

Paramotor

OCTAGON 190



User's Manual



edition: V-10.15

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1. Introduction.

We congratulate you on choosing the paramotor with Octagon 190 engine! We know that you are a person who treats adventure, passion and the beauty of flying as an important part of life. We are happy that you decided to pursue your passion with our equipment. We are proud that more and more pilots choose our paramotors in order to realize their adventures.

We are pleased to welcome you as our customer.

1.1 Limitation of liability:

Remember! In certain circumstances, paragliding could be extremely dangerous. An accident on the paraglider could result in severe disability or even death. Paragliding is allowed only in weather conditions that are not conducive to dangerous situations.



Warning : The paramotor is only a device that supports the flight of the paraglider. Thus, in case the engine stops working during the flight, you have to be always prepared for safe landing.

You should never fly above reservoirs, vast forests or other areas where safe landing is impossible when the paramotor's breaks down, you lack fuel or you experience other unpredicted situations. You should also remember that each country has its own air traffic regulations. You should read existing regulations before starting your flights in a given country.

If you want to paraglide with paramotor you must have a license, which can be obtained by attending special training. Paragliding with paramotor without license or third party insurance is forbidden. In some countries, you can take off and land only on the areas specially designated for these purposes. Moreover, radio communication is often obligatory. If you plan to paraglide get to know about aviation areas in order to avoid the places where flying is forbidden.

Although we took all necessary precautions in order to provide you with the equipment that is maximally safe and without structural and material defects, you must be always ready for safe emergency landing. You should always keep adequate altitude and distance margin that is indispensable if you want to fly safely to the landing area.

The fact that the engine at work is extremely dangerous means that using it and performing any operations with it is forbidden after drinking alcohol.

Paramotor Octagon 190 was designed only for amateur paragliding. The paramotor is not designed for participating in sport competitions, aerobatics, or stunts. It is also not designed for commercial purposes. We accept no liability for any financial losses and lost revenues caused by the paramotor's breakdown, waiting time for

repair and spare parts, as well as health and property damages incurred by the third party.

It is not allowed to make any modifications or adjustments, to use non-original spare parts, and to make repairs without the permission and control of the producer or its authorized representative. Such actions cause the loss of the warranty rights. They could also lead to problems with the working of the equipment, serious equipment damage, and severe body damage including the risks to the pilot's and the third party's lives. The pilot is obliged to follow all instructions that are included in this manual.

1.2 The meaning of symbols used in the manual:



Warning : This indicates the instruction that should be followed if you want to avoid harming or risking the life of the pilot, mechanic or third party.



Attention : The instruction that should be followed if you want to avoid a severe engine's damage. In some cases, not following this instruction could result in health risks.



Important: Information that are important during the exploitation.



Note: Information that help in using the equipment and in its proper maintenance.

⇒ Indicates maintenance activities.

✓ Indicates check-up activities.

2. Preparing paramotor for exploitation.

2.1 Package content.

The complete package of Octagon 190 paramotor in standard version includes the following items:

- | | |
|------------------------------------|--------|
| 1. Frame with engine and harness | 1 pc. |
| 2. Propeller cage | 1 cpl. |
| 3. Propeller | 1 cpl. |
| 4. Propeller mounting screws | 1 cpl. |
| 5. Propeller nut locking washer | 1 pc. |
| 6. User's manual and warranty card | 1 pc. |

✓ The serial number of the propeller is on the inner surface of its hub and is visible when separated from the paramotor.


✓ The serial number of the engine is stamped on the casing below the small pulley.

2.2 Assembling paramotor for the first time.

2.2.1 Mounting of the propeller.

The Octagon 190 paramotor's propeller is mounted with six M6 screws according to DIN912, 8.8 class with ripp-lock washers. The set of propeller mounting screws with the aluminium washer (propeller thrust) can be found in the side pocket of the harness. Propeller mounting screws must be screwed cross-wide in two stages: first – using 6 Nm torque – then you should check blade axial wobbling. The difference between the trail of both tips of the blade should not exceed 2mm. In second stage, screws must be tightened using 10 Nm torque. If the difference of the trail exceeds 2mm you should loosen the screws and then tighten them cross-wide once again but this time using bigger torque on the side of the blade that sticks out more from the engine. You should not use any washers under the propeller because they can break off the screws that hold the propeller during the flight.

 For mounting of the propeller use allen key 5. Tools are not included in the package.


 You should not tighten the screws that hold the propeller by using torque bigger than 10 Nm.

