

Checklist MS FSX incl. PMDG 747-400(F)

IVAO:

Member-#: _____

Website-PW: _____

Network-PW: _____

Attention:

PMDG Options Menu / Various:

If not:

Ground Air/Power Available should be set to on

Bring forward APU start (instead of Ext Pwr On)

Parking Position / Preparation:

- | | |
|---------------------------------|--|
| • Load & Fuel (at Configurator) | Set |
| • Flightplan | Create a flightplan (in FSBuild and save at PMDG dir.) |
| • FSX | Start & load/create 747-flight |
| • Dark & Cold | Load D&C panel setting |
| • Load & Fuel (at FSX) | Check (or reset) |
| • Parkingbreak | Set |
| • Dark & Cold (at Configurator) | Load |
| • IVAP-Connection | Activate |
| • Dep-Metar | Check & note |
| • Arr-Metar | Check & note |
| • Door(s) | Open |
| • Gangway | Enable (if available) (Ctrl + J) |

→ OVHP only:

- | | |
|--------------------------------------|---|
| • Battery | On |
| • Standby Power | Auto |
| • Bus Tie switches | Auto |
| • GENERator CONTrol switches | On |
| • Hydraulic Demand pump switches 1-3 | Off |
| • Hydraulic Demand pump switch 4 | Aux |
| • Engine hydraulic pump selectors | On |
| • Ext Pwr 1 switch | On (if available) (needs parking break to be set) |
| • Ext Pwr 2 switch | On (if available) (needs parking break to be set) |
| • Panel lights | |
| o CKT BKR OVHD PANEL | On (if needed) |
| o GLARESHIELD PANEL/FLOOD | On (if needed) |
| o DOME | On (if needed) |
| • Elec Eng Control switches | Norm & saved |
| • Utility (power switch) Left | On |
| • Utility (power switch) Right | On |
| • Lights | |
| o NAV | On (mandatory) |
| o LOGO | On |
| o WING | On |
| • Emergency Light | Arm |
| • IRS Alignment (OVHP & FMC): | |
| o IRS switches (1-3) | Off |
| o IRS switches (1-3) | Nav |
| o IRS switches (1-3) | Align |

- o → FMC:
 - Ident page 1L
 - Pos Init page 6R
 - Copy GPS Position 4R (alternative enter 4-letter airport code & press 2L)
 - Paste to IRS Pos. 5R (alternative copy airport position to IRS; 2R → 4R)
 - o IRS switches (1-3) Nav
 - Fuel Pumps Off (CTR, STAB, MAIN 1 and 4, OVRD & MAIN 2 and 3)
 - Fuel X-Feed On (4 switches)
 - Nacelle Anti-Ice Off
 - Wing Anti-Ice Off
 - Window Heat Enable
 - Yaw Dampers On
 - APU switch Start
 - wait till APU Gens available---
 - APU Gen Switches 1 & 2 On
 - PASSenger TEMPerature Auto
 - FLT DECK (temperature) Auto
 - Trim Air On
 - Upper Recirculation Fan On (Upr Recirc)
 - Lower Recirculation Fan On (Lwr Recirc)
 - Gasper On
 - Pack switches (1-3) Norm
 - ISLN switches L & R Open ("Valve" extinguished)
 - APU Bleed (abv Eng Bleed) On
- End OVHP only
- FMC
 - Clear messages → CLR
 - Route Page → RTE
 - Enter company route [read: enter flightplan-name (created in FSBuild)] → 3R
 - Activate → 6R → Exec
 - Performance initialization page → 6R
 - Enter FL / altitude → 1R (max FL for 747 = FL410)
 - Gross Weight auto function → 1L
 - Enter fuel reserve in % → 4L
 - Enter Cost Index (50 to 100) → 5L
 - Thrust Limit page → 6R
 - Modify Thrust settings if needed
 - Takeoff page → 6R
 - Enter flaps setting (standard 20) → 1L
 - Verify V1, VR and V2 → 1R → 2R → 3R (remember V2 speed)
 - Verify takeoff trim settings → 4R (remember trim number)
 -
 - IVAP-flightplan Read from FMC & note/enter in IVAP FP
 - Speed at flightplan Enter TAS (calculate: KIAS + FL/2) or MACH
 - Departure Time Enter (UTC to CET → CET -2 (winter -1))
 - EFIS-Mode (MainPanel/MP) MAP
 - EFIS-Range (MP) 40nm (or as required)
 - GND-Control Set frequency (active ATC or Unicom 122.8)
 - IFR-clrc Request (when ATC active)
 - FP-correction Correct (if required / requested)
 - IFR-clrc-data Note (Squawk, First-Altitude, QNH → Readback)

