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 17, 26-30 removed)	TN 359/24 Reduction of operating limitations	April 2007
3	0.1, 1, 2, 4 - 6, 8 - 13, 16, 17a, 19, 21, 25, 27, 33, 42 (pages 26 + 28-30 may be inserted again)	TN DG-SS-05 Manual revision, inclusion of ÄM 300/10/94 and TN359/24	August 2020
4	0.1, 2, 7.1 – 7.6	TN 359/17 Revision 1 Wingtips with Winglets and TN DG-SS-08 neo Winglets	Nov. 2024

Section	Content	page	issued	replaced	replaced	replaced
4.	**Normal operation**					
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4.2	Cockpit Check	22	Mai 92			
4.3	Aero tow - winch launch	23	Mai 92			
4.4	Free flight	23	Mai 92			
4.5	Cloud flying	24	Mai 92			
4.6	Aerobatics Category "U"	25	Mai 92	April 07	August 20	
	“	26	Mai 92			
4.7	Aerobatics Category "A"	27	Mai 92	August 20		
	“	28	Mai 92			
	“	29	Mai 92			
	“	30	Mai 92			
4.8	Approach and Landing	31	Mai 92			
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7	**Supplements**					
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	„	7.5.	Nov. 2024			
	„	7.6	Nov. 2024			

Section 7

7 Supplements

7.1 Introduction

7.2 List of inserted supplements

7.3 Wing tips with winglets

7.1 Introduction

This section contains the appropriate supplements necessary to safely and efficiently operate the sailplane when equipped with various optional systems and equipment not provided with the standard sailplane.

7.2 List of inserted supplements

Date of insertion	Document No.	Title ot the inserted supplement
Oct. 1995	7.3	Wing tips with winglets (TN359/17)
Revision 1 November 2024	7.3 – 7.6	Wing tips with winglets TN359/17 and with neo Winglets TN DG-SS-08

7.3 Wing tips with neo winglets

Section 1 General

Introduction
Subsection amended

In the following text the changes to those sections of the flight manual which are affected by the installation of winglets will be given.

Description
Subsection amended

In addition to those wing configurations described in section 1 – 6 and 7.3 of this flight manual, winglets may be installed.
Winglets: The installation of the winglets to the wingtips must be executed during production of the glider or as a retrofit according to technical note TN 359/17.
The height of the winglets is 0.35 m (13.8 in.).

Neo Winglets: The installation of the neo winglets to the wingtips must be executed as a retrofit according to technical note TN DG-SS-08.
The height of the neo winglets is 0.5 m (19.7 in.).

Note: In case winglets according to TN 359/17 have already been installed, the neo winglets may be installed instead. The connection at the wing parting is the same for both types of wingtips with winglets.

Section 2 Operating limitations

Note: For operation with winglets the same limitations as with TN359/24 instruction A are applicable but in addition water ballast in the wings is no longer allowed. The limitations are the same for both types of winglets and are given in the following.

2.1 Airworthiness category
Subsection amended

Caution: Aerobatics are not approved with winglets.

2.3 Required minimum equipment

Subsection amended

Airspeed indicator

The speed range markings must be changed to the following values:

Speed range markings:	km/h	kts.
Green arc	90-175	48-95
Yellow arc	175-250	95-135
Redline at	250	135
Yellow triangle, no change	*90*	*48*

Limitation placards

The data placard and the airspeed placards must be exchanged against the following placards:

Placard 12 with TN359/24 A not applicable**:**

All variants except for → DG-300 ELAN Acro and Club Acro

Type: DG – 300 XXX Serial No.: 3E
Year of construction:

Maximum airspeeds	km/h	kts.
Winch launching	130	70
Aero-tow	175	95
Manoeuvring VA	175	95
Rough air	175	95
Maximum speed VNE	250	135

Approved Aerobatics manoeuvres (only without water ballast): Spins, inside loop, stall turn, lazy eight, chandelle

Maximum weight no winglets	525 kg	1157 lbs.
Maximum weight with winglets	450 kg	992 lbs.

No water ballast in the wings is allowed during operation with winglets

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

XXX= DG-300 Variant e.g.
Club ELAN Acro

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

Maximum airspeeds	km/h	kts.
Winch launching	130	70
Aero-tow	175	95
Manoeuvring VA	175	95
Rough air	175	95
Maximum speed VNE	250	135

Approved Aerobatics manoeuvres (only without water ballast): Spins, inside loop, stall turn, lazy eight, chandelle

In addition category A (only without water ballast and without winglets):
half loop and half roll, half roll and half loop, slow roll, inverted flight, tail slide, flick roll, half negative flick roll from inverted flight

Maximum weight CAT U no winglets	525 kg	1157 lbs.
M.W. CAT A	370 kg	816 lbs.
Maximum weight CAT U with winglets	450 kg	992 lbs.

No water ballast in the wings is allowed during operation with winglets.

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

Placards 15

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

Placard 12 All variants with TN359/24 A applicable**:**

Type: DG – 300 XXX Serial No.: 3E
Year of construction:

Maximum airspeeds	km/h	kts.
Winch launching	130	70
Aero-tow	175	95
Manoeuvring VA	175	95
Rough air	175	95
Maximum speed VNE	250	135

Aerobatics not approved

Maximum weight with winglets 450 kg 992 lbs.
No water ballast in the wings is allowed during operation with winglets

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

2.4 **Airspeed limits**
Airspeed limits are reduced to the following values:

		km/h	kts
Never-exceed airspeed	VNE	250	135
Maximum airspeed in rough air	VRA	175	95
Manoeuvring speed	VA	175	95

Note: VLO, VT,and VW remain unchanged.

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

2.6 **Weights**
Subsection amended

For operation with winglets the max. masses are reduced:
Wmax: 450 kg / 992 lbs.
Max. mass of the non lifting parts: 240 kg / 529 lbs.

2.8 **Ballast plan**
Subsection amended

No water ballast in the wings is allowed during operation with winglets.

Section 4 Normal operation

4.9 **Flight at high altitude and at low temperatures**
Subsection amended

The max. speed VNE is reduced at high altitudes according to the following tables:

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

Section 5 Rigging and derigging
Section amended

Assembly and diassembly of the winglets (both types)
To assemble the winglets, remove the normal wing tips first by inserting the 4 mm Allen key wrench (which is kept with the rigging tools) via the hole at the wing upper surface, into the hexagonal hole of the securing pin. Loosen this pin upwards, by rotating the wrench counterclockwise as far as possible. Remove the wrench and pull off the wingtip. Plug in the wingtip with winglet and fasten the securing pin downwards, by rotating the wrench clockwise as far as possible.
Removal of the winglets and reassembly of the wingtips is accomplished by the same procedure.

Caution: For flutter reasons it is not allowed to mount additional masses (e.g. cameras) on the winglets.

Section 6
Section amended

Gliding performance
Winglets according to TN359/15:
Thanks to the winglets the max. L/D is increased by approx. two points. The min. sink is reduced by approx. 0.01 m/s (0.4 ft/min.).

Neo Winglets according to TN DG-DD-08:
The increase in gliding performance is not yet determined.