2.2.2 Propeller cage mounting.

Delta propeller cage mounting.

We start to mount the propeller cage by inserting 6 carbon connectors into the frame. Next, after stretching out the cage's frame with the net, we insert all 4 parts of the cage into connectors. The next step is inserting protections that connect the cage directly with the lower part of the frame. When all the elements of the cage are connected you should remove the wrap by pulling the rope in the lower part of the security net. The last, but very important activity is mounting three security bands (Velcro), which prevent the cage from accidental unfastening of the cage (you do not have to pull it very strongly)

✓ After mounting the propeller cage you should once again check if it is correctly mounted and protected.

 It is recommendable to memorize the exact sequence of all activities.

2.2.3 Harness adjusting.

Adjusting of the harness consists of two steps. First, you adjust the harness with the paramotor on your back. Second, you make final adjustments with the suspended paramotor with fuel.



Warning : If you forget to adjust the harness or you do it improperly, it could cause serious problems during the start or it could even prevent you from taking off. It could also lead to twisting of the tapes during the flight which could result in the immediate paraglider's air dive. When something like this happens at low altitude it could result in a very dangerous fall on the ground.

3. Fuel.

Two-stroke engine in Your paramotor requires using oil-petrol mixture in 1:40 ratio during regular usage and 1:33 when you run it in.



Warning! : Fuels are extremely flammable liquids and their fumes are explosive. You mustn't use open flame while preparing the mixture, refueling or when you are close to the place where you store it. You should handle fuel very carefully. Do it only in well-ventilated places or in the open air.



Attention: Remember to use only unleaded petrol with an octane rating minimum 95.



In order to correctly prepare the fuel-oil mixture, you should use a special canister. The best situation is when the canister is not red because most oils dye fuel in this way. In short, with a red canister it would be difficult to tell whether the fuel has been already mixed or not.



Warning : You should not mix the fuel with oil in the paramotor's fuel tank, especially if the tank was empty before refueling.




You should only use high quality synthetic oils. Try to find out what oil grades are available and popular in the place where you live or in the area where you want to fly on a regular basis. If you choose a particular oil grade try not to change it. If it is necessary, try to change it as rarely as possible. The Octagon 190 engine is not designed to work with mineral oils!



Warning: Fuel mixed up with oil loses its properties with time. Do not use the mixture that was prepared a month ago. Try to plan the amount you will need for your flight and prepare only as much mixture as you need. If you are going to store the paramotor for a long time, you should empty the tank completely.

 This table shows how to prepare the proper ratio of the mixture:

During the run-in 1:33		Regular use 1:40	
Petrol [litres]	Oil [ml]	Petrol [litres]	Oil [ml]
0,5	15	0,5	7.5
1	30	1	25
2	60	2	50
3	90	3	75
4	120	4	100
5	150	5	125
10	300	10	250

 The majority of contaminations that get inside the fuel tank come from a contaminated funnel. After filling the tank, petrol immediately evaporates from the funnel surface and it leaves a thin oil layer. Dust and various small and big molecules stick to this layer. Some of them get inside the fuel tank because they cannot be stopped by the filter. These contaminations get into the tank during the next refill. That is why one of the most important aspects of keeping the tank clean is protecting the funnel from dirt in between refills. This task is very often neglected by the users.

We strongly recommend to pre-filter the mixture before pouring it into the tank. Poor quality of the fuel or storing it in dirty containers are the most common causes of engine problems.

Filter the fuel using manual or electrical pump with the additional fuel filter installed on the pipe. The filter kit could replace inconvenient funnel. Moreover, it helps to empty the fuel tank easily, e.g. for transportation or at the end of the season.

4. Starting the engine for the first time.



Warning : It is obligatory to check the working of the gas throttle each time you want to start up the engine.



Warning : When you start up the engine please bear in mind that if you pull the rope too strong you could break the locks or break the rope itself. After the start-up it is recommended to drive the handle with the rope back to the initial position. You mustn't drop the handle and let the rope come back to the initial position with high speed without your control.

Every time you want to start up the engine you must secure the gas throttle in such a way that it will not be possible to turn it on by accident. You should also check whether the starter rope is not tangled or jammed, and the carburetor throttle is not left ajar. In case you need to turn the engine off immediately, the gas throttle should be placed in such a way that it is possible to reach quickly and easily for the ignition switch.



Warning : If the engine starts working rapidly, and unexpectedly at high speed (high rpm) it may cause very serious body injuries resulting from getting hit by the propeller.

4.1 In order to insert fuel inside WB37 carburetor, while pressing the bulb, you should delicately press the membrane through the special opening in the carburetor's cover. In this way you will be able to open the valve and enable the flow of fuel. When fuel, which is visible in the fuel pipe, will enter the carburetor you should insert additional small portion of fuel in order to enrich the mixture for starting the cold engine. It is usually enough to be pressing the bulb and to press the membrane for no longer than a fraction of a second. After pulling out the starter's handle and feeling the first resistance you should energetically pull the starter's handle in your direction. You have to pull it a couple of times until the engines starts running.

4.1.1 When the bulb is not available you should press and hold the membrane through the special opening in the carburetor's cover in order to open the valve and to enable the flow of fuel to the carburetor. While observing the level of fuel in the fuel pipe, you should move the propeller energetically (right/left, the range of 60°/70°). When fuel enters the carburetor, you should insert additional small portion of fuel in order to enrich the mixture for starting the cold engine. After pulling out the starter's handle and feeling the first resistance you should energetically pull the starter's handle in your direction. You have to pull it a couple of times until the engines starts running.

☞ When you start up the paramotor standing on the ground by pulling the starter, you should hold the cage's crossbar, which is next to the starter rope's block, with another hand. It is recommended to stabilize the paramotor by putting one foot on the lower part of the frame. When the engine is working you should perform all further actions (increasing rpm) while holding the paramotor's frame, NEVER THE CAGE!

☞ When you start up the paramotor on your back, you should focus on driving the rope and handle downwards along the body. Pulling it forward leads only to bending the paramotor.



Warning : All engine trials performed when the propeller is spinning must be undertaken with utmost caution. You mustn't hold the propeller's cage! If you do this the engine's thrust might bend the cage towards the spinning propeller. Always make sure whether the propeller's cage is properly mounted on the frame and whether it is protected.

Properly regulated and flooded engine starts usually after one or two yanks and works steadily at idle speed, though immediately after the start-up the speed is much higher than 2000-2200 rpm and decreases during the warm-up. When you have problems with this, the reason might be:

- **Over-flooding** – too much fuel in the carburetor
Symptoms: When engine starts with a few strokes and cuts out, but with each start-up attempt engine works a little bit longer and then cuts out, we are dealing with a too rich mixture. When engine is over-flooded it might be necessary to push slightly the handle throttle.
- **Not enough fuel**
Symptoms: The engine does not start at all, or works shorter with each start-up till it ceases to start. In that case one should apply brief fuel „injection“, introducing fuel back to the carburetor.



Warning: You should not flood the carburetor with additional fuel when the engine is still warm – it might damage the spark plug isolator or cause problems during the next start-up.



Warning! : Never pull out the starter rope to its maximal length.



In the first engine start-ups you should pull the rope gently to its very end so as to remember its furthest position. This rope should never be pulled that far again. To assure trouble-free operation of the starter just before yanking you should pull the rope gently till the first perceivable resistance induced by snapping the hook on the flywheel. It helps you to avoid “knocks” on triggers and it noticeably extends the time of the trouble-free operation of the starter.



Warning: After the start-up of the engine you mustn't (in any case!) pull the starter handle. Every time you pull the rope while the engine is working the triggers are pushed towards the cup clutch, which could lead to serious damage of the starter.

4.2 Turning off the engine.

In order to turn off the engine you should push the button on the gas throttle and wait till the engine stops completely. If you release the button earlier the engine will start up again.

4.3 Emergency engine stop.

In order to turn off the engine you should bend the fuel pipe and wait till the engine stops completely. If the set is equipped with the fuel tap you should turn it off.

5. The run-in and the engine use.

5.1 New engine check-up on the ground

Every engine in a new paramotor has been already switched on and initially regulated. Due to the fact that membrane carburetors are sensitive to changes in atmospheric pressure, humidity etc., the adjustment of the idle speed might be needed. You should perform the initial run-in on the ground right before the first flight.

When you start up the cold engine you should briefly warm it up (1-2 minutes) on medium speed. Then increase it to around 4000 rpm and keep like that for around 30 seconds. Next, you should check the idle speed, and check how the engine reacts to rapid opening of the throttle. If the engine chokes you should increase the speed again to around 4000 rpm for around 30 seconds and try to accelerate once again. If the engine is properly regulated and warmed-up it smoothly reacts to the changes in position of the throttle. If the engine after warming-up chokes during rapid opening of the throttle you should enrich the idle speed mixture by delicately loosening the "L" screw .

5.2 The run-in of the new engine on the ground.

After warming-up the new engine you should initially set its speed. In order to do that you should start up the engine and try to keep the speed at around 4000 rpm for 30 minutes. After that time you should increase the speed to 6000 rpm and keep it for around 10 minutes.

Next, you should check whether the engine reacts properly and smoothly to speeding from idle to maximum. You should also check whether the engine does not choke and does not have the tendency to cut out.

If you observe any alarming symptoms please contact the distributor or directly our service.



After every flight you should check if all threaded connections, exhaust system parts, and rubber parts are not loosened, broken etc. Any disturbing symptoms (vibrations, sounds etc.) should be thoroughly checked. If in doubt, you should contact the service.

5.3 The run-in of the engine in the first hours of its exploitation.



Warning : The Octagon 190 engine is equipped with WG-37 carburetor. This carburetor is extremely sensitive to the changes in the location of the screw regulating high Speed – „T“-shaped screw with letter „H“ on the carburetor's body. Even small change in the location of this screw causes big changes in mixture composition.

You should also be very careful while regulating „L“ screw – minimum speed, because it is responsible for mixture composition during horizontal flight rotation.



The run-in during the flight is divided into two stages:

First stage involves making first take-offs and first flights maintaining the lowest possible speed. Maximum speed must not be reached unless it is absolutely necessary and it should take as short as possible. High altitudes are not advisable, but if necessary they should be reached in steps, making pauses while ascending in order to cool the engine. We advise you to maintain high ascent for no longer than half a minute, then keep lower ascent for about one minute.

The first test flight should take no longer than 10-20 minutes. After landing you should check combustion conditions by checking the condition of the spark plug.



Spark plug evaluation in the engine working previously for a long time at idle speed is not reliable. For proper evaluation you should turn the engine off after a few minutes on medium and high speed (horizontal flight) and land on the turned-off engine.



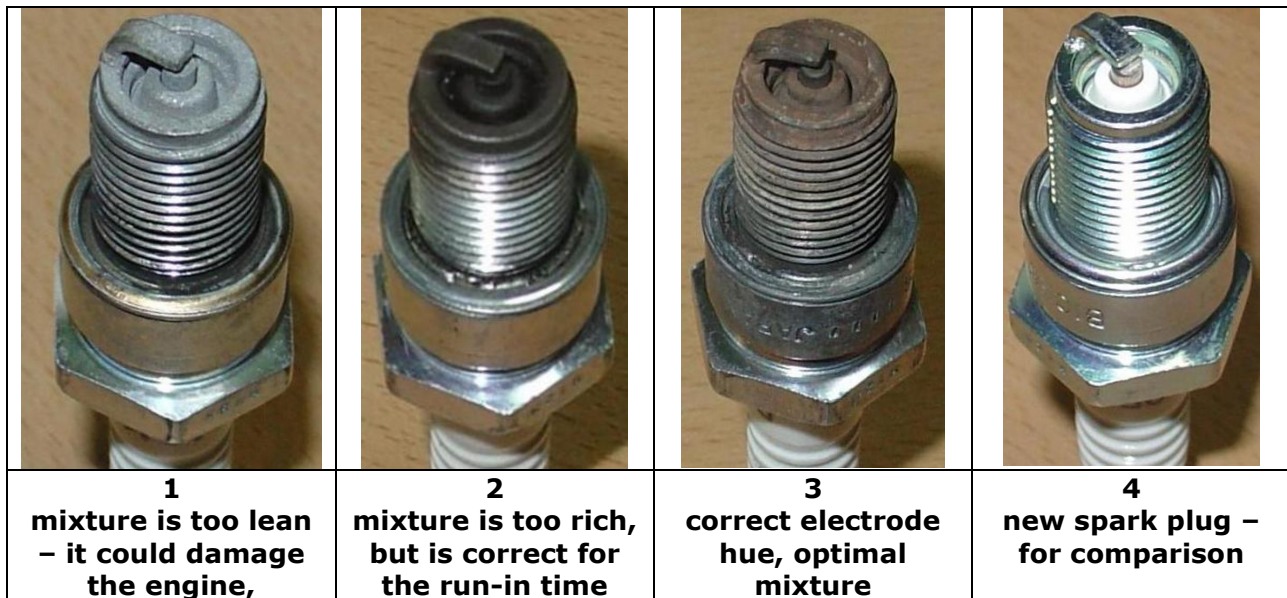
Attention : There are only two ways of checking whether the mixture's composition is correct! First, taking the temperature of the fumes. Second, evaluating the state of the spark plug!

