (on Unicom state final app)
- Hand-off APP to TWR — Change frequency
- Autopilot (AP) — Disengage
- A/T (AP) — Off
- F/D (AP) — Off
- Trim settings — Adjust (when needed)
- Landing clrc — Request (or state intention on Unicom)

---Touchdown---

- Throttles — Idle
- Thrust reversers — Engage (if needed)
- Thrust reversers — Disengage (at 80kt) (Throttles idle)
- Runway — Vacate („rwy vacated“)

Taxi:

- Transponder — Stdby
- Hand-off TWR to GND — Change frequency
- Taxiways — Note and follow (with active ATC)
- (Ground-Guidance — Request if required)
- Flaps — Set 0
- Autobreake — Off
- Landing lights — Off
- Strobe — Off
- Landing time — Note (if needed)
- APU — Start

Parking Position:

- Parkingbreak — Set
- Lights — All Off (NAV on)

- Throttles — Decrease full ➔ Fuel Flow Off
- AC Fuel Pumps — Off
- Engine Start/Stop Selectors — Stop (Engine Ignition Selectors)
- Door 1 — Open (shift + e)
- Gangway — Enable (strg + j)
- Seat-Belts — Off
- ATC contact — End (state “on blocks, thx for service, bye”)
- Ground Power — On

  ---continue if dark & cold needed---
- Emergency Exit Lights — Off
- Ground Power — Off
- APU — Off
- NAV Light — Off
- Cockpit Lights — Off
- Battery 1 — Off
- Battery 2 — Off

Checklist for E-Jet Series with Microsoft Flight Simulator.

Created by:	Carsten Rau (January 2009 / v6)
I used to create:	Wilco E-Series PIC manual, my other checklists, some tips from the internet
Only use with:	Microsoft Flight Simulator / IVAO (Intl. Virtual Aviation Organization)
Visit:	http://www.ivao.aero
	http://www.carstenrau.de
	http://www.leveldsim.com - Level-D 767
	http://www.precisionmanuals.com - PMDG 747 / MD11
	http://www.wilcopub.com - Wilco 737 PIC / E-Jet & Airbus Series
	http://www.captainsim.com - 757 Captain

Attachments

for
Checklist MS FSX incl. Wilco E-Jet Series PIC
by Carsten Rau

E170 --- Takeoff V-Speeds --- Flap 4 --- Mode T/O-1

Pressure Alt. (ft.)	Static Air Temperature (°C)														
SL →	-40	to	39	40	to	50									
1000 →	-40	to	38	39	to	48									
2000 →	-40	to	34	35	to	45	46	to	46						
3000 →	-40	to	29	30	to	41	42	to	44						
4000 →				-40	to	36	37	to	42						
5000 →				-40	to	31	32	to	40						
6000 →				-40	to	27	28	to	38						
7000 →							-40	to	31	32	to	36			
8000 →							-40	to	18	19	to	34			

