

NANOLIGHT TRIKE WING

Fox 13TL

OWNER / SERVICE MANUAL



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1. INTRODUCTION

Thank you for purchasing Aeros wing for your nanolight trike.

Fox 13TL is a kingpostless wing that combines performance of a Discus T with simplicity of construction and quickness of rigging and de-rigging of a Fox T. No kingpost means that you can store the wing in hangar while it remains fixed to the trike. Fox 13TL has got one really unique design feature: it can be quickly set up on a trike from being folded to 5.1 m. This allows storing the trike with the wing on it in a really limited space in a hangar or even in a garage. Setting the wing that already attached to the trike up for flight takes about five minutes. Outer leading edges are just inserted into the main leading edges, without pins, with sail put directly on the LE caps, which makes it possible to easily remove and de-rig the wing to a 3.1 meters long package, while leaving the wing still attached to the trike.

With all the features mentioned above combined with glide ratio better than that of a Fox T and maximum speed similar to a Discus T, the new Fox 13TL is ranked as the most outstanding wing in the line of Aeros nanolight trike wings.

Please read and be sure you thoroughly understand this manual before flying the Fox 13TL. Be sure that you thoroughly familiar with the wing and the contents of this manual before initial operation. If you have access to the Internet, please visit us regularly at

<http://www.aeros.com.ua>

In case of any doubts or questions contact your local dealers or Aeros directly.

We wish you safe and enjoyable flying career.

Aeros Ltd.

Definitions

Definitions used in this Manual such as WARNING, CAUTION and NOTE are employed in the following context:

WARNING

OPERATING PROCEDURES, TECHNIQUES, ETC. WHICH IF NOT FOLLOWED CORRECTLY, MAY RESULT IN PERSONAL INJURY OR DEATH.

CAUTION

OPERATING PROCEDURES, TECHNIQUES, ETC. WHICH IF NOT STRICTLY OBSERVED, MAY RESULT IN DAMAGE TO THE AIRCRAFT OR ITS INSTALLED EQUIPMENT.

NOTE

Operating procedures, techniques, etc. which considered essential to highlight.

2. TECHNICAL INFORMATION AND OPERATING LIMITATIONS

WARNING

THE FOX 13TL IS DESIGNED FOR FLYING WITH A NANOLIGHT TRIKE ONLY.

The Fox 13TL has been designed especially for nanolight trikes, using a Fox 13 hang glider as a base. Flight operation of the Fox 13TL should be limited to non-aerobatic maneuvers; those in which the pitch angle will not exceed 30 degrees nose up or nose down from the horizon and bank angle will not exceed 60 degrees.

Sail area, sq.m. (sq.ft.)	13 (140)
Wing span, m (ft.)	8.65 (28.35)
Aspect ratio	5.75
Nose angle, °	121
Weight (without bags), kg (lb)	35 (77)
Number of sail battens	15
Double sail, %	30
Tested load, G	+6/-3
Wind speed max, m/sec (mph)	8 (18)
Min. airspeed, km/h (mph)*	37 (23)
Cruise speed, km/h (mph)*	55-60 (34-37)
Max. airspeed, km/h (mph)*	90 (56)
Max. clip-in weight, kg (lb)	170 (378)

* - Airspeed measured with Aeros ANT nanolight trike and CorsAir M25 engine.

Aeros recommends that no attempt should ever be made to deliberately spin a trike with this wing.

The stability, controllability, and structural strength of a properly maintained Fox 13TL have been determined to be adequate for safe operation when the wing is operated within the entire manufacturer specified limitations.

No warranty of adequate stability, controllability, or structural strength is made or implied for operation outside of these limitations.

Operating the Fox 13TL outside of the above limitations may result in injury and death.

Flying a nanolight trike with the Fox 13TL wing in strong or gusty winds or turbulence may result in loss of control of the wing, which may lead to injury and death.

Do not fly in such conditions unless you realize and wish to personally accept the associated risks.

3. FOX 13TL REASSEMBLY AFTER SHIPPING PROCEDURE

1. With the wing in the bag (4 meters long) lay the wing on the ground.
2. Unzip the bag. Undo the Velcro straps. Remove the batten bag, the control bar, the struts and the outer leading edge tubes # 3 from the bag.
3. Unfold the sail along the leading edge to its full length. Attach the outer leading edge tubes # 3 to the front leading edge tubes # 2 according to the markings (L-left, R-right marks must be on top).

Working on one wing at a time and working with the appropriate leading edge # 3, fold the outer sprop, which is attached to the outer leading edge, towards the inboard end of the leading tube # 3. Slide the inboard end of the leading edge tube # 3 into the sail. Then slide the outer leading edge forward, allowing the sprop end to come outside the sail at the corresponding hole, and slide the rear leading edge into the inner leading edge.



Figure 1

Align the outer leading edge properly so that the sprog is on the inside of the leading edge, and slide the outer leading edge forward, rotating as necessary, until the slot in the outer leading edge engages securely into the clevis pin in the front leading edge. When the outer leading edge is fully engaged, you will not be able to rotate it. For better access use appropriate zippers in the sail next to the tube joints.

4. Tighten the sail along the leading edge by putting the sail mount webbing into the slot in the end cap of the leading edge # 3.
5. Secure the sail mount webbing to the leading edge # 3 with the sail mount webbing Velcro (fig.1).

6. Install the wing tip bags.

Put battens on top of the wing between Mylar pockets in the front part of the wing.

Place Velcro ties around the wing.

Put the control bar between leading edges in the rear part of the wing.

Put the struts in the rear part of the wing.

Put the wing bag back on and zip it up.

4. FOX 13TL BREAKDOWN FOR SHIPPING PROCEDURE

This process will basically be the reverse of reassembling after breakdown for shipping. Before beginning, read through the section above on how to re-install the rear leading edges.

1. Lay the wing on the ground or floor, unzip the bag and remove the Velcro ties. Remove the control bar, struts and battens from the wing. Remove the protection wing tip bags.
2. Check to see that the leading edges are marked "Left" and "Right". If they are not, mark them with an indelible marker.
3. Undo the sail mount webbing Velcro and remove the sail mount webbing from the leading edges end caps. With the outboard sprop folded towards the nose pull the rear leading edge straight aft and slide it backwards carefully out of the sail. Tape or pad the exposed ends of the inner leading edge tubes # 3, and do the same for the outer leading edge tubes # 2 in order to prevent sail damage during transportation.
4. Carefully fold the outermost area of the sail over onto the innermost area of the sail, place Velcro ties around the wing and put on the wing bag, turning the bag 180 deg (i.e. matching the front part of the bag to the rear part of the wing).
5. Zip up the wing bag zipper.

5. FOX 13TL SET-UP PROCEDURE

1. Lay the wing on the ground, with the bag zipper up and the nose of the wing pointing downwind.
2. Undo zipper and take out battens, struts and the control bar.
3. Lift and separate the control frame uprights.
4. Remove the quick pin from the corner bracket. Insert the corner bracket all the way into the control bar. Install the quick pin bolt (from front to rear), securing the bracket to the control bar (fig. 2, 3).



Figure 2



Figure 3

CAUTION

DO NOT FORCE THE FITTING INTO THE CONTROL BAR. IF IT DOES NOT SLIDE IN FREELY CHECK FOR DIRT OR DAMAGE TO THE FITTING OR THE INSIDE OF THE CONTROL BAR.

5. Flip the wing upright on the control bar. Try to set the control bar on level ground. Remove the wing bag and all the Velcro sail ties. Do not remove the leading edge tip protection bags at this time.
6. By lifting up the nose batten, push the nose batten fully back into the sail so that the V-tip of the batten rests on top of the keel tube.
7. Attach the bottom front wires to the hook on the bottom nose plate.
8. Spread the wings all the way (fig. 4). Attach the struts according to the markings. L-left, R-right marks must be on the control frame side of the strut on top (fig. 5).



Figure 4



Figure 5



Figure 6



Figure 7

Attach the strut to the control frame bracket first (fig. 6). Then attach the strut to the crossbar bracket together with the safety wire (fig. 7).

9. Holding the rear part of the keel tube lift it up and put the nose of the wing on the ground (fig. 8). Rotate the wing as necessary to position it against wind. Remove the control frame apex protection bag and tip protection bags off the wing.



Figure 8



Figure 9

10. From the direction of keel install the transverse battens in to the corresponding batten pockets (fig. 9).

11. Remove battens from the batten bag, and check each batten for symmetry against the corresponding batten from the other wing. Align the battens at their front tips, and at about the 60% of the chord point. There should be no deviation of more than 3 mm (1/8") from one batten to the other along the full length of the battens.

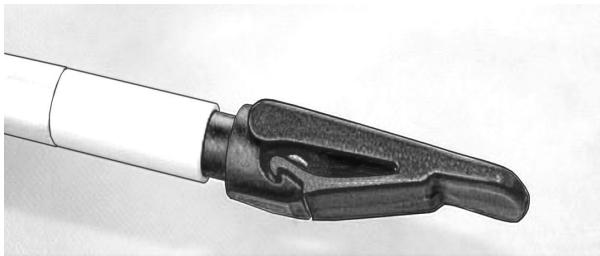
If you choose not to check your battens for symmetry before each flight, you should, at a minimum, check them once a month.

