

0.1 Erfassung der Berichtigungen / Record of Revisions

Lfd.Nr. Rev.No.	Benennung Reference	Seite Page	Datum Date
1	<b><u>Änderungsblatt Nr. 890-2</u></b> Steuerseile Ø 3,2 mm für Schleppkupplung(en) ab Werk-Nr. 48 (wahlweise Werk-Nr. 1 bis 47)  <b><u>Modification Bulletin No. 890-2</u></b> Control cable Ø 3,2 mm for tow release(s) S/N 48 and up (optional S/N 1 through 47)	0.2.1 3.1.1	Februar / February 2002
2	<b><u>Technische Mitteilung Nr. 890-2</u></b> Handsteuerung für Seitenruder (Werk-Nr. 53, 89 und wahlweise folgende Werknummern bei der Herstellung)  <b><u>Technical Note No. 890-2</u></b> Hand operated rudder system installation during constructions S/N 53, 89 and up optional	0.2.1 0.2.2 3.2.1 5.1.1 Diagr. 1 Diagr. 2 ----- 0.2.2 5.1.1 Diagr. 2	Februar / February 2003  ----- November 2003
3	<u>Ergänzungen</u>  <u>Supplements</u>	0.2.1 0.2.2 0.2.3 1.1 1.3 3.1.1 4.2.2 4.2.3 5.1.1 5.2.1 5.2.2 9 11	Juli / July 2003
4	<u>FAA-Ergänzung</u>  <u>FAA-supplements</u>	0.2.1 0.2.3 3.1.1 3.3.1 3.3.2 8.8	August 2003

MB: *Modification Bulletin* – Änderungsblatt  
TN: *Technical Note* – Technische Mitteilung

Hinweis: Nicht eingefügte Berichtigungen sind zu streichen.  
Das Verzeichnis der Seiten ist gegebenenfalls handschriftlich zu aktualisieren  
Note: *Cross out revisions which are not included.*  
*The list of effective pages must be amended by hand if necessary.*

0.1 Erfassung der Berichtigungen / Record of Revisions

Lfd.Nr. Rev.No.	Benennung Reference	Seite Page	Datum Date
5	<b>Änderungsblatt Nr. 890-3</b> LCD-Kraftstoffvorratsanzeiger ab Werk-Nr. 85 wahlweise Werk-Nr. 1 bis 84  <b><u>Modification Bulletin No. 890-3</u></b> LCD-fuel quantity indicator standard on S/N 85 optional S/N 1 through 84	0.2.1 0.2.3 7.2.2 Diagr. 9c	Oktober / October 2003
6	<u>Ergänzung der Instrumente</u>  <u>Supplements of instruments</u>	0.2.3 7.2.3 7.2.4	Januar / January 2004
7	<u>Ergänzungen</u>  <u>Supplements</u>	0.2.1 0.2.3 0.3.1 2.1.1 3.2.4 8.1	Januar / January  2005
8	<u>Ergänzung</u> Wägung, Leermassen-Schwerpunktbereich  <u>Supplement</u> Weighing, Empty mass c/g range	0.2.2 6.3 6.4.3	April 2005

MB: *Modification Bulletin* – Änderungsblatt  
TN: *Technical Note* – Technische Mitteilung

Hinweis: Nicht eingefügte Berichtigungen sind zu streichen.  
Das Verzeichnis der Seiten ist gegebenenfalls handschriftlich zu aktualisieren

Note: *Cross out revisions which are not included.*  
*The list of effective pages must be amended by hand if necessary.*