Weight		↓			↓			↓			↓			Flap 4		Full
LBS	KG	V1	VR	V2	V1	VR	V2	V1	VR	V2	V1	VR	V2	Vfs	Vac	Vref
52911	24000	109	119	125	112	121	125	116	122	125	118	123	125	162	118	106
54014	24500	111	121	126	114	122	126	117	124	126	120	125	126			
55116	25000	113	122	127	116	124	127	119	125	127	122	126	127	165	120	108
56218	25500	114	124	128	118	125	128	121	126	129	123	128	129			
57320	26000	116	125	130	119	127	130	122	128	130	125	129	130	168	123	110
58423	26500	118	127	131	121	128	131	124	129	131	126	130	131			
59525	27000	120	128	132	123	130	132	125	131	132	128	132	132	172	125	112
60627	27500	121	130	133	124	131	133	127	132	133	129	133	134			
61730	28000	123	131	135	126	132	135	129	133	135	131	134	135	175	127	114
62832	28500	124	132	136	128	134	136	130	135	136	132	135	136			
63934	29000	126	134	137	129	135	137	132	136	137	134	137	137	178	130	116
65037	29500	128	135	138	131	136	138	133	137	138	135	138	138			
66139	30000	129	137	139	132	138	139	135	139	139	137	139	140	181	132	118
67241	30500	131	138	141	134	139	141	136	140	141	138	140	141			
68344	31000	132	139	142	135	140	142	137	141	142	139	142	142	184	134	120
69446	31500	134	140	143	136	142	143	139	142	143	141	143	143			
70548	32000	135	142	144	138	143	144	140	143	144	142	144	144	187	136	122
71651	32500	137	143	145	139	144	145	141	145	145	143	145	145			
72753	33000	138	144	146	141	145	146	143	146	146	144	146	146	190	138	124
73855	33500	139	146	147	142	146	147	144	147	147	146	148	148			
74958	34000	141	147	148	143	148	148	145	148	148	147	149	149	193	141	126
76060	34500	142	148	149	145	149	149	147	149	150	148	150	150			
77162	35000	144	149	151	146	150	151	148	150	151	149	151	151	196	143	127
78265	35500	145	150	152	147	151	152	149	151	152	150	152	152			
79367	36000	146	151	153	148	152	153	150	153	153	150	153	153	198	145	128
80469	36500	147	153	154	150	153	154	151	154	154	149	154	154			
81571	37000	149	154	155	151	154	155	153	155	155	148	155	155	201	147	129
82674	37500	150	155	156	152	155	156	154	156	156	147	157	157			

E190 --- Takeoff V-Speeds --- Flap 4 --- Mode T/O-1

Pressure Alt. (ft.)	Static Air Temperature (°C)																				
SL →	-40	to	34	35	to	40	41	to	46	47	to	50									
1000 →	-40	to	29	30	to	36	37	to	43	44	to	48									
2000 →	-40	to	26	27	to	31	32	to	38	39	to	45	46	to	46						
3000 →				-40	to	27	28	to	34	35	to	41	42	to	44						
4000 →				-40	to	22	23	to	29	30	to	36	37	to	42						
5000 →							-40	to	24	25	to	32	33	to	40						
6000 →							-40	to	19	20	to	27	28	to	38						
7000 →										-40	to	21	22	to	36						
8000 →										-40	to	15	16	to	34						
9000 →													-40	to	32						
10000 →													-40	to	30						
Weight		↓			↓			↓			↓			↓			**Flap 4**		**Full**		
LBS	**KG**	**V1**	**VR**	**V2**	**V1**	**Vfs**	**Vac**	**Vref**	**VR**	**V2**	**V1**	**VR**	**V2**	**V1**	**VR**	**V2**	**Vfs**	**Vac**	**Vref**		
66139	30000	97	105	116	95	101	112	92	97	107	92	96	104	95	98	104	157	119	103		
68344	31000	97	104	114	95	100	110	93	98	107	95	98	106	98	100	106	160	121	104		
70548	32000	97	103	113	95	100	110	96	100	108	98	101	108	101	103	108	162	122	106		
72753	33000	97	102	112	97	102	110	99	102	110	100	103	110	103	105	109	164	124	107		
74958	34000	98	103	112	99	104	112	101	104	111	102	105	111	105	107	111	168	127	110		
77162	35000	100	105	113	102	105	113	103	106	113	104	107	113	107	108	113	170	128	111		
79367	36000	103	107	115	104	107	115	105	108	114	106	109	114	109	110	114	172	130	113		
81571	37000	105	108	116	106	109	116	107	110	116	108	111	116	111	112	116	174	132	114		
83776	38000	107	110	118	108	111	117	109	112	117	110	113	117	112	114	117	176	133	115		
85981	39000	109	112	119	110	113	119	111	114	119	113	114	119	115	115	119	179	136	117		
88185	40000	111	114	120	112	114	120	113	115	120	115	116	120	117	117	120	181	137	119		
90390	41000	113	116	122	114	116	122	115	117	122	117	118	122	119	119	122	183	139	120		
92595	42000	115	117	123	116	118	123	118	119	123	120	120	123	-	-	-	186	140	122		
94799	43000	117	119	125	118	120	125	120	121	125	121	121	125	-	-	-	188	142	123		
97004	44000	119	121	126	120	122	126	122	122	126	-	-	-	-	-	-	190	144	125		
99209	45000	121	123	128	122	123	128	124	124	128	-	-	-	-	-	-	192	146	126		
101413	46000	123	124	129	125	125	129	-	-	-	-	-	-	-	-	-	194	147	127		
103618	47000	125	126	130	126	126	130	-	-	-	-	-	-	-	-	-	196	149	129		
105822	48000	127	128	132	-	-	-	-	-	-	-	-	-	-	-	-	199	151	130		
108027	49000	129	129	133	-	-	-	-	-	-	-	-	-	-	-	-	201	152	132		
110232	50000	131	131	134	-	-	-	-	-	-	-	-	-	-	-	-	203	154	133		