Second stage: If the spark plug has dark color or is black after the test flight, we can continue flying also using maximum engine power.



Warning : The greatest threat for the engine is when it is working on too lean mixture. This leads to rapid temperature growth of the piston crown, and could result in melting or burning of the piston crown. In such case, serious damages of cylinder, piston and crankshaft bearing could appear. In practice, it means very high repair costs. Due to the fact that only the user is responsible for mixture composition, the producer takes no responsibility for damages caused by overloading the engine thermally, engine seizure, tearing off the connecting rod, jamming the piston rings, using inadequate oil, or using not enough amount of oil!

5.4 Typical spark plug hues are shown below



☞ During the run-in time a wet and tarry spark plug is a good sign because it means that the mixture is rich. Petrol in a two-stroke engine is not only a fuel but also a warmth conductor, which is emitted excessively during the run-in. During the run-in time, we even advise you to use a too rich mixture at the expense of slightly weaker engine performance.

☞ During the run-in time it is generally recommended to use the engine on differential speed and not to keep one speed for a long time (e.g. long flight on a steady altitude).

① Manipulating gently with the gas throttle during the run-in and acting according to the guidelines described above will lead to sustained and trouble-free engine running and significant prolongation of the time before the first repair. If the user intentionally does not follow the guidelines presented above, it will not cause the loss of any warranty rights or the engine's damage, but it is important to bear in mind that preserving the engine in the best shape during further exploitation depends on how we handle it in the first hours.



The run-in time for the "OCTAGON 190" engine is about 15-20 hours of flight.

☞ The practical way of estimating the length of run-in stage is using up 1 litre bottle of oil.

☞ We advise you to mount the tachometer, which facilitates both evaluating the engine's state and basic adjustments. It also has the hour meter.

5.5 Regulating the carburetor during the run-in time.

Before sale every carburetor gets its default, factory settings.


If it works well, you only need to regulate the idle speed because it changes together with the changes in atmospheric pressure (horizontal screw lifting the throttle lever).


After the warm-up, we set speed on 2100-2200 rpm or so that the engine could work steadily and would not cut out.


During the run-in time you might feel slight and irregular vibrations when the engine is below 4000 rpm. It is usually caused by too rich minimum speed mixture (the L screw) and it usually happens when the surrounding temperature is too high. The similar symptom appears when the space between the spark plug electrodes is too wide. The difference is that when the problem is a too rich mixture on minimum speed, the symptom disappears when the speed is increased, and when the electrodes are too far away or the spark plug is damaged those symptoms increase along with the speed. This can be prevented by leaning the mixture slightly by using the L screw (vertical screw with head for flat-blade screwdriver). You must tighten the screw once, for 5' clockwise and check how the engine works. Then, you must perform the test flight with the spark plug check-up.

During the run-in time you should avoid changing high-speed mixture composition (the H screw) even if the spark plug check-up shows that the mixture is too rich. At this time, your priority is lubricating and preventing the engine from overheating.

 **Each newly purchased spark plug has about 1mm space between the electrodes. You must necessarily reduce it to 0,5mm.**

 **NEVER START THE ENGINE WITHOUT MOUNTING THE PROPELLER. IF THE ENGINE STARTS WORKING WITHOUT THE BALLAST IT COULD CAUSE IMMEDIATE AND VERY SERIOUS DAMAGES TO ENGINE.**

 When the engine is hot, the temperature of some exhaust system parts may exceed 300° C. Touching the engine, even by accident, may cause serious burns.

 The Paramotor with the OCTAGON 190 engine is to be used with 125cm or 130cm propellers.

Using other propellers is not recommended. For instance, too „ballasted“ ones might lead to accelerated engine wear. In turn, too „light“ propellers might lead to exceeding the maximum propeller speed limit, overheating and damage of the engine mechanical parts. Damages caused by using inadequate propellers are not covered by the warranty.



When the paramotor is running with a damaged, unevenly balanced or not correctly routed propeller, the gear unit components and rubber parts wear off very quickly. The gear unit damages due to the use of inadequate, damaged, unevenly balanced and incorrectly routed propeller are not covered by the warranty.

6. Pre-flight check-up and adjustments

6.1 Pre-flight paramotor check-up.

Checking up the paramotor before taking off includes obligatory propeller cage mounting check-up and the gas throttle performance check-up. The propeller check-up means controlling its mounting and checking for mechanical damages or cracks.



The propeller should rotate steadily, whistles or whizzes indicating blade damage should not be heard.



