Our Wings Carry Your Dreams

Taxi & Run Up

Contents

Introduction

Please ensure you have read the Mini Brief ‘Starting the Aircraft’ before continuing onto this brief.

Before Taxiing

Before commencing taxi, ensure that all After Start checks are complete as per the checklist.

Hold feet on brakes, release the Park Brake.

Request Taxi clearance on SMC. Ensure you are ready to taxi BEFORE making your call.

Begin Taxiing

Use Good Airmanship – consider objects, aircraft and people around and behind your aircraft.

Use the minimum amount of power needed to get the aircraft moving, and once moving, reduce power to the minimum required to taxi.

On flat ground (such as the Pegasus ramp) you should need very little if any additional power, 1000 RPM should be sufficient to get moving. Otherwise, increase power by 100-200 RPM, and then reduce once the aircraft starts to roll. In nil wind on flat paved surfaces, 800-900 RPM will be sufficient to maintain a safe Taxi speed of 10-12 knots.

Ensure the mixture has been leaned (as per the after-start checks) to prevent Spark Plug fouling during extended operations at low RPM. This is essential during hot days in summer. On a 35 degree day at Bankstown, even with a QNH of 1013, the Density Height at the field will be 2430’ and on even hotter days and/or low QNH then density height can be over 3000’. Running the engine at Full Rich mixture at such a high-density height and very low RPM is a sure fire way to foul spark plugs.

Taxi Checks

The Taxi Checks should be performed by memory and can be completed within the first minute of beginning taxi.

Shortly after commencing taxi, test the brakes. You do not to press hard or bring the plane to a stop. Simply ensure there is pressure in the brakes and that they work.

Check the DI and Turn Co-ordinator when making the first turn on the ground, ideally when turning onto Taxiway Bravo. The DI should rotate in the direction of turn, and the Turn Coordinator should show a Skidding Turn (ball to outside). This is also a good opportunity to observe that the Turn Coordinator indicates a RATE of TURN, not a bank.

Also ensure that the ADF is tracking towards the Bankstown NDB station. The station is located on the other southern side of taxiway Bravo. Look for 2 metal towers with a cable between them. Of course, this will only work if you tuned the BK NDB as part of your after-start checks.

How to Taxi

12-16 Knots is your MAXIMUM safe Taxi Speed. When near aircraft, people or vehicles, use a lower speed (including as slow as walking pace) as required.

If you have a GPS fitted, this is easy to judge. Remember however that the GPS has a significant lag factor and takes time to catch up to changes in direction and speed.

Without a GPS, the only effective way to judge your speed is to look at your at the grass beyond your wingtips. If you can't make out individual blades (i.e. the grass is just a green blur) you are taxiing too fast. Don't attempt to judge speed by looking ahead, as everything below 25 knots will look roughly the same

Approaching the Run Up Bay

SLOW DOWN

We need to align ourselves into the wind, plan how you are going to do this before arriving at the bay, as we don't have a reverse gear?

You may need to go past your intended Run Up spot and turn back in order to do this.

Enter the Run Up bay at Walking Pace and attempt to line up in the bay with the nose wheel straight.

When coming to a stop, set the RPM to 1000. This should become automatic every time the aircraft is at a standstill with the engine running.

Engine Run Ups

STOP. PARK BRAKE SET ON. THROTTLE 1000 RPM. This should become automatic without the need to look at the checklist. Keep some pressure on the foot brakes during run ups. Whilst the PA28's park brake is quite good, if you progress to larger aircraft, you may find the park brake is merely that, and unable to hold the aircraft still under power.

CHANGE FUEL TANK SELECTOR TO FULLEST TANK – We must start the aircraft on the tank with the least fuel. Once in the Run Up Bay, we change to the Fullest Tank. There are 2 reasons for this.

Firstly, it ensures we will be on the fullest tank before take-off. Secondly, it ensures we are testing the fuel and its flow from BOTH tanks before take-off. Had there been an issue with the fuel from the least tank, it would have become apparent after start or during the taxi. If there is an issue with the fuel in the fullest tank, it will become apparent during the Run Ups. This is also why it is critical to change tanks from Left to Right even when both are identical. You do not want the first time you change tanks to be in the air.

