JET

OWNER'S MANUAL

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1.0 INTRODUCTION AND GENERAL NFORMATION

1.1 Safety first, WWW! (Who, Where and When can fly it)

Powered Para Gliding (PPG) is the most exciting, least expensive, safest, and most accessible form of aviation available! However, it is still aviation, and it brings with it all the inherent potential dangers of aviation. People can, and do, get hurt, and even killed, in any form of aviation, including PPG. For that reason it is imperative that before fly with this PPG you must receive proper training from qualified instructors and obtain a valid PPG license, an then offer PPG the respect all aviation deserves, respect weather and conditions, and realize that in the end, it is the pilot himself that is fully responsible for his own safety and the safety of fellow pilots and bystanders.
Depending on every national regulations, the PPG may only be operated in authorized areas and flights within controlled airspace usually needs a permission given by radio.
Additional requirements like a valid insurance must be fulfilled.
Powered Paragliding is an extremely demanding sport that requires exceptional levels of attention, judgment, maturity, self-discipline, and attention to detail. It is unlikely that you will be able to participate in it safely unless you make a conscious and continual commitment to your own safety.
Due to the inherent risks in flying this or any PPG, no warranty of any kind can be made against accidents, bodily injury, equipment failure, and/or death.

This PPG is not covered by product liability insurance. Do not start it or fly it unless you are willing to assume all risks inherent in the sport of Powered Paragliding and all responsibility for any property damage, injury, or death which may result from the use of this product.

Enjoy PPGing to the fullest, and welcome to the sport!
Please read and be sure you thoroughly understand this Operator's Manual before starting or flying your **JET**. It contains information critical to the safe operation of the Powered Para Glider.

1.2 Notation used

Certain special terms (*NOTE, CAUTION, WARNING*) will be used throughout this manual. Their usage is defined below.

A **NOTE** provides supplemental information to help clarify a point being made in the text. Generally, a ***"note"*** is provided to help assembly, use, or maintenance of the product. Disregarding a ***"note"*** could cause inconvenience, but would not cause damage or personal injury.
A **CAUTION** provides supplemental information to help clarify an area where equipment damage could occur. Disregarding a ***"caution"*** could result in permanent and significant mechanical damage, however personal injury is unlikely.
A **WARNING** provides supplemental information to help clarify an area where personal injury or death could occur from negligence. Disregarding a ***warning"*** could result in serious injury or death.

1.3 JET Features

FLY PRODUCTS's JET Model is truly a remarkable, state-of-the-art Powered Paraglider that represents a huge leap forward in PPG technology. . The Jet will provide you with outstanding performance and superb, quiet flying comfort for hundreds of hours of safe and enjoyable flight.

The following is a brief list of some of the many features that are found on the JET :

? Very High Thrust/Weight Ratio JET weighs only 46 lbs., and produces 110 lbs static thrust
? Easy disassembly and assembly
? Clutch-driven prop doesn't spin during critical inflation, launch, and landing
? Gear-driven reduction drive
? Force-air cooling
? Tuned Pipe
? Extremely quiet
? In-flight Restarting
? Very good fuel economy and duration – JET flies 6 hours on only 15 liters (4 US gal) of fuel (with 150 lb pilot and modern wing)1.3 Diagram of Components

1.4 Diagram of Components

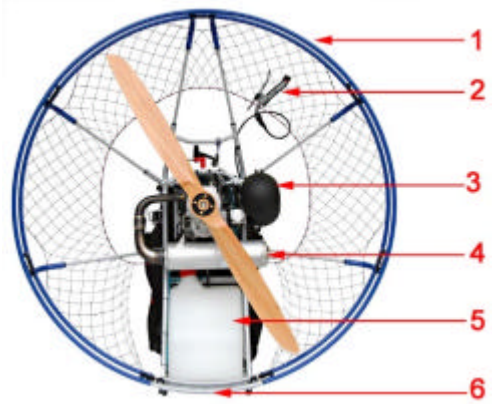


Fig. 1 - Rear View of unit

1 – External cage

2 – Multifunction throttle handgrip

3 – Silenced air filter

4 – Muffler/tuned pipe

5 – Fuel Tank

6 – External base frame

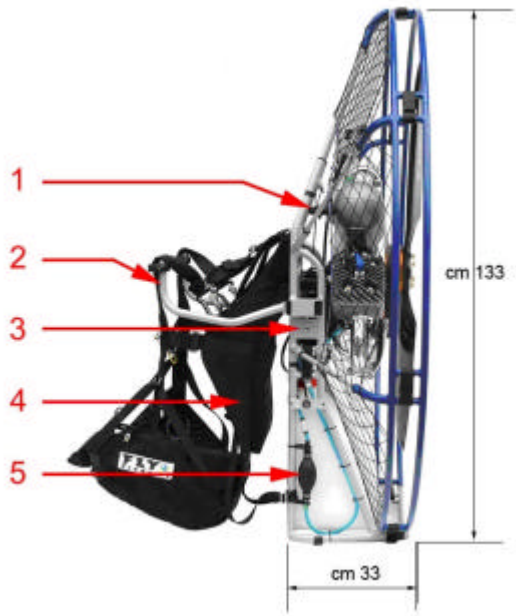


Fig. 2 – Side view:

1 – Manual pull starter

2 – Distance bar

3 – Main on/off security switch

4 – Harness

5 – Fuel pump

2.0 UNPACKING AND ASSEMBLING YOUR "JET"

2.1 Package Contents

The figure below illustrates the components that will be packed with your JET.

Fig. 1 The packing contents of the JET.

2.2 Frame Assembly

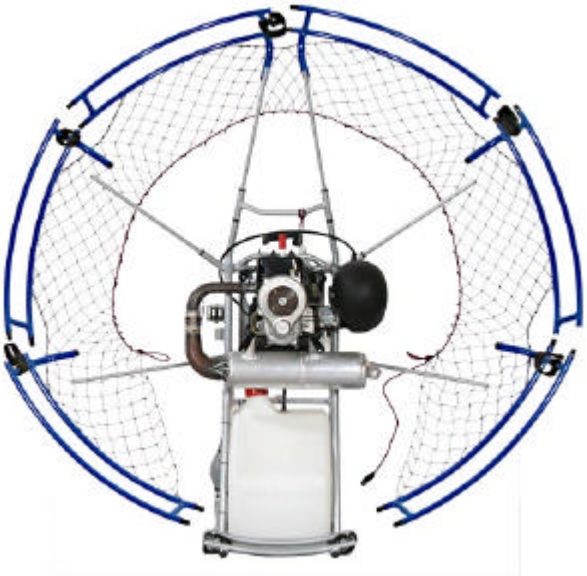


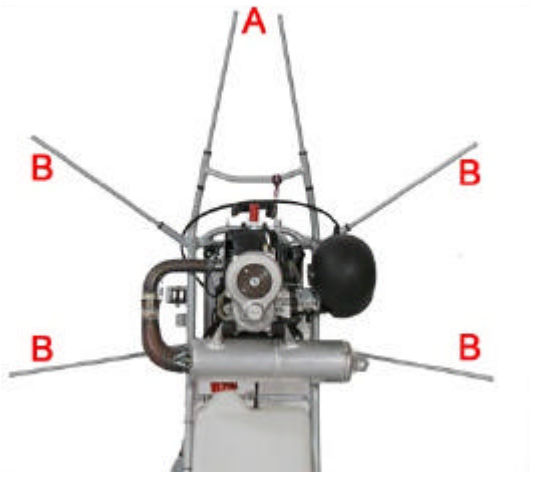
Fig. 2 The frame assembly of the JET.

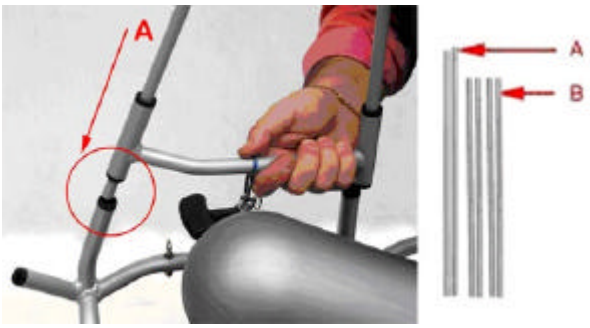
Frame assembly and disassembly on the JET is very fast and easy.

The frame consists of four parts, and they are held together by the support rods.

To init the assembling, Place the JET's central frame (the engine unit) on a flat surface.

For an easy and correct assembly proceed in the following order:





Step n. 1. - Support rods.

Plug all six cage support rods
into their bushings
on the central frame (engine),
take attention to put longest on the top.

Fig. 5 - Support rods

Fig. 6 - Upper mount

Step n. 2 - Assembling upper frames

Make sure that the cage netting is in front of the cage support rods as shows in the picts.
Place the upper frame quarts onto the upper support rods (fig. 6) and rotate the frames until plug in the inserts in the related holes.
Lock the velcro strap as shown in fig. 8 .

Fig 7 - upper side connection

Step 3 : Assembling right hand side outer frame

Insert the two upper-side pins into their seating as in fig. 7.
Mount the left hand side outer frame repeating the previous step 3
Insert the two lower–side pins of the frame into their seating .
Mount the other lower-side outer frame repeating the same operation.

Step 4 : Assembling lower outer frame
Insert the two lower pins of the frame into their seating .
Mount the other lower outer frame repeating the same operation.

Step 5 : Attach the velcro straps.
Once the frame is properly connected, it is best to immediately attach the velcro straps as shown in fig. 8 – 9 – 10

Fig. 8 – Attach the upper

Fig. 9 – Attach the sides

Fig. 10 – Attach the lowers

NOTE! The cage support rods must be completely seated into their bushings in the frame, and into their bushings in the cage,
if they are not seated completely into their bushings, you will be unable to fasten the netting into place in the next step.

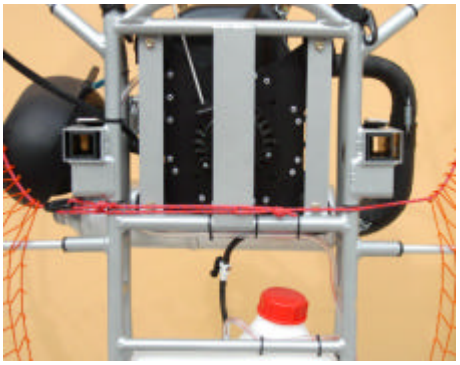


Fig. 11 - The string loop

Step n. 6 - Fasten the net.

Attach the netting tension strings as shown in the figures, simply passing the string-hook into the string loop, pull it tight, and then hook it back onto the string loop.

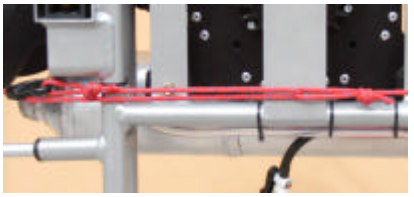
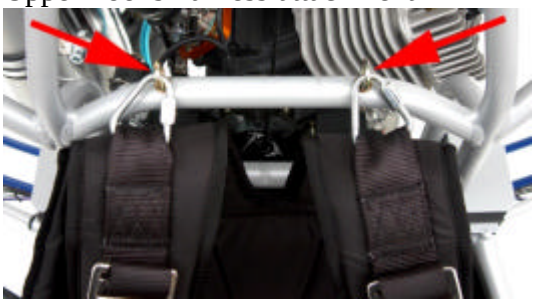


Fig. 12 - String lock

2.2 Harness mounting

The harness mounts to the central frame with six attachment points.
They are: the top harness triangular carabiners, the ground handling straps, and the distance bars.

Fig. 13
Upper hooks harness attachment



Step 1:

First engage the harness to the central unit by hooking the two triangular carabiners to the eyelets bolts as shown in fig. 13.

CAUTION – Close the carabiners immediately in order to avoid forgetting them later.

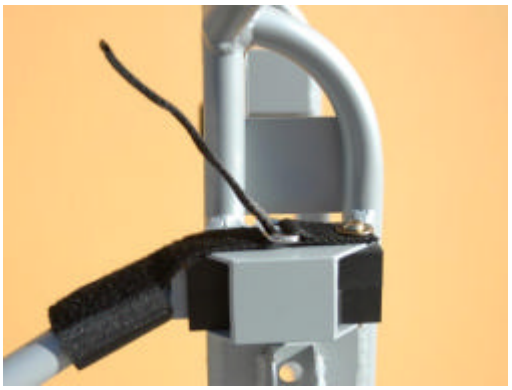


Fig. 14 - Distance bar attachment to the central frame

Step 2:

insert the two distance bars into their frame seats as shown in Fig. 14

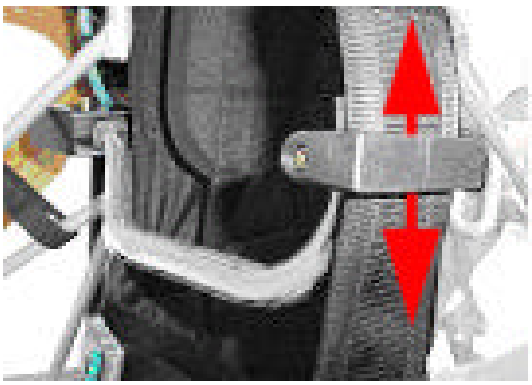


Fig. 15 – Front harness webbing attachment

Step 3:

Ensure that the harness is attached correctly to the distance bars and the web straps can freely slide into their seats as shown in fig 15.

Fig. 16 – 17
Lower harness attachment

Step 4: Next, attach the two bottom harness straps as shown in Fig. 16-17. Fasten these belts securely as shown in close up detail. Do this for the left and right sides. Leave these straps at their loosest setting for now, we'll adjust them later.

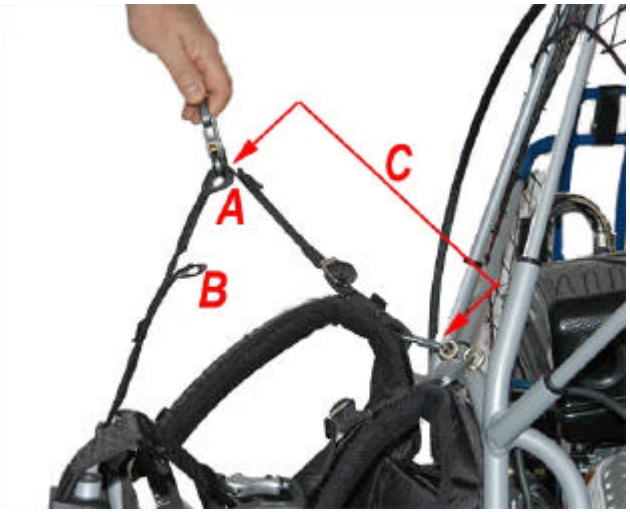


Fig. 18 – Upper harness attachment

Fig. 19 – Seat set-up

NOTE! The harness has 2 attach position, use the "**A**" position for paramotor use and "**B**" for trike operation.
As shown in fig. 18, the "**C**" distance can be regulated from 28 to 32 cm.

You can also regulate the harness-seat keeping closed or opened the harness seat zipper as shown in fig. 19.

This completes the harness mounting.

Double check your work to ensure that everything is OK.

MENTION ON DISTANCE BARS:
These distance bars are extremely easy to mount and dismount since they slide easily into the central frame. The end of the distance bars are made of a square aluminum profile that does not allow them to rotate. Due to the compression of the harness, the distance bars can not slide out of their fittings during flight.