- Squawk Set
- Altimeter Set to actual atmospheric pressure (B)
- F/D (AP) On
- V2 (AP) Enter V2 speed to IAS/MACH indicator of AP
- LNAV (AP) Arm
- VNAV (AP) Arm
- First Alt (AP) Set
- AP Disengage Bar Up
- Fuel Control Switches (TP) Cutoff (Throttle Panel)
- Trim settings (TP) Check (same as FMC) (NUM1/7 with NUM off)
- Autobreak RTO
- TCAS switch Stby/Test
- wait till TCAS test finished---
- TCAS switch TA/RA
- TCAS biasing mode Above
- No Smoking On (or Auto)
- Seat Belts Auto
- FLT DK Door Lock
- TFC button (EFIS) Press (and check potential traffic)
- open Overhead panel & EICAS panel---
- Fuel Button (EICAS) Press & check fuel
- Fuel pumps On (all fuel pumps of tanks containing fuel)
- wait till fuel pumps rdy (green light)---
- Xfeed Set
 - o Tank 2 > Tank 1 Xfeed 1 on
 - o Tank 3 > Tank 4 Xfeed 2 on
 - o Otherwise Xfeed off

Engine s/u & Pushback:

- Gangway disable (strg + j)
- Doors closed
- Engine s/u & Pushback p/b clrc request
- Beacon Light On
- Hydraulic Demand pump switches 1-3 Auto
- Hydraulic Demand pump switch 4 Aux (check)
- Pack 1 On
- Pack 2 & 3 Off
- Engine Bleed Air switches On
- EICAS Open Engines Page
- EICAS Clear EICAS messages (Cacl Btn.)
- Parking break Off
- Pushback Start
- Engine Start Procedure:
 - o Autostart:
 - Autostart On
 - Continuous Ignition On
 - Fuel Control Swt. 1 – 4 Run
 - Engine 1 & 4 Start Sel. Pull
 - wait till Engine 1 & 4 back at idle---
 - Engine 2 & 3 Start Sel. Pull

O No Autostart:

- Autostart Off
- Continuous Ignition On
- Engine 1 & 4 Start Sel. Pull
---wait till N2% RPM reaches magenta line (14%)---
- Fuel Control Swt. 1 & 4 Run
---wait till Engine 1 & 4 back at idle---
- Engine 2 & 3 Start Sel. Pull
---wait till N2% RPM reaches magenta line (14%)---
- Fuel Control Swt. 2 & 3 Run
- APU Off
- APU Bleed Air Off
- Packs Norm (all)
- Hydraulic Demand pump switch 4 Auto
- Engine & Wing anti-ice On (under 10°C TAT)
- Main Display Check for warnings
- Taxi Lights On
- Flaps Select (as filled in FMC)
- Pushback Finish

Taxi:

- Taxi-Clrc Request
- Taxiways Note (if needed)
- Ground-Guidance Request (if needed)

h/p:

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

Ready to Takeoff:

- Parkingbreak Set
- Autothrottle (AP) On
- AP settings Check (FD on, HDG, IAS, LNAV, VNAV)
- Thrust Levers Forward
---wait till 70% N1---
- Parkingbreak Release
- TO/GA button Press (the screw over the F/D switch)
- Yoke Press forward till 80kts
- 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 >500ft)
- Autopilot On (1 of 3)

- Flaps Raise (on schedule, see PFD)
- Landing gear lever Off position
- Airborne Publish airborne when on Unicom (no ATC)
- Start time Note (if needed)
- Hand-off TWR to APP(DEP) Change frequency

Climb:

- Landing-/Taxi Lights Off
--- to final FL / next FL clrc ---
- AP altitude (& speed) Change (Selected Mode if needed)
- TCAS biasing mode N
---do the following things if required---
- Hand-off APP to CTR Change frequency
- Engine & Wing anti-ice On (under 10°C TAT)
- Altimeter Readjust (above 18000ft)

