

TRIKE WING

Profi TL

OWNER / SERVICE MANUAL



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Schemes

1. INTRODUCTION

Thank you for purchasing Aeros wing for your trike.

PROFI TL is a new innovative non-kingposted wing for two-seater trikes. It is the result of extensive design and development program aimed at optimizing your level of safety and satisfaction as a pilot, through high performance and strength of construction. PROFI TL is designed for experienced pilots, not for beginners and will provide you with fast cruising speed. No kingpost means that you can store the wing in a hangar whilst been fixed to the trike. 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 is fast and easy.

Profi TL wing is safely controllable and stable at a wide range of operating speeds but your trike should be properly adapted to fly with speedy Profi TL. The strength of the wing is sufficient for different conditions of flight with defined load.

Please read and be sure you thoroughly understand this manual before flying your PROFI TL. Be sure you are thoroughly familiar with set up, break down, preflight and maintenance procedures as described in this manual.

Please read thoroughly the SAFETY INSTRUCTIONS. Be sure your Profi TL wing is properly adapted to your trike as well as your trike is adapted to use with Profi TL wing. Aeros recommend this wing only to be used if trike has the wheel fairings with fins. A thorough test flight must be performed by a highly qualified test pilot before you fly your microlight.

Please visit us regularly at Aeros web page: <http://www.aeros.com.ua>
Having any doubts or questions contact us by e-mail: info@aeros.kiev.ua

We wish you a 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

2.1. TECHNICAL INFORMATION

Wing type	PROFI TL 14
Sail area, sqm	14.5
Wing span, m	10.0
Aspect ratio	6.9
Nose angle, deg	128
Max airspeed, kmph	140+
Stall speed, kmph (with max load)	62
Speed of max glide angle, kmph (with max load)	70
Range of operating overloads	+4/-2
Ultimate tested strength, G	+6/-3
Total load max, kg	450
Weight without bag, kg	60.0

2.2. OPERATING LIMITATIONS

* PROFI TL is not designed to fly at bank angle over 60 degrees or pitch angle exceeding 30 degrees. Operation in any of these modes may severely compromise your safety.

* The flying of any trike in presence of turbulence or gusty wind can result in flight inversion, structural failure of the wing and possible fatal injuries.

*** Performance of the wings with laminated leading edge can worsen in wet (rain, thick fog, dew, etc.) and ice-covering conditions, therefore we do not recommend to fly wings in such conditions, as this can compromise your safety.**

* The PROFI TL range of speeds and wing handling really impress and exceed all expectations. A microlight with this wing accelerates within seconds easily and fast; any increase in engine power affects directly the speed, not so much the climb rate. This creates possibilities and qualities for the trike, which the trike pilots in the past only could dream about.

But! Here are simple and definite dangers:

1) The easy and dynamic acceleration of a trike with the Profi TL wing requires from a pilot adaptation to a changed handling. The pilot must be experienced enough and with good flying abilities on trikes to understand the new requirements.

2) During the flight tests we found out that it may be a problem, if the trike Aeros 2-912, Profi TL has no wheel fairings with fins.

In that case the trike tends to progressively turn left when it is flying faster than 110km/h.

The progressive dynamic of such turns definitely startled Aeros test pilots and made them find out, that limits could be reached which are beyond controllability.

The reasons of this effect we found to be the following:

- powerful engines enable trikes to fly at higher speed, on the other hand they (with the large and heavy propellers) create a much larger moment around the longitudinal axis which moves (in case with the Rotax 912) the trike to the left (relative to the wing axis) with trike nose turning to the right. On the high speed (and high engine RPM) the right wing begins to slip with lift increasing, in result the trike will turn to the left;

-large, heavy multiblade propeller on high RPM works as gyroscope . So, during abrupt high speed turn the trike could not follow the wing trajectory(outer wing will slip) and, because of gyroscopic precession, could change the pitch angle. In this case the bank of the turn will increase violently;

-trike fairing with large lateral surface, especially in the nose part, create a strong destabilizing moment when it slips.

All these phenomena can be counteracted by fixing a stabilizing fins far enough behind the center of gravity of the trike body, or by increasing, concentrating the lateral surface on the rear part of the trike (like trike without fairing has), or by winglets (with fins) mounting on the wing .

No such effects were observed when flying Profi TL with trike Aeros 1-582.

This trike has the same accelerating and of course it requires from pilot adequate handling responses. But there are no dangerous regimes that are near the limit of controllability, which exist when flying the Aeros 2-912 Profi TL without the wheel fairings with the fins.

These observations in our mind the following requirements must be adhered when using the PROFI TL wing:

1. Using the Profi TL wing on the other trikes than the AEROS trikes require adapting of the hang point, height of the control frame, position of the control bar in flight and checking of sufficient clearance of any part of the wing to the propeller in any position possible to steer. These checks usually are done without mentioning. In case of the PROFI TL wing your trike has to be also adapted for Profi TL wing and a thorough test flight must be performed in which a highly qualified test pilot must check the microlight has no effect as described above.
2. It is clear that on trikes, which have large fairings, such as Aeros 2, Cobra, Class..., applying the Profi TL wing not acceptable, if flying without the wheel fairings with fins. Even with wheel fairings with fins, when using the Profi TL wing test flights by proficient pilots are without exception required to prove save handling in any situation.
3. The probability of observing such effects with trikes like Antares (Graffitti) and similar is much lower.
But they too are required to perform thorough flight test by qualified test pilot.
4. There were no such effects observed while using any trike with the standard PROFI with kingpost.

When ordering the PROFI TL You must consider all these aspects. In case You are not absolutely sure about Your choice please send to Aeros all information (picture, trike and engine characteristics) about the trike, on which the Profi TL is supposed to be installed, for discussion and analyzing the installation.

3. PROFI TL REASSEMBLY AFTER SHIPPING PROCEDURE

3.1. Unzip the wing bag. Undo the Velcro straps. Remove battens, the control bar and the outer leading edge tubes from the wing bag. Remove all packing material.

3.2. Unfold the sail along the leading edge to its full length. Attach the outer leading edge tubes to the front leading edge tubes according to the markings: L-left, R-right. The triangular marking on the leading edge tube #3 and the triangular marking on the leading edge tube #2 should match together (fig. 1, shown without the sail).

Working on one wing at a time and working with the appropriate leading edge # 3, fold the outer sprog, which is attached to the outer leading edge tube, forward. Slide the inboard end of the leading edge tube # 3 into the sail.

Align the outer leading edge properly so that the sprog bracket is on the inside of the leading edge, and slide the outer leading edge tube forward carefully until it engage completely on the

front leading edge tube, allowing the sprog end to come outside the sail at the access zipper (fig. 2 and fig. 3).



Figure 1



Figure 2



Figure 3



Figure 4



Figure 5

3.3. Tighten the sail along the leading edge by putting the sail mount webbing into the slot in the end cap of the outer leading edge tube. Secure the sail mount webbing to the outer leading edge with the sail mount webbing Velcro (fig. 4 and fig. 5).

NOTE:

The sail is attached to the leading edge tube using an inner strap, the outer strap is auxiliary and serves only as a tensioning handle.

3.4. Turn the wing on one side and spread the control frame down tubes. Install the control bar according to the markings. Fix the control bar with bolts and nuts so, that fixing nuts are pointing backwards, against the direction of flight (fig.6).

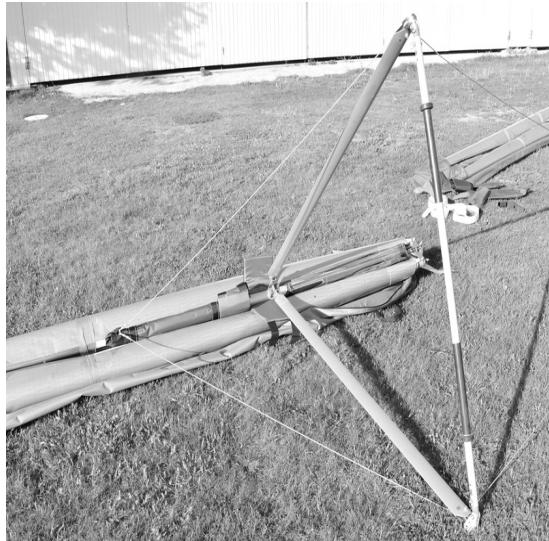


Figure 6



Figure 7

3.5. Lift the wing upright on its control frame (fig.7). Try to set the control bar on level ground. Do not attach the front wires for now.

3.6. By lifting up and back of the nose batten strings, push the nose battens fully back into the sail so that the batten tips rest in the holes on top of the keel tube (fig. 8).



Figure 8



Figure 9

3.7. Remove protection bags from the keel, from the control frame apex, from the hang bracket and from the crossbar central unit.

3.8. Pay attention to the control frame / keel tube junction, making sure it does not stay out of alignment (fig. 9).

3.9. Remove all Velcro ties and spread the wings approximately 30% from fully open.

3.10. Lay the struts on the ground as shown on the figure 10. Attach the struts according to the markings. L-left, R-right marks must be on the control frame side of the struts, on top. Attach the lower part of the strut to the control frame bracket using the pin and the safety ring (fig. 11). Do not attach the strut safety wire to the base tube for now.



Figure 10



Figure 11

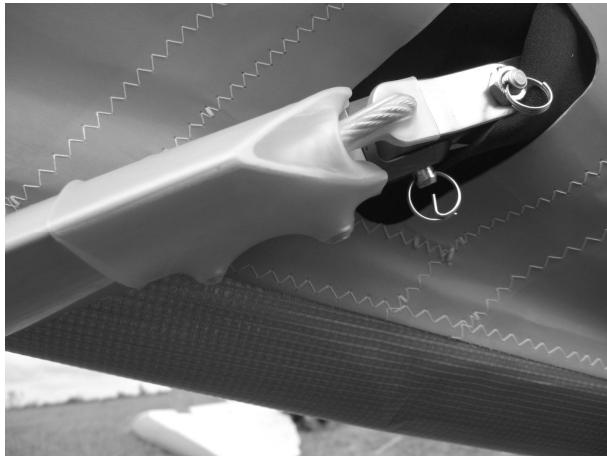


Figure 12

3.11. Lift the upper part of the strut and attach it to the crossbar junction. Attach the strut safety wire. It may be necessary to push the wing forward to be able to fair the holes when attaching the strut. Tighten the nut and secure with a safety ring (fig. 12). Repeat procedure for the other side of the wing.



Figure 13

3.12. Attach the bottom front wires and secure the nose catch of the bottom wires on the nose junction channel using the clevis pin and the safety ring (fig. 13).

3.13. Check that the sail mount webbing is in proper position in the slot of the outer leading edge tube end cap. Open the main sprog access zipper and look inside, making sure that the leading edge #3 stays in place and the triangular markings on the leading edge tube #3 and on the leading edge tube #2 match together.

3.14. Carefully spread the wings all the way, lowering the nose of the wing on the ground (fig. 14). Once the nose of the wing is on the ground the wings spread themselves. You will need an assistant to perform this procedure.



Figure 14



Figure 15

3.15. Attach the strut safety wires (left and right) to the base tube. Tighten the nut and secure with a safety ring (fig. 15). Attach the control frame corner protection cover with Velcro.

3.16. Attach the rescue system bridle to the wing, passing it through the corresponding hole in the sail and all the way through the rescue bridle palm on the top surface of the wing. Pass the rescue system bridle through the keel pocket palms. Note that on all wings manufactured before 2020 there were no rescue bridle palms.

3.17. Wheel the trike behind the wing, rolling the front wheel over the control bar. Check that the ignition switch and the key are in off position. Tilt the main pylon of the trike down (fig. 16).

3.18. Connect the trike pylon to the wing hang bracket (fig. 17). Insert the heart bolt, tighten the nut firmly and secure with a safety ring. Attach the back up loop, making u-turn around the keel tube. Connect the rescue system bridle.

3.19. Lift the nose of the wing to allow for the front wheel to be rolled rearward over the control frame so that the base tube is in front of the cockpit and the rear of the keel tube rests on the pylon. Make sure the protection pad on the main upper pylon is in proper position and protects the pylon against bottom rear wires.



