CHECK INSTRUCTION

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Introduction

The NOVA Full Service – NFS (complete check) and the **NOVA Trim Tuning – NTT** (trim check) shall ensure the flight safety of the paraglider.

Personel requirements for performing a ceck

Only checkcentres, which are authorised by NOVA may carry out checks. You can find all authorised persons / checkcentres on our homepage: www.nova-wings.com/english/nova/checkcenter.html

If you have questions about checks in your country, you can eighter contact NOVA (info@nova-wings.com), or the NOVA distributor in your country: www.nova-wings.com/english/nova/distributors.html

Necessary documents and devices for performing a check

- Lineplan: www.nova-wings.com/english/downloads/lineplans.html
- List of material: www.nova-wings.com/english/downloads/check.html
- Previous NFS check protocols (if you don't perform the first NFS on the glider)
- Line measurement device (Laser telemeter and a special device to ensure measurement with constant line load – ask NOVA for further information)
- Porosity meter (Kretschmer or JDC)
- „Betsometer" for checking the cloth strength.
- Line tear machine according to EN926-1:4.6.3
- Maintainance and calibration documentation of all the measurement devices.

Check intervall

We schedule a trim inspection (NOVA Trim Tuning NTT) within the first year after the date of purchase (new glider) In the case that the NTT is not done, the wing needs a full check after 2 years after purchase (new glider). The check expert can define the next check interval on the basis of the wing's condition. In areas where conditions are harsh on the material (i.e. by salty air and sand next to the coast), an annual complete check (NFS) is strongly recommended! We recommend the same for wings which are used for regular acro flying.

The date of purchase of the new glider is decisive for any deadline concerning NTT and NFS, as well as for guarantee.

Attention:

In the case of commercially used gliders, (tandems or school gliders) the NFS has to be performed every year.

Independent from the deadlines mentioned above:

A check (NFS) has to be performed not later than every 200 hours of flight, or every 400 flights. (Depending on what happens first.)

The check has to be confirmed with the check-stamp on the stabilo. All necessary documents for the inspection can be found on the NOVA homepage (http://www.nova-wings.com): Service & Downloads

Performing the Check

Identifying the glider

The glider type and the serial number of the glider can be found on the wing tip. Please ensure that the certification tag is on the middle rib of the wing.

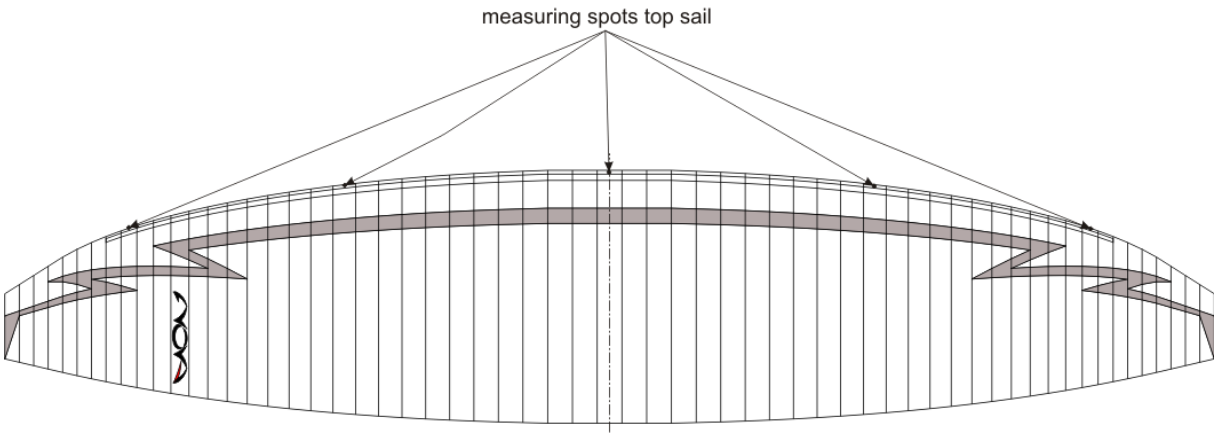
Checking the porosity

The porosity check has to be performed on 5 spots on the top sail. These spots have to be clean (no sand, no dust) and without damage (e.g. small holes). Otherwise the result would be falsified.