Aeros convention is that the red marked battens go in the left wing and green marked battens in the right wing. Battens are numbered from the center outwards, and the longest batten in a Fox 13TL is designated as the "No. 1" batten. Install the cambered battens in the sail, leaving out the shortest three on each side for now.

Install the batten tips into the hem of the trailing edge. At each batten, make sure the opening in the underside of the trailing edge hem is spread to accept the tab on the batten tip. Make sure the tab slides fully into the hem.

CAUTION: INSERT BATTENS CAREFULLY, SO AS TO MINIMISE STRESS AND WEAR ON THE SAIL

Never insert or remove battens with the crosstube tensioned (except for up to the last three on each side) and never insert or remove battens with heavy wind pressure on the top of the sail or in any condition which causes the battens to slide with great resistance in the pockets.



To open or close the batten tip lever, press firmly on the undersurface of the tip lever to disengage or engage it (fig.10).

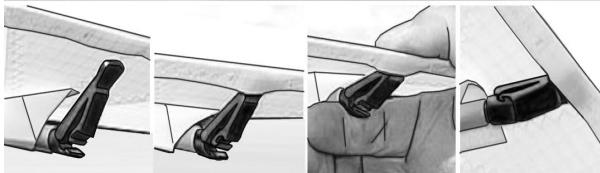


Figure 10



Figure 11



Figure 12

12. At the rear inside of the keel pocket find the crossbar tensioning wires handle. Pull the crossbar tensioning wires handle out of the rear end of the keel pocket, and check that the tensioning wires are not twisted. At the same time with another hand pull the crossbar backwards – this will considerably decrease the drag force on the sweep wires handle. On the latest Fox 13TL models you will need to move the crossbar sideways when pulling it backwards (fig. 11). Attach the shackle of the crossbar tensioning wires to the hook, placed on the keel tube (fig. 12).

WARNING

IN-FLIGHT DISENGAGEMENT OF THIS ATTACHMENT WILL CAUSE A COMPLETE LOSS OF STRUCTURAL SUPPORT OF THE WING AND A TOTAL LOSS OF CONTROL. NEVER ATTACH THE PULL HANDLE WEBBING OF THE SHACKLE TO THE HOOK, EVEN TEMPORARILY.



Figure 13



Figure 14

13. Install the tip lever battens. Position the tip lever batten as shown on the figure 13 and install the tube end of the tip lever batten on the batten hook.



Figure 15

Install the V-tail of the tip-batten on the strap, sewn into the sail, (fig. 14) and straiten the batten completely (fig. 15).

14. The next step is to install the outboard sprogs. Swing the sprog away from the leading edge and push it towards the leading edge in to the receptacle. Make sure the sprog sits all the way in the sprop receptacle (fig. 16).

15. Install the inboard sprogs. Swing the sprop away from the leading edge and fix it with Velcro straps or buckles (on the later Fox 13TL models) as shown on the figure 17.



Figure 16

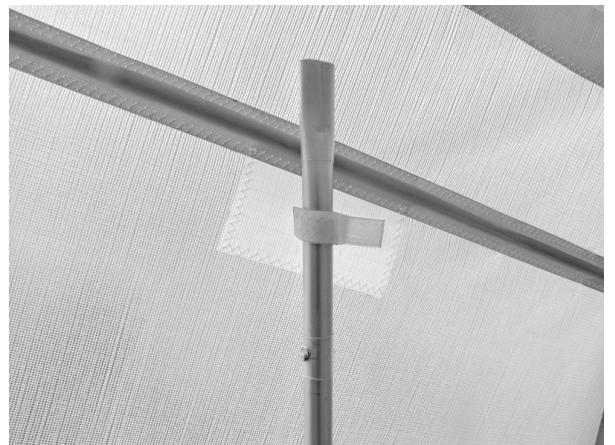


Figure 17

16. Install the hang bracket on the keel tube and secure the nuts with safety rings (fig. 18, 19).



Figure 18



Figure 19

Now your wing is ready to be mounted on your nanolight trike.



Figure 20

17. Don't forget to install the nosecone when you mount the wing on the trike (fig. 20).

WARNING
DO NOT FLY WITHOUT THE NOSECONE!

6. PREFLIGHT PROCEDURE

Conduct a complete preflight inspection of the wing, checking all assemblies, which have not already been checked. Every bolt, nut, pin, safety ring, and fastener of any kind should be checked during every pre-flight. A full pre-flight inspection should precede every flight you make, not just the first flight of the day.

Carefully check the entire length of the leading edge pocket to insure that the Mylar insert is lying flat in the pocket. If any section of the Mylar is folded under, de-tension the crossbar, remove as many battens as necessary and unfold the Mylar.

Along the left leading edge:

Check that the strut is properly secured, safety wire is engaged and the safety ring is installed (fig. 21). Open the crossbar / leading edge junction access zipper and look inside, making sure that the crossbar and the main sprog are properly secured (fig. 22). Close the crossbar / leading edge junction access zipper.



Figure 21



Figure 22



Figure 23

Along the trailing edge, left wing

Check that there are no tears in the sail material along the trailing edge.

Check that all battens are properly secured.

Check that the outboard sprog is properly secured in position supporting the last outboard cambered batten.

Check that the inboard sprog is properly secured in position with Velcro (or buckle on the latest models) supporting the transverse batten.

At the left wingtip

Check that the tip lever batten is properly installed.

Check that the sail mounting strap is properly installed and secured with Velcro (fig. 23).



Figure 24

From the rear keel

Check that the shackle of the sweep wires is secured on the hook on the keel tube (fig. 24). Check the rear cables making sure there are no kinks or twisted thimbles.

Along the trailing edge, right wing: Same as for the left wing.

At the right tip: Same as for the left tip.

Along the right leading edge: Same as for the left leading edge.



Figure 25

Under the wing at the control bar: Sight down the downtubes, making sure that they are straight.

WARNING

DO NOT FLY WITH BENT DOWNTUBES!

Check that the strut is properly secured to the control frame and the safety ring is installed.

Check for proper installation of all nuts and safety rings at the control bar corners (fig. 25).

Check the sweep wire for wear.

Check the crossbar center plate's assembly including the sweep wires/X-bar junction and the center bolt (fig. 26).



Figure 26



Figure 27

Visually inspect the crosstubes by sighting along the length of the crosstubes looking for any evidence of damage.

Check the control frame apex, and the hang block bracket hardware (fig. 27).

7. ATTACHING THE WING TO THE TRIKE

1. Check the ignition switch on the trike is off. Install the wing mount bracket on the lower pylon as shown on the figures 28 and 29.



Figure 28



Figure 29

2. Position the wing on its control frame, facing into the wind, with the nose on the ground.
3. Disconnect the lower part of the front brace tube from the bracket on the lower pylon. Pressing the push pins fold the front brace tube all the way in. Hold down the main pylon of the trike and rest the lower end of the front brace tube on the pilot's sit.

4. Wheel the trike behind the wing. Lift the control frame of the wing up and rest the base bar on the wing mount bracket. Fasten straps of the mount bracket around the base tube (fig. 30).



Figure 30



Figure 31

5. Attach the front brace tube in to position using the quick pin (fig. 31).
6. Lift the nose of the wing up until high enough to connect the hang bracket of the wing to the main pylon of the trike. Insert the heart bolt, tighten nut firmly and secure with a safety ring.

7. Connect backup loop so that it passes over the keel and back to the pylon. Tighten a nut and secure with a safety ring (fig. 32).



Figure 32



Figure 33

8. Install the nose cone of the wing by applying the top Velcro first then gently tension over the nose plates and attach the Velcro to the undersurface of the wing.

9. Sit in the pilot's seat. Undo straps around the base tube. Take a firm grip on a base tube and lift it up on your knees first and then all the way up until the push pin of the front brace tube click in position. Install the quick pin in position to double secure the front brace tube from folding in (fig. 33).

10. Go to the back of the trike. Install the clamp bolt of the main pylon in place. Check that all clamp bolts are tightened up (fig. 34).

11. Remove the wing mount bracket from the lower pylon.

Now the ultralight is ready for pre flight inspection (fig. 35). Conduct a complete pre flight of the trike and the wing.



Figure 34



Figure 35

8. REMOVING THE WING FROM THE TRIKE

See section **Attaching the Wing to the Trike** and use reverse procedure.

1. Position the trike facing into the wind. Check the ignition switch on the trike is off.
2. Install the wing mount bracket on the lower pylon.

3. Remove the upper clamp bolt off the main pylon.
4. Remove the quick pin from the front brace tube.
5. Sitting in the pilot's seat and holding the base tube, press the push pin on the front brace tube at the same time and lower the wing on your knees first and then all the way down until the base tube rests on the wing mount bracket.
6. Fasten straps of the mount bracket around the base tube.
7. Remove the nose cone.
8. Detach the safety strap. Remove the heart bolt from the hang bracket and lower the wing with its nose on the ground.
9. Remove the quick pin from the front brace tube / lower pylon joint and rest the lower end of the front brace tube on the pilot's seat.
10. Undo straps around the base tube.
11. Lift the base tube up and wheel the trike back and out from the wing.
12. Remove the hang bracket from the wing.

