USER'S MANUAL

The need for speed

ZION

WELCOME

We wish to welcome you to our team and thank you for the confidence that you have placed in a NIVIUK Glider.

We would like to share with you the thrill and the passion which has been involved in the creation of this speed flying glider ensuring every flight offers new experiences and the true pleasure of three dimensional flights.

Designed for flyers who are searching for speed and freedom, the ZION is the result of an evolution in the modern flying world, the natural solution for the spirit that seeks adventure and new challenges, delivering freedom like no other wing on the market today.

We wish you may pleasurable flights and memorable moments under your new ZION.

We are confident that you will enjoy flying this wing and that you will soon discover the meaning of our slogan:

"Give importance to the small details that build up to big things"

We recommend that before your first flight you read this user manual in detail.

The NIVIUK Gliders Team.

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USER'S MANUAL

NIVIUK Gliders ZION

This manual contains all the necessary information to allow you to fully familiarize yourself with the main characteristics of your new ZION. Although this manual provides you with information about your wing, it does not offer the instruction requirements necessary for you to be able to pilot this type of wing. Flying instruction can only be taught at a paragliding school recognised by the flying federation of your country.

This manual does not provide any pilot the authorisation to fly a glider in this class without first complying with the necessary legal requirements of the country in which it is flown.

(See the norms of your country).

Nevertheless we remind you of the importance of reading and understanding all the contents of the ZION manual. Severe injury and even fatality can be the consequence of misusing this equipment.

More information can be found on our web page www.niviuk.com

SUMMARY

1. CHARACTERISTICS

1.1 WHO IS IT DESIGNED FOR?

We have created the ZION to suit a wide range of pilots, a new breed of athletes who enjoy nature, speed and the great outdoors. The ZION, a wing for many!

It is important to note that to be able to safely fly a speed flying wing correct training and an ongoing learning process is of paramount importance. To achieve maximum security and performance it is of utmost importance that the correct size of wing is selected to suit your own weight/size and pilot experience/ability. The availability of three different sizes allows a choice of ZION to suit every pilot weight/size and experience/ability.

(See weight and level table.)

The ZION attracts those pilots drawn to a new sensation of flight, those wishing to develop and expand their experience of flying, whilst testing their body and mind beyond their known limitations.

The ZION is the answer to those adventurous spirits seeking new experiences, the flight, the mountain, the journey, the thermals, the soaring, and the pleasure of speed, the ZION is the harmony of all these contrasts, a concentration of forces available to you in one wing.

We strongly recommend that newcomers to the sport of speed flying seek expert tuition from qualified speed flying professionals. We also recommend that athletes digressing from different areas of air sports also seek advice from speed flying professionals and use a common sense approach in order to tailor their experience in this new discipline.

The ZION is a wing carefully and specifically designed to allow pilots of all levels enjoy the true experience and sensation of speed and control.

1.2 CERTIFICATION

Speed Flying is a relatively new discipline and every speed wing must at the moment be subjected only to the EN 926-1 structure, load and impact test up to 8g of the maximum pilot weight shown for the glider. The ZION has very successfully passed these requirements and therefore holds the EN 926-1 certification.

NIVIUK have taken the testing of the ZION one stage further and outside the official EN laboratory the Niviuk test pilots have completed exactly the same test protocols required to achieve an EN 926-2 certification. We considered the test results to be excellent and anticipate that the ZION would achieve an official EN certification of Class C.

Note: This is a NIVIUK initiative and the EN 926-2 Class C is the opinion of the Niviuk test pilots and R&D team after every test equivalent to the EN process has been carried out. The ZION does not carry the official EN certificate for EN926-2.

We remind you that the tests were carried out within the specified wing loading and also in conditions free of turbulence.

1.3 IN-FLIGHT BEHAVIOUR

Inspired and designed to be flown in a wider variety of conditions and locations the ZION is the solution for those adventurous spirits seeking new experiences; descend the mountains, soar the slopes the ZION has created the third dimension of flight.

