II SERVICE MANUAL

1. ASSEMBLY AND DISASSEMBLY

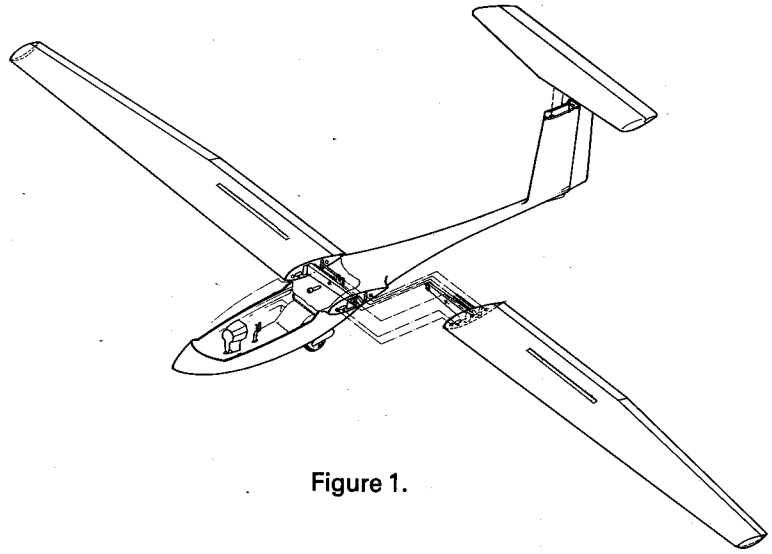

Figure 1.

1.1. Preparation

Three or even two persons can easily assemble and disassemble the PIK-20 D. Before assembly remove the canopy and prepare the wing assembly tool, clean clothes, grease of mineral or synthetic basis. Clean and grease all fitting surfaces, bolts, pins and control system connections.

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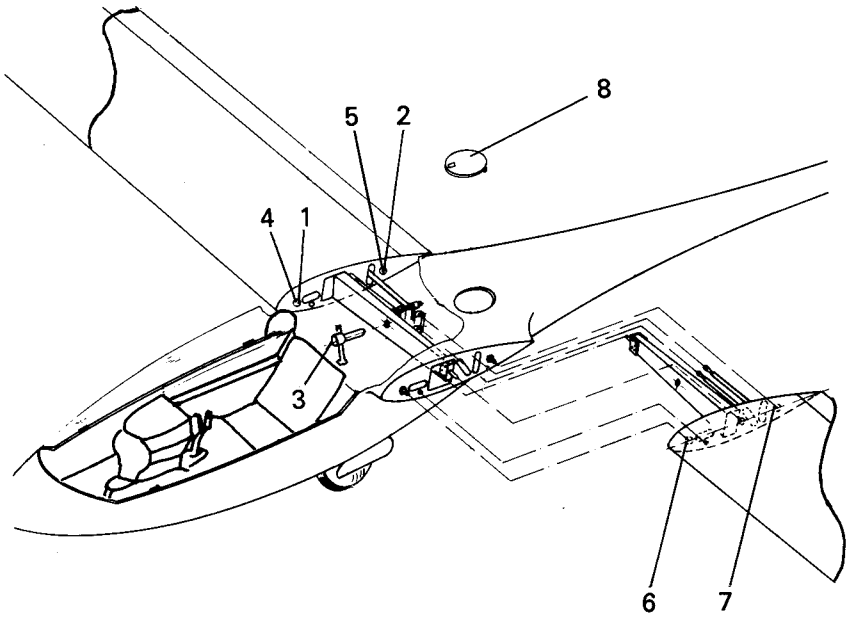


Figure 2

1.2. Wing assembly (Figure 2)

- Insert the right-hand wing ensuring that the wing bevel pins (1) and (2) are in the seats (4) and (5) in the fuselage.
- Insert the left-hand wing in the same way and watch that the bevel pins (6) and (7) go correctly into their seats. Draw the wings together with the wing assembly tool and install the main wing pin and secure it using a Fokker-pin. It is necessary to lift the wing tips when using the assembly tool.
- Connect the flap and airbrake control rods with quick release locks and secure them with Fokker pins. Close the inspection opening (8) on the top of the fuselage.
- Connect the water ballast hoses to the fuselage.
- Install the venturi tube.