Cruise:

- Radio /ATC contact Maintain (on UniCom watch TCAS)
- Autopilot / FMC Check permanently
 - o FMC Check PROGRESS page for fuel consumption
- when center tanks (center/stab) empty---
- Center / stab fuel pump Off
- when inner wing tanks have reached same fuel load as outer wing tanks---
- Xfeed Off

Descent & Approach:

- Descent preparations Begin 30nm before T/D (Top of Descent)
- Airport-/Meta-Information Retrieve
- Autobreaks Set
- FMC:
 - o Arrivals page → DEP/ARR
 - o Set active rwy (and approach/STAR)
 - o Approach Ref page → INIT REF button
 - o Copy flap and corresponding Vref setting → 1R or 2R
 - o Paste for approach → 4R
 - o Note approach speed (see 4R)
 - o NAV Radio page → NAV/RAD
 - o Note rwy heading (see 4L)
 - o Close FMC
- Start of Descent (4 possibilities):
 - o VNAV:
 - Alt (AP) Set (before reaching T/D !)
 - VNAV Will descent automatically at T/D
 - o DES NOW:
 - Alt (AP) Set (before reaching T/D !)
 - FMC ACT ECON CRZ page → VNAV
 - Page 2 Next Page
 - Des Now 6R
 - Execute EXEC
 - o FL CH:
 - Alt (AP) Set
 - FL CH (AP) On

- Speed (AP) Set to IAS, set Speed
 - o Change Cruise Alt:
 - FMC ACT ECON CRZ page → VNAV
 - Alt (FMC) Enter in Scratchpad
 - Cruise Alt (FMC) Set → 1L
 - Execute EXEC
- TCAS Biasing mode Below
- Speedbrakes Up (when needed/too fast)
- Altimeter Readjust (under 18000ft)
- Hand-off CTR to APP Change frequency
- Landing lights On
- Taxi light On

Final approach & Landing (Autoland):

- Flaps Lower (as indicated on PFD) (e.g. 1 passes by set to 5)
- Gear Down (under 270kt / at flap 20)
- Speedbrake Arm
- stabilize von glideslope---
- ILS captured Announce (on Unicom state final app)
- LOC (AP) On (to follow ILS localizer)
- APP (AP) On (to follow glideslope)
- check, when APP pressed, LOC, VNAV off, 3 AP on---
- 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):

- Flaps Lower (as indicated on PFD) (e.g. 1 passes by set to 5)
- Gear Down (under 270kt / at flap 20)
- Speedbrake Arm
- stabilize von glideslope---
- ILS captured Announce (on Unicom state final app)
- check flaps to ref-degree and gear down---
- Hand-off APP to TWR Change frequency
- Autopilot (AP) Disengage (Disengage bar down)
- 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 | Stdbby |
| • Hand-off TWR to GND | Change frequency |
| • Taxiways | Note and follow (with active ATC) |
| • (Ground-Guidance | Request if required) |
| • Flaps | Set 0 |
| • Speedbrake | Disengage (if engaged) |
| • Autobrakes | Off |
| • Landing lights | Off |
| • Strobe | Off |
| • Landing time | Note (if needed) |
| • APU | Start |

Parking Position:

- | | |
|--------------------------|---|
| • Parking brake | Set |
| • ATC contact | End (state “on blocks, thx for service, bye”) |
| • APU Gen 1 & 2 | On |
| • APU Bleed | On |
| • Engine Bleed | Off |
| • Engine hydraulic pumps | Off |
| • Fuel control switches | Cutoff |
| • Seatbelts | Off |
| • Door s | Open (shift + e) |
| • Gangway | Enable (strg + j) |
| • Beacon lights | Off |

