Manufacturer	Mac Para	Type testing No.	EAPR-GS-7163/09
Address	756 61 Roznov pod Radhostem, CZ	Date of testing	21./22.02.2009
Model	Progress 28	Location	Madeira



European Academy of Parachute Rigging e.V - Luitpoldstr. 30 - D87700 Memmingen - Germany Under approval of EPTA European Paraglider Testlaboratory Alicane

	Minimum take off weight	Maximum take off weight		
Testpilot	Johannes Tschofen	Mario Eder		
Harness	Acvademy	Academy		
Pilot's take off weight	85 kg	110 kg		

Classification	Α
----------------	---

Test-criteria		Minimum take off weight		Maximum take off weight	Evaluation	
1. Inflation / take-off - 4.4.1						
Rising behavior		Smooth, easy and constant rising	А	Smooth, easy and constant rising	А	
pecial take off technique required		No	A	No	A	
2. Landing - 4.4.2				•		
Special landing technique required		No	А	No	А	
3. Speeds in straight flight - 4.4.3						
Trim speed more than 30km/h		Yes	А	Yes	А	
Speed range using the controls larger than 10km/	า	Yes	A Yes		A	
Minimum speed		Less than 25 km/h	A	Less than 25 km/h	A	
4. Control movement - 4.4.4		•				
Max. weight in flight up to 80kg			-		-	
Max. weight in flight 80 to 100kg		Increasing > 60cm	А	Increasing > 60cm	A	
Max. weight in flight greater than 100kg			-		-	
5. Pitch stability exiting accelerated flight - 4.4	.5					
Dive forward angle on exit			А	Dive forward less than 30°	А	
Collapse occurs		No	A	No	A	
6. Pitch stability operating controls during acc	elerated fl	light - 4.4.6				
Collapse occurs		No	A	No	A	
7. Roll stability and damping - 4.4.7						
Oscillations			A	Reducing	A	
8. Stability in gentle spirals - 4.4.8						
Tendency to return to straight flight		Spontaneous exit	A	Spontaneous exit	A	
9. Behaviour in a steeply banked turn - 4.4.9						
Sink rate after two turns		Up to 12m/s	A	12m/s to 14m/s	A	
10. Symmetric front collapse - 4.4.10						
Entry	-	Rocking back less than 45°	A	Rocking back less than 45°	A	
Recovery	trim speed	Spontaneous in less than 3 sec	А	Spontaneous in less than 3 sec	А	
Dive forward angle on exit	, E	Ĕ	0° - 30° Keeping course	A	0° - 30° Keeping course	A
Cascade occurs	-	No	А	No	А	
Entry	σ	Rocking back less than 45°	A	Rocking back less than 45°	А	
Recovery	ate	Spontaneous in less than 3 sec	A	Spontaneous in less than 3 sec	A	
Dive forward angle on exit	accelerated	0° - 30° Entering a turn of less than	90° A	0° - 30° Keeping course	Α	
Cascade occurs	ă	No	А	No	А	

11. Exiting deep stall (parachutal stall) - 4.4.11 Deep stall achieved		Yes				Yes			
				^				۸	
Recovery		Spontaneous in less than 3 sec		A	Spontaneous in less than 3 sec			A	
Dive forward angle on exit		0° - 30° Changing course	a loss that 450		A	0° - 30°	loss that 450		A
Change of course Cascade occurs		Changing course less than 45° No		A	Changing course No	e iess (nan 45°		A	
12. High angle of attack recovery - 4.4.12		110			A	110			A
Recovery		Spontanoous in	loss than 3 soc		А	Spontanoous in	loss than 2 cos		А
-		Spontaneous in less than 3 sec			Spontaneous in less than 3 sec				
Cascade occurs		No			A	No			A
13. Recovery from a developed full stall - 4.4.1	3								
Dive forward angle on exit Collapse		0° - 30° No collapse			A	0° - 30° No collapse			A
Cascade occurs (other than collapse)		No		A	A No		A		
Rocking backward		Less than 45°		A				A	
Line tension		Most lines tight			А	Most lines tight			А
14. Asymmetric collapse (trim speed) - 4.4.14									
Change of course until re-inflation	Φ	< 90°	Dive or roll angle	15° - 45°	А	< 90°	Dive or roll angle	0° - 15°	А
	d, aps		.1						
Re-inflation behavior	coll	Spontaneous re-	-inflation		A	Spontaneous re-	inflation		A
Total change of course	m st 20%	Less than 360°		А	Less than 360°		А		
Collapse on the opposite side occurs	trim speed, max 50% collapse	No		A	No No			A	
Twist occurs Cascade occurs	- E	No No			A	No			A
			Dive or roll!-	150 450			Dive or roll angle	160 450	
Change of course until re-inflation	ose	< 90°	Dive or roll angle	15° - 45°	A	< 90°	uve or roll angle	15° - 45°	A
Re-inflation behavior	trim speed, max 75% collapse	Spontaneous re-	-inflation		А	Spontaneous re-	inflation		А
Total change of course	spe % o	Less than 360°			A	Less than 360°			A
Collapse on the opposite side occurs	trim × 75	No			A	No			A
Twist occurs	mai	No			A	No			A
Cascade occurs		No			A	No			A
