Category A, Aerobatic

Warning: Only approved with 17,2m span or 18m span without winglets, without water ballast in the wings and in fin tank A.
Execute only the approved manoeuvres.
Don't execute aerobatics below the safety altitude required by national law.

Approved manoeuvres (Category A, Aerobatic):
All manoeuvres approved for category U, Utility and additionally:

Approved manoeuvres	**recommended airspeed**	**g-load**
Inverted flight	140 - 200 km/h (76 - 108 kts.)	-1
Lines in inverted flight max. 45^up or downwards	140 - 220 km/h (76 - 119 kts)	-1 to -2g
Positive loop from inverted to inverted	Entry speed 140 km/h (76 kts) Max. speed at bottom 220 km/h(119 kts)	+3 to +4g
	Entry speeds	
half loop and half roll	220 km/h (119 kts.)	+5.0
half roll and half loop	180 – 200 km/h (97 - 108 kts.)	+4.5
slow roll	180 - 200 km/h (97 - 108 kts.)	+/-1.5
Rolling circle with in or outside roll	190 - 220 km/h (103 - 119 kts)	+/-2g
Humpty Bump: Like loop, but with marked vertical line, afterwards pulled or pressed Humpty	200 - 220 km/h (108 - 119 kts.) Pulling at min. 100km/h (54kts) pressing at min.110km/h (60kts)	+3 to+4g +1,5g -1,5g
Combinations of approved manoeuvres		

Caution: Inverted spinning with the DG-500 is not approved. Only spinning from normal flight attitude is approved.

Caution: the DG-500 is equipped with a powerful longitudinal trimming device. In addition the mass balance weight of the elevator is incorporated in the elevator control system. Due to these facts the elevator control forces during inverted flight change considerably with trim position.
It is strongly recommended to trim the glider to approx. 140 km/h (76 kts.) in horizontal flight prior to executing aerobatics, especially prior to inverted flight.

Inverted flight
The speed in inverted flight should preferably be chosen between 120-200 km/h (65-108 kts.). At speeds greater than 185 km/h (100 kts.) no full control deflections are allowed.

Warning: When the speed is reduced below the minimum speed (depending on weight and c.g. position 120 - 135 km/h, 65-73 kts.) the DG-500 ELAN ORION enters an inverted stationary stall with
high sink-rate. This will be indicated by buffet-
ing of the tailplane.
The aircraft nose may point far below the horizon and the airspeed may show 130 - 150 km /h (70 – 81 kts). The efficiency of the ailerons and rudder will be reduced considerably.
Note: The inverted stalled flight must be recovered by neutralizing the stick until the buffeting of the tailplane stops. The airspeed will increase very quickly. As soon as this condition is reached, raise the glider nose above the horizon by gradually pushing the stick forward. Regain normal flight by a half roll.

Half loop and half roll:
After reaching the entry speed of 220 km/h (119 kts) pull the stick quickly, but not abruptly until reaching the inverted position, where the speed should still be 130 to 140 km/h (70-75 kts).
Then return the stick to neutral and keep the nose slightly above the horizon. Then apply full
aileron in the desired direction. After the wing passes the vertical position apply upper rudder to keep the nose above the horizon until normal flying position is reached.

Note: If the nose is raised too much above the horizon or the inverted speed is too slow, a stall can occur when the wing reaches the vertical position and the glider finishes the rolling motion as a "flicked" roll into normal flying position.

Half roll and half loop:
After reaching the entry speed of 170-180 km/h (92-97 kts) the nose must be raised to 10 – 20° above the horizon. After returning the stick to neutral apply full aileron into the desired direction to start the half roll. After the wing passes vertical position the stick has to be pushed slightly (never abruptly) forward to keep the nose above the horizon. When reaching inverted flight the ailerons must be neutralized and the speed must be reduced to 130-140 km/h (70-76 kts) by pushing the stick forward before starting the half loop to level out.

Note: If during the entry the nose is raised too high or the entry speed is too low, it could be that it is impossible to stop the rotation in the inverted position and the glider continues the roll into normal position.

Slow roll
After reaching the entry speed of 180 - 200 km/h (97-108 kts.) the nose must be raised slightly above the horizon. After returning the stick to neutral, full aileron has to be applied in the desired direction.
When the wing passes the vertical position the rudder must be applied a little in upwards direction.
After the wing has passed the first vertical position the stick is to be pushed slightly (never abruptly) forward to keep the nose above the horizon. When the wing passes the second vertical position the rudder must be applied upwards to keep the nose above the horizon until normal flying position is reached.
Note: If during the inverted flight the nose is raised too high above the horizon and the speed is reduced too much, a stall could occur when the wing reaches the second vertical position and the roll is finished as a "flicked" roll.
The stall is indicated by buffeting of the tailplane.

Rolling circle:
If flown during roll with elevator correction in the blade positions and corresponding rudder correction up, a roll circle will occur.
Note: Care must be taken to maintain the required speed and rudder deflections so as not to create a stall!

Humpty-Bump:
Humptys are only allowed from normal flight attitude! For the Humpty, the entry speed is to be selected somewhat higher than for a turn, i.e. approx. 220 km/h (119kts).
After a strong pull up into the vertical, this line is to be stabilized until the speed is reduced to 100 up to 120 km/h (54 up to 65kts). The Humpty is to be flown in the vertical position. Then the rollover (loop without movement around the transverse axis) is initiated with full pulled elevator or full pushed elevator, whereby the speed for pushing is to be selected higher than for pulling.
During the rotation, hold the stick in the fully pulled or pushed deflection without aileron deflection. It may happen that the airplane turns over at too low speed at the top or takes a slight backward phase, which is to be avoided.

Due to the large span and the resulting large moment of inertia, executing flick manoeuvres is more difficult than with smaller aerobatic gliders. Therefore you should not try these manoeuvres solo unless you have trained and mastered them on other gliders

Combinations of approved manoeuvres
Combinations of approved manoeuvres may also be flown if the operating limits are observed.

Caution: If the operating limits have been exceeded during a flight, a comprehensive inspection of the entire airframe must be performed before the next take-off. If damage is discovered, the manufacturer must be informed and, if necessary, a repair procedure determined by him must be performed.