



Just Flight BAe 146 Professional Flows

Power Up	
Gear Handle	Verify DOWN
Weather Radar	Verify OFF
Flaps	Verify UP
Air Brake	Verify IN
Thrust Levers	Verify all to FUEL OFF
Parking Brake	If chocks available ⇒ Verify disengaged If chocks unavailable ⇒ Verify YEL system and engaged
Transponder	STBY
Batteries	Check for minimum 24V on VOLT/AMP selector ⇒ Both to ON
Standby Power	STBY INV and STBY GEN to ARM ⇒ Verify EMERG AC annunciation extinguishes
Generators	Verify OFF/RESET
Fire Tests (completed first flight of day only)	Press and hold ENG FIRE 1 ⇒ Verify bell, fire handles, and MWS annunciators lit Repeat for 2, 3 and 4 and APU FIRE
GPU	If available ⇒ EXT AC to ON
APU Gen	If required or GPU not available ⇒ ON
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 after 1 minute of operation

Pre-Flight Setup	
Boarding & Fuel	Open doors as required, call fuel truck, commence boarding/loading
Master Switches	Yaw Damp 1 & 2 ⇒ ON AP Master ⇒ ON Avionics A & B ⇒ ON
Ground Ignition	Set as required ⇒ A on odd dates ⇒ B on even dates ⇒ BOTH for cold weather
Brake Fans	Verify OFF
Anti-Skid	ON
Lift Spoilers	YEL & GRN to ON

Hydraulics Panel	Verify all OFF
DC Pump	ON ⇒ Verify YEL brake pressure increases OFF
AC Pump & PTU	AUTO ⇒ Verify YEL system pressure rise PTU to ON ⇒ Verify GRN system pressure rise ⇒ Verify LO PRESS annunciators out AC PUMP & PTU both to OFF
Fuel Panel	CTR Tank Transfer to AUTO Verify all pumps OFF ⇒ If APU running L INNER is ON
Bus-Ties	AC & DC to AUTO
Galley Power	ON
Engine Anti-Ice	All to ON
Airframe & Wing Anti-Ice	Verify all OFF
Ice Heaters	Verify all OFF
Ice Detect Switch	Verify covered and OFF
Pressurisation	Verify MODE set to AUTO ⇒ Set BARO to STD (1013) ⇒ ALT SET to cruise altitude
Ground Testing	STALL WARN 1 & 2 ⇒ Verify stick shaker & MWS SPEED WARN 1 & 2 ⇒ Verify horn
<i>Nav Lights</i>	<i>HIGH INT</i>
<i>No Smoking Lights</i>	<i>ON</i>
<i>Cabin Emerg Lights</i>	<i>ARM</i>
<i>Entry Lights</i>	<i>As required</i>
Engine Air	Verify all OFF
APU Air	Verify OFF unless APU running
Cabin Air	Set to RECIRC
Packs	Set one to ON ⇒ PACK A on odd dates ⇒ PACK B on even dates
Flight Deck Emerg Lights	ON ⇒ Verify flood & emergency lights illuminate ARM
Overhead Annun Test	Press and hold ANNUN TEST ⇒ Verify overhead annunciators light and extinguish once released
Flight Deck Annun Test	Press and hold FLT ANNUN ⇒ Verify flight deck annunciators light and extinguish once released

MWS Test	Push fully in ⇒ Verify all MWS annunciators illuminate and chime sounds Return to middle (unlit) position and clear caution
Flight Directors	Both to ON
Altitude	Set to cleared altitude
Heading/Course	Set runway heading or as required
Radios & DME	Tune as required & DME to ON
TMS	PWR on ⇒ TEST and verify annunciators TREF to outside air temperature Select TO Set TGT to 840°
Gauge Bugs	Set NI and TGT bugs to TMS values Set airspeed indicator bugs to flipchart values for takeoff flaps/weight (click the flipchart to set bugs automatically)
TMS	PWR off
FMS	Program for LNAV navigation
HSI	Set as required, Cpt & FO ⇒ NAV for radio navigation ⇒ RNAV for FMS navigation
Altimeters	Set to local pressure
Weather Radar	STBY
Transponder	Set as required ⇒ XPDR 1 on odd dates ⇒ XPDR 2 on even dates Perform TCAS test Set squawk code and optionally enter flight ID
Brake Temperature	TEST ⇒ Verify displays 750° & OVHT ⇒ Set to ON
Oxygen	Flight deck oxygen Cpt & FO sides ⇒ Verify air flow Passenger oxygen supply both sides ⇒ ON Passenger oxygen pressure FO side ⇒ Verify in green band

