Centrair Pegasus 101B Serial number 101A0202 N70FP V

Doug Cline
12 December 2018

History 1985 – 2018

1985: The FAA Standard Airworthiness Certificate was issued 21 May 1985 to Donald F Kroesch in Chicago.
The Pegasus is a 101B model, but registered as a 101A model to simplify registration with the FAA. The 101A has a glass fiber main spar whereas the 101B has a carbon fiber main spar.

1991: John Cochrane purchased N70FP from Don Kroesch in 1991 and John flew it competitively.
John installed a Terra TRT250 Mode C Transponder due to the high density of airline traffic near O'Hare.

1997: Doug Cline purchased N70FP from John Cochrane on 22 July 1997. Total flight time was 408 hours.
The following were included in this sale:

- Airspeed, altimeter, compass,
- Rechargable battery, battery charger,
- Ilec TE probe
- Panel-mounted Dittel radio with boom mike
- Terra transponder with mode C altitude encoder
- Ball 701 regular/netto variometer with audio
- Borgelt B50 speed to fly variometer with audio plus upgrade board
- Constant-flow oxygen system with both mask and cannula, reducing valve plus cylinder etc.
- Front and rear wing water ballast bags. Rear bags not installed.
- All documentation including Airworthiness Certificate, Registration, operating manual, weight and balance.
- Tow bar and wing wheel
- Two wing stands
- Schreder aluminum trailer in roadworthy condition plus fittings

1998 – 2015: Doug made the following improvements:
Installed a Volkslogger, plus HP Compaq IPAQ running the WinPilot navigation system.
Rewired the Pegasus instrumentation and installed two 10AHr batteries located behind the wing spars for safety.
Completely rebuilt the wing and fuselage dolly system.
Added a screwjack adjustable ramp to the trailer
Installed a double battery charging system in the trailer.
Added an industrial thermostat-controlled heater fan for climate control during winter storage
Purchased an Udo Rump wing rigger ($1000). Built a storage mount for the rigger in the trailer.
Purchased an aluminized canopy cap cover.
Installed a pilot relief system.

2016: Boshhart installed and certified a Beringer disc brake in 2016. This greatly improved the Pegasus wheel braking performance.

2016: The Volkslogger exceeded its design lifetime, plus the IPAQ computers died, necessitating purchase of a LXNAV S100 digital speed-to-fly, GPS navigation, moving map, variometer, flight logger, plus an S100 remote stick controller, were installed to replace the Ball 701 variometer and Volkslogger.
The Winpilot navigation system was replaced by an 8" Samsung Galaxy S2 tablet running XCSOAR, or TOPHAT. This tablet is linked by Bluetooth to the S100 to provide GPS and airspeed information. The SUPERAMOLED 2048X1536 pixel color display is visible in bright sunlight, and the XCSOAR navigation system works well.

12/2018: The current total flight time is 1017.9 hours. The most recent Pegasus Annual was performed 10/16/17, while the last transponder certification was 9/12/16. Both were done by Boshart Enterprises.

PEGASUS Instrumentation.

1)Power; Two 12.7V 10Ahr batteries are installed in the battery case which is mounted in the fuselage behind the wing spars. The batteries are clamped in the battery box. The connections to the batteries are accessed via the fuselage removable access panel. The wings must be removed for inserting or removing the batteries from the battery case. Each battery has an attached fuse. These two batteries are wired to the A or B battery busses that are mounted behind the instrumentation panel. The instrument panel has two locking three-way switches that connect the equipment to either the A or B 12.7V busses. One switch provides power to the variometers, plus navigation equipment. The second switch powers the radios, and transponder. This arrangement provides flexibility to independently power the radios/transponder and flight instrumentation from either bus. Typically, one bus is used for the radio/transponder, and the other bus for the flight instrumentation. In spite of the large power draw of the mode-C transponder, the Pegasus battery capacity is more than adequate to power everything for full flying days operating the transponder, radios and all the flight instrumentation. The switch for the flight instrumentation has a large electrostatic capacitor to maintain the voltage powering the logger in order to suppress switching transients when switching between the two busses. This ensures that the log file is not corrupted by switching battery busses. The Pegasus power system has worked trouble free for 21 years. Two XENOTRONIX chargers are installed in the Pegasus trailer to allow battery charging while the Pegasus is in the trailer.