Never put your hands into the propeller space when the engine is on, even if the propeller does not rotate.



Never turn on the engine without mounted and secured propeller cage.



Never leave the paramotor turned on without supervision, especially with the gas throttle lying on the ground. If you step on it accidentally it may cause serious injuries.

- Check harness, tapes, joints and carabines. Check the condition of all rubber parts of the paramotor. Check all the accessible screws - whether they are not broken, missing, loosened. Check the engine power supply system, filter and fuel pipes - whether there are no leaks that could lead to sucking-in the „fake“ air.
- Check the mounting of the engine, the exhaust system, mounting of the suction murmur silencer, and pay special attention to the condition of rubber parts.
- Check the propeller cage ropes, speed ropes and footstool. Make sure that starting the engine will not cause sucking in other objects by the propeller - i.e. gloves, radio cables, helmet or loose clothing parts. Make sure that turning the engine on will not pose any threat to other objects or third party.



Monitoring the engine technical state after each flight is strongly advised. By doing this you can avoid mistakes during the pre-taking off rush and you can shorten the preparations.



Never perform maximum thrust test with the paramotor standing on the ground. If you want to do this put the paramotor with the turned off engine on your back and then turn the engine on.



One of the most dangerous and unpredictable events during the flight is tearing off the parts of the exhaust system. This usually causes damage to the propeller and immediate thrust loss. It also leads to immediate preparation for emergency landing. When the parts of the exhaust system start to fracture it is usually indicated by a sudden change or increase of sound intensity produced by the engine. Tearing off or loosening up the parts is indicated by perceivable increase in vibrations. It leads to exhaust leaks that are indicated by increased noise.



Small capacity engines have small heat capacity, therefore they warm up quickly. After refueling, flooding and initial start-up (on the ground), 30 seconds on low speed and about 30 seconds on medium speed is enough to prepare the engine. Then the engine can be turned off in order to finish preparations for the take-off. After the wing is attached and the pre-start wing monitoring is already performed, we advise you to start up the engine while keeping it on your back and then to lean forward to perform the high speed test (it should take a few seconds). It will help you to “push” the rest of the air into fuel system and it will warm up the engine to the optimal temperature. Moreover, it will enable you to evaluate how the engine is running on high speed.

6.2 Basic engine adjustments.

WB37 Carburetor adjustments.

The most frequent activity is adjusting the idle speed. Membrane carburetors are quite sensitive to the changes in atmospheric pressure. It means that there are days when the engine works properly at idle speed, and days when it works unevenly, cuts out or, for instance, works on too high speed.



Attention! : All carburetor adjustments should be performed after warming up the engine (approximately 2-3min on low and medium speed)

If you notice that it takes too much effort for the engine to start and it does not work evenly on low speed or if it works unsteadily (e.g. has a tendency to cut out), you should correct minimum speed settings. It is usually enough to adjust the throttle's position with a screw (horizontal screw lifting throttle lever), but in some cases it is necessary to change the composition of the idle speed mixture.

WB37 carburetor has three screws that can be regulated. These are: throttle positioning screw, idle speed mixture composition screw (L for low speed) and high speed mixture composition screw (H for high speed).

Default mixture composition screws settings in Octagon 190 engine are:
The L screw unscrewed for 50' – 1,00' of the clock face - 1 turn from closed position,
The H screw unscrewed for 1, 00' – 1, 10' of clock face from closed position.



Attention : You must not start the engine with the opening smaller than one H screw turn (the mixture is too lean).

This setting is risky because it could lead to serious engine damage. With a correctly warmed-up engine you should set the „H” screw in such a way that the engine could reach maximum speed while opening the throttle completely. You should monitor the speed using the tachometer. Next, you should unscrew the “H” screw (enrich the mixture) so that the speed would slightly decrease (about 100-150 rpm). After performing the high speed regulation you should not use the maximum engine power until you evaluate fuel usage and spark plug condition and confirm that the composition of the mixture is adequate.

The composition of the minimum speed mixture is set by unscrewing the „L” screw (one turn) and then evaluating how regularly the engine runs and the level of idle speed. Idle speed of a properly regulated engine usually range between 2000-2200 rpm and may vary due to temporary engine temperatures. Adjustments should be performed by means of slight corrections of screw position (approximately the width of the slot on the circumference of the screw head). If you observe the following symptoms: after warming up the engine starts slowly and decreases the speed steadily until the cut out, it floods the spark plug, and at the same time the slight opening of the throttle makes it easier to start it – you should make the idle speed mixture leaner by screwing the “L” screw and you should make another attempt after re-warming up for about 1 minute on medium speed.

If the engine works with large fluctuations on low speed, and it has strong vibrations on idle, you should slightly unscrew the „L” screw, increasing throttle’s opening by screwing the throttle buffer screw in order to increase the idle speed.

The symptoms of too rich mixture at idle speed are the following: after starting the cold engine it works properly for a while and when the temperature increases it starts to work slower and slower until it cuts out. Opening the throttle before the cut-out increases the amount of fumes, and the engine reluctantly gains speed. After a while on high speed (4000-5000 rpm) the engine takes low speed again, but left on it for a short time its speed would decrease systematically until the cut-out.

Another symptom of too rich idle speed mixture: the engine works properly on low speed in low temperatures (e.g. right after the start) and has very low speed and tendency to cut out after warming up significantly (2-3 minutes on minimum 6000 rpm speed).

Engine with too rich idle speed mixture very often starts reluctantly when hot. At the same time, it starts much better with the throttle opened a little. Sometimes starting the hot engine without opening the throttle just a little bit may be impossible. In any of these cases you should make the mixture leaner by screwing the “L” screw slightly.

The symptoms of too lean mixture at idle speed could be:

The tendency to cut out and problems with keeping low speed on cold engine, especially right after the start. The engine works irregularly, vibrates strongly, stops. Loosening the „L” screw a bit causes speed decrease, but the engine works more steadily and does not cut out.

The cold engine very often cuts out after the start and it is impossible to start it again without a slight re-fueling with the fuel pump. This does not refer to the situation when the engine was not filled with enough fuel.

After adjusting the composition of idle speed mixture you should perform the high speed adjustment again – „H” screw.

7. Storing the paramotor and other maintenance operations.

While storing the paramotor in a standing position you should loosen up the fuel tank stopper. Even small changes in the surrounding temperature may cause significant pressure changes in the sealed tank. When planning long-term storing of the paramotor, you should empty the fuel tank completely, completely remove the wires, and the carburetor. It is extremely dangerous to leave even the tiniest amount of fuel in the sealed tank in highly sunlit place or other place where intense heating (car trunk etc.) could occur.

You should also remember not to store the paramotor in humid places because it could influence its technical and visual state. Direct exposition to such conditions is not covered by the warranty.

7.1 Pre-flight paramotor check-up – daily check-up.

- Check and evaluate general state of the paramotor’s parts by looking for cracks, leaks etc.
- Check the engine mounting, check the fuel system for leaks, and check the way the shifter and the throttle work.
- Pay special attention to the state of the exhaust system. Check the silencer mounting, condition of all threaded connections, and rubber shock absorbers.
- Check the propeller’s mounting, clean oil deposits, soot and other impurities from the propeller. Treating the propeller with a piece of cloth will help you to find cracks and other damages.
- Check the electric installation thoroughly looking for mechanical damage, abrasions, joints or some disconnections between the elements.
- Check the engine starter.
- Pay special attention to all leakages, scratches and atypical stains. In case of any doubts, contact a Techno-Fly representative.
- Check the frame and the propeller cage. Check the construction’s geometry. Inspect thoroughly harness settings, condition of tapes, carbines and braking system.

7.2 The paramotor’s maintenance and servicing – recommended operations.

After first 5 hours:

1. Check the tightening of all screws and nuts (visual control).
2. Check the tightening of the head (torque 13 Nm)
3. Check the internal carburetor filter (by unscrewing 4 screws on fuel pump’s cover-WG37)
4. Check the spark plug – condition of electrodes and spark plug hue. Torque 26Nm.
5. Check the engine regulation.

☞ Carburetor WB-37 has the opening (diameter circa 8 mm) closed up with the net, which is located under the back lid and rubber petal. This is the additional fuel filter. On the filter, especially in the first period of exploitation there could be some technological contamination of the fuel system as well as gel deposits caused by poor fuel quality. The easiest way to get rid of contaminations noticed during the check-up is to rinse it by means of regular syringe with the stream of pure washing benzene or brake cleaning spray.

Reducing the fuel flow through a sieve could cause intermittent engine running, lack of power. In some cases, this could lead to leaning of the mixture, temperature growth and the engine seizure!

After first 10 hours:

1. All steps performed after first 5 hours.

Every 25 Hours:

The same activities performed after 10 hours plus:

1. Check the Spark plug condition – the electrode gap and the isolator's hue.
2. Clean the carburetor (internal mesh filter).
3. Clean or replace the main fuel filter.
4. Check the tension of the transmission belt.