The handling of the ZION during every aspect of flight is precise, fast and dynamic with a high level of overall stability. Because of its small size and its profile the ZION absorbs and deals with turbulence exceptionally well. The ZION responds immediately and precisely to any pilot brake input and physical weight shift. Rolling often experienced in this class of wing is noticeable by its absence and almost does not exist in the ZION. Pitching is

sufficiently buffered to minimise the risk of experiencing frontal symmetric collapses. The ZION is a very stable wing and from launch to landing can be flown at high speeds without stress.

NOTE: Speed flying by its very nature dictates that the pilot must have received the appropriate training or have the experience required to fly a speed wing pro-actively. Care and awareness must given to the ground speed during low altitude turning and in general to all manoeuvres that involve acceleration, especially when near or approaching any terrain.

1.4 MATERIALS

The ZION has not only introduced new design methods but also new manufacturing technology. From Olivier's computer to the very final stitch, this technology does not allow even a single millimetre of error. To ensure perfect assembly, each section of fabric is cut and numbered by a computer programmed precision laser.

Each line is semi-automatically manufactured, cut to the exact length and the sewing finished under the supervision of our highly trained specialists.

Every individual and numbered precision part of the ZION is then brought together and assembled under the strict and high manufacturing standards set by the NIVIUK factory.

Every NIVIUK glider is subjected to a final and extremely stringent quality control inspection before it is carefully packaged and allowed to leave the factory.

(Information about construction materials is given on the last pages of this manual.)

1.5 ELEMENTS, COMPONENTS

The ZION is delivered to you together with a series of components that although not fundamental, do take an important part in the care, use, transport and storage of a speed flying wing.

(The harness is NOT part of the package).
ZION
Sticker.
Compression belt.
Protective inner bag.
Risers protection bag.
A small fabric repair kit - containing self adhesive rip stop.
A mini guide.
A USB pen drive uploaded with all relevant ZION information and the complete NIVIUK catalogue. This can be updated online.

2. UNPACKING AND ASSEMBLY

2.1 CHOOSE THE RIGHT PLACE

We recommend that you unpack and assemble your wing on a gentle slope or a clear flat area in light winds and free of obstacles. These conditions will allow you to carry out all the steps required for you to first check and inflate the ZION.

We recommend that an instructor or a Niviuk retailer supervises the entire procedure as only they are competent to resolve any issues in a safe and professional way.

2.2 PROCEDURE

Remove the paraglider from the rucksack and lay it out on its upper surface with the lines on top of the underside. The wing should now be positioned

as if you were to about to inflate it. Check the condition of the fabric and the lines and make sure there are no abnormalities. Check the maillons which attach the lines to the risers are properly closed. Identify and order the A, B, C, and D lines, the brake lines and the corresponding risers. Make sure that there are no ties or knots. Check the operation of the trimmers making sure they have full range of unobstructed movement.

2.3 ASSEMBLY OF THE HARNESS

Correctly place the risers on the harness karabiners. The risers and lines should not have any twists and they should be in the correct order. Check that the harness buckles are correctly locked. The risers must be attached so that the A lines (identified by the green colour) run cleanly from the harness to the leading edge. The D lines and the trimmers will then run clear allowing the pilot easy access and functioning of the trimmers and controls when in the harness.

2.4 TYPE OF HARNESS

To achieve perfect balance and control over the ZION it is our opinion that the correct selection and type of the harness is a crucial element in achieving the complete ZION experience. From launch to landing the harness should remain unrestrictive, secure and comfortable. At Niviuk we have designed a harness specifically suited for these needs.

The ROAMER is a reversible harness with a large storage capacity, independent leg support, and excellent balance and response for both the control and transmission of the wings behaviour. Without any doubt it is the ideal complement to your ZION.

Harness adjustment is crucial to the overall handling of the wing, if the chest strap adjustment is set wide then mobility, feedback and wing reaction will be increased. However if the chest strap is set narrow then the opposite of each characteristic will be the result. We suggest the harness be adjusted to your own level of comfort and ability.

NOTE: we recommend the use of a harness with independent leg support.