Change of course until re-inflation		< 90°	Dive or roll angle	15° - 45°	А	< 90°	Dive or roll angle	0° - 15°	А
	accelerated, max 50% collapse	< 30	Dive of foil aligie	13 - 45	^	< 30	Dive of foil angle	0 - 15	~
Re-inflation behavior	ated	Spontaneous re-	-inflation		А	Spontaneous re-	inflation		А
Total change of course	elera 9% c	Less than 360°			A	Less than 360°			A
Collapse on the opposite side occurs	x 50	No			A	No			A
Twist occurs	ma	No			Α	No			А
Cascade occurs		No	<del></del>	1	A	No	1	r.	A
Change of course until re-inflation	ę	< 90°	Dive or roll angle	15° - 45°	А	< 90°	Dive or roll angle	15° - 45°	А
Re-inflation behavior	accelerated, max 75% collapse	Spontaneous re-	-inflation		А	Spontaneous re-	inflation		А
Total change of course	accelerated x 75% colla	Less than 360° No		A	Less than 360°		A		
Collapse on the opposite side occurs	acce < 75			A	No No			A	
Twist occurs	ma)	No					A		A
Cascade occurs		No			A	No			A
15. Directional control with a maintained asymptotic	metric col								•
Able to keep course straight		Yes			A	Yes			A
180° turn away from the collapsed side possible in 10 sec Yes				A	A Yes			А	
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				
<u>.                                    </u>	opin				A	More than 50%			A
16. Trim speed spin tendency - 4.4.16	opin				A	More than 50 %			A
16. Trim speed spin tendency - 4.4.16 Spin occurs	орп	No			A	No			A
Spin occurs 17. Low speed spin tendency - 4.4.17						No			
Spin occurs 17. Low speed spin tendency - 4.4.17 Spin occurs		No No							
Spin occurs 17. Low speed spin tendency - 4.4.17					A	No			A
Spin occurs 17. Low speed spin tendency - 4.4.17 Spin occurs			n less than 90°		A	No	n less than 90°		A
Spin occurs           17. Low speed spin tendency - 4.4.17           Spin occurs           18. Recovery from a developed spin - 4.4.18		No	n less than 90°		A A A	No	n less than 90°		A
Spin occurs         17. Low speed spin tendency - 4.4.17         Spin occurs         18. Recovery from a developed spin - 4.4.18         Spin rotation angle after release         Cascade occurs		No Stops spinning in	n less than 90°		A	No No Stops spinning in	n less than 90°		A
Spin occurs         17. Low speed spin tendency - 4.4.17         Spin occurs         18. Recovery from a developed spin - 4.4.18         Spin rotation angle after release		No Stops spinning in No			A A A A	No No Stops spinning in No			A A A A
Spin occurs 17. Low speed spin tendency - 4.4.17 Spin occurs 18. Recovery from a developed spin - 4.4.18 Spin rotation angle after release Cascade occurs 19. B-line-stall - 4.4.19		No Stops spinning in No Changing course			A A A	No Stops spinning in No Changing course			A
Spin occurs         17. Low speed spin tendency - 4.4.17         Spin occurs         18. Recovery from a developed spin - 4.4.18         Spin rotation angle after release         Cascade occurs         19. B-line-stall - 4.4.19         Change of course before release		No Stops spinning in No Changing course	e less than 45° with straight span		A A A A A	No Stops spinning in No Changing course	e less than 45° with straight span		A A A A A
Spin occurs         17. Low speed spin tendency - 4.4.17         Spin occurs         18. Recovery from a developed spin - 4.4.18         Spin rotation angle after release         Cascade occurs         19. B-line-stall - 4.4.19         Change of course before release         Behaviour before release         Recovery		No Stops spinning in No Changing course Remains stable Spontaneous in	e less than 45° with straight span		A A A A A A	No Stops spinning in No Changing course Remains stable Spontaneous in	e less than 45° with straight span		A A A A A A
Spin occurs         17. Low speed spin tendency - 4.4.17         Spin occurs         18. Recovery from a developed spin - 4.4.18         Spin rotation angle after release         Cascade occurs         19. B-line-stall - 4.4.19         Change of course before release         Behaviour before release		No Stops spinning in No Changing course Remains stable	e less than 45° with straight span		A A A A A A A A	No Stops spinning in No Changing course Remains stable	e less than 45° with straight span		A A A A A A A A