The average value on the top sail has to be used to judge the gliders condition. If one value is a lot lower than the other values, please repeat the measurement and move the measurement spot slightly.

Evaluation of the measurements for the top sail:

JDC	Kretschmer	Evaluation
15-30	50-100	Strongly used
<15	<50	Not sufficient



If the result is “strongly” used, this has to be recorded in the check protocol. In this case, the next check has to be scheduled one year later.

If the result is “not sufficient” the glider looses its airworthiness. This has to be recorded in the check protocol as well.

Checking the cloth strength

Checking the cloth strength is carried out with the so called betsometer on one spot on the top sail and on one spot on the bottom sail. Both spots should be chosen in the middle of the wing (front section). If the cloth tears at a load of 600g, the strength is not sufficient and the glider looses its airworthiness. If the cloth does not tear at 600g the glider passes and the test shall be aborted. The result has to be entered in the check protocol.

Visual inspection of the canopy

The canopy has to be checked for damages which might affect the airworthiness of the glider. This contains damages on the top sail, the bottom sail, the ribs, the diagonal ribs and all seams. (Especially in the area of the cell openings, as well as the seams of the suspension loops on the bottom sail.)

Small tears and holes (up to about 5cm) on the top- or bottom sail can be repaired with “NOVA adhesive repair tape”. If the tear is bigger than 5cm or if it is close to a seam, the repairing has to be carried out by NOVA or by an accredited repair centre. (Same for damages on the ribs, or diagonal ribs.)

Every damage and repairing has to be entered in the check protocol.

Check of the line condition

The paraglider has to be spreaded and every single line has to be checked. The lines have to by manually scanned on their whole length. If you detect a damage, on the coating or on the core, the line has to be replaced. Further more the sewing and the line loops have to be controlled.

Every damage and repairing has to be entered in the check protocol.

Measuring the line strength

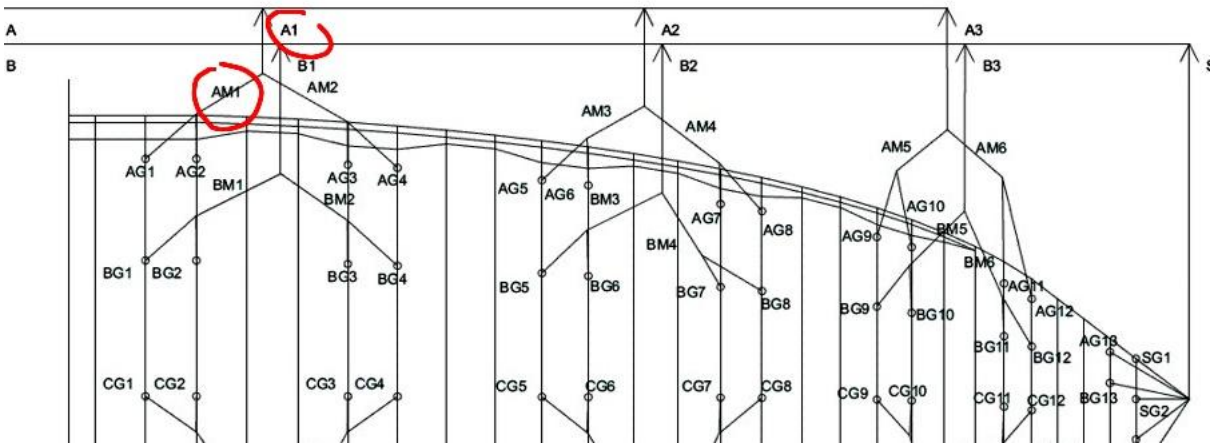
The ripping test has to be carried out at the first NFS. (so 2, or 3 years after purchase)

How to perform the ripping test:

One lower line and one mid line have to be ripped. The A-lines in the centre of the wing are the ones with the most loads in flight, so you have to rip the A1 and the A1M (inner mid line).

CAUTION: If a glider has just two line levels, (only lower lines and top lines, e.g. Mentor 2) the ripping test has to include the top level. The strength of the top line has to meet the criteria which are required for the mid lines on a glider with three line levels. (See explanation below)

In other words: If there are just two line levels, the top lines have to be treated the same way, like the mid lines on a glider with three line levels.



