Manual amendments

No.	page	description	issue date
1	2a, 7.1, 7.2, 7.3	Wingtips with Winglets TN 359/17	Okt. 95
2	1, 2, 4, 9, 11, 12, 13, 16, 25, 33 (pages 26-30 removed)	TN 359/24 Reduction of operating limitations	April 2007

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1.2 Description

The DG-300 ELAN ACRO is a single place high performance sailplane, with 15 m wingspan, designed for the FAI Standard Class.

Technical Data

Wing span	15	m	49.2	ft
Wing surface	10,27	m²	110.5	ft²
Aspect ratiog	21,91	/	21.91	/
Length	6,8	m	22.3	ft
Fuselage width	0,63	m	2.07	ft
Fuselage height	0,81	m	2.66	ft
Empty weight with min. equipment approx.	245	kg	540	lbs.
Max. water ballast in the wings	190	kg	420	lbs.
Fin ballast tank capacity	5,5	kg	12.1	lbs.
Max. take off weight	450	kg	992	lbs.
Wing loading g (payload 75 kg, 165 lbs.)	31	kg/m²	6.34	lbs/ft²
Max. wing loading.	43,8	kg/m²	8.98	lbs/ft²
Max. speed VNE	250	km/h	135	kts
Stall speedt W/S=32 kg/m², 6.55 lbs/ft²	65	km/h	35	kts

Description of the components

Wings:	GFRP-foam-sandwich-skin GFRP-Rovings
Elevator:	GFRP-skin
Ailerons, horizontal tailplane and rudder:	GFRP-foam-sandwich-skin
Fuselage:	GFRP-skin
Undercarriage:	Retractable, assisted by a gas strut, spring mounted, internal drum brake, fully sealed landing gear box. Tyre: 5.00 - 5 (dia. 362 mm) (14.25 in) 4 PR or 6 PR
Tailwheel:	Tyre 200 x 50 2 PR
Tow release:	Safety release "Europa G 88". for winch launch and aerotow near the C.G. **additional as option** "nose release E 85" installed under the instrument panel only for aerotow.

2. Operating limitations

2.1 Airworthiness category:
"U" Utility

2.2 **Approved flight regimes**
Airworthiness category "U"
A) **With waterballast**
1. Flight according to VFR (day light)
B) **Only without waterballast**
1. Cloud flying (day light): permitted when properly instrumented see 2.3 (not permitted in the USA and Canada)

Caution: Aerobatics are not permitted

2.3 **Required minimum equipment**
As required minimum equipment only the instruments and equipment specified in the equipment list (see maintenance manual) or in the master equipment list are to install.

a) **General**
Airspeed indicator
Range: 0-300 km/h (O-165 kts)
Speed range markings:

Green arc	90-175 km/h	48-95 kts
Yellow arc	175-250 km/h	95-135 kts
Redline at	250 km/h	135 kts
Yellow triangle (recommended approach speed)	90 km/h	48 kts

Note: The airspeed indicator is to be connected to the front static ports.

Please refer to the calibration curve sect. 6.8.

2.3 ff **Limitations placards**

Type: DG – 300 ELAN ACRO Serial No.: 3E A
Year of construction:

Maximum airspeeds	km/h	kts.
Winch launching	130	70
Aero-tow	175	95
Manoeuvring V_A	175	95
Rough air	175	95
Maximum speed V_{NE}	250	135

Aerobatics are not permitted

Maximum weights:
Category U 450 kg 992 lbs.

Cockpit load (parachute included)
Maximum: 110 kg (242 lbs.)
Minimum 70 kg (154 lbs.)

Gepäck max. 15 kg
baggage max. 33 lbs.

Sollbruchstelle max. 680 da N
rated load max. 1500 lbs.