Spin occurs         17. Low speed spin tendency - 4.4.17         Spin occurs         18. Recovery from a developed spin - 4.4.18         Spin rotation angle after release         Cascade occurs         19. B-line-stall - 4.4.19         Change of course before release         Behaviour before release         Recovery         Dive forward angle on exit		No Stops spinning it No Changing course Remains stable Spontaneous in 0° - 30°	e less than 45° with straight span		A A A A A A	No No Stops spinning in No Changing course Remains stable Spontaneous in 0° - 30°	e less than 45° with straight span		A A A A A A
Spin occurs         17. Low speed spin tendency - 4.4.17         Spin occurs         18. Recovery from a developed spin - 4.4.18         Spin rotation angle after release         Cascade occurs         19. B-line-stall - 4.4.19         Change of course before release         Behaviour before release         Recovery         Dive forward angle on exit         Cascade occurs         20. Big ears - 4.4.20		No Stops spinning ii No Changing course Remains stable Spontaneous in 0° - 30° No	e less than 45° with straight span less than 3 sec		A A A A A A A A A	No Stops spinning in No Changing course Remains stable Spontaneous in 0° - 30° No	e less than 45° with straight span less than 3 sec		A A A A A A A A A
Spin occurs         17. Low speed spin tendency - 4.4.17         Spin occurs         18. Recovery from a developed spin - 4.4.18         Spin rotation angle after release         Cascade occurs         19. B-line-stall - 4.4.19         Change of course before release         Behaviour before release         Recovery         Dive forward angle on exit         Cascade occurs         20. Big ears - 4.4.20         Entry procedure		No Stops spinning ii No Changing course Remains stable Spontaneous in 0° - 30° No Standard technic	e less than 45° with straight span less than 3 sec		A A A A A A A A	No No Stops spinning in No Changing course Remains stable Spontaneous in 0° - 30° No Special device m	e less than 45° with straight span less than 3 sec		A A A A A A A A
Spin occurs         17. Low speed spin tendency - 4.4.17         Spin occurs         18. Recovery from a developed spin - 4.4.18         Spin rotation angle after release         Cascade occurs         19. B-line-stall - 4.4.19         Change of course before release         Behaviour before release         Recovery         Dive forward angle on exit         Cascade occurs         20. Big ears - 4.4.20		No Stops spinning ii No Changing course Remains stable Spontaneous in 0° - 30° No	e less than 45° with straight span less than 3 sec		A A A A A A A A A	No Stops spinning in No Changing course Remains stable Spontaneous in 0° - 30° No	e less than 45° with straight span less than 3 sec		A A A A A A A A A
Spin occurs         17. Low speed spin tendency - 4.4.17         Spin occurs         18. Recovery from a developed spin - 4.4.18         Spin rotation angle after release         Cascade occurs         19. B-line-stall - 4.4.19         Change of course before release         Behaviour before release         Recovery         Dive forward angle on exit         Cascade occurs         20. Big ears - 4.4.20         Entry procedure		No Stops spinning ii No Changing course Remains stable Spontaneous in 0° - 30° No Standard technic	e less than 45° with straight span less than 3 sec que		A A A A A A A A	No No Stops spinning in No Changing course Remains stable Spontaneous in 0° - 30° No Special device m	e less than 45° with straight span less than 3 sec		A A A A A A A A A
Spin occurs         17. Low speed spin tendency - 4.4.17         Spin occurs         18. Recovery from a developed spin - 4.4.18         Spin rotation angle after release         Cascade occurs         19. B-line-stall - 4.4.19         Change of course before release         Behaviour before release         Recovery         Dive forward angle on exit         Cascade occurs         20. Big ears - 4.4.20         Entry procedure         Behaviour during big ears		No Stops spinning ii No Changing course Remains stable Spontaneous in 0° - 30° No Standard technic Stable flight	e less than 45° with straight span less than 3 sec que		A A A A A A A A A A	No No Stops spinning in No Changing course Remains stable Spontaneous in 0° - 30° No Special device re Stable flight	e less than 45° with straight span less than 3 sec		A A A A A A A A A A
Spin occurs         17. Low speed spin tendency - 4.4.17         Spin occurs         18. Recovery from a developed spin - 4.4.18         Spin rotation angle after release         Cascade occurs         19. B-line-stall - 4.4.19         Change of course before release         Behaviour before release         Recovery         Dive forward angle on exit         Cascade occurs         20. Big ears - 4.4.20         Entry procedure         Behaviour during big ears         Recovery		No Stops spinning ii No Changing course Remains stable Spontaneous in 0° - 30° No Standard technic Stable flight Spontaneous in	e less than 45° with straight span less than 3 sec que		A A A A A A A A A A A A	No No Stops spinning in No Changing course Remains stable Spontaneous in 0° - 30° No Special device re Stable flight Spontaneous in	e less than 45° with straight span less than 3 sec		A A A A A A A A A A A A A
Spin occurs         17. Low speed spin tendency - 4.4.17         Spin occurs         18. Recovery from a developed spin - 4.4.18         Spin rotation angle after release         Cascade occurs         19. B-line-stall - 4.4.19         Change of course before release         Behaviour before release         Recovery         Dive forward angle on exit         Cascade occurs         20. Big ears - 4.4.20         Entry procedure         Behaviour during big ears         Recovery         Dive forward angle on exit         21. Big Ears in accelerated flight - 4.4.21		No Stops spinning in No Changing course Remains stable Spontaneous in 0° - 30° No Standard technic Stable flight Spontaneous in 0° - 30°	e less than 45° with straight span less than 3 sec que less than 3 sec		A A A A A A A A A A A A A A	No No Stops spinning ii No Changing course Remains stable Spontaneous in 0° - 30° No Special device re Stable flight Spontaneous in 0° bis 30°	e less than 45° with straight span less than 3 sec equired less than 3 sec		A A A A A A A A A A A A A A A
Spin occurs         17. Low speed spin tendency - 4.4.17         Spin occurs         18. Recovery from a developed spin - 4.4.18         Spin rotation angle after release         Cascade occurs         19. B-line-stall - 4.4.19         Change of course before release         Behaviour before release         Recovery         Dive forward angle on exit         Cascade occurs         20. Big ears - 4.4.20         Entry procedure         Behaviour during big ears         Recovery         Dive forward angle on exit         21. Big Ears in accelerated flight - 4.4.21         Entry procedure		No Stops spinning in No Changing course Remains stable Spontaneous in 0° - 30° No Standard technic Stable flight Spontaneous in 0° - 30° Special device re	e less than 45° with straight span less than 3 sec que less than 3 sec		A A A A A A A A A A A A A	No No Stops spinning in No Changing course Remains stable Spontaneous in 0° - 30° No Stable flight Spontaneous in 0° bis 30° Special device re	e less than 45° with straight span less than 3 sec equired less than 3 sec		A A A A A A A A A A A A A A
Spin occurs         17. Low speed spin tendency - 4.4.17         Spin occurs         18. Recovery from a developed spin - 4.4.18         Spin rotation angle after release         Cascade occurs         19. B-line-stall - 4.4.19         Change of course before release         Behaviour before release         Recovery         Dive forward angle on exit         Cascade occurs         20. Big ears - 4.4.20         Entry procedure         Behaviour during big ears         Recovery         Dive forward angle on exit         21. Big Ears in accelerated flight - 4.4.21		No Stops spinning in No Changing course Remains stable Spontaneous in 0° - 30° No Standard technic Stable flight Spontaneous in 0° - 30°	e less than 45° with straight span less than 3 sec que less than 3 sec		A A A A A A A A A A A A A A	No No Stops spinning ii No Changing course Remains stable Spontaneous in 0° - 30° No Special device re Stable flight Spontaneous in 0° bis 30°	e less than 45° with straight span less than 3 sec equired less than 3 sec		A A A A A A A A A A A A A A A
