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DHV TESTREPORT EN926-2:2014

UP MAKALU 4 L

Type designation UP Makalu 4 L
Type test reference no DHV GS-01-2207-16
Holder of certification [UP International GmbH](#)
Manufacturer [UP International GmbH](#)
Classification B
Winch towing Yes
Number of seats min / max 1 / 1
Accelerator Yes
Trimmers No



BEHAVIOUR AT MIN WEIGHT IN FLIGHT (100KG)

BEHAVIOUR AT MAX WEIGHT IN FLIGHT (130KG)

Test pilots



Harald Buntz



Sebastian Mackrodt

Inflation/take-off

A

A

Rising behaviour Smooth, easy and constant rising
Special take off technique required No

Smooth, easy and constant rising
 No

Landing

A

A

Special landing technique required No

No

Speeds in straight flight

A

A

Trim speed more than 30 km/h Yes
Speed range using the controls larger than 10 km/h Yes
Minimum speed Less than 25 km/h

Yes
 Yes
 Less than 25 km/h

Control movement

A

A

Symmetric control pressure Increasing
Symmetric control travel Greater than 60 cm

Increasing
 Greater than 65 cm

Pitch stability exiting accelerated flight

A

A

Dive forward angle on exit Dive forward less than 30°
Collapse occurs No

Dive forward less than 30°
 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

A

en : Erstes Ansprechen des Gleitschirms (die ersten 180°) Drehgeschwindigkeit
Tendency to return to straight flight en : selbstständiges Ausleiten (G-Kraft abnehmend, Drehgeschwindigkeit abnehmend)

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

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

Symmetric front collapse	A	A
Entry Rocking back less than 45°		Rocking back less than 45°
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°
Change of course Keeping course		Keeping course
Cascade occurs No		No
en : Faltleinen wurden benutzt no		no
en : Symmetrischer Frontklapper mindestens 50% Flügeltiefe	A	A
Entry Rocking back less than 45°		Rocking back less than 45°
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°
Change of course Keeping course		Keeping course
Cascade occurs No		No
en : Faltleinen wurden benutzt no		no
en : Symmetrischer Frontklapper im beschleunigten Flug	A	A
Entry Rocking back less than 45°		Rocking back less than 45°
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°
Change of course Keeping course		Keeping course
Cascade occurs No		No
en : Faltleinen wurden benutzt no		no
Exiting deep stall (parachutal stall)	A	A
Deep stall achieved Yes		Yes
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°
Change of course Changing course less than 45°		Changing course less than 45°
Cascade occurs No		No
High angle of attack recovery	A	A
Recovery Spontaneous in less than 3 s		Spontaneous in less than 3 s
Cascade occurs No		No
Recovery from a developed full stall	A	B
Dive forward angle on exit Dive forward 0° to 30°		Dive forward 30° to 60°
Collapse No collapse		No collapse
Cascade occurs (other than collapses) No		No
Rocking back Less than 45°		Less than 45°
Line tension Most lines tight		Most lines tight
en : Kleiner einseitiger Klapper	A	A
Change of course until re-inflation Less than 90°		Less than 90°
Maximum dive forward or roll angle Dive or roll angle 15° to 45°		Dive or roll angle 15° to 45°
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	A	B
Change of course until re-inflation Less than 90°		90° to 180°
Maximum dive forward or roll angle Dive or roll angle 15° to 45°		Dive or roll angle 15° to 45°
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 : Kleiner einseitiger Klapper im beschleunigten Flug	A	A
Change of course until re-inflation Less than 90°		Less than 90°
Maximum dive forward or roll angle Dive or roll angle 15° to 45°		Dive or roll angle 15° to 45°
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	B	B
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 15° to 45°
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

A

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

A

A

Change of course before release Changing course less than 45°

Changing course less than 45°

Behaviour before release Remains stable with straight span

Remains stable with 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

A

B

Entry procedure Dedicated controls

Dedicated controls

Behaviour during big ears Stable flight

Stable flight

Recovery Spontaneous in less than 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°

Big ears in accelerated flight

A

B

Entry procedure Dedicated controls

Dedicated controls

Behaviour during big ears Stable flight

Stable flight

Recovery Spontaneous in less than 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