Reifendruck 2 bar
Tyre pressure 28 psi
Tail wheel

Reifendruck 3,5 bar
Tyre pressure 49 psi
Main wheel

Cockpit Check

1. Lead ballast (for under weight pilot)?
2. Fin ballast tank emptied or correct amount filled in?
3. Parachute worn properly?
4. Safety harness buckled?
5. Seat back and pedals adjusted?
6. All controls and knobs in reach?
7. Altimeter?
8. Dive brakes cycled and locked?
9. Control check ? (One person at the control surfaces).
10. Trim?
11. Canopies locked?

limits for use of the waterballast tank

minimum ground temperature	°C	13.5	17	24	31	38
	°F	56	63	75	88	100
maximum flight altitude above GND	m	1500	2000	3000	4000	5000
	ft.	5000	6500	10000	13000	16500

Altitude	m	0-3000	4000	5000	6000
VNE indicated	km/h	250	243	230	218

Altitude	ft	0-10000	13000	16000	20000
VNE indicated	kts.	135	131	124	117

Other cockpit placards see section 1.3

2.4 **Airspeed limits**

	km/h	kts
Never-exceed airspeed	VNE = 250	135
Maximum airspeed in rough air	VRA = 175	95
Manoeuvring speed Category "U"	VA = 175	95
Maximum airspeed for landing gear operating	VLO = 175	95
Maximum airspeed for aero tow	VT = 175	95
Maximum airspeed for winch launch	VW = 130	70

Remarks
Rough air is air motion such as wave rotors, storm cloud turbulence, dust devils and turbulence that one often encounters near mountain tops.

The manouevring speed is the highest speed at which it is allowed to apply full control deflections. At maximum airspeed only deflections of up to 1/3 full deflection are allowable. Attention must be paid to the fact that at higher altitudes the true airspeed is greater than the indicated airspeed.
This fact has no influence on the strength and the aerodynamic loads on the sailplane. But for flutter prevention the following indicated airspeeds are not to exceed.

Altitude	m	0-3000	4000	5000	6000
VNE indicated	km/h	250	243	230	218

Altitude	ft	0-10000	13000	16000	20000
VNE indicated	kts.	135	131	124	117

2.5 **Maximum G-Loadings**

The following G-Loadings are not to be exceeded:

Airworthiness category "U"

at manoeuvring airspeed	VA	+5.3	-2.65
at maximum airspeed	VNE	+4	-1.5

2.6 **Weights**

Empty weight without instruments: approx. 245 kg 540 lbs.

Maximum weight: category "U" 450 kg 992 lbs.

The maximum weight without ballast in the wings has to be calculated as follows:

G = GNT + Gwings see weight record page 14

maximum weight for the nonlifting parts:

GNT = 240 kg 529 lbs.

2.7 **Center of gravity locations**

The permissable in-flight center of gravity range is

160 mm to 325 mm

6.3 inches to 12.8 inches

behind datum (leading edge of the wing root rib).