2) Panel-mounted Dittel radio plus boom mike. The radio still operates trouble free as it has for 21 years

3) Mode C Transponder. The Terra transponder, plus mode C altitude encoder, has operated trouble free. The transponder squarks 1202 which is the current dedicated glider code. I contact KROC Class C or KELM Class D when flying close to their restricted airspaces. The biennial transponder recertification usually is performed by Boshart every second October, in parallel with the annual inspection. The latest recertification and annual were due for October 2018. Unfortunately, the weather was awful this past October and November postponing the Boshart recertification of the transponder and the annual inspection.

4) Borgelt B50 speed to fly Supervariometer. The Borgelt variometer is a wonderful instrument. The installed B50 is serial number 3 and it still works perfectly after nearly 3 decades of use. The variometer is intuitive and simple to use, and it provides power voltage and temperature readings, in addition to variometer and speed to fly. The cruise/thermal switch is installed on the lefthand side of the cockpit in front of the gear handle, near the pilot's left kneecap. The forward-switch position corresponds to cruise, and the backward-switch position is for thermalling. The audio volume and speed-to-fly have obvious rotary controls on the B50 control unit.

5) LXNAV S100 digital speed to fly variometer, GPS logger and navigation. The modern and sophisticated S100 was purchased to replace the Volkslogger and Ball variometer. The S100 provides a powerful speed to fly variometer, GPS logger, final glide computer, simple moving map, current battery voltage, and temperature displays etc. The display is excellent in bright sunlight. However, in contrast to the simple and intuitive Borgelt B50, which takes minutes to learn, the LXNAV S100 is computer controlled, with hundreds of parameters, making it more complicated to set up and learn. I installed a LXNAV S100 remote stick control because I found it difficult to manipulate the 5 buttons at arm's length while flying in turbulent conditions. The remote stick greatly facilitates operation since you can easily control everything using only your thumb. The S100 has an AHRS built into the hardware, but this costs $830 to enable. This valuable feature has not been enabled due to the cost.

It takes few hours to learn to operate the S100. I strongly recommend that you learn to operate the S100 by sitting in the cockpit, when the Pegasus is parked, for study of the sophisticated controls and all the settings. **Note that the S100 must be switched off using the upper control button prior to switching off the power**. The manual warns that the S100 settings can be corrupted by switching off the power prior to switching off the S100. The remote stick draws current when powered, even when the S100 unit is switched off. Therefore, turn the power off when not using the remote stick in order to save battery power. The user manual can be downloaded from the LXNAV website.

6) XCSOAR/TOPHAT navigation system. It takes a few minutes to learn to use the B50 vario, a few hours to learn to use the S100 Vario, and many days to learn to use the complicated, sophisticated, and powerful navigation computer codes XCSOAR or TOPHAT. Learn XCSOAR using your own tablet while sitting at home, this is too complicated and time-consuming to do while flying. The XCSOAR and TOPHAT user manuals can be downloaded from the XCSOAR or TOPHAT websites.

XCSOAR runs on an 8" Samsung Galaxy S2 tablet to provide navigation and speed to fly. The tablet is linked by Bluetooth to the S100 which provides the GPS and airspeed. The SUPERAMOLED 2048X1536 pixel color display on the tablet is visible in bright sunlight. The Bluetooth connection to the S100 works trouble-free. An Edmunds-Scientific double-socket optical support-arm is clamped to the ball fitting on the left side of the Pegasus panel. A RAM Tab-Tite spring-loader cradle is attached to the optical support arm to hold the 8" tablet at any orientation on the left-hand side of the panel. During take-off and landing, the tablet is folded against the left hand side of the canopy to ensure that there is no danger of restricting motion of the stick, and providing full visibility. In flight, I adjust the orientation of the tablet to improve the visibility of the screen while still ensuring unrestricted stick motion. The 8" Samsung tablet is wonderful to use, but it is the maximum useable size for the Pegasus cockpit. A 6" sized tablet probably would have been a better compromise of screen size versus screen size for maximum control movement. My Samsung 8" tablet is not included in the sale. I recommend that members purchase their personal computer tablets because of the wide variety of available tablets, the wide range of adjustable settings, preferred operating systems. This allows you to customize, and develop familiarity with XCSOAR or TOPHAT as well as save your favorite settings for navigation for any sailplane. I plan on using my tablet in the ASK21 as well as the Pegasus. I will loan my Samsung S2 Galaxy 8" tablet to FLSC members so they can evaluate this tablet. Note that Chuck Zabinsky and Jim Martin both use LXNAV S100 or S80 variometers, plus either XCSOAR or TOPHAT, so they can provide valuable advice.