Every 50 hours or once a year:

The same as every 25 hours plus:

1. Replace the spark plug.
2. Replace the starter rope.
3. The starter's check-up (clearing and lubrication).
4. Control the engine's regulation.
5. Replace the transmission belt.

Every 100 hours:

The same activities as every 50 hours plus:

1. Remove carbon deposits from the combustion chamber.
2. Replace the head gasket.
3. Replace the piston with piston pin rings and needle bearing.
4. Check the condition of the shaft bearings and connecting rod bearings.
5. Replace the manual fuel pump.
6. Replace the rubber joint of suction murmurs silencer.
7. Replace the silencer rubber shock absorber.
8. Replace the spark plug pipe.

Every 200 hours.

The same activities as every 100 hours plus:

1. Replace the membrane valve petals

8. Technical specifications of the paramotor with the engine Octagon 190

Paramotor :	Octagon 190
Engine type	Two-stroke
Power	27 KM / 7800 rpm
Capacity	190cm ³
Compression ratio	10:1
Cooling	With air
Cylinder	Aluminium with Nicasil layer
Cylinder diameter	65 mm
Exhaust pipe	The resonance tube, pointing down
Starter	Manual
Carburetor	WB 37
Ignition	TCI
Spark plug	NGK (BR10SE) / DENSO (W31ESR-U) / DENSO (IW31)
Propeller	125 cm / 130 cm (6x50mm)
Max thrust at 7900 rpm	~ 70-75 kg
Gear ratio	1:2,65
Gear unit	Belt transmission
Fuel tank	11,5 L / 15,5 L
Cage	Aluminium and carbon
Suspension	Upper / Lower
Harness	Techno-Fly
Carbines	30mm / 45mm
Engine's weight (with Exhaust pipe and suction murmurs silencer and absorbers)	11.5 kg
Combustion at 5000 rpm	3 – 3,5 l/h (after the run-in)
Fuel	Pb 95
Recommended pilot weight	60-130 kg
Weight of the paramotor ready to flight without fuel	19,5 kg

9. Warranty and service

9.1 We are putting every effort in order to make our paramotors durable and reliable. Still, being mechanical devices, they can sometimes have material and assembly defects which are independent of our will (the components from external suppliers).

In order to guarantee proper exploitation, Techno-Fly company provides you with telephone consultations. Contact us in case of any doubts concerning proper exploitation of the equipment.

The invoice is the document confirming your warranty rights.

9.2 Techno-Fly grants 24-month warranty on new paramotors from the day of purchase as indicated in the invoice. Warranty covers charge-free repair of damages caused by material and assembly defects, provided that the user acted according to our exploitation recommendations and inspection rules presented in the manual and presented in the course of the training. The inspections described in the manual during the warranty period are obligatory.

9.3 We guarantee the engine repair in max. 14 working days from the day of receiving the equipment and frame repair in max. 30 days. If the user could replace the spare parts on his/her own, we send them by courier or post in 3 working days.

The service has most spare and consumable parts, but the repair time might be exceeded when it is necessary to import components from abroad or to run a detailed test and weather conditions are not too good enough for that.

9.4 All manual starters used in Techno-Fly engines have to be checked up every 50 hours. This could be done only by a specially trained person. Taking into consideration the reliability and security we strongly discourage you from making any changes in the paramotor on your own.

9.5 The warranty does not cover repairs after seizing the engine due to thermal reasons (mixture is too lean due to a number of reasons) or foreign matter getting inside.

The warranty also does not cover damage due to long-term engine exploitation on maximum speed or without mounted propeller.

9.6 The paramotor must be delivered to the service personally or by courier in a package preventing it from any transportation damage.

Please empty the paramotor's fuel tank. Do not send the propeller, the propeller cage or any other additional elements unless they are directly connected to the repair carried out by the service.

You should add to the package a sheet of paper with a brief description of the problem and contact details to enable us to contact you in case of any doubts or questions.



Attention! : All extra processing and repairs of the paramotor, without prior agreement of the producer result in the immediate loss of warranty!!!

10. Service book.

Date	Description	Service operations	Comments	Signature
	<i>0 - h</i>	Service review		
	<i>25 - h</i>	Service review		
	<i>50 - h</i>	Service review		
	<i>100 - h</i>	Service review		
	<i>200 - h</i>	Service review		

Date	Description	Other service operations	Comments	Signature