9. SPEED TO FLY

The range of ***trim speed*** for the Fox-13TL is 54 - 55 km/h (33 - 34 mph).

The range of the ***stall speed*** for the Fox 13TL is 36 - 37 km/h (22 – 23 mph). The wing is stable at the beginning of stall. While pushing out the base bar, the bar pressure is progressively increase.

The Fox TL, depending on the wing load, speeds up to 86 - 90 km/h (53 – 56 mph), being essentially roll neutral, with no tendency to yaw. The bar pressure will increase progressively as the speed increases.

WARNING

ALL SPEEDS ARE GIVEN WITH AEROS NANOLIGHT TRIKE.

10. FOX 13TL BREAKDOWN

Breakdown of the wing is the reverse of assembly.



Figure 36

1. Remove the nosecone. Put the nose of the wing on the ground. Remove the hang block from the keel tube. Remove any instruments from the control frame (fig. 36).
2. Disengage the outboard sprogs. Pull the sprop out of the leading edge receptacle, swing it towards the leading edge and fix it with the Velcro.
3. Remove the tip lever battens.
4. Disengage the inboard sprogs. Undo the Velcro strap (or buckle on the latest models) and let the sprop to swing towards the leading edge.

5. De-tension the crossbar sweep wires.

6. Remove all battens out of the sail except for the nose batten and store them in the batten bag.
7. Remove the transverse battens.
8. Install the wingtip protection bags.
9. When holding the rear part of the keel tube, lower it down until the wingtips of the wings rest on the ground (fig. 37).
10. Detach both struts and store them in the struts bag.
11. Fold the wings all the way in to the keel pulling the sail over the top of the leading edges. At each wingtip, remove the tip cover bag.
12. Detach the front wires from the hook on the bottom nose plate. Lift up the nose batten and lower it down so that the V-tip of the batten positioned aside of the keel tube (fig. 38).



Figure 37



Figure 38

13. Pull the sail out away from the keel until it is even on top and bottom. Roll the sail gently and carefully as shown on the figure 39.



Figure 39

NOTE

Try to roll the sail in such way that the leading edge portion remains as smooth as possible. Do not attempt to stuff the sail between the Mylar pocket and the leading edge tube at any point where you feel resistance, and do not attach the Velcro ties tight so as to induce creases in the Mylar or leading edge sail material.

Working from the trailing edge, roll the sail tightly to the leading edge and install the wing tip cover bag.

14. Finish rolling the sail in the area of the outer sprogs. Secure the sail with the Velcro sail ties.

15. Stow the battens in the batten bag in the front part of the wing.
16. Install the sail Velcro straps around the sail and stow the nosecone under the most forward Velcro.
17. Install the wing bag. Flip the wing over onto the ground. Detach the control bar. Fit the control bar in the protection bag and stow it between the leading edges in the aft part of the wing.
18. Fold up the control frame and install the control frame bag, lay it down against the keel.
19. Zip up the wing bag.

11. WING TUNING

Properly tuned, the wing is safe, comfortable and fun to fly. The wing has been tested and tuned by the manufacturer or your dealer. However, in case you have enough experience, you may tune the wing by yourself, as written below, if necessary. There are a number of adjustments that affect the flight characteristics.

WARNING

DO NOT PERFORM MORE THAN ONE ADJUSTMENT AT ONCE. IF YOU DO NOT HAVE ENOUGH EXPERIENCE TO TEST FLY THE WING, ASK MORE EXPERIENCED PILOT TO DO IT FOR YOU. IT SHOULD BE PERFORMED IN SMOOTH AIR AND WITH CAUTION.

BATTENS

The battens will need to be compared and adjusted to match the batten profile template at regular intervals. Small variations in batten camber (± 10 mm at the trailing edge) will not have significant effect on flight characteristics.

BATTEN TENSION

With some airtime on the wing the battens tension may get too loose, this may cause the trailing edge to flutter. If the battens tensioned too much, the handling will become harder. Make sure the battens tensioned on both wings identical.

All battens on the Fox 13TL are tensioned by lever batten tips. The desired batten tension can be easily adjusted by the threaded batten tip adjuster.

To increase batten tension rotate the threaded lever batten tip adjuster counter clockwise. To decrease batten tension rotate the threaded lever batten tip adjuster clockwise.

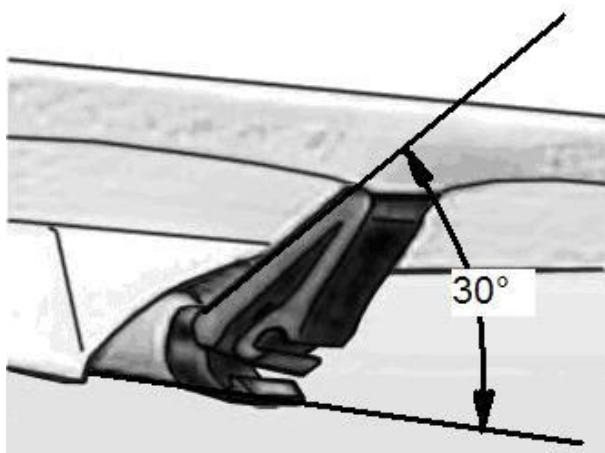


Figure 40

The correct batten tension is checked as described below:

Install the folding clip in the hem at the trailing edge of sail and start to clip the batten, the folding clip should be at approximately 30 degrees to the batten shaft as tension starts to come on the clip (fig. 40).

As the folding clip is closed, the sail should become tight without obvious wrinkles. The clip should not be difficult to close.

SAIL MOUNT CAPS ADJUSTMENT



Figure 41

The turn of the wing can be corrected by rotating one of the sail mount plastic caps (fig. 41). Left turn is corrected by twisting the right sail cap clockwise (twisting the sail up at the trailing edge). Right turn is corrected by twisting the left sail mount cap counter clockwise (twisting the sail up at the trailing edge). If rotation of the plastic cap on one side is not enough to compensate turn, you can at the same time rotate the plastic cap on another wing in opposite direction.

CG ADJUSTMENT

CG adjustment is done by changing the location of your hang point along the keel. The farther forward your hang point is, the faster the wing will trim, the less effort will be required to fly fast, and the more effort will be required to fly slow.

On the Fox 13TL, the hang point position is adjusted by repositioning the hang block along the keel tube.

12. MAINTENANCE

This section contains a recommended schedule of periodic maintenance. None of the items in this section are a substitute for the continual and consistent practice of proper pre-flight inspections and immediate maintenance of any items on the wing, which require it. Safety requires that your wing be fully airworthy for every flight. Nuts and bolts must always be secure, safety rings must always be in place, and damage to any part, which could compromise the airworthiness of the wing, cannot be tolerated. If you have a question about the need to repair or replace some part of your wing, feel free to contact your dealer or Aeros directly. It is not always obvious which items require attention and which may not. Minor dents or dings in a non-critical location on an airframe tube may not require any repair or maintenance. On the other hand, a wire that has been kinked one time can fail very quickly after that, and should be replaced immediately.

We recommend that you have all maintenance work done by your Aeros dealer.

EVERY SIX MONTHS

1. Check the sail washout as described in the last section.
2. Check your battens on a flat level floor against the batten diagram provided, and correct any that deviate from the pattern by more than 6 mm (1/4").
3. Have a complete inspection performed on the wing and replace any suspension system component that shows any wear, and any cable that shows any kinks, wear, damage, corrosion, etc.
4. Inspect all bolts for tightness, all safety rings for proper installation and possible damage. Inspect plates and fittings for damage, holes in tubes for elongation.
5. Inspect the sail for wear, tears, UV damage, loose stitching, etc.
6. Lightly spray all zippers on the wing with silicone spray lubricant. Also spray your battens before you install them in the wing to lubricate the insides of the batten pockets. Do not use any other type of lubricant. Wipe off any excess silicone so that it does not attract dirt.
7. Inspect the outboard sprogs. If the sprogs have been loaded heavily, it is possible that the sprog tubes may have been bent.

EVERY YEAR

In addition to the normal six month service items, also perform the following:

1. Have the sail completely removed from the frame and disassemble all frame components. Inspect every part of the wing for any damage or wear. Inspect the tubes for straightness and for signs of corrosion.
2. Anytime you have the sail off the frame, inspect all of the batten pockets and batten pocket terminations.
3. Replace hang block heart bolt.

SPECIAL CIRCUMSTANCES

1. Any time you suffer a crash or extremely heavy landing you should have an "annual" inspection done on your wing to insure that you find all damaged parts.
Heavy landings may also impose very high loads on the sprogs and bridle lines. Inspect them accordingly.
2. If your wing is ever exposed to salt water you will need to have the wing completely disassembled in accordance with the recommended annual inspection procedure. All frame parts will need to be disassembled, including the removal of all sleeves and bushings, flushed liberally with fresh water and dried completely.
3. If you fly in a dusty or sandy environment, it will help to prolong the life of your batten pockets if you wipe each batten with a rag before you install it in the sail.
4. A wet wing must be dried before storing. Do not leave your wing wet for more than one day, because corrosion may result.
5. Take special care to avoid ice-covering the wing, particularly the leading edge in wintertime.
6. If you fly regularly at the coast in windy conditions, be aware that the sea mist spray can have the same effect. Hose down your wing after such flights, and keep a special lookout for corrosion.
7. Keeping your sail clean will extend the life of the cloth. When cleaning the entire sail you should generally use only water and a soft brush. You may clean small spots or stains with any commercial spot remover that is labeled for use on polyester.

