DHV TESTREPORT EN 926-2:2013+A1:2021

UP MAKALU 5 L

Type designation	UP Makalu 5 L
Type test reference no	DHV GS-01-2955-25
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**	 **Mario Eder**
	No release	No release
Inflation/take-off	**A**	**A**
Rising behaviour	Smooth, easy and constant rising	Smooth, easy and constant rising
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	**A**	**A**
Symmetric control pressure	Increasing	Increasing
Symmetric control travel	Greater than 60 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
Behaviour exiting a fully developed spiral dive	**A**	**A**
Initial response of glider (first 180°)	Immediate reduction of rate of turn	Immediate reduction of rate of turn
Tendency to return to straight flight	Spontaneous exit (g force decreasing, rate of turn decreasing)	Spontaneous exit (g force decreasing, rate of turn decreasing)
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
Folding lines used	no	no

Unaccelerated collapse (at least 50 % chord)	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
Folding lines used	no	no

Accelerated collapse (at least 50 % chord)	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
Folding lines used	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	A
Dive forward angle on exit	Dive forward 0° to 30°	Dive forward 0° to 30°
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

Small asymmetric collapse	A	A
Change of course until re-inflation	Less than 90°	Less than 90°
Maximum dive forward or roll angle	Dive or roll angle 0° to 15°	Dive or roll angle 0° to 15°
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	No (or only a small number of collapsed cells with a spontaneous re inflation)	No (or only a small number of collapsed cells with a spontaneous re inflation)
Twist occurs	No	No
Cascade occurs	No	No
Folding lines used	no	no

Large asymmetric collapse	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	No (or only a small number of collapsed cells with a spontaneous re inflation)	No (or only a small number of collapsed cells with a spontaneous re inflation)

Twist occurs	No	No
Cascade occurs	No	No
Folding lines used	no	no
Small asymmetric collapse accelerated	**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	No (or only a small number of collapsed cells with a spontaneous re inflation)	No (or only a small number of collapsed cells with a spontaneous re inflation)
Twist occurs	No	No
Cascade occurs	No	No
Folding lines used	no	no
Large asymmetric collapse accelerated	**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	No (or only a small number of collapsed cells with a spontaneous re inflation)	No (or only a small number of collapsed cells with a spontaneous re inflation)
Twist occurs	No	No
Cascade occurs	No	No
Folding lines used	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**	**A**
Entry procedure	Standard technique	Standard technique
Behaviour during big ears	Stable flight	Stable flight
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°
Big ears in accelerated flight	**A**	**A**
Entry procedure	Standard technique	Standard technique
Behaviour during big ears	Stable flight	Stable flight
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°
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

DHV TESTREPORT EN 926-2:2013+A1:2021

UP MAKALU 5 M

Type designation	UP Makalu 5 M
Type test reference no	DHV GS-01-2956-25
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 (85KG)	BEHAVIOUR AT MAX WEIGHT IN FLIGHT (110KG)
Test pilots		
	Josef Bauer	**Mario Eder**
	No release	No release
Inflation/take-off	**A**	**A**
Rising behaviour	Smooth, easy and constant rising	Smooth, easy and constant rising
Special take off technique required	No	No
Landing	**A**	**A**
Special landing technique required	No	No
Speeds in straight flight	**A**	**B**
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	25 km/h to 30 km/h
Control movement	**A**	**A**
Symmetric control pressure	Increasing	Increasing
Symmetric control travel	Greater than 60 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
Behaviour exiting a fully developed spiral dive	**A**	**A**
Initial response of glider (first 180°)	Immediate reduction of rate of turn	Immediate reduction of rate of turn
Tendency to return to straight flight	Spontaneous exit (g force decreasing, rate of turn decreasing)	Spontaneous exit (g force decreasing, rate of turn decreasing)
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
Folding lines used	no	no

Unaccelerated collapse (at least 50 % chord)	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
Folding lines used	no	no

Accelerated collapse (at least 50 % chord)	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
Folding lines used	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	A
Dive forward angle on exit	Dive forward 0° to 30°	Dive forward 0° to 30°
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

Small asymmetric collapse	A	A
Change of course until re-inflation	Less than 90°	Less than 90°
Maximum dive forward or roll angle	Dive or roll angle 0° to 15°	Dive or roll angle 0° to 15°
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	No (or only a small number of collapsed cells with a spontaneous re inflation)	No (or only a small number of collapsed cells with a spontaneous re inflation)
Twist occurs	No	No
Cascade occurs	No	No
Folding lines used	no	no

Large asymmetric collapse	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	No (or only a small number of collapsed cells with a spontaneous re inflation)	No (or only a small number of collapsed cells with a spontaneous re inflation)

Twist occurs	No	No
Cascade occurs	No	No
Folding lines used	no	no
Small asymmetric collapse accelerated	**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	No (or only a small number of collapsed cells with a spontaneous re inflation)	No (or only a small number of collapsed cells with a spontaneous re inflation)
Twist occurs	No	No
Cascade occurs	No	No
Folding lines used	no	no
Large asymmetric collapse accelerated	**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	No (or only a small number of collapsed cells with a spontaneous re inflation)	No (or only a small number of collapsed cells with a spontaneous re inflation)
Twist occurs	No	No
Cascade occurs	No	No
Folding lines used	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**	**A**
Entry procedure	Standard technique	Standard technique
Behaviour during big ears	Stable flight	Stable flight
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°
Big ears in accelerated flight	**A**	**A**
Entry procedure	Standard technique	Standard technique
Behaviour during big ears	Stable flight	Stable flight
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°
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