0.1 Erfassung der Berichtigungen / Record of Revisions

Lfd.Nr. Rev.No.	Benennung Reference	Seite Page	Datum Date
9	<p><b>Änderungsblatt Nr. 890-6</b> Winglets, Hinterkantenklappen (Werk-Nr. 126) und gefedertes Fahrwerk (ab Werk-Nr. 128)</p> <p><b>Modification Bulletin No. 890-6</b> <i>Winglets, trailing edge flap (S/N 126) and landing gear with shock absorber struts (S/N 128 and on)</i></p>	Deckblatt / cover sheet 0.2.1 0.2.2*) 0.2.3 1.2.2 1.2.3*) 2.1.2 2.3 3.1.2 3.2.1 3.2.4 5.4.1.1*) 5.4.1.2*) 5.4.2*) 6.2.2*) 6.4.2*) 6.4.3*) 6.6.2*) 6.7*) 8.6*) 8.7*) Diagr. 1 Diagr. 3 Diagr. 4*) Diagr. 5 Farbkennz. Rep. 1, 2  *) entfällt bei Werk-Nr. 126  <i>not applicable for S/N 126</i>	September 2005
10	<p><b>Technische Mitteilung Nr. 890-7</b> Winglets wahlweise, Werk-Nr. 1 bis 125</p> <p><b>Technical Note 890-7</b> <i>Winglets optional, S/N 1 through 125</i></p>	0.2.1 2.1.2 Diagr. 3 Farbkennz. / <i>Anti collision marking</i> Rep. 1	November 2005

MB: *Modification Bulletin* – Änderungsblatt  
TN: *Technical Note* – Technische Mitteilung

Hinweis: Nicht eingefügte Berichtigungen sind zu streichen.  
Das Verzeichnis der Seiten ist gegebenenfalls handschriftlich zu aktualisieren

Note: *Cross out revisions which are not included.*  
*The list of effective pages must be amended by hand if necessary.*

0.1 Erfassung der Berichtigungen / Record of Revisions

Lfd.Nr. Rev.No.	Benennung Reference	Seite Page	Datum Date
11	<u>Ergänzung der Instrumente</u>  <u>Supplement of Instruments</u>	0.2.1 0.2.3 7.2.1 7.2.3 7.2.4	März / March 2006
12	<u>Ergänzungen zum <b>ÄB 890-6</b></u> Tragflügel in GFK/CFK, Werk-Nr. 147 und ab Werk-Nr. 151  <u>Supplement to <b>MB 890-6</b></u> Wings in GFRP/CFRP, S/N 147 and S/N 151 and up	0.2.1 1.1 2.2.1 Rep. 1	Juli / July 2006
13	<u>Ergänzungen zum <b>ÄB 890-6</b></u> ab Werk-Nr. 172  <u>Technische Mitteilung Nr. 890-9</u> Werk-Nr. 147, 150, 151 bis 171 optional  Erhöhung der max. Flugmasse auf 750 kg und der Masse der nichttragenden Teile auf 500 kg  <u>Supplement to <b>MB 890-6</b></u> S/N 172 and up  <u>Technical Note No. 890-9</u> S/N 147, 150, 151 through 171 optional  Increase of the max. take-off mass to 750 kg and the mass of the non-lifting parts to 500 kg	0.2.2 0.2.3 5.2.1 5.2.2 5.4.1.1 6.5 6.6.1 6.7 8.1 8.2	Juli / June 2007
14	<u>Technische Mitteilung Nr. 890-11</u> Alle Werk-Nr., optional  Ersetzen des Bugrades durch einen Schleifsporn  <u>Technical Note No. 890-11</u> All S/N, optional  Substitution of the nose wheel by a nose skid	0.2.2 6.2.1	Juni / June 2007

MB: *Modification Bulletin* – Änderungsblatt  
TN: *Technical Note* – Technische Mitteilung

Hinweis: Nicht eingefügte Berichtigungen sind zu streichen.  
Das Verzeichnis der Seiten ist gegebenenfalls handschriftlich zu aktualisieren  
Note: *Cross out revisions which are not included.*  
*The list of effective pages must be amended by hand if necessary.*



Diagrams:

- 1 Control circuits in the fuselage
- 2 Rudder control circuits
- 3 Control circuits in the wing
- 4 Undercarriage with retracting linkage and hydraulic disc brake
- 5 Inspection opening in the aileron web
- 6 Inspection opening in the fin
- 7 Aileron template
- 8 Power plant installation
- 9a Wiring diagram / cable position view single control
- 9b Wiring diagram / cable position view double control
- 9c Part list – Diagram 9a, 9b, 10a, 10b
- 9d Connector (engine to airframe)
- 10a Wiring diagram single control
- 10b Wiring diagram double control
- 11 special tool for removal and re-installation of the pylon gas strut