1.3. Tailplane assembly (Figure 3)

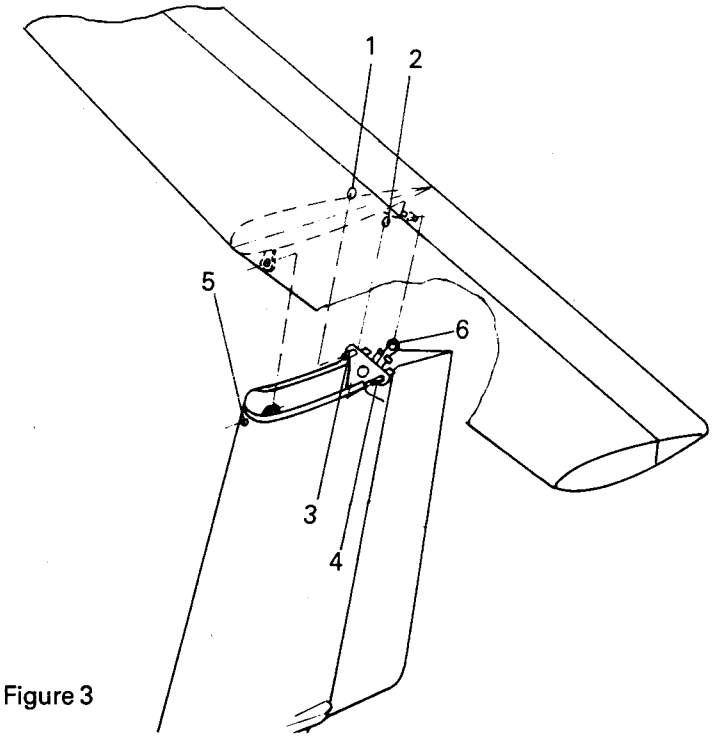


Figure 3

- Insert the horizontal stabilizer by moving the trim and flap lever to the foremost position and by lifting the leading edge up a little and by pushing the ball bearings (1) and (2) on to the pins (3) and (4) on the vertical stabilizer.
- Pull out the locking pin (5) with a tool (Fokker-pin of the wing bolt) and push the leading edge into place. Remove the tool and push the locking pin in. Ensure that the safety spring is engaged and secure the pin using a Fokker-pin).
- Deflect the elevator upwards and connect the elevator control rod (6) and secure it using a Fokker-pin.

1.4. Disassembly

- The wings and horizontal stabilizer are removed in the reverse sequence to assembly.
- Put the Fokker-pins back in their places.

1.5. Waterballast filling

- The waterballast filling has been described in Flight manual in the paragraph "Sailplane description". For the right loading of the sailplane the weight of the water ballast must be known. The amount of water in the tanks has to be equal.

2. PREFLIGHT CHECK

After the sailplane has been rigged, and before the first flight of the day carry out the following checks:

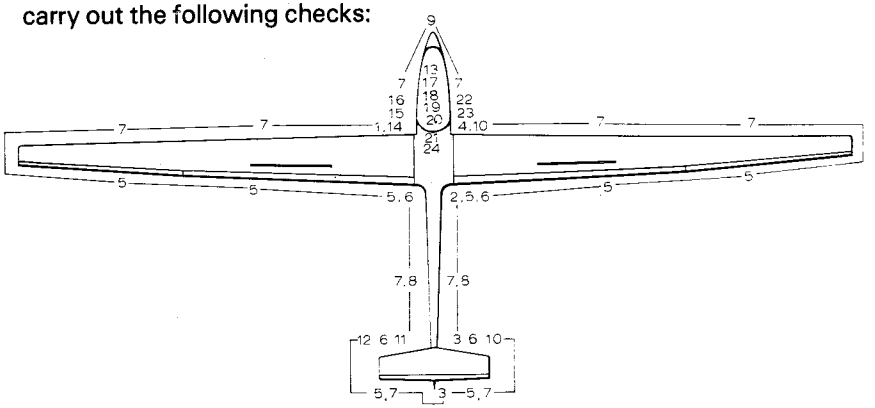


Figure 4

1. Main wing pin secured.
2. Quick release locks connecting flaps and airbrakes secured.
3. Horizontal stabilizer attachment pins correct and locking pin all the way in and secured. Quick release for elevator control rod secured.
4. Tow coupling clean and functioning properly.
5. Flaps, ailerons, airbrakes, elevator and rudder correct, free and full travel and without slackness.
6. Tapes over wing roots and horizontal stabilizer for adherense (if fixed).
7. Wings, fuselage and empennage for damages to the skin, dents or cracks.
8. Static pressure vents free.
9. Pitot tube free.
10. Tyre pressures correct.
11. Tail dolly removed.
12. Venturi tube correctly installed.
13. Ballast properly fastened.
14. Canopy clean and locking mechanism for condition.
15. Water ballast system for condition and proper functioning.
16. No foreign or loose particles in the cockpit.
17. Control stick and pedals free and full travel.
18. Flaps full travel.
19. Airbrakes full travel and locked.
20. Trim for condition.
21. Safety belts for condition.
22. Instruments for condition and correct indication.
23. Wheel brake for condition.
24. Documents in the sailplane.

3. TRANSPORTATION OF SAILPLANE AND HANDLING ON GROUND

3.1. Transportation

For transportation, the use of the special PIK-20 trailer is recommended. If the sailplane is being transported in another vehicle, the following should be checked:

- Depending on the transportation van, the sailplane may be fixed and supported by the following elements: Wing spar root shanks; bushings of the fuselage for the wing attachment, bevel pins for the horizontal stabilizer attachment; Undercarriage wheel (take care of the gear doors) and the tail wheel. Besides this the wing, fuselage and horizontal stabilizer may be placed in appropriate holding clamps.
- It is advisable to use nylon sleeves when using wing fitting points or horizontal stabilizer fitting points for the fuselage support.
- Fix all control surfaces using gust locks.
- Lock the air brake and flaps rods using cords or rubber bands.
- Take care of that no shifting jamming or deformation can arise and avoid entry of dirt and water into the sailplane.
- On an open trailer, protect the canopy, the area of the horizontal stabilizer attachment and the wing roots and cover the pitot tube, static pressure vents and the venturi-tube hole.
- Ensure that all components cannot move during transportation.

3.2. Handling on ground

To make the handling on ground easier, attach the tail dolly. It saves the sailplane from damage on rough airfields. The sailplane must not be pushed from the trailing edge because of the flaps, and so it is easier to move it backwards. The easiest way to move the sailplane is to pull it from the tow coupling. If the sailplane is pulled by car the speed must not be higher than normal walking speed.

PIK 20 D Service manual

4. CARE AND MAINTENANCE

The PIK-20 fiberglass sailplane requires minimal maintenance.

4.1. General care

The outside of the sailplane can be kept bright and smooth simply by washing with water and mild soap. Avoid abrasive or harsh detergents. Rinse with clean water and dry with terry-cloth towels or a chamois. If you choose to wax your sailplane, use a good automotive-type wax, however, not one containing silicone.

When gliding in rain the performance of the sailplane is better if wax is removed. The wax can be removed with wax-remover (car motor detergent) or by sanding paper number 600, until the glossy finish of the wings is removed.

The canopy surface may be cleaned according to the following instructions:

1. Use plenty of water to rinse the canopy surface.
2. Wash the acrylic sheet with dish washing detergent or mild soap-water. Use a sponge in spreading the soap-water. Don't rub because dirt scratches the acrylic sheet.
3. Grease and oil spots can be removed with kerosene and a soft cloth.
4. Never clean with a dry cloth.

Note: Never use gasoline, benzine, alcohol, acetone, carbon tetra-chloride, lacquer thinner or glass cleaner to clean plexiglass.

In the hot sunshine it is recommended that the sailplane is protected with a light coloured covering.

Prior to hangaring, the water drain holes, shown in Figure 5 should be inspected for free outlets and cleaned if necessary.

4.2. Before assembly

Clean and grease points marked "X" in Figure 6.

4.3. Every week

Clean cabin and wheel box e.g. with vacuum cleaner.

4.4. Every month

Check the water ballast system for leaks.

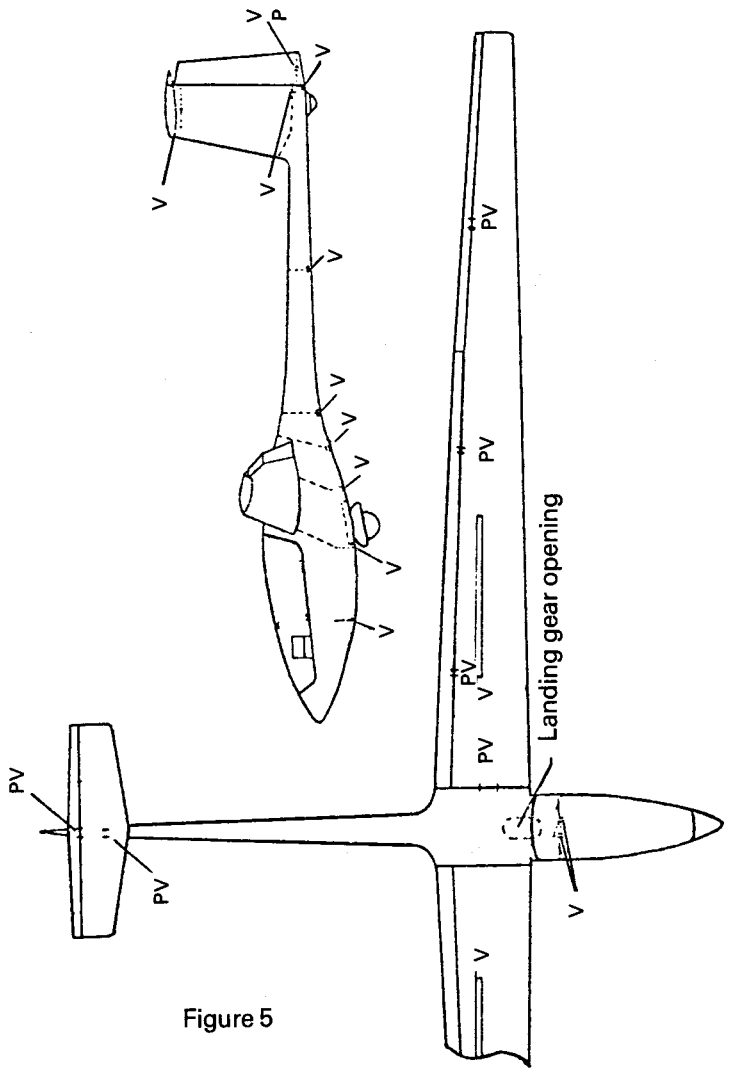


Figure 5

Water drain (v) and pressure relief (p) holes

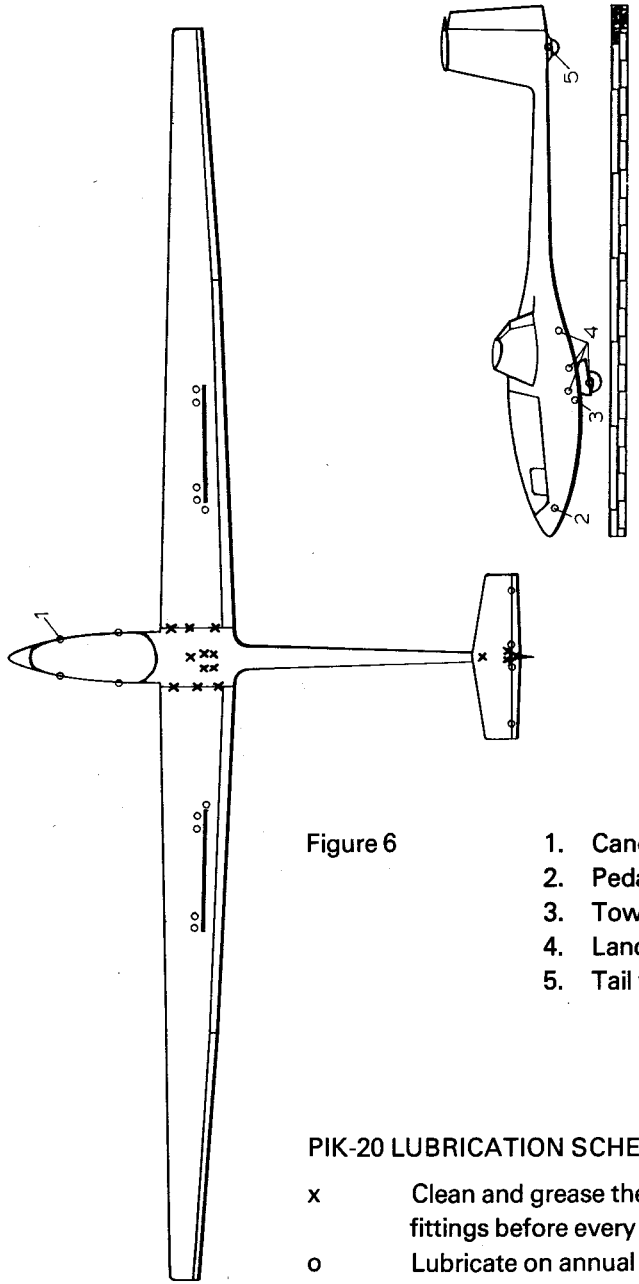


Figure 6

1. Canopy hinges
2. Pedals
3. Tow coupling
4. Landing gear
5. Tail wheel

PIK-20 LUBRICATION SCHEME

x Clean and grease these fittings before every assembly

o Lubricate on annual inspection

4.5. Annual inspection

- Inspect all hinges, bearings and rod ends for slackness (less than 0,1 mm)
- Lubricate "0" marked points with molybdenium sulphite containing grease using a greasing press. Use an extension if needed. All the rod ends and the main part of bearing bushings are lined with PTFE and are service free. Other lubrication than lithium base grease is forbidden in PTFE lined bearings.
- Inspect the ends of the rudder cables and especially the section going through the S-tube (change after 1000 flight hours).