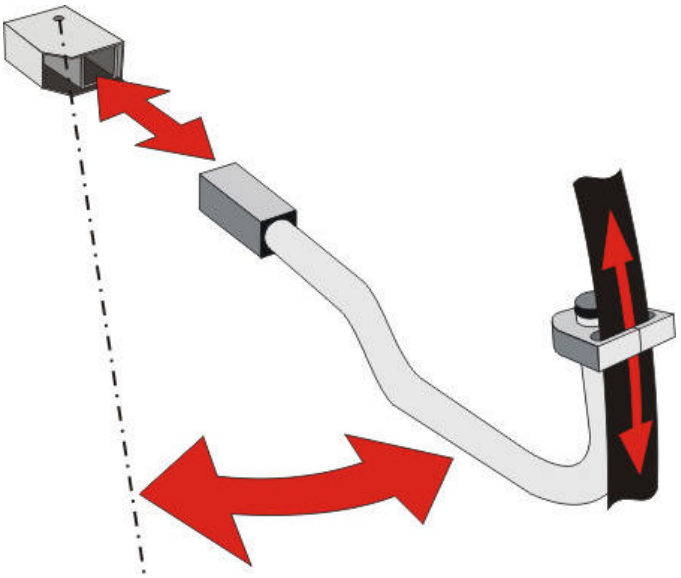


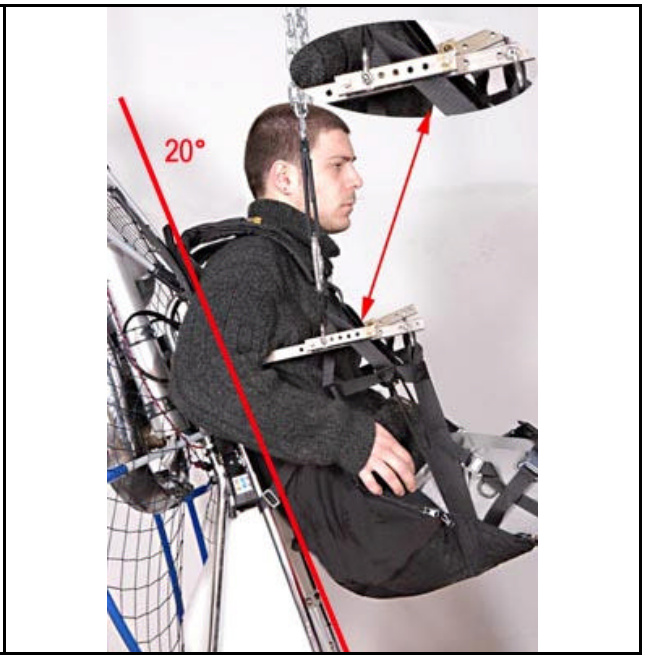
Fig. 20 Distance bar system.

ANTITORQUE SISTEM

The distance bars are designed to favor the sliding of front harness webbing in a way that the pilot finds the proper angle with the paraglider. With this system the discharge of the propeller torque onto the risers is avoided, which usually gives the the tendency to turn one direction that in the case of the rotation of the TOP 80 engine the tendency is to turn left.

LATERAL WIDENING OF DISTANCE BARS.
The distance bars allow a lateral movement which is useful for the pilot to enter easily into the harness.

Low connections



2.4 Prop Mounting

***NOTE**: Here is some terminology we'll use in this section.*

The "front" is the direction the pilot faces while flying, the "rear" is the opposite direction.
The "front" of the prop can be identified by the thick side of the prop blades.
The "rear" side of the prop can be identified by the thin side of the prop blades as the upper blade section shown in fig. 9.
The "rear prop flange" is the one that is most rearward when the prop is mounted.
The "front prop flange" is the one that is mounted on the reduction drive.

Mounting the prop is quick and easy.
Place the rear prop flange on the rear side of the prop.
Insert the four (4) prop bolts through the rear prop flange and prop.
Place the front thickness flange between the propeller and the reduction taking attention to fit the little centering hole in the prop.
Screw the bolts to the reduction drive and tighten them evenly.
The correct torque to use is 50-inch lbs. MAX.
A more practical "field method" of torquing is to tighten the bolts snuggly and evenly, but not enough to begin to crush the wood of the prop.

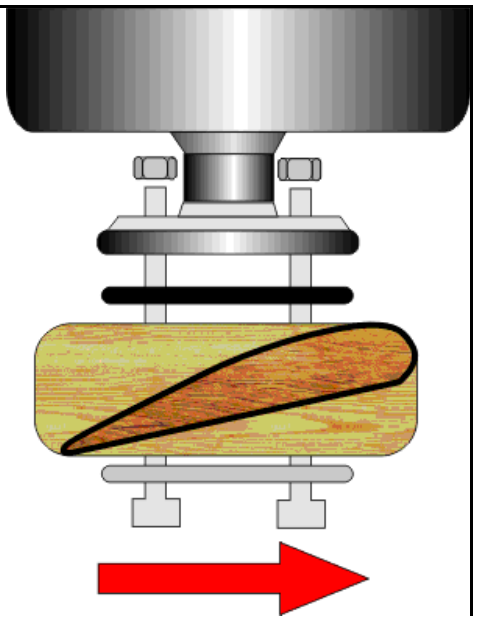


Fig. 21 – mounting the prop, the red arrow indicate the direction of propeller rotation.

2.5 Spark Plug

Set the spark plug gap to 0.025" (0.635mm). Install the spark plug and torque to specifications (120-inch lbs. or 10 ft-lbs.).

2.6 Assembly Inspection

It is critical to fully inspect the assembly of the JET and find and remedy any problem areas before proceeding. The inspection should contain, at a minimum, the following items:

? Review each assembly step above
? Examine all nuts, bolts, and fasteners for security
? Check the harness for correct mounting, that all straps are secure, that there are no twists on any straps
? Examine prop cage for correct assembly, that it is strong, the netting is tight and on the correct side
? Check that nothing can get in the prop. The prop should clear the cage by at least 2.5 inches (4 fingers) at all points
? Check the fuel tank and fuel delivery system
? Check for correct mounting of prop, and correct torque of prop bolts

3.0 PREPARING FOR YOUR FIRST FLIGHT

3.1 Fuel and Oil

FLY PRODUCTS recommends the use of a premium unleaded automotive gasoline of 92 octane or higher, and the use of premium synthetic 2-cycle oil. Mix fresh gas and oil before each flying session. Store your fuel/oil mixture in an approved, sealed container. Dispose of fuel/oil mixture that is older than 72 hours.
The recommended fuel/oil ratio is 2% Be sure to thoroughly agitate the mixture to completely dissolve the oil. Use only fresh fuel and oil, and use clean containers, funnels, hoses, etc.
To fill the fuel tank, remove the fuel tank by unscrewing the fuel tank cap . Take care not to get dirt, dust, etc. onto the fuel pickup.
It is recommended that the fuel be poured into the tank using a straining-type of funnel. Fill the tank with the desired amount of fuel.. Tighten the fuel cap securely.

NOTE: Wipe up any spilled fuel immediately, as the fuel/oil mixture is highly flammable, and an in-flight fire would be catastrophic. Also, the oil will leave a residue, which will attract and retain dust and dirt.

WARNING! Use common sense when refueling. Do not refuel a hot or running engine, do not smoke or allow on-lookers to smoke while refueling. Do not refuel near heat or open flame.

3.2 Before Starting the Engine

Before starting the engine on the ground, ensure that the unit is in an area free from dirt, rocks, dust, etc. that could be sucked up and thrown around by the propeller.

OPEN the fuel tank vent cock and check the breather hole is free of gag .

Check assembly of the unit, and especially check any and all nuts, bolts, and screws, that could be loose. Also check all parts of the prop cage for looseness. The prop produces a significant amount of thrust, and can suck things into it from a surprising distance.

Fig. 22 – Tank vent cock

WARNING! Ensure that no bystanders or onlookers are close by when starting the motor. The most dangerous place to stand is in the plane of the propeller. This is where dust, dirt, rocks, nuts, bolts, etc. will be thrown if they are picked up by the prop.

At full RPM, the prop tips are moving in excess of 370mph, and pushing the air rearward at over 62mph. This amount of force can pick up anything loose in the area and throw it around like a bullet. Not only can it severely injure you or bystanders, even small items like dirt can inflict significant damage to the prop.

3.3 Starting and Stopping Engine

3.3.1 Stopping the Engine

Since it's important to know how to stop the engine once it's started, let's cover "Stopping the Engine" first. To stop the engine, simply depress the "STOP" button (fig. 23 - "A") and hold it until the engine comes to a complete stop.

