

When entering the normal position neutralize the aileron and rudder and return to the steady flight.

- Flick roll

In respect to the troubles in correct controlling of the flick roll at the rear location of glider c.g. this manoeuvre should be limited to two persons crew only. Performing of flick roll depends on the extorting of autorotation by means of simultaneous full stick pulling and full rudder deflection towards the intended rotation direction. During the autorotation the airspeed decreases considerably.

Therefore to avoid the stalling and unpleasant dropping of the glider at the end of the manoeuvre it is recommended to initiate the flick roll with the position pitched clearly below the horizon.

In the steep diving accelerate the glider to 57- 59 kts /not more ! / then simultaneously pull the stick full and deflect full the rudder.

The glider performs the autorotation in respect to longitudinal axis with the tendency to climbing. Before gaining the 360° position neutralize the controls to break the rotation.

If necessary finish the rotation with the aileron and return to the normal flight.

### 4.5.3. Inverted spinning

In respect to the fact that the steady inverted spinning is not possible to be performed in the greater part of c.g. location range this manoeuvre is not allowed.

In the case of unintended developing of inverted spinning as a consequence of inverted stalling the stick should be pulled immediately and the other controls neutralized. The glider breaks the rotation nearly immediately and passes into diving.

It should be recovered slowly controlling the airspeed.

If necessary, extend the airbrakes in advance.

The recovering from inverted spinning into the inverted flight is prohibited!

### 4.6. Danger and emergency conditions procedures

#### 4.6.1. Break or unintended releasing of tow-cable at low height

1. Release the hook /if the cable remained with glider/.
2. Bring the glider to correct glide.
3. Land in place chosen with respect to the wind direction and other landing conditions.

#### 4.6.2. Flight with incorrect trim

- a/ In case of lack of required number of balancing weights /solo light weight pilot/ - interrupt the flight and land on the airfield avoiding the stall.

b/ Excess of weights /heavy crew/

- interrupt the flight and land on the airfield.

4.6.3. Danger of exceeding of the maximum permissible airspeed

In case the airspeed unintended increases creating the danger of exceeding the allowed value in normal flight /116 kts. / or in inverted flight / 97 kts / the air brake shall be extended in advance and the proper action for decreasing the airspeed and making the flight steady should be taken.

In such situations the considerable stick pulling is not allowed.

4.6.4. Emergency jettisoning and use of parachute

a/ Decision to leave the glider:

Leaving the glider is the obligatory crew rescue, when it is impossible to land on the ground in controlled way, as e.g.:

- in case of fire or technical fault making impossible the controlled flight,
- in case of sudden severe mis-disposition of pilot during the flight /e.g. injured eyes/,
- in case of impossible return to the ground /e.g. the, extensive fog region/

The decision of leaving the glider is taken by the ship-captain.

b/ Sequence of leaving the glider.  
The crew member being not the ship-captain leaves the glider first. The ship-captain leaves the glider in second sequence after using all the possibilities to enable the second crew member to leave the glider.

c/ Sequence of procedures:

1. Release the control stick
2. Hold firmly and push forwards simultaneously:
  - canopy lock handle with left hand,
  - canopy emergency jettisoning lever /with right hand/.
3. When holding the handles push the canopy and jettison out.
4. Release the safety belts.
5. Fold the legs and jump out of the cockpit. If the glider gets the quick rotational movement - jump towards the centre of rotation.
6. Wait at least 3 sec. to get a distance in respect to glider and open the parachute.

d/ Procedures in special cases:

- If the canopy does not allow to be jettisoned, destroy the perspex, starting from the windows. If necessary use the action of legs.
- If the cockpit leaving occurs on the altitude below 200 m open the parachute immediately paying

attention to avoid a collision of the parachute and glider structure or another crew member.

- If the cockpit leaving follows on the high altitude take into consideration:
  - a/ danger of further climbing on parachute in the strong climbing currents /in a cloud/ and danger of on oxygen lack, low temperature, or icing.
  - b/ danger of freezing the body at delayed parachute opening.

In respect to these circumstances it is recommended to stay in the cockpit of damaged glider /if its condition allows for/ until it descends to the altitude of conditions for safe parachute use.

- If the damaged glider allows for the limited control and the altitude does not require the immediate cockpit leaving the ship-captain can help the pupil in leaving the cockpit /e.g. giving instructions or maintaining the convenient flight condition/ acc. to his decision e.g.:
  - when controlling the glider to order the pupil to jettison the canopy and leave the cockpit
  - delay the jettisoning of the canopy or after jettisoning to control the glider again.

## 4.7. Assembling and disassembling /Fig. 5 and 6/

### 4.7.1. Tools

- assembling lever for fitting the spars
- screwdriver
- pliers
- pin for service of tail plane securing bolt.

### 4.7.2. Assembling staff: min. 4 persons

### 4.7.3. Assembling procedures

1. Clean and grease the working surfaces of disconnected fittings and joints.
2. Put the fuselage on the assembly stand Support the front wheel /tail skid on the ground/
3. Take off the fuselage upper inspection door. Retract the air brake in wings, set up the brake slider in the cockpit in the front position and the control stick in the plane of glider symmetry.
4. Insert the R.H. wing to the fuselage acc. to Fig. 5 /aileron to the neutral position, air brake retracted/.
5. Insert the L.H. wing to the fuselage keeping the ailerons in the neutral position. Obtain the connection of pivots and nests, as well as elements coupling the control system. After having wings in position lock the spars finally by the lever installed on spar feet acc. to Fig. 5b. Insert the main pin, insert the tommy-bar into the hole in glass-fibre member

and secure with the safety pin.

6. Assemble the R.H. half of a tailplane with the vertical stabilizer acc. to Fig. 6 /insert the tubular spar end and the front fixing pivot into proper nests/.  
Connect the control system joint /set up the elevator and trimming tab properly/.
7. Slide on the L.H. half of a tailplane on the tubular spar protruding from the L.H. side of a vertical stabilizer. Pull forward the protruding end of securing pin and lock it turning by  $90^{\circ}$  Connect the control system joints /set up properly the elevator and trimming-tab/. After connecting the L.H. half of a tailplane turn the securing pin by  $90^{\circ}$  and press it back /red mark must disappear/.
8. Check all the connections and operation of controls. Close the fuselage upper inspection door.

#### 4.7.4. Assembling procedures

1. Pull forward the protruding pin securing the L.H. half of tailplane and lock turning it by  $90^{\circ}$  /red mark on the pin should be visible/.
2. Take off at first the L.H. and then the R.H. half of the tailplane /pull outside applying the oscillating motions to loosen the connection/.  
If necessary beat the carrying tube end using the hammer and the wooden block.
3. Retract the air brake and take off the safety-pin which secures the main pin. Support the wing ends and take out the pin.

4. Support the wing ends, put on the assembling lever on the spar feet and loosen the connection of spars with motion of a lever.

Next support the fuselage and take off at first the L.H. and next the R.H. wing.

Install the main pin into the fuselage fitting and secure with safety-pin.



5. DRAWINGS AND DIAGRAMS  
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Fig. 1. SZD-50-3 PUCHACZ glider

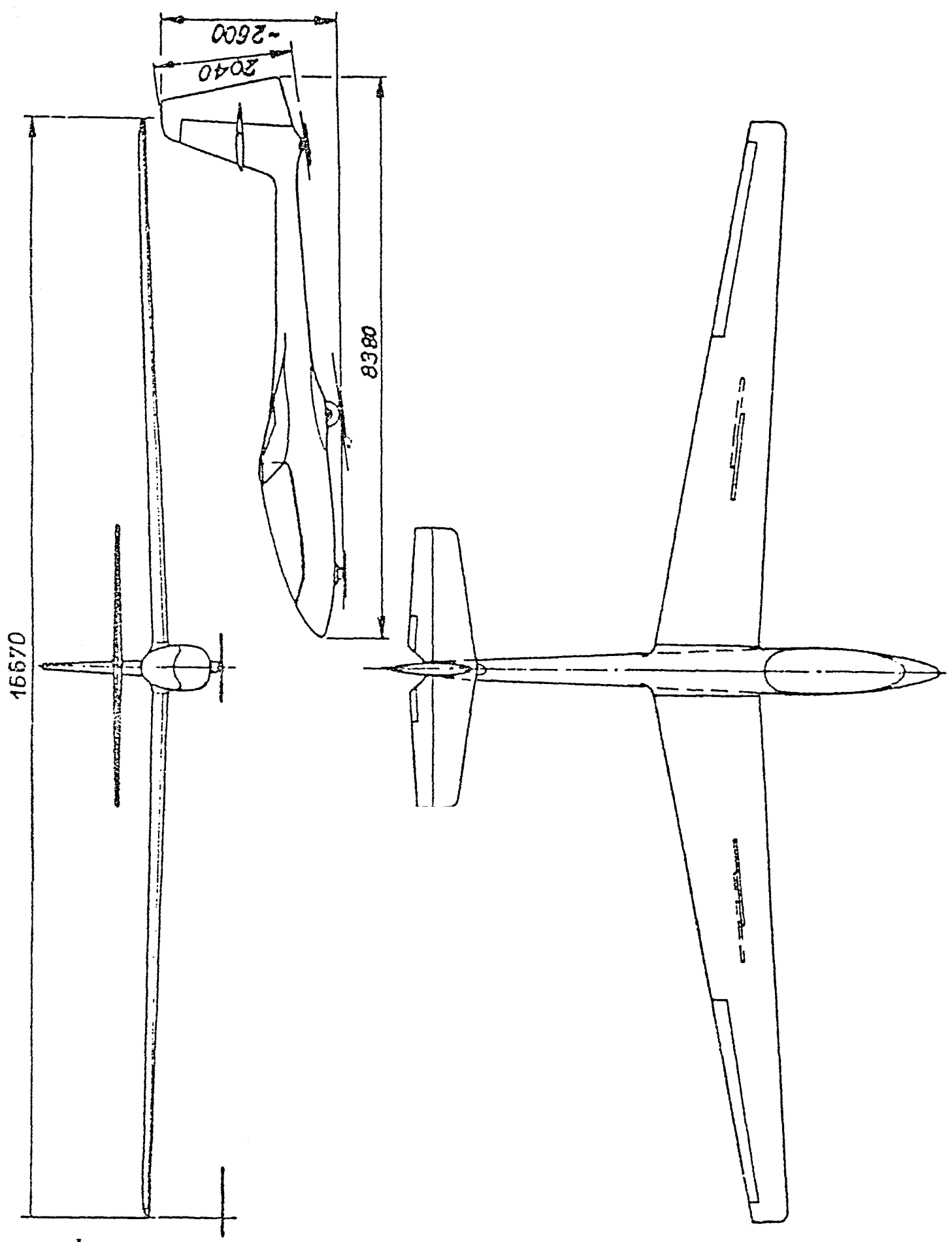


Fig. 1

Fig. 2. Installation of board instruments.  
Glider with two instrument panels.

