

Specifications

	SW60B	SW80B	SW120B	SW140B	SW160B	SW170B	SW190B	SW210B
Dia.	84mm	84mm	100mm	100mm	110mm	110mm	110mm	110mm
Length	203mm	203mm	250mm	250mm	258mm	258mm	258mm	258mm
Weight	783g	788g	1255g	1255g	1450g	1457g	1563g	1471g?
RPM	50-160K	50-155K	38-125K	38-128K	38-113K	36-110K	36-115K	33-120K
Thrust MAX	13.5LBS	18LBS	27LBS	31.5LBS	35LBS	38.LBS	42.5LBS	47LBS
EGT	650°C	650°C	700°C	700°C	700C	700°C	700°C	700°C
Fuel Used Average	5.7oz min	9.5oz min	10.9oz min	11.4oz min	12oz Min	12.4oz min	13.4oz min	15oz Min
Fuel	Kero Diesel Jet A							
Lube	5%	5%	5%	5%	5%	5%	5%	5%
Maint.	25Hrs							



SWIWIN Brushless Turbine Manual

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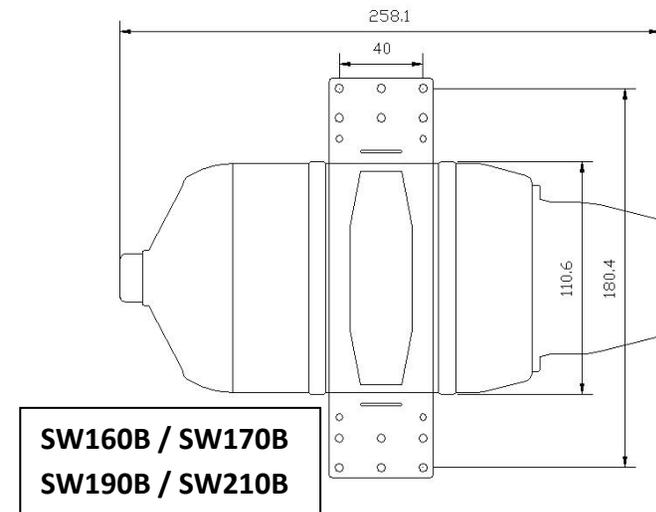
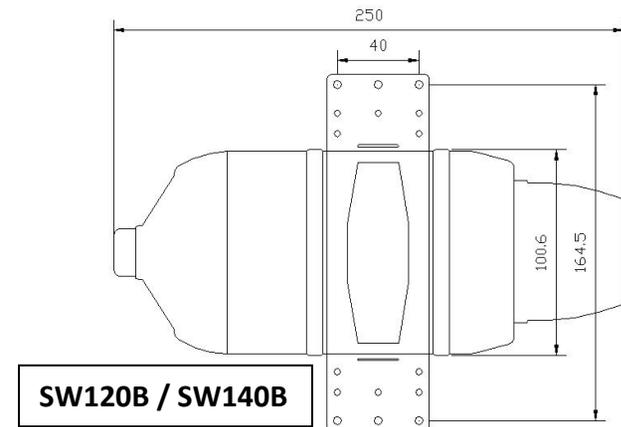
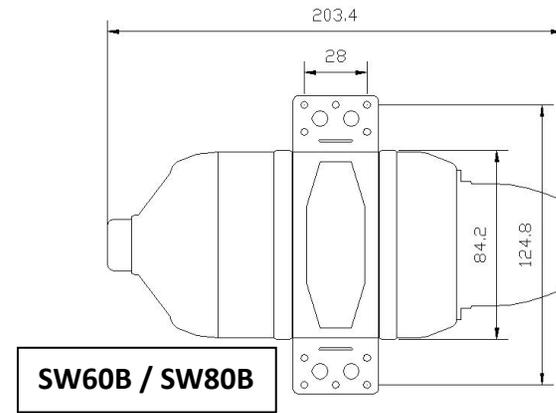
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Phone (Sales):602-881-1042 Phone (Service):623-219-8073
 Website: BadBoyzRC.com Email: BadBoyzRC@cox.net
 Hours: Mon-Sun 8am-8pm