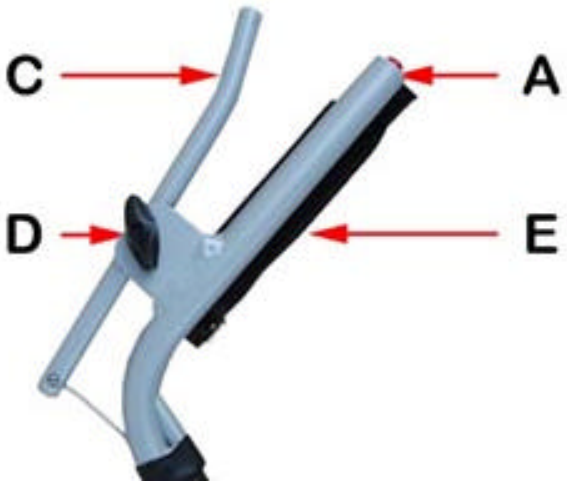


Fig. 23 - The handgrip

A - *STOP button*

C - *Throttle lever*

D - *Throttle lever hold to half power*

E - *Velcro strap*

It is important to be aware of some other engine stopping techniques, should the stop switch not function correctly.

The stop switch may not function correctly due to

1) faulty switch,
2) broken or frayed wires,
3) bad connections to any part of the stop switch circuitry.

For this reason, the following emergency stop procedures are available:

To stop the engine if the stop switch doesn't function correctly, you can

? Place your hand over the airbox intake hole

? Place the carburetor choke in the "ON" position

? Squeeze the fuel line (requires an aggressive squeeze, and takes about two minutes to stop the motor)

3.3.2 Starting the Engine

Now that we've covered stopping the motor, let's get to the fun part!

There are three different positions that can be used to start the engine. These positions are:

? Standing in front of the unit, holding the unit on the ground

? Strapped into the unit, standing on the ground

? In Flight

We'll cover each of these starting options in turn.

If the engine is cold it's very important to fill the fuel pipes squeezing the apposite fuel pump placed near the fuel tank.

- Standing in front of the unit, holding the unit on the ground

WARNING! The method of holding the throttle handle is important in this position. Hold the throttle handle such that you can easily reach the stop button, but not so that you can inadvertently squeeze the throttle. A common accident can happen where you hold the throttle in the same hand that you hold the motor unit, and if you squeeze the throttle a little, the thrust of the machine will

push the throttle onto your hand, causing you to squeeze the throttle even more. Make sure that you CANNOT inadvertently squeeze the throttle handle when starting in this position.

- Stand in front of the unit, and place your left hand on the top of the central frame tube. Hold the throttle in your left hand also, noting the warning above. Grasp the pull-starter cord with your right hand.

Gently pull the pull-starter cord until you feel the engine's compression. Allow the pull-starter cord to rewind into the motor. Rapidly and sharply pull the starter cord. The engine should start after one or two pulls.

Gently pull the pull-starter cord until you feel the engine's compression. Allow the pull-starter cord to rewind into the motor. Rapidly and sharply pull the cord. The engine should start after one or two pulls.

- Strapped into the unit, standing on the ground

In this position is possible to leave the throttle hanging to the right side of the harness, grasp the pull-starter cord with both hands and proceed like to the position above.

- In-Flight

For information on this starting position, refer to the "In-Flight Starting" section under "Flying Your JET".

CAUTION! Do not allow the starter-rope to snap back into place after you've started the motor. Gently place it back into place.

3.3.3 Choking the engine

If the engine hasn't been run in a few hours and is no longer warm to the touch, use of the choke will be needed. The choking procedure is as follows:

? Move the choke lever to the "ON" position.

? Pull the starter rope until the engine starts.

? Move the choke lever to the "OFF" position.

? Allow the engine to stabilize a few seconds before applying throttle.

The choke lever and it's "ON" and "OFF" position can be seen in Fig. 24.

3.4 Carburetor Adjusting

Our carburetor is provided with a starter for the very first starting (cold starting) Flip up switcher A in position 2 for starting, in position 1 for functioning.
You can set the carburetion at the desired revs. by the long black downward screw C. By turning it anticlockwise you rich the mixture, while the opposite you lean it.
The basic setting is between 1 and 2.5 turns from the shut position.

The C screw must be turned very gently, always verifying the cleanliness of the "passage" (the point where the nozzle of the idle enters the nozzle of the full, at about half revs.) in revving up.
If the engine pops, you tighten it, if it abates you loosen it.
The D screw sets the revs. at idle, by opening the butterfly valve.

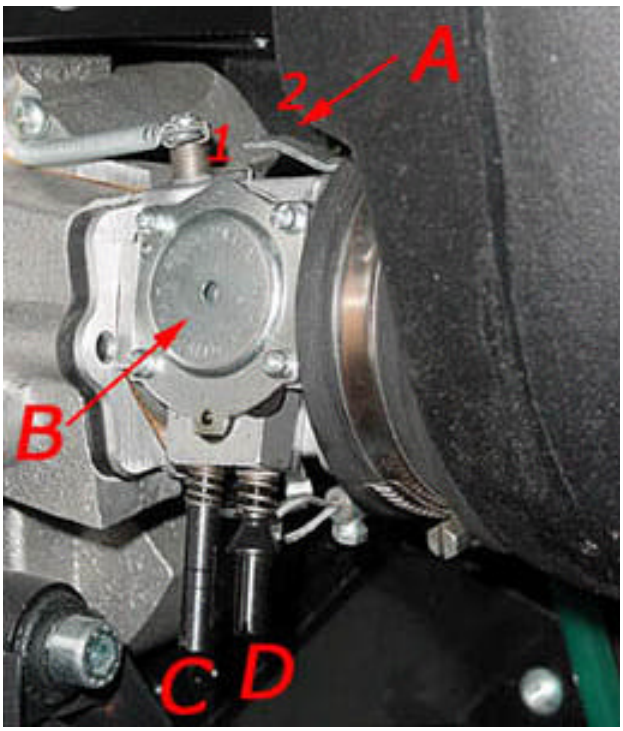


Fig. 24 JET JET carburetor

Components shown:

A – Choke Lever,

Position "**1**" is Choke **OFF**

Position "**2**" is Choke **ON**

B – Carburetor Diaphragm

C – Idle Mixture Screw

D – Idle Speed Screw

The JET carburetor has two adjustments, detailed in Fig. 24.

Carburetor adjusting proceeds as follows: Warm the engine by allowing it to idle for at least 5 minutes. Adjust the idle mixture C for the fastest idle possible. Once attained, adjust D for the slowest smooth and stable idle possible.

Often, after making a few adjustments to the carburetor, it is necessary to "start over", and go back to the original factory settings. The original factory settings for the carburetor are:

Idle Mixture Screw (C in Fig. 24): 1.5 turns out from stop

Idle Speed Screw (D in Fig. 24):1.5 turns out from stop

To restore the adjustments to the factory settings, GENTLY turn the screws CW until they hit their stops, and then back them out (CCW) the number of turns described above.

3.5 Engine Break-In

Break-in of the JET's Top 80 Engine is required before the first flight. Proper break-in will provide you with a better running engine, it will also provide for considerably longer engine life.

During the break-in, gently change RPM from idle to full-throttle and back. Do not rapidly change RPM, as this causes unnecessary wear and tear on the clutch. The procedure is as follows:

? Run the engine, varying the RPM, for 2 minutes.

? Stop the engine and let it cool for 2 minutes. Check for loose bolts, etc. during this time.

? Run the engine, varying the RPM, for 5 minutes.

? Stop the engine and let it cool for 5 minutes. Check for loose bolts, etc. during this time.

? Run the engine, varying the RPM, for 10 minutes.

? Stop the engine and let it cool for 5 minutes. Check for loose bolts, etc. during this time.

? Continue 10 minutes of running, 5 minutes of cooling until 30 minutes of run time is achieved.

At this point, you can fly the JET, however avoid long durations of full power, and vary the throttle setting often.
For heavier pilots that require more power to fly, it is recommended that 1 hour of non-flying break-in be completed before flying.
Break-in is complete after 10 liters of fuel have been run through the engine.
CAUTION! Be wary of overheating during the break-in process, it will show itself as a loss of power.
Should this occur, reduce power and land as soon, as is practicable. Allow the engine to cool. Check to ensure the carburetor mixture is correct (a lean condition can also produce overheating) before flying again.

3.6 Harness Adjustment

The JET's harness consists of two separate strapping systems, one used to comfortably support the paramotor assembly unit on the pilot's back while on the ground, and the other is used to support the paramotor and pilot while flying. This system also correctly aligns the thrust angle of the prop. The two systems have separate purposes, and are adjusted separately.