DHV TESTREPORT EN 926-2:2013+A1:2021

UP MAKALU 5 SM

Type designation	UP Makalu 5 SM
Type test reference no	DHV GS-01-2957-25
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 (75KG)	BEHAVIOUR AT MAX WEIGHT IN FLIGHT (100KG)
Test pilots		
	Josef Bauer	**Mario Eder**
	No release	No release
Inflation/take-off	**A**	**A**
Rising behaviour	Smooth, easy and constant rising	Smooth, easy and constant rising
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	**A**	**A**
Symmetric control pressure	Increasing	Increasing
Symmetric control travel	Greater than 55 cm	Greater than 60 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
Behaviour exiting a fully developed spiral dive	**A**	**A**
Initial response of glider (first 180°)	Immediate reduction of rate of turn	Immediate reduction of rate of turn
Tendency to return to straight flight	Spontaneous exit (g force decreasing, rate of turn decreasing)	Spontaneous exit (g force decreasing, rate of turn decreasing)
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
Folding lines used	no	no

Unaccelerated collapse (at least 50 % chord)	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
Folding lines used	no	no

Accelerated collapse (at least 50 % chord)	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
Folding lines used	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	A
Dive forward angle on exit	Dive forward 0° to 30°	Dive forward 0° to 30°
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

Small asymmetric collapse	A	A
Change of course until re-inflation	Less than 90°	Less than 90°
Maximum dive forward or roll angle	Dive or roll angle 0° to 15°	Dive or roll angle 0° to 15°
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	No (or only a small number of collapsed cells with a spontaneous re inflation)	No (or only a small number of collapsed cells with a spontaneous re inflation)
Twist occurs	No	No
Cascade occurs	No	No
Folding lines used	no	no

Large asymmetric collapse	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	No (or only a small number of collapsed cells with a spontaneous re inflation)	No (or only a small number of collapsed cells with a spontaneous re inflation)

Twist occurs	No	No
Cascade occurs	No	No
Folding lines used	no	no
Small asymmetric collapse accelerated	**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	No (or only a small number of collapsed cells with a spontaneous re inflation)	No (or only a small number of collapsed cells with a spontaneous re inflation)
Twist occurs	No	No
Cascade occurs	No	No
Folding lines used	no	no
Large asymmetric collapse accelerated	**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	No (or only a small number of collapsed cells with a spontaneous re inflation)	No (or only a small number of collapsed cells with a spontaneous re inflation)
Twist occurs	No	No
Cascade occurs	No	No
Folding lines used	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**	**A**
Entry procedure	Standard technique	Standard technique
Behaviour during big ears	Stable flight	Stable flight
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°
Big ears in accelerated flight	**A**	**A**
Entry procedure	Standard technique	Standard technique
Behaviour during big ears	Stable flight	Stable flight
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°
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

DHV TESTREPORT EN 926-2:2013+A1:2021

UP MAKALU 5 S

Type designation	UP Makalu 5 S
Type test reference no	DHV GS-01-2958-25
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 (65KG)	BEHAVIOUR AT MAX WEIGHT IN FLIGHT (90KG)
Test pilots	 **Juliette Schönsee**	 **Josef Bauer**
	No release	No release
Inflation/take-off	**A**	**A**
Rising behaviour	Smooth, easy and constant rising	Smooth, easy and constant rising
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	**A**	**A**
Symmetric control pressure	Increasing	Increasing
Symmetric control travel	Greater than 55 cm	Greater than 60 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
Behaviour exiting a fully developed spiral dive	**A**	**A**
Initial response of glider (first 180°)	Immediate reduction of rate of turn	Immediate reduction of rate of turn
Tendency to return to straight flight	Spontaneous exit (g force decreasing, rate of turn decreasing)	Spontaneous exit (g force decreasing, rate of turn decreasing)
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
Folding lines used	no	no

Unaccelerated collapse (at least 50 % chord)	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
Folding lines used	no	no

Accelerated collapse (at least 50 % chord)	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
Folding lines used	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	A
Dive forward angle on exit	Dive forward 0° to 30°	Dive forward 0° to 30°
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

Small asymmetric collapse	A	A
Change of course until re-inflation	Less than 90°	Less than 90°
Maximum dive forward or roll angle	Dive or roll angle 0° to 15°	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	No (or only a small number of collapsed cells with a spontaneous re inflation)	No (or only a small number of collapsed cells with a spontaneous re inflation)
Twist occurs	No	No
Cascade occurs	No	No
Folding lines used	no	no

Large asymmetric collapse	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	No (or only a small number of collapsed cells with a spontaneous re inflation)	No (or only a small number of collapsed cells with a spontaneous re inflation)

Twist occurs	No	No
Cascade occurs	No	No
Folding lines used	no	no
Small asymmetric collapse accelerated	**B**	**A**
Change of course until re-inflation	90° to 180°	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	No (or only a small number of collapsed cells with a spontaneous re inflation)	No (or only a small number of collapsed cells with a spontaneous re inflation)
Twist occurs	No	No
Cascade occurs	No	No
Folding lines used	no	no
Large asymmetric collapse accelerated	**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	No (or only a small number of collapsed cells with a spontaneous re inflation)	No (or only a small number of collapsed cells with a spontaneous re inflation)
Twist occurs	No	No
Cascade occurs	No	No
Folding lines used	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	**B**	**B**
Spin rotation angle after release	Stops spinning in 90° to 180°	Stops spinning in 90° to 180°
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**	**A**
Entry procedure	Standard technique	Standard technique
Behaviour during big ears	Stable flight	Stable flight
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°
Big ears in accelerated flight	**A**	**A**
Entry procedure	Standard technique	Standard technique
Behaviour during big ears	Stable flight	Stable flight
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°
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