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Exclusions

Warranty and/or extended coverage does not apply under the following circumstances:

- a) The ECU or turbine leads altered in any way.
 - b) The turbine has been stored improperly
 - c) The turbine has sand or water damage
 - d) The turbine has been modified in any fashion
 - e) Any attempt to repair or dismantle
 - f) Any crash regardless of cause
 - g) The turbine was not cooled properly
 - h) Turbine serial number has been removed or altered.
 - i) Turbine is found to have been operated with 2 cycle oil
1. If a problem occurs during the warranty period, please contact our service department and take the following steps:
 - a) Contact Bad Boyz RC phone support at 623-219-8073 to discuss the issue. Many times the issue is parameters incorrect for climate and elevation.
 - b) Contact Bad Boyz RC to coordinate shipping of the turbine to the service center for evaluation and repair.
 - c) Send the turbine to our repair center. Please include all accessories, ECU,GSU,Pump and ALL wires. We will also need owners information Including address, daytime phone number, email address, etc. Please also include a photo copy of the original sales receipt.
 3. Owner agrees to cover charges for all parts and/or labor charges not covered by this warranty.
 4. In the event that a turbine is returned and it is later determined that the engine has failed due to issues that are not covered under the warranty (see above conditions) the owner will be provided with a repair estimate.
 - a. If the estimate is refused, the turbine will be returned to the user. Owner agrees to cover all return shipping costs.
 5. This document constitutes the entire warranty between SWIWIN / Bad Boyz RC and the owner and supersedes all prior agreements and/or understandings.

Introduction

Congratulations on the purchase of your SWIWIN Turbojet Engine. This manual is intended to aid the user in proper setup and running procedures associated with the SWIWIN TurboJet Engine. The user should have the appropriate skills and working knowledge and or experience with RC turbines. If not we strongly urge you to seek the help of a qualified person to assist in safe handling practices.

Non-Disclaimer

Turbines are sophisticated and DANGEROUS to operate. It is NOT a toy! Please read there instruction completely over and over until you are confident in the safe handling procedures. Please have a clear understanding how the turbine operates and are properly prepared to extinguish a fire if necessary, before attempting to operate. It is strongly advised that if you are a first time turbine user that you engage the help of a seasoned turbine operator.

Bad Boyz RC, LLC WILL NOT assume any responsibility for any damages or injuries to property, animals the user or any bystanders. Our responsibility is explicitly limited to the motor and the internal workings and the accessories supplied with this turbine. Bad Boyz RC, advises ALL users (novice and expert) to test all engines in a secure test stand before installing into any plane. This procedure is to confirm that you have set the turbine up properly and ensures reliable and safe operation.

If you are uncertain how to properly set up and operate this engine please DONOT take any chances. DO NOT attempt to start the turbine unless a qualified individual can help you. PLEASE call our tech/ service department at (623) 219-8073

Ear Protection

Turbines produce excessive Db levels of noise. Always use ear protection when running the engine.

Fire Extinguishers

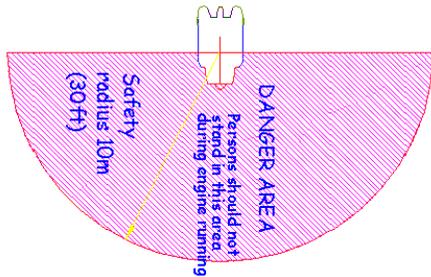
It is strongly advised to always have a CO2 or similar gas-type fire extinguisher with you when running the engine – you never know when an emergency will strike and it is best to be prepared. If you need to extinguish an onboard fire you should point the extinguisher into the front of the engine and not in through the turbine end as this may simply blow the flames into the model.

Dry chemical extinguishers will extinguish a fire but CAN AND WILL DAMAGE a running Turbine. Using this type of extinguisher will VOID any warranty.