2.5 ADJUSTING THE BRAKES

The length of the main brake lines is set at the factory to the length established during the testing and certification process (see technical data). However, the length can be adjusted to suit the pilots own flying style. Nevertheless, we recommend that you fly for a while with the length at the factory setting. This will allow you to become accustomed to the ZION´s original flying behaviour. If you then decide to adjust the length of the brake lines, simply untie the knot, slide the line through the brake link to the desired length, and strongly re-tie the knot. It is advisable that only qualified personnel carry out this adjustment. You must ensure that this adjustment does not slow down the glider without any pilot input. Both brake lines should be symmetrical and measure exactly the same length. The recommended knots are the clove hitch knot or bowline knot.

NOTE: If the brake line breaks, the ZION can be gently turned either with the body weight or using the D lines as a substitute for the brakes. In this scenario the decision to change direction, left or right should be made sooner than in normal circumstances. To prevent stalling the wing the pressure on the D lines should be applied slowly and with care.

2.6 ADJUSTING THE TRIMMERS

The trimmers are located on the D risers and are adjustable to a total distance of 14 cm. Every adjustment made to the trimmers immediately affects the speed and reactions of the wing. Each adjustment to the trimmers must remain symmetrical and smooth. After adjustment the trimmers can be easily locked into position or released by the pilot using the precise locking system.

The trimmers set in a neutral position will provide less speed but a more efficient glide whilst with the trimmers fully released the wing will have more speed but a slightly less efficient glide.

The Neutral trim position is achieved when the finished edges of the C and D risers are aligned with A and B. (See graph)

The Released trim position is achieved when the finished edges of the C and D risers have a longer travel than A and B risers. (See graph)

2.7 INSPECTION AND WING INFLATION ON THE GROUND

Once you have checked all the equipment and made sure that the wind conditions are favourable, inflate your ZION as many times as necessary in order to become acquainted with the wings behaviour. You will find that the ZION consistently inflates easily and smoothly. The launch of the ZION is effortless and the wing will inflate with minimum pressure on the harness when you move forward. Launch may be assisted by accompanying the natural rising movement of the A risers as the wing lifts from the ground. Once the wing is in the 12 o'clock position, simply apply correct pressure to the brakes and the ZION will sit directly above your head. Repeating this exercise in varying intensities of wind will allow you to quickly familiarize yourself with the launch characteristics of the ZION and also to become acquainted with the trimmer adjustment and their effectiveness. Carrying out this exercise will also be beneficial at a later stage when flying in different situations.

3. FIRST FLIGHT

3.1 LAUNCH PREPARATION

When you arrive at your chosen launch site, please take the time to observe the prevailing weather conditions. Check the wind speed and direction and any areas of possible turbulence.

Take the necessary time to create a flight plan or run and check for obstacles and areas of risk. Select a launch location which offers a clear and wide area, free of obstacles and obstructions.

Carefully check your glider, the lines and the remainder of your equipment, repeating points 2:2/2:3 for the pre flight preparation. Because of the wide range of possibilities and conditions in which the ZION may be flown it is very important to carefully assess the conditions at the launch site and ensure that the correct decision to fly or not is made. These conditions must be accurately assessed and the decision to launch must be taken only when you are comfortable they are suitable for your own ability and experience. The ZION is a speed wing but we should never underestimate the meteorological conditions.

3.2 CHECK LIST BEFORE TAKE OFF

Immediately prior to launch you should take the time to once again check your equipment, ensuring all connections are secure and all lines are free from knots or tangles. Ensure your launch path is clear from any new obstacles and the weather conditions are still suitable for your flight.

3.3 LAUNCH

The launch procedure with the ZION is similar to that of conventional wings. Once everything has been checked, the trimmers should set to the neutral position. Then with a light breeze and a slight forward motion the wing will rise quickly and cleanly above your head. Depending on the strength of the wind and/or how much forward motion you apply it may be necessary to apply a small amount of brake control to prevent over shoot.

Because of the smaller surface area of the ZION, in very light/nil wind conditions slightly more forward speed than used on standard wings will be required to achieve launch. It is therefore important to launch with speed and remember that every action with the brakes will be very effective in the reduction of forward speed.