- A - Instrument panel of front seat
- B - Instrument panel of rear seat
- C - Location of panels, ports and ducts in fuselage
- 1 - Total pressure port
- 2 - Static pressure port
- 3a - Total pressure duct end in fuselage /bottom/
- 3b - Static pressure duct end in fuselage /upper/
- 4 - Rubber ducts
- 5a - Total pressure duct end of rear instrument panel
- 5b - Static pressure duct end of front instrument panel
- 6 - Drainage unit
- 7 - Bottle
- 8 - Compensator
- 9 - Airspeed indicator
- 10 - Variometer
- 11 - Altimeter
- 12 - Turn indicator
- 13 - Compass
- 14 - Turn indicator battery socket
- 15 - Turn indicator switch
- 16 - Nuts fixing the rear instrument panel to canopy

Arrows mark the drainage unit end which should be disconnected when draining the installation.

- 17 - K-1 tube
- 18 - K-1 tube duct

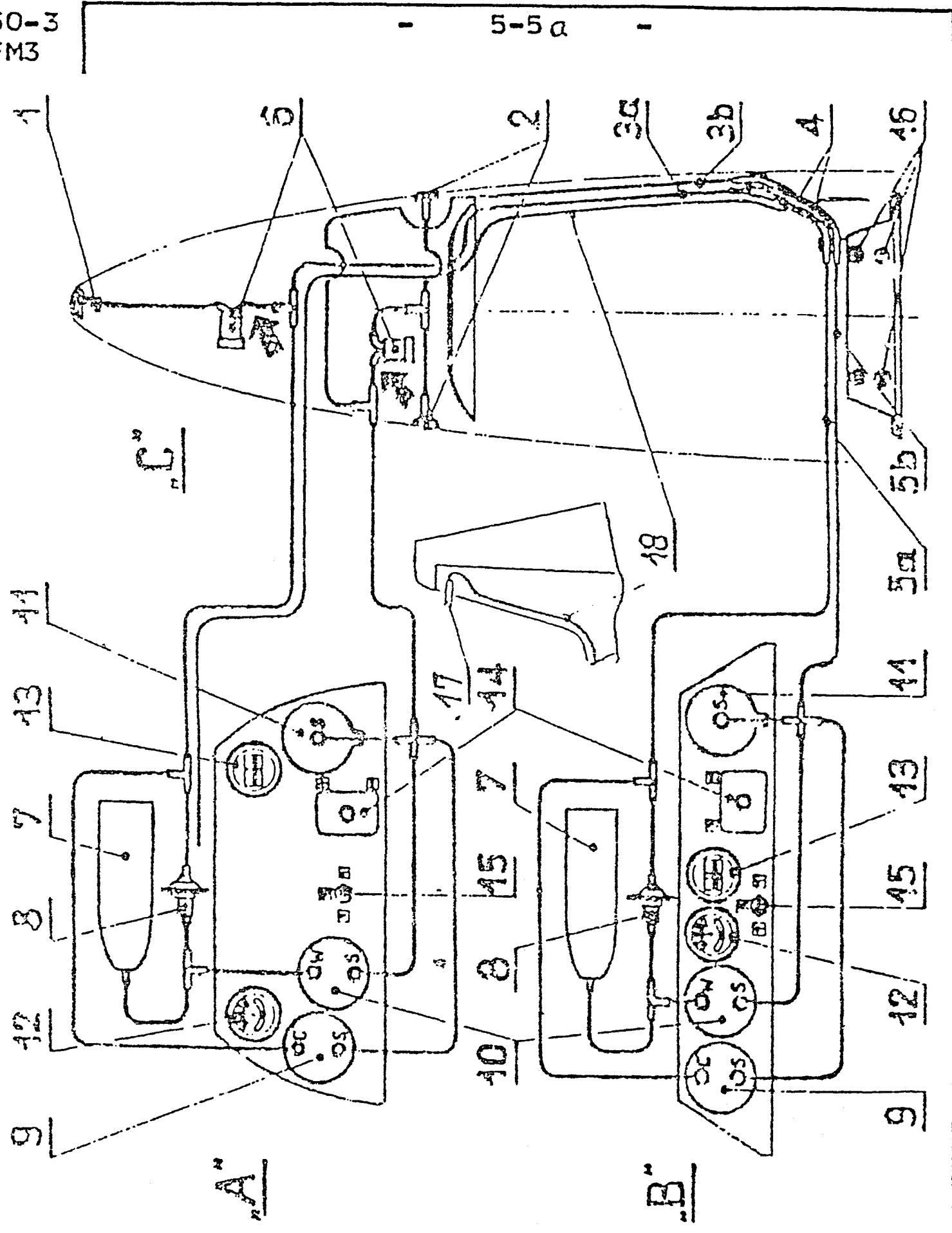


Fig. 2

Fig. 2a. Installation of board instruments  
Glider wit one instrument panel

- 1 - Total pressure port
- 2 - Static pressure port
- 6 - Drainage unit
- 7 - Bottle
- 8 - Compensator
- 9 - Airspeed indicator
- 10 - Variometer
- 11 - Altimeter
- 12 - Turn indicator
- 13 - Compass
- 14 - Turn iddicator battery socket
- 15 - Turn indicator swith

Arrows mark the drainage units ends 6,  
which should be disconnected when  
draining the installation.