---Aircraft ready for turn-around /next flight---

---Continue if Cold&Dark needed---

- | | |
|------------------------------|---------------------------------|
| • Ground power | On (if available) |
| • APU bleed | Off (if Ground power available) |
| • APU | Off (if Ground power available) |
| • Yaw Dampers | Off |
| • Hydraulic Demand switches | Off |
| • Continuous Ignition | Off |
| • Autostart | Off |
| • IRS systems 1-3 | Off |
| • Utility L & R | Off |
| • Fuel pumps | Off (all) |
| • XFeeds | On (all) |
| • Window heat | Off |
| • Engine & Wing anti-ice | Off |
| • AFT Cargo HT(heat) | Off |
| • Trim Air | Off |
| • Gasper | Off |
| • UPR RECIRCulation fan | Off |
| • LWR RECIRCulation fan | Off |
| • Packs 1-3 | Off |
| • ISLN switches L & R | Off |
| • GENERator CONTROL switches | Off |

- TCAS Stdbby
- If still on APU (no Ground power):
 - o APU bleed Off
 - o APU Gen 1 & 2 Off
 - o APU Off
- Ground power Off
- External lights Off (all)
- Internal lights Off (all)
- Bus Tie Switches Off
- Stdbby power selector Off
- Battery Off

Checklist for PMDG 747X with Microsoft Flight Simulator.

Created by: Carsten Rau (June2008 / v5)
 I used to create: PMDG Manual, Michael Swannick's B744 Checklist, Jared Smith's 744 Guide
 Only use with: Microsoft Flight Simulator / IVAO (Intl. Virtual Aviation Organization)
 Visit: <http://www.ivaoo.aero>
 <http://www.carstenrau.de>
 <http://www.leveldsim.com> - Level-D 767
 <http://www.precisionmanuals.com> - PMDG 747
 <http://www.wilcopub.com> - Wilco 737 PIC / Airbus Series 1 & 2

Attachments

for

Checklist MS FSX incl. PMDG 747-400(F)

by Carsten Rau

Table Represents M.86 Cruise at Optimum Altitude (or use of Step Climb Procedures)

Trip Length NAM	Pressure Altitude (Feet) / True Airspeed (Knots)											
	FL410 / 479		FL390 / 479		FL370 / 479		FL350 / 481		FL330 / 486		FL310 / 488	
	Flight Time (Hours:Minutes) and Fuel Burn (Pounds x 1000)											
8800												
8400	17:31	380.0	17:31	381.0	17:28	380.1	17:22	378.8	17:20	386.0		
8000	16:43	356.0	16:42	357.0	16:39	356.2	16:33	355.2	16:30	362.0	16:23	381.0
7600	15:54	338.0	15:54	338.9	15:51	338.3	15:46	336.9	15:42	344.0	15:35	353.0
7200	15:02	316.0	15:00	317.0	14:47	315.6	14:42	315.4	14:38	321.0	14:31	331.0
6800	14:12	298.0	14:12	298.6	14:09	298.2	14:05	297.4	14:01	303.0	13:54	313.0
6400	13:22	275.0	13:21	275.8	13:18	275.2	13:13	274.6	13:09	280.0	13:03	390.2
6000	12:31	258.0	12:31	258.8	12:28	258.3	12:23	257.5	12:19	260.7	12:13	270.9
5600	11:43	238.0	11:42	237.6	11:39	237.0	11:35	239.2	11:31	244.0	11:25	254.0
5200	10:48	222.0	10:48	221.2	10:45	222.2	10:41	224.0	10:37	230.0	10:32	240.0
4800	10:00	198.0	9:58	197.4	9:55	198.2	9:51	200.0	9:47	206.0	9:42	215.0
4400	9:12	186.0	9:12	185.6	9:09	186.2	9:06	188.0	9:03	200.0	8:57	210.6
4000	8:21	169.0	8:21	169.4	8:18	169.2	8:15	171.8	8:13	176.4	8:08	184.4
3600	7:30	152.0	7:30	152.6	7:28	152.2	7:25	155.0	7:23	170.4	7:20	167.4
3200	6:43	136.0	6:43	136.6	6:42	136.2	6:40	139.0	6:38	169.8	6:35	176.4
2800	5:48	121.0	5:48	121.2	5:46	121.4	5:44	124.0	5:42	128.4	5:39	134.2
2400	5:00	103.0	5:00	102.8	4:59	103.2	4:57	105.6	4:56	108.4	4:53	113.4
2000	4:13	88.0	4:13	87.6	4:12	88.4	4:10	90.4	4:08	93.6	4:05	97.7
1400	3:21	73.0	3:21	72.6	3:19	73.2	3:18	75.0	3:18	77.6	3:15	80.8
1000	2:30	62.0	2:30	62.6	2:29	63.2	2:28	64.6	2:26	66.4	2:22	69.0
800	1:41	46.5	1:41	47.2	1:39	48.0	1:39	48.8	1:37	50.0	1:34	51.6
400	1:06	34.0	1:06	34.4	1:05	35.2	1:05	35.6	1:04	36.0	1:00	36.8
Adjust:	700lbs/hr		880lbs/hr		1000lbs/hr		860lbs/hr		680lbs/hr		320lbs/hr	

