

DHV TESTREPORT EN926-2:2014

MAC PARA ELAN 2 33

Type designation Mac Para Elan 2 33
Type test reference no DHV GS-01-2314-17
Holder of certification [MAC Para Technology](#)
Manufacturer [MAC Para Technology](#)
Classification C
Winch towing Yes
Number of seats min / max 1 / 1
Accelerator Yes
Trimmers No



Test pilots **BEHAVIOUR AT MIN WEIGHT IN FLIGHT (115KG)**



Harald Buntz

BEHAVIOUR AT MAX WEIGHT IN FLIGHT (145KG)



Sebastian Mackrodt

Inflation/take-off

B

B

Rising behaviour en : einfaches Aufziehen, etwas Korrektur des Piloten erforderlich

en : einfaches Aufziehen, etwas Korrektur des Piloten erforderlich

Special take off technique required No

No

Landing

A

A

Special landing technique required No

No

Speeds in straight flight

A

A

Trim speed more than 30 km/h Yes

Yes

Speed range using the controls larger than 10 km/h Yes

Yes

Minimum speed Less than 25 km/h

Less than 25 km/h

Control movement

C

A

Symmetric control pressure Increasing

Increasing

Symmetric control travel 50 cm to 65 cm

Greater than 65 cm

Pitch stability exiting accelerated flight

A

A

Dive forward angle on exit Dive forward less than 30°

Dive forward less than 30°

Collapse occurs No

No

Pitch stability operating controls during accelerated flight

A

A

Collapse occurs No

No

Roll stability and damping

A

A

Oscillations Reducing

Reducing

Stability in gentle spirals

A

A

Tendency to return to straight flight Spontaneous exit

Spontaneous exit

en : Verhalten beim Verlassen einer vollständigen Steilspirale

A

C

en : Erstes Ansprechen des Gleitschirms (die ersten 180°) en : unmittelbare Verringerung der Drehgeschwindigkeit

en : keine unmittelbare Reaktion

Tendency to return to straight flight en : selbstständiges Ausleiten (G-Kraft abnehmend, Drehgeschwindigkeit abnehmend)

en : selbstständiges Ausleiten (G-Kraft abnehmend, Drehgeschwindigkeit abnehmend)

Turn angle to recover normal flight Less than 720°, spontaneous recovery

en : 1080° bis 1440°, selbstständige Rückkehr in den Normalflug

| | | |
|---|----------|--|
| <u>Symmetric front collapse</u> | B | B |
| Entry Rocking back less than 45° Recovery Spontaneous in less than 3 s Dive forward angle on exit Dive forward 30° to 60° Change of course Entering a turn of less than 90° Cascade occurs No en : Faltleinen wurden benutzt no | | Rocking back less than 45° Spontaneous in 3 s to 5 s Dive forward 30° to 60° Keeping course No no |
| <u>en : Symmetrischer Frontklapper mindestens 50% Flügeltiefe</u> | B | B |
| Entry Rocking back less than 45° Recovery Spontaneous in 3 s to 5 s Dive forward angle on exit Dive forward 30° to 60° Change of course Entering a turn of less than 90° Cascade occurs No en : Faltleinen wurden benutzt no | | Rocking back less than 45° Spontaneous in 3 s to 5 s Dive forward 30° to 60° Keeping course No no |
| <u>en : Symmetrischer Frontklapper im beschleunigten Flug</u> | C | C |
| Entry Rocking back less than 45° Recovery Spontaneous in 3 s to 5 s Dive forward angle on exit Dive forward 30° to 60° Change of course Entering a turn of 90° to 180° Cascade occurs No en : Faltleinen wurden benutzt no | | Rocking back less than 45° Spontaneous in 3 s to 5 s Dive forward 30° to 60° Entering a turn of 90° to 180° No no |
| <u>Exiting deep stall (parachutal stall)</u> | A | B |
| Deep stall achieved Yes Recovery Spontaneous in less than 3 s Dive forward angle on exit Dive forward 0° to 30° Change of course Changing course less than 45° Cascade occurs No | | Yes Spontaneous in less than 3 s Dive forward 30° to 60° Changing course less than 45° No |
| <u>High angle of attack recovery</u> | A | A |
| Recovery Spontaneous in less than 3 s Cascade occurs No | | Spontaneous in less than 3 s No |
| <u>Recovery from a developed full stall</u> | B | B |
| Dive forward angle on exit Dive forward 30° to 60° Collapse No collapse Cascade occurs (other than collapses) No Rocking back Less than 45° Line tension Most lines tight | | Dive forward 30° to 60° No collapse No Less than 45° Most lines tight |
| <u>en : Kleiner einseitiger Klapper</u> | A | B |
| Change of course until re-inflation Less than 90° Maximum dive forward or roll angle Dive or roll angle 15° to 45° Re-inflation behaviour Spontaneous re-inflation Total change of course Less than 360° Collapse on the opposite side occurs en : Nein (oder nur eine kleine Anzahl von eingeklappten Zellen mit selbstständiger Wiederöffnung) Twist occurs No Cascade occurs No en : Faltleinen wurden benutzt no | | 90° to 180° Dive or roll angle 15° to 45° Spontaneous re-inflation Less than 360° en : Nein (oder nur eine kleine Anzahl von eingeklappten Zellen mit selbstständiger Wiederöffnung) No No no |
| <u>en : Großer einseitiger Klapper</u> | C | C |
| Change of course until re-inflation 180° to 360° Maximum dive forward or roll angle Dive or roll angle 15° to 45° Re-inflation behaviour Spontaneous re-inflation Total change of course Less than 360° Collapse on the opposite side occurs en : Nein (oder nur eine kleine Anzahl von eingeklappten Zellen mit selbstständiger Wiederöffnung) Twist occurs No Cascade occurs No en : Faltleinen wurden benutzt no | | 90° to 180° Dive or roll angle 45° to 60° Spontaneous re-inflation Less than 360° en : Nein (oder nur eine kleine Anzahl von eingeklappten Zellen mit selbstständiger Wiederöffnung) No No no |
| <u>en : Kleiner einseitiger Klapper im beschleunigten Flug</u> | B | C |

| | | |
|---|--|--|
| Change of course until re-inflation | 90° to 180° | 90° to 180° |
| Maximum dive forward or roll angle | Dive or roll angle 15° to 45° | Dive or roll angle 45° to 60° |
| Re-inflation behaviour | Spontaneous re-inflation | Spontaneous re-inflation |
| Total change of course | Less than 360° | Less than 360° |
| Collapse on the opposite side occurs | en : Nein (oder nur eine kleine Anzahl von eingeklappten Zellen mit selbstständiger Wiederöffnung) | en : Nein (oder nur eine kleine Anzahl von eingeklappten Zellen mit selbstständiger Wiederöffnung) |
| Twist occurs | No | No |
| Cascade occurs | No | No |
| en : Faltleinen wurden benutzt | no | no |

en : Großer einseitiger Klapper im beschleunigten Flug

C

C

| | | |
|---|--|--|
| Change of course until re-inflation | 180° to 360° | 90° to 180° |
| Maximum dive forward or roll angle | Dive or roll angle 45° to 60° | Dive or roll angle 45° to 60° |
| Re-inflation behaviour | Spontaneous re-inflation | Spontaneous re-inflation |
| Total change of course | Less than 360° | Less than 360° |
| Collapse on the opposite side occurs | en : Nein (oder nur eine kleine Anzahl von eingeklappten Zellen mit selbstständiger Wiederöffnung) | en : Nein (oder nur eine kleine Anzahl von eingeklappten Zellen mit selbstständiger Wiederöffnung) |
| Twist occurs | No | No |
| Cascade occurs | No | No |
| en : Faltleinen wurden benutzt | no | no |

Directional control with a maintained asymmetric collapse

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A

| | | |
|--|--|--|
| Able to keep course | Yes | Yes |
| 180° turn away from the collapsed side possible in 10 s | Yes | Yes |
| Amount of control range between turn and stall or spin | More than 50 % of the symmetric control travel | More than 50 % of the symmetric control travel |

Trim speed spin tendency

A

A

| | | |
|--------------------|----|----|
| Spin occurs | No | No |
|--------------------|----|----|

Low speed spin tendency

A

A

| | | |
|--------------------|----|----|
| Spin occurs | No | No |
|--------------------|----|----|

Recovery from a developed spin

A

A

| | | |
|--|---------------------------------|---------------------------------|
| Spin rotation angle after release | Stops spinning in less than 90° | Stops spinning in less than 90° |
| Cascade occurs | No | No |

B-line stall

C

C

| | | |
|--|--------------------------------------|--------------------------------------|
| Change of course before release | Changing course less than 45° | Changing course less than 45° |
| Behaviour before release | Remains stable without straight span | Remains stable without straight span |
| Recovery | Spontaneous in less than 3 s | Spontaneous in less than 3 s |
| Dive forward angle on exit | Dive forward 0° to 30° | Dive forward 0° to 30° |
| Cascade occurs | No | No |

Big ears

B

B

| | | |
|-----------------------------------|--|---------------------------|
| Entry procedure | Dedicated controls | Dedicated controls |
| Behaviour during big ears | Stable flight | Stable flight |
| Recovery | Recovery through pilot action in less than a further 3 s | Spontaneous in 3 s to 5 s |
| Dive forward angle on exit | Dive forward 0° to 30° | Dive forward 0° to 30° |

Big ears in accelerated flight

B

B

| | | |
|---|--|--|
| Entry procedure | Dedicated controls | Dedicated controls |
| Behaviour during big ears | Stable flight | Stable flight |
| Recovery | Recovery through pilot action in less than a further 3 s | Recovery through pilot action in less than a further 3 s |
| Dive forward angle on exit | Dive forward 0° to 30° | Dive forward 0° to 30° |
| Behaviour immediately after releasing the accelerator while maintaining big ears | Stable flight | Stable flight |

Alternative means of directional control

A

A

| | | |
|-------------------------------------|-----|-----|
| 180° turn achievable in 20 s | Yes | Yes |
| Stall or spin occurs | No | No |

Any other flight procedure and/or configuration described in the user's manual

No other flight procedure or configuration described in the user's manual

