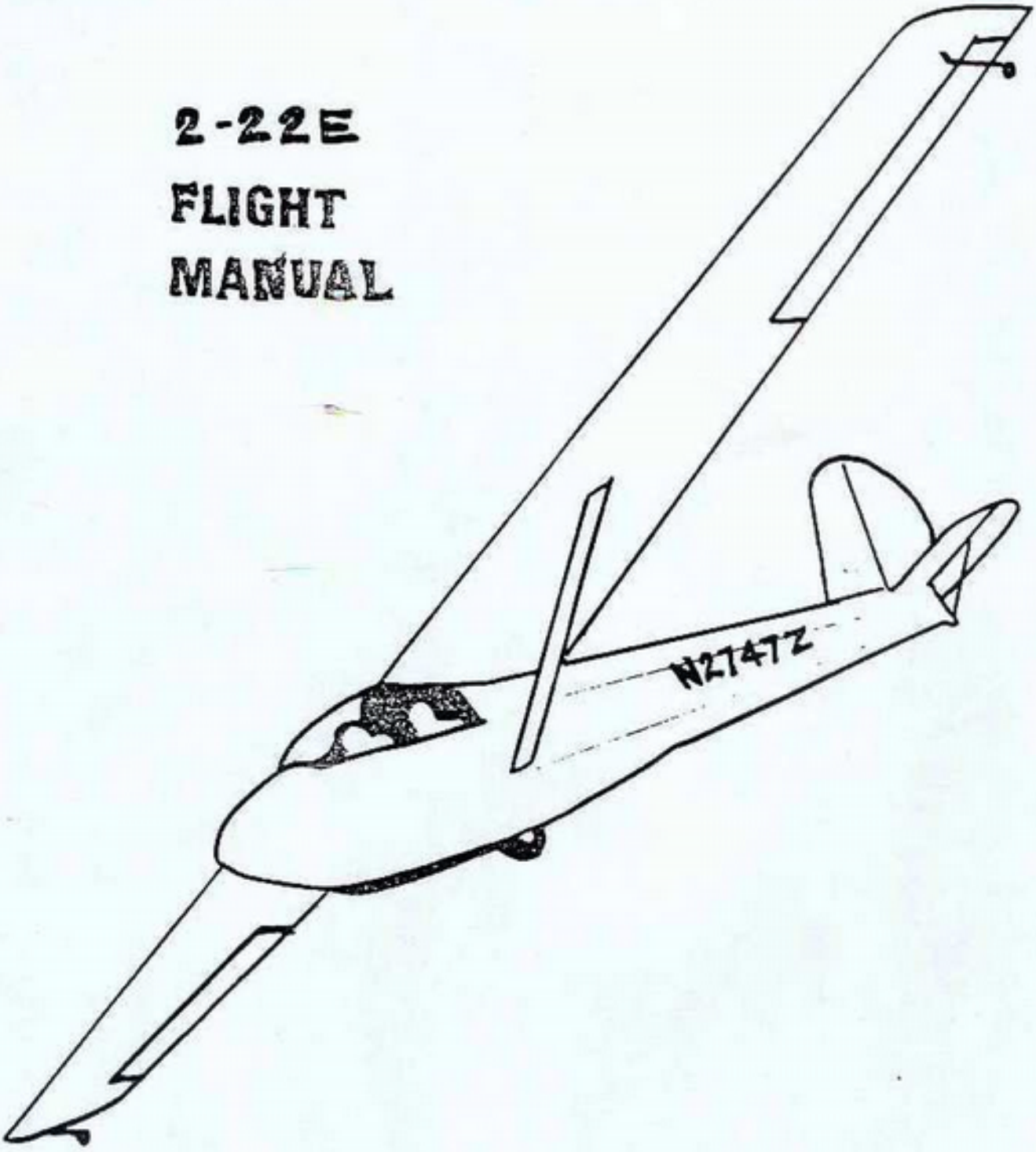
2-22E
FLIGHT
MANUAL



Stahe

GENERAL DESCRIPTION

The 2-22C is a conventional two-place tandem basic training sailplane manufactured by Schweizer Aircraft Corp., Elmira, New York. Its construction is all-metal with fabric cover.

The SGU 2-22E is basically the same but has increased headroom and vision in rear seat, plus a longer (spanwise) spoiler in the wing.

Overall Dimensions are: Length - 25' 8½"
Span - 43'
Height - 9'

FLIGHT CONTROLS:

1. TOW RELEASE KNOB

   Front - Located at center bottom of instrument panel.

   Rear - Located at top left of front seat back.