A NOTE ABOUT CABLES AND CABLE MAINTENANCE

The cables which support the wing's airframe are critical components of the wing's structure, and must be maintained in an airworthy condition. It is a general practice in the design of aircraft structures to design to an ultimate strength of 1.5 times the highest expected load in normal service.

The wing's cables, like other structural components on the wing, are typically designed with a structural safety factor of only about 50% above the expected maximum load. No significant loss in cable strength can be tolerated.

A cable with even a single broken strand must be replaced before the wing is flown again. A cable which has been bent sharply enough to have taken a permanent set must also be replaced immediately.

Some degree of fatigue due to repeated bending of cables is almost unavoidable in an aircraft that is assembled and disassembled regularly.

SPROG MEASUREMENT

The Fox 13TL uses inboard and outboard sprogs in combination with one transverse batten on each inboard sprop. Each transverse batten spans two top surface battens, so a total of six top surface battens are supported. The sprop system is the primary component of the system, which provides pitch stability. The function of the system is to support the trailing edge of the sail at low angles of attack, and thus provide a nose-up pitching moment. The inner sprogs are adjusted at the factory to their proper settings. The outer sprogs are non-adjustable.

The inner sprop angles should be checked regularly. This can be done with any digital electronic angle meter as follows:

1. Fully set up the wing on a reasonably level surface.
2. Rest the keel tube on a support and using the angle meter as shown on the figure 42, set the angle meter to zero. Maintain this keel tube angle during further measurements.



Figure 42



Figure 43

3. Place the worktop of the angle meter under the middle part of the inner sprog close enough to the sprog wire attachment point so that the entire worktop surface of the angle meter touches the sprog (fig. 43).

The scale of the angle meter will show the sprog angle.

The inner sprogs for Fox 13TL should be set to 12 deg.

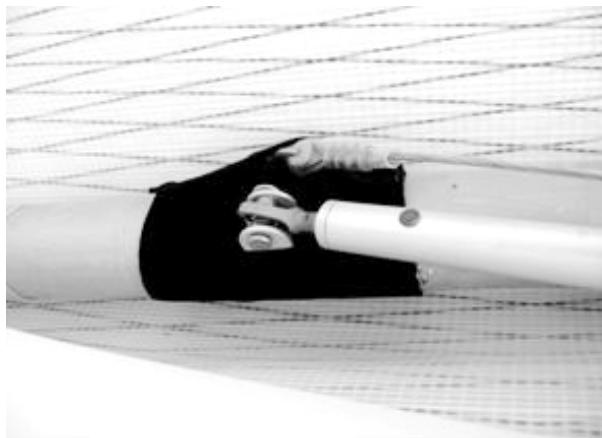


Figure 44

To adjust the main sprog angle:

1. Remove the pin from the sprog threaded adjuster at the front of the sprog. To raise the sprog angle turn the end of the sprog threaded adjuster counter clockwise. To lower the sprog angle turn the end of the sprog threaded adjuster clockwise (fig.44).
2. Re-install the pin to the sprog threaded adjuster and press down firmly on the rear end of the sprog to seat the cable before checking the measurement again.

13. REMOVING THE SAIL FROM THE AIRFRAME AND RE-INSTALLING

Many maintenance and repair procedures will require the removal of the sail from the frame. Please follow these instructions when removing and reinstalling the sail. Please read all the instructions for each operation before beginning.

SAIL REMOVAL

You will need an unobstructed area 2 m by 9 m (6x30 ft). Make sure the surface is clean. If it is abrasive, you should either cover it with protective tarp or be extremely careful not to scrape your sail. Since Fox 13TL is a single surface wing the sail removal is rather easy to perform.

1. Unzip and remove the wing bag and put struts, battens and the control bar aside. Remove Velcro straps and all protection bags from the wing.
2. Position the wing so that the control frame is on bottom and spread the wings slightly. Remove all battens from the sail including the keel batten. Remove the screws that fix the nose part of the sail to the leading edge tubes (fig.). Undo the sail mount webbing Velcro and remove sail mount webbing from the plastic end at the rear leading edge (fig.).

NOTE

Reassemble the hardware removed in its place in original order so that it doesn't get lost. All disassembled assemblies on the glider must be reassembled in the proper order and orientation.

3. Remove the keel pocket mounting screw from the keel pocket webbing at the rear part of the keel tube. Detach the rear cables from the keel tube.
4. Open the crossbar / leading edge tube junction zipper and unbolt the crossbar from the leading edge. Detach the sprog wire at the same time and feed it through the hole and out of the sail. Remove the outer parts of the crossbar tubes out of the sail and slide the entire crossbar along the keel tube backwards.
5. Detach the main sprog tube from the sprog threaded adjuster.
6. Slide the sail out of the frame. If you encounter resistance, stop and find out what is hanging up.
7. If you need to send the sail to the factory for repair, remove the Mylar inserts. The Mylar inserts removed from the front end of the Mylar pocket. It helps to secure the opposite end of the sail to something solid, so that you can lay the leading edge out straight and pull the Mylar straight out of the pocket.
Fold and pack the sail carefully if you plan to ship it for repair.

RE-INSTALLING THE SAIL ON THE FRAME

Same as for breakdown procedure, you will need an unobstructed area 2 m by 9 m (6x30 ft) with clean surface.

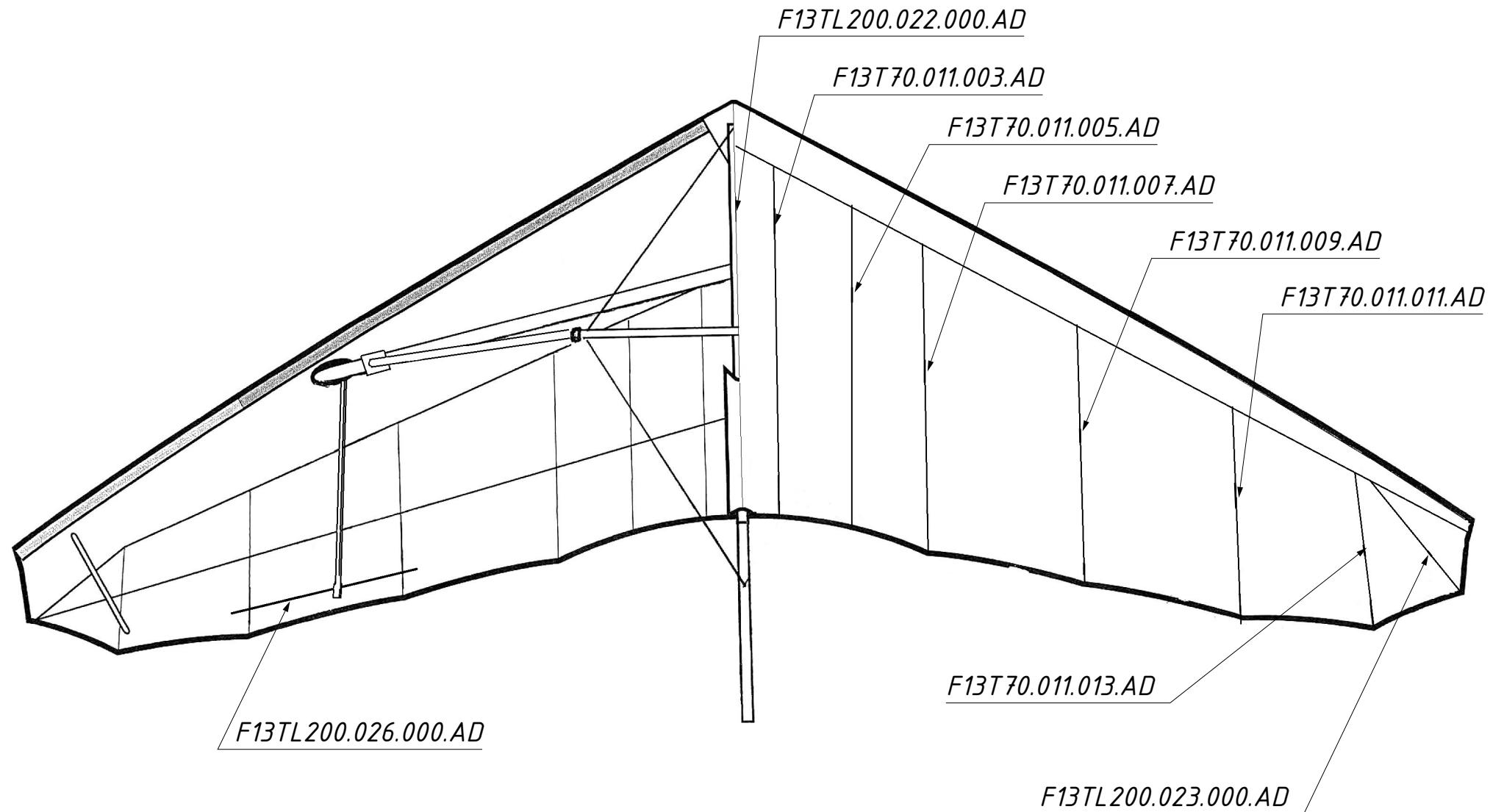
1. Install the Mylar inserts, if they were removed before, in the sail. Make sure you install it right side up; the slit edge is at the front and on the bottom. The easiest way to install the Mylar insert is to push it into the pocket using a long lofting batten attached to the end of the Mylar insert, which is first inserted in the pocket.
You will have to stop from time to time to make sure the Mylar insert is properly lying flat in the pocket. Do not push the Mylar insert too far into the pocket (the front edge of the insert should be aflush with the front edge of the insert pocket or the insert should stay approx. 5 mm out). Make sure there are no folds in the Mylar insert, especially at the tips. Make sure the insert wraps in the proper direction to follow the sail around the leading edge as it enters the pocket.
2. Position the sail on the floor with the keel pocket facing down and the wings folded so that the leading edges lie along the length of the root line.
Position the frame with the crossbar detached from the leading edges and control frame facing down so that the rear end of the leading edges are at the nose of the sail. Slide the entire crossbar along the keel tube backwards. Slide the leading edges into the sail through the nose opening, making sure that the leading edges pass properly into the leading edge pockets of the sail and don't get caught at the rear of the bottom surface near the root. As you feed the frame slowly into the sail, check periodically to see that none of the hardware is snagging on the sail. At certain stage don't forget to insert the keel tube into the keel pocket.
3. When the frame is fully inserted, slide the tip part of the sail on both rear leading edges forward, towards the nose as far as necessary to extract washout struts out through the washout holes in the sail.
4. Open the crossbar / leading edge tube junction zipper and bolt the crossbar to the leading edge tube and splint the joint.
5. Attach the main sprog tube to the sprog threaded adjuster. Attach the sprog wire, feeding it through the corresponding hole inside the sail before attaching it.
6. Fix the nose part of the sail at the front part back to the leading edge tubes with screws.
7. Reach into the sail from the sail tip, find the sail mount strap and stretch it towards the aft end of the leading edge, using the handle on the mount strap. Position the sail mount strap to the end cap slot of the leading edge tube and make sure the sail is mounted properly. Close the safety Velcro around the leading edge tube.

