



# 50 VT

## **Four Stroke Electronic Ignition Single Cylinder Gasoline Engine Approx 2.5hp, 50cc (3.0ci) single 20x12, 22x8, 22x10 2 blade or 19x10 3 blade propellers**

Congratulations on your purchase of the RCS 50VT Four Stroke engine from Troy Built Models! The designation "VT" is a German abbreviation for "Viertakt" meaning "four cycle". This is the first single cylinder gasoline four cycle electronic ignition engine made available to the R/C marketplace. The engine has been given a thorough quality inspection and test run at the factory before delivery. We are sure you will be pleased with its quality and performance.

The engines have been designed to produce maximum power at a relatively low rpm range with very high torque characteristics. They include state of the art computerized auto advancing ignition systems with built in over speed protection. The fuel/oil mixture is delivered by a pumped carburetor to the combustion chamber via a cast intake runner directly to the intake valve on the cylinder head. Some piston ring blow-by has been designed in to provide crankcase and cam gear lubrication. A small fitting on the crankcase backplate should be used to direct the excess lubrication away from the aircraft via small ID fuel resistant tubing, typically on the bottom of the aircraft.

Use a good quality pump gas ONLY with at least an 87 octane rating. Fuel/Oil mix should be 32:1 Synthetic ONLY for the first couple of gallons. We then recommend switching to a 50:1 Synthetic mix thereafter for the life of the engine.

Valve rocker pivots and pushrod ends should be lubricated once daily before flying with a drop of oil. No need to over-lubricate. We recommend the valve clearances be checked every hour of operation. Valve clearances should be checked between the valve tip and rocker pad ONLY when the engine is cold. Be sure the cylinder has reached TDC and the valves are fully closed. You may need to apply slight pressure to the rocker arm to insure the pushrod lifters are seated fully against the cam base circle. Using a 0.007" feeler gauge between the rocker pad and the valve tip, adjust for slight drag by loosening the locknut and rotating the valve adjuster. While maintaining the valve adjusters position, tighten the locknut.

Always start with a smaller prop when breaking the engine in. We recommend you use a 20x12 two bladed propeller initially. Then you may go to the larger sizes. Be sure to always richen the carb when going to a larger propeller. The engine may be mounted upright or inverted without problems.

The central propeller shaft is 10mm in diameter. If using a spinner, we recommend a spinner adapter be used. Prop bolts are 4mm and use a 3mm Allen key. Make sure the prop bolts are of proper length for your prop and/or spinner combination. Be sure the bolts are checked for tightness before flying. Secure the muffