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3.1 Introduction

This section comprises

- checklists which show the recommended procedures (catchwords) for coping with emergencies.
- amplified procedures for coping with emergencies.

Emergency Procedures (Check List)

- (1) Canopy Jettison
 - Switch off engine (ignition OFF) if possible
 - Pull red-white handle on LH side of canopy frame backwards
 - Lift canopy
 - Pull red handle on RH side wall backwards
 - Push canopy up
- (2) Bailing Out
 - Release safety harness
 - Stand up and exit aircraft over left or right side depending on the attitude
 - If possible, dive away under the wing
Caution: Wings, propeller and tail surfaces
 - When using a manual parachute, grip release and pull firmly to full extent after 1-3 seconds
- (3) Spin (Normal Attitude)
 - (If engine is extended, move throttle to IDLE position)
 - Apply opposite rudder (against spin direction)
 - Apply some down elevator (push on control stick)
 - Set aileron control to neutral or apply opposite aileron (against spin direction)
 - After recovery from spin set rudder control to neutral and pull out smoothly
- (4) Fire
 - Fuel cock : OFF
 - Throttle : FULL until engine stops
 - Ignition : OFF
 - Master switch : OFF
 - Do not retract engine
 - Slip the aircraft to deflect flames from the tail surfaces (check visually)
 - land as soon as possible
 - extinguish fire
- (5) Aborted take-off prior to getting airborne
 - The decision to abort the take-off should be made not later than 200 meters from the end of the useable runway!
 - Throttle : IDLE
 - Operate wheel brake
 - Ignition : OFF
 - Fuel cock : OFF
- (6) Off-field landing
 - Always try to retract the engine

- (7) Engine running rough
- Fuel quantity (fuselage tank) : check
 - Choke : check
 - Magnetos : check
 - Fuel cock : check
 - Propeller setting *) : check
 - If no improvement : switch off engine
- (8) Severe engine vibration
- Engine : switch off
 - Engine : retract if possible
- (9) Engine failure
- If engine fails with sufficient safety height
- Priority switch : ?
 - Choke : OPEN ?
 - Fuel cock : ON ?
 - Ignition : ON ?
 - Master switch : ON ?
 - Fuel quantity (fuselage tank) : check
 - Engine : retract
- If engine fails at low altitude
- Perform the above check list
 - Minimum flying speed : observe!
 - Throttle : IDLE
 - Ignition : OFF
 - Fuel cock : OFF
 - Engine : Retract if possible
 - Master switch : OFF
 - Prepare for off-field landing
- (10) Start engine after gliding using windmilling
- Speed : 90 - 100 km/h (48 - 54 kts)
 - Master switch : ON ?
 - Avionic switch : OFF
 - Engine electrics : ON
 - T-grip "Powerplant extension" : PULL
 - Propeller CRUISING setting *) : ON
 - Fuel cock : ON
 - Throttle for variable pitch prop: FULL
 - for fixed pitch prop. : IDLE
 - Choke : as required
 - Engine fully extended : check
 - "Powerplant extended" light : ON
 - Ignition (both magnetos) : ON
 - Speed : 160 - 175 km/h (86 - 94 kts)
 - Avionic switch : ON when engine is running
- *) only for variable pitch propeller

3.2 Canopy Jettison

If the engine is running, try to switch it off (ignition OFF) before jettisoning the canopies.

First jettison the front canopy, then the rear canopy.

1. Pull canopy latch on the LH side of the canopy frame backwards to the stop.
2. Lift canopy. The airflow will fully open the canopies.
3. Pull the canopy emergency jettison lever (red lever on the RH side wall) and push the canopy up. The lower attaching balls of the gas springs tear out and the airflow separates the canopies from the aircraft.

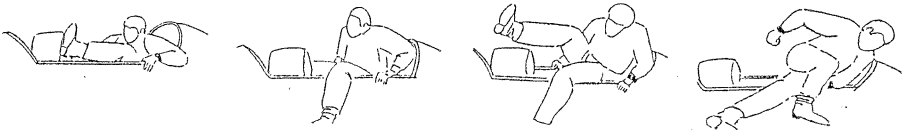
Warning: Do not use safety pins with the gas springs. If the canopies or parts of them remain on the aircraft during the emergency the bail-out will be endangered.

3.3 Bailing Out

If a bail-out is unavoidable, first release the safety harness and leave the aircraft as quickly as possible according to the bail-out procedure depicted below.

The roomy cockpit and its excellent furnishing panels ensure a quick and safe exit in case of emergency. Use the rigid canopy frames of the fuselage as levers to draw yourself up and out of the cockpit.

Be careful of the wing leading edge, the tail surfaces and the engine (if extended).



3.4 Stall Recovery in Normal and Circling Flight

- Apply some down elevator (push on the control stick) until the aircraft recovers from the stall.
- Then use opposite aileron and/or rudder control as necessary.

The loss of altitude at sea level is approx. 50 m (164 ft). With increasing altitude, the losses will also increase. The maximum loss of altitude will be in lee wave areas at high altitudes (mountain flights).

Caution: Increased vibration and sluggish controls are indications of a stall condition.

3.5 Spin Recovery

Intentional spinning is prohibited.

The recovery from an unintentional spin is achieved by the following method:

- Apply full opposite rudder (i.e. against the spin direction)
- Apply some down elevator (push on the control stick)
- Set aileron control to neutral or apply opposite aileron.
- After recovery from the spin, set rudder and aileron controls to neutral and pull-out smoothly from the dive.

