



Just Flight BAe 146 Professional Flows

Pre-Flight Checks & Power Up	
WX	Check Off ⇒ Tilt 15 degrees UP
Transponder	Verify STBY
Air brake	Verify IN
Flaps	Verify UP
Batt 1 & Batt 2	ON ⇒ Check BATT ammeter shows a discharge ⇒ Check for minimum 24V on the VOLT/AMP selector
Nav Lights	HI INT
No Smoking	AUTO
Cabin Emergency Lighting	ARM
Landing Gear	Verify lever DOWN and 3 Greens
Parking Brake	Verify YEL and set
GPU (Ext AC)	ON (if available)
APU Gen	ON (if required or GPU not avail)
L Inner Fuel Pump	ON
APU	START ⇒ Monitor RPM for increase ⇒ Monitor TGT for increase, peak, decrease ⇒ Check APU PWR AVAIL annunciation
APU Air	ON
Master Switches	Yaw Damp 1 & 2 ⇒ ON AP Master ⇒ ON Avionics A & B ⇒ ON
Ground Ignition	Check setting ⇒ A for odd dates, B for even dates ⇒ BOTH for cold weather cond.
Anti-Skid	ON
Lift Spoilers	YEL & GRN ⇒ ON
Hydraulic Pumps	ENG Pump 2 & 3 ⇒ Verify OFF
Bus-Ties AC & DC	Set to AUTO
Stby Inv & Stby Gen	ARM
Galley/Shed	ON
Generators	GEN1 & 4 ⇒ Verify OFF/RESET
Engine Anti-Ice	Verify all ON
Cabin Air	Set to RECIRC

Packs	One to ON ⇒ PACK1 on odd dates ⇒ PACK 2 on even dates
Engine Air	Verify all OFF
Overhead Panel Annunciators	Press and hold TEST ⇒ Verify annunciators lit and extinguish after releasing
Cockpit Emergency Lighting	ARM

Pre-flight Testing	
MWS	Press in fully ⇒ Verify all MWS annunciators illuminated and chime sounds Return to middle position (unlit)
Flight Deck Annunciators	Press and hold FLT ANNUN ⇒ Verify windshear and altitude callouts ⇒ Verify flight deck annunciations light, and extinguish once released
Ground Tests	Engine Fire 1-4 ⇒ Verify MWS annunciation and fire bell warning Stall Warn 1 & 2 ⇒ Verify stick-shaker and caution Speed Warn 1 & 2 ⇒ Verify horn and caution Optionally complete other ground tests.
DC Pump	ON ⇒ Verify rise in YELLOW brake pressure (below v-speed) OFF
AC Pump	ON ⇒ Verify rise in YELLOW system pressure (above switch)
PTU	ON ⇒ Verify rise in GREEN system pressure ⇒ Verify all annunciators extinguished
AC Pump & PTU	OFF
WX	Set to STBY
Transponder	Set XPDR ⇒ 1 on odd dates ⇒ 2 on even dates Press TEST to run TCAS check
Brake Temp Indicators	TEST ⇒ Verify displays 750°C & OVHT ⇒ Set to ON
Oxygen	Flight crew oxygen test left and right ⇒ Verify air flow Passenger oxygen supply on FO side ⇒ Turn valve to ON

Before Start	
EFB	FWD PAX ⇒ Open Airstairs ⇒ Down Fuel, Passenger, Cargo boarding can begin
Parking Brake	Verify set
Brake PSI	Verify YELLOW >2,500 PSI ⇒ If lower, turn DC Pump ON until pressure has risen
Thrust Levers	Verify FUEL OFF position
Hydraulics	Verify all switches in OFF position
Ctr Tank Transfer	AUTO
Pressurisation	Verify MODE set to AUTO ⇒ BARO set to standard ⇒ Use ALT SET to set flight altitude
Ice Detection	ON, replace guard
Flight Data Recorder	Set date and flight leg
Transponder	Set squawk code or 2000 without ATC Press ATC/FID ⇒ Set flight ID (i.e. EG2102) using keypad ⇒ ENTER to confirm ⇒ ATC/FID again to switch back to ATC mode
TMS	Press PWR to turn on ⇒ TEST ⇒ Verify annunciations on each key ⇒ Set TREF to outside air temp ⇒ Select TO for Take-Off mode ⇒ Set TGT to 840°C
Gauge Bugs	Set NI and TGT bugs to TMS values Set airspeed indicator bugs to flipchart values for takeoff flaps/weight <i>(or click the flipchart to set the bugs automatically)</i>
TMS	Press PWR to turn off
Flight Directors	Both to ON
Altimeters	Set QNH
FMS/Navigation	Program FMS for LNAV navigation, or tune VORs/courses as required Set HSI accordingly; ⇒ NAV = VOR navigation ⇒ RNAV = LNAV & FMS navigation
Altitude	Set and ARM
Radios	ON and tune as required
DME	Turn to ON