PEGASUS Weight and balance

The EXCEL work sheet for the Pegasus load, plus weight & balance, is given below assuming the maximum allowed pilot mass. This assumes use of the proposed 2.5lb single 9AH Li battery system, plus the current battery box, to replace the two current batteries. The Pegasus allowed range for the CG is 230mm – 375mm behind the datum line, which is the wing leading edge at the wing root. John Cochran installed a 3kg ballast weight in the tail of V to move the cg backwards. This ballast weight remains installed in the Pegasus. For my weight (183lbs), including a 14lb parachute, and with no oxygen equipment or water ballast installed, the loaded Pegasus total weight is 797.6lbs, with the CG at 352mm from the rear datum. This is 84.4% of the rear CG limit, which provides outstanding thermalling capability.

The maximum pilot mass, including parachute, is 241lb (109kg) is limited by the maximum 380kg maximum flying weight for the loaded dry Pegasus. This implies that the CG is at 51.33% of the allowed range. (NB. The ASK21 maximum pilot mass including parachute is 242lb.)

The minimum pilot mass, including parachute, is 165lb (74.8kG) corresponds to the maximum rearward CG location of 375mm. A Strong parachute weighs 14lb corresponding to a minimum pilot mass of 151lb. A 4"OD by 2" thick, 10lb, circular lead ballast disk, is provided with an axial hole to allow attaching to the screwed rod inside the nose of the Pegasus. The lever arm for this ballast disk, when installed in the nose, is -1.84m. This ballast reduces the minimum pilot including parachute weight by 28lbs. I have never installed this ballast weight in the nose of the Pegasus. Use the butterfly nut to attach the lead disk, and this nut should be checked prior to flight. ***Pilots using this ballast should remove the ballast from the nose of the Pegasus*** since the subsequent pilot may not notice the ballast brick buried deep in the nose of the Pegasus.

The weight and balance assuming use of the current two 10AH batteries can be found in the cockpit side pocket.

Weight and Balance Worksheet for Pegasus N70FP Serial # 202 Dec 2018

OBJECT		Weight	Max	Lever	Moment	Center of gravity		Wing loading	
	lbs	kg	kg	m	kg-m	m	% rear limit	kg/m2	lbs/ft2
Glider	577	261.74		0.634	165.94				
Radio	1.76	0.8		-1.1	-0.88				
S100 vario + S2 Tablet	5	2.3		-1.1	-2.53				
Transponder	1	0.45		-1.1	-0.50				
Front Water Ballast	261	118.3		0.15	17.75				
Rear Water Ballast	88	40		0.525	21.00				
Rear Tanks	0	0		0.525	0.00				
Li Battery + battery box	5.5	2.5		0.65	1.63				
Front ballast		0		-1.84	0.00				
Rear ballast	6.61	3		4.243	12.73				
Oxygen	18	8.2		0.2	1.64				
Parachute	14	6.36		-0.65	-4.13				
Maximum mass pilot	227	103		-0.65	-66.95				
Empty ship	596.9	270.79	380		176.39	0.65			
Dry maximum pilot	823.9	380.15	380		105.31	0.277	32.43	36.20	7.42
Dry + Oxygen	841.9	388.35	380		106.95	0.275	31.30	36.99	7.58
Wet (Front)	1085	498.45	505		123.05	0.247	11.64	47.47	9.72
Wet(Front) + Oxygen	1103	506.65	505		124.69	0.246	11.11	48.25	9.88
Wet (Front+Rear)	1191	538.45	505		144.05	0.268	25.88	51.28	10.50

Load factors: Max load factor at 92kn IAS n= +5.3/-2.65

Max positive load factor at 135kn IAS n= +4.0/-1.5

Note that an AD forbids using the rear water bags. The rear water bags have been removed from the wings to save weight. The front water ballast bags are installed in the wing and the gaskets for the water bags are in the plastic storage bin in the trailer. Note that I have never used the water ballast bags so I do not know if they leak.