   To Release - Pull Red Knob Full Out.

2. SPOILER AND BRAKE LEVER

   Front - Located at left side of cockpit under instrument panel.

   Rear - Located at center left of front seat back.

   To use spoiler - pull straight back. This control is spring-loaded and must be held at all times. Wheel brake is actuated when last ½ inch of spoiler control is used.

3. CONTROL STICKS

   Front and Rear - Are conventional and both are mounted on a single torque tube.

4. RUDDER PEDALS

   Front - Located on left and right forward of floor and are conventional.
   They are toe pedals.

   Rear - Located at left and right of front seat.

5. TRIM LEVER

   Front Only - Located in center of floor board between pilot's knees. It is a bungee type, two position control. Use forward for solo and back for dual. It should be forward when towing either solo or dual.

6. INSTRUMENTS

   Front Only - ASI is required. Additional instruments may be added, up to full panel, as desired.

NOTE:

Instrument flight is prohibited, regardless of instrumentation.

PREFLIGHT

1. WING:

   Check all strut fittings.

   Check all spoiler hinges and connections.

   Check all fabric attachments to D-tube.

   Check all aileron hinges, attach points and pushrods.

2. TAIL ASSEMBLY:

   Check all hinge points.

   Check pushrod attachment to elevator horn.

   Check stabilizer struts and stabilizer attachment to fuselage.

   Check rudder cable connection to rudder horn.

   Check Fuselage.

3. FUSELAGE:

   Check Release.

   Check all controls for free movement including release.

   Check instruments.

   Check canopy attach points.

   Check safety belts and shoulder harnesses.

   Check rear door and wind attach points and catches.

   Check fabric.

   Check Tire, Wheel and Brake.

4. CHECK TOW ROPE.

WINCH OR AUTO TOWS

PRECAUTIONS:

1. Be sure equipment is suitable for purpose.
2. Person driving car or operating winch should be experienced with equipment and know towing characteristics of 2-22C or 2-22E.
3. Never hook rope or wire to empty sailplane.

Winch or auto tows may be executed in the usual manner with either the forward or CG release, although the latter results in a higher altitude. There is no tendency to oscillate with either release. Maximum speed on auto or winch tow is 69 MPH.

CAUTION:

1. *Do not climb at full back stick position until a safe height for stall recovery is reached (75 - 100 feet).*
2. *Level out before releasing.*

AERO TOWING: –

1. Trim should be forward.
2. You will notice that aileron control is fairly heavy at fast towing speeds, but reduce to a reasonable level at slower speeds.

FREE FLIGHT

FLYING SPEEDS: –

Best Gliding Speed	(L/D) 18-1 at 40 MPH (2) - Place.	
Best Gliding Speed	(L/D) 18-1 at 38 MPH (1) - Place.	
Min. Sinking Speed	(40 MPH) (2) - Place	3.3 FPS
Min. Sinking Speed	(38 MPH) (1) - Place	3.1 FPS

PLACARD SPEEDS: –

Dive - - - - - - - - - -	90 MPH	(Maximum Speed Indicated)
Aero Tow - - - - - -	90 MPH	
Spoilers Extended -	90 MPH	
Auto & Winch Tow -	69 MPH	

AEROBATICS:–

Mild aerobatics to 80 MPH can be done. Inverted flight prohibited.

STALLS: –

Are very gentle and always straight ahead with no tendency to fall off to either direction. Buffeting occurs before the stall 31 MPH solo, 34 MPH dual.

SPINS: –

Although the older model 2-22 will not spin, the 2-22C and 2-22E will depending on the weight of pilots and equipment, etc. Care should be taken to avoid stalls and spins at low altitude by using extra air speed.

USEFUL LOADS: –

The placard on the instrument panel is stamped showing three weight combinations - see example below:

(a) "MINIMUM WEIGHT FWD. PILOT, SOLO".

This weight is to be strictly observe in order to maintain the c.g. within the aft limit.

(b) "MAXIMUM WEIGHT AFT PILOT/220 LBS. FWD."

This figure is an arbitrary one as it assumes a relatively heavy (220 #) forward pilot. The sum of the two weights (220 + 198 per the example below) would be the total useful load of a particular sailplane. However, any combination of pilot weights above those shown in (c) below, up to that total will maintain the c.g. within limits yet not exceed the aircraft's specified gross weight.

(c) "MINIMUM WEIGHT AFT PILOT/100 LBS. FWD."

This figure shows a load combination assuming a relatively light pilot (100 #) in the forward seat and is given as a quick reference to assure that the aft c.g. limit is not exceeded.