3.4 THE FLIGHT

The ZION is fast and responsive but not aggressive. It remains predictable and controllable in all aspects of flight. During the firsts flights on the ZION

we recommend that you explore within your own level of experience and ability, the capabilities, reaction and speed which this profile allows. Knowing the capabilities of both the ZION and yourself will allow you to become quickly acquainted and confident sensational flying will without doubt soon follow.

We once again remind you the importance of a learning phase and the necessity of progression with security. We also recommend your first flights should not be carried out within close proximity to the terrain and that you use high altitude to become accustomed to the radius of the turns and the variable sink rate.

The ZION - a new world of adventure and possibilities.

(See also chapter 1.3 In-Flight Behaviour.)

3.5 LANDING

During the final stage of the flight you should evaluate the current conditions at the landing zone and prepare your approach accordingly. Whenever possible and depending on the site, wind speed, direction, possible obstacles etc, the classic constant aspect (U) approach should be adopted. The trimmers should be placed in the neutral position, and a long glide with speed and soft control input carried out. As the speed decreases and you approach the ground gently and symmetrically apply maximum brake pressure. Anticipation and planning are always a must to achieving a safe final glide and superb landing.

You will discover that the superb stability and maneuverability of the ZION will at this point be very helpful. To minimise the risk of any forced landings or errors we recommend that during the first flights a large area in which to land is selected.

NOTE: Sudden turns close to the ground should always be avoided.

3.6 INCIDENTS IN FLIGHT

When flown in normal and appropriate conditions and even in thermic or turbulent conditions we would not expect to experience any in flight issues. Whilst the profile and high internal pressure of the ZION absorbs the turbulence exceptionally well, in conditions of "severe turbulence" the wing could momentarily lose pressure however the ZION will recover from any deflation spontaneously and immediately. Collapses on the ZION will be very rare, however if you do find yourself experiencing extreme turbulence the trimmers should be set to the neutral position and active piloting adopted. Whilst the ZION can be flown in conditions not suitable for standard gliders, please remember turbulence in the air is always present and may sometimes be severe.

4. CARE AND MAINTENANCE

4.1 MAINTENANCE

The materials used to make the ZION have been carefully selected for continued performance and optimal aging. However, it is the responsibility of every pilot to ensure that the following basic care guidelines are adhered to:

1.The fabric and the lines do not need to be washed, if they do become dirty, clean them gently with a soft damp cloth. Do not use chemical products.
2. If your wing becomes wet with salty water, immerse it in fresh water and dry it away from direct sunlight
3. Excessive exposure to the sunlight may cause UV damage to the materials of your wing and cause premature aging. Once you have landed, do not leave the wing in the sun, store it properly.
4. If you use your wing in a sandy area, try to avoid sand entering the cell openings on the leading edge. If sand is inside the wing, remove it before folding.

Remember - Careful maintenance of your equipment will ensure continued performance.

4.2 STORAGE

A prolonged period of storage within a vehicle is not recommended. In warmer climates and during the summer season temperatures can very quickly rise to in excess of 50 degrees.
Avoid continued and heavy weight being placed on top of the wing.
Ensure the wing is carefully and correctly folded
Do not fold the wing or place it in storage whilst it is wet.
If you use the wing in the snow, we recommend it only be stored once it is completely dry.
Always store your ZION in cool dry conditions.

4.3 CHECKS AND CONTROLS

It is important to thoroughly and regularly check all your equipment. In addition to your pre-flight checks, it is good practice after your flight to carry out a post flight check and visually check your ZION for any damage or irregularities whilst folding.

You should ensure your ZION is periodically serviced and checked at your local authorised repair centre every 100 hours of use or once a year (whichever is the first).

The service should always include the following points:
A thorough inspection of all components.
Check the resistance of suspension lines.
Check the lines geometry.
Check the geometry of the risers.
Test the porosity of the fabric.

Correct maintenance will ensure the correct functioning of your wing is maintained. If the ZION is flown in harsh terrains and abrasion may be a factor, it is recommended that it be checked more frequently.

In the case of small tears in the fabric, you can temporarily repair it yourself with the self adhesive kit provided. However if damage to any stitching is apparent this must be repaired by a qualified specialist.
Do not accept home repairs.