Flight limitations:

Neither aerobatic flight, nor spins, are allowed flying the Pegasus. I spun it once and found that it spins in a nose down attitude like the Grob. Recovery from the spin was not a problem, but the recovery was slow making it likely to exceed redline. Fortunately, the excellent aileron control at stall makes accidental spins highly unlikely. During 21 years flying the Pegasus, I never experienced any indication of incipient spin behavior even when thermalling at minimum speed. Executing a stable benign-spiral descent mode in the Pegasus, requires fully open airbrakes, with the trim set slightly aft, and with the hands off the stick and feet off rudders. Tests show that a benign spiral of the Pegasus leads to a spiral dive with increasing speed and G load if the air brakes are closed.

The Pegasus air brakes are powerful giving an L/D = 5 with full brakes applied at approach speed. Like other top-side air brake systems, one must be careful opening the dive brakes at high speed, or you may hit your head hard against the canopy if the dive brake is opened quickly. I learned that fact the hard way.

The Pegasus rudder is powerful; in a slip it will stay at full lock until forcible neutralized by the pilot. The Pegasus thermals very nicely at speeds down into the mid 40 knot range. The soaring performance is excellent for speeds below about 90 knots but the glide ratio deteriorates at higher speeds. The claimed best L/D for the Pegasus (L/D=41). My flight logs, as well as team flying with ASW19 (L/D=38), are consistent with the relative claimed L/D performance.

PEGASUS Flight characteristics

The Pegasus has wonderful handling and thermalling characteristics, with excellent aileron control even well into the stall. The flexible wing results in a comfortable ride. However, the cg hook and the flexible wing require care when taking off in the Pegasus. The Pegasus is sensitive to elevator control on takeoff due to the rearward location of the CG. Lighter mass pilots must check that the takeoff trim is set far forward for take off. A thorough check out is essential prior to flying the Pegasus. Except for the sensitivity on takeoff, the Pegasus is a forgiving and easy plus safe ship to fly.

Preflight:

The Hotellier elevator connection is a critical safety item. Thus before each flight I check that this fitting is attached correctly with the safety pin secured.

Takeoff:

1) Make sure the tail dolly is removed
2) Set the trim to one notch back from full forward position before takeoff.
3) Prior to tow, ensure that the ship is pointing in the direction you wish to roll since the ship will go in the direction it is pointing until the tail lifts off. That is, the pull of the tow rope does not align the fuselage with the tow direction as it does using a forward tow hook. I recommend using neutral elevator stick for taking off so that the tail lifts off and then the powerful rudder can steer. Ensure that the wing runner does not pull or push the wingtip on release since that will change the direction you roll. The cg hook requires being careful to ensure that the ship does not pitch up into winch launch attitude at low speed since then the elevator control authority is insufficient to recover. The reality of such an uncontrolled winch launch was illustrated several years ago, when the FLSC Pegasus, 58KG, executed an unintentional and steep winch-launch while attached to the tow plane during an aerotow launch at KDSV.
4) Apply full wheel brake when taking up slack rope, since the ship can roll forward over the rope which then back releases. Also rolling over the two rope can result in the rope wrapping around the axle of the wheel which is dangerous since then you will be unable to release the rope if the tow continues, and the attachment point now is behind the cg hook making the Pegasus more prone to assume the winch-launch attitude.
5) If the wheel hits a sharp bump during takeoff, then the ship can bounce into the air which will cause the wings to bend downward when the wheel drops back to the ground. The small dihedral, coupled with the low flexible wings, can result in the downward bent wing catching in long grass. This results in a ground loop on either aero tow or a winch launch. The pilot should keep their left hand at the base of the stick ready to pull the tow release during the ground roll. I recommend taking off and landing on the asphalt runway if the grass is long.
6) The ground roll is the most critical stage flying the Pegasus. With full forward trim, use neutral stick on the initial roll to expedite lifting the tail so that the rudder becomes effective for steering. The ship is slower to lift off than training gliders due to the low angle of incidence of the wing. Holding the stick forward during the initial roll can lead to lift off will occur at a higher speed causing the ship to have a tendency to jump well above the tow plane. *Do not pull the stick back too much during lift-off since then the ship may rotate into the winch launch attitude at a speed that provides insufficient elevator authority to recover from the winch-launch attitude.*
7) The Pegasus is very easy to fly on tow once the normal tow attitude is established.