EXAMPLE:

Maximum Weight Aft Pilot/220 Lbs. Fwd. - 198 Lbs.
Minimum Weight Aft Pilot/100 Lbs. Fwd. - 102 Lbs.
Minimum Weight Fwd. Pilot Solo - - - - - - 118 Lbs.

NOTE:

Ballast must be added if minimum weights of pilots are less than placard.

FREE FLIGHT (Cont'd.)

SPIRALLING IN THERMALS: –

In order to remain aloft or gain altitude, it is necessary to spiral. The average thermal diameter is quite small, therefore, a fairly steep bank is required. Although this is general practice, it is not necessary in areas where large diameter thermals are found. The best flying speed in any thermal at any degree of bank is one or two miles per hour above the buffet before the stall.

EXAMPLE

SGU 2-22C or "E"

	SOLO	DUAL
Stalling Speed - Level Flight	31 MPH	32 MPH
Stalling Speed - 30° Bank	33.5 MPH	34.5 MPH
Buffeting	34-37 MPH	35-38 MPH
Spiralling Speed	38 MPH	39 MPH

Keep in mind that the steeper the spiral is, the greater the sink and stalling speed will be. Sometimes it is necessary to spiral steeply and sacrifice slow speed and low sink to remain within the limits of the thermal. This is especially true in strong, small diameter thermals.

SLIPPING: –

The 2-22C or "E" can be slipped both forward and while turning. Slipping turn is done in a normal manner, but due to limited rudder area, the forward slip must be done with very little low wing and full rudder. The airspeed should be kept between 45-50 MPH for greatest rate of descent.

LANDING

PATTERN: –

It is standard practice to fly a traffic pattern. Downwind and base legs and the approach. Extra speed is also used, depending upon wind velocity and gust conditions. It is good practice to add 1 MPH to airspeed for each MPH of wind.

SPOILERS: –

Approach should be made high with use of spoilers. Spoilers increase sink which in turn gives a steeper and more controllable glide path. They can also be used to lose altitude rapidly at any time during flight or during a tow to take up slack or to lower sailplane from a too high position.

When flying solo, the stalling speed of the 2-22C or "E" is 31 MPH with spoilers closed and 34 MPH with spoilers open. For dual flight, the speeds are 32 MPH and 35 MPH respectively.

It is unsafe, however, to make an approach with spoilers open in the speed range of 36 to 43 MPH as the rate of descent is so great that a proper flareout for landing cannot be made.
Keep approach at 50 if full spoile
TOUCH DOWN: – time. Level threshold.

Can be done with either spoilers open or closed although it is preferable to land with them open. With spoilers on, the glide path is quite steep, therefore, a flare out must be executed 2-5 feet above the ground at 43-46 MPH. By holding a level attitude close to the ground, the sailplane will settle to a smooth, level touch down. DO NOT FLARE OUT TOO HIGH - this will cause a very hard landing and may result in injury to occupants or sailplane.

TOUCH DOWN WITH SPOILERS CLOSED: –

Is executed by letting sailplane land itself at, or near 40 MPH. Be careful not to ease stick back after touching down. This will increase angle of attack and sailplane will become airborne again.

TAXIING AFTER TOUCH DOWN: –

Even though sailplane is on the ground, it should literally be flown to a stop with use of all controls. Wheel brake may be used if a quick stop is desired or needed.

LANDING (Cont'd.)

GETTING OUT OF 2-22C or "E": –

On the ground it is tail down when empty and nose down with the pilot. When pilot gets out he should keep his weight on the side of the cockpit until he is in a position to lower tail gently.

FLIGHT PROCEDURES IN HIGH WINDS

1. Be careful during ground handling operations. Keep tail high going to and from tie down area.

2. Keep well up-wind of your landing area.

3. When going against wind, it is good practice to add wind velocity to speed at best L/D.

EXAMPLE:

SPEED AT BEST L/D . . . 40 MPH
WIND VELOCITY . . . . + 15 MPH
DESIRED SPEED . . . 55 MPH

This speed will give a better glide angle than a slower one.

4. Land into the wind whenever possible. In crosswind landing crab into wind to maintain desired path over ground and at last moment straighten ship to line of flight and touch down. Be careful while ship is rolling. Down-wind landing in high winds - land with brake full on and maintain directional and lateral control as long as possible.

TIE DOWNS

The 2-22C or "E" should never be left unattended in strong winds or gusty conditions. Tie down points are at each wing where main struts are attached and at tail wheel bracket. Be sure ropes and stakes used for tying down are adequate and in good condition.

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