

AIR TURQUOISE SA certified by

## Flight test report: EN

BUREAU VERITA Certification

Manufacturer **Bruce Goldsmith Design** Certification number PG\_0848.2013 **GmbH** Hügelweg, 12 Address Date of flight test 18. 12. 2013 9400 Wolfsberg

paragliding by air turquoise

Austria

Representative Place of test Villeneuve None

Glider model **Dual 40 lite** Classification В

Trimmer yes: closed

> Tost nilot Thurnheer Claude Zoller Alain

Test pilot	Thurnheer Claude		Zoller Alain	
Harness	Advance - Bi Pro 2		Advance - Bi Pro 2	
Total weight in flight (kg)	120		220	
1. Inflation/Take-off	A			
Rising behaviour	Smooth, easy and constant rising	Α	Smooth, easy and constant rising	Α
Special take off technique required	No	Α	No	Α
2. Landing	Α			
Special landing technique required	No	Α	No	Α
3. Speed in straight flight	A			
Trim speed more than 30 km/h	Yes	Α	Yes	Α
Speed range using the controls larger than 10 km/h	Yes	Α	Yes	Α
Minimum speed	Less than 25 km/h	Α	Less than 25 km/h	Α
4. Control movement	Α			
Max. weight in flight up to 80 kg				
Symmetric control pressure / travel	not available	0	not available	0
Max. weight in flight 80 kg to 100 kg				
Symmetric control pressure / travel	not available	0	not available	0
Max. weight in flight greater than 100 kg				
Symmetric control pressure / travel	Increasing / greater than 65 cm	Α	Increasing / greater than 65 cm	Α
5. Pitch stability exiting accelerated flight	A			
Dive forward angle on exit	Dive forward less than 30°	Α	not available	0
Collapse occurs	No	Α	not available	0
6. Pitch stability operating controls during accelerated flight	Α			
Collapse occurs	No	Α	not available	0
7. Roll stability and damping	A			
Oscillations	Reducing	Α	Reducing	Α
8. Stability in gentle spirals	Α			
Tendency to return to straight flight	Spontaneous exit	Α	Spontaneous exit	Α
9. Behaviour in a steeply banked turn	В			
Sink rate after two turns	Up to 12 m/s	Α	More than 14 m/s	В
10. Symmetric front collapse	A			
Entry	Rocking back less than 45°	Α	Rocking back less than 45°	Α
Recovery	Spontaneous in less than 3 s	Α	Spontaneous in less than 3 s	Α
Dive forward angle on exit / Change of course	Dive forward 0° to 30° / Keeping course	Α	Dive forward 0° to 30° / Keeping course	Α
Cascade occurs	No	Α	No	Α
With accelerator				
Entry	not available	0	not available	0