The loss of altitude from the spin recovery point to the lowest point of the pull-out is approx. 280 m (920 ft) (at sea level). The pull-out speed is approx. 190 km/h (103 kts) and the pull-out load factor approx. + 3.5 g.

Warning: If - as is instinctively done by beginners - the stick is pulled instead of pushed, the TWIN III SL could enter a steady spin even though the rudder and ailerons are held neutral. For recovery push the stick decisively for a prompt stop of the spin.

- During powered flight the engine must be throttled to idle. This prevents overspeeding the engine during spin recovery.

Note: At forward center of gravity positions it is not possible to achieve a steady state spin with the aircraft. After approx. 1/2 rotation the aircraft goes into a spiral dive.

Caution: Spinning can be completely avoided by following the procedure for "Stall Recovery".

In the gliding configuration, the TWIN III SL has an extreme aft center of gravity position compared to the non-motorized TWIN series. This means that when circling in thermals (at high angles of attack), the margin for error leading to an unintended spin is much lower. Sufficiently experienced glider pilots will always recognize the stalled or almost stalled condition. If the circling flight stall is not recognized at an early stage and the aircraft starts to spin, a height loss of 150 m (492 ft) at MSL can be expected even if the correct action is taken. Correct action means a positive push of the stick.

3.6 Spiral Dive Recovery

Depending on aileron and/or rudder position during a spin at forward center of gravity positions (i.e. within the range of non-steady state spinning of the G 103 C TWIN III SL), the aircraft will go into a spiral dive or take on a yawing condition similar to a spiral dive after approx. 1/2 rotation. Both conditions are indicated by a rapid increase in speed and acceleration.

Recovery from both flight conditions is as follows:

- Apply opposite rudder (against direction of rotation)
- Apply opposite aileron (against direction of rotation)
- Apply up elevator, ensuring that max. pull-out load factor is not exceeded

The loss of altitude for recovery is dependent on speed and may be up to approx. 100 m (328 ft) at sea level. The max. pull-out load factor is + 3.5 g.

Warning: During powered flight the engine must be throttled to idle. This prevents overspeeding the engine during spin recovery.

3.7 Engine Failure

(1) Engine Failure with Sufficient Safety Height

Go through checklist no. (9).
If no faults are apparent when the above items are checked, a defect has occurred which cannot be corrected in flight. After retracting the engine the G 103 C TWIN III SL must now be flown like a glider. Retract the engine normally according to the checklist. If necessary, perform a normal off-field landing.

(2) Engine Failure at Low Altitude

Go through checklist no. (9).

(3) Engine Running Rough

Go through checklist no. (7).

(4) Severe Engine Vibration

Go through checklist no. (8).
If no defect is found, switch off and retract the engine normally. It must be assumed that the propeller is damaged and has become unbalanced. Do not restart the engine.

3.8 Fire

(1) Fire with Extended Engine

Go through checklist no. (4) and land as soon as possible. Do not retract the engine as the burning engine will weaken the structure.

Extinguish the fire with a fire extinguisher or smother it with a suitable piece of material (items of clothing).

(2) Fire with Retracted Engine

If you suspect that the source of the fire is the engine, extend the engine if possible.

- Fuel cock : OFF
- Extend engine
- Master switch : OFF
- Land as soon as possible
- Extinguish the fire

3.9 Other Emergencies

3.9.1 One Aileron not Connected

- Flight speed up to max. 120 km/h (65 kts)
- Turn with low bank angle
- Prepare for longer final approach than usual

3.9.2 One Airbrake not Connected

An airbrake that is not connected but locked will usually become obvious to the pilot on final approach only. The one-sided moment induced by the connected and operated airbrake, can be compensated by aileron and rudder control.

An airbrake that is not connected and unlocked will usually extend abruptly during take-off. A rudder control deflection of approx. 60 % will prevent a one-sided yaw.

- Launch or tow should be continued until safe altitude is reached
- Max. airspeed 150 km/h (81 kts)

With one airbrake extended, a side slip at low bank angle is possible in either direction.

3.9.3 Retracting/Extending the Engine with a Discharged Main Battery

An optional auxiliary battery can be installed. If the main battery is discharged the auxiliary battery switch on the RH canopy frame must be switched over. This disconnects the main battery from the engine bus and switches the auxiliary battery on to the bus. The engine can now be extended. The auxiliary battery can now be switched off. After the ignition has been switched on the engine can be started using the windmilling effect in accordance with checklist no. (10).

3.9.4 Ground Loop Landing

If the remaining distance between touch-down point and end of field is too short, a decision in favour of a controlled ground loop should be taken at least 30 m (98 ft) before the end of the landing field.

- If possible, turn into wind
- Simultaneous aileron and rudder control deflections into turn direction with control stick fully pulled and wheel brake released.

Ground looping requires the nose wheel to be unloaded. This is only possible with the wheel brake released and sufficient elevator effect (more than 40 km/h / 22 kts).

3.9.5 Off-Field Landing

Always try to retract the engine.
Choose a suitable landing site while you still have sufficient height. Observe the wind direction. Approach accurately and touch down smoothly.

3.9.6 Emergency Landing on Water

Experience from the ditching of a composite powered sailplane has shown that these type of aircraft with fixed or extended landing gear do not tend to "dive under" if they touch down at minimum speed (airbrakes retracted) with almost a zero rate of descent. Furthermore composite aircraft are capable of floating for a lengthy period of time.

Warning: An emergency landing on water, however, must always be considered the last resort.