This is also the reason all Run Ups are conducted with the Electric Fuel Pump OFF. If the Fuel Pump is ON it will mask any problems with the mechanical fuel pump, or low fuel pressure issues. You do not want the first time you turn the Fuel Pump OFF to be at 300 feet after take-off.

The Following Checks should be committed to MEMORY so that you can perform them as a single 'Phase' and use the checklist after they are all complete. This is the correct use of a checklist as opposed to treating each line as a to-do-list. *---Commence Run ups---*

THROTTLE 2000 RPM – Ensure it actually is 2000 RPM. You cannot judge the RPM drop accurately if you are not starting from the correct RPM.

IGNITION SWITCH – Test the left and the Right Magnetos individually by GENTLY turning the Key from BOTH to LEFT MAG. Note the RPM drop and Return to BOTH. Gently turn the key 2 clicks to the left to RIGHT MAG. Note the RPM drop and return to BOTH. The maximum RPM drop must be less than 175 RPM and the maximum difference 50 RPM. If turning to one Magneto produces zero RPM drop, it means you have been running on that one Mag the entire time (despite the switch being set to BOTH) and the other magneto is faulty. If so, request taxi back to the hangar.

CHECK CARB HEAT – Turn the Carburettor Heat to ON. You should experience a small (around 50) RPM drop and notice some audible rough running. This is due to the Carb Heat introducing Hot Air into the engine, reducing density and therefore power, as well as causing rich running (same fuel, but less air). Turn the Carburettor Heat off. You should always avoid ground operations with Carburettor Heat ON (other than this temporary check) as Carb Heat is unfiltered air.

ENGINE INSTRUEMENTS – Oil Pressure, Oil Temperature, Fuel Pressure: "Green, Green, Green"

SUCTION – 4.9 to 5.2. This indicates the operation of the vacuum pump, which drives the Vacuum Operated Gyro Instruments: The Directional Indicator and the Attitude Indicator. The Turn Coordinator is driven by a separate electrically powered gyro.

ALTERNATOR – Should read a positive charge. The Alternator indicates the 'load' being placed on the Alternator, which charges the battery. Immediately after engine start it will often read quite high due to the load placed on the battery by starting. As the battery charges it will drop, generally to between 5-10 amps. If this is reading ZERO this indicates the alternator is NOT charging the battery and it will soon go flat. You should also see an ALT annunciator light. First confirm that Alternator Master Switch is ON. If it is this means the alternator has failed. Turn off all unnecessary electrical equipment and request taxi back to Clam back.

IDLE – This means to BRIEFLY test the engines idle to ensure it is smooth and not too high which could make it difficult to land. Smoothly reduce power to Idle, and then return it to 1000 RPM without delay. Extended running at idle will increase the likelihood of spark plug fouling and produce rough running.

---*Run Ups Complete – Use Checklist to Confirm*---

NOTE: Although it is not mentioned on the checklist, on hot days you should lean the engine again after running ups, just as we did after start for taxiing. The engine should always be leaned during extended ground operations and especially during conditions of High-Density height (i.e., HOT days)

COLD OIL TEMPERATURE – It is permitted to run the engine up whilst the oil temp is still below green. When advancing the throttle to 2000 RPM, do so slowly and note the Oil PRESSURE. Cold Oil is thicker and will cause higher pressure to build up. If pressure exceeds the green range, reduce RPM and wait for the engine to warm. As long as the pressure remains in the GREEN range and the engine produces no rough running, it is permitted to not only perform Run Ups but also take off once run ups are complete. This is specifically mentioned in the Piper Warrior POH, Section 4 - Normal Procedures – Warm Up.

Reference Material

PA-28 Pilots Operating Handbook

Trivia

Failure to Use a checklist is a mandatory FAIL item during a flight test. There have been multiple airline accidents where crews with thousands of hours of experience have failed to properly use checklists, missing vitals actions as a result.

Remember – the correct way to use a checklist is as a CHECK list, not a TO-DO list.