Landing:

The powerful dive brakes make the Pegasus easy to land. A slip should not be necessary and slipping the Pegasus is not very effective. The flight manual recommends that it is best to rely on the powerful dive brakes rather than the unfamiliar slipping behavior. In slipping flight, at speeds between 36kts and 45kts, it is possible to reach full back stick before reaching full rudder travel, leading to a more nose-down attitude. This is more noticeable when airbrakes are deployed. Considering the unusual slip behavior, it is recommended that final approach be done with airbrakes only as a means of glide control. The recommended landing speed is 49 knots. Typically, I approach at

55-60 knots and then slow down on final to 50kts plus half the wind speed. Prior to landing I open the airvent so that I have an aural indication of airspeed. Note that I recommend using the air brakes with the brake handle pointing downwards for two reasons. The first reason is that, when the gear is retracted, the gear handle will hit your arm if you try to open the air brakes with the gear up; this provides an excellent built-in gear-up warning. Secondly, using the handle in a horizontal orientation resulted in me tearing the skin of my left hand on the cable connectors attached to the nearby water ballast levers. This leaves a bloody mess. After lowering the gear, check that the gear handle is **fully locked and in the detent,** otherwise it can bounce out. Note that the Pegasus comes with a set of microswitches that can be used to build an electronic gear warning system, which, if installed, can be used with the S100 to provide a verbal "gear-up" warning. This gear alarm capability could be implemented easily if desired.

Wheel brake:

The powerful new Beringer disc brake assembly, installed in 2016, has eliminated the wheel braking deficiency of the original drum brake. I recommend reducing the wheel-brake force as the airspeed slows since the aerodynamic downforce provided by the elevator decreases at lower speeds, which can lead to damage to the nose of the Pegasus if it noses over and contacts the ground.

Hydration:

Hydration is an important and essential topic for XC soaring because of the long time spent in a confined cockpit. I strongly recommend use of a classic Camelback 100oz (2L) water bladder since it fits the narrow gap between the pilot seat back and the adjacent bulkhead. The 3foot long drinking hose snakes over the pilot's shoulder or around their body with the mouthpiece lying loosely close to their mouth. The camelback bladder is far superior to having the hazard of loose bottles rolling around the cockpit. A 2L bladder is sufficient for a several hour flight. Disposal of excreted liquid is equally important and poses a bigger problem especially for females. The Pegasus has a plastic pipe running from near the base of the control sick down to one side of the wheel struts, in order to dispose of urine. Doug Cline can provide more details of the personal custom plumbing needed for male use this system. Males will need to provide male catheters plus a means of flushing the piping. The pipes must be flushed with water and the rear fuselage back to tail should be washed to remove the corrosive urine. The urine smell in the cockpit can be objectionable if the plumbing is not flushed with water. Read the article "To Pee or Not to Pee? No question about it" by Karl and Iris Striedeck published in Soaring March 1996. Females should talk to Linda Evenski.

Canopy removal and installation

Access to the instruments and requires removal of the canopy. The canopy is fragile so it needs to be handled carefully. The replacement cost is about $5K and an expert is required to fit plus glue the canopy to the frame. Removal and installation of the canopy is a frequent maintenance issue. Removal is straightforward requiring two people, standing on either side of the cockpit, to hold the side rails of the canopy while opening the canopy emergency release. Installation of the canopy is much more difficult since it requires the canopy to be aligned precisely at the correct inclination angle and rotational angle, which is difficult. I have found the following procedure is a far easier way to install the canopy. Slide about a 1/8" spacer into the gap where the moving section touches the fuselage just in front of the stick. Then close the attached section of the instrument panel by pushing it down so that the overcenter spring holds this panel section closed and rests on the spacer. The spacer lifts the sprung section about 1/8" too high in order to attach the canopy. Two people then should place the canopy in the correct location over the cockpit. One person then pushes down on the front of the canopy while the other person is holding the canopy emergency lever open. The emergency canopy release then can be closed so that the canopy is latched correctly. When latch, open the canopy and remove plus save the 1/8"spacer.