2.8 **Loading chart**

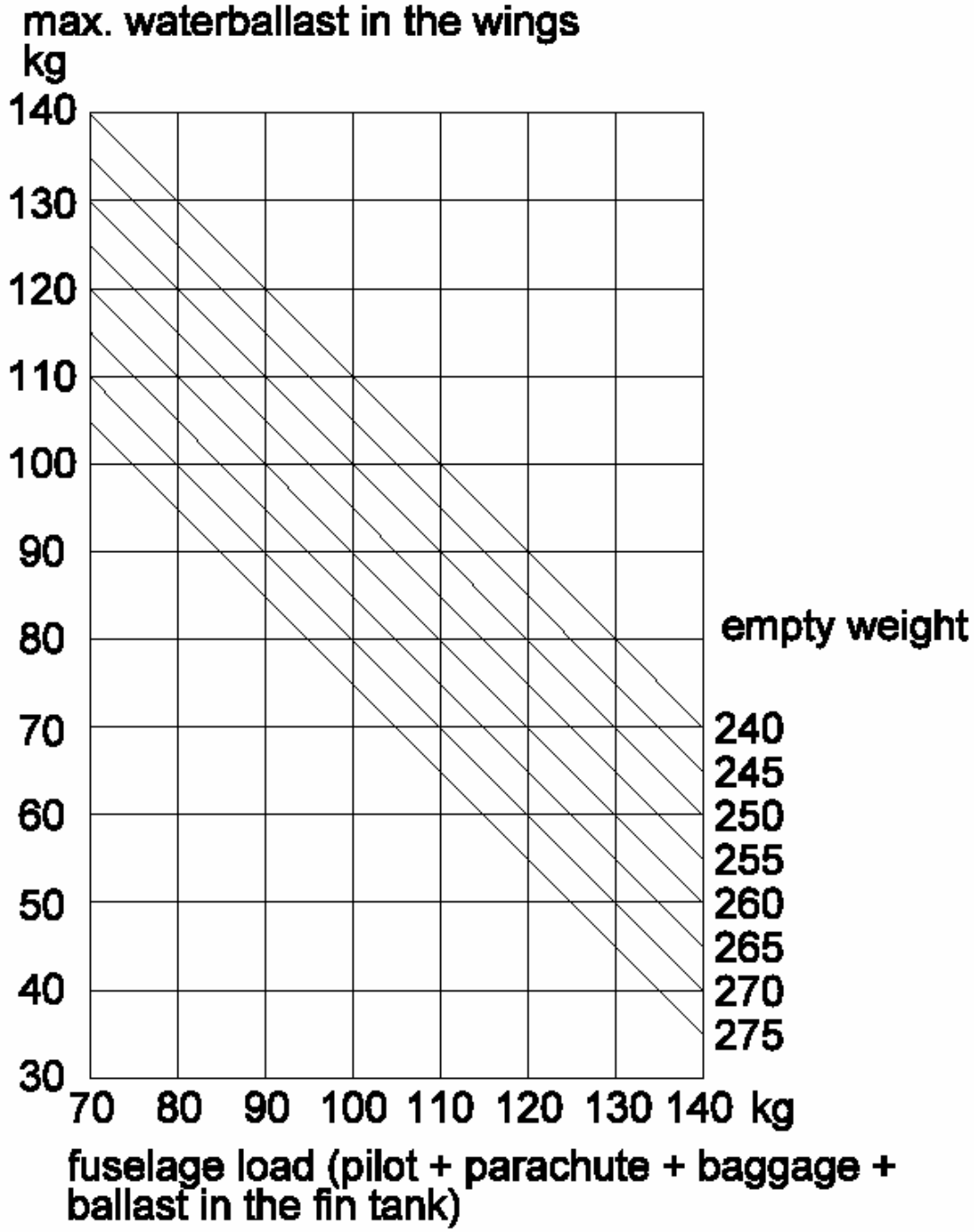
With the cockpit loads as specified in the table of page 14, the C.G. limits will not be exceeded.
With lower pilot mass necessary lead ballast must be added in the seat. Ballast put on the seat (lead ballast cushion) must be fastened at the connections of the safety belts.
To determine the empty weight C.G. and its limits consult the maintenance manual.
The maximum weight is not to be exceeded.
The maximum weight of the nonlifting parts will not be exceeded if you don't exceed the max. weight without waterballast as specified in the table of page 14.

DG-300 Ballastplan

for determination of max. water ballast in the wing tanks
at max. TOW 450 kg

Diagram 1

1 kg = 2.2046 lbs.



4.6 Aerobatics (Utility Category)

Caution: Aerobatics are not permitted

4.7 Aerobatics (Aerobatic Category)

Caution: Aerobatics are not permitted

4.10 **Flight at high altitude and at low temperatures**
With temperatures below 0°C (32°F) for instance when wave flying or flying in winter, it is possible that the control circuits could become stiffer.
Special care should be taken to ensure that there is no moisture on any section of the control circuits to minimize the possibility of freeze up. It could be advantageous to apply Vaseline along all the edges of the airbrake cover plates to minimize the possibility of freezing closed.
Apply the controls in short periods.
It is not allowed to carry waterballast.

Caution:
1. At temperatures below -20°C (-4°F) there is the risk of cracking the Gelcoat.

2. Attention must be paid to the fact at higher altitudes the true airspeed is greater than the indicated airspeed.
The max. speed VNE is reduced. See the following table:

Altitude	m	0-3000	4000	5000	6000
VNE indicated	km/h	250	243	230	218

Altitude	ft	0-10000	13000	16000	20000
VNE indicated	kts.	135	131	124	117

3. Dump the water ballast before you reach freezing altitude at +2°C (36°F) or descend to lower altitudes.

4.11 **Flight in rain** (also see sect. 3.5)
With rain, the stall speed and landing speeds are increased. The rate of sink of the aircraft also increases remarkable.