Figure 16

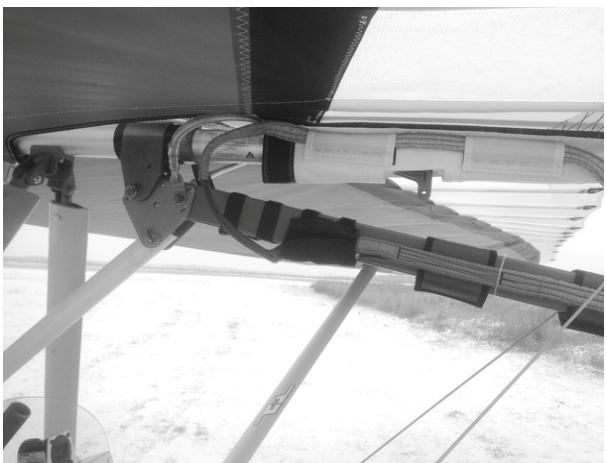


Figure 17

3.20. Remove the wingtip protection bags and install the cambered battens in the sail.

3.21. Check that the pull back (cross tube tensioning) wires for twisted thimbles and tangs. Take the shackle with one hand and attach it to the hook placed on the keel tube end.

3.22. Install the tip lever battens.

3.23. Tension the cumbered battens by installing the lever batten tips into the hems of the trailing edge.

3.24. Install the undersurface battens.

3.25. Deploy both the inboard sprogs and the outboard sprogs and secure them in position.

3.26. Fix the sail mount tangs at the nose part of the sail to the wing bolts (fig.18). Do not over tighten the mount nuts. When the fixing nut is properly tightened, the sail mount tang rotate freely on the fixing bolt.

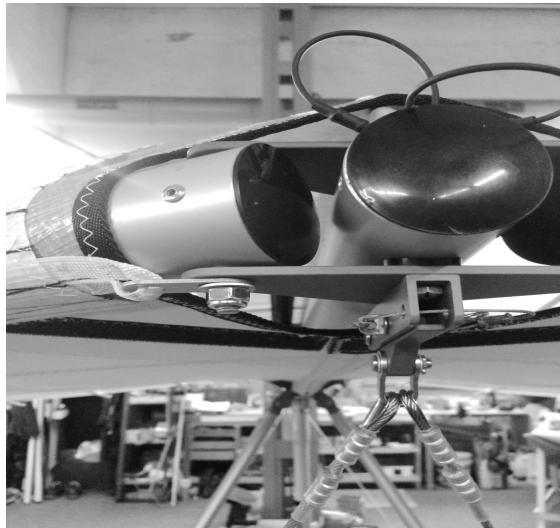


Figure 18

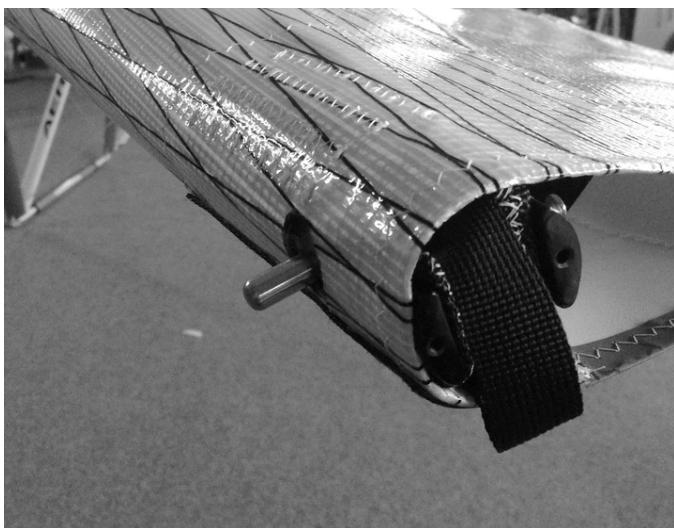


Figure 19

3.27. Take the winglets and find the winglet fixing rods packed inside. Install the winglets fixing rods to the leading edges #3 (fig. 19).

3.28. Install winglets.

3.29. While the base tube of the trike is still on the ground install the nosecone.

4. Profi TL BREAKDOWN FOR SHIPPING PROCEDURE

This process will basically be the reverse of reassembling after breakdown for shipping. Before beginning, read through the section above. Refer to the photos in the section above for reference, if necessary.

5. Profi TL SET-UP PROCEDURE

5.1. Lay the wing on the ground, with the bag zipper up. Lay the struts and the winglets next to the wing.

5.2. Undo the bag zipper and take out battens and the control bar.

5.3. Untie Velcro straps. Open the control frame apex protection bag (fig. 20).

5.4. Turn the wing on one side and spread the control frame down tubes. Install the control bar according to the markings. Fix the control bar with bolts and nuts so, that fixing nuts are pointing backwards, against the direction of flight (fig. 21).

5.5. Lift the wing upright on the control frame. Try to set the control bar on level ground.



Figure 20



Figure 21



Figure 22

5.6. By lifting up and back of the nose batten strings, push the nose battens fully back into the sail so that the batten tips rest in the holes on top of the keel tube (fig. 22).

5.7. Remove protection bags from the keel, from the control bar apex, from the hang bracket and from the crossbar central unit.

5.8. Remove all Velcro ties and spread the wings approximately 30% from fully open.



Figure 23



Figure 24

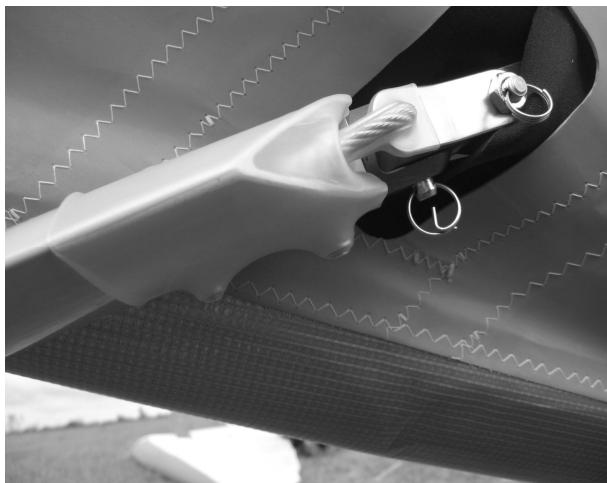


Figure 25



Figure 26



Figure 27



Figure 28

5.10. Attach the bottom front wires and secure the nose catch of the bottom wires on the nose junction channel using the clevis pin and the safety ring (fig. 27).

5.11. Carefully spread the wings all the way, lowering the nose of the wing on the ground (fig. 28). Once the nose of the wing is on the ground the wings spread themselves. You will need an assistant to perform this procedure.

5.12. Position the wing on its control frame, facing into the wind, with the nose on the ground.



Figure 29

5.13. Attach the strut safety wires (left and right) to the base tube. Tighten the nut and secure with a safety ring (fig. 29).

5.14. Attach the rescue system bridle to the wing, passing it through the corresponding hole in the sail and all the way through the rescue bridle palm on the top surface of the wing (fig.30). Pass the rescue system bridle through the keel pocket palms (fig. 31, the wing is shown with all battens inserted). Note that on all wings manufactured before 2020 there were no rescue bridle palms.



Figure 30



Figure 31

5.15. Wheel the trike behind the wing, rolling the front wheel over the control bar. Check that the ignition switch and the key are in off position. Tilt the main pylon of the trike down (fig. 32).

5.16. Connect the trike pylon to the wing hang bracket (fig. 33). Insert the heart bolt, tighten the nut firmly and secure with a safety ring. Attach the back up loop, making u-turn around the keel tube. Connect the rescue system bridle.

Lift the nose of the wing to allow for the front wheel to be rolled rearward over the control frame so that the base tube is in front of the cockpit and the rear of the keel tube rests on the pylon. Make sure the protection pad on the main upper pylon is in proper position and protects the pylon against bottom rear wires.



Figure 32

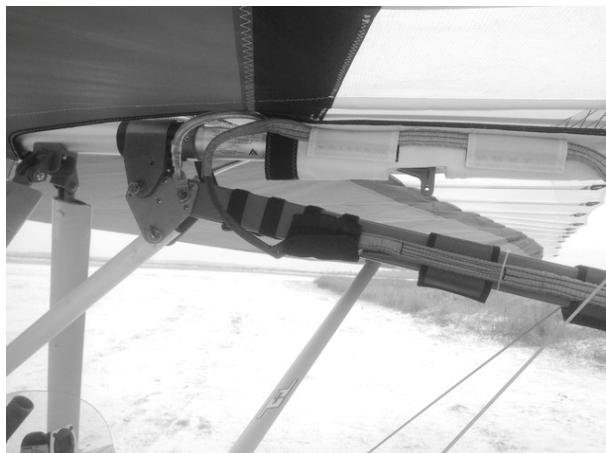


Figure 33

5.17. Remove the wingtip protection bags. Remove battens from the batten bag and check each batten for symmetry against the corresponding batten from the other wing. Align battens at their front tips, and at about the 60% of the chord point. There should be no deviation of more than 3mm (1/8") from one batten to the other along the full length of 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 go in the right wing. Battens are numbered from the center outwards, and the longest battens for Profi TL are designated as the "No. 1" battens.

Install all cambered battens in the sail.

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

Never insert or remove battens with the cross tube 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 battens to slide with great resistance in their pockets.

Install the lever batten tips into the hem of the trailing edge (fig. 34 and fig. 35). 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. Battens # 9, 10, 11 should be tensioned after the sail is tensioned with the crossbar.

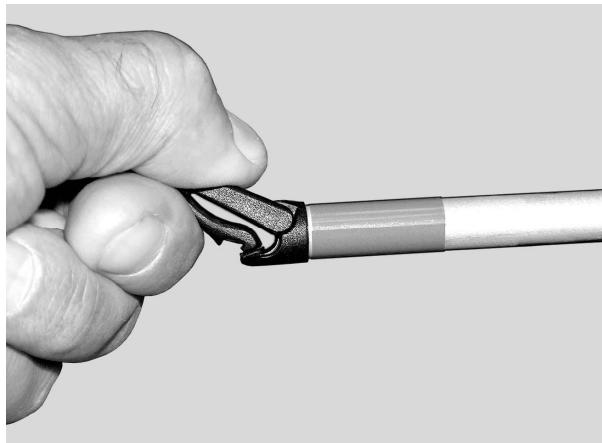


Figure 34

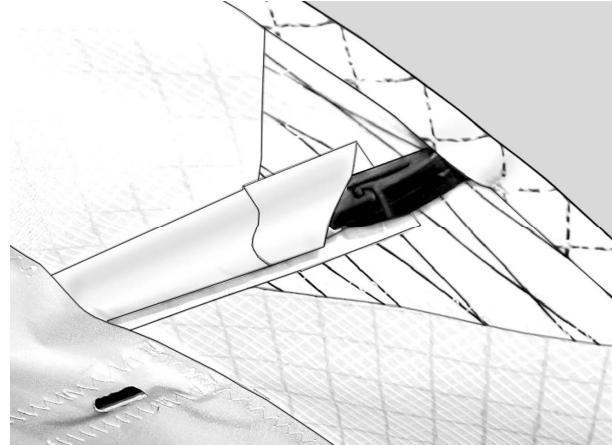


Figure 35

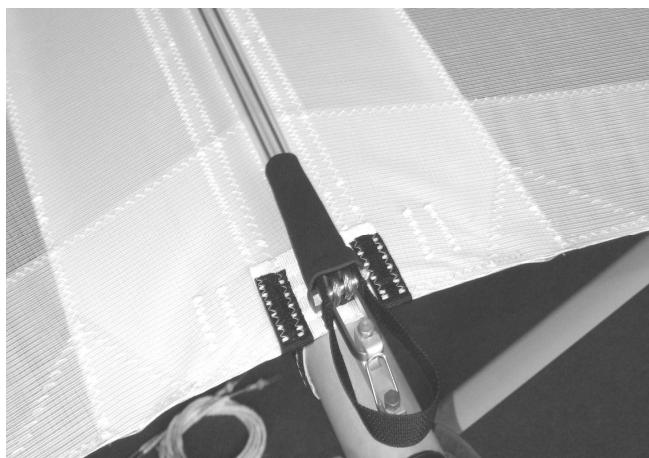


Figure 36

5.18. Check that the pull back (cross tube tensioning) wires for twisted thimbles and tangs. Take the shackle with one hand and attach it to the hook placed on the keel tube (fig. 36).