8. Attach the keel pocket webbing with the keel pocket mounting screw to the rear part of the keel tube.
Attach the rear cables to the keel tube.
9. Install the nose batten.
10. Finish assembling the wing as written in section FOX 13TL SET-UP PROCEDURE.

14. IN CLOSING - A FEW WORDS ON YOUR SAFETY

- Flying nanolight trikes is a great fun but it is, as any form of flying, associated with risks. Your safety can be greatly enhanced by following a few simple rules:
 - Your wing is delivered to you ready to fly. Do not make any adjustments, which are not described in this manual.
 - If you are in doubt about any aspect of your wing, you should consult your dealer or Aeros for advice.
 - Fly a wing suited to your level of ability. A new risk may arise when you first fly a new type of the wing.
 - The reactions of your new wing may well differ from those of the wing you were used to. In order to keep this risk low, we recommend that you gradually become familiar with your new wing.
 - Before every take-off always do both an assembly check and a pre-flight check of your wing and a trike unit.
 - Do not take off if the sail is wet or covered with ice, especially the leading edge, as the stall speed will increase significantly.
- ***Always fly with a dry sail!***
 - A wet wing must be dried before storing. Do not leave your wing wet for more than one day because corrosion may result.
 - Don't push your luck; it is your responsibility to know the limits of your wing and the limits of your own experience. Remember that ultimately your safety is your responsibility.
 - Fly only in places that are suitable for flying.
 - With proper care and maintenance, your wing will retain a high level of airworthiness for many years.

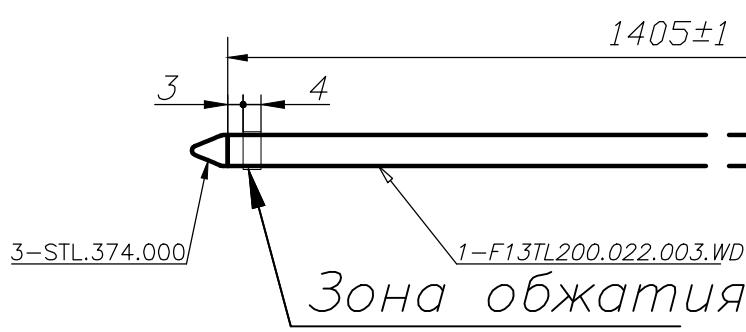
Have fun. Fly safely.
Aeros Team



AEROS

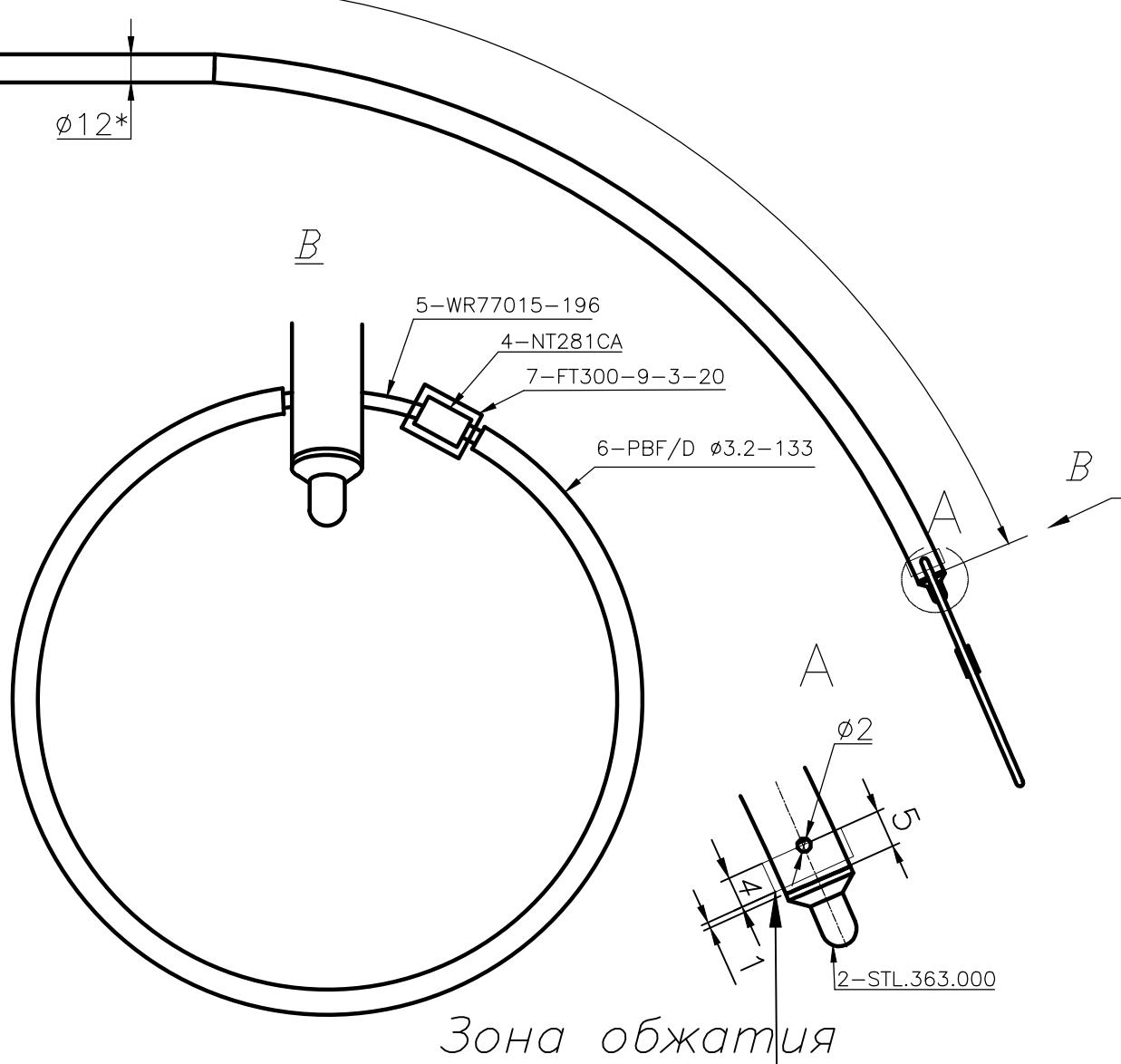
F13TL200.010.000.AD
Battens Set (Комплект лат)

Scale:



- Покрытие дет. БЧ: Ан. Окс. нв.
- Неуказанные предельные отклонения по ОСТ 00022-80.
- *Размер для справок.
- Клеймить и маркировать по ОПИ-63-79 на бирке.