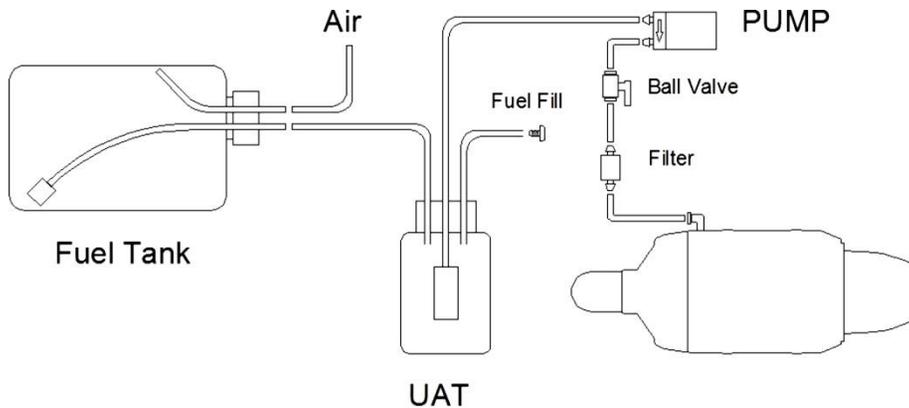
Warning to User and Bystanders:

Operator acknowledges the risk to themselves and bystanders and except all responsibility while operating the turbine. The operator shall take ALL precautionary steps necessary to ensure all persons and property is a safe distance from the operating turbine.

Always ensure, when running a gas turbine that you keep spectators at least 10m (30ft) clear of the area to the side and rear of the engine, Turbines rarely catastrophically malfunction however, it is best to maintain a safe distance and take all necessary precautions. It is your responsibility as operator, to ensure safe, careful and considerate operation of your engine at all times.



Setup Diagram



SWIWIN Limited Lifetime Warranty

SWIWIN warrants each turbine to be free from defects in materials and workmanship during normal usage, according to the following terms and conditions.

1. The warranty is transferable to any subsequent user. There is a \$75.00 admin fee which will be collected when ownership of the motor is transferred. Please make sure that each user registers the motor with SWIWIN at the time of transfer so that service can be maintained on the motor.
2. Warranty period commences on the date of purchase.
3. First year warranty covers all parts.
4. Lifetime warranty coverage applies after year one and covers the following items:
 - a. Combustion chamber
 - b. Shaft
 - c. Shaft tunnel
 - d. Diffuser
 - e. Injectors
 - f. NGV (nozzle guide vans)
 - g. Turbine wheel
5. Lifetime Warranty does not cover the following items:
 - A) Damage caused by improper installation
 - B) Damage to Can/ FOD including crash
 - C) Starter motor
 - D) Glow Plug
 - E) Diffuser
 - F) GSU .
 - G) ECU
 - H) Pump
 - I) Solenoid/valves

Terms

1. Within the initial 1 year warranty period, SWIWIN will repair or replace, at SWIWIN's discretion, any defective part(s), with new replacement parts if such repair or replacement is required and is due to a malfunction during normal usage.
2. SWIWIN will cover labor charges associated with any warranty repair.
3. SWIWIN warranty coverage is limited to replacement of parts and repair of the unit ONLY and does not apply to any other losses or damages, Due to a failure.
4. Buyer is required to register the motor with SWIWIN at the time of purchase. Please retain all receipts and paper work.
5. Buyer agrees to cover the cost of shipping the turbine to Bad Boyz RC for repair.

Initial Setup

2. With the GSU plugged into the ECU. Turn on power to the receiver and plug in the power to the ECU. Observe GSU startup. The motor and GSU will sync up with an audible signal.
3. Turn on the fuel valve.
4. Raise the trim to 100% and observe ECU status switches from stop to "ready". If the ECU does not transition to ready state, recheck the ECU to radio connection and redo Learn RC if needed.
5. Raise the throttle stick to full then to min. This will initiate a start sequence.
6. The starter motor will begin to spin. The ECU will switch to ignition, then to preheat, then to ramp.