Pegasus assembly:

Assembly of the Pegasus and ASW19 are similar and are outlined below.

1, Lower the rear ramp. The double screw-jack assembly plus the handle can slide out of the right side rear of the trailer. The two extension hooks at the rear of the loading ramp hook over the lifting pads on the two jacks. Raise the jack so that the Pegasus wheel will be clear of the ground when lowered. The tracks for the wing dollies need to be roughly level.

2, The tailplane support frame is attached to the trailer using a double-threaded screw. Unscrew the threaded screw bolt to release the tailplane support from the trailer, then raise the screw further so that it latches via the second thread. Slide the tailplane out of the left rear of the trailer and place it alongside the trailer near the trailer wheel so that it does not impede moving the wings panels. Take care to not damage the ends of the tailplane due to the tailplane support frame being narrower than the span of the tailplane.

3, Unfold the attachments to the wing-dolly tracks at the outer end of the loading ramp.

4, Unfasten the auto lap belt holding the Pegasus tail in the trailer, and release the two DeStaCo clamps that lock the fuselage dolly via the wing-pin sleeves.

5, Lift the tail dolly of the Pegasus to release the wing-pin attachments and then roll the fuselage back out of the trailer until the fuselage dolly at the outer limit of the track.

6, ***Remove the tail dolly*** and put it under the rear of the trailer so that you do not trip over it when moving the heavy wing panels. *Note that the tail dolly must be removed, otherwise, then the fuselage can move sideways which causes the wing stands to tilt and fall over resulting in the wings falling onto the ground.*

7, Open the canopy and use the aluminized canopy cover to minimize the chance that sun reflected from the canopy will burn the instrument panel cover.

8, Lower the gear and ensure that the gear is locked down and not touching the ground

9, Remove the loud-speaker panel.

10, Ensure that the batteries are installed, connected, and correctly clamped in the battery box. Use the B50 to check the voltage is at least 12.7V on both the A and B power busses. Check the radio and variometers

11, Clean and grease the wing pins, the four wing pins, all the Hotellier ball connectors, and the tailplane pins. Warning: Do not install the tailplane without a fresh coat of lubricant on the tailplane pins, otherwise it can be difficult to remove the tailplane from the tail due to the close tolerance fittings. Note a baby bottle brush can be found in the trailer storage bin that is bent 90degrees to enable cleaning the two sockets at the top of the fin if necessary. This is a rare problem.

12, The right wing is attached first. The toggle clamp for the wing dolly in the trailer must be released to move wing dolly.

13, Insert the left wing and install the two main pins

14, Connect the aileron and airbrake Hotellier fittings and attach the safety wires. Because of the small size of the fuselage hatch, this is best done by feel followed by a visually check.

15, Attach the tailplane to the top of the fin and insert and lock the hold-down bolt.

16, *Attach and safety the elevator Hotellier fitting.* **This is a critical safety item.**

17, Install the ILEC total energy probe. The forward tip should point upwards so that the two tiny holes are in the plane of the tailplane.

18, Attach the wing and tailplane sealing tapes.

19, Attach both the loudspeaker and fuselage access panels.

20, Use the assembly checklist to ensure all assembly tasks have been completed.

21, *Perform the positive control check.*

Use the laminated check-lists that are in the right-side pocket of the Pegasus. Copies of the airworthiness certificate, registration, operating limits, and weight and balance are also in the pocket. Copies of the available checklists are given at the end of this document.

