

Screen-shot the result of View/Mode/Viewing (alternatively Download...PDF in Firefox), default 100%, start at -0.5/-0.5 cm with the help of the ruler for consistent content placement, size 768x1024.

NOTES

- Based on [1], [3], [5] and training missions. Some actions are reordered to be more similar to P-51D procedures.
- When communicating with ATC the menu does not close and stays in the ATC submenu. When the ground crew is contacted (\) the wrong submenu stays open. Always check whether the communication menu is not already open and also its state and use **F11** and **F12** as needed before or after using \ or **RShift+**.
- Boost-throttle interconnect notes:
 - Generally, it should be OK to use the interconnect, even during the start. Real-life P-47D-30 manual [6] instructs to takeoff with the interconnected Boost and Throttle (except for the hot weather).
 - Using the interconnect may not be the most optimal thing, as the same MP with interconnect provides lower performance (speed) than the same MP with just the throttle, especially in low altitude.
 - [4]-1A@5:21 claims that the interconnect costs ~300hp, although less in high altitudes. You should first max your throttle before increasing the boost. (This was not a problem with later P-51N models where it was regulated.)
 - Generally, turbo should be used as a “second throttle” when the throttle is already fully advanced – especially in low altitude.
 - [4], video 1A, states that interconnect should not be used under 7,000 at all, but [5] says this limitation is only with 91-octane fuel used for training (DCS likely models 100-octane fuel).
 - Takeoff training mission recommends using boost-throttle interconnect, but this is not recommended in other sources for takeoff, especially to allow full throttle without engaging the turbo. Boost may be used for heavy takeoff.
- Throttle-RPM interconnect is both-ways in DCS, but it should likely be only one way in reality. It should prevent RPM going below throttle, but should allow throttle go below RPM just fine.

PRE-FLIGHT CHECKS – EXTERIOR INSPECTION

Most steps are not applicable in DCS. Maintenance personnel completed all pre-flight requirements. Preflight walkaround based on [5].

Pilot starts at the left wing tip and goes around CW checking the following items:

1. Pitot tube: Cover removed.
2. Guns: Plugs inserted(?) and blast tubes snug (tight, not moving).
3. Wheels: Chocked.
4. Tires: For proper inflation (outside bead of the tire tread should just touch the ground) and alignment on wheels (painted line on the rim and tire should align).
5. Oleo strut: 1 $\frac{5}{8}$ inches to 2 $\frac{1}{4}$ inches of oleo visible.
6. Inspection plates: All closed.
7. Cowling: Securely fastened.
8. Propeller: For nicks.
9. Leading edge of wings: For dents.
10. Ailerons: For foreign objects.
11. Radio antenna: For proper tension, and security of fastening.
12. Tail surfaces: For rust, damage, or dirt.
13. Inside of supercharger flight hood: For accumulated oil or dirt.
14. Camera glass: For cracks, scars, or yellowed appearance.
15. Navigation lights: For cracks and cleanliness.
16. Landing light: For cracks and cleanliness.
17. Canopy: For scratches, scars, dirt, and oily film.
18. In cold weather check for snow, frost or ice on the surfaces and antenna.

END

BEFORE START:

1. **Parking brake: ENGAGE**
2. **Controls** (stick and rudder) **and surfaces**: check unrestricted movement
3. Test **hydraulic hand pump**: pull 3 or more times and see the hydraulic pressure indicator action
4. **Cowl Flaps**: check **OPEN**
If not, first switch landing **Flaps** to **NEUTRAL**, **pull** the cowl flaps handle, and while holding it pulled, operate the **hydraulic hand pump**. You can see the cowl flaps are fully open when the hydraulic pressure gauge does not return to 0 between pumping.
5. **Carburetor Air Heat** control lever: **COLD** (forward, default) hidden under the left arm panel
6. **Air Filter** control lever: as needed, for paved runways **OFF** (back, default)
7. **Trim: rudder T.O.**, aileron **Neutral**, elevator **Neutral** (or $\frac{1}{4}$ **forward** with full auxiliary fuel tank)
8. **Flaps: UP** (forward) Flaps will not go up yet as there is no hydraulic pressure.
9. **Landing gear** handle: **down** (extended)
10. **Fuel selector** valve: **MAIN**
11. **Boost** (supercharger) lever: check **movement**, set **back**
12. **Throttle**: check **movement**, set **1" open**
13. **Engine RPM** (propeller pitch): check **movement**, set to **INCREASE** (max RPM, fully forward)
14. **Mixture: IDLE CUTOFF**
15. **Compressibility Recovery Flaps** switch: **UP** and **covered**
16. **Propeller Control** switch: **AUTO** (up)
17. **Propeller Governor CB** check: **IN**
18. **Fuel Booster Pump** rheostat: **Start/Altitude** position (all the way CCW)
19. *Check*: all CBs are in
20. **Generator: ON**
21. **Ignition: OFF**
22. **Altimeter**: as required for the mission (or to 0, or to MSL/field elevation ~29.92"Hg)
23. **Horizon: uncage**
24. **Oxygen pressure** indicator: **400–500 PSI**
25. **Radio: OFF**
26. **Tailwheel lock**: set **UNLOCK** (back)
27. **Armament** switches (**TODO**): all **OFF**

END

BEFORE START – Electric systems:

1. Ask for **ground power** using \, **F8, F2, F1** (preferred for the P-47D)
 - a. Alternatively – **Battery: ON**
2. *Check*: all CBs are in, including the **Propeller Governor CB**
3. Indicators come alive:
 - a. *Carb air* and *Oil temp* (both show ambient temperature)
 - b. *Manifold Pressure* shows atmospheric pressure
 - c. *Fuel gauges* show approximate fuel levels
4. *Check* **GREEN** landing light is **ON**
5. *Test warning lights with two test switches*: switch each up and down to check 4 lamps
6. Check interior lights (and leave as needed):
 - a. **Cockpit Lighting** switch: **ON** (no rheostat for intensity)
 - b. Instrument UV lights: **Instrument Light** to **START** position, wait for UV lights to start.
After start (up to 10s) the rheostat moves to the max position just before the **START** position. Instrument fluorescent paint should show. Avoid **START** position with high RPM (CB may pop out). Adjust UV light on the left and right as needed.
7. *Check* exterior lights:
 - a. **Wing/tail position lights** - both levels, leave as necessary (OFF with battery)
 - b. All three **Recognition lights** - both steady and keyed function, leave all OFF
8. **Fuel levels**: check
Fuel gauge requires electric power in the P-47D.
The level shown on the ground is approximate, use the table on the left plate for conversion.
9. **Oil cooler** and **Intercooler** shutters: **OPEN**
In cold weather: both **CLOSED**.
Later check *Oil temperatures* regularly and be ready to open the **Oil cooler** shutters as necessary.
10. Check gunsight:
 - a. **Gun Safety** switch: **CAMERA ONLY** (up)
 - b. **Gun Sight Rheostat**: operate and check *gunsight visible*
 - c. **Gun Safety** switch: **OFF** and **covered**

END

STARTUP:

1. **Generator** switch: check ON
2. *Electric power*: check ON (preferably ground power, or **Battery** switch)
3. **Cockpit lights**: as needed
4. OPTIONAL – request for startu-up:
 - a. **Radio: ON** and switched to local airfield (often the **B** channel)
 - b. **COMM PTT, F5, F1, F3 (F11, F12** to close)
 - c. *After confirmation* – **Radio: OFF**
5. Prime the engine:
 - a. **Primer Lock: UNLOCK**
 - b. **Operate Fuel Priming Pump**: 2–4 stroke, 4–6 on colder days
 - c. **Primer Lock: LOCK**
6. **Booster/throttle/prop control/mixture** check: **back/1"/forward/IDLE CUTOFF**
7. "CLEAR PROP!"
8. **Ignition: BOTH**
9. **Starter**: flick **ENGAGE** for a moment to seat the starter brushes.
10. **Starter: ENERGIZE** (hold 15–20s)
11. **Starter: ENGAGE** (and hold)
 - a. **Mixture** to **AUTO RICH**
 - b. *RPM* stabilizes ~**800** (can take a few seconds in cold weather)
 - c. **Starter: release**
If the engine doesn't start, *check*: Fuel selector, ignition, throttle...
12. *Oil pressure* check: **pressure rises**
If not above 25 PSI after 30 s, **shutdown the engine immediately!**
13. If ground power is used:
 - a. **Battery** switch: **ON**
 - b. **Ground power: OFF** (\, **F8, F2, F2**)
14. Let the **engine warm up** (you may continue with the rest of the checklist):
 - a. Idle at **800–1000 RPM**
 - b. Wait for *Oil temperature* to reach **40°** (adjust the **Oil cooler** shutters if needed)
 - c. Wait for *Oil pressure* to go under the red line.
In cold weather, oil pressure can go up to 200 PSI and will go down slowly. Use **Oil dilution** for up to 4 minutes, but **not when Oil temperature is above 70°**.
15. *Flaps*: check visually **UP** (hydraulic pressure is up)
16. **Radio: ON** and switched to local airfield (often **B**)
17. *You can continue with the next checklist even with the engine not warmed up*

END

AFTER START and TAXI:

1. **Wing/tail position lights:** as needed
2. **Cowl Flaps: OPEN**
3. **Tailwheel lock:** set **UNLOCK** (back) for taxi
4. **Flaps: UP** (forward)
Do not taxi with extended flaps.
5. *Engine instruments* check:
 - a. *Oil/fuel pressures* in green
 - b. *Oil temperatures, Carb air temperature* and *CHT* in green or below
 - c. *Suction* in green (why is it lower at 1000 RPM, regardless of ambient temp?)
6. **Oil dilution** check: **OFF**
7. OPTIONAL – request taxi: **COMM PTT, F5, F1, F1 (F11, F12 to close)**
8. **Parking brake: RELEASE**
9. **TAXI instructions:**
 - a. Keep **RPM 800–900** to avoid speeding up. To start moving, set 1200 RPM shortly.
 - b. Prevent the inside wheel from stopping when turning to avoid tyre damage.
 - c. Move in an S-shape pattern to see ahead. (F4 view may simulate guide on the wing.)
 - d. Use one brake at a time, using a gentle pumping motion.
 - e. Run up the RPM every few minutes to keep the engine from loading up (unburned fuel in the engine and exhaust system).
 - f. When behind another plane, always have the plane in sight! Use opposite S-turns.
 - g. Your wheels are under the guns, use this to judge your path.
10. Taxi to the runway, but don't enter it.
11. **Stop at an angle** to avoid prop wash affecting the planes behind you, ideally into the wind.

PRE-TAKEOFF CHECKS:

1. **Brakes:** keep engaged during the tests
2. **Flaps** *test:* test **DOWN**, then back to **UP**
3. If heavy, set **Flaps: 10–20°** (first fully **DOWN**, then **UP** and when in position set **NEUTRAL**)
4. **Throttle/RPM:** set **30" MP** and **2000 RPM** (avoid exceeding 2000 RPM)
Start with the throttle, with RPM control all the way forward, 30" MP should give you 2000 RPM.
If the brakes don't hold, return to the line.
5. **Magnetos** *check:* Switch to **R** and **L**, expect **drop of 60 RPM**, must not drop over 100 RPM
If the drop is higher but the engine is not running rough, try to clear the engine and check again.
6. Governor *check:* **Prop control** back for **200 RPM drop**, see *no oscillations*, back to **2000 RPM**
7. Verify backup prop operation:
 - a. **Propeller control** switch: **FIXED**
 - b. Check function of **DEC./INC. R.P.M.** switch positions.
 - c. Switch back to **AUTO** (Constant speed) and observe return to **2000 RPM**
8. Run the engine on each filled fuel tank (incl. external) for ~20s, check fuel pressure **22-24 PSI**.
9. *Ammeter:* check a charge (non-zero value)
To run the generator keep **RPM>1100**. Low charge is OK, it means the battery is charged and helps with the load.
10. With **MP/RPM** at **30"/2000** check:
 - a. *Oil pressure:* **75–85 PSI**
 - b. *Oil temperature:* **~50°C** (adjust the **Oil cooler** shutter if needed)
 - c. *Cylinder head temperature:* **100-260°C**
 - d. *Fuel pressure:* **22–24 PSI**
 - e. *Hydraulic pressure:* **800–1100 PSI**
11. **Throttle:** set **900 RPM**
12. **Engine RPM** (propeller pitch): set to **INCREASE** (max RPM, fully forward)
13. Check **surface controls** for free movement.
In cold weather, cycle all the surfaces, trim tabs and flaps three or four times. If you notice any problem, return to the line.
14. Reset **G-meter** and **Horizon**
15. *Check* both compasses, adjust the **Directional Gyro**
16. *Check* **Fuel selector** valve: **MAIN**
17. *Check* trim (**N/N/T.O.**)
18. Check the runway and clear with the ATC: **COMM PTT, F5, F1, F1 (F11, F12 to close)**
19. If clear, enter the runway and align with the centerline, then **lock the tailwheel** and **stop**.