Engine Start

Doors	Verify all secured and no MWS door annunciators
Parking Brake	SET if disengaged ⇒ Verify YEL pressure of 2500+ psi
Chocks	Remove
Fuel Pumps	All to ON
Fasten Belts	ON
Beacon	ON
APU & APU Gen	Start if pushback required or poor conditions (<i>blue flows on Power Up</i>)
GPU & EXT AC	Disconnect if using APU and set OFF

Packs	OFF
APU Air	OFF
Pushback	If required commence prior to engine start
Start PWR	Verify set NORM
Start Master	ON ⇒ Verify START PWR ON annunciation
Engine 4 Start	START SELECT to 4 ⇒ ENGINE START switch to START for 2 seconds ⇒ Verify ENG IGN ON and STARTER OPERATING annunciators ⇒ Monitor NI, N2 and 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
Engines 1-3	Repeat above in order 3, 2, 1 Monitor for engines to stabilise once all running
Start Select	OFF
Start Master	OFF

After Start

Engine Anti-Ice	As required
Ice Heaters	All to ON
Ice Detection	ON and replace cover
Generators 1 & 4	ON ⇒ Verify OFFLINE annunciators extinguish
GPU	If used for engine start disconnect
EXT AC	OFF
APU	STOP if running and not req for takeoff
APU Gen	OFF/RESET if running and not req
Hydraulic Engine Pumps 2 & 3	ON ⇒ Pump 3 remain OFF until towbar disconnect ⇒ Verify YEL & GRN gauges indicate 3000+ psi
AC Pump & PTU	ON once YEL & GRN pressure stable
Brake Fans	Set AUTO
Engine Air	All to ON
Packs	Both to ON
APU Air	Verify/set OFF if APU not req
Flaps	Set as required
Transponder	TA (or ALT OFF)
Weather Radar	WX or MAP as required
Taxi Lights	ON

Taxi	
Parking Brake	Release
Brake Test	Switch to GREEN system ⇒ Test brakes and verify pressure increase Return to YELLOW system ⇒ Test brakes and verify pressure increase
Flight Controls	Check free & clear both sides
Trims	Rudder & Aileron ⇒ Verify centered Elevator ⇒ Within green band range (click CG% box on EFB to set for weight)
Config Check	Press and hold ⇒ Verify no horn
CONT IGN	A & B to ON if conditions are poor
TMS	PWR on ⇒ Arm TO mode
Cabin Call	Press (cabin secure & crew seated) ⇒ Wait for verification from crew ⇒ Check that slider has been moved to Take-Off
Line-Up	
Landing Lights	ON
Strobe Lights	ON
Brake Temperatures	Normal runway conditions ⇒ Verify below 300°C Contaminated runway conditions ⇒ Ride brakes to achieve 50-100°C
Yaw Damper	ON ⇒ Verify YD1 and YD2 lit
Transponder	TA/RA
MWS	All annunciations extinguished except Greens ⇒ ICE PROT may display in White

Takeoff & Climb	
Flight Directors	Press AP switch on yoke ⇒ Verify bars pitch upwards
Brakes	Hold until takeoff power set
Thrust Levers	Advance to 60% NI ⇒ Verify stable ⇒ Once stable, advance to approximately the gauge bugs
VR	Pitch to flight director bars
Positive Rate	
Gear	UP
Pitch	Adjust to achieve 250kt climb speed
Flaps	UP at VTFO speed

Autopilot	Engage ⇒ Arm LNAV for FMC navigation OR ⇒ 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 ⇒ Verify TGT of 840°
Gear	Verify UP
Flaps	Verify UP
Cabin Air	Set to FRESH
APU Air	OFF ⇒ Verify APU VLV NOT SHUT annunciator extinguishes
PTU	OFF (AC Pump remains ON)
APU	STOP
APU Gen	OFF/RESET
Cabin Call	Press once in steady and safe climb (releases cabin crew)
Altimeters	Transition altitude ⇒ Set STD
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 crossover ⇒ Arm MACH on MCP to hold speed to cruise altitude

Cruise	
Speeds	Maintain 280kt/0.68M for normal cruise ⇒ Max cruise 290kt/0.72M
Fuel	Check expected fuel at each waypoint
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 Landing Lights to ON when given approach clearance or 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
PTU	ON
Navigation	Tune ILS/NDB/VOR frequency and course
Decision Height	Set
APU & APU Gen	If required for landing ⇒ START at 5,000ft (follow blue flows under Power Up)

Approach & Landing		
Gauge Bugs	Check flipchart for VREF/VAPP speeds for intended landing flaps (or click flipchart to set these automatically)	
Cabin Call	Press at final descent point altitude (cabin secure and crew seated)	
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
<i>Flaps 18</i>	Intercept altitude	Intercept altitude
<i>Gear Down</i>	1 dot below GS	3nm from FAF
<i>Flaps 24</i>	0.5 dots below GS	2nm from FAF
<i>Flaps 33</i>	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 If APU running ⇒ 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 ENGINE START to begin new flight

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.