WARNING

An 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 of the shackle to the hook, even temporarily!

5.20. Install the bottom surface battens. The longest bottom surface batten is inboard batten. Push the battens all the way into the pocket until the rear end is secure in the batten pocket. The strings on the rear ends of the bottom surface battens are to facilitate removal of the battens from the sail during breakdown (fig. 37).

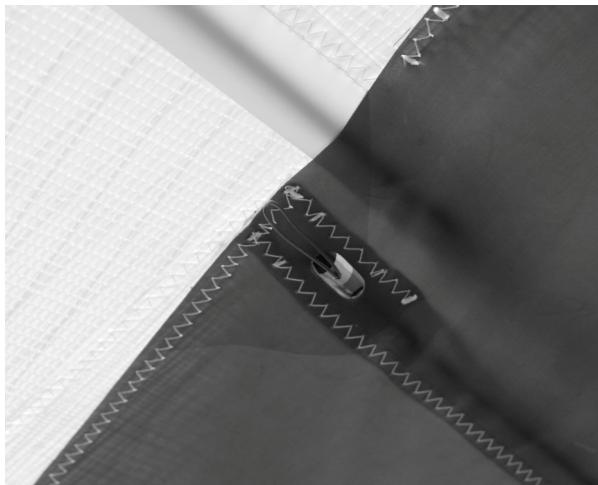


Figure 37

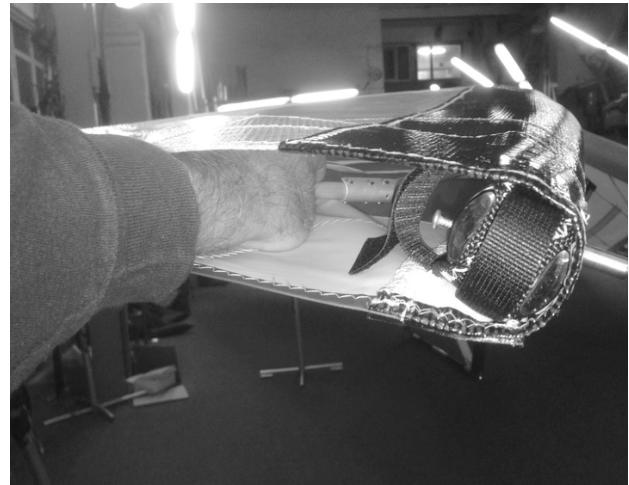


Figure 38

5.21. Install the tip lever battens (fig.38). The adjustable tip lever batten is fixed to the LE # 3 with one end and to the sail with another end.

To install the adjustable tip lever batten proceed as follow:

- bend one part of the batten (fixed to the LE tube) in its joint for necessary angle and slide another part of the batten in it;
- pressing on the joint, push the partly folded batten towards the keel section, straightening the batten completely (fig. 39).

When de-rigging the wing simply reverse the procedure written above.

The adjustable tip lever batten is fixed to the LE # 3 tube with the threaded adjuster, giving a possibility to adjust the sail tension.

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

To decrease the tip lever batten tension rotate the batten clockwise.

5.22. Install the inner and outer washout struts, just swing them to the right place underneath the corresponding top surface battens through the access zipper in the bottom surface (fig. 40 and fig. 41).

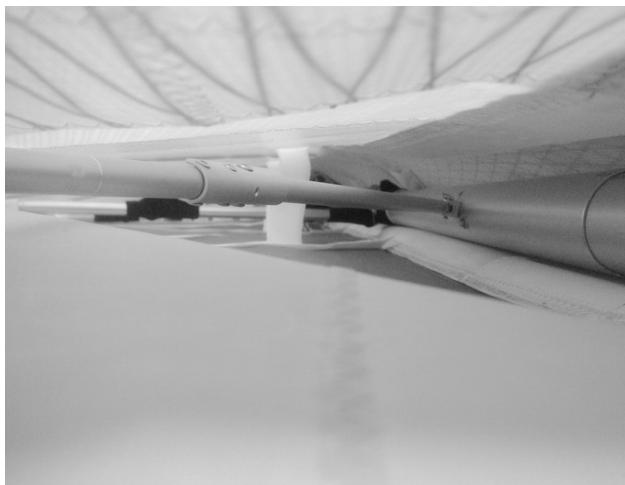


Figure 39

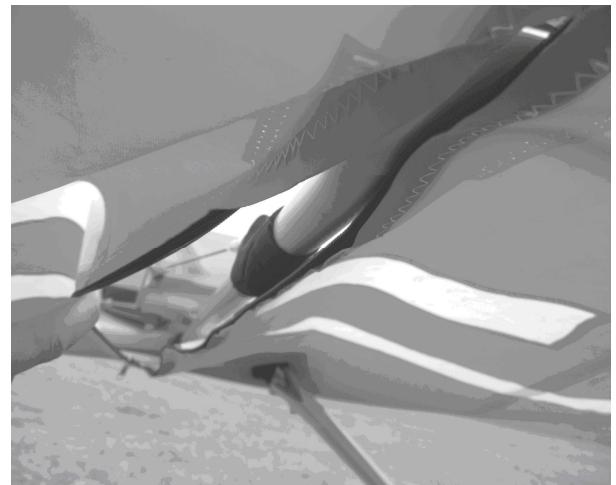


Figure 40



Figure 41



Figure 42

Close all access zippers.

5.23. Install the strut / control frame protection cover (fig. 42).

5.24 Attach winglets.

Carefully mount the winglets on the wing tips. The LE pins have to pass through the winglet holes (fig. 43 and 44).

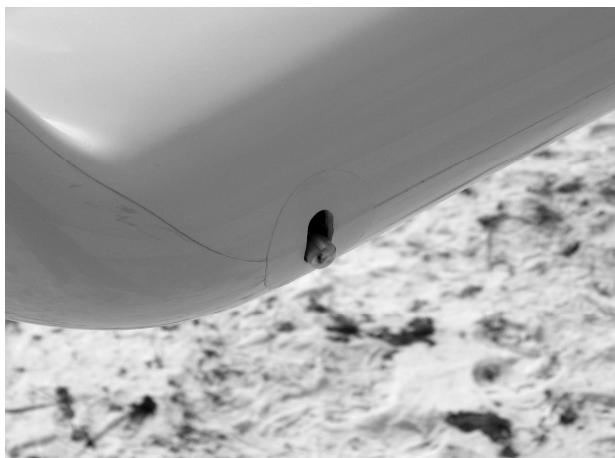


Figure 43

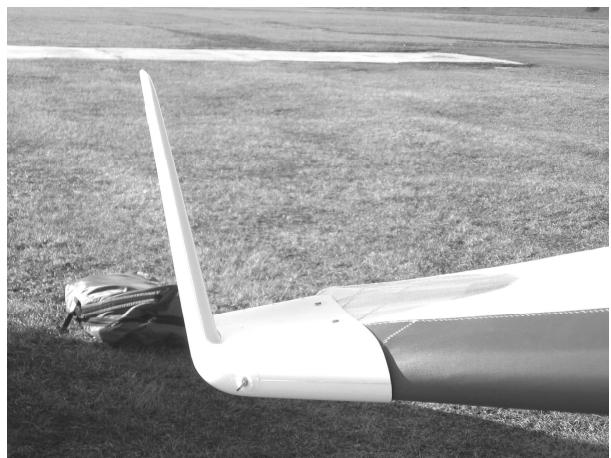


Figure 44

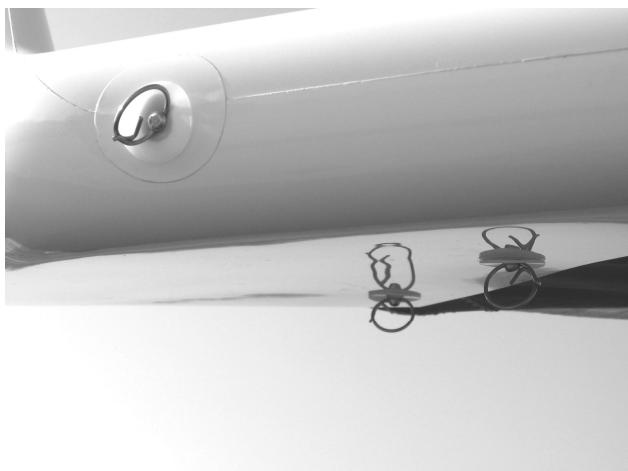


Figure 45

Insert the pins through the winglets holes and sail grommets, put on the washers, fix with safety rings (fig.45).

5.25. When the wing is attached to the trike with the base tube still on the ground install the nosecone, taking care to align it so that it lies flat on top and bottom of the sail (fig. 46 and 47).

WARNING
DO NOT FLY WITHOUT THE NOSECONE!

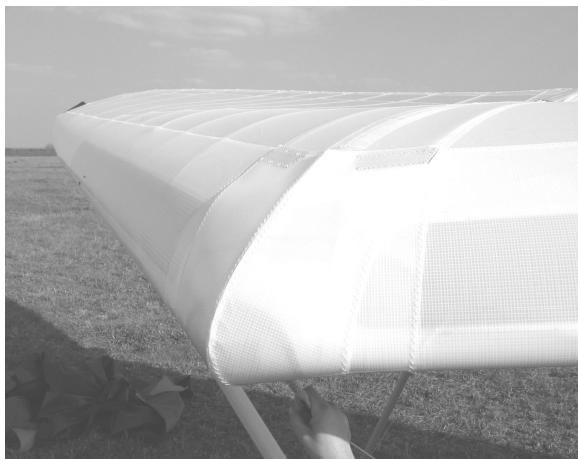


Figure 46



Figure 47

5.26. Rise the wing on the trike.

5.26. After the wing is raised on the trike connect the trim device to the wing using pins and safety rings. Connect the rear bracket first (fig. 48). Slide the front bracket of the trim device in place (fig. 49). Connect the socket connector of the trim device to the corresponding connector on the trike pylon.



Figure 48



Figure 49

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.

At the nose, with the nose cone removed:

Check that the nose junction hardware is tighten, the front wires catch is secured, the nose battens are engaged in the corresponding holes on the keel tube (fig. 50 and 51). Don't forget to install the nosecone before raising the wing up on the trike.

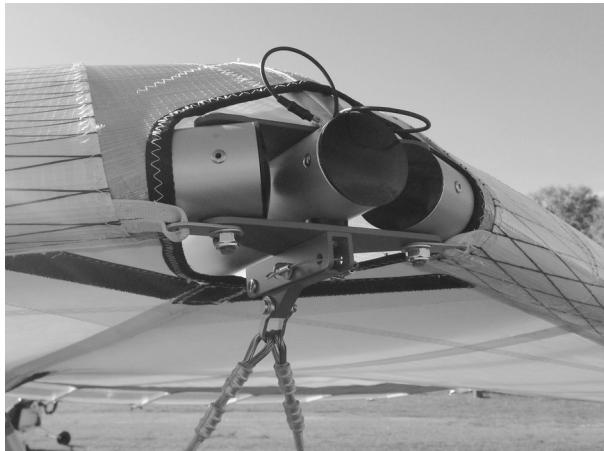


Figure 50



Figure 51

Along the left leading edge:

Open the main sprog access zipper and look inside, making sure that the crossbar / leading edge junction, the main sprog and the main sprog wire are properly secured. Check the sprog hardware, and the sprog cable attachments at both ends of each sprog cable. Close the main sprog access zipper (fig. 52).

Open the outer sprog access zipper and check the sprog hardware and the sprog cable attachments at both ends of the sprog cable (fig. 53).

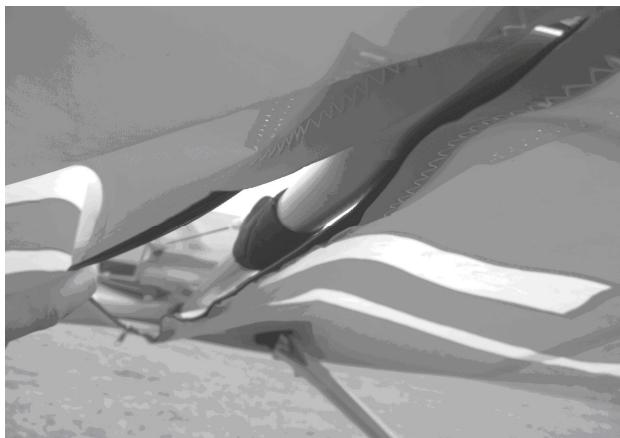


Figure 52



Figure 53

CAUTION

REMEMBER TO SLIDE THE SPROG NEOPRENE COVER BACK ON PLACE TO COVER THE JOINT. CLOSE THE ACCESS ZIPPERS.