END

TAKEOFF:

1. Check **Tailwheel lock: LOCK** (forward)
2. Check **Cowl Flaps: OPEN** (some sources say **half open?**)
3. Check **Flaps: UP** or **10–20°** if the plane is heavy or for short fields
4. Check **Engine RPM**: set to **INCREASE** (full forward)
5. Check **Oil cooler** and **Intercooler** shutters: set to **NEUTRAL**
6. **Canopy**: as desired (it seems typical to leave it open with the bubble canopy)
7. Check **Boost** and **Throttle**: connected
In hot weather (above 35°C): **disconnect** the Boost and Throttle and use Throttle only
8. **Brakes: engage**
9. **Throttle**: to **30" MP**
10. **Brakes: release**
11. **Throttle**: advance continuously to **52" MP**
12. **Use the rudder gently** to avoid “wrapping the tail around your neck”.
Use a bit wider view and focus on some distant point and/or use the *slip indicator*.
First the strong right rudder will be needed, as the speed goes up, much less is needed.
When the tailwheel lifts, again a bit stronger right rudder will be needed.
13. Gently push on the stick to keep the plane on the ground.
Otherwise, it would try to fly off the ground from a 3-point attitude at around **100 mph**.
Let the tailwheel lift (around 6") to speed up a bit more.
14. At **110 mph**, pull the stick gently to **get airborne**.
15. **Keep flying just above the runway** to gain some speed, push the stick as needed.
16. **Landing gear** handle: **UP** (when safely off the ground)
Some tutorials recommend tapping the **brakes** to stop the wheels, e.g. [5]. DCS manual [1] *does not recommend it* – just like for P-51D. Other sources don't mention it nor warn about it.
Don't reverse the Landing gear operation before the action is complete (warning light is on).
17. Do not climb before the speed reaches the best climbing speed **155 mph**.
18. *Above 500 ft:*
19. **Flaps** (if used): “**milk them up**”
Flaps UP shortly, then NEUTRAL to avoid loss of altitude. Repeat until flaps are up.
20. **Pitot heat**: as necessary (**ON** in cold weather or adverse weather conditions)
21. **Canopy**: if still open, **CLOSE**
22. **Throttle, Engine RPM**: set **42" MP, 2550 RPM**
23. **Cowl Flaps: CLOSE**
24. **Air Filter** control lever: **OFF**
25. Check instruments, temperatures, hydraulic pressure (~**1000 PSI**) and ammeter (~**50 A**).

END

CLIMB:

1. Best climbing speed: **150–165 mph**
Higher speeds may be necessary for prolonged climbs or in hot weather.
2. Check CHT: under **260°C** (manage with **Cowl flaps**)
3. Check Oil temperature: **~95°C** (manage with **Oil cooler** shutters)
4. Check Carburetor air temperature: **~35°C** (manage with **Intercooler** shutters)
5. After 10 minutes of flight, **Fuel selector** valve: **AUXILIARY** (unless empty)

FLIGHT:

- **Above 350 mph:** check **Oil cooler** and **Intercooler** shutters are **NEUTRAL**, not open
- Check fuel levels regularly:
 - *With external tanks:* In safe altitude, check the external tanks first:
 - **Fuel selector** valve: **EXTERNAL**
 - **External fuel tanks selector** valve: cycle each available tank for **~30 s**
 - First **use the auxiliary tank**, until it has **10 gals** left (for better longitudinal stability)
 - Then use external

FLIGHT PROBLEMS:

- **Buffeting** (*shaking*) above **225 mph**: check **Cowl Flaps** are **CLOSED**
- **No acceleration** after takeoff: check **Landing gear** is **UP** and **Flaps** are **UP**

LANDING:

Based on [1], [3], [5] and the training lesson.

Do not fly the straight-in approach because of the limited forward visibility. Perform overhead landing pattern or approach from the side, to keep the runway in view all the time.

1. **Fuel selector** valve: the fullest interior tank (**MAIN** or **AUXILIARY**)
2. **Mixture: AUTO RICH**
3. **Propeller Control** switch: **AUTO** (up)
4. **Propeller Governor CB** check: **IN**
5. **Engine RPM** set: **2,550 RPM**
6. **Tailwheel lock**: set **LOCK** (forward)
7. **Cowl Flaps: CLOSED**, unless CHT is high, then **OPEN**
8. **Air Filter** control lever: **OFF** (back), unless dusty conditions, then **ON** (forward)
9. **Canopy: OPEN**
10. Slow down to: **160 mph**
11. **Landing gear** handle: **down** (extended) (max 200 mph)
 - a. Wait for the **green light** (can take some time, even longer with higher speed)
 - b. Check *System pressure*: back to **~1000 PSI**
 - c. **Trim** the plane using the elevator trim
12. **Flaps: DOWN** (back) (max 190 mph)
13. Maintain approach speed **140–150 mph** (with throttle), don't turn under 130 mph
14. Slow down to **115–120 mph** during the final turn (when lining up with the runway)

Controls are inverted, control speed with pitch and descent with the throttle.
15. *Over the threshold, 10–20 ft AGL*
16. Smoothly reduce throttle and **flare** (don't pull too much to avoid climbing!)
17. *After touchdown*
18. Maintain alignment with the rudder
19. **Brakes**: check action
20. **Cowl Flaps: OPEN**
21. **Tailwheel lock**: set **UNLOCK** (back) for taxi
22. **Flaps: UP** (forward)

Do not taxi with extended flaps.
23. Taxi to the parking spot

END

AFTER LANDING

1. **Parking brake: ENGAGE**
 - a. Or ask for chocks (N/A in this module)
2. **Throttle** set: **1000 RPM**
3. **Oil Dilution: ON**
4. **Mixture: IDLE CUTOFF**
5. Wait for the engine to stop
6. **Oil Dilution: OFF**
7. **Ignition: OFF**
8. **Battery: OFF**
9. **Fuel selector** valve: **OFF**
10. Right-to-left sweep to turn everything else off, including: **Radio, Generator, Pitot heat,**
11. **Horizon: cage**
12. **Reset trim** to **N** and **T.O.** for rudder trim
13. In cold weather:

- a. Ask for chocks (N/A in this module)

- b. **Parking brake: RELEASE**


When leaving your plane, under no circumstances set the parking brakes. Condensation in the drums will freeze, locking the brakes solid.

AEROBATICS

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Loop

Resources

1. *DCS: P-47D-30 Thunderbolt Flight Manual*
2. *DCS guide P-47D Thunderbolt by Chuck (2023-09-20)*
3.  *DCS P-47D Thunderbolt Startup /Takeoff /Landing Tutorial Lesson* by Reflected
4. [P-47 Thunderbolt](#) playlist by Greg's Airplanes and Automobiles (part number added to the source for concrete video), but not all info seems to be 100% accurate for P-47D-30 from DCS.
5. *P-47 Pilot training manual for the Thunderbolt, AAF manual No. 50-5 (real-life)*
6. *Pilot's Flight Operating Instructions for P-47D-25... -30 and -35 airplanes, British model Thunderbolt, AN 01-65BC-1A (real-life)*

Bonus resources

- 1.