3.6.1 Ground Handling Straps

In the Fig. 25, the ground handling straps are in green, the flight straps are in red.

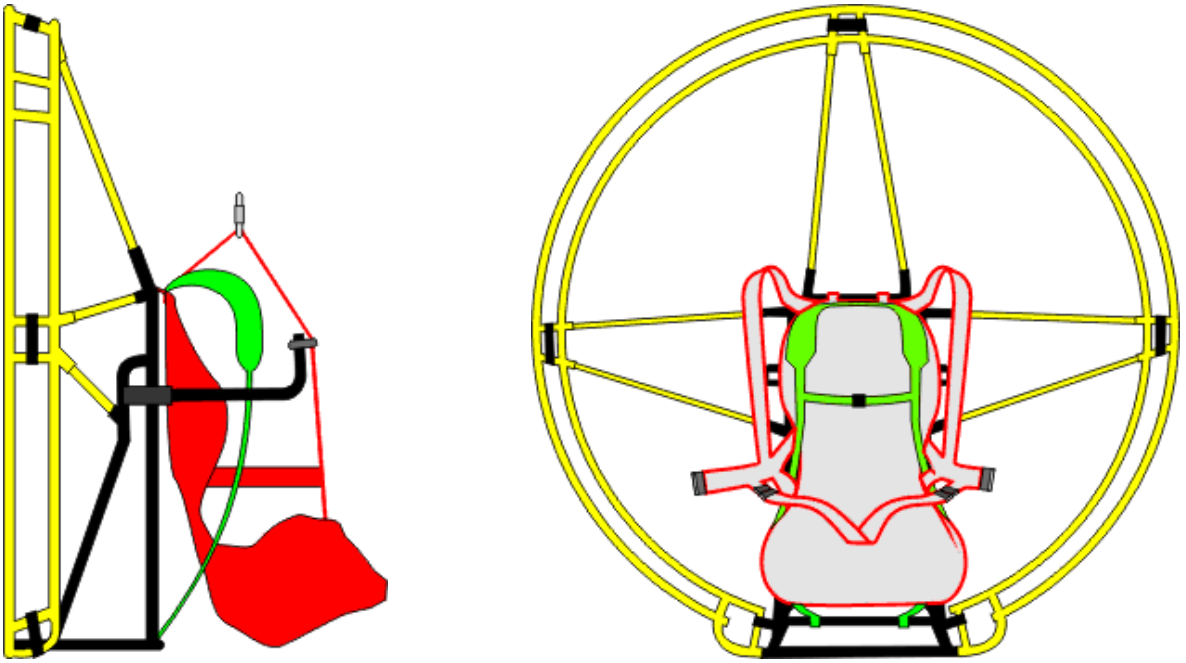


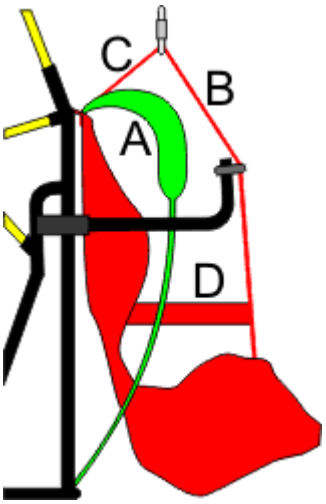
Fig. 25 Side and Front Views of Ground Handling Straps and the flight straps

The ground handling straps as shown above are best adjusted standing on the ground, with the JET on the pilot's back.
The purpose of the shoulder straps and shoulder pads is to carry the weight of the JET while on the ground.
The purpose of the ground handling chest strap is to keep the ground handling shoulder straps from falling off the pilot's shoulders.

The adjustment procedure for the ground handling straps is as follows:

? Strap into the paramotor and stand up.
? Adjust the Shoulder Straps until the shoulder pads are carrying the weight of the paramotor.
? Snug the ground handling chest strap .
? Adjust the thigh straps, the tightness of the thigh straps will determine how easily you can slide into the seat after takeoff.
Adjust these with the use of a simulator.
The ground handling straps are adjusted correctly if:
? The weight of the paramotor is on the shoulder pads
? The shoulder pads/straps won't fall off the shoulders
? The seat can be moved out from under the buttocks easily
? You can easily slide into the seat after takeoff
? You can run easily and the seat and thigh straps don't interfere with your ability to run.

3.6.2 Flight Straps



In Fig. 26, the flight straps are shown in red.

The purpose of each flight strap is as follows:

? Length "**B**" determines the carabiner height. Higher accommodates larger pilots. Lower accommodates smaller pilots and provides more weight shift capability. This length has a variable adjustment locations.

? Length "**C**" is adjusted by buckle "5", and it sets the thrust angle. Adjust it so the thrust angle is zero to five degrees below horizontal. This must be done in a simulator. See "Hang Test in a Simulator" below.

? Lenght '**D**", is used to adjust the back of pilot's distance from the PPG.

? **Proceed to final adjusting of the harness in the simulator.**

Fig. 26 Setup of Flight Straps

3.6.3 Hang-test in a Simulator

It is HIGHLY recommended that you perform a hang-test in a simulator before the initial flight of the JET, and every time you make a harness adjustment thereafter. A simulator can consist of two ropes tied to a horizontal (and strong) tree limb, two ropes tied to rafters in your garage or basement, etc.

Once you have made your initial adjustments, strap into the JET and clip the carabiners into the simulator. Gently lift your feet and get seated in the harness. Continue to adjust the harness until the following criteria are met:

? The ground-handling straps should be loose and comfortable
? The ground handling chest strap should be loose (still buckled, but loose)
? No part of the harness should hamper free movement of your arms and the throttle cable.
? Make sure you can reach your arms up very high with no strain or interference from the harness
? The propeller shaft must be approximately 5 (and no more than 10) degrees below.

4.0 FLYING YOUR "JET"

4.1 Pre-flight Inspection

Before your first flight, and before every flight, it is absolutely essential to perform a pre-flight inspection on your aircraft.

WARNING! Failure to perform a sufficient preflight has been a contributing factor to accidents in all kinds of aircraft. Equipment damage, bodily injury, even death can occur due to equipment problems not caught in a preflight inspection.

As the saying goes, "Preflight as if your life depends on it, because it does!"

The essential items to check are:

- **PARAGLIDER** – this PPG was homologated with the SWING "Powerplay Sting140" model which has a 29,5 m² surface, check the lines and canopy integrity.
- **ENGINE** – check everything is ok , the silent-block integrity and gasoline mixture level.
- **PROPELLER** – blades integrity, bolts clamping.
- **RECOVERY SYSTEM** (if there is) – ready and safety catch off.
- **CAGE ASSEMBLY –** check all the Velcro straps and all blockings.

NOTE! Example of pre-flight checklists can be found at the end of this manual.
It is highly recommended that you use one of the examples, or create your own, print it out, laminate it, and use it whenever you fly.
Also note that these Checklists are examples only, FLY PRODUCTS is not responsible for their use or for their completeness.

4.2 Pre-Flight Checklist Examples

The following checklists are provided only as EXAMPLES.
It is recommended to produce one tailored to your own needs, print it and laminate it, and carry it with you.

Pre-Flight Checklist Example 1

Site/Conditions

- Current weather
- Long-range (next few hours) forecast
- Winds aloft
- Takeoff/landing direction
- Obstructions (especially Power lines)

Wing

- Lay wing out into wind direction
- Lines straight and clear
- Riser/Line condition
- Quick-links tight (hand tighten only)
- Correct brake length

Paramotor and/or Harness

- Tank vent open
- Webbing and straps for stress
- Prop Guard for alignment/stress/wear
- All fasteners tight
- Carabiners condition
- Radio secured
- Sufficient fuel

Strap In, Hook Up

- Buckles secure

? Chest strap tight
? Harness adjusted properly
? Reserve parachute attachment
? Reserve parachute deployment pin
? Reserve parachute handle in sight - Deploy in 3 sec., rehearse procedure
? Risers hooked up correctly
? Carabiners locked
? Nothing loose to get in prop
? Radio for volume, clearness
? Helmet on, tight, fastened
? Tuck in hood on hooded sweatshirt

Startup and Launch

? Brake lines/risers held correctly, no tangles
? Kickbar tucked out of way
? Engine run-up to correct RPM
? Kill switch working (briefly push)
? Look UP during run!

