SZD-50-3 Puchacz Flight Characteristics Notes
Rev 2021-06-14

Return to Flight Notes by: Roy Bourgeois

I got the tough job :-) of doing the Puchacz's return to service flight today after the rudder repair and with the glider fresh in my mind I thought some people would find a few comments about it helpful:

First - If you are an experienced pilot planning to use the Puch only for taking friends for guest rides you are missing out on just how much of a joy this glider is to fly solo. It handles great and climbs extraordinarily well with only one person on board. I climbed easily from 1200 AGL to 5000 AGL and the glider when lightly loaded just doesn't want to come down. The new instruments and radio are great. It also has the best trim system of any glider I have ever flown (and that's a lot of gliders). The only negative about ours is the plastic front seat boom microphone which is already broken needs to be replaced with a real one soon.

For those familiar with the Blanik but not the Puchacz, there are a few differences:

The Puchacz's canopy lock levers are the reverse of the Blanik (Blanik locks forward - Puch locks backward). When sliding the vent windows open it's possible to snag a cuff on the lever (although the canopy is quite heavy and not likely to open in a hurry).

The Puch has a really big span stabilizer & rudder that get caught in the spoiled airflow from the dive brakes. This creates a "rumble" or vibration when the brakes are out that takes a little getting used to. Anybody who ever flew a Phoebus will remember this (they had an all flying tail the size of a large surfboard).

The Puch has an aerodynamically balanced rudder with a top portion forward of the hinge line (like the 2-33A only bigger). Under some circumstances/angles of attack this will cause the rudder loads to reverse so that full rudder "locks in" and it takes positive pressure on the opposite rudder to neutralize the rudder. This will sometimes occur in a deep stall, a spin, or even in a slip. It doesn't happen all the time and may be disconcerting when it happens to you for the first time but once you pounce on the opposite rudder it returns to normal quickly.

Sometimes when pulling a lot of G load (coming out of a spin or loop) you will hear or feel a buzzing or vibration sound. It is caused by the dive brake caps standing up in the airflow and vibrating when the wing is very flexed. No big deal but it is bothersome unless you know what it is.

Compared to the Blanik's the Puchacz wheel brake is pretty useless. Remember that it is a nose wheel glider so if you want to steer on the

ground you have to pull the stick back to unload the front wheel. Don't aim at anything you don't want to buy.

Ground handling and turning require somebody to lift the nose or lower the tail. If a wing is down remember to sweep the down wing forward and not backward. There is little clearance from the tiny tip wheels and the ailerons are quite delicate.

Roy B.

Differences from Flight Manual

Richard "Dick" Johnson, a soaring legend, made some points worth noting in his highly respected flight tests, published in *Soaring*: full flight test / additional spin testing

- Extensive tests revealed that the spin recovery practice detailed in the Puch's flight manual – full opposite rudder, then *wait one full second* before applying forward stick – actually delays spin recovery. When no delay is used, spins cease almost immediately.
- Flight tests demonstrated an L/D_{max} – best glide – of 32:1, rather than 30:1 glide ratio stated in the Puch's manual. Further, Johnson's tests show that best glide is achieved at 48 kts rather than the 46 kts specified in the manual.

Tom Witkin

Pre-Flight Notes

Added by George Young 5/26/13

Tim-Tabs- When checking the trim tabs during preflight inspection, make sure that the screws turn within the metal part attached to the trim tab. They are supposed to turn, so the cable does not need to bend when the trim is adjusted. I they are tight the cable will bend with every adjustment and eventually break.

Rudder Adjustment - DON'T Keep pulling on the rudder adjustment cable!!! It does **NOT** move the rudder pedals! The rudder cable only unlatches the rudder pedal assembly allowing it to move fore-and-aft. To move the pedals forward just push on both pedals until the desired location is reached and make sure the latch is engaged. To move the pedals aft, insert your toes under the straps on the rudder pedals and pull the assembly back to the desired position. There is a small bungee that assist in moving the pedals aft, but it is not strong enough and you must use your toes to pull the assembly back.