Pushback & Engine Start	
Stairs	To retract airstairs ⇒ AC Pump ON ⇒ Retract Stairs via EFB ⇒ AC Pump OFF
Doors	Verify closed and secured Lock flight deck door ⇒ Check MWS door cautions extinguished
APU & APU Gen	On, if not already <i>(follow blue flows under Pre-Flight & Power Up)</i>
Chocks & GPU	Remove via EFB
Fasten Belts	ON
Beacon	ON
APU Air	OFF <i>(if APU has been running)</i>
Packs	OFF
Parking Brake	ON Until Tug Requests Disconnect
Pushback	Commence
Fuel Pumps	All to ON
Engine Anti-Ice	All to ON for start
Start PWR	Verify set NORM
Start Master	ON ⇒ Verify START PWR ON annunciation
Engine 4 Start	START SELECT knob to 4 ⇒ Press ENGINE START switch to START for 2 seconds ⇒ Verify ENG IGN ON and STARTER OPERATING annunciations ⇒ Monitor NI, N2, TGT gauges At 10% N2 ⇒ Engine 4 Thrust lever to FUEL ON ⇒ Monitor increase in values ⇒ At 100+ NI and TGT verify ENG IGN annunciators extinguished, move onto Eng 3
Engines 1-3	Repeat above in order 3, 2, 1. Monitor all gauges to ensure stable at idle once all engines live. Return START SELECT to OFF.

After Start	
Start Master	OFF
Engine Anti-Ice	As required
Ice Protect Heat	All to ON
Generators	GEN 1 & 4 to ON ⇒ Verify OFF LINE annunciators extinguished
Hydraulic Pumps	ENG Pump 2 & 3 to ON ⇒ Pump 3 must remain OFF until tow-bar disconnect ⇒ Check YEL and GRN gauges climb and indicate +3000psi

After Start (cont)	
AC Pump & PTU	ON once pressure has reached +3000psi ⇒ Must remain OFF until towbar disconnect
Brake Fans	AUTO
APU Air	ON
Packs	Both to ON
Flaps	Set as required
Transponder	Set to TA

Taxi	
Taxi Lights	ON
WX	Set to WX or MAP
Parking Brake	Release
Brake Test	Switch to GREEN ⇒ Test and verify increase in pressure Return to YELLOW ⇒ Test and verify increase in pressure
Flight Controls	Check free & clear
Trims	Rudder ⇒ Verify centered Aileron ⇒ Verify centered Elevator ⇒ Within green band range (<i>click CG% box on EFB to set automatically</i>)
Config Check	Verify no horn

Taxi Speeds	
Runway	Max 50kts
Taxiway	Max 30kts
Apron	Max 15kts

Before Takeoff	
CONT IGN	A & B to ON if conditions are poor
Cabin Call	Press (<i>cabin secure and crew seated</i>) ⇒ Wait for verification that cabin is secure ⇒ Check that Cabin Secured slider has been moved to Take-Off
Landing Lights	ON
Strobe Lights	ON
Brake Temps	Normal runway conditions ⇒ Verify below 300°C Contaminated runway conditions ⇒ Ride brakes to achieve 50-100°C
TMS	PWR on ⇒ TO to arm takeoff mode
MWS	All annunciations extinguished except Greens ⇒ ICE PROT may display
Yaw Damper	ON ⇒ Verify YD1 and YD2 lit
Transponder	Set to TA/RA