Ignition - This is the first phase of startup. During the ignition phase, there is a minimal flow of fuel to the glow plug. After initial combustion, the engine will then transition to preheat.

Preheat – The motor will increase rpm as the jets increase fuel flow

Fuel ramp – The motor begins to enter phase 2 as it increases RPM's and reaches proper running temperatures.

Running- At this time the ECU will transfer control to the user.

Shutdown Procedure

Always observe proper shutdown and cooling of the turbine. Failure to observe proper shutdown by not properly cooling the unit will cause damage and will void the warranty.

Shutting down the turbine

1. Lower the throttle stick to minimum
2. Lower trim to minimum
3. The Turbine will shut down and initiate a cool down sequence by turning on the starter motor. The starter will turn until the engine has reached a SAFE Temperature. DONOT Turn off power to the system until the cooling process has completed. IF you do this will render damage and will void the warranty.
4. Turn the fuel shut off valve to the off position
5. Turn off power to the Receiver and ECU
6. Turn off power to your radio

Fuel /Turbine Oil

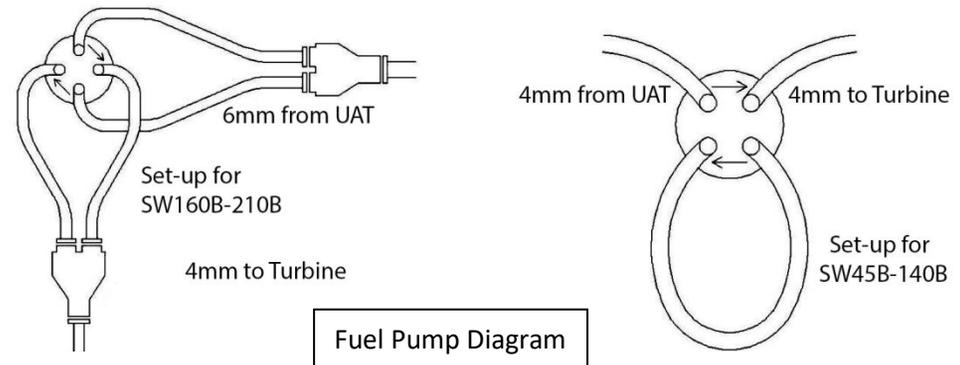
SWIWIN engines use Diesel, 1-K kerosene or Jet-A1 for fuel. Fuel must be mixed with 5% synthetic turbine oil or 1 quart of oil in every 5 gallons of fuel. Use of any non-approved oil such as 2 cycle oil voids the warranty.

For first time use of any engine, it is strongly recommended that the Turbine be placed into a secure test stand.

Mount the engine in a test stand that will minimally handle the full thrust of the engine. This means secure it properly and anchor the table if needed! **Do not do this indoors!** Mount the Turbine accessories neatly where you can see them, away from the heat of the turbine. Note the orientation of the parts and the plumbing. Make sure the shut off valve is in the off position.

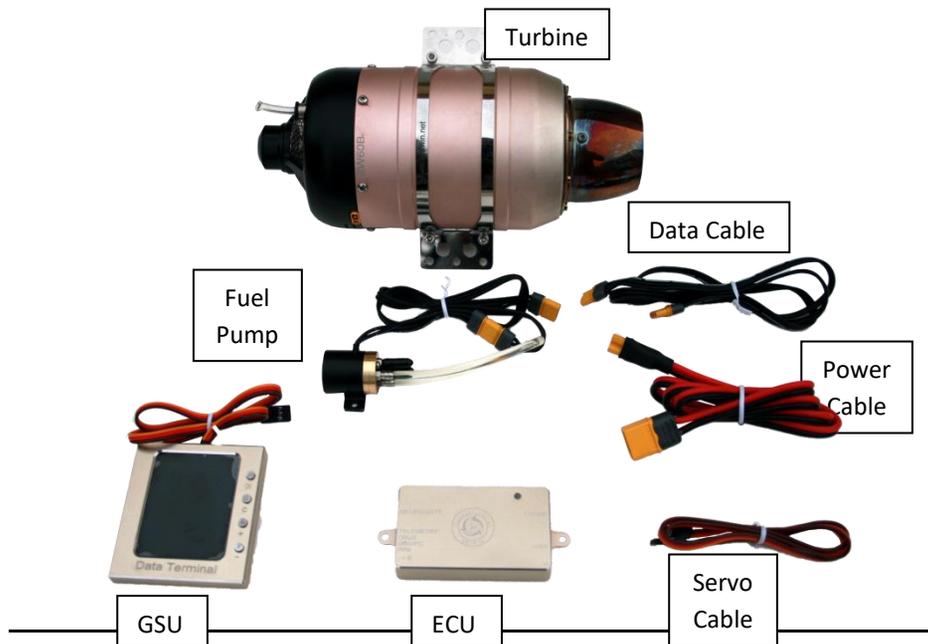
Please refer to the Setup Diagram

1. Connect the Turbine Festo fitting to a section of 4mm tubing (included).
2. Route the tubing to the filter then to the shut off valve as shown.
3. Connect the other end of the shutoff with 4mm tubing to the output of the Brushless Fuel pump.
4. Plumb the UAT as shown and per the UAT instructions (UAT is not included).
5. Plumb the Fuel tank per the manufacturer instructions (Tank not included).
6. Connect Input of Brushless fuel pump to UAT fuel out.(refer to UAT manual)
7. Double check all fittings and secure all non Festo type fitting with 20 gauge stainless steel safety wire.



Turbine Setup

1. Connect one end of the R30 black data cable (provided) to the motor receptacle. Connect the other end of the black R30 cable to the ECU connection labeled "Engine"
 2. Connect the Red and Black power cable to the ECU port labeled "3S Lipo Batt". (XT60)
 3. Connect the fuel pump to the pump cable(provided R30) and the other end to the ECU port labeled "pump".
 4. Connect one end of the servo cable (provided) between the ECU port labeled "PPM/SBUS" and the other end to your receiver Throttle input.
- Please note "S" signal and "-" on ECU polarity. The ECU and/or GSU will not function properly if not connected properly.
6. Connect the GSU to the ECU port labeled GSU/PC. Orange signal toward top of ECU. Please observe correct polarity or the terminal will not operate properly.



Radio Setup – Learn RC

First power up your transmitter and receiver. Then power up your ECU with a 3cell lipo. Go to Learn RC in the ECU settings

1. With maximum highlighted on the GSU, raise the throttle stick and trim to max. Depress OK to set in the new "maximum" value.
2. Highlight Idle on the GSU and lower the stick while leaving trim at maximum level. Depress Ok and lock in the "idle" value
3. Highlight Minimum on the GSU and lower the trim to a value you select as stop. The stick should be at minimum now. Press Ok to lock in the "minimum" value.

Priming the Pump

Before using the turbine for the first time it is imperative to prime the pump and remove all air from the lines before attempting to start the engine.

To prime the pump:

1. Connect a section of fuel line to the input of the pump from the UAT
2. Connect another section of fuel line from the output of the pump that is long enough to reach the turbine. DO NOT PLUG INTO TURBINE this will flood the engine. Route the line into the Fill tube of your Fuel tank.
3. Initiate the test pump function by going to the main screen then stepping down to "test". Select the first option "test pump". With the OK button depressed. The pump will gradually begin to spin faster and faster until a steady stream of fuel can be seen cycling back to the fuel tank. Be sure all air bubbles have been expelled from the fuel line. Then STOP depressing the OK button and the pump will stop priming.
4. Once the operation is complete remove fuel line from the Fuel tank fill tube. Plug your fuel tank fill line. At this time it is safe to plug the fuel line into your Turbine.

Startup Operation

Prior to running the turbine walk around the test stand and make sure that all Power, data cables and Fuel lines connections are placed correctly.

NOTE: When filling Fuel tank. ALWAYS have fuel shut off valve in the off position! Failure to do so can flood and Turbine and cause a fire VOIDING the warrantee.

1. Turn the fuel shut off valve to the on position