If you check an old glider, make sure, you don't rip a line, which has been replaced in a former ripping test!

To avoid that a priori we recommend, ripping the A1 lower line, and A1M mid line on the right side for the first ripping test. For the next test, rip those lines on the left side. Then A2, and A2M on the right. Then those lines on the left, and so on …

Further more you have to enter the ripped lines and the breaking load in the check protocol!

The ripping test has to be performed with a special machine and with a feed of 1m/min. (see EN 926-2:4.6.3)

If one of the ripped lines doesn't meet the requirements, all lines on the glider have to be replaced. You can find the requirements in the table below.

Bevore tearing the length of the lines has to be measured. The torn lines have to be replaced. Please find the used line materials and the correct seam pattern on our homepage:

http://www.nova-wings.com/english/downloads/check.html

http://www.nova-wings.com/download/files/line_sewing_new.pdf

The braking strength has to be noted in the check report.

Gliders with Dyneema lines on all A-lines and B-lines

The ripping test doesn't have to be carried out at the first NFS (so 2, or 3 years after purchase), because Dyneema (PPSL) lines don't loose much strength in normal use. That's why the ripping test doesn't have to be carried out before the second NFS.

But we recommend performing a ripping test at the first NFS if:

- if the wing is used for Acro flying regulary
- if the lines got in contact with salt water, or if the glider was used a lot in salty air
- if the lines got in contact with sweat a lot (e.g. school gliders on the training hill, due to sweaty hands)
- if the glider was exposed to sand for a lot of time
- if the glider was exposed to heat (> 50°C, e.g. in a car) for a long time

Minimum required strength fort he lower and mid lines

	max. take off weight	Minimum Strength			
		Lower line		Mid line	
		at 8g	at 10 g	at 8g	at 10g
2 lower lines = (8A/B) (Syntax;Primax;Rookie;Ra...)	60 Kg	75 daN	90 daN	45 daN	54 daN
	65 Kg	81 daN	98 daN	49 daN	59 daN
	70 Kg	88 daN	105 daN	53 daN	63 daN
	75 Kg	75 daN	94 daN	45 daN	56 daN
	80 Kg	80 daN	100 daN	48 daN	60 daN
	85 Kg	85 daN	106 daN	51 daN	64 daN
	90 Kg	90 daN	113 daN	54 daN	68 daN
	95 Kg	95 daN	119 daN	57 daN	71 daN
	100 Kg	100 daN	125 daN	60 daN	75 daN
	105 Kg	105 daN	131 daN	63 daN	79 daN
	110 Kg	110 daN	138 daN	66 daN	83 daN
	115 Kg	115 daN	144 daN	69 daN	86 daN
	120 Kg	120 daN	150 daN	72 daN	90 daN
	125 Kg	125 daN	156 daN	75 daN	94 daN
	130 Kg	130 daN	163 daN	78 daN	98 daN
	190 Kg	190 daN	238 daN	114 daN	143 daN
	220 Kg	220 daN	275 daN	132 daN	165 daN
	240 Kg	240 daN	300 daN	144 daN	180 daN
3 lower lines = (12A/B) (X-act,Pheron,Mentor...)	60 Kg	40 daN	50 daN	24 daN	30 daN
	65 Kg	43 daN	54 daN	26 daN	33 daN
	70 Kg	47 daN	58 daN	28 daN	35 daN
	75 Kg	50 daN	63 daN	30 daN	38 daN
	80 Kg	53 daN	67 daN	32 daN	40 daN
	85 Kg	57 daN	71 daN	34 daN	43 daN
	90 Kg	60 daN	75 daN	36 daN	45 daN
	95 Kg	63 daN	79 daN	38 daN	48 daN
	100 Kg	67 daN	83 daN	40 daN	50 daN
	105 Kg	70 daN	88 daN	42 daN	53 daN
	110 Kg	73 daN	92 daN	44 daN	55 daN
	115 Kg	77 daN	96 daN	46 daN	58 daN
	120 Kg	80 daN	100 daN	48 daN	60 daN
	125 Kg	83 daN	104 daN	50 daN	63 daN
	130 Kg	87 daN	108 daN	52 daN	65 daN
	140 Kg	93 daN	117 daN	56 daN	70 daN
	150 Kg	100 daN	125 daN	60 daN	75 daN
	160 Kg	107 daN	133 daN	64 daN	80 daN
	170 Kg	113 daN	142 daN	68 daN	85 daN
	180 Kg	120 daN	150 daN	72 daN	90 daN
	190 Kg	127 daN	158 daN	76 daN	95 daN
	200 Kg	133 daN	167 daN	80 daN	100 daN
	210 Kg	140 daN	175 daN	84 daN	105 daN
	220 Kg	147 daN	183 daN	88 daN	110 daN
	235 Kg	157 daN	196 daN	94 daN	118 daN
	250 Kg	167 daN	208 daN	100 daN	125 daN