Excerpts from RAS posting by CFI-G Eric Munk Oct 4, 2012

Added by George Young

As an instructor I have about 2000 launches in the Puch, as a technician I

serviced four of them for 10+ years. A delight to fly, if proper spin training is done in the club environment and the aircraft's flight envelope is respected. As an ab initio it is perhaps not ideal due to is spinning ability (the reason we sold ours and converted to ASK-21s). Dick Johnson wrote a good article on its pros and cons in spinning. Your questions:

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How do they hold up to daily use/abuse?
Very well. We do 7-days a week flying, on an often wet airfield, with about 2000 flights a year per glider. A strong glider, that stands up to a lot of abuse and:

- Has a very well sprung undercarriage that is an instructor's delight.
- Spacious back cockpit.
- Getting the airbrakes extended from the front cockpit is a bit awkward, but you get used to it.
- Aerobatics are not really advisable, given low VNe, small margins for error, etc.
- Don't buy one with a skid but go for a tail wheel (less change of damage).
- The wheel brake sucks, but there's a mod for Tost brakes which we had and works wonderful.
- Puchs (like e.g. ASK-13s) suffer from relatively low max. cockpit loads. Check yours before buying.
- Respect airspeeds (we overstressed one in repeated high speed winch launches, with structural wing damage that needed repair).
- Teach people to be careful with the tail in hangars. They are Ceconite covered control surfaces and prone to hangar rash.
- Airbrake caps raise themselves at airspeeds in excess of 180 km/h or a bit lower with high G. No issue, but scares the living daylight out of you if you do not know this ;-)

Maintenance issues?
See the factory SB-overview for weak points (if you buy one make sure it has the new design front wing attachments: this'll save a lot of hassle and costs due to hairline cracking).

- Main wheel bungees deteriorate with age. Have a spare set available at all times. Easy to replace by technician.

- Tail wheel tyres sometimes go off the rim with traversed landings.

- All control cables have to be replaced every 12 years/1500 hours according to SB 007/94 (lots of work).

- Canopy closing levers sometimes work loose when lock rings are worn.
- Replace the canopy cable (which stops the canopy from opening further than needed) with a different design: they snap and it'll cost you a canopy.

- Play on elevator after ca. 1500 hours is normal (replace t-lever in the tail), play on stabilizer occurs as well (the limits for play are enormous compared to German gliders, so that'll easy your mind).

- We had one jammed bevel gear in the airbrake system due to dirt, they are not an ideal design. Wear in the gears will cause asymmetric opening and play.

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- Trim tab actuator rods snap if lubrication is not carried out regularly.

- The lower rudder attachment ply and its vertical support are prone to damage. This really should be an AD IMHO, but is not.

- Check the horizontal ply for cracks, and the joint between vertical and horizontal for de-bonding at every DI [Daily Inspection] to be sure.

- All in all the Puch is a bit more work on maintenance than say an ASK-21, but not too bad/costly if you have club technicians available for the brunt of the work.

- Inspection schedule is every 50 flying hours, with a bigger one every 250 (equal to an annual, which it has as well). A major inspection/servicing every 1000 hours. Airframe lifetime is 6000 hours, but may now be extended to 6750 and is expected to be more in some years time as design life is 11000 hours.

- Parts supply and service is excellent from Allstar [WindPath].

How are they for ab initio?
OK, provided you have a good spin training programme that is mandatory for all instructors who fly on it, to pass the information/skills on to their students.

Truth to the spin-eager rep?
See the Johnson article. Aircraft has tendency to flatten out in a spin rather quickly if back pressure is applied with low cockpit loads. Also, with asymmetric stall from a turn with relatively little nose-up (but low speed), wing will drop and with little warning go into spin. Other than this, it is very predictable, and gives ample warning.

Any bad habits?
I don't have any I am aware of.

Eric