Figure 54

Check that the strut is properly secured, safety wire is engaged and the safety ring is installed (fig. 54).

At the left wingtip, with the left winglet removed:

Check that the tip folded batten is properly installed (fig. 55).

Check that the sail mounting strap is properly installed and secured with Velcro (fig. 56).

Install the winglet back on place.



Figure 55



Figure 56

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 inboard and outboard sprogs are properly secured in their position supporting the appropriate transverse battens.

Make sure all zippers are closed.

From the rear keel:

Check that the keel mount webbing and bottom rear wires are safely secured to the keel tube (fig. 57 and fig. 58).

Check the rear wires cables making sure there are no kinks or twisted thimbles (fig. 57).

Check that the sweep wires are tight and secured on the hook on the keel tube (Fig. 58).

An in-flight disengagement of this attachment will cause a complete loss of structural support of the glider and a total loss of control. Never attach the pull handle of the shackle to the hook, even temporarily!



Figure 57

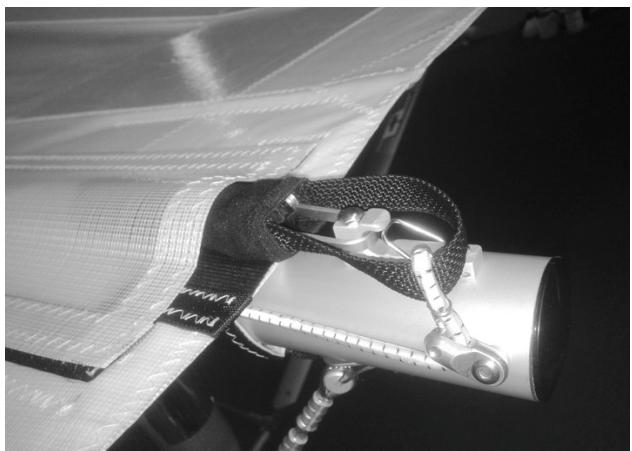


Figure 58

Under the wing at the control frame apex:

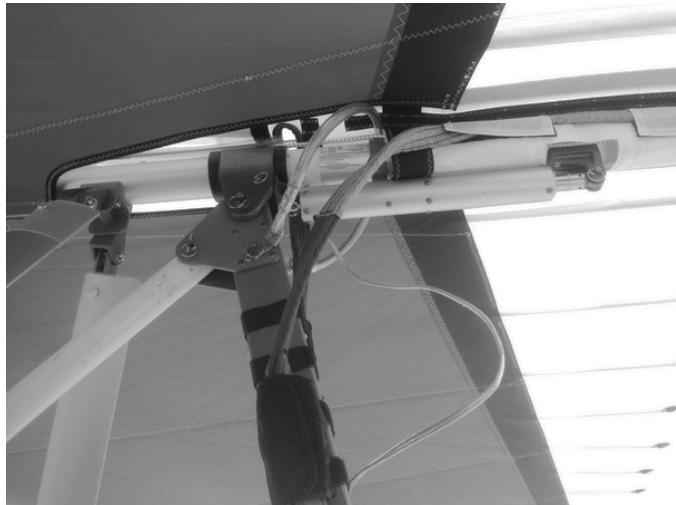


Figure 59

Check the control frame apex and the hang block bracket hardware. Check the wing to the trike attachment, the back up loop attachment, the trim mechanism brackets attachment (fig. 59).

Unzip the center zipper. Check that all bottom surface battens positioned under the leading edge tube.

Check the crossbar center plates assembly including the sweep wire/X-bar junction and the center bolt.

Make sure that cross bar tensioning cables are tight, there are no kinks or twisted thimbles, no signs of wear.

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

Close the center zipper.

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

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

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



Figure 60

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.

Look under the protection cover and check for proper installation of all nuts and safety rings at the control bar corners (Fig. 60).

7. SPEED TO FLY

The range of **trim speed** for Profi TL is 90-130 km/h ((56-81 mph)).

The **stall speed** for Profi TL is 62 km/h (39 mph). The wing is stable at the beginning of stall.

While pushing out the base bar, the bar pressure is progressively increase.

Profi TL, depending on the wing load, speeds up to 150 km/h (94 mph), being essentially roll neutral, with no tendency to yaw. The bar pressure will increase progressively as the speed increases.

WARNING

ALL SPEEDS ARE MEASURED WITH AEROS-2 TRIKE.

8. PROFI TL BREAKDOWN

Breakdown of Profi TL is reverse of its assembly. Please follow these instructions when breaking down the wing. Please read all the instructions for each operation before beginning. Refer to the section **5. Profi TL Set-Up procedure**, if necessary.

- 8.1. Set the trim device to the aft position and then move it 10mm forward.
- 8.2. Disconnect the socket connector of the trim device from the corresponding connector on the trike.
- 8.3. Disconnect the trim device from the wing. Fit the protection bag on the trim device.
- 8.4. Remove the bolt from the front support compression tube.
- 8.5. Remove the bolt from the main pylon joint.
- 8.6. Lower the wing until the control bar is on the ground.
- 8.7. Remove the nose cone from the wing.
- 8.8. Remove winglets.
- 8.9. Unplug the tip folded battens. Remove the undersurface battens.
- 8.10. Unzip the sprog access zippers all the way to the leading edge end of the zippers and put out the inboard and outboard sprogs.
- 8.11. De-tension the crossbar pull back wires.
- 8.12. Remove the top battens except for the top battens #1. Pack battens into the batten bag.
- 8.13. Lower the nose of the wing to allow the front wheel to be rolled forward over the control frame.
- 8.14. Detach the rescue system bridle from the carabiners.
- 8.15. Detach the back up loop.
- 8.16. Unbolt the trike from the hang bracket of the wing and lower the nose of the wing on the ground.
- 8.17. Undo the Velcro of the strut / control frame protection cover and slide the cover towards the middle of the control bar. Detach the strut safety wire from the control bar.

8.18. Install the wingtip protection bags.



Figure 61

8.19. Fold the wings approx. 30 % from fully closed rotating them around the control bar until the wingtips are on the ground (fig. 61).

8.20. Detach the front wires from the nose junction channel.

8.21. Detach the struts. Disconnect the bottom first, than disconnect the top together with a strut safety wire. Stow the struts in their bag.

8.22. Install protection bags on the control frame apex, hang bracket, if it stays on the wing (with the hang bracket positioned down), on the pool back wires hook on the keel tube and on the crossbar central unit.

WARNING

FOLDING THE WING WITHOUT PROTECTION BAGS WILL CAUSE THE TUBES DAMAGE.

8.23. Fold the wings completely. Pull the sail out away from the keel until it is even on top and bottom. Roll the sail gently and carefully.

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. Finish rolling the sail in the area of the outer sprogs and install the wing tip cover bags.

8.24. Stow battens in the batten bag in the front part of the wing. Install Velcro ties around the wing.

8.25. Install the wing protection bag. Lower the wing on the ground.

8.26. Detach the control bar.

8.27. Fold the control frame tubes, install the control frame protection bags and lay the control frame against the keel. Pack cables carefully between down tubes.

8.28. Fit the control bar in the protection bag and stow it between the leading edges in the aft part of the wing. Stow the nosecone under the most forward Velcro.

8.29. Zip up the wing protection bag.

9. WING TUNING

Properly tuned, the wing is safe, comfortable and fun to fly.

PROFI TL wing should fly straight and level without any pilot input with a cruising speed ranging between 70 kph and 140 kph using a trim device.

Before making any adjustments to the wing, first check that the wing is in the standard condition and that the battens all conform to the PROFI TL batten template.

If the wing is not new, check the condition of the frame especially the outer leading edge tubes. The best is to remove the leading edges and check that they have the same bend in them and when under load they flex equally.

Do not exceed the adjustment limitations.

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. TEST FLIGHT SHOULD BE PERFORMED IN SMOOTH AIR AND WITH CAUTION.

The new wing has been tested and tuned by Aeros. However, in case you have sufficient experience, you may tune the wing by yourself, as written below, if necessary. There are a number of adjustments that affect the flight characteristics.

BATTENS

The battens will need to be compared and adjusted to match the batten profile template at regular intervals. Small variations in batten camber (± 5 mm at the trailing edge) will not have significant effect on flight characteristics.

BATTEN TENSION

With some airtime batten tension may get loose, this may cause the trailing edge to flatten. If the battens tensioned too much, the handling will become harder. Make sure the battens are tensioned on the left and right wings identical.

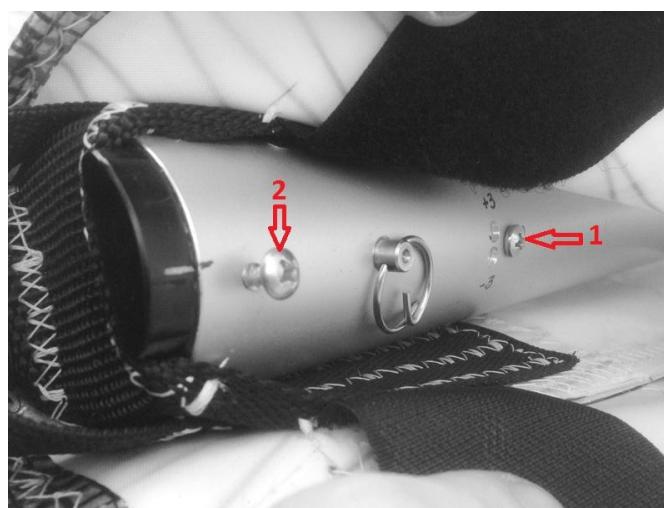
The top battens on the Profi TL are tensioned with adjustable batten tips.

The desired batten tension can be easily adjusted by the threaded lever 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.

TURN CORRECTION

There are two self-tapping screws for the turn adjustment on the outer part of the leading edge # 3 (fig. 62)



By rotating a wingtip down, the lift on the end of that wing will increase and this half-wing will rise in flight. Adjust the self-tapping screw up by 2.5 mm at a time. When rotating a wingtip up, the lift will be decreased on that side and the half-wing will drop on that side. Adjust the self-tapping screw down by 2.5 mm at a time. It is preferable to rotate the wingtip up first rather than down.

Adjust one wingtip at a time and test fly after each adjustment.

Figure 62

CG ADJUSTMENT

CG adjustment is done by changing the location of the 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 Profi TL the hang point position is adjusted by trim device, repositioning the hang block along the keel tube.

10. 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 item may require attention and which may not. Minor dents or dings in a non-critical location on the 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.

10.1. WING INSPECTION

The sail should be inspected once every three months or after each 50 flying hours. The frame should be inspected once a year, after every 100 flying hours, and after every hard landing.

10.1.1. SAIL

4.1.1. Checking the sail surface and seams.

There should be no cuts, ruptures, threadbare holes and torn seams on the sail. Any torn seams should be re-stitched. Cuts and ruptures on the fairing and bottom surface of the sail that are not longer than 30 mm can be patched up with self-adhesive Dacron. The Dacron must be of a weight of not less than 100 g/m. larger cuts and ruptures are to be repaired by stitching on a reinforcing piece of the same fabric (stitched along the edges). Any rupture shorter than 50 mm can be repaired in this manner, but more complicated repairs and **all cuts near the trailing edge** should be carried out in the workshop of authorized company.

Keep an eye on the sail grommets/eyelets and all areas of the sail that are subject to extra stress, especially the keel section, the nose section of leading edge and the outer tip section of the leading edge.

10.1.2. CABLE SYSTEM

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.

The cables must be checked for broken wires and corrosion. If any defect on a wire is observed, no matter how small, the cable in question **MUST BE REPLACED**. It is recommended that the entire cable system be replaced once every four years irrespective of service conditions.