Anti collision markings “Duo Discus T”Check list:

1. Engine mount (pylon) and pivoting mechanism
2. Fuel system
3. Electrical system (power plant monitoring, engine test run)

Trouble shooting lists “Duo Discus T”Appendix:

1. Repair Instructions for powered sailplane model “Duo Discus T”
2. Repair Instructions for Schempp-Hirth Sailplanes and Powered Sailplanes constructed from Fiber Reinforced Plastic

It is recommended to insert Technical Notes (TNs) and Airworthiness Directives (Ads) behind this page.

Diagrams:

- 1 Control circuits in the fuselage
- 2 Rudder control circuits
- 3 Control circuits in the wing
- 4 Undercarriage with retracting linkage and hydraulic disc brake
- 5 Inspection opening in the aileron web
- 6 Inspection opening in the fin
- 7 Aileron template
- 8 Power plant installation
- 9a Wiring diagram / cable position view single control
- 9b Wiring diagram / cable position view double control
- 9c Part list – Diagram 9a, 9b, 10a, 10b
- 9d Connector (engine to airframe)
- 10a Wiring diagram single control
- 10b Wiring diagram double control
- 11 special tool for removal and re-installation of the pylon gas strut

Anti collision markings “Duo Discus T”Check list:

- C-1 Wing, fuselage
  - C-2 Undercarriage; rudder; horizontal tailplane
  - C-3 Equipment; control circuits and their functions
  - C-4 Checks to be made with sailplane rigged
1. Engine mount (pylon) and pivoting mechanism
  2. Fuel system
  3. Electrical system (power plant monitoring, engine test run)

Trouble shooting lists “Duo Discus T”Appendix:

1. Repair Instructions for powered sailplane model “Duo Discus T”
2. Repair Instructions for Schempp-Hirth Sailplanes and Powered Sailplanes constructed from Fiber Reinforced Plastic

It is recommended to insert Technical Notes (TNs) and Airworthiness Directives (Ads) behind this page.

To facilitate the checking of the empty mass center of gravity, the table below shows – at different empty mass values – the maximum permissible load on the tail wheel, with various loads on the front seat and in relation to the most rearward c/g position.

The actual load on the tail wheel is determined with the aircraft in weighing attitude, i.e. main wheel on the ground and tail jacked up as described on page 6.2.1.

If the load on the tail wheel is below the value in the table, the empty mass centre of gravity is in front of the rearmost allowed limit for the corresponding minimum cockpit load and empty mass.

Empty mass		Load on tail wheel (or skid) with a minimum seat load of:									
		70	154	75	165	80	176	85	187	90	198
kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb
410	904	35.7	78.7	37.2	82,0	38,8	85,5	40,4	89,1	41,9	92,4
420	926	36.0	79.4	37.6	82,9	39,2	86,4	40,7	89,7	42,3	93,3
430	948	36.4	80.2	37.9	83,6	39,5	87,1	41,1	90,6	42,6	93,9
440	970	36.7	80.9	38.3	84,4	39,9	88,0	41,4	91,3	43,0	94,8
450	992	37.1	81.8	38.6	85,1	40,2	88,6	41,8	92,2	43,4	95,7
460	1014	37.4	82.5	39.0	86,0	40,6	89,5	42,1	92,8	43,7	96,3
470	1036	37.8	83.3	39.4	86,9	40,9	90,2	42,5	93,7	44,1	97,2
480	1058	38.1	84.0	39.7	87,5	41,3	91,0	42,8	94,4	44,4	97,9

Note:

Should a tail skid be fitted (instead of a tail wheel), the above values are to be multiplied by a factor of 0.993).



To facilitate the checking of the empty mass center of gravity, the table below shows – at different empty mass values – the maximum permissible load on the tail wheel, with various loads on the front seat and in relation to the most rearward c/g position.