Ноз	Обозначение	Наименование	Кол
1	F13TL200.022.003.WD	Tube L=1405	1
		Труба 12x1 ОСТ 1 92096-83 В95 ГОСТ 4784-97	
2	STL.363.000	Plug-on Tip (Латный упор)	1
3	STL.374.000	Batten Tip (Латный носик)	1
4	NT281CA	Press Sleeve (Ниппель)	1
5	WR77015-196	Wire (Трос) 7x7 d1.6 L=196	1
6	PBF/D-3.2-133	Hot Shrink Tube(Термоусадка) L=133	1
7	FT300-9-3-20	Hot Shrink Tube(Термоусадка) L=20	1

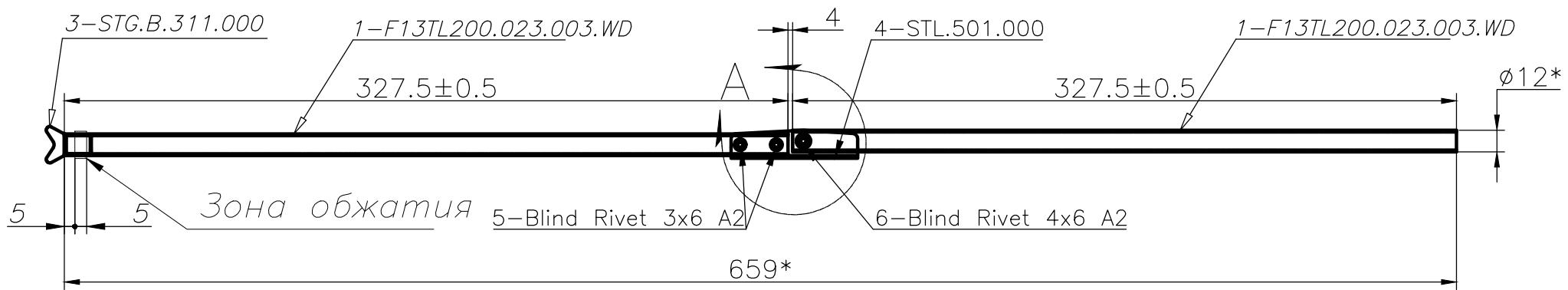


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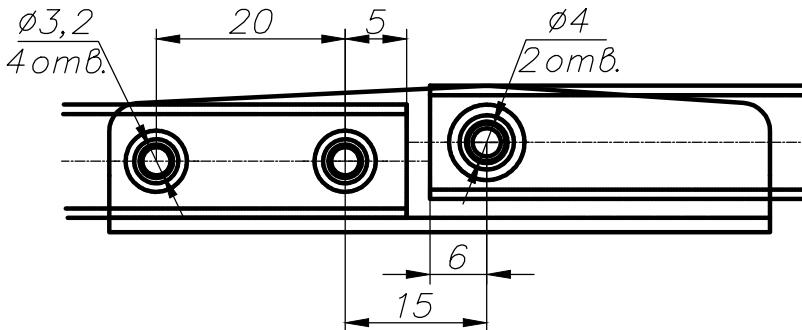
F13TL200.022.000.AD
Keel Batten (Лата килевая)

Scale:

Кол. на изделие - 2шт.



A(1:4)



- Покрытие деталей БЧ: Ан. Окс. нв.
- Неуказанные предельные отклонения по ОСТ1 00022-80.
- *Размеры для справок.
- Клеймить и маркировать по ОПИ-63-79 на бирке.

Поз.	Обозначение	Наименование	Кол
1	F13TL200.023.003.WD	Tube L=327.5	2
		Труба 12х1 ОСТ 1 92096-83 ДЛ67 ГОСТ 4784-97	
3	STG.B.311.000	Batten Tip (Латный фиксатор)	1
4	STL.501.000	Channel (Шв-р упорной латы)	1
5	Blind Rivet d3x6	Заклепка вытяжная d3x6 A2	4
6	Blind Rivet d4x6	Заклепка вытяжная d4x6 A2	2

AEROS

by:

Date:

F13TL200.023.000.AD
Plug-on Batten (Упорная лата)

Scale:

F13TL200.030.000.AD

Первич. примеч.

Справочный №

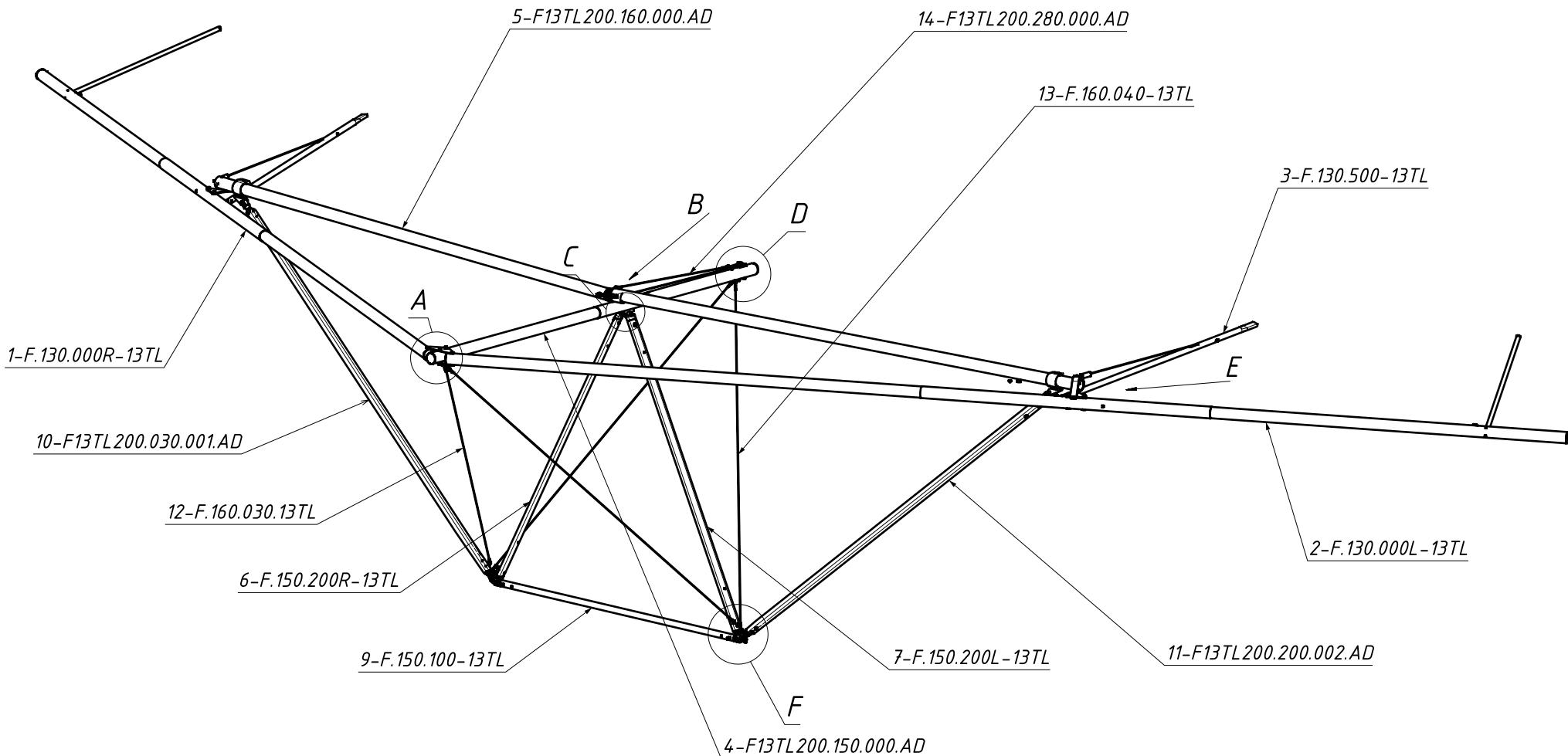
Подп. и дата

Инв.№

Подп. и дата

Взам. инв.№

Инв.№



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Разраб.	.			
Проверил				
Т.контр.				
Нач.дюро.				
Н.контр.				
Утв.	Дробышев С.			
		Литера	Масса	Масштаб
				1:20
		Лист 1	Листов 7	

Формат А3

F13TL200.030.000.AD

A (1:1)

53-Nut M6, self-locking (DIN 985)
 59-Washer M6 (DIN 125)
 36-930.302-89 (6x89)

53-Nut M6, self-locking (DIN 985)

59-Washer M6 (DIN 125)

34-930.302-74 (6x74)

24-910.101-01

25-910.101-02

16-920.110-02

29-930.101-50

33-930.302-69 (6x69)
 59-Washer M6 (DIN 125)
 53-Nut M6, self-locking (DIN 985)

Первич. примен.

