

DHV TESTREPORT EN926-2:2014

MAC PARA ELAN 2 22

**Type designation** Mac Para Elan 2 22  
**Type test reference no** DHV GS-01-2291-17  
**Holder of certification** [MAC Para Technology](#)  
**Manufacturer** MAC Para Technology Ges.m.b.H.  
**Classification** C  
**Winch towing** Yes  
**Number of seats min / max** 1 / 1  
**Accelerator** Yes  
**Trimmers** No



BEHAVIOUR AT MIN WEIGHT IN FLIGHT (55KG)

BEHAVIOUR AT MAX WEIGHT IN FLIGHT (70KG)

Test pilots



Sophia Putzer

Expert Harald Buntz



Beni Stocker

<b>Inflation/take-off</b>	A	A
<b>Rising behaviour</b>	Smooth, easy and constant rising	Smooth, easy and constant rising
<b>Special take off technique required</b>	No	No
<b>Landing</b>	A	A
<b>Special landing technique required</b>	No	No
<b>Speeds in straight flight</b>	A	A
<b>Trim speed more than 30 km/h</b>	Yes	Yes
<b>Speed range using the controls larger than 10 km/h</b>	Yes	Yes
<b>Minimum speed</b>	Less than 25 km/h	Less than 25 km/h
<b>Control movement</b>	A	C
<b>Symmetric control pressure</b>	Increasing	Increasing
<b>Symmetric control travel</b>	Greater than 55 cm	40 cm to 55 cm
<b>Pitch stability exiting accelerated flight</b>	A	A
<b>Dive forward angle on exit</b>	Dive forward less than 30°	Dive forward less than 30°
<b>Collapse occurs</b>	No	No
<b>Pitch stability operating controls during accelerated flight</b>	A	A
<b>Collapse occurs</b>	No	No
<b>Roll stability and damping</b>	A	A
<b>Oscillations</b>	Reducing	Reducing
<b>Stability in gentle spirals</b>	A	A
<b>Tendency to return to straight flight</b>	Spontaneous exit	Spontaneous exit

<b>en : Verhalten beim Verlassen einer vollständigen Steilspirale</b>	<b>A</b>	<b>A</b>
<b>en : Erstes Ansprechen des Gleitschirms (die ersten 180°)</b>	en : unmittelbare Verringerung der Drehgeschwindigkeit	en : unmittelbare Verringerung der Drehgeschwindigkeit
<b>Tendency to return to straight flight</b>	en : selbstständiges Ausleiten (G-Kraft abnehmend, Drehgeschwindigkeit abnehmend)	en : selbstständiges Ausleiten (G-Kraft abnehmend, Drehgeschwindigkeit abnehmend)
<b>Turn angle to recover normal flight</b>	Less than 720°, spontaneous recovery	Less than 720°, spontaneous recovery
<b>Symmetric front collapse</b>	<b>B</b>	<b>B</b>
<b>Entry</b>	Rocking back less than 45°	Rocking back less than 45°
<b>Recovery</b>	Spontaneous in less than 3 s	Spontaneous in less than 3 s
<b>Dive forward angle on exit</b>	Dive forward 30° to 60°	Dive forward 30° to 60°
<b>Change of course</b>	Entering a turn of less than 90°	Entering a turn of less than 90°
<b>Cascade occurs</b>	No	No
<b>en : Faltleinen wurden benutzt</b>	no	no
<b>en : Symmetrischer Frontklapper mindestens 50% Flügeltiefe</b>	<b>B</b>	<b>B</b>
<b>Entry</b>	Rocking back less than 45°	Rocking back less than 45°
<b>Recovery</b>	Spontaneous in 3 s to 5 s	Spontaneous in 3 s to 5 s
<b>Dive forward angle on exit</b>	Dive forward 30° to 60°	Dive forward 30° to 60°
<b>Change of course</b>	Entering a turn of less than 90°	Entering a turn of less than 90°
<b>Cascade occurs</b>	No	No
<b>en : Faltleinen wurden benutzt</b>	no	no
<b>en : Symmetrischer Frontklapper im beschleunigten Flug</b>	<b>C</b>	<b>C</b>
<b>Entry</b>	Rocking back less than 45°	Rocking back less than 45°
<b>Recovery</b>	Spontaneous in 3 s to 5 s	Spontaneous in 3 s to 5 s
<b>Dive forward angle on exit</b>	Dive forward 30° to 60°	Dive forward 30° to 60°
<b>Change of course</b>	Entering a turn of 90° to 180°	Entering a turn of 90° to 180°
<b>Cascade occurs</b>	No	No
<b>en : Faltleinen wurden benutzt</b>	no	no
<b>Exiting deep stall (parachutal stall)</b>	<b>A</b>	<b>A</b>
<b>Deep stall achieved</b>	Yes	Yes
<b>Recovery</b>	Spontaneous in less than 3 s	Spontaneous in less than 3 s
<b>Dive forward angle on exit</b>	Dive forward 0° to 30°	Dive forward 0° to 30°
<b>Change of course</b>	Changing course less than 45°	Changing course less than 45°
<b>Cascade occurs</b>	No	No
<b>High angle of attack recovery</b>	<b>A</b>	<b>A</b>
<b>Recovery</b>	Spontaneous in less than 3 s	Spontaneous in less than 3 s
<b>Cascade occurs</b>	No	No
<b>Recovery from a developed full stall</b>	<b>B</b>	<b>B</b>
<b>Dive forward angle on exit</b>	Dive forward 30° to 60°	Dive forward 30° to 60°
<b>Collapse</b>	No collapse	No collapse
<b>Cascade occurs (other than collapses)</b>	No	No
<b>Rocking back</b>	Less than 45°	Less than 45°
<b>Line tension</b>	Most lines tight	Most lines tight
<b>en : Kleiner einseitiger Klapper</b>	<b>A</b>	<b>A</b>
<b>Change of course until re-inflation</b>	Less than 90°	Less than 90°
<b>Maximum dive forward or roll angle</b>	Dive or roll angle 15° to 45°	Dive or roll angle 15° to 45°
<b>Re-inflation behaviour</b>	Spontaneous re-inflation	Spontaneous re-inflation
<b>Total change of course</b>	Less than 360°	Less than 360°
<b>Collapse on the opposite side occurs</b>	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)
<b>Twist occurs</b>	No	No
<b>Cascade occurs</b>	No	No
<b>en : Faltleinen wurden benutzt</b>	no	no
<b>en : Großer einseitiger Klapper</b>	<b>C</b>	<b>C</b>
<b>Change of course until re-inflation</b>	180° to 360°	180° to 360°
<b>Maximum dive forward or roll angle</b>	Dive or roll angle 15° to 45°	Dive or roll angle 15° to 45°
<b>Re-inflation behaviour</b>	Spontaneous re-inflation	Spontaneous re-inflation
<b>Total change of course</b>	Less than 360°	Less than 360°