16 - K-1 tube duct

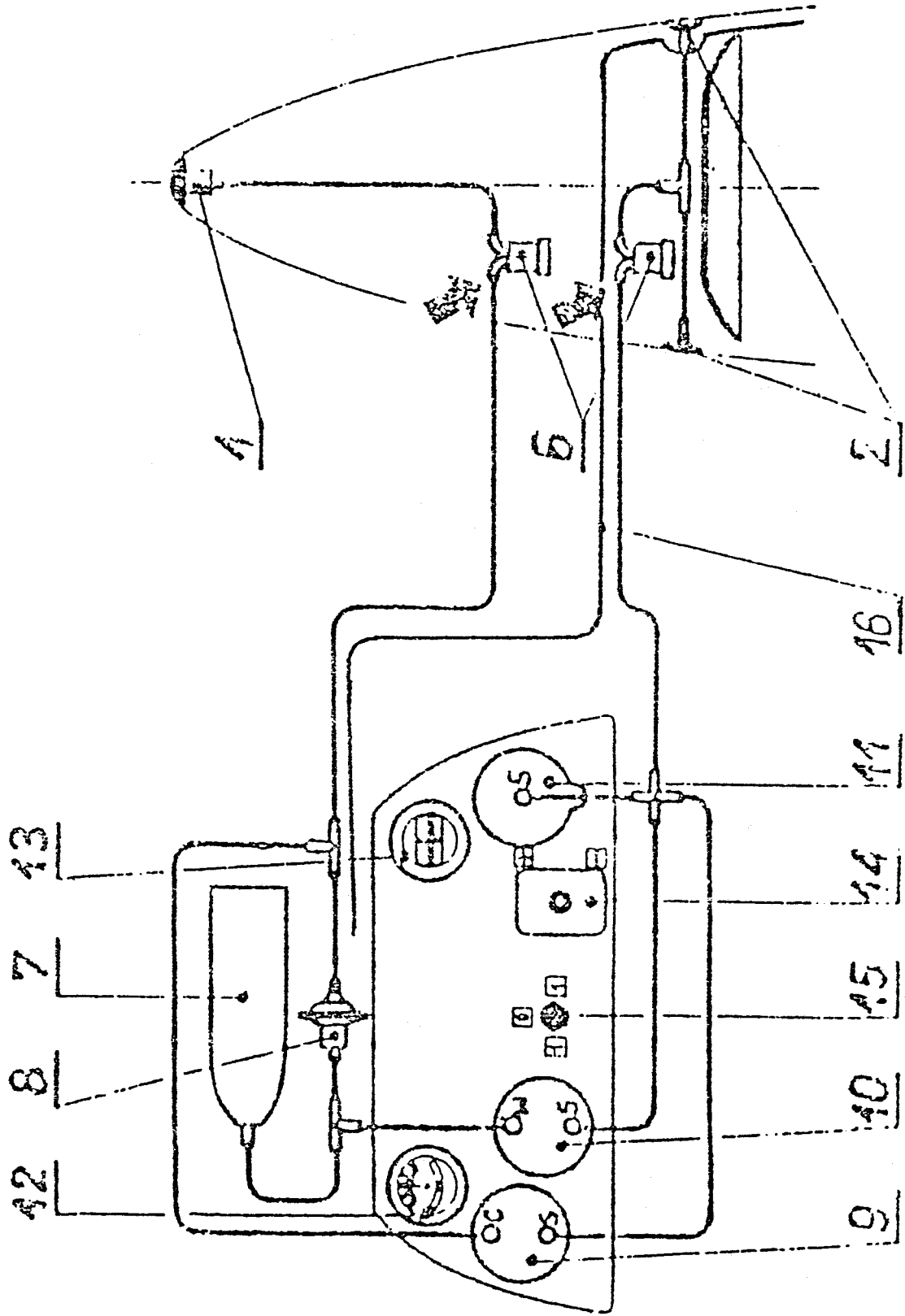


Fig. 2a

Fig. 3. Wiring diagram of electric turn indicator

- 1 - Turn indicator
- 2 - Switch
- 3 - Batteries /the poles arrangement shown on drawing/