Spin occurs         17. Low speed spin tendency - 4.4.17         Spin occurs         18. Recovery from a developed spin - 4.4.18         Spin rotation angle after release         Cascade occurs         19. B-line-stall - 4.4.19         Change of course before release         Behaviour before release         Recovery         Dive forward angle on exit         Cascade occurs         20. Big ears - 4.4.20         Entry procedure         Behaviour during big ears         Recovery         Dive forward angle on exit         21. Big Ears in accelerated flight - 4.4.21         Entry procedure		No Stops spinning in No Changing course Remains stable Spontaneous in 0° - 30° No Standard technic Stable flight Spontaneous in 0° - 30° Special device re	e less than 45° with straight span less than 3 sec que less than 3 sec equired		A A A A A A A A A A A A A	No No Stops spinning in No Changing course Remains stable Spontaneous in 0° - 30° No Stable flight Spontaneous in 0° bis 30° Special device re	e less than 45° with straight span less than 3 sec equired less than 3 sec equired		A A A A A A A A A A A A A A
Spin occurs         17. Low speed spin tendency - 4.4.17         Spin occurs         18. Recovery from a developed spin - 4.4.18         Spin rotation angle after release         Cascade occurs         19. B-line-stall - 4.4.19         Change of course before release         Behaviour before release         Recovery         Dive forward angle on exit         Cascade occurs         20. Big ears - 4.4.20         Entry procedure         Behaviour during big ears         Recovery         Dive forward angle on exit         21. Big Ears in accelerated flight - 4.4.21         Entry procedure         Behaviour during big ears         Recovery         Dive forward angle on exit         21. Big Ears in accelerated flight - 4.4.21         Entry procedure         Behaviour during big ears         Recovery         Dive forward angle on exit		No Stops spinning it No Changing course Remains stable Spontaneous in 0° - 30° No Standard technic Stable flight Spontaneous in 0° - 30° Special device m Stable flight	e less than 45° with straight span less than 3 sec que less than 3 sec equired		A A A A A A A A A A A A A A A	No No Stops spinning in No Changing course Remains stable Spontaneous in 0° - 30° No Special device re Stable flight Spontaneous in 0° bis 30° Special device re Stable flight	e less than 45° with straight span less than 3 sec equired less than 3 sec equired		A A A A A A A A A A A A A A A
Spin occurs         17. Low speed spin tendency - 4.4.17         Spin occurs         18. Recovery from a developed spin - 4.4.18         Spin rotation angle after release         Cascade occurs         19. B-line-stall - 4.4.19         Change of course before release         Behaviour before release         Recovery         Dive forward angle on exit         Cascade occurs         20. Big ears - 4.4.20         Entry procedure         Behaviour during big ears         Recovery         Dive forward angle on exit         21. Big Ears in accelerated flight - 4.4.21         Entry procedure         Behaviour during big ears         Recovery         Dive forward angle on exit         21. Big Ears in accelerated flight - 4.4.21         Entry procedure         Behaviour during big ears         Recovery		No Stops spinning ii No Changing course Remains stable Spontaneous in 0° - 30° Stable flight Spontaneous in 0° - 30° Stable flight Spontaneous in 0° - 30°	e less than 45° with straight span less than 3 sec que less than 3 sec equired		A A A A A A A A A A A A A A A A A A	No No Stops spinning in No Changing course Remains stable Spontaneous in 0° - 30° No Special device m Stable flight Spontaneous in 0° bis 30° Special device m Stable flight Spontaneous in	e less than 45° with straight span less than 3 sec equired less than 3 sec equired		A A A A A A A A A A A A A A A A A A A

22. Behaviour exiting a steep spiral - 4.4.22				
Tendency to return to straight flight	Spontaneous exit	А	Spontaneous exit	А
Turn angle to recover normal flight	Less than 720°, spontaneous recovery	А	Less than 720°, spontaneous recovery	А
23. Alternative means of directional control	4.4.23			
180° turn achievable in 20 sec	Yes	А	Yes	А
Stall or spin occurs	No	A	No	A
24. Any other flight procedure and/or configur	ation described in the user's manual - 4.4.24			
Procedure works as descibed		NA		NA
Procedure suitable for novice pilots		NA		NA
Cascade occurs		NA		NA
25. Remarks of testpilot:				
Copyright Ralf Antz 2009	This Flig	ht Test Report	was generated automatically and is valid wit	thout signature