10.1.3. TUBINGS

To check the condition of the wing tubes the sail should be removed from the wing frame and the tubes should be detached at the joints. The tubes are to be inspected visually. When there is suspicion of damage, the points in question should be inspected using a magnifying glass of (5-10) X magnification. There should be no trace of corrosion, cracks, bends or dents. Check that the uprights and the struts are straight and undamaged. If any defect on the uprights or the struts observed or you find them bended - **replace immediately**.

10.1.4. BATTENS

The battens of PROFI TL should be checked against the template and their bends should be adjusted if necessary. Check all the plastic batten heads and tails and replace if necessary.

10.1.5. FASTENERS

Check all fasteners (bolts, screws, rollers, nuts, splint pins etc.) for corrosion. Any corroded fasteners should be replaced. Bolts should not be worn and/or bent. Key bolts should be checked most thoroughly for cracks between the head and the bolt body. These are the bolts at the control bar side and bottom joints, the central spreader bar tensioning cable attachment point and the rear cable attachment point on the keel tube. If any cracks are observed - **REPLACE IMMEDIATELY!**

10.1.6. SPECIAL CIRCUMSTANCES

1. Any time your trike suffer a 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 sprog cables. 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 of 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 cause corrosion. 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 sail 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.

10.1.7. SPROG MEASUREMENT

Profi TL uses inboard and outboard sprogs in combination with one transverse batten on each sprog. Each transverse batten spans two top surface battens, so a total of eight top surface battens are supported. The sprog 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 and outer sprogs are adjusted at the factory to their proper settings.

The sprog angles should be checked regularly. This can be done with any digital electronic angle meter as described below:



Figure 63

1. Fully set up the wing on a reasonably level surface.
2. Rest the keel tube on a support with the keel tube horizontal. Attach the keel extension to the keel tube. Using the angle meter, as shown on fig. 63 and fig. 64, check that the keel extension is set to horizontal position. Maintain this keel tube angle during further measurements. Set the angle meter to zero.



Figure 64



Figure 65

3. Place the worktop of the angle meter under the middle part of the sprog close enough to the sprog wire attachment point so that the entire worktop surface of the angle meter touches the sprog (Fig. 65).

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

The main sprogs for Profi TL should be set to 11 deg.
The outer sprogs for Profi TL should be set to 14 deg.



Figure 66

To adjust the sprog angle:

1. Using the wrench as shown on fig. 66 unlock the sprog threaded adjuster.
2. Remove the pin from the sprog threaded adjuster at the front of the sprog. To raise the sprog turn the end of the sprog threaded adjuster counter clockwise. To lower the sprog turn the end of the sprog threaded adjuster clockwise.

3. Re-install the pin to the sprog threaded adjuster, install a safety ring and lock the adjuster with a nut. Press down firmly on the rear end of the sprog to seat the cable before checking the measurement again.
4. Using the wrench as shown on fig. 48 lock the sprog threaded adjuster in place.

11. SAIL REMOVAL

Some 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.

You will need an unobstructed area 2m by 9m. Make sure the surface is clean. If it is abrasive, you should either put down a protective tarp or be extremely careful not to scrape your sail.

11.1. Unzip the wing bag.

11.2. Set the wing on the A-frame. Remove the wing bag, protective bags and pads.



Figure 67



Figure 68

11.3. Spread out the wings slightly, approx. 20% from the fully closed position (fig. 67).

11.4. Remove the number 1 battens and the nose battens from the sail.

11.5. Remove the sail fixing tangs from the nose part of the wing (fig. 68).

11.6. Remove the front clevis pin of the winglet from the outer part of the leading edge tube (fig. 69).



Figure 69



Figure 70

11.7. Undo the Velcro of the sail mount webbing and remove the sail mount webbing off the leading edge (fig. 70).



Figure 71

11.8. Remove protection cover and undo the nuts of the trim device bracket. Remove the trim device bracket from the keel tube (fig. 71).



Figure 72



Figure 73

11.10. Remove the main sprogs from the wing. Fix the sprog threaded adjuster with a nut to prevent its rotation (fig. 73).

11.11. Open the bottom surface main zipper and detach the sail fixing flap on the top surface from the keel tube (fig. 74).



Figure 74

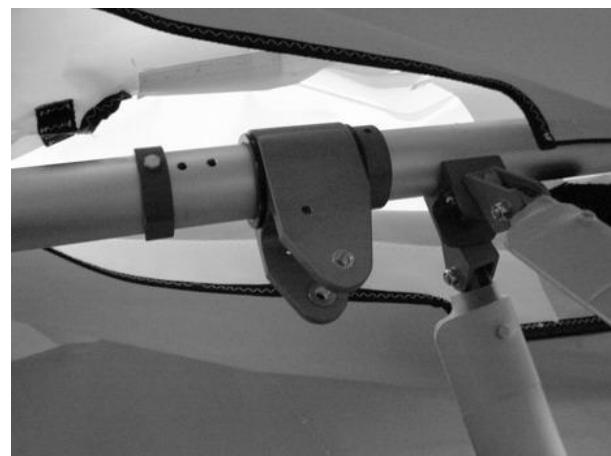


Figure 75

NOTE: Do not forget to remove the bolt from the hang bracket front supporting ring (fig. 75).



Figure 76

11.12. Lay the wing down on the ground.

11.13. Remove the control bar from the control frame and bring the downtubes together (fig. 76).

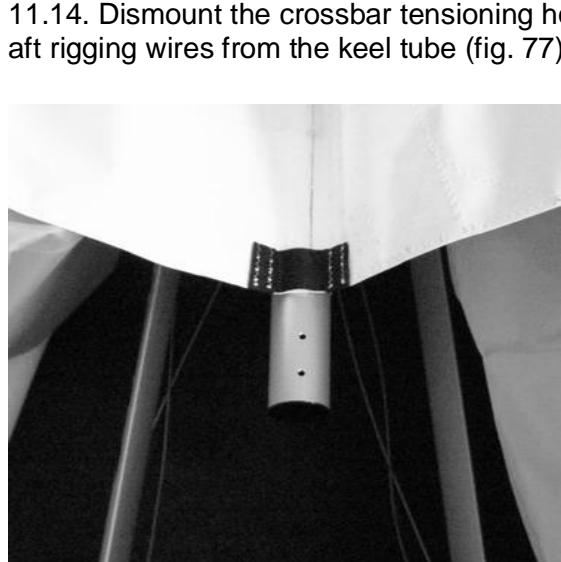


Figure 77



Figure 78

11.15. Slide the sail slightly forward and get the nose of the frame out through the nose hole of the sail (fig. 78).

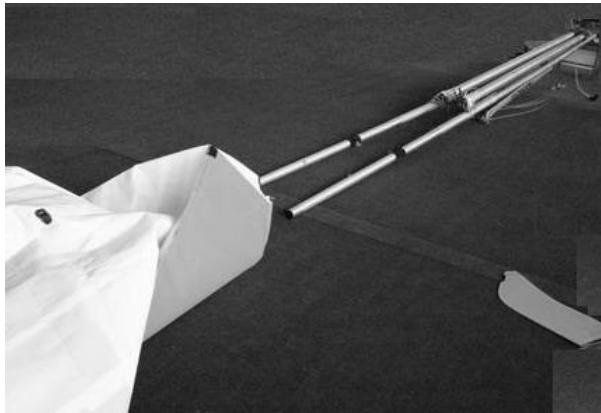


Figure 79

11.16. Bring the leading edges together and carefully slide the complete frame out through the nose hole of the sail (fig. 79). If you encounter resistance, stop and find out what is hanging up.

11.17. 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.

12. RE-INSTALLING THE SAIL ON THE FRAME

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.

The procedure of the sail re-installing on the frame is basically reverse of the sail removal. Read and make sure you understand the written above procedure before re-installing the sail on the frame.

13. STORAGE AND TRANSPORTATION

The trike with the topless wing can be rolled into the most microlight hangars.

If not flying for a long time, you should reassemble and store the wing in its bag in a dry place on soft bedding.

Before storage you must ensure that the sail is dry.

The frame of the wing must not be subjected to load during storage and the tubes must not be bent under their own weight.

The wing storage temperatures range from -10°C to +25°C.



NOTE:

It is possible to store the complete microlight without removing the wing from the trike in a hangar as shown on figure 80.

Figure 80

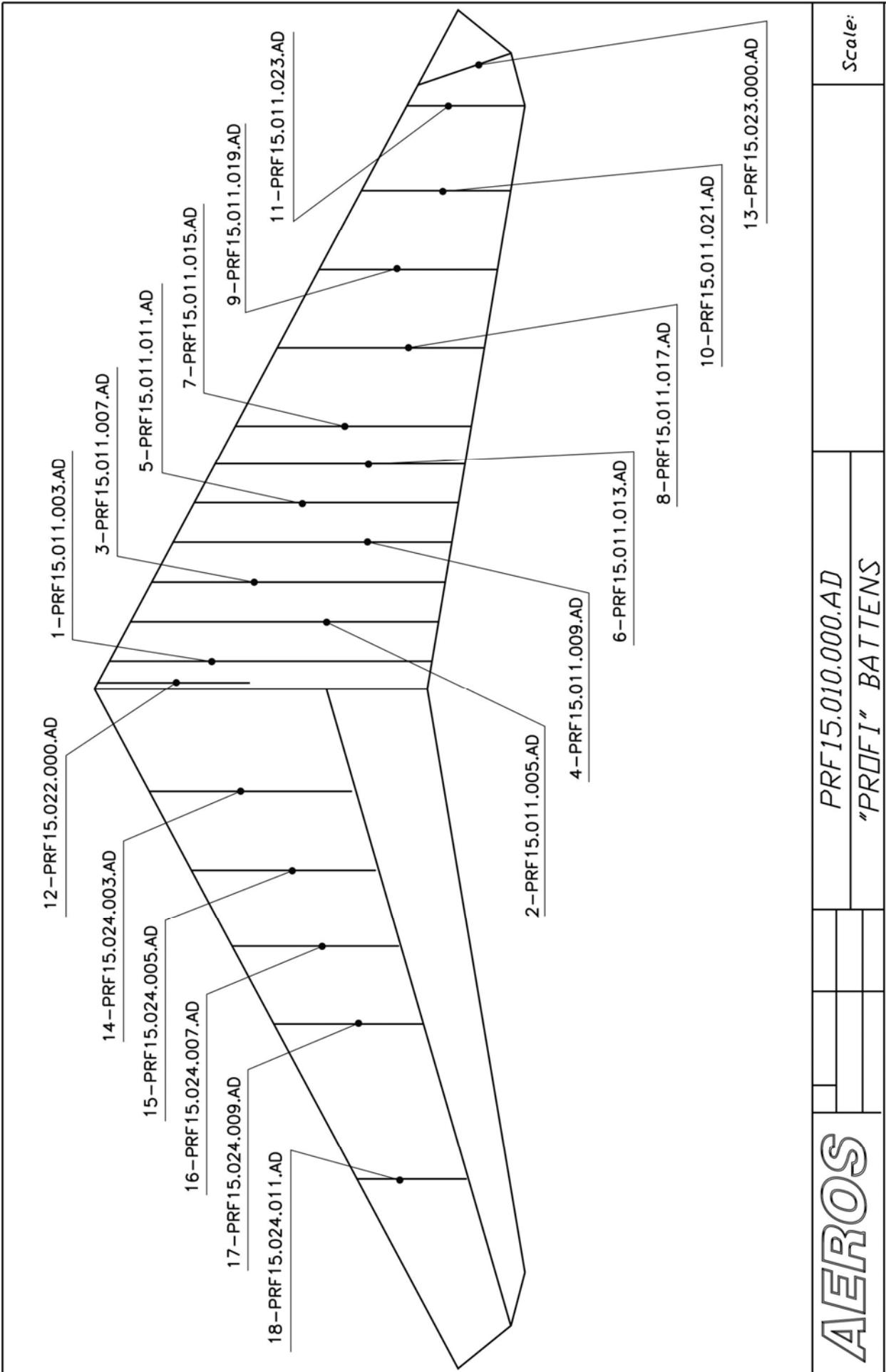
The wing can be transported in its bag with any vehicle that offers protection from mechanical damage, soiling and long exposure to rain. It is not recommended that the wing be carried or transported without its bag.