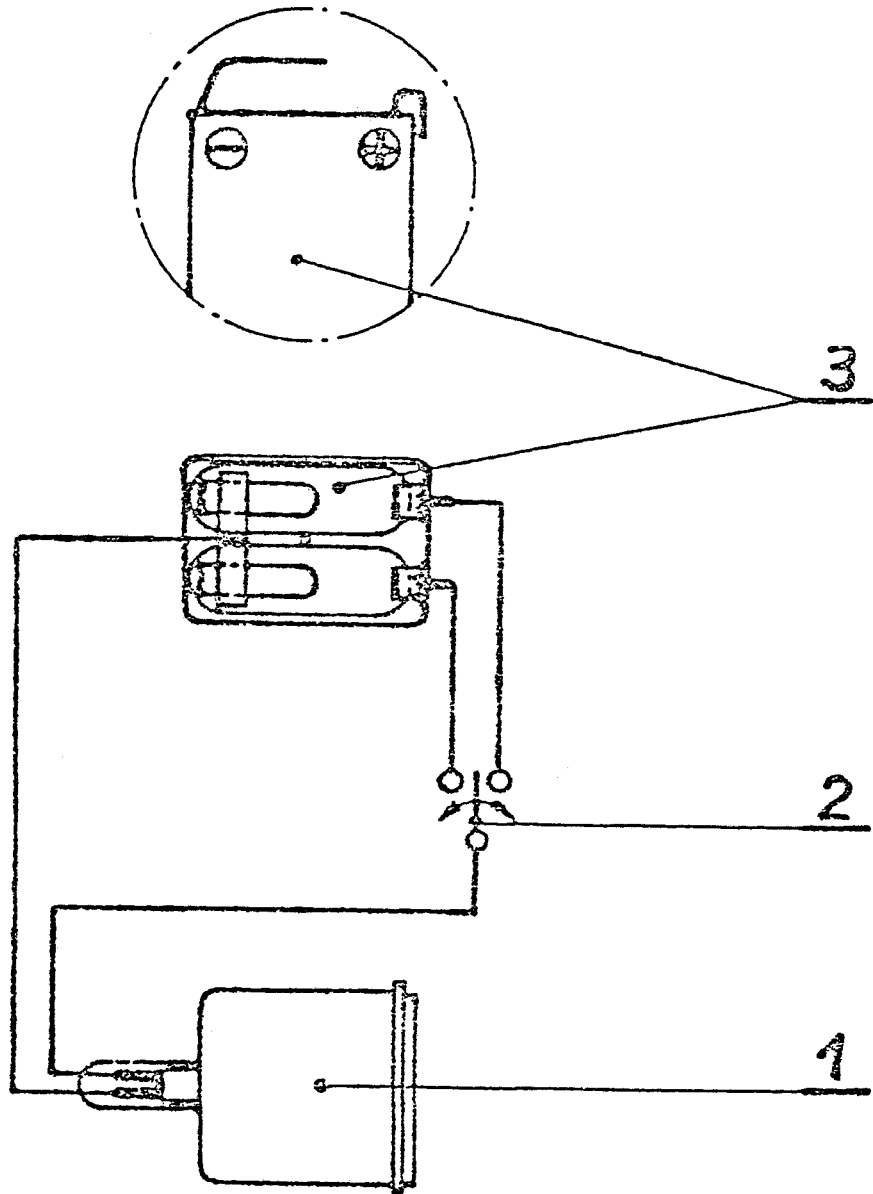


Fig. 3

Flight measured

Fig. 4. Speed polar

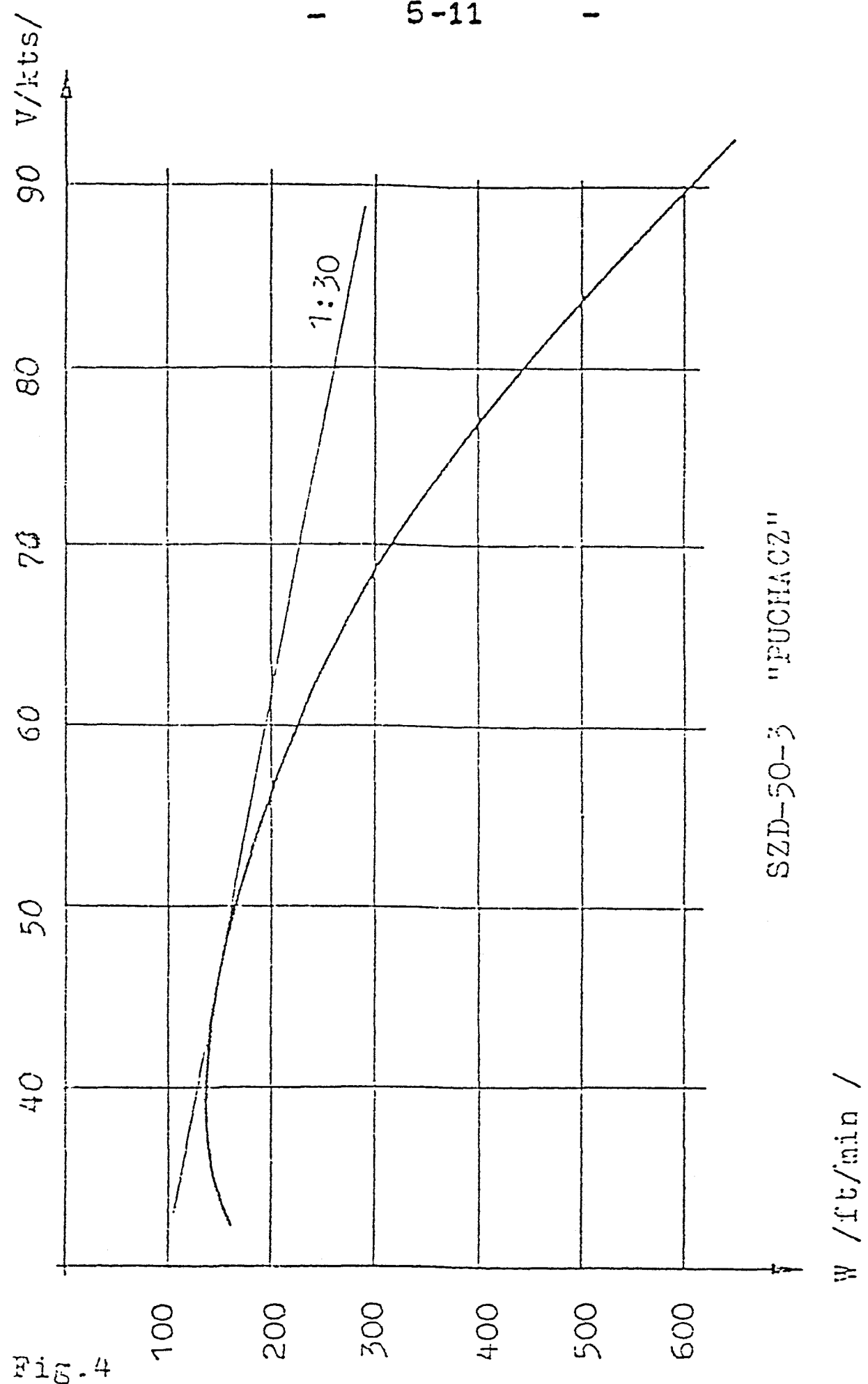


Fig. 4

Fig. 5. Wings-fuselage assembling

a/ R.H. wing fitted to fuselage

L.H. wing prepared for fitting

b/ Locking the spars by means of assembling lever attached on thrust pivots.

Full arrow: rigging. Broken arrow: derrigging

- 1 - Spar root pivots
- 2 - Fuselage pivots
- 3 - Self-aligning nests in wings
- 4 - Control system joints in wings
- 5 - Air brake control system joints in fuselage
- 6 - Aileron control system joints in wings
- 7 - Aileron control system joints in fuselage
- 8 - Main bolt with tommy-bar
- 9 - Safety - pin
- 10 - Spar thrust pivots
- 11 - Assembling lever
  
- P - R.H. wing
- L - L.H. wing
- K - Fuselage

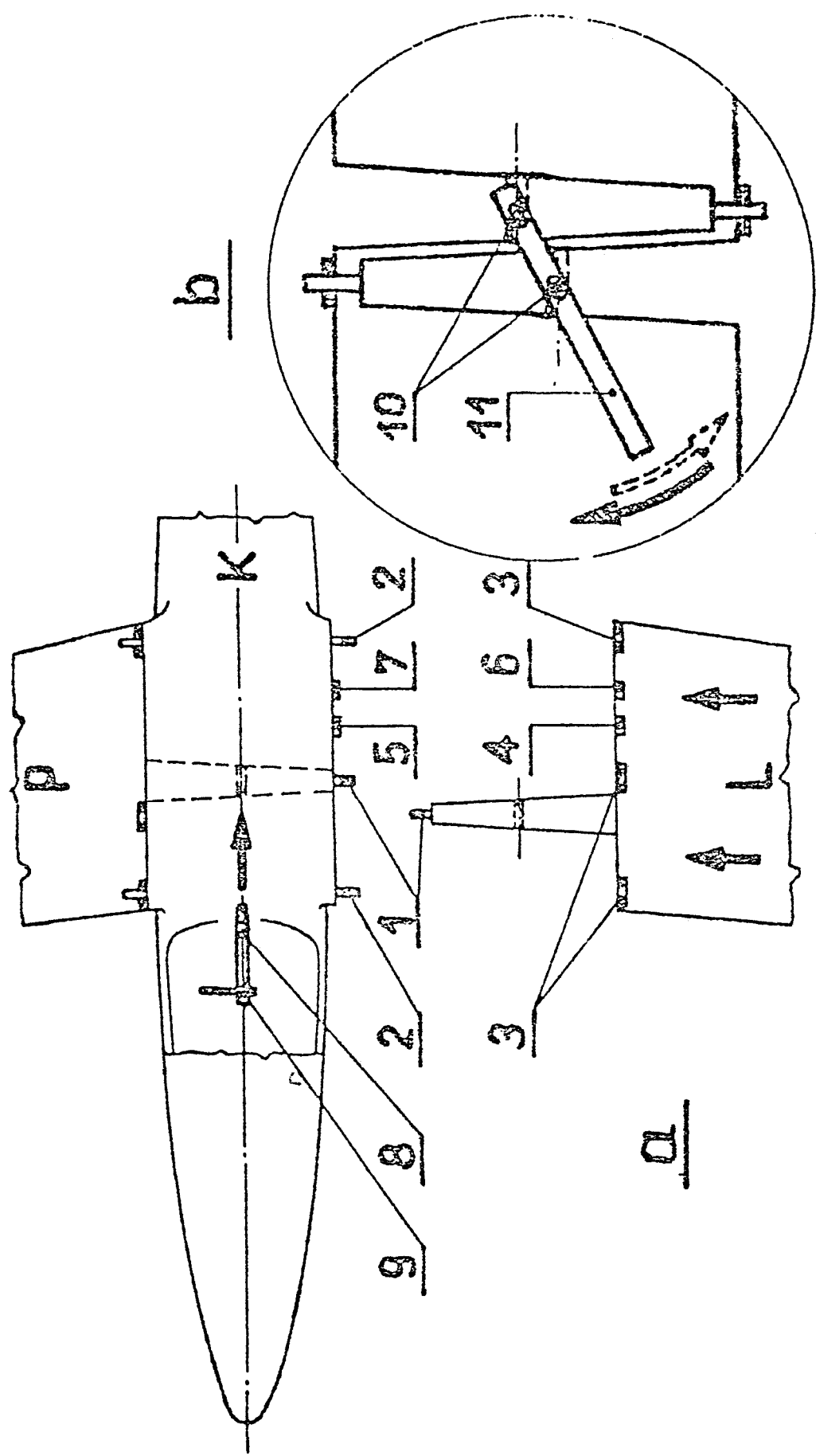


Fig. 5

Fig. 6. Assembling of horizontal tailplane

- P - R.H. half tailplane /with carrying tube/ fitted with fin
- L - L.H. half of tailplane with trimming-tab
- 1 - Carrying tube
- 2,3 - Carrying tube nests in L.H. half
- 4 - Pivot fixing fin half
- 5 - Securing pin in dissecured position /protruded forward/, secured position /small hole in wervtical position/.  
Red caution sign visible in this position disappears when the pin is pressed in.
- 7 - Trinning-tab control joint on L.H. half of control surface
- 8 - Trimming-tab control joint on vertical stabilizer
- 9 - Control joint on elevator
- 10 - Elevator control joint on vertical stabilizer