Dec forward angle on ext / Change of course   Cascade occurs   A	Recovery	not available	0	not available	0
Cascade occurs	,				
1. Exiting deep stall (parachutal stall)					-
Deep stall achieved         Yes         A         Yes         A         Spontaneous in less than 3 s         A         Spontaneous in less than 3 s         A         Dive forward or 'bo 30'         A         Dive forward or 'bo 30'         A         A         Spontaneous in less than 45'         A         Changing course less than 45'         A         No         No         A         No         No         No         No         No         No         No         No			Ü	not available	U
Recovery			Δ	Vas	Δ
Dive forward angle on exit   Dive forward 0" to 30"   A   Dive forward 0" to 30"   A   Changing course less than 45"   A   Changing course less than 45"   A   Changing course less than 45"   A   No	·				
Changing course less than 45° A Qascado occurs         A No         A				•	
Caseade occurs         No         A         No         A           12. High angle of attack recovery         Spontaneous in less than 3 s         A         Spontaneous in less than 3 s         A         Spontaneous in less than 3 s         A         No         Collapse         A         No         A         No         A         No         A         No         A         No         A         No         Collapse         A         No         Collapse         A         No         Collapse         A         No         A         No         A         A         Less than 45°         A         Less than 50°         A         No         A         A         Less than 50°         PO         1.0         1.0         No         No         No         No         No         No         No         No<	The state of the s				
1.   High angle of attack recovery   Spontaneous in less than 3 s   A   Spontaneous in less than 3 s   A   No   No					
Recovery from a developed full stall   A   No   No   No   No   No   No   No				NO	
Cascade occurs         No         A         No         A           13. Recovery from a developed full stall         A           Dive forward only on a developed full stall         A           Dive forward only on a developed full stall         Dive forward only to 30°         A         No localpase         A           Collapse         No         A         No collapse         A           Cascade occurs (other than collapses)         No         A         Less than 45°         A         Less than 45°         A           Rocking back         Less than 45°         A         Less than 45°         A         Less than 55°         A           Line tension         A         Most lines tight         A         Less than 55°         A         Less than 55°         A           Line tension         A         Less than 55°         A         Less than 55°         Divide Course         A         Less than 55°         Divide Course         Less than 50°         Divide Course         A         No         A         No         A         No         A         No         A         No         A         No         A         Less than 50°         Divide course         A         Less than 50°         Divide course         A         Less than 50°			Δ	Spontaneous in less than 3 s	Δ
13.   Recovery from a developed full stall   Dive forward 0° to 30°   A   Dive forward 0° to 30°   A   Cocilapse   No collapse   A   No collapse   A   No collapse   A   Rocking back   Less than 45°   A   Less than 45°   A   Rocking back   Less than 45°   A   Less than 45°   A   A   Most lines tight   A   A   A   A   Most lines tight   A   A   A   A   Most lines tight   A   A   A   A   A   A   A   A   A	,	·		•	
Dive forward ongle on exit			, ,		, ,
Collapse         No collapse         A No collapse         A Collapse Course until re-inflation / Maximum diver forward or langle         Collapse of course until re-inflation / Maximum diver forward or langle         Collapse of course until re-inflation / Maximum diver forward or langle         Collapse of course until re-inflation / Maximum diver forward or langle         Collapse of course until re-inflation / Maximum diver forward or langle         Collapse of course until re-inflation / Maximum diver forward or langle         A Collapse of course until re-inflation / Maximum diver forward or langle         A No         A Minth			Α	Dive forward 0° to 30°	Α
Cascade occurs (other than collapses)   No   Less than 45"   A   Most lines tight   A					
Rocking back   Less than 45"   A   Most lines tight   A   Asymmetric collapse   A   Asymmetric collapse or course until re-inflation / Maximum dive forward or langle of course until re-inflation / Maximum dive forward or langle of course until re-inflation / Maximum dive forward or langle of course on the opposite side occurs   No   A	·				
Line tension         Most lines tight         A         Most lines tight         A           14. Asymmetric collapse         A           Change of course until re-inflation / Maximum dive forward or roll angle of course until re-inflation behaviour         Less than 90° / Dive or roll angle of to 15°         A         Less than 360° / Dive or roll angle of to 15°         A         Less than 360° / Dive or roll angle of to 15°         A         Spontaneous re-inflation         A         Spontaneous re-inflation         A         No         A         A         A         No         A		Less than 45°	Α	Less than 45°	
A. Asymmetric collapse         A           With 50% collapse         Less than 90° / Dive or roll angle of to 15° of					
With 50% collapse         A collapse         Less than 90° / Dive or roll angle of course until re-inflation / Maximum dive forward or oll angle of course until re-inflation / Maximum dive forward or oll angle of course         Less than 360° in 15°         A collapse on the opposite side occurs         A collapse on the opposite side occurs         A collapse on the opposite side occurs         No         A collapse on the opposite side occurs         A vo         A collapse on the opposite side occurs         A vo         A vo <th< td=""><td></td><td></td><td>, ,</td><td>most imos tig.nt</td><td>•</td></th<>			, ,	most imos tig.nt	•
Change of course until re-inflation / Maximum dive forward or langle         Less than 90° / Dive or roll angle of 15° to 15°         A         Less than 90° / Dive or roll angle of 15° to 15°         A           Re-inflation behaviour         Spontaneous re-inflation         A         Spontaneous re-inflation         A           Collapse on the opposite side occurs         No         A         No         A           Cide page on the opposite side occurs         No         A         No         A           With 75% collapse         No         A         No         A           Change of course until re-inflation / Maximum dive forward or roll angle         15° to 45°         A         Less than 90° / Dive or roll angle         A           Re-inflation behaviour         Spontaneous re-inflation         A         Spontaneous re-inflation         A           Re-inflation behaviour         Less than 360°         A         Less than 90° / Dive or roll angle         A           Re-inflation behaviour         Less than 360°         A         Less than 90° / Dive or roll angle         A           Collapse on the opposite side occurs         No         A         No         A           Twist occurs         No         A         No         No           Chascade occurs         No         A         No	•				