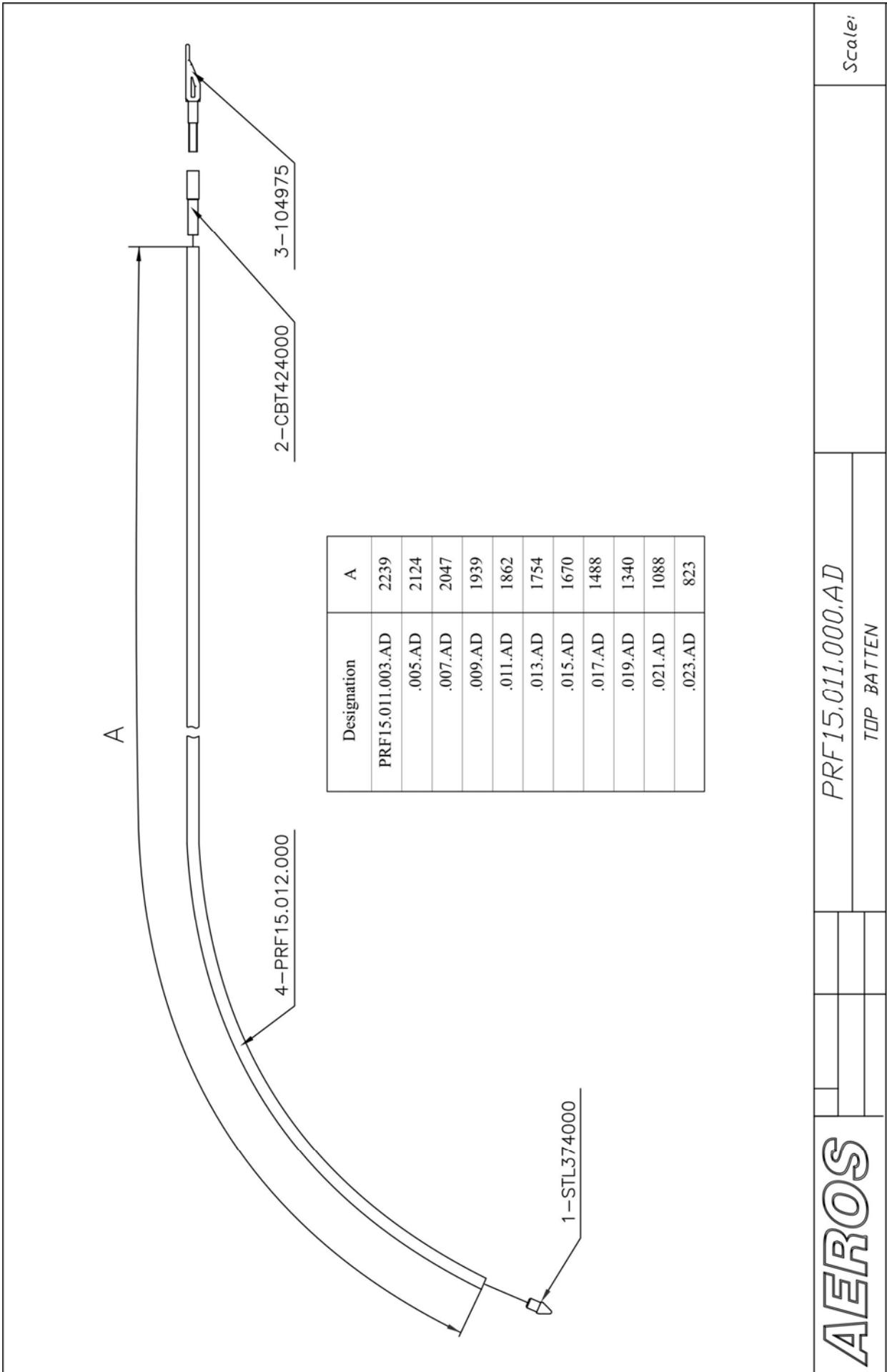
14. IN CLOSING - A FEW WORDS ON YOUR SAFETY

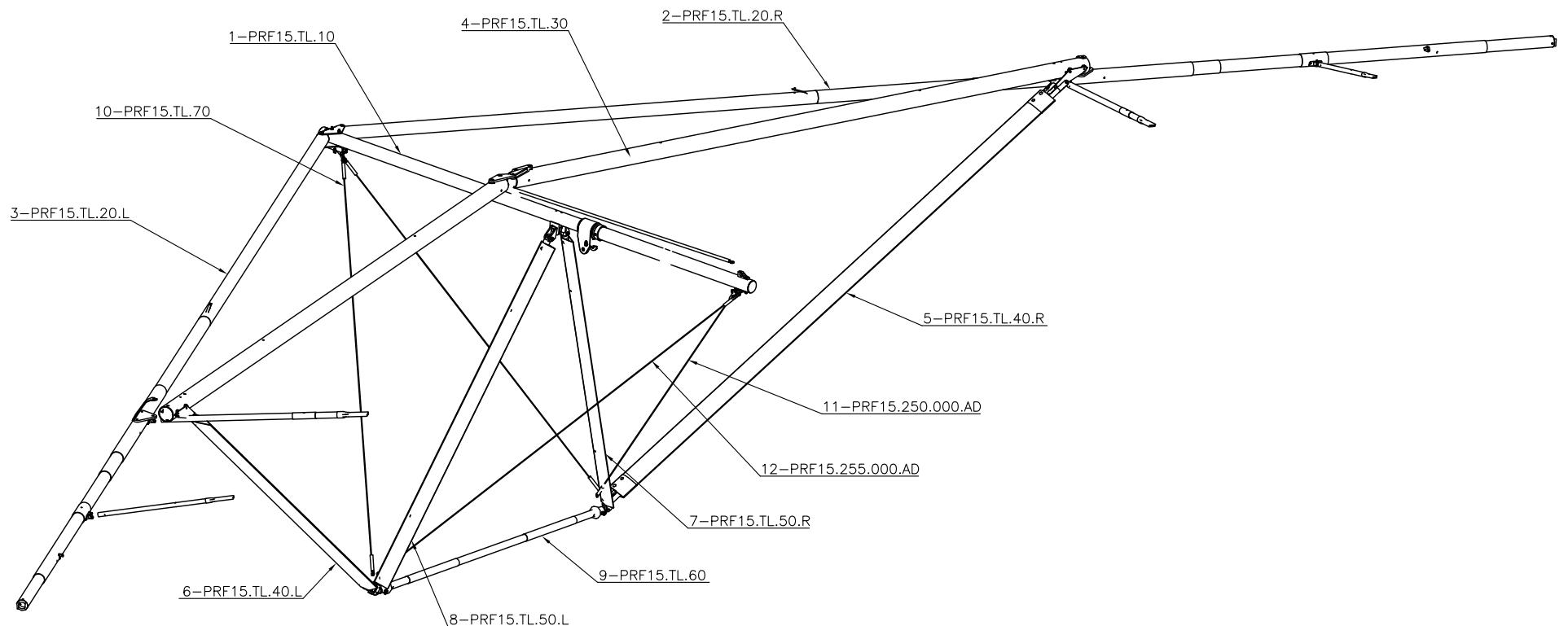
- Flying an ultralight is an active air sport with associated risks. Your safety can be greatly enhanced by following a few simple rules:
- Your wing is delivered to you ready to fly. Do not make any adjustments, which are not described in this manual.
- Be sure the wing is properly adapted for your trike.
- If you are in doubt about any aspect of your trike or wing you should consult your dealer or Aeros for advice.
- Remember the Profi TL was designed for experienced pilots. 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.
- Do not take off if the sail is wet, especially the leading edge, as the stall speed will increase significantly.
- ***Always fly with a dry sail!***
- ***Take special care to avoid ice covering the glider, particularly the leading edge in wintertime.***
- A wet wing must be dried before storing. Do not leave your glider wet for more than one day, because corrosion may result.
- Never fly alone.
- 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, which 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.