See the technical data for a full list of materials, providers and their reference.
All the materials of your wing are available at all NIVIUK Gliders distributors.

5. SAFETY AND RESPONSIBILITY

It is well known that speed flying is considered a high-risk sport, where safety depends on the person who is practising it. Misuse of this equipment can cause severe injuries to the pilot and even death.

You must not use this equipment if you are not trained to do so. Do not take advice or accept any informal training from anyone who is not officially and fully qualified as a flight instructor.

Manufacturers and dealers are not responsible for any act or accident which may be the result of practicing this sport.

6. GUARANTEE

The entire equipment and components are covered by a 2 year guarantee against manufacturing defects.

The guarantee does not cover misuse or abnormal use of the materials or components.

7. TECHNICAL DATA

7.1 TECHNICAL DATA

ZION			15	17	19
CELLS	NUMBER		37	37	37
	CLOSED		4	4	4
	BOX		31	31	31
FLAT	AREA	M2	15	17	19
	SPAN	M	8,57	9,13	9,65
	ASPECT RATIO		4,9	4,9	4,9
PROJECTED	AREA	M2	12,85	14,53	16,21
	SPAN	M	6,81	8,54	9,13
	ASPECT RATIO		3,69	3,69	3,69
FLATTENING		%	15	15	15
CORD	MAXIMUM	M	2,13	2,27	2,39
	MINIMUM	M	0,5	0,53	0,56
	AVERAGE	M	1,75	1,86	1,96
LINES	TOTAL METERS	M	271	289	306
	HEIGHT	M	5,06	5,39	5,69
	NUMBER		244	244	244
	MAIN		3/4/3/2	3/4/3/2	3/4/3/2
RISERS	NUMBER	4	A/B/C/D	A/B/C/D	A/B/C/D
	TRIMS	CM	14	14	14
	ACCELERATOR		NO	NO	NO
TOTAL WEIGHT IN FLIGHT					
(PILOT+WING+EQUIPMENT)		KG	90	105	115
GLIDER WEIGHT		KG	3,6	3,9	4,3
CERTIFICATION		EN	926-1	926-1	926-1

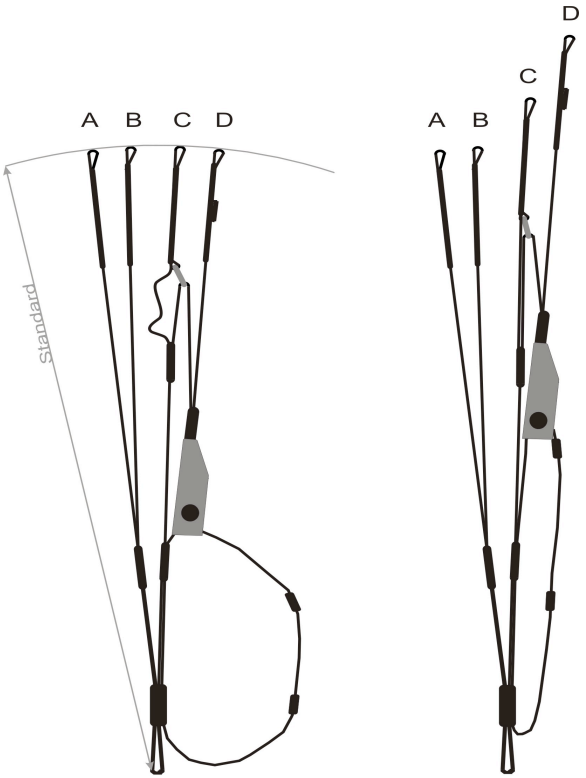
7.2 MATERIALS DESCRIPTION

CANOPY	FABRIC CODE	SUPPLIER
UPPER SURFACE	SKYTEX 40 9017 E77	PORCHER IND (FRANCE)
BOTTOM SURFACE	SKYTEX 40 9017 E38A	PORCHER IND (FRANCE)
PROFILES	SKYTEX 40 9017 E29	PORCHER IND (FRANCE)
DIAGONALS	SKYTEX 40 9017 E29	PORCHER IND (FRANCE)
LOOPS	LKI - 10	KOLON IND. (KOREA)
REIFORCEMENT LOOPS	W-420	D-P (GERMANY)
TRAILING EDGE REIFORCEMENT	MYLAR	D-P (GERMANY)
RIBS REIFORCEMENT	W-420	D-P (GERMANY)
THREAD	SERAFIL 60	AMAN (GERMANY)