Справочныи №

Подп. и дата

Инв.№

Подп. и дата

Взам. инв.№

Инв.№

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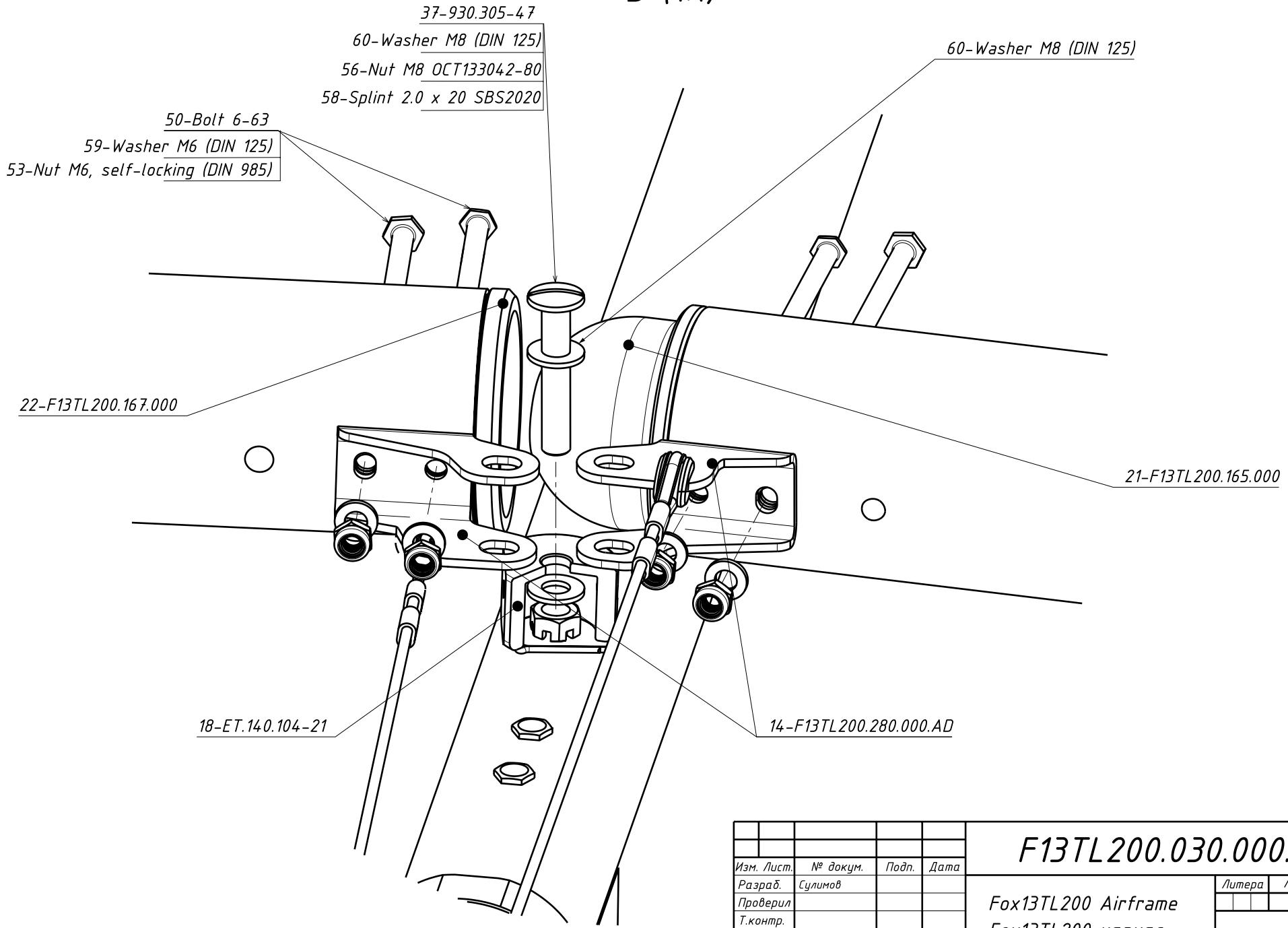
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Разраб.							
Проверил							
Т.контр.							
Н.контр.							
Утв.							
		Дробышев С.					

Fox13TL200 Airframe
Fox13TL200 каркас

Формат А3

F13TL200.030.000.AD

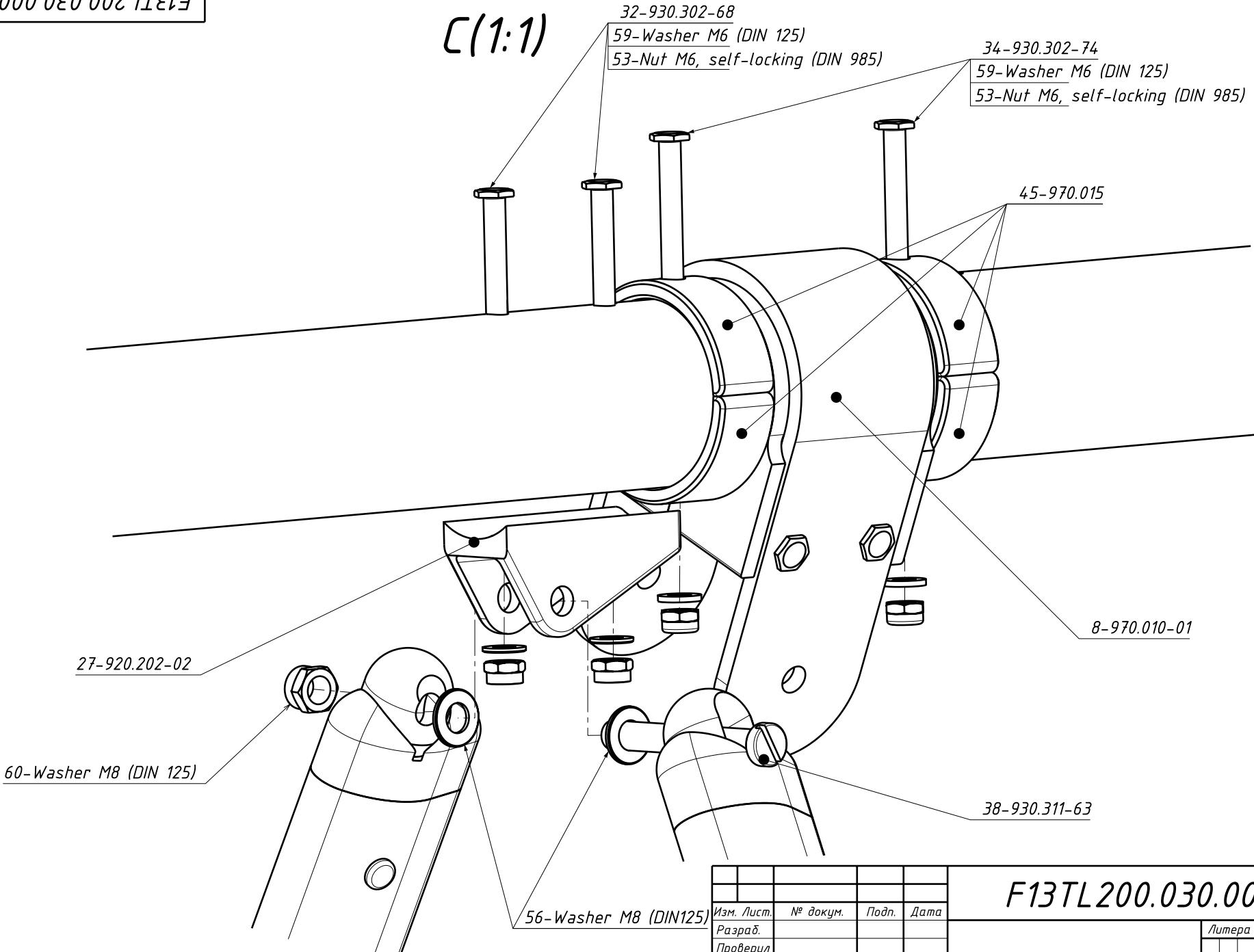
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Проверил					Fox13TL200 каркас			
Т.контр.								
Н.контр.								
Утв.		Дробышев С.						

F13TL200.030.000.AD

C(1:1)



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Изм. Лист.	№ докум.	Подп.	Дата						
Разраб.									
Проверил									
Т.контр.									
Н.контр.									
Утв.	Дробышев С.								

F13TL200.030.000.AD

D(1:1)

35-930.302-68
 59-Washer M6 (DIN 125)
 53-Nut M6, self-locking (DIN 985)

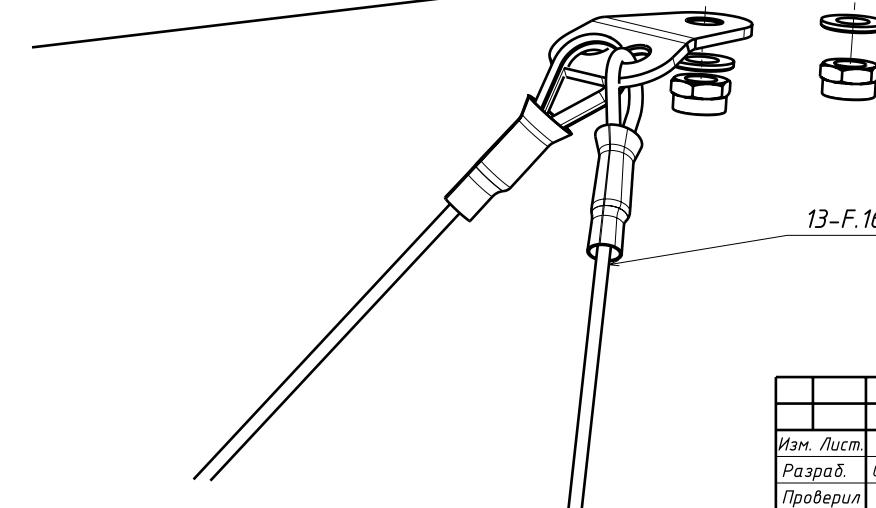
32-930.302-68
 59-Washer M6 (DIN 125)
 53-Nut M6, self-locking (DIN 985)

14-F13TL200.280.000.AD

15-920.110-01

43-940.103-4852

13-F.160.040-13TL



Инв. №	Подп. и дата	Взам. инв. №	Инв. № з/з	Подп. и дата

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Изм.	Лист	№ докум.	Подп.	Дата
Разраб.		Сулимов		
Проверил				
Т.контр.				
Н.контр.				
Утв.		Дробышев С.		