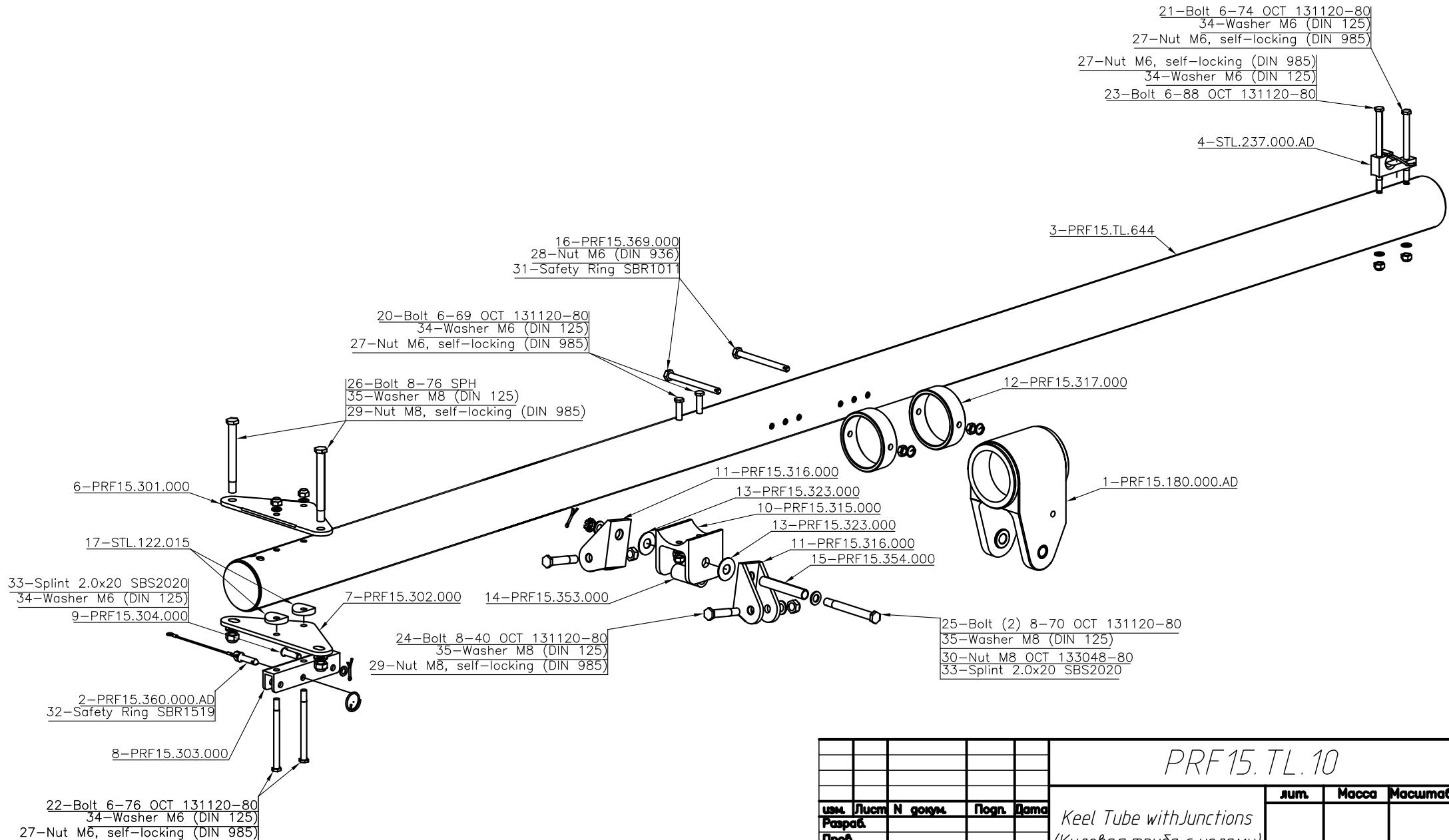
Aeros Team





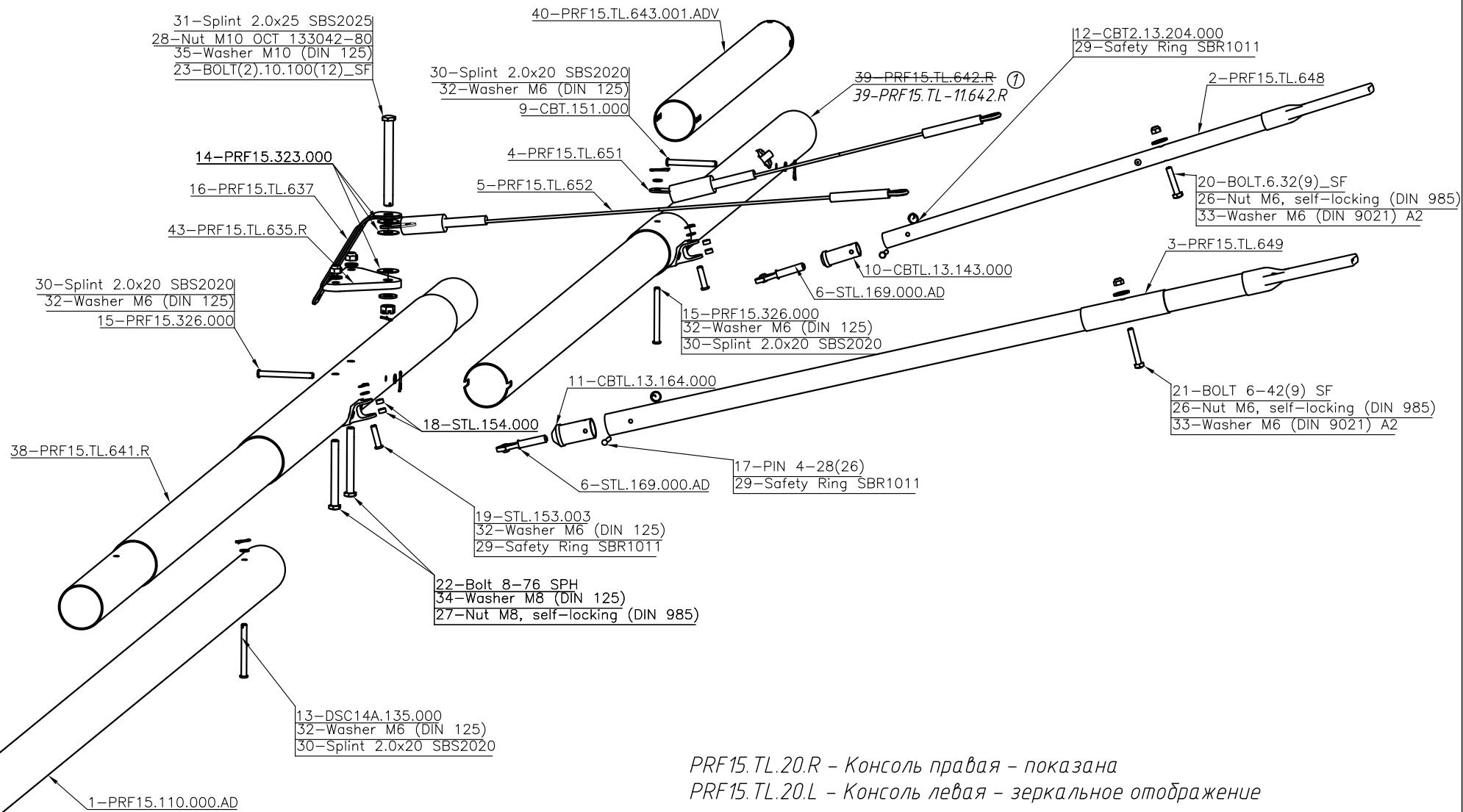


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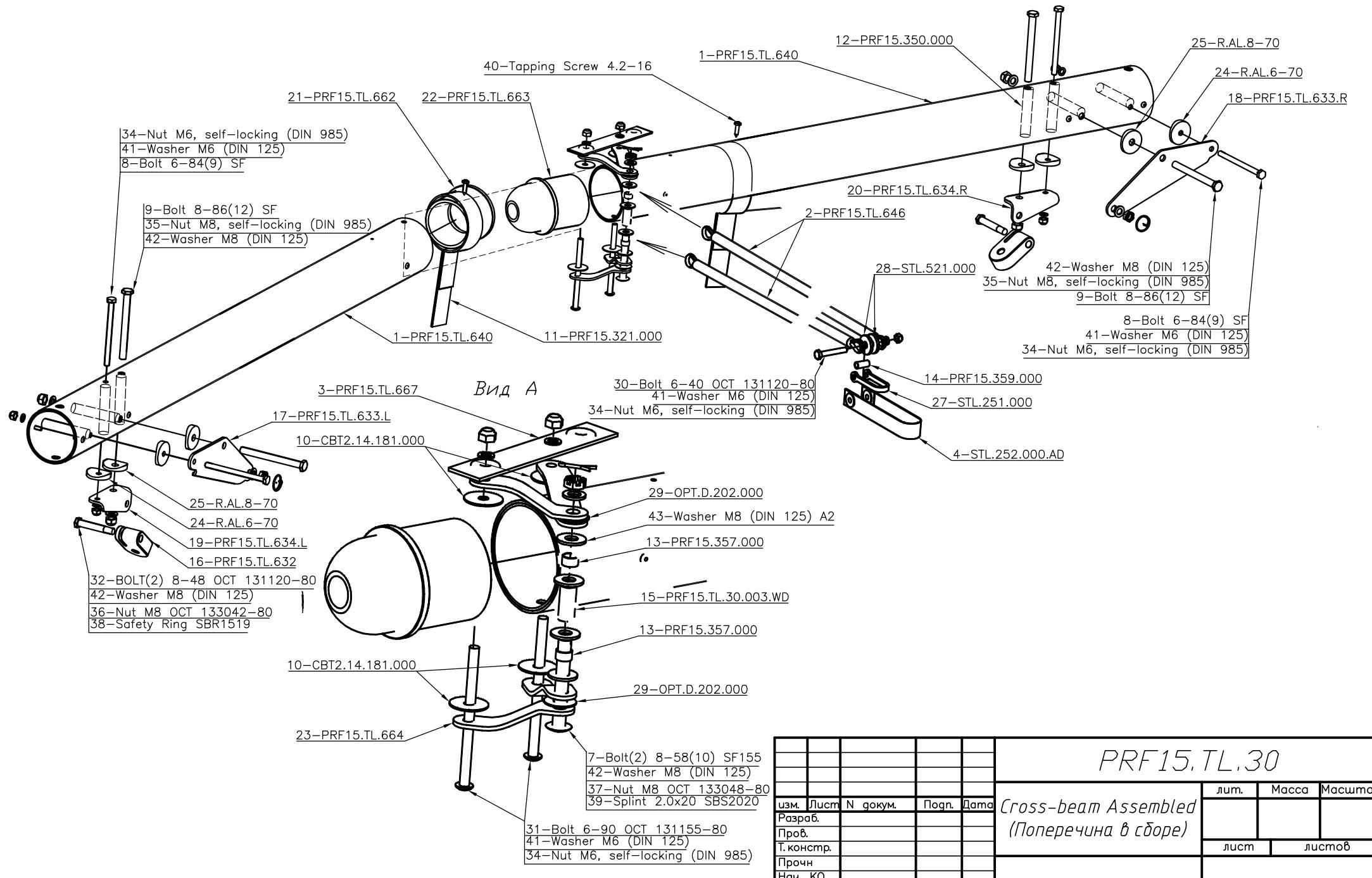
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PRF.15.TL.20.R - Консоль правая - показана

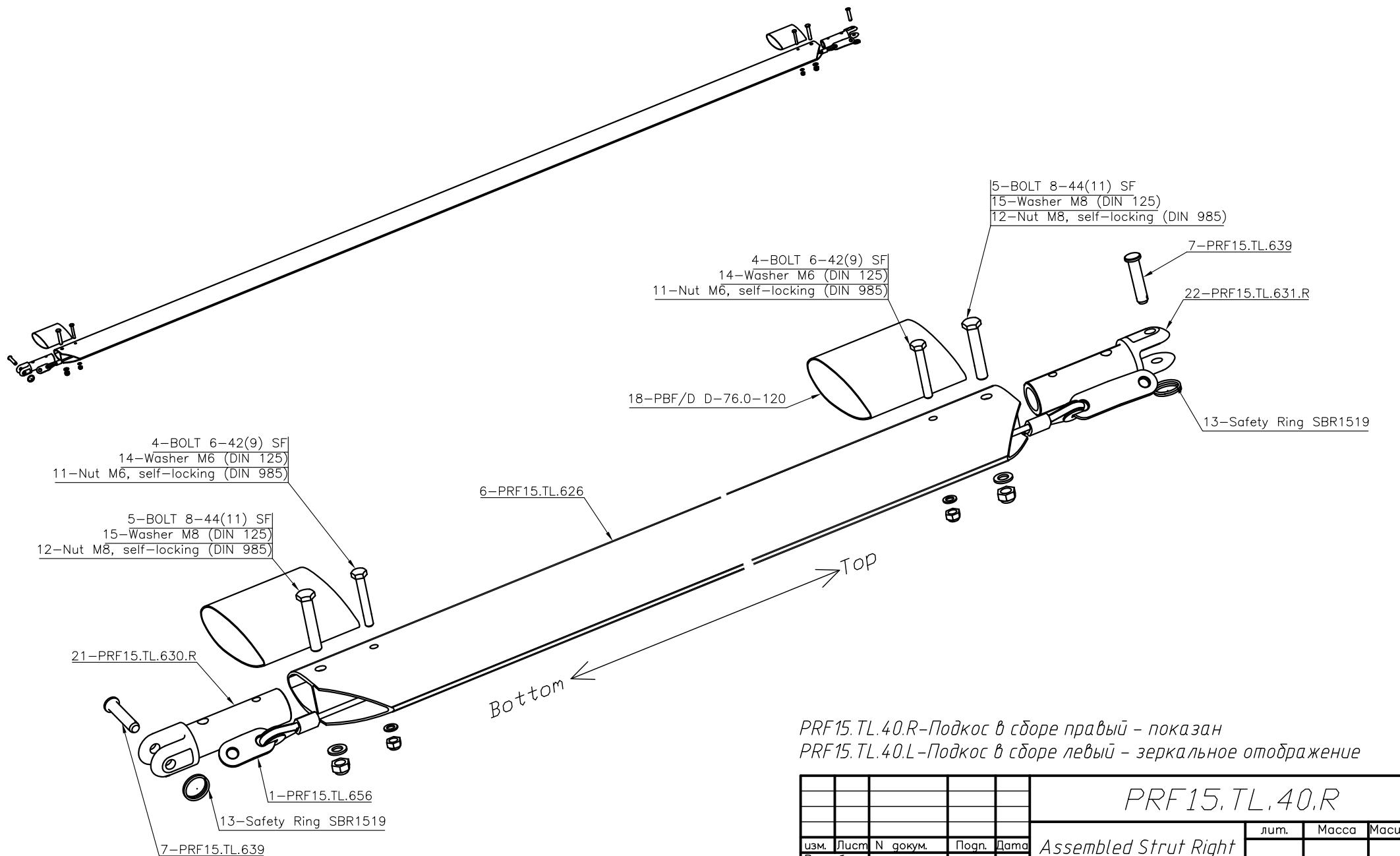
PRF.15.TL.20.L - Консоль левая - зеркальное отображение

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<i>Leading Edge Right (Консоль правая)</i>		лист	листов
		"AEROS"	

