



*DO NOT USE FOR FLIGHT*

# *Boeing 747-400(F)*

## *Checklist / Flow-Procedure*

*including basic Flight-Planning-Charts*

*for PMDG 747-400(F)  
with Microsoft Flight Simulator / Prepar3D*

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*Print Notice: Page size DIN A5. Print 2 pages per A4 or Letter page. This page is the front cover.*

**Attention:**

PMDG Options Menu / Various: Ground Air/Power Available should be set to on  
If not: Bring forward APU start (instead of Ext Pwr On)

**Parking Position / Preparation:**

- Load & Fuel (at Configurator) Set
- Flighplan 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
  - CKT BKR OVHD PANEL On (if needed)
  - GLARESHIELD PANEL/FLOOD On (if needed)
  - DOME On (if needed)
- Elec Eng Control switches Norm & saved
- Utility (power switch) Left On

- |                                    |   |
|------------------------------------|---|
| • Utility (power switch) Right     | On  |
| • Lights                           |   |
| ○ NAV                              | On (mandatory)  |
| ○ LOGO                             | On  |
| ○ WING                             | On  |
| • Emergency Light                  | Arm   |
| • IRS Alignment (OVHP & FMC):      |   |
| ○ IRS switches (1-3)               | Off   |
| ○ IRS switches (1-3)               | Nav   |
| ○ IRS switches (1-3)               | Align   |
| ○ → 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)  |
| ○ 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
- EFIS-Mode (MainPanel/MP) MAP
- EFIS-Range (MP) 40nm (or as required)
- GND-Control Set frequency
- IFR-clrc Request (when ATC active)
- FP-correction Correct (if required / requested)
- IFR-clrc-data Note
- Note (Squawk, First-Altitude, QNH → Readback) ---
- Squawk Set
- Altimeter Set to 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)  
Buttons: 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
  - Tank 2 > Tank 1 Xfeed 1 on
  - Tank 3 > Tank 4 Xfeed 2 on
  - 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:
  - 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
  - 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
- l/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
- --- TO/GA button is the screw over the F/D switch ---
- Yoke Press forward till 80kts
- V1 No abort
- 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 when on Unicom
- 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
- Autopilot / FMC Check permanently
  - 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
- Airport-/Meta-Information Retrieve
- Autobreaks Set
- FMC:
  - Arrivals page → DEP/ARR
  - Set active rwy (and approach/STAR)
  - Approach Ref page → INIT REF button
  - Copy flap and corresponding Vref setting → 1R or 2R
  - Paste for approach → 4R
  - Note approach speed (see 4R)
  - NAV Radio page → NAV/RAD
  - Note rwy heading (see 4L)
  - Close FMC
- Start of Descent (4 possibilities):
  - VNAV:



- Alt (AP) Set (before reaching T/D !)
  - VNAV Will descent automatically at T/D
- DES NOW:
  - Alt (AP) Set (before reaching T/D !)
  - FMC ACT ECON CRZ page → VNAV
  - Page 2 Next Page
  - Des Now 6R
  - Execute EXEC
- FL CH:
  - Alt (AP) Set
  - FL CH (AP) On
  - Speed (AP) Set to IAS, set Speed
- 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
- 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

**---Touchdown---**

- |                    |                                   |
|--------------------|-----------------------------------|
| • Throttles        | Idle                              |
| • Thrust reversers | Engage (if needed)                |
| • Thrust reversers | Disengage (at 80kt) (idle thrust) |
| • 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)<br>(e.g. 1 passes by set to 5) |
| • Gear   | Down (under 270kt / at flap 20)                            |
| • Speedbrake   | Arm  |
| <b>---stabilize von glideslope---</b>                |  |
| • ILS captured                                       | Announce   |
| <b>---check flaps to ref-degree and gear down---</b> |  |
| • 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  |
| <b>---Touchdown---</b>                               |  |
| • Throttles  | Idle   |
| • Thrust reversers                                   | Engage (if needed)   |
| • Thrust reversers                                   | Disengage (at 80kt) (idle thrust)                          |
| • Runway   | Vacate („rwy vacated“)                                     |

**Taxi:**

- |                       |                        |
|-----------------------|------------------------|
| • Transponder         | Stdby                  |
| • Hand-off TWR to GND | Change frequency       |
| • Taxiways            | Note and follow        |
| • ( 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)
- 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 Stdby
- If still on APU (no Ground power):
  - APU bleed Off
  - APU Gen 1 & 2 Off
  - APU Off
- Ground power Off
- External lights Off (all)
- Internal lights Off (all)
- Bus Tie Switches Off
- Stdby power selector Off
- Battery Off



**Intentionally Blank**

## Attachments

**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	309.2
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) (max 535.000 LBS)	XXX.XXX	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) (max 630.000 LBS)	XXX.XXX	LBS
+	Flight Plan Fuel (fuel for route)	XXX.XXX	LBS
=	Planned Takeoff Weight (PTOW) (max 875.000 LBS)	XXX.XXX	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.