SUSPENSION LINES	FABRIC CODE	SUPPLIER
UPPER CASCADES	TNL - 080	TEIJIM LIMITED (JAPAN)
MIDDLE CASCADES	TNL - 080	TEIJIM LIMITED (JAPAN)
MIDDLE CASCADES	TNL - 140	TEIJIM LIMITED (JAPAN)
MAIN	TNL - 140	TEIJIM LIMITED (JAPAN)
MAIN	TNL - 220	TEIJIM LIMITED (JAPAN)
MAIN	TNL - 280	TEIJIM LIMITED (JAPAN)
MAIN BREAK	TNL - 400	TEIJIM LIMITED (JAPAN)
THREAD	SERAFIL 60	AMAN (GERMANY)

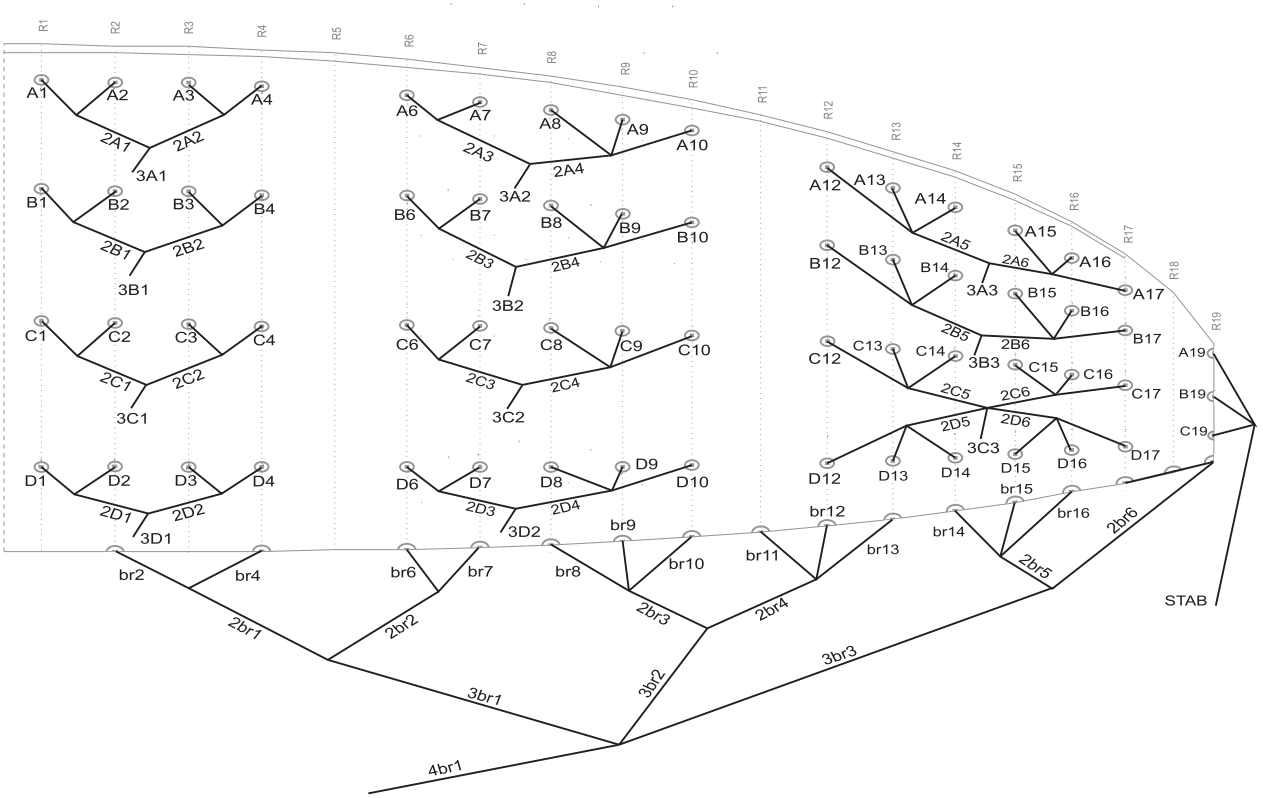
RISERS	FABRIC CODE	SUPPLIER
MATERIAL	G-R 22	TECNI SANGLES (FRANCE)
COLOR INDICATOR	PAD	TECNI SANGLES (FRANCE)
THREAD	V138	COATS (ENGLAND)
MAILLONS	MRI4	ANSUNG PRECISION (KOREA)
PULLEYS	PY-1304-2	ANSUNG PRECISION (KOREA)

7.3 RISER ARRANGEMENT ZION



Riser ZION	*A*	*B*	*C*	*D*
Standard	470	470	470	470
Trimer	470	470	540	610
Travel	0	0	70	140

7.4 LINE PLAN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2br3
2br4
2br5
2br6
3br1
3br2
3br3
4br1
STAB

7.5 LENGTHS ZION 15

NIVIUK ZION 15

LINES HEIGHT CM.

	A	B	C	D	BR
1	500	493,5	496,5	506,5	567,5
2	495	489	490,5	500	544,5
3	493	486,5	488,5	497,5	525,5
4	493,5	487	490	500	522,5
5	489	483	487	497,5	516,5
6	484,5	478,5	481	490	507
7	481,5	476	478	486	505,5
8	479,5	474,5	477	485,5	503,5
9	481	476,5	480,5	491,5	503
10	474	470,5	473	481,5	508,5
11	468,5	466	468	475	498,5
12	465	463	465	473,5	492
13	460,5	458,5	461	467,5	491,5
14	456	454,5	457	463	488
15	452,5	451,5	454,5	461,5	
STB	431,5	429	430,5		

RISERS LENGTHS CM.

	A	B	C	D	
	47	47	47	47	STANDARD
	47	47	54	61	TRIMMER OPENED
	0	0	7	14	TRAVEL

7.6 LENGTHS ZION 17

NIVIUK ZION 17

LINES HEIGHT CM.

	A	B	C	D	BR
1	531,5	525,5	529	539,5	606,5
2	526,5	520,5	523	533	581
3	524	518	520,5	530,5	560
4	524,5	519	522,5	533	557
5	520	514,5	518	531	550,5
6	515	509,5	512	523	540
7	511,5	506,5	509	518	538,5
8	510	505	508	517,5	536,5
9	511,5	507	512	524	536
10	504,5	501,5	504,5	513,5	542
11	499	496,5	499	506,5	531,5
12	495,5	493,5	495,5	505	524,5
13	490,5	489	491	498,5	524
14	485,5	485	487	494	520
15	482,5	482	484,5	492,5	
STB	458,5	459	463		

RISERS LENGTHS CM.

	A	B	C	D	
	38	38	38	38	STANDARD
	38	41	44	50,5	TRIMMER OPENED
	0	3	6	12,5	TRAVEL

7.7 LENGTHS ZION 19

NIVIUK ZION 19					
		LINES HEIGHT CM.			
	A	B	C	D	BR
1	562	555	560	571,5	639,7
2	556,5	550	553,5	564	612,7
3	554,5	547,5	550,5	561,5	591,7
4	555	548,5	552,5	564	588,2
5	550	544	548,5	561,5	581,7
6	544,5	539	542	553	570,7
7	541	535,5	538,5	548	568,7
8	539,5	534	537,5	548	566,7
9	541	536,5	541,5	554,5	566,7
10	533	530,5	533,5	543	572,7
11	527,5	525	528	536	561,2
12	523,5	522	524,5	534	553,7
13	518,5	517	520	527,5	553,2
14	513,5	512,5	516	522,5	549,2
15	510	509,5	513	521,5	
STB	485	485	489,5		

	RISERS LENGTHS CM.				
	A	B	C	D	
	38	38	38	38	STANDARD
	38	41	44	505	TRIMMER OPENED
	0	3	6	125	TRAVEL

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The importance of small details

Bisgrafic