The actual load on the tail wheel is determined with the aircraft in weighing attitude, i.e. main wheel on the ground and tail jacked up as described on page 6.2.1.

If the load on the tail wheel is below the value in the table, the empty mass centre of gravity is in front of the rearmost allowed limit for the corresponding minimum cockpit load and empty mass.

Empty mass		Load on tail wheel (or skid) with a minimum seat load of:									
		70	154	75	165	80	176	85	187	90	198
kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb
410	904	39.7	87.5	41.2	90.8	42.8	94.4	44.3	97.7	45.9	101.2
420	926	40.1	88.4	41.7	91.9	43.2	95.3	44.8	98.8	46.3	102.1
430	948	40.6	89.5	42.1	92.8	43.7	96.4	45.2	99.7	46.8	103.2
440	970	41.1	90.6	42.6	93.9	44.2	97.5	45.7	100.8	47.3	104.3
450	992	41.5	91.5	43.1	95.0	44.6	98.3	46.2	101.9	47.7	105.2
460	1014	42.0	92.6	43.5	95.9	45.1	99.4	46.6	102.8	48.2	106.3
470	1036	42.4	93.5	44.0	97.0	45.5	100.3	47.1	103.9	48.6	107.2
480	1058	42.9	94.6	44.4	97.9	46.0	101.4	47.5	104.7	49.1	108.3
490	1080	43.3	95.5	44.9	99.0	46.4	102.3	48.0	105.8	49.5	109.1
500	1103	43.8	96.6	45.3	99.9	46.9	103.4	48.4	106.7	50.0	110.3

Note:

Should a tail skid be fitted (instead of a tail wheel), the above values are to be multiplied by a factor of 0.993).

## 6.6 Useful load

### Load on the seats

LOAD ON THE SEATS (crew incl. parachutes)					
SEAT LOAD	TWO PERSONS		ONE PERSON		
	min.	max.	min.	max.	
front seat load	<b>70*</b> kg <b>154*</b> lb	<b>110</b> kg <b>243</b> lb	<b>70*</b> kg <b>154*</b> lb	<b>110</b> kg <b>243</b> lb	
rear seat load	at choice		<b>110</b> kg <b>243</b> lb		
valid for the following battery location(s):					
1 batt.	engine battery (E)				
2 batt.**	in front of rear stick mounting frame (C1, C2)**				
Maximum load in the cockpit when the fuel tank is completely filled ***			<b>222*</b> kg / <b>490*</b> lb		
The maximum load in the cockpit (load on both seats + baggage + trim ballast) must not be exceeded. If the front seat load is below the minimum front seat load: see instructions in the flight manual - section 6.2.					
Maximum fuel	kg	lb	Ltr.	US. Gal.	IMP. Gal.
	<b>12</b>	<b>26.5</b>	<b>16</b>	<b>4.23</b>	<b>3.52</b>

\*) Values as an example, the actually applicable values - see Flight Manual log chart section 6.2 - must be entered.

\*\*) Enter number of batteries installed at weighing and enlisted in equipment list.

\*\*\*) With removed power plant the amendment "when fuel tank is completely filled" must be crossed out.

Depending on its equipment and the installation of fixed trim ballast, the actual minimum front seat load and the maximum cockpit load of this particular Duo Discus T (to which this manual refers) may differ from the above entered values.

The placards in the cockpit must always show the actual values, which are also to be entered in the log chart – see flight manual, page 6.2.3 or 6.2.4.

### Determination of the values for the maximum load in the cockpit and in the seats:

The **maximum front seat load** and  
The **maximum rear seat load**  
are always 110 kg.

The **maximum load in the cockpit when the fuel tank is completely filled** must be determined in such a way that, with considering 12kg fuel load in the fuel tank, the maximum weight of the non-lifting parts and the maximum weight without water ballast is not exceeded (see Flight Manual page 2.6).

With removed power plant the **maximum load in the cockpit** must be determined in the same way but without considering any fuel.