E-170 Fuel Planning Charts:

Flightplan Fuel only ISA, no Wind	MZFW 66.447 lbs	Fuel Consumed (lbs)	Break Release to Landing	Climb: 250 / 300 kt M 0.78	Cruise: M 0.78	Descend: M 0.78 300 / 250 kt
E170 max. Range at MZFW: ≈ 1500 nm						
Fuelburn (lbs) per hour ≈ 3500				Fuelburn per 1nm ≈ 7,78		
Distance (nm)	**Payload * % / lbs**	**Fuel (lbs) at FL 290/300**	**Fuel (lbs) at FL 310/320**	**Fuel (lbs) at FL 330/340**	**Fuel (lbs) at FL 350 - 410**	
100**	100 / 21100	1578	≈ 97% of FL290	≈ 94% of FL 290	≈ 91% of FL 290	
200		2356				
300		3133				
400		3911				
500		4689				
600		5467				
700		6244				
800		7022				
900		7800				
1000		8578				
1500		12467				
After 1500nm Payload has to be traded for fuel. ***						
2000	76 / 16200	16356	≈ 97% of FL290	≈ 94% of FL 290	≈ 91% of FL 290	
2100	72 / 15400	17133				

* Maximum Payload to MTOW (including pilots at 640lbs). (Max Fuel = 20580 lbs)

** For a distance of 100nm altitudes of 15000ft maximum are assumed.

*** Flying in higher altitudes - consuming less fuel - it is possible to carry the same payload over a longer range with the trade-off between the fuel, range and payload affecting the aircraft after a longer distance.

Fuel planning notes E170:

	Basic Operating Weight (OEW)	*046.385*	*LBS*	
+	*Payload (passengers & cargo)*	*XXX.XXX*	*LBS*	
=	*Zero Fuel Weigh (ZFW)*	*XXX.XXX*	*LBS*	*(max 66.447 LBS)*
+	*Minimum Landing Fuel*	*001.000*	*LBS*	
+	*Alternate Fuel (200nm distance)*	*001.500*	*LBS*	
+	*Contingency Fuel (holding, taxi, etc.)*	*001.000*	*LBS*	
=	*Planned Landing Weight (PLW)*	*XXX.XXX*	*LBS*	*(max 72.312 LBS)*
+	*Flight Plan Fuel (fuel for route)*	*XXX.XXX*	*LBS*	
=	*Planned Takeoff Weight (PTOW)*	*XXX.XXX*	*LBS*	*(max 80.012 LBS)*

➔***Flight Plan Fuel + 3.500 LBS = Total Fuel***

➔ *Total fuel = Enough fuel for route, 1h contingency (holding & taxi), problematic winds, alternate fuel for 200nm and a minimum landing fuel (1h). Modify alternate value as needed.*
➔ *Load all wing tanks with same amount of fuel; outer tanks full ➔ inner tanks ➔ center tanks.*

E-190 Fuel Planning Charts:

Flightplan Fuel only ISA, no Wind	MZFW 89.947 lbs	Fuel Consumed (lbs)	Break Release to Landing	Climb: 250 / 300 kt M 0.78	Cruise: M 0.78	Descend: M 0.78 300 / 250 kt
E190 max. Range at MZFW: ≈ 1650 nm						
Fuelburn (lbs) per hour ≈ 4350				Fuelburn per 1nm ≈ 9,67		
Distance (nm)	**Payload * % / lbs**	**Fuel (lbs) at FL 290/300**	**Fuel (lbs) at FL 310/320**	**Fuel (lbs) at FL 330/340**	**Fuel (lbs) at FL 350 - 410**	
100**	100 / 28800	1867	≈ 97% of FL290	≈ 94% of FL 290	≈ 91% of FL 290	
200		2833				
300		3800				
400		4767				
500		5733				
600		6700				
700		7667				
800		8633				
900		9600				
1000		10567				
1500		15400				
1700		17333				
After 1500nm Payload has to be traded for fuel. ***						
2000	88,8 / 17660	20133	≈ 97% of FL290	≈ 94% of FL 290	≈ 91% of FL 290	
2400	74,6 / 21560	24000				

* Maximum Payload to MTOW (including pilots at 640lbs). (Max Fuel = 28596 lbs)

** For a distance of 100nm altitudes of 15000ft maximum are assumed.

*** Flying in higher altitudes - consuming less fuel - it is possible to carry the same payload over a longer range with the trade-off between the fuel, range and payload affecting the aircraft after a longer distance.

Fuel planning notes E190:

	Basic Operating Weight (OEW)	*061.112*	*LBS*	
+	*Payload (passengers & cargo)*	*XXX.XXX*	*LBS*	
=	*Zero Fuel Weigh (ZFW)*	*XXX.XXX*	*LBS*	*(max 089.949 LBS)*
+	*Minimum Landing Fuel*	*001.250*	*LBS*	
+	*Alternate Fuel (200nm distance)*	*002.000*	*LBS*	
+	*Contingency Fuel (holding, taxi, etc.)*	*001.250*	*LBS*	
=	*Planned Landing Weight (PLW)*	*XXX.XXX*	*LBS*	*(max 094.799 LBS)*
+	*Flight Plan Fuel (fuel for route)*	*XXX.XXX*	*LBS*	
=	*Planned Takeoff Weight (PTOW)*	*XXX.XXX*	*LBS*	*(max 110.893 LBS)*

➔***Flight Plan Fuel + 4.500 LBS = Total Fuel***

➔ *Total fuel = Enough fuel for route, 1h contingency (holding & taxi), problematic winds, alternate fuel for 200nm and a minimum landing fuel (1h). Modify alternate value as needed.*

➔ *Load all wing tanks with same amount of fuel; outer tanks full ➔ inner tanks ➔ center tanks.*