Total change of course  Less than 360° A Less than 360° A Collapse on the opposite side occurs  No A No	Change of course until re-inflation / Maximum dive forward or		Α		Α
Collapse on the opposite side occurs No No A	Re-inflation behaviour	Spontaneous re-inflation	Α	Spontaneous re-inflation	Α
Twist occurs  No No A No	Total change of course	Less than 360°	Α	Less than 360°	Α
Cascade occurs     No     A     No     A       With 75% collapse     Change of course until re-inflation / Maximum dive forward or langle of langle     Less than 90° / Dive or roll angle 15° to 45°     A     Less than 90° / Dive or roll angle 15° to 45°     A       Re-inflation behaviour     Spontaneous re-inflation     A     Spontaneous re-inflation     A       Total change of course     Less than 360°     A     Less than 360°     A       Collapse on the opposite side occurs     No     A     No     A       Twist occurs     No     A     No     A       Cascade occurs     No     A     No     A       With 50% collapse and accelerator     No     A     No     A       Change of course until re-inflation / Maximum dive forward or roll angle of course     not available     0     not available     0       Re-inflation behaviour     not available     0     not available     0     not available     0       Clapse on the opposite side occurs     not available     0     not available     0     not available     0       With 75% collapse and accelerator     Twist occurs     not available     0     not available     0       Change of course until re-inflation / Maximum dive forward or roll angle     not available     0     not available     <	Collapse on the opposite side occurs	No	Α	No	Α
Change of course until re-inflation / Maximum dive forward or loll angle of course until re-inflation / Maximum dive forward or loll angle of course until re-inflation / Maximum dive forward or loll angle of course of the opposite side occurs of the oppo	Twist occurs	No	Α	No	Α
Change of course until re-inflation / Maximum dive forward or roll angle         Less than 90° / Dive or roll angle 15° to 45° 15° to	Cascade occurs	No	Α	No	Α
roll angle Re-inflation behaviour Spontlaneous re-inflation A Spontlaneous re-inflation A Less than 360° A Less than 360° A No A No A No A No Cascade occurs No No A No A No A No Cascade occurs No No A No A No A No A Mith 50% collapse and accelerator Change of course until re-inflation / Maximum dive forward or roll angle Re-inflation behaviour Total change of course No Cascade occurs No	With 75% collapse				
Total change of course  Less than 360° A Less than 360° A No			Α		Α
Collapse on the opposite side occurs No A No A No A No A No A No A Twist occurs No A No A No A No A No A Cascade occurs No A No A No A No A No A Mith 50% collapse and accelerator  Change of course until re-inflation / Maximum dive forward or roll angle not available n	Re-inflation behaviour	Spontaneous re-inflation	Α	Spontaneous re-inflation	Α
Twist occurs No A No A No A No A No A Cascade occurs No A No A No A No A With 50% collapse and accelerator  Change of course until re-inflation / Maximum dive forward or roll angle not available 0 not avail	Total change of course	Less than 360°	Α	Less than 360°	Α
Cascade occurs  No A No A No A No A With 50% collapse and accelerator  Change of course until re-inflation / Maximum dive forward or roll angle course until re-inflation behaviour not available 0 not availa	Collapse on the opposite side occurs	No	Α	No	Α
With 50% collapse and accelerator  Change of course until re-inflation / Maximum dive forward or roll angle  Re-inflation behaviour  not available  not avai	Twist occurs	No	Α	No	Α
Change of course until re-inflation / Maximum dive forward or roll angle  Re-inflation behaviour  not available  not available	Cascade occurs	No	Α	No	Α
roll angle  Re-inflation behaviour  not available	With 50% collapse and accelerator				
Total change of course Collapse on the opposite side occurs not available Ond availabl		not available	0	not available	0
Collapse on the opposite side occurs  not available  not available  not available  0 not av	Re-inflation behaviour	not available	0	not available	0
Twist occurs	Total change of course	not available	0	not available	0
Cascade occurs  With 75% collapse and accelerator  Change of course until re-inflation / Maximum dive forward or roll angle  Re-inflation behaviour  Total change of course  Collapse on the opposite side occurs  not available  not available  not available  not available  0 not a	Collapse on the opposite side occurs	not available	0	not available	0
With 75% collapse and accelerator  Change of course until re-inflation / Maximum dive forward or roll angle  Re-inflation behaviour  not available  not available  0 not available  0 not available  0 collapse on the opposite side occurs  not available  not available  0 not avail	Twist occurs	not available	0	not available	0
Change of course until re-inflation / Maximum dive forward or roll angle  Re-inflation behaviour  Total change of course  Collapse on the opposite side occurs  not available  A  Note than 50 % of the symmetric  A  More than 50 % of the symmetric  A  More than 50 % of the symmetric  A	Cascade occurs	not available	0	not available	0
roll angle  Re-inflation behaviour  not available  not available  not available  onot availabl	With 75% collapse and accelerator				
Total change of course  Collapse on the opposite side occurs  not available  not available  0 A  Cascade occurs  not available  0 A  A  A  Yes  A  Yes  A  A  A  A  A  A  A  A  A  A  A  A  A		not available	0	not available	0
Collapse on the opposite side occurs  not available  0 not available 0 not available 0  Cascade occurs not available 0 not available 0 not available 0  15. Directional control with a maintained asymmetric collapse  Able to keep course Able to keep course A Yes A Yes A Yes A More than 50 % of the symmetric A  More than 50 % of the symmetric A	Re-inflation behaviour	not available	0	not available	0
Twist occurs  not available  0 not available  0 not available  0  15. Directional control with a maintained asymmetric collapse  Able to keep course  Able to keep course  Yes  A Yes  A Yes  A More than 50 % of the symmetric  A More than 50 % of the symmetric  A More than 50 % of the symmetric  A	Total change of course	not available	0	not available	0
Cascade occurs  not available  0 not available  0  15. Directional control with a maintained asymmetric collapse  Able to keep course  A Yes  A Yes  A Yes  A More than 50 % of the symmetric A  More than 50 % of the symmetric A	Collapse on the opposite side occurs	not available	0	not available	0
A Superscription of the collapsed side possible in 10 s A Superscription of control range between turn and stall or spin A A A A A A A A A A A A A A A A A A A	Twist occurs	not available	0	not available	0
Collapse  Able to keep course  Yes  A Yes  A 180° turn away from the collapsed side possible in 10 s  Amount of control range between turn and stall or spin  More than 50 % of the  A More than 50 % of the symmetric  A	Cascade occurs	not available	0	not available	0
180° turn away from the collapsed side possible in 10 s  Yes  A Yes  A More than 50 % of the symmetric  A More than 50 % of the symmetric	collapse	A			
Amount of control range between turn and stall or spin More than 50 % of the A More than 50 % of the symmetric A			Α		Α
			Α		Α
·	Amount of control range between turn and stall or spin	More than 50 % of the symmetric control travel	Α		Α