Takeoff & Climb	
Thrust Levers	Advance to 55% NI ⇒ Verify stable ⇒ Once stable, advance to approximately the gauge bugs ⇒ TMS will take over and fine tune
VR Speed	Pitch to 10°
Positive Rate	
Gear	UP
Pitch	Adjust to maintain V2+10kt ⇒ No steeper than 20°
1,500ft AGL	
Pitch	Adjust to achieve 250kt climb
VTFO	Flaps UP
Autopilot	Engage ⇒ Arm LNAV for FMC navigation ⇒ Arm V/L for VOR navigation ⇒ Arm IAS to hold speed
TMS	Select SYNC mode ⇒ Reduce thrust levers to 88% NI ⇒ Increase by 1% per 5,000ft Alternatively select TGT mode ⇒ Set TGT of 840°
Gear	Verify UP
Flaps	Verify UP
Cabin Air	Set to FRESH
Engine Air	All to ON
APU Air	OFF ⇒ Verify APU VLV NOT SHUT annunciator extinguishes
AC Pump & PTU	OFF
APU	STOP
APU Gen	Set to OFF/RESET
Cabin Call	Press once in steady and safe climb (<i>releases cabin crew</i>)
10,000ft	
Landing Lights	OFF
Fasten Belts	OFF
Pitch	Adjust to achieve 280kt climb ⇒ Optionally select MCT mode on TMS to maintain max safe thrust At 0.66 Mach speed ⇒ Arm MACH to hold speed to cruise altitude

Cruise	
Speeds	Maintain 280kt/0.68M for normal cruise ⇒ Max cruise 290kt/0.72M
Fuel	Monitor
Pressurisation	Monitor
CONT IGN	A & B to ON if turbulence is encountered
Top Of Descent	Calculate via EFB or; ⇒ 3x difference in altitude, ± 1nm per 10kt headwind/tailwind
Top of Descent	
Pressurisation	Set to landing altitude & landing QNH ⇒ Monitor for drop in cabin pressure
Altitude	Set and ARM
TMS	Select DESC mode ⇒ For expedited descent select SYNC to force lower NI
Thrust Levers	Idle
Speeds	Maintain 250-280kt on descent ⇒ Use airbrake as necessary ⇒ IAS hold in smooth conditions ⇒ V/S of 2000ft in turbulent conditions

Descent	
10,000ft	
Lights	Taxi Lights to ON when controlled ⇒ R LANDING on when approach given ⇒ L LANDING on when clear to land Landing Lights to ON when uncontrolled
Speeds	Maintain 250kt unless otherwise advised
Anti-Ice	If OAT is 10°C or lower with visible moisture ⇒ Engine & Airframe Anti-Ice to ON
Fasten Belts	ON
AC Pump & PTU	ON
Navigation	Tune ILS/NDB/VOR frequency and course
Decision Height	Set
APU & APU Gen	If required for landing ⇒ START at 5,000ft (<i>follow blue flows under Pre-Flight & Power Up</i>)

Approach & Landing	
Gauge Bugs	Check flipchart for VREF/VAPP speeds for intended landing flaps (<i>or click flipchart to set these automatically</i>)
Cabin Call	Press at final descent point altitude (<i>cabin secure and crew seated</i>)
Navigation	Switch HSI source to NAV for ILS/LOC approach ⇒ Arm V/L once on intercept course (45° or less) ⇒ Arm GSL once on final course

Flaps & Gear	Precision App	Non-Precision App
Flaps 18	Intercept altitude	Intercept altitude
Gear Down	1 dot below GS	3nm from FAF
Flaps 24	0.5 dots below GS	2nm from FAF
Flaps 33	After GS intercept	1nm from FAF
Gear	Verify 3 Greens	
Anti-Ice	Airframe Anti-Ice ⇒ OFF by 500ft AGL Engine Anti-Ice ⇒ As required	
Air Supply	Normal Procedure ⇒ Cabin Air to RECIRC ⇒ Engine Air and Packs all stay ON If Engine Anti-Ice is on ⇒ Pack 1 & 2 to OFF ⇒ Engine Air 1, 2, 3 to OFF <i>If APU running</i> ⇒ Pack 1 to OFF ⇒ Cabin Air to RECIRC ⇒ APU Air On ⇒ Engine Air all to OFF	