Reduced & Conventional Vertical Separation Minima - CVSM & RVSM

CVSM		RVSM		RVSM (North-South)		RVSM (meter)		CVSM (meter)	
180° - 359°	000° - 179°	180° - 359°	000° - 179°	270° - 89°	90° - 269°	180° - 359°	000° - 179°	180° - 359°	000° - 179°
FL 040	FL 050	FL 040	FL 050	FL 040	FL 050	1,200 m (3,900 ft)	1,500 m (4,900 ft)	1,200 m (3,900 ft)	1,500 m (4,900 ft)
FL 060	FL 070	FL 060	FL 070	FL 060	FL 070	1,800 m (5,900 ft)	2,100 m (6,900 ft)	1,800 m (5,900 ft)	2,100 m (6,900 ft)
FL 080	FL 090	FL 080	FL 090	FL 080	FL 090	2,400 m (7,900 ft)	2,700 m (8,900 ft)	2,400 m (7,900 ft)	2,700 m (8,900 ft)
FL 100	FL 110	FL 100	FL 110	FL 100	FL 110	3,000 m (9,800 ft)	3,300 m (10,800 ft)	3,000 m (9,800 ft)	3,300 m (10,800 ft)
FL 120	FL 130	FL 120	FL 130	FL 120	FL 130	3,600 m (11,800 ft)	3,900 m (12,800 ft)	3,600 m (11,800 ft)	3,900 m (12,800 ft)
FL 140	FL 150	FL 140	FL 150	FL 140	FL 150	4,200 m (13,800 ft)	4,500 m (14,800 ft)	4,200 m (13,800 ft)	4,500 m (14,800 ft)
FL 160	FL 170	FL 160	FL 170	FL 160	FL 170	4,800 m (15,700 ft)	5,100 m (16,700 ft)	4,800 m (15,700 ft)	5,100 m (16,700 ft)
FL 180	FL 190	FL 180	FL 190	FL 180	FL 190	5,400 m (17,700 ft)	5,700 m (18,700 ft)	5,400 m (17,700 ft)	5,700 m (18,700 ft)
FL 200	FL 210	FL 200	FL 210	FL 200	FL 210	6,000 m (19,700 ft)	6,300 m (20,700 ft)	6,000 m (19,700 ft)	6,300 m (20,700 ft)
FL 220	FL 230	FL 220	FL 230	FL 220	FL 230	6,600 m (21,700 ft)	6,900 m (22,600 ft)	6,600 m (21,700 ft)	6,900 m (22,600 ft)
FL 240	FL 250	FL 240	FL 250	FL 240	FL 250	7,200 m (23,600 ft)	7,500 m (24,600 ft)	7,200 m (23,600 ft)	7,500 m (24,600 ft)
FL 260	FL 270	FL 260	FL 270	FL 260	FL 270	7,800 m (25,600 ft)	8,100 m (26,600 ft)	7,800 m (25,600 ft)	8,100 m (26,600 ft)
FL 280	FL 290	FL 280	FL 290	FL 280	FL 290	8,400 m (27,600 ft)	8,900 m (29,100 ft)	8,600 m (28,200 ft)	9,100 m (29,900 ft)
CVSM	CVSM	RVSM	RVSM	RVSM	RVSM	RVSM	RVSM	CVSM	CVSM
FL 310		FL 300	FL 310	FL 300	FL 310	9,200 m (30,100 ft)	9,500 m (31,100 ft)	9,600 m (31,500 ft)	
	FL 330	FL 320	FL 330	FL 320	FL 330	9,800 m (32,100 ft)	10,100 m (33,100 ft)		10,100 m (33,100 ft)
FL 350		FL 340	FL 350	FL 340	FL 350	10,400 m (34,100 ft)	10,700 m (35,100 ft)	10,600 m (34,800 ft)	
	FL 370	FL 360	FL 370	FL 360	FL 370	11,000 m (36,100 ft)	11,300 m (37,100 ft)		11,100 m (36,400 ft)
FL 390		FL 380	FL 390	FL 380	FL 390	11,600 m (38,100 ft)	11,900 m (39,100 ft)	11,600 m (38,100 ft)	
	FL 410	FL 400	FL 410	FL 400	FL 410	12,200 m (40,100 ft)	12,500 m (41,100 ft)		12,100 m (39,700 ft)
CVSM	CVSM	CVSM	CVSM	CVSM	CVSM	CVSM	CVSM	CVSM	CVSM
FL 430	FL 450	FL 430	FL 450	FL 430	FL 450	13,100 m (43,000 ft)	13,700 m (44,900 ft)	13,100 m (43,000 ft)	14,100 m (46,300 ft)
FL 470	FL 490	FL 470	FL 490	FL 470	FL 490	14,300 m (46,900 ft)	14,900 m (48,900 ft)	15,100 m (49,500 ft)	16,100 m (52,800 ft)
1 Step = 4000 ft						1 Step = 1200 m		1 Step = 2000 m	

RVSM: All countries (inlcuding the Atlantic Ocean) with the following exeptions:

RVSM (North-South): France, Italy, Portugal, Spain & New Zealand.

RVSM (meter): China, excluding Hong Kong, Macau and Taiwan.

CVSM (meter): Russia, Mongolia, North Korea, Kyrgyzstan, Kazakhstan, and 6,000 m or below in Turkmenistan (where feet is used for FL210 and above).