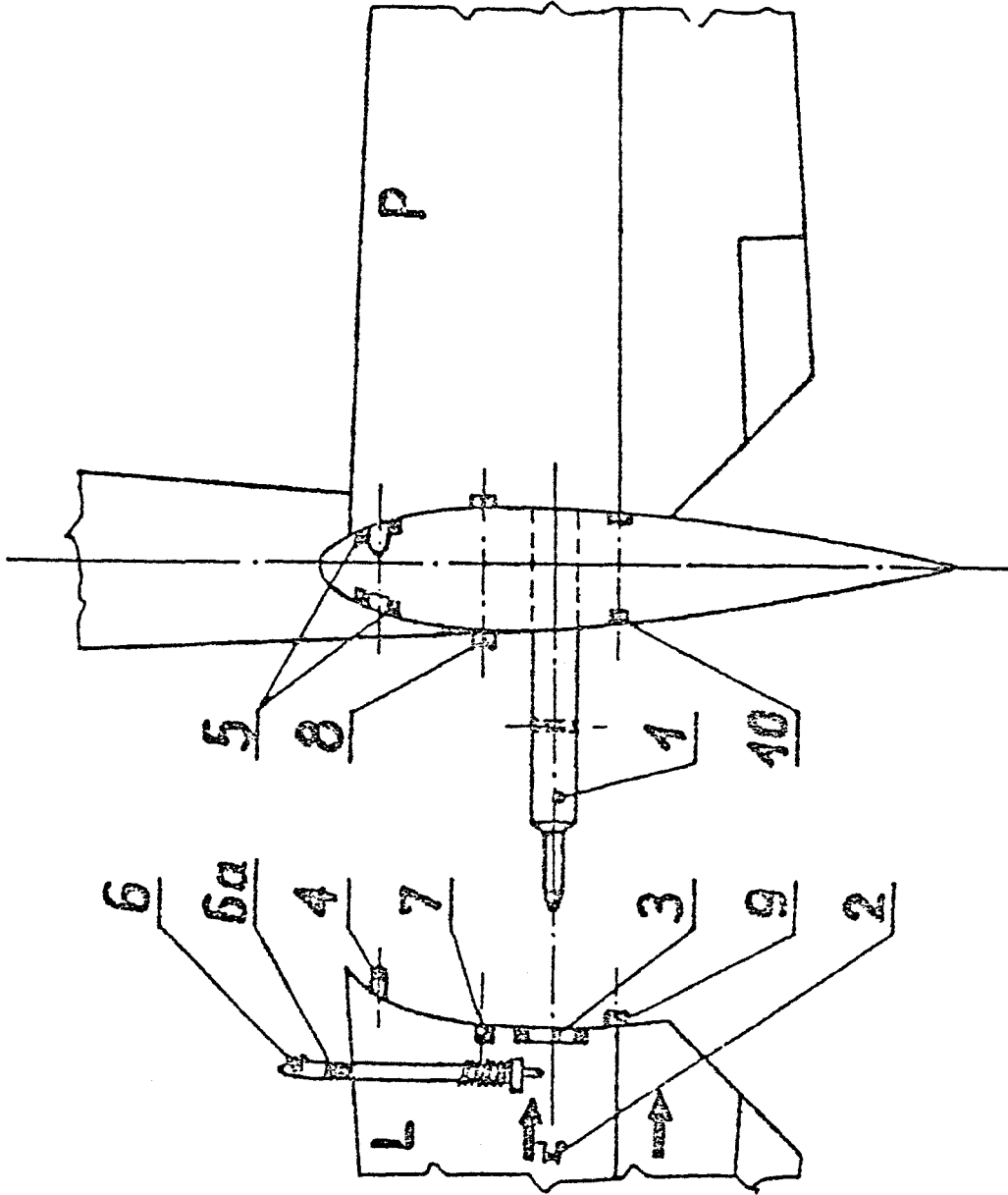


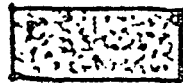
Fig. 6

Fig. 7.

