

Flight test report



Manufacturer Niviuk Gliders
Address Air Games S.L, C/Doctore Cordina, 29 Bajos
 17165 La Celler de Ter Girona
 Spain
Representative Olivier Nef
Type of glider Takoo 39
Trimmer Closed trimmer

Certification number PG 071.2007
Date of flight test 24/05/2007
Place of test Villeneuve

Classification B

Test Pilot Alain Zoller
Harness Sol Paragliders - Slider L
Total weight in flight 115 kg
 Claude Thurnheer
 Advance Bi-pro
 190 kg

| | Min weight | | Max weight | |
|---|--|---|--|---|
| 1. Inflation/Take-off | | | | |
| Rising behaviour | Smooth, easy and constant rising | A | Smooth, easy and constant rising | A |
| Special take off technique required | No | A | No | A |
| 2. Landing | | | | |
| Special landing technique required | No | A | No | A |
| 3. Speed in straight flight | | | | |
| Trim speed more than 30 km/h | Yes | A | Yes | A |
| Speed range using the controls larger than 10 km/h | Yes | A | Yes | A |
| Minimum speed | Less than 25 km/h | A | 25 km/h to 30 km/h | B |
| 4. Control movement | | | | |
| <i>Max. weight in flight up to 80 kg</i> Symmetric control pressure/travel | not available | 0 | not available | 0 |
| <i>Max. weight in flight 80 kg to 100 kg</i> Symmetric control pressure/travel | not available | 0 | not available | 0 |
| <i>Max. weight in flight greater than 100 kg</i> Symmetric control pressure/travel | Increasing, Greater than 65 cm | A | Increasing, Greater than 65 cm | A |
| 5. Pitch stability exiting accelerated flight | | | | |
| Dive forward angle on exit | not available | 0 | not available | 0 |
| Collapse occurs | not available | 0 | not available | 0 |
| 6. Pitch stability operating controls during accelerated flight | | | | |
| Collapse occurs | not available | 0 | not available | 0 |
| 7. Roll stability and damping | | | | |
| Oscillations | Reducing | A | Reducing | A |
| 8. Stability in gentle spirals | | | | |
| Tendency to return to straight flight | Spontaneous exit | A | Spontaneous exit | A |
| 9. Behaviour in a steeply banked turn | | | | |
| Sink rate after two turns | Up to 12m/s | A | More than 14 m/s | B |
| 10. Symmetric front collapse | | | | |
| Entry | Rocking back less than 45° | A | Rocking back less than 45° | A |
| 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°, Keeping course | A | Dive forward 0° to 30°, Keeping course | A |
| Cascade occurs | No | A | No | A |
| <i>With accelerator</i> | | | | |
| Entry | not available | 0 | not available | 0 |
| Recovery | not available | 0 | not available | 0 |
| Dive forward angle on exit | not available | 0 | not available | 0 |
| Cascade occurs | not available | 0 | not available | 0 |
| 11. Exiting deep stall (parachutal stall) | | | | |
| Deep stall achieved | Yes | A | Yes | A |
| 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 |
| Change of course | Changing course less than 45° | A | Changing course less than 45° | A |
| Cascade occurs | No | A | No | A |
| 12. High angle of attack recovery | | | | |
| Recovery | Spontaneous in less than 3 s | A | not available | 0 |
| Cascade occurs | No | A | not available | 0 |
| 13. Recovery from a developed full stall | | | | |
| Dive forward angle on exit | Dive forward 0° to 30° | A | Dive forward 30° to 60° | B |
| Collapse | No collapse | A | No collapse | A |
| Cascade occurs (other than collapse) | No | A | No | A |
| Rocking back | Less than 45° | A | Less than 45° | A |
| Line tension | Most line tight | A | Most line tight | A |
| 14. Asymmetric collapse | | | | |
| <i>With 50% collapse-Maximum dive forward or roll angle</i> | | | | |
| Change of course until re-inflation | Less than 90°, Dive or roll angle 0° to 15° | A | Less than 90°, Dive or roll angle 0° to 15° | 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 |
| <i>With 75% collapse-Maximum dive forward or roll angle</i> | | | | |
| Change of course until re-inflation | 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 |
| <i>With 50% collapse and accelerator-Maximum dive forward or roll angle</i> | | | | |
| Change of course until re-inflation | not available | 0 | not available | 0 |
| Re-inflation behaviour | not available | 0 | not available | 0 |
| Total change of course | not available | 0 | not available | 0 |
| Collapse on the opposite side occurs | not available | 0 | not available | 0 |

| | | | | |
|---|--|---|--|---|
| Twist occurs | not available | 0 | not available | 0 |
| Cascade occurs | not available | 0 | not available | 0 |
| <i>With 75% collapse and accelerator-Maximum dive forward or roll angle</i> | | | | |
| Change of course until re-inflation | not available | 0 | not available | 0 |
| Re-inflation behaviour | not available | 0 | not available | 0 |
| Total change of course | not available | 0 | not available | 0 |
| Collapse on the opposite side occurs | not available | 0 | not available | 0 |
| Twist occurs | 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 | Yes | A | Yes | A |
| 180° turn away from the collapsed side possible in 10 s | Yes | A | Yes | A |
| Amount of control range between turn and stall or spin | More than 50 % of the symmetric control travel | A | More than 50 % of the symmetric control travel | A |
| 16. Trim speed spin tendency | | | | |
| Spin occurs | No | A | No | A |
| 17. Low speed spin tendency | | | | |
| Spin occurs | No | A | No | A |
| 18. Recovery from a developed spin | | | | |
| 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 | | | | |
| Change of course before release | Change of course less than 45° | A | not available | 0 |
| Behaviour before release | Remains stable with straight span | A | not available | 0 |
| Recovery | Spontaneous in less than 3 s | A | not available | 0 |
| Dive forward angle on exit | Dive forward 0° to 30° | A | not available | 0 |
| Cascade occurs | No | A | not available | 0 |
| 20. Big ears | | | | |
| 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 | Spontaneous in less than 3 s | A |
| Dive forward angle on exit | Dive forward 0° to 30° | A | Dive forward 0° to 30° | A |
| 21. Big ears in accelerated flight | | | | |
| 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 |
| 22. Behaviour exiting a steep spiral | | | | |
| Tendency to return to straight flight | Spontaneous exit | A | Spontaneous exit | A |
| Turn angle to recover normal flight | Less than 720°,spontaneous recovery | A | Less than 720°,spontaneous recovery | A |
| Sink rate when evaluating spiral stability [m/s] | 10 m/s | | 25 m/s | |
| 23. Alternative means of directional control | | | | |
| 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 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 |
| Comments of test pilot | | | | |
| Comments | no | | B-line stall not possible | |



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