Note: The graphic above represents Flight Plan Fuel only.

Upper & Lower graphics available for free at <http://www.precisionmanuals.com> (747 manual)

Maximum & Optimum Cruise Altitudes

Altitude	Optimum Wt	Maximum Wt.	Time to Burn Fuel Wt.
FL420	470,000lbs [213,000kg]	520,000lbs [238,000kg]	-
FL410	500,000lbs [227,500kg]	550,000lbs [250,000kg]	1:42
FL400	520,000lbs [238,000kg]	570,000lbs [247,500kg]	1:07
FL390	550,000lbs [250,000kg]	600,000lbs [272,500kg]	1:35
FL380	570,000lbs [247,500kg]	630,000lbs [285,000kg]	1:02
FL370	600,000lbs [272,500kg]	670,000lbs [305,000kg]	1:22
FL360	630,000lbs [285,000kg]	700,000lbs [315,000kg]	1:24
FL350	670,000lbs [305,000kg]	740,000lbs [335,000kg]	1:36
FL340	700,000lbs [315,000kg]	770,000lbs [350,000kg]	1:14
FL330	740,000lbs [335,000kg]	810,000lbs [367,500kg]	1:27
FL320	770,000lbs [350,000kg]	840,000lbs [385,000kg]	1:05
FL310	810,000lbs [367,500kg]	870,000lbs [395,000kg]	1:26
FL300	840,000lbs [385,000kg]	-	1:00

Fuel planning notes:

	Basic Operating Weight (OEW)	394.000	LBS	
+	Payload (passengers & cargo)	XXX.XXX	LBS	
=	Zero Fuel Weight (ZFW)	XXX.XXX	LBS	(max 535.000 LBS)
+	Minimum Landing Fuel	024.000	LBS	
+	Alternate Fuel (200nm distance)	018.000	LBS	
+	Contingency Fuel (holding, taxi, etc.)	018.000	LBS	
=	Planned Landing Weight (PLW)	XXX.XXX	LBS	(max 630.000 LBS)
+	Flight Plan Fuel (fuel for route)	XXX.XXX	LBS	
=	Planned Takeoff Weight (PTOW)	XXX.XXX	LBS	(max 875.000 LBS)

➔ Flight Plan Fuel + 60.000 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.

Recommendation: Print pages 2-1 to 2-16 (Cruise / Fuel) & 3-1 to 3-7 (Landing) from 747 manual.

Reduced & Conventional Vertical Separation Minima - CVSM & RVSM

<u>CVSM</u>		<u>RVSM</u>		<u>RVSM (North-South)</u>		<u>RVSM (meter)</u>		<u>CVSM (meter)</u>	
<u>180°</u> - 359°	<u>000°</u> - 179°	<u>180°</u> - 359°	<u>000°</u> - 179°	<u>270°</u> - 89°	<u>90°</u> - 269°	<u>180°</u> - 359°	<u>000°</u> - 179°	<u>180°</u> - 359°	<u>000°</u> - 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)
<u>CVSM</u>	<u>CVSM</u>	<u>RVSM</u>	<u>RVSM</u>	<u>RVSM</u>	<u>RVSM</u>	<u>RVSM</u>	<u>RVSM</u>	<u>CVSM</u>	<u>CVSM</u>
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 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)
<u>CVSM</u>	<u>CVSM</u>	<u>CVSM</u>	<u>CVSM</u>	<u>CVSM</u>	<u>CVSM</u>	<u>CVSM</u>	<u>CVSM</u>	<u>CVSM</u>	<u>CVSM</u>
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 (including the Atlantic Ocean) with the following exceptions:

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).