Under certain conditions the maximum load in the cockpit may be lower than 220kg. In this case it is not possible to use the maximum seat load in both seats at the same time.

Placing:

LOAD ON THE SEATS (crew incl. parachutes)					
SEAT LOAD	TWO PERSONS		ONE PERSON		
	min.	max.	min.	max.	
front seat load	70* kg 154* lb	110 kg 243 lb	70* kg 154* lb	110 kg 243 lb	
rear seat load	at choice 110 kg 243 lb		—	—	
valid for the following battery location(s):					
1 batt.	engine battery (E)				
2 batt.**	in front of rear stick mounting frame (C1, C2)**				
Maximum load in the cockpit when the fuel tank is completely filled ***			222* kg / 490* lb		
The maximum load in the cockpit (load on both seats + baggage + trim ballast) must not be exceeded. If the front seat load is below the minimum front seat load: see instructions in the flight manual - section 6.2.					
Maximum fuel	kg	lb	Ltr.	US. Gal.	IMP. Gal.
	12	26.5	16	4.23	3.52

Cockpit inner skin on the right for either seat

- \*) Values as an example, the actually applicable values - see Flight Manual log chart section 6.2 - must be entered.
- \*\*) Enter number of batteries installed at weighing and enlisted in equipment list.
- \*\*\*) With removed power plant the amendment "when fuel tank is completely filled" must be crossed out.

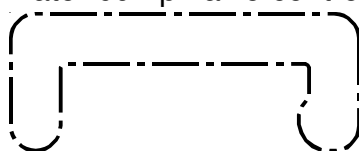
Note:

The stars (\*, \*\*, \*\*\*) refer to the aside mentioned comments. In the real cockpit placard they are omitted.



Above water dump valve control on cockpit inner skin on the right (front seat only)

Water dump valve control



Guide slot on cockpit inner skin on the right (front seat only)

WHEN FLOWN SOLO, THE PLACARDED MINIMUM FRONT SEAT LOAD MAY BE REDUCED BY UP TO:	NUMBER OF LEAD PLATES REQUIRED
- 05 kg (11 lb)	1
- 10 kg (22 lb)	2
- 15 kg (33 lb)	3
- 20 kg (44 lb)	4
- 25 kg (55 lb)	5
- 30 kg (66 lb)	6

(if installed)  
Cockpit inner skin on the right (front seat only)

**WATER BALLAST IN THE FIN**  
The rear limit for the in-flight center of gravity must not be exceeded. Therefore for loading the fin tank strictly follow the Flight Manual section 6.2!

(if installed) Cockpit inner skin on the right for either seat

CHECK LIST BEFORE TAKE-OFF
<ul style="list-style-type: none"> <li><input type="radio"/> Water ballast in fin tank correctly filled (if installed) ? Dump all water ballast in case of doubt !</li> <li><input type="radio"/> Loading charts checked ?</li> <li><input type="radio"/> Parachute securely fastened ?</li> <li><input type="radio"/> Safety harness secured and tight ?</li> <li><input type="radio"/> Seat back, head rest and pedals in comfortable position ?</li> <li><input type="radio"/> All controls and instruments easily accessible ?</li> <li><input type="radio"/> Airbrakes checked and locked ?</li> <li><input type="radio"/> All control surfaces checked with assistant for full and free movement in correct sense ?</li> <li><input type="radio"/> Elevator trim correctly set ?</li> <li><input type="radio"/> ASI switched to Pitot head in fin ?</li> <li><input type="radio"/> Canopy closed and locked ?</li> </ul>

Placing:

Cockpit inner skin on the right for either seat

CHECK LIST EXTENDING AND STARTING THE POWER PLANT
<ul style="list-style-type: none"> <li><input type="radio"/> <b>OPEN</b> fuel shut-off valve</li> <li><input type="radio"/> Switch ASI to pitot head in nose cone</li> <li><input type="radio"/> <b>EXTEND</b> power plant at <b>90-100 km/h (49-54 kt, 56-62 mph)</b></li> <li><input type="radio"/> Ignition <b>ON</b></li> <li><input type="radio"/> <b>PULL</b> decompression handle and <b>HOLD</b></li> <li><input type="radio"/> <b>DEPRESS</b> fuel pump button</li> <li><input type="radio"/> Accelerate to about <b>100 km/h (54 kt, 62 mph)</b></li> <li><input type="radio"/> <b>RELEASE</b> decompression handle</li> <li style="padding-left: 20px;"><b>WITH ENGINE RUNNING:</b></li> <li><input type="radio"/> <b>RELEASE</b> fuel pump button and</li> <li><input type="radio"/> Climb at <b>90-95 km/h (49-51 kt, 56-59 mph)</b></li> </ul>

Cockpit inner skin on the left - for front seat only (unless a 2nd control unit is installed)

STOPPING AND RETRACTING THE POWER PLANT
<ul style="list-style-type: none"> <li><input type="radio"/> Reduce speed to about <b>90 km/h (49 kt, 56 mph)</b></li> <li><input type="radio"/> Ignition <b>OFF</b></li> <li><input type="radio"/> <b>CLOSE</b> fuel shut-off valve</li> <li><input type="radio"/> <b>RETRACT</b> power plant <b>for 5 seconds</b></li> <li><input type="radio"/> When prop has stopped, <b>RETRACT</b> power plant at <b>90-100 km/h (49-54 kt, 56-62 mph)</b> fully</li> <li><input type="radio"/> Switch ASI to pitot head in fin</li> </ul>

Main switch



PIN CONNECTION (1 control unit)  
(viewed in flight direction)

Connector left		Connector right	
(A)		(A)	5 Ignition
(B)		(B)	6 Ignition
(C)		(C)	7 Limit Sw. EXT.
(D)		(D)	8 Limit Sw. RETR.
(E)		(E)	RPM +
(F)	Batt S1	(F)	RPM Indicator
(G)	Batt S2	(G)	Tank sensor
(H)	GND BS1/BS2	(H)	Tank +5V
(I)		(I)	Tank +
(J)		(J)	Fuel pump
(K)		(K)	GND Fuel pump
(L)	Res 3	(L)	GND Fuel pump
(M)	Res 4	(M)	3 Pylon pivot drive
(N)		(N)	4 Pylon pivot drive
(O)		(O)	2 +12V
(P)		(P)	13
(R)		(R)	

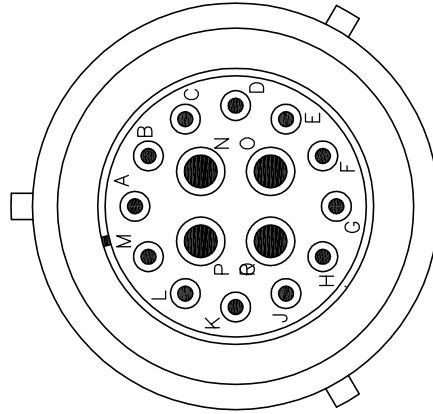
PIN CONNECTION (2 control unit)  
(viewed in flight direction)

Connector left		Connector right	
(A)	5h	(A)	5 Ignition
(B)	6h	(B)	6 Ignition
(C)	7h	(C)	7 Limit Sw. EXT.
(D)	8h	(D)	8 Limit Sw. RETR.
(E)	9h	(E)	RPM +
(F)	Batt S1	(F)	RPM Indicator
(G)	Batt S2	(G)	Tank sensor
(H)	GND BS1/BS2	(H)	Tank +5V
(I)	Res 1	(I)	Tank +
(J)	Res 2	(J)	Fuel pump
(K)	Res 3	(K)	GND Fuel pump
(L)	Res 4	(L)	GND Fuel pump
(M)	3h	(M)	3 Pylon pivot drive
(N)	4h	(N)	4 Pylon pivot drive
(O)	1h +12V	(O)	2 +12V
(P)	12h	(P)	13
(R)		(R)	

CONNECTOR (engine-to-airframe)

(viewed from the front)

Male plug (AMP 7808576)



Female plug (AMP 7805160)