4 lower lines = (16A/B) (Philou..)	60 Kg	30 daN	38 daN	18 daN	23 daN
	65 Kg	33 daN	41 daN	20 daN	24 daN
	70 Kg	35 daN	44 daN	21 daN	26 daN
	75 Kg	38 daN	47 daN	23 daN	28 daN
	80 Kg	40 daN	50 daN	24 daN	30 daN
	85 Kg	43 daN	53 daN	26 daN	32 daN
	90 Kg	45 daN	56 daN	27 daN	34 daN
	95 Kg	48 daN	59 daN	29 daN	36 daN
	100 Kg	50 daN	63 daN	30 daN	38 daN
	105 Kg	53 daN	66 daN	32 daN	39 daN
	110 Kg	55 daN	69 daN	33 daN	41 daN
	115 Kg	58 daN	72 daN	35 daN	43 daN
	120 Kg	60 daN	75 daN	36 daN	45 daN
	125 Kg	63 daN	78 daN	38 daN	47 daN
	130 Kg	65 daN	81 daN	39 daN	49 daN

8G

The breaking load of the line equates to the LTF threshold. The lines should be replaced, because the strength of the lines would soon be below the LTF limit.

If the breaking load is in between 8g and 10g we strongly recommend scheduling the next NFS after just one year instead of two. If the wing is used for Acro flying or for more than 100hours a year, the lines have to be replaced.

> 10G

The breaking load is well above the LTF limit of 8 G. For normal use (less than 400 flights and 200 hours per 2 years, no Acro) we recommend the next NFS after two years.

Note:

The values in the table above for the mid lines are valid for all gliders which have two mid lines per lower line. For gliders with three mid lines per lower line (e.g. Carbon) you have to calculate the strength limit as follows:
Get the value for the lower line from the table and divide it by three. Then multiply this value by 1.2 to get the strength limit for the mid line. For example:
If the limit for the lower line is 120 daN, the limit for the mid line (in case of three mid lines) is 48 daN. = (120 / 3) * 1.2

If you want to perform a ripping test on the top lines (not obligatory), the calculation is as follows: Multiply the max. Take-off weight by the G-load. Then divide this value by the number of all A and B top lines. (no stabile lines!) This value has to be multiplied by 1.2.

For example:
Maximum take-off weight=110kg
Number of A & B top lines=40
Necessary G load= 10g

Minimum strength= [(110*10)/40]*1.2=33 daN

Checking the risers

The risers have to be checked for abrasion and damage, especially on the main suspension loop, on the seams, and on the shackles. The shackles have to be tightened properly. Damaged or missing o-rings have to be replaced. Also check the speed system for damages. Make sure, that the length of the speed systems rope is sufficient: The A-riser must not be shortened, if you stretch all risers.

A damaged riser has to be replaced by a new one.

Measuring the line lengths

The measurement of the lines has to be performed with a special measuring device (see Necessary documents and devices for performing a check) and our own Software. (see www.nova-wings.com/english/info_zone/ntt.html). With this software and our computer online system (COS) all relevant data is recorded and saved on a server.

To use this system, you have to get a proper introduction at NOVA International. Then you will get the access to our online system. (Find a list with all authorized persons and checkcentres here: (www.nova-wings.com/english/nova/checkcenter.html)

Documentation

After performing the check, the check sheet has to be saved on the computer. Then a protocol will be generated automatically, which has to be printed and handed to the costumer.

The NFS has to be entered on the glider. (As well as the date of the next NFS)

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