Pre-Flight Checklist Example 2

ENGINE PRE-START

1) CAGE SECURE
2) CAGE MESH OK
3) GAS AMOUNT AND QUALITY OK
4) GAS CAP ON AND SECURE
5) TANK VENT OPEN
6) THROTTLE CABLE FREE AND FULL
7) PROP NUTS TIGHT
8) PROP CONDITION
9) SHAKE TEST MUFFLER
10) SHAKE TEST CARBURETOR
11) FUEL LINES OPEN NO KINKS

PRE-FLIGHT

1) WEATHER TREND CHECK
2) POCKET CHECK (NO LOOSE OBJECTS)
3) SPEEDBAR QUICK LINKS AND PULLEYS OK
4) HARNESS POCKETS ZIPPED CLOSED
5) PARAMOTOR/HARNESS CONNECTS SECURE
6) EARPLUGS IN
7) HELMET ON AND SECURE
8) RISERS/BRAKES/LINES FREE AND CORRECT
9) 3 HARNESS BUCKLES GOOD
10) LEG STRAPS TIGHT
11) SPEED SYSTEM SLACK AND CLEAR
12) SET UP ALTIMETER AND GPS
13) CHECK RESERVE PARACHUTE PINS
14) PRIME CARBURETOR

RUN-UP

1) ENGINE SECURE
2) CHECK THROTTLE CABLE FREE
3) CLEAR PROP! START
4) CHECK CUT OFF
5) FULL MAX CHECK, VIBRATION OK

6) IDLE CHECK
7) WARM UP AND KILL

TAKEOFF

1) LINES/BRAKES TAUT AND CORRECT
2) WING ORIENTATION TO WIND
3) START
4) THROTTLE CUT-OFF CHECK
5) FULL POWER CHECK, IDLE OK
6) WIND, CHECK FOR CHANGE
7) CHECK TRAFFIC
8) CLEAR

4.3 Flights under special conditions

Even though you must know these information learned in your license-flight , we wont remember you some important flight information:

RAIN:
In principle no flights under rainy conditions should become necessary. Anyway, every pilot may get into unforeseeable worse weather conditions. And so if the rain is only very light, the flight may be continued for a certain time, but the wet canopy will get heavier. Therefore flight speed will increase, causing a higher stall speed as well.
With a wet wing fly carefully, avoid sudden manoeuvres and don't be excessively slow when landing.
If the rain gets stronger land! *No flights in strong rain*!

WIND:
If under strong wind conditions land immediately and once touch down turn quickly to control the wing with the "B" elevators avoiding to be dragged away.

FLIGHTS IN SNOWY CONDITIONS:
They are not permitted at all. In case it starts to snow during flight land soon as possible!

EXTREME TEMPERATURES:
Remember that flight parameters changes in different temperature levels.
At high temperatures the required power and the required flight speed increases, so that the take off distance gets longer than in winter. This is similar to flights in high altitudes.

4.4 Dangerous situation

Extreme flying with a PPG and full gas are extremely dangerous and therefore cannot be tested. They must be avoided at all costs. Problems do not arise during a normal flight. However, pilot error during the flight or extreme wind conditions may force the wing into an unusual flying position. This may require the pilot to make corrections during flight to which he may not be used to.

In this section we explain how to correct extreme situations if they do arise. The manoeuvres described below are based on the legal -take-off weight as described in the technical data section.
These instructions do not replace safety training or specialised literature. We recommend that you

undertake special safety training which will prepare you for extreme situations.
Always keep within the recommended limits. Do not perform aerobatics or extreme flying manoeuvres.

FRONT STALL
Strong turbulence can cause part or all of the leading edge of the glider to fold or tuck under.
Normally the "Powerplay sting 140" wing will immediately recover into its normal flight position.

- Recovery
If the wing not immediately recover from a frontal tuck, brake quickly and strongly with both steering-lines (brake lines) to re-inflate the glider.
Any weather condition which causes a front stall is dangerous. If you get into such weather land as soon as possible and do not continue before the weather got quieter!

FULL STALL
A full stall could occur if full brake is applied during the flight. The paraglider slows down, surges backwards and deflates. If the brakes are held down, the canopy comes up over the pilot again.

- Recovery
Fully release the brakes within 3 seconds. If you release the brakes too slowly, the paraglider may spin. The spin stops automatically when the brakes are released completely.

ASYMMETRICAL TUCKS
In turbulent air, one side of the paraglider may collapse. Some of the cells deflate and the wing may collapse or spin.
During test flights the "Powerplay sting 140" wing self-recovered it turned less than 90° and stabilised itself.

- Recovery

- Counter-brake slightly on the side of the paraglide that is still inflated to stop it turning away and to stabilise it.
- Counter-brake just enough that the paraglider continues to fly straight ahead.
- If the wing has not yet self-recovered, pump with the brake on the side that has collapsed in order to open it, making use of the full brake travel.

WARNING! Counter-braking too strongly can result in a stall on the inflated side.

4.5 In-flight Starting

One very valuable feature of the JET is its ability to be started while in flight. This feature allows the pilot the freedom to turn-off the engine and glide silently, to enjoy the exhilaration of thermal soaring, and then when he gets low, to start the engine and climb back up to do it again. The process of in-flight starting is very simple.

First, release the paraglider's brake toggles.

WARNING! Failure to release the brake toggles before attempting in-flight restarting could result in excessive braking of the paraglider. This could result in loss of control, a stall, spin, and possible crash.

Next, reach up over your shoulder and grasp the start handle. Give the start handle an aggressive, quick pull. The engine will start.

Grasp the glider's brake toggles, and gently add power.

5.0 OPTIONAL ACCESSORIES

5.1 Tool Kit

It is highly recommended that a tool kit be assembled and carried in one of the harness pouches. The following tools, at a minimum, are suggested for the tool kit:

? Spark plug wrench (13/16")
? Metric Allen wrenches
? Vice Grips
? Combination wrenches (10mm, 13mm)
? Screwdrivers (both Phillips and Straight)

5.2 Reserve Parachute

A reserve parachute can be fitted to the JET, and is a highly recommended safety item. Many different mounting locations and methods are possible and acceptable, and the one you choose depends on many things such as which hand you want to deploy with, what type of reserve you have, where you prefer to mount it (front, left or right side), etc. For this reason, FLY PRODUCTS cannot make a generalized statement of what the best mounting configuration is for you. It is highly recommend that you seek assistance from your PPG instructor on the mounting of your reserve parachute. It is also highly recommended that you receive training (a reserve parachute clinic) covering topics reserve deployment topics such as reserve re-packing and parachute care, performing a PLF (Parachute Landing Fall), and when to make the decision to deploy your reserve.

WARNING! A reserve parachute is a life-saving backup system, to be used in life-threatening emergencies only. A reserve parachute should never be deployed "for fun" or to "see what it's like". A reserve parachute deployment is an extremely dangerous event. You surrender control over your aircraft, you have no choice as to your landing location and could land on rocks, roads, power lines, etc. Even with a correctly deployed parachute, your impact speed with the ground is significant. Also, reserve parachutes are not guaranteed to deploy correctly. Remember the expression, "A reserve parachute isn't your second chance, it's your last chance." Carry a reserve parachute, and deploy it only if it is absolutely necessary.

5.3 Speed Bar

A speed bar can be mounted to the JET harness. Optional pulleys can be added to the harness to facilitate the application and routing of the speed-bar.

These pulleys can be obtained from your JET dealer.

6.0 PACKING YOUR "JET" FOR TRAVEL

6.1 Disassembling for local travel

For local travel in a car, only partial disassembly is necessary. This disassembly includes removing the prop cage and prop.
Since there are four (4) prop bolts and only two (2) bolts on the reduction drive assembly (commonly called "re-drive"), it is faster to remove the entire reduction drive assembly than it is to remove the prop.

6.1.1 Disassembling the Prop Cage

Unclip the hook on the cage net tension string, (Fig. 12) and follow the reverse procedure as described before in cap. 2.2.
The complete cage is now disassembled and ready for transport.
Now remove the prop and reduction drive assembly. This is done by removing the two nuts that hold the reduction drive to the engine.
Your JET is now ready for local transport.

6.2 Disassembling and packing for long-distance travel

Disassembly and packing for long-distance or airline travel requires complete disassembly of the JET, and then packing into a suitably padded and protected box for travel. The first steps of the process are the same as for local travel, except you should remove the prop from the reduction drive and leave the reduction drive on the machine. The rest of the process is below:

6.2.1 Fuel Tank drain

For airline travel, make sure you completely drain the tank, and wipe the inside dry by inserting a paper towel and thoroughly drying tank.

NOTE! Make sure you check, and comply with, FAA regulations as well as regulations of the specific airline that you are traveling before taking the machine aboard an airliner.

6.2.2 Draining All Fuel

With the fuel tank completely drained, start the engine and allow it to idle until it stops running. At this point, all of the fuel will have been removed from the carburetor and fuel lines.

6.2.3 Removing The Harness

Remove the top two harness straps that go around the top tube of the central (engine) frame (or, in case, unhook the two triangular carabines).
Remove the distance bars from their seating.
Remove the ground handling straps by threading the lower straps up through the buckles. This completes the harness removal.

7.0 MAINTENANCE

Periodic maintenance is required in order to keep your JET in top operating condition.
The following chart provides the suggested maintenance schedule.

INTERVAL	INSPECT	REPLACE
During and after Break-In	All screws, nuts, bolts, prop cage, netting, harness webbing, etc.	
Every 5 hours	All screws, nuts, bolts, prop cage, netting, harness webbing, etc. Spark Plug, check color is light brown. Check spark plug cap.	
Every 25 hours	All screws, nuts, bolts, prop cage, netting, harness webbing, etc. Clean, re-gap spark plug	
Every 50 hours	Clutch Diameter and clearance Clutch Bell (min thickness 1.2mm) De-carbonize Cylinder head. Inspect piston ring for sticking and condition	Spark Plug and fuel filter
Every 75 hours	Re-drive gears, bearings and clutch basket	Replace bearings and repack with No. #2 grease
Every 100 hours	Crankshaft seal	Piston ring, piston pin, piston pin bearing and pin keepers
Every 200 hours	Crankshaft bearings	Piston and cylinder assembly, all bearings and crankshaft

		seals
Yearly (regardless of hours)	Fuel pump and carburetor diaphragms. Crankshaft seals and condition of all plastic parts	Fuel hose, fuel filter, Spark Plug

Remember…
…that YOU are ultimately responsible for your motor and it's proper care, *FLY PRODUCTS and it's dealers assume NO responsibility for any engine problem resulting from improper use!*
Before leaving the factory each motor has been tested for up to 30 minutes to insure that it is in proper running order and all FLY PRODUCTS units are guaranteed up to **twelve** months after purchase.
The extraordinary maintenance or repairs will do only by authorized personal.

FLY PRODUCTS will replace any defective engine parts during the **twelve** months period after purchase.
Note that any electric parts that are damaged for improper use or modified in any way which could cause an engine malfunction are not guaranteed.

7.1 Regular checks obligation.

In Germany the PPG (only with empty mass less than 120 Kg.) must not be checked once a year, it depends on the manufacturer. Most of them declare: must be checked once a year by a qualified person. We too align with this behaviour and recommend you to check it once a year!

The same with the canopy, it depends on the manufacturer of the canopy, most of them must be checked in a TWO years cycle by manufacturer.

7.2 Maintenance overview.

Make a note on this summary table of all maintenance operation for a detailed maintenance overview .

Operation time (h)	Date	Check	Inspector	Remarks

7.3 Cleaning

Clean your JET with clean water and a mild soap. Dust and dirt can be brushed off, or removed with water and mild soap. Grease and oil can be removed with a good water-based degreaser such as "Simple Green".

7.4 Prop Care

Avoiding Prop Damage

It is very easy to damage the propeller by sucking up dirt or rocks when running the motor on the ground. To avoid this, either place the unit on a sheet of plywood or something similar, or use a nice clean area such as a nicely mowed yard. An alternative is to strap the motor on and start it in the standing position.

Prop Balancing

Balancing of the propeller is very critical. The prop blades are subjected to accelerations as high as 2000 G's! Therefore, a weight difference of only 1 gram can cause forces as high as 2kg. This force will cause a vibration at the speed of the propeller RPM, and can cause enough vibration to break welds or tubes of the frame. Therefore, correct prop balance is of the utmost importance.

Keeping the Prop Clean

Wipe all dirt and oil from the prop when finished flying. Oil, if left on the prop for long periods of time, can seep into the wood and cause an imbalance.

Store the Prop Horizontally

When storing the paramotor, rotate the prop to a horizontal position. This is because if the prop is stored vertically, moisture and oils in and on the prop can migrate downward and cause prop imbalance. This phenomenon can only happen on wood props.

7.5 Spark Plug

The recommended sparkplug for the Top 80 motor on the JET is the B9ES. The "resistor" version of this plug, the BR9ES is also recommended, and is particularly helpful at reducing interference on radios or music devices.

Spark plug gap is 0.025" (0.635mm). Recommended cleaning and gapping interval is every 25 hours. Recommended replacement interval is every 50 hours.

7.6 Repairs

Minor repairs can be performed on the prop, cage, cage guard, and harness. Major repairs should be performed by a trained service technician, or by FLY PRODUCTS.

FLY PRODUCTS provides full repair services including frame, prop, harness, and engine repairs. FLY PRODUCTS also carries all parts and supplies to keep your JET in top operating condition.

Caution! Repairs to the harness or any stress-carrying areas of the JET should only be performed by a certified parachute rigger. If in doubt, contact FLY PRODUCTS.

7.7 Carburetor Maintenance

Diaphragm carburetor maintenance.

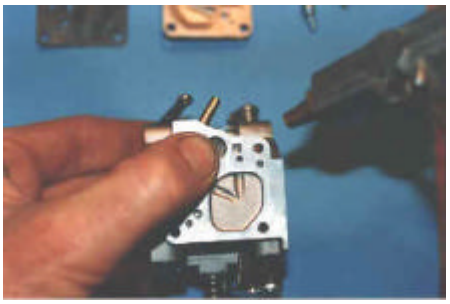


Fig. 27 Cleaning the carburetor's internal filter

The diaphragm carburetor is provided with an internal filter that may get blank and cause carburetion problems that shows with power losses.

To clean it it is compulsory to open the carburetor from the fuel entering side.

In order to do it you must remove the aluminum lid held by four screws You do clean it by a spout of air or by a fuel wet soft brush.

Do not remove the filter, clean it while leaving on its seat. Do pay attention to cover with your finger about half of the filter housing, as shown in the picture, it may slip out. For settings and modifications go to carburation

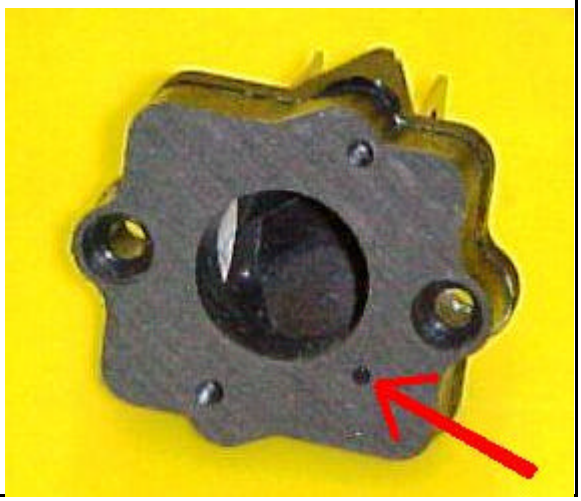
Pay attention please

The diaphragm carburettor "pumps" thanks to the variable pressure inside the crank case.

The pressure comes to carburettor throught a small hole on the reed valves, we suggest you to control and clean that hole and the nearest gaskets.

You can use a 2,5mm drill bit, clean the back side of the hole.

The typical symptom of this defect is an engine that "haul" in the final part of the throttle control (means that the carburetor is unable to pump enough fuel at high rpm)



7.8 Long Term Storage

Long Term Storage is defined as anything longer than 3 months. The long-term storage procedure is as follows:

? Fuel tank drain completely.

? Start and run engine at idle until it stops from fuel starvation. This is to remove all fuel from the carburetor and lines.