Fox13TL200 Airframe

Fox13TL200 каркас

Литера	Лист	Листов
	5	7

Первич. примеч.

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Инв. №

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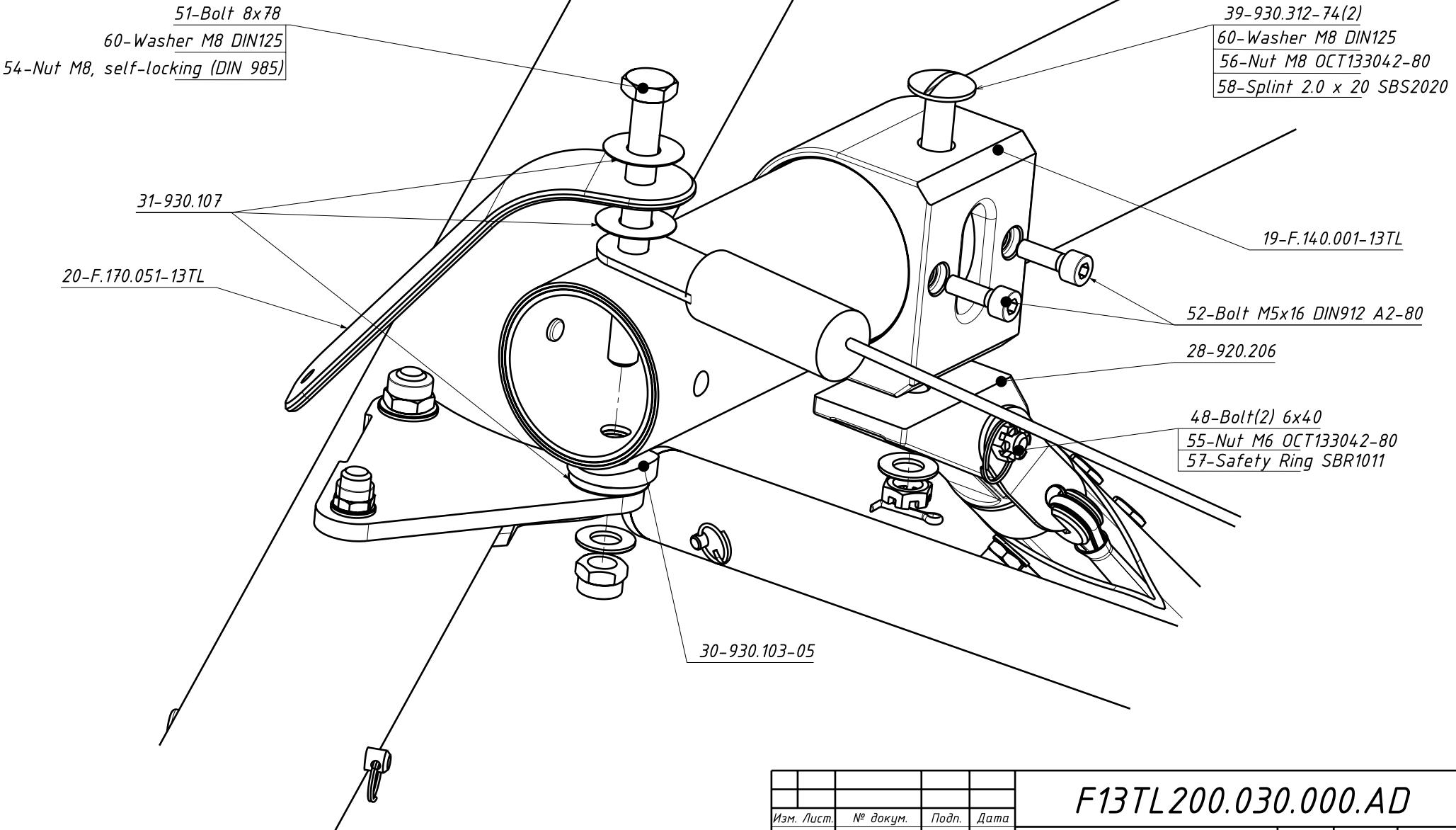
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Формат А3

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E(1:1)



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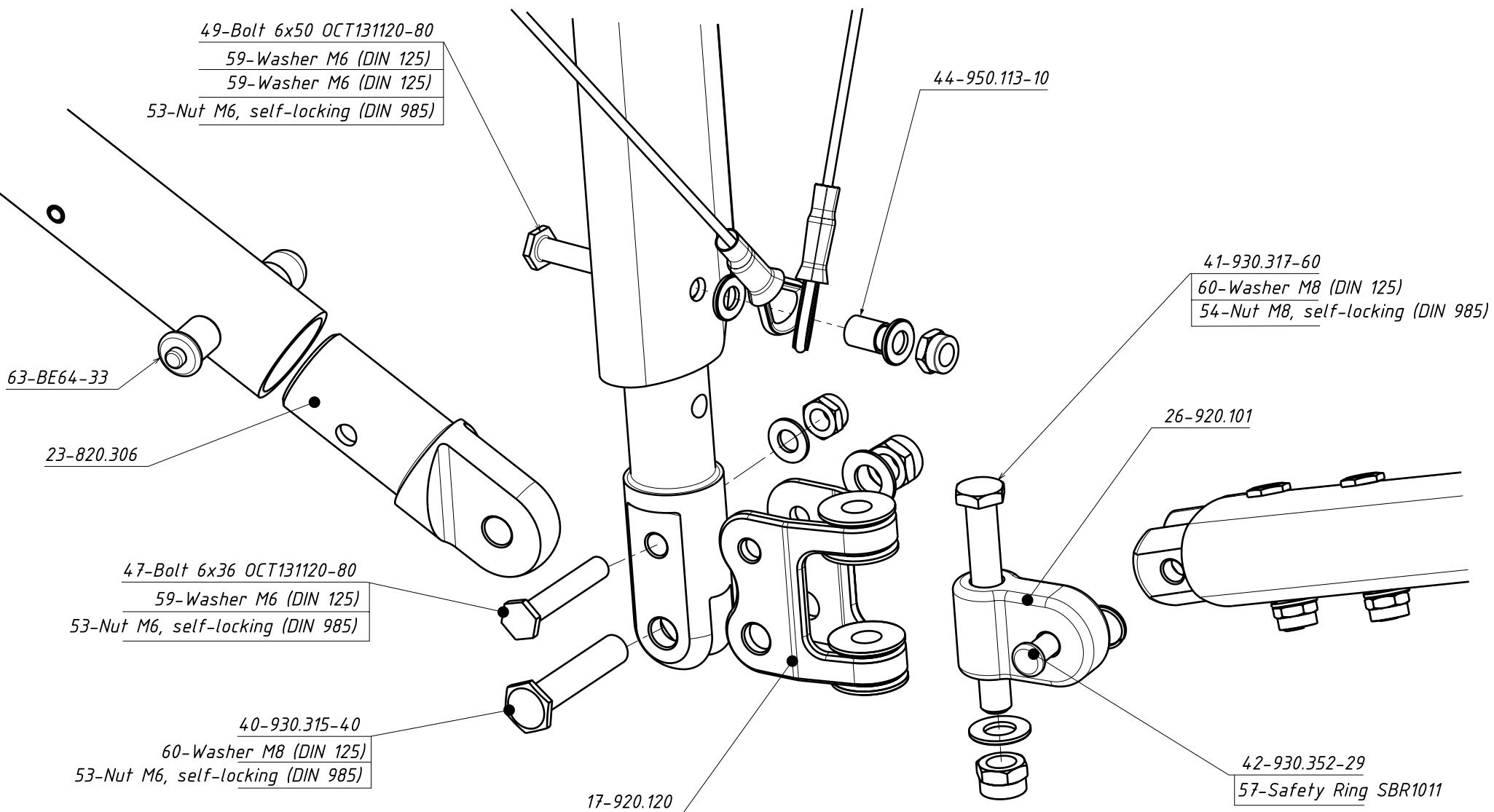
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Проверил				Fox13TL200 каркас			
Т.контр.							
Н.контр.							
Утв.	Дробышев С.						

Формат А3

F13TL200.030.000.AD

F(1:1)



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Проверил					Fox13TL200 каркас			
Т.контр.								
Н.контр.								
Утв.		Дробышев С.						