Spin occurs  No A No
Spin occurs  No A No A No A  18. Recovery from a developed spin A  Spin rotation angle after release Stops spinning in less than 90° A Stops spinning in less than 90° A
A Stops spinning in less than 90° A Stops spinning in less than 90° A Stops spinning in less than 90° A
Spin rotation angle after release Stops spinning in less than 90° A Stops spinning in less than 90° A
Cascade occurs No A No A
19. B-line stall A
Change of course before release Changing course less than 45° A Changing course less than 45° A
Behaviour before release Remains stable with straight A Remains stable with straight span A span
Recovery Spontaneous in less than 3 s A Spontaneous in less than 3 s A
Dive forward angle on exit Dive forward 0° to 30° A Dive forward 0° to 30° A
Cascade occurs No A No A
20. Big ears B
Entry procedure Dedicated controls A Dedicated controls A
Behaviour during big ears Stable flight A Stable flight A
Recovery Spontaneous in less than 3 s A Recovery through pilot action in B less than a further 3 s
Dive forward angle on exit Dive forward 0° to 30° A Dive forward 0° to 30° A
21. Big ears in accelerated flight 0
Entry procedure not available 0 not available 0
Behaviour during big ears not available 0 not available 0
Recovery not available 0 not available 0
Dive forward angle on exit not available 0 not available 0
Behaviour immediately after releasing the accelerator while not available 0 not available 0 maintaining big ears
22. Behaviour exiting a steep spiral A
Tendency to return to straight flight Spontaneous exit A Spontaneous exit A
Turn angle to recover normal flight Less than 720°, spontaneous A recovery A Less than 720°, spontaneous A recovery
Sink rate when evaluating spiral stability [m/s] 16 19
23. Alternative means of directional control A
180° turn achievable in 20 s Yes A Yes A
Stall or spin occurs No A No A
24. Any other flight procedure and/or configuration 0 described in the user's manual
Procedure works as described not available 0 not available 0
Procedure suitable for novice pilots not available 0 not available 0
Cascade occurs not available 0 not available 0
25. Comments of test pilot
Comments