? Remove spark plug. Inject 4 teaspoons of 2-cycle oil into the spark plug hole. Gently pull the starter rope a few times to distribute the oil, then reinstall the plug.

? Clean the prop of any dirt and/or oil.

? Clean the cage, harness, etc. so that it is free from dirt and/or oil.

? Cover the machine with a sheet or light cloth.

? Store in a clean, dry place.

7.9 Paraglider

Cleaning

Clean the paraglider only with a soft sponge and clean water.
Harsh chemical substances, high-pressure cleaners or steamers will destroy the surface layer.
Clean the paraglider only if it is absolutely necessary.

Repairs

Repairs should only be carried out by the factory or a specialist recommended by the manufacturer.
You can repair small tears in the wing yourself using the material recommended by the manufacturer, as long as they are in areas which do not bear heavy loads and they are not bigger than 3 cm.

WARNING! Always replace lines that are damaged with only original parts or parts that have been authorised by the manufacturer.

7.10 Paraglider inspections

General

Failure to observe the inspection periods will invalidate the warranty and certification.
A properly completed logbook will help you to comply with the periods.

Inspection periods

The STING "Powerplay 140" glider must be inspected as follows:
- Gliders used by schools and commercially used gliders must be inspected (as for the 2-yearly check) every 12 months from the purchase date.
- Gliders for personal use (not used commercially) must be inspected at least every 2 years from the purchase date.
- The paraglider must be inspected after 150 hours of use (including ground handling) if this occurs prior to the periods of 1 year or 2 years as above.

CAUTION : Ground handling time must be at least doubled when working out the total hours of use because of the increased wear and tear on the glider.

Inspection validity

All inspections must be carried out by Fly Products, by SWING, or another inspection agent authorised by Fly Products. The documentation and the result of the inspection must be clearly identifiable by the inspector (date and place / name of inspector) and be entered near the glider information/certification sticker.

8.0 TROUBLESHOOTING

8.1 Diagnosing and starting a flooded engine

A flooded engine can be identified by the smell of unburned gasoline coming from the exhaust pipe, or by periodic weak firing and puffs of black smoke during starting attempts. If you have a flooded engine, follow the procedure below:

? Remove the spark plug and thoroughly dry it. (Note another indication of a flooded engine is a spark plug that is dripping with gas).
? With the spark plug removed pull the starter cord 5 to 10 times while holding the throttle in the full-open position and with the choke in the OFF position. This will remove excess fuel from the engine.
? Install the dry spark plug, and start using the normal procedure, however do not choke the engine.

WARNING! Ensure you have placed the spark plug cap away from all fuel sources before pulling the starter cord or a fire could occur!

WARNING! Do not use a flooded engine procedure whereby you hold the throttle wide-open and then attempt to start the engine.

If the engine were to start, the prop would rapidly spin to full RPM and damage or injury would most likely occur!

8.2 Troubleshooting Chart

SYMPTOM	POSSIBLE CAUSES	SOLUTIONS
Engine does not start	No fuel in tank	Fill tank per fueling instructions
	Fuel pickup does not reach all the way to bottom of tank	Inspect fuel pickup and ensure that it reaches the bottom
	Spark Plug cap not in place	Ensure spark plug cap is installed
	Insufficient battery power	Recharge battery
	Fouled Spark Plug	Inspect plug, clean and re-gap, or replace with a new plug
	Incorrect Spark Plug Gap	Gap the plug to 0.025" (0.635mm)

Engine starts, but does not continue to run	Engine is flooded	Follow procedure outlined in section 8.1
Excessive Vibration	Prop out of balance	See section 2.4
	Loose fasteners mounts or attachments	Check and tighten engine mounting bolts, muffler bolts, prop bolts, etc.

9.0 SPECIFICATIONS AND PERFORMANCE

9.1 Specification and Performance Summary Chart

Item	Specification
Engine Make and Model	Top 80
Engine Type	Single cylinder, air cooled
Displacement	80 cc
Bore x Stroke	47.6mm X 44mm
Power Output	15.4HP (11.5 kW)
Ignition System	CDI
Carburetor	Walbro WG Series
Rotation Direction	Clockwise, as viewed from rear
Air Cleaner	None, Input Silencer
Spark Plug	B9ES or BR9ES
Fuel	Premium auto gas, 92 Octane or higher
Fuel/Oil Ratio	2%
Starting System	Recoil pull starter
Prop	2 blade, 49 inch diameter
Thrust (lbs., kg)	105lbs, 48kg
Climb rate	2.5m/s with a DHV ½ wing
Frame	Aluminum, aircraft tubing
Harness	Rip-stop nylon
Dry Weight	51lbs (23 Kg)
Dimensions (cm)	135 x 135 x 75 assembled 85 x 40 x 40 packed for travel
Fuel Tank Capacity	16 liters
Estimated fuel duration	6 hours, with a 150lb pilot
Noise Level	Less than 52 dBA at 30 feet
Maximum Pilot weight	220lbs (100kg)

Clutch System	Centrifugal, dry friction
Exhaust System	Tuned resonant, w/ integrated silencer
Max RPM	9600 RPM
Reduction System	Gear box, grease bath
Reduction Ratio	3.65:1

9.2 Torque Specification Chart

Item	Fastener Size (mm)	Wrench Used (mm)	Torque (inch-pounds)	Notes
Cylinder head bolts Note: Jet were fitted with two types of cylinder studs. Standard studs are chrome by appearance while the high performance studs are black in appearance.	M6	10mm Socket with inch pound torque wrench	80 inch lbs. Standard head studs (chrome finish) 100 inch lbs. For units equipped with grade #8 studs (black finish)	Use a cross pattern tightening sequence. Start sequence at 40-inch lbs. and increase each step by 20-inch pound increments until reaching desired torque setting.
Spark Plug	N/A	13/16"	120 inch lbs. or 10 ft-lbs.	Do not over tighten spark plug.
Prop bolts	M6	Hex 5mm and Wrench 10mm	50 inch lbs. MAX	Tighten them snug, but don't crush the wood
Rubber Engine Mounts	M6	Allen 5	50 inch lbs.	Restrain mounts from twisting during tightening. Do not use bolts longer than stock.
Rubber Engine Mounts	M8	Allen 6	80 inch lbs.	Restrain mounts from twisting during tightening. Do not use bolts longer than stock.
Misc. M4 bolts	M4	Allen 3	20 inch lbs.	
Carburetor bolts	M5	Allen 4	30 inch lbs. MAX.	Do not over tighten
Reduction housing nuts	M8	Socket 13mm	145 inch lbs. Or 12 ft lbs.	Inspect for correct seating of the clutch housing face

				to engine casing.
Muffler Flange	M6	Socket 10mm	Tighten nuts till spring is fully compressed. Then back off nut one ¾ to 1 full turn.	Spring action keeps the muffler snug against the cylinder for proper sealing.

10.0 MISCELLANEOUS

10.1 Obtaining Repair Parts

To obtain repairs parts for your machine, call your FLY PRODUCTS local dealer

10.2 Warranty

FLY PRODUCTS will warrant their product to be free from defects in materials and workmanship for a period of Twelve (12) months from the date of purchase. This warranty applies to the product in normal usage situations only. The dealer, from whom you purchased the product, or FLY PRODUCTS, will repair the product free-of-charge.

To obtain warranty service, please contact your dealer or FLY PRODUCTS, and then either bring the product in or have it shipped. Shipping charges are the responsibility of the purchaser.
This warranty does not apply even during the warranty period, and the purchaser shall pay repair or replacement charges if:

- **The cause of malfunction is due to misuse, neglect, negligence, etc. This includes seize of the engine due by an improper carburetor adjustment or improper fuel/oil mix.**
- **The malfunction is caused by incorrect pilot operation, i.e. a crash, whack, dork, bang, splat, ding, prong, bend, tweak, trip, fall, bounce, or any other piloting eventuality.**
- **The malfunction is caused by lack of normal maintenance, or modification, i.e. loose parts falling off and breaking the prop.**
- **The malfunction is caused by an Act of God, including but not limited to fire, earthquake, hurricane, flood, or other natural calamity.**

10.3 Internet info and upgrade

For information, more details and news see our internet site: **www.flyproducts.com**
For safety information , data and rules you can visit the DULV website: **www.dulv.de**

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