Pegasus disassembly

1, Remove the tail dolly to ensure that the fuselage does not move during disassembly and store under the trailer.
2, Pull the Pegasus into the fuselage saddle until the pen marks on the side of the fuselage align with the aft side of the saddle support. This ensures that the saddle support arms for the wing pins will align with the wing pins.
3, Remove tape and clean leading edges of wing, tailplane, and fin.
4, Remove the total energy probe and store in cockpit. Cover the total energy port with tape to stop tiny insects building a nest in the entrance port of the total energy port. This was a recurrent problem at KDSV.
5, Disconnect the elevator, aileron, and airbrake Hotellier fittings
6, Remove the tailplane and lock in the tailplane support.
7: Remove the left wing and store in the trailer.
8, *Attached the left dolly arm to the left wing pin and attach the mechanical latch which ensures that the fuselage cannot rotate.* (Replacement of a broken canopy costs >$5000.)
9, Remove the right wing and store in the trailer.
10, Attach the right dolly arm to the right wing pin.
11, Install loudspeaker panel
12, Retract the gear
13, Fasten all loose belts etc
14, Close canopy and fasten both side canopy latches to minimize canopy distortion during storage
15, Install the tail dolly.
16, Roll the fuselage into the trailer and lift the fuselage so that the wing-pin holders sit in the semicircular holder support. Clamp the pins into the support stand and fasten seat belt securing the tail of the fuselage.
17, Connect battery chargers.
19, Park double screw-jack plus crank in trailer
20 Attach both wheel-dolly toggle clamps in trailer.
21, Install and fasten the tail-plane support frame in the trailer.
22, Attach wing-dolly latches
23, Fasten the wing stands in the trailer.

Maintenance of the Pegasus:

The gel coat of Pegasus N70FP is in remarkably good condition for a 32 year old glider. For the past 21 years I have polished the Pegasus, once per year, using either Collinite 885 Heavy-duty paste Fleetwax, or Collinite 915 Marque d;Elegance paste wax. Collinite claims that these waxes have the highest percentage use of carnuba wax which provides excellent gel coat protection. I purchase the wax from ARITARI in Rochester. The Pegasus typically takes about 4 manhours to wax and polish using a rotary polisher. I have waxed the Pegasus once per year for the past 21 years. In addition, the trailer has a permanently installed industrial-quality, thermostatically-controlled fan, that I have operated between November through April for the past 21 years, in order to inhibit water condensation on the gel coat when the Pegasus is stored in the trailer in a cold hanger. The excellent condition of the Pegasus gel coat probably is due to the regular waxing and use of the industrial heater in winter. Hank Nelson, who has refinished many glass gliders, stated that it costs between $27K and $36K to refinish a 15 meter sailplane. This is comparable to the cost to purchase the FLSC Pegasus, and implies that the FLSC should invest the time and effort to wax and polish both the Pegasus and ASK21 at least once per year.

Insurance:

The current insurance for the Pegasus, plus trailer, is with Costello Insurance Associates. It.is valid from July 22, 2018 until July 22, 2019. Currently the Pegasus has a ground only endorsement between October 29, 2018 and May 10, 2019. The Pegasus is insured for $27,000 for the aircraft and $3000 for the trailer. I recommend that the

Pegasus value be increased to $30,000 plus $3000 for the trailer to reflect the addition of the LXNAV 100, plus the Beringer disc brake.

Trailer: Functionally the Schreder trailer is in excellent condition, although the exterior needs to be cleaned. Two new tires were installed September 2018. The fuselage dolly and wing dollies and the clamping mechanisms were redesigned to rigidly fasten the Pegasus in the trailer. The fuselage dolly clamps the fuselage via Teflon sleeves over the wing pins using DeStaCo clamps. A screw jack adjustable trailer ramp has been installed to facilitate assembly, disassembly. A thermostatically controlled fan was installed, and two battery chargers were installed in the trailer. Mechanical clamps hold the fuselage into the dolly assembly so it cannot rotate in the saddle. The fuselage must be clamped mechanically to at least one or both of the two support side arms, which are attached to the wing pins so that the fuselage cannot rotate. See Joe Somers or Doug Cline to see how these clamps operate. In 2007 I built a reinforcing framework to strengthen the upper part of the trailer. In 2019 the Pegasus will be stored assembled in the hanger, giving us the opportunity to install this reinforcing framework during 2019. Storage of the Udo Rump Wing Rigger plus the wing stands are built into the trailer. The wing wheel and the tow bar are stored in the hanger. The title and registration for the trailer need to be transferred to FLSC. The trailer inspection documentation is in a plastic bag taped inside on the RHS of the front door.

Learning cross-country soaring in the Pegasus

I recommend that the neophyte cross-country pilot work with an instructor, or experienced XC pilot, to serve as a mentor while learning to fly the Pegasus. Learn and develop the required skills and judgement by flying locally should be your first goal. Set reasonable and realistic goals each flight. Spend a season refining your flying skills in the Pegasus, including thermalling, spot landings, navigation, and learning to optimize use of the XCSOAR/ S100 instrumentation for flying final glides while staying within gliding distance of KDSV. You can really enjoy flying short tasks while staying within a 25mile radius of KDSV.