Landing	
Airbrake	Extend when passing through 100ft AGL ⇒ In case of engine failure/s do not deploy until passing threshold
Thrust Levers	Ground idle when passing threshold
Lift Spoilers	Deploy once nose gear on the ground

APU Usage and 2-3 Engine Taxi
Normal operations do not start the APU for landing or taxi-in to the gate. APU should only be used for landing; ⇒ When the runway surface is contaminated ⇒ When ground equipment isn't available (i.e. GPU) ⇒ When 2 engine taxi is expected to the gate Taxi-in can be accomplished with 3 engines without APU for extended taxi/delays. 2 engine taxi must have APU on.

After Landing	
Taxi Lights	ON
Strobe Lights	OFF
TMS	OFF
Transponder	Set STBY
Flaps	UP
Airbrake & Lift Spoilers	IN
CONT IGN	Verify both set to OFF
Packs	One to OFF (if both are ON) ⇒ Pack 2 on odd dates ⇒ Pack 1 on even dates
Flight Directors	Both to OFF
Altitude	Set to zero

Taxi In & Stand	
Thrust Levers	If required, Engines 1 and/or 4 can be shut down on taxi-in to gate If APU is not running ⇒ Thrust Lever 1 to FUEL OFF ⇒ GEN1 to OFF/RESET If APU is running ⇒ Thrust Levers 1 & 4 to FUEL OFF ⇒ GEN1 & 4 to OFF/RESET
Taxi Lights	OFF when turning onto stand
Parking Brake	Verify YEL and set
GPU (Ext AC)	Request via EFB and connect ⇒ Set to ON
Thrust Levers (cont.)	1, 2 and 3 ⇒ FUEL OFF 4 (if APU isn't running) ⇒ Remain on until GPU connected ⇒ Once GPU connected, FUEL OFF and GEN 4 to OFF/RESET
GPU (Ext AC)	Request via EFB and connect ⇒ Set to ON
Pressurisation	Verify depressurized completely ⇒ Cabin pressure should match airport elevation
MWS	Pull out fully
Hydraulics	PTU ⇒ Set to OFF AC Pump ⇒ Set to OFF ENG Pump 2 & 3 ⇒ Set to OFF DC Pump ⇒ Verify OFF
Fuel Pumps	All to OFF ⇒ If on APU power leave L INNER pump to ON
Air Supply	Cabin Air ⇒ Set to RECIRC Engine Air ⇒ All to OFF APU Air ⇒ On if APU running Packs ⇒ Verify one ON (1 on odd dates, 2 on even dates)
Anti-Ice	Engine Anti-Ice (if off) ⇒ Set to ON Airframe Anti-Ice ⇒ Verify OFF
Ice Protect Heat	All to OFF
Ice Detection	OFF, replace guard
Beacon	OFF

EFB	FWD PAX ⇒ Open Airstairs ⇒ Down Chocks ⇒ Set Deboarding can now begin. Plane is in turnaround state—repeat flows from BEFORE START to begin new flight
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Shutdown	
Master Switches	Avionics Master A & B ⇒ OFF Autopilot Master ⇒ OFF Yaw Damper Master 1 & 2 ⇒ OFF
Brake Fans	If brake temps are <300°C ⇒ Set to OFF
Anti-Skid	OFF
Lift Spoilers	OFF
Galley Power	SHED
Packs	OFF
APU Air	OFF ⇒ Verify APU VLV NOT SHUT annunciator extinguishes
APU	STOP ⇒ Needs to be shutdown within 30s of APU Air being set to OFF ⇒ Can be shortcut by holding the APU OVSPD test button
Fuel Pumps	Verify all OFF
Lights	Turn off all remaining ⇒ Cabin emergency lighting ⇒ Flight deck emergency lighting ⇒ Nav lights ⇒ No Smoking
Batteries	BATT 1 & BATT 2 ⇒ OFF

With many thanks to Liam (Books) for his help in putting these flows together.