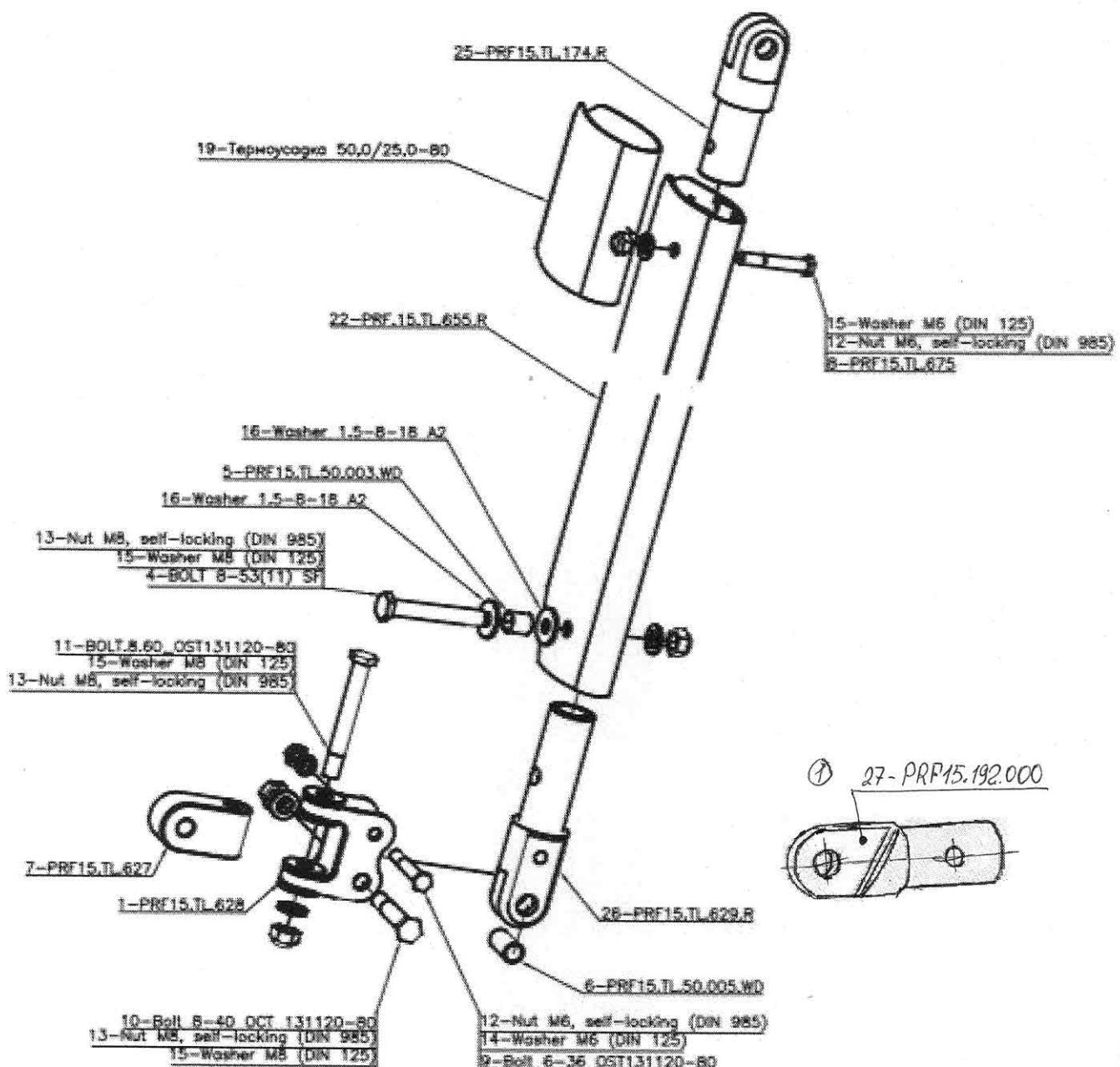


PRF15.TL.30

Cross-beam Assembled (Поперечина в сбопе)



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Проб.							
Т. констр.							
Прочн							
Нач. КО							
Утв.							



PRF15.TL.50.R - Стойка в сборе правая - показано

PRF15.TL.50.L - Стойка в сборе левая - зеркальное отображение

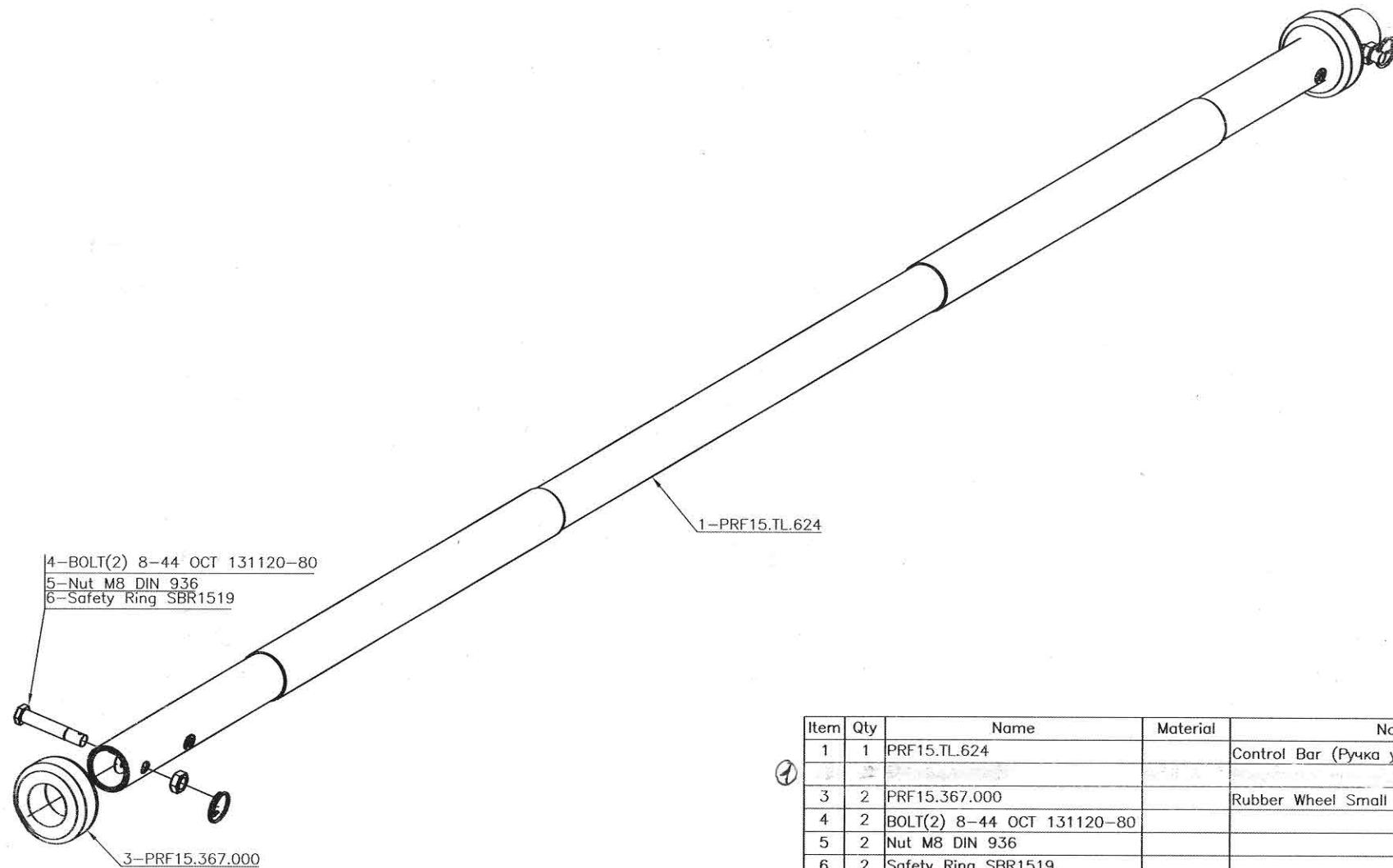
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Upright Assembled Right
(Стойка в сборе правая)

Лит.	Масса	Масштаб
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лист	листов	

Кол. на изделие - 1шт.



Item	Qty	Name	Material	Note
1	1	PRF15.TL.624		Control Bar (Ручка управления)
3	2	PRF15.367.000		Rubber Wheel Small (Колесо рез. мал.)
4	2	BOLT(2) 8-44 OCT 131120-80		
5	2	Nut M8 DIN 936		
6	2	Safety Ring SBR1519		

①

PRF15.TL.60

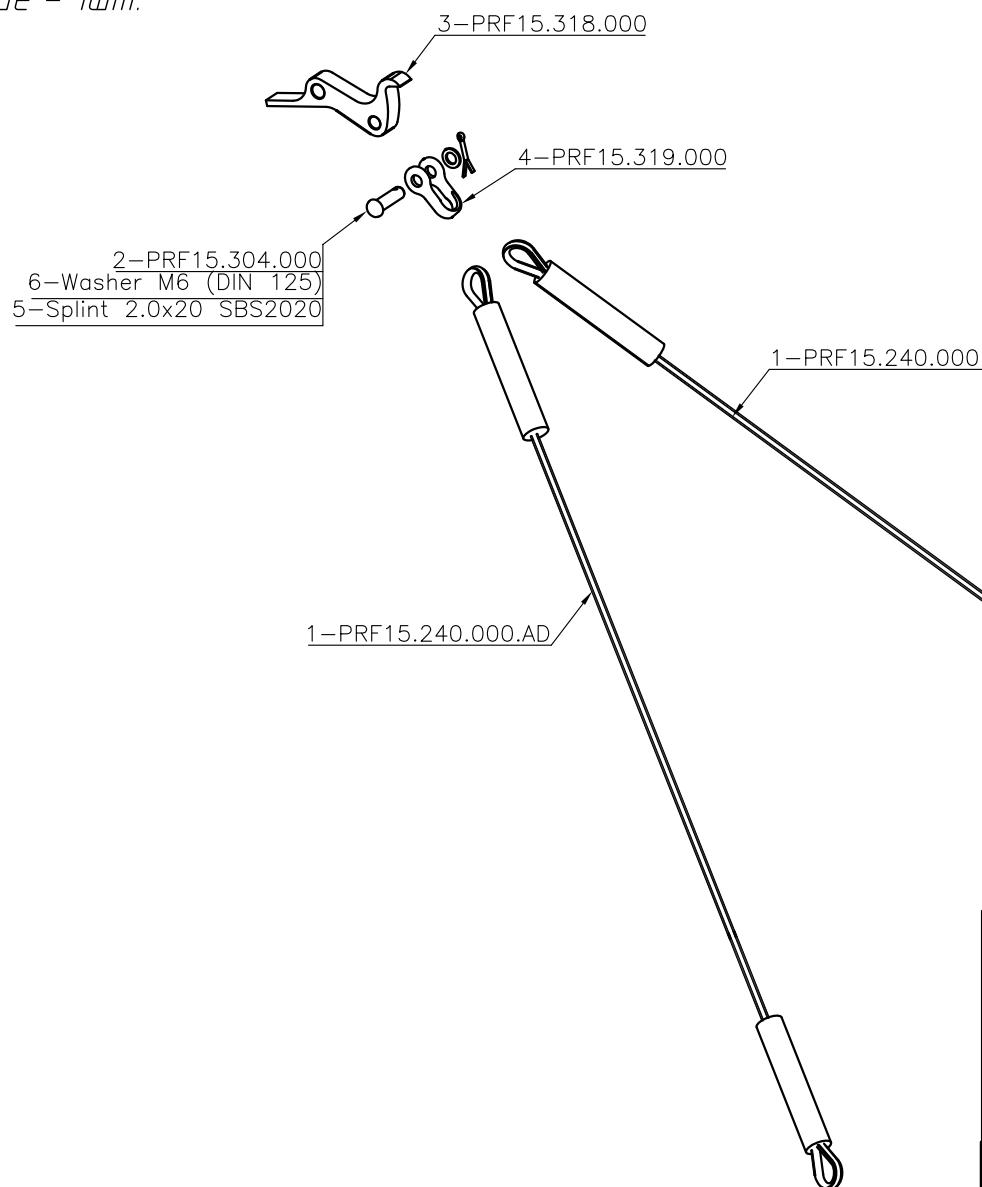
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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Control Bar Assembled
(Ручка управления в сборе)

16

маск
маскоб

Кол. на изделие - 1шт.



Спецификация				
Item	Qty	Name	Material	Note
1	2	PRF15.240.000.AD		Bottom Front Wire (Трос нижний передний)
2	1	PRF15.304.000	12X18H10T	Clevis Pin (Валик) 6-21.5
3	1	PRF15.318.000	D16T	Goose Catch (Замок лягушка)
4	1	PRF15.319.000	12X18H10T	Shackle (Сервга)
5	1	Splint 2.0x20 SBS2020		
6	1	Washer M6 (DIN 125)		

PRF15.TL.70

изм.	Лист	Н.документ	Подп.	Дата	лит.	Масса	Масштаб
Разраб.							
Проб.							
Т.констр.							
Прочин							
Нач. КО							
Утв.							

Bottom Front Wire Assembled
(Нижний передний трос СБ)

лит.
литров