Venturing beyond gliding distance to KDSV can be done by team flying with a mentor. It takes years to learn the required skills, plus judgement needed for safe XC soaring.

I recommend that the Borgelt B50 vario be used for your first introductory flights in the Pegasus since it is easy plus intuitive to use. This allows you to concentrate on learning the basic handling of the Pegasus. Once you are comfortable flying the Pegasus using the B50, then start learning to use the more powerful S100 plus the remote control stick grip. After you are familiar and comfortable using both the B50 and the S100, then start learning to use the navigation code XCSOAR. At this stage you can practice out-and return flights to nearby locations like Hannas Acres, Avoca, Letchworth, Hornell, or Perry-Warsaw. Use these to practice final glides back to KDSV using XCSOAR. Compare the XCSOAR predicted arrival altitude, with your achieved arrival altitude. Explore the lift and sink along different trajectories leading to your goal. These will help develop your XC skills plus build your confidence and judgement needed to fully exploit the remarkable cross-country capabilities of the Pegasus.

Enjoy flying the Pegasus.

Doug Cline

Pre-soaring packing list

Parachute
Navigation tablet
Cell phone
Water bottle
Relief system catheter
Lunch
Logbooks
Documentation manuals
Hat
Sunglasses
Sun screen/lip balm
Sponge, towels to clean after flight
Tow hitch

Pegasus preflight

Wing pins safety
Aileron/brakes l'Hotelier
Tailplane bolt safety
Elevator l'Hotelier
Pitot tube and statics unobstructed
Total-energy probe installed
TAKE OFF DOLLY
Landing gear [38-49psi]
Tow hook
Batteries security/voltage
LXNav S100 and Borgelt Variometers
Navigation tablet synched to S100
Radio
Transponder 1202
Altimeter
Seat adjustment/locked
Canopy clean
Parachute
Drinking water
P tube
Maps
Hat, sunglasses, sunscreen
Positive control check
Trailer ready with car keys in car

Pegasus 101B

Take-off	Speeds
Controls	V_{ne} =135 kn
Ballast	V_a = 102 kn
Straps/seat	V_{ra} = 102 kn
Instruments	V_{aero}= 92 kn (65 kn)
Trim-FULL FORWARD	V_{winch}= 65 kn (60.5 kn)
Canopy locked	V_{gear}= 92 kn
Vent closed	V_{land}= 49+WS/2
Brakes closed	V_{stall} = 34 kn
Wind	$V_{x\ wind}$ < 11 kn
Emergency	$V_{L/D}$ = 52 kn
Time	V_{sink}= 45 kn

Landing

Water
Wind
Wires
Wheel - locked
Speed 49**+WS/2**
Trim
Airbrakes
Look out
Landing

RADIO		
Dansville Unicom	123.00	663’
Dansville AWOS	118.325	
Air-air	123.3	
FSS	122.2	
Bradford	123.075	2143’
Corning Painted P	122.8	962’
Genesee County	122.7	913’
Grand Canyon	122.8	1899’
Harris Hill	123.3	1709’
Hornell CTAF	122.2	1220’
ELM approach	119.45	954’
ELM tower	121.1	
Ithaca	119.6	1099’
Olean	122.8	2135’
Perry Warsaw	122.8	1559’
ROC Approach	119.55	559’
ROC Tower	118.3	
Towanda	123.0	730’
Wellsville	123.0	2124’

Aircraft ID	
Citabria	N7591F
Pawnee	N7409Z
ASK21	N574KS
Blanik L13 AC	N374BA
Grob 102	N20737
1-26	N3822A
Doug Cline	V
Linda Evenski	KI
Jim Martin	UP
John Seymour	SM
Jari Wallach	SK
Tim Welles	W3
Heinz W	HW
Chuck Zabinski	ZC

Postflight Closure

Wash wings, tailplane, and fin
Download flight log
Parachute
Transfer glasses, cell phone, to car
Galaxy tablet.
Power off
Remove wing tape.
Aileron locks
Wings locked
Fuselage locked
Tail-plane locked in place
Charging cables connected
Connect both charging cables