Colour markings of airspeed indicator  
dial



- red

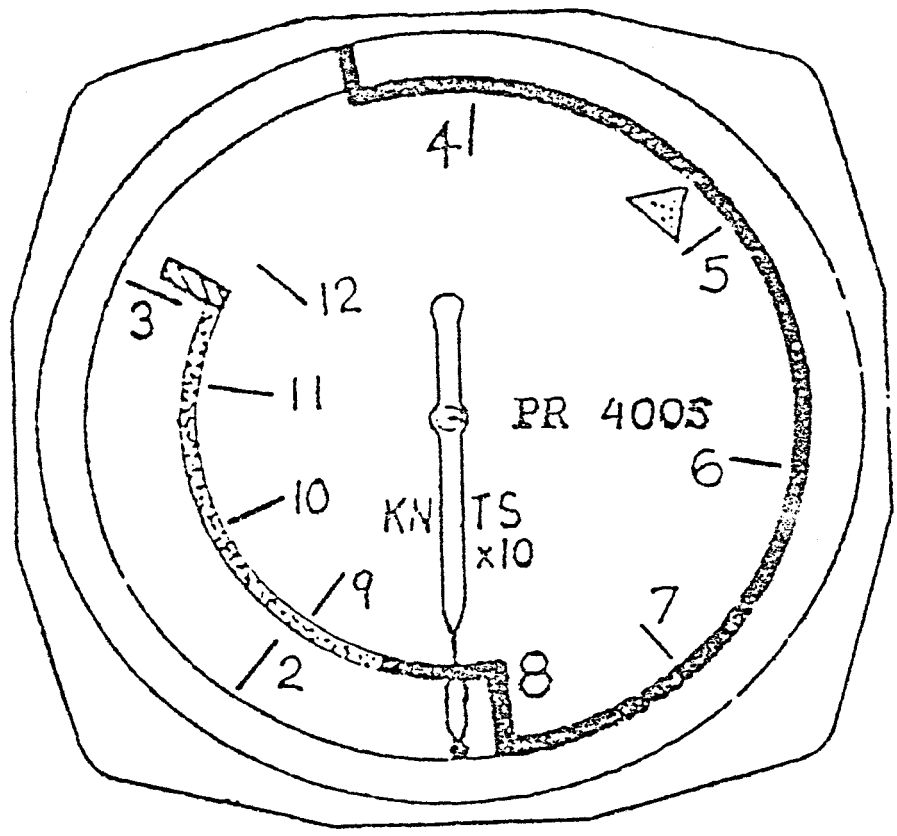


- yellow



- green





A P P E N D I X

Individual loading plan

During the daily operation of the glider the simplified method of checking the loading mass and defining the balancing weights amount can be applied on base of the table of individual loading plan /page 6-3/.

Rules for use the individual loading plan

1. The balancing weights are required only in solo flight if the pilot's mass is lower than 70 kg.
2. The total load mass defined as the sum of real crew mass /parachute included/ and eventual luggage cannot exceed to maximum value listed in the table.
3. Mass of single crew member /parachute included/ cannot exceed 110 kg.
4. The mass of front seat occupant in the inverted two persons flight must not exceed 95 kg.

Rules for inscriptions to the table of individual loading plan.

1. The inscriptions are made by Techn. Check. Dept. of producer or work-shop which performed the repair or replacement of additional equipment.

2. Every time two tables are fulfilled: one remains in this Manual, the second one is to be stored in the pocket provided in the cockpit. In case the revision is made the page 6-3 of Flight Manual should be replaced with the new one with actual data.

On the same way prepare the new table on page 6-4 cut it off and place in the cockpit.

3. It should be inscribed:

- Fact. No of glider
- Actual additional equipment /transceiver oxygen equipment, rear instrument panel/.
- Empty glider mass with standard equipment and additional equipment installed.
- Max. total load mass /crew with parachutes and luggage/ equal to the subtraction of:  
570 kg - total mass of empty glider with standard equipment and additional equipment installed.
- Max. pilot s mass /parachute included/ on front seat defined as the subtraction of max. load mas-pilot's mass /parachute included/ on rear seat. If the value so calculated exceed 110 kg the value of 110 kg should be inscribed. If the inscribed value for two persons flight exceeds 95 kg the sign x/ should be added.
- Date, seal and signature of Techn. Check. Dept.

2 | NOTE: To define the total mass of the crew and luggage the NOTE of page 2-4a should be taken into account.

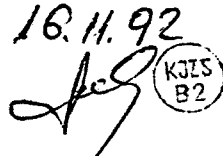
Individual loading plan placard  
/copy of glider placard for Flight Manual/

SZD-50-3 „PUCHACZ” Fact. No. *B-2083.*

## INDIVIDUAL LOADING PLAN

Mass of empty glider with standard equipment and the following additional equipment . . . . .  
 . . . . .  
 . . . . .  
 . . . . .  
 . . . . . ranges: *370,3* kg

Maximum all-up mass in: - normal flight 570 kg  
 - inverted flight 540 kg *198/168*  
 Maximum summarized load mass i.e. crew and luggage. . . . .kg

Mass of pilot and parachute		kg		Balancing weights pieces:	Date Signature Seal of Factory Inspection
Rear seat	Front seat				
	minimum	maximum			
	0	55	<i>70/70<sup>x</sup></i>	2	<i>16.11.92</i> 
	0	70	<i>110/110<sup>x</sup></i>	0	
two persons flight	55	55	<i>110/95<sup>x</sup></i>	0	
	60	55	<i>110/95</i>	0	
	70	55	<i>110/95</i>	0	
	80	55	<i>110/88</i>	0	
	90	55	<i>108/78</i>	0	
	100	55	<i>98/68</i>	0	
	110	55	<i>88/58</i>	0	

x/ for inverted flight

Individual loading plan placard  
/spar placard for the glider/

In case of revision make the inscriptions  
acc to new page 6-3 cut off and place in  
the cockpit.

SZD-50-3 „PUCHACZ” Fact. No. ....

## INDIVIDUAL LOADING PLAN

Mass of empty glider with standard equipment and the  
following additional equipment . . . . .  
. . . . .  
. . . . .  
. . . . .  
ranges . . . . . kg

Maximum all-up mass in: -normal flight 570 kg  
-inverted flight 540 kg

Maximum summarized load mass i.e. crew and luggage. ....kg

Mass of pilot and parachute		kg		Balancing weights pieces:	Date Signature Seal of Factory Inspection
Rear seat	Front seat				
	minimum	maximum			
0	55	70	2		
0	70	110	0		
two persons flight	55	55	110 x/	0	
	60	55	...	0	
	70	55	...	0	
	80	55	...	0	
	90	55	...	0	
	100	55	...	0	
	110	55	...	0	

x/ for inverted flight 95 kg