- Inspect the Bowden control cables of the tow release and wheel brake and the push-pull cables of the pedal adjustment, cabin ventilation and the water ballast valve.
- Inspect and lubricate the tow release coupling. Change after 2000 starts or 3 years.
- Inspect the wing attachment points and tightness of attachment (slackness less than 0,1 mm)
- Inspect the horizontal stabilizer attachment points.
- Inspect and clean the pitot-static system.
- Inspect other instrumentation tubing for leaks.
- Check the control surface deflections (see Flight Manual 1.2)
- Inspect the water tanks and ballast system for leaks.
- When the sailplane is assembled check the locking of the airbrakes one at a time (release the other airbrake operating rod). The force on the handle has to be reasonable (about 10 lbs).
- The locking position can be adjusted from the short control rod in the brake box by unscrewing the lock nuts and by screwing the rod 20 — 30° at a time (both ends are right handed). The small inspection hole is for to have enough thread in the push rod.
- Check the free play of the moving control surfaces to be less than the following:

  1 Elevator a) stick locked ± 3 mm
  b) the push rod in the fin locked ± 1 mm

  2 Flaps stick and flap lever locked:
  ± 5.0 mm from flap to flap
  ± 2.5 mm from aileron to flap
  ± 2.5 mm moving together both flaps up and down

4.6. After gear-up landing

If you make a gear-up landing check the skin and ribs of front fuselage and clean and check the tow coupling.

Note: If the sailplane is damaged, the structural repair schemes are given in the PIK-20 D Repair Manual.

5. WEIGHING PROCEDURE

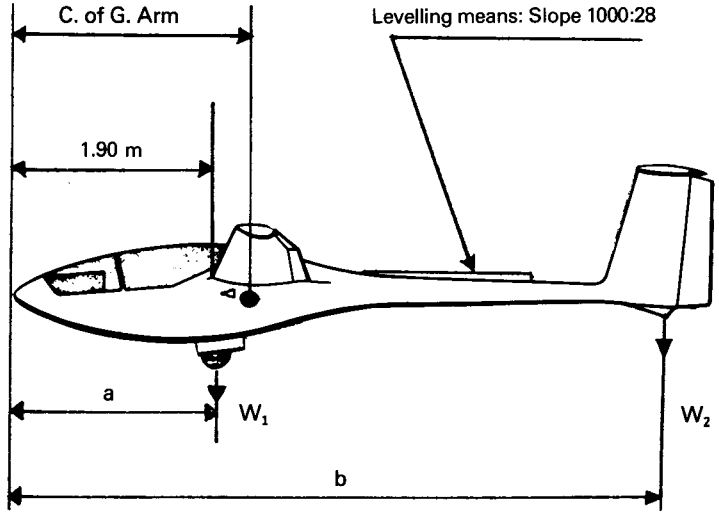
5.1. Preparation

- Ensure that all items marked in the sailplane equipment list are installed in their proper location in the sailplane.
- Remove dirt, moisture, foreign items such as rags and tools from the sailplane before weighing.
- Weigh the sailplane inside a closed building to prevent errors in scale readings due to wind.

5.2. Weighing

- Level sailplane (see diagram). Levelling means: Slope of top surface of rear fuselage between stations 3.5 m and 4.5 m 1000 to 28 tail down.

Datum: Vertical plane 1.90 m (74.80 in.) in front of leading edge of wing root rib.



– With the airplane level, record the weight shown on each scale. Deduct the tare, if any, from each reading.

Scale Position on Symbol	Scale Reading (kg)	Tare (kg)	Net Weight (kg)
Main wheel (W_1)			
Tail wheel (W_2)			

Empty weight and moment	Net Weight (kg)	Arm (m)	Moment (kgm)
W_1		a = 2.02	
W_2		b = 5.82	
Licensed Empty Weight		C. of G.	

$$\text{C. of G.} = \frac{W_1 a + W_2 b}{W_1 + W_2}$$

NOTE:
Emptying the water ballast moves the C. of G. backward.

6. EQUIPMENT

The following list shows equipment items which may be installed in the PIK-20 D. Items marked "X" are included in the Empty Weight recorded in Weight and Balance Data Sheet.

Item	Part	Weight (kg)	Arm (m)	Moment (kgm)
	I Minimum Equipment (Standard USA)			
	Airspeed indicator Model:			
	Altimeter Model:			
	Compass Model:			
	Safety belts Model:			
	Seat cushion Model:			
	Tow coupling Model:			
	Slip indicator Model: (not std. USA)			
	II Cloud Flying Equipment			
	Variometer Model:			
	Compensating bottle			
	Clock Model:			

Item	Part	Weight (kg)	Arm (m)	Moment (kgm)
	Turn and slip indicator Model:			
	III Optional Equipment			
	Variometer Model:			
	Compensating bottle			
	Variometer Model:			
	Compensating bottle			
	Artifical horizon Model:			
	Aux. unit for Art.h			
	Accelerometer Model:			
	Radio: Model:			
	Battery: Model:			
	Oxygen Equipment Model:			
	Oxygen bottle Model:			
	Water ballast tanks Model:			
	Water Ballast system Model:			