<b>Collapse on the opposite side occurs</b>	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)
<b>Twist occurs</b>	No	No
<b>Cascade occurs</b>	No	No
<b>en : Faltleinen wurden benutzt</b>	no	no

**en : Kleiner einseitiger Klapper im beschleunigten Flug**

**B**

**B**

<b>Change of course until re-inflation</b>	90° to 180°	90° to 180°
<b>Maximum dive forward or roll angle</b>	Dive or roll angle 15° to 45°	Dive or roll angle 15° to 45°
<b>Re-inflation behaviour</b>	Spontaneous re-inflation	Spontaneous re-inflation
<b>Total change of course</b>	Less than 360°	Less than 360°
<b>Collapse on the opposite side occurs</b>	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)
<b>Twist occurs</b>	No	No
<b>Cascade occurs</b>	No	No
<b>en : Faltleinen wurden benutzt</b>	no	no

**en : Großer einseitiger Klapper im beschleunigten Flug**

**C**

**C**

<b>Change of course until re-inflation</b>	180° to 360°	180° to 360°
<b>Maximum dive forward or roll angle</b>	Dive or roll angle 45° to 60°	Dive or roll angle 45° to 60°
<b>Re-inflation behaviour</b>	Spontaneous re-inflation	Spontaneous re-inflation
<b>Total change of course</b>	Less than 360°	Less than 360°
<b>Collapse on the opposite side occurs</b>	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)
<b>Twist occurs</b>	No	No
<b>Cascade occurs</b>	No	No
<b>en : Faltleinen wurden benutzt</b>	no	no

**Directional control with a maintained asymmetric collapse**

**A**

**A**

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

**Trim speed spin tendency**

**A**

**A**

<b>Spin occurs</b>	No	No
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**Low speed spin tendency**

**A**

**A**

<b>Spin occurs</b>	No	No
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**Recovery from a developed spin**

**A**

**A**

<b>Spin rotation angle after release</b>	Stops spinning in less than 90°	Stops spinning in less than 90°
<b>Cascade occurs</b>	No	No

**B-line stall**

**C**

**C**

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

**Big ears**

**B**

**B**

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

**Big ears in accelerated flight**

**B**

**A**

<b>Entry procedure</b>	Dedicated controls	Dedicated controls
<b>Behaviour during big ears</b>	Stable flight	Stable flight
<b>Recovery</b>	Recovery through pilot action in less than a further 3 s	Spontaneous in 3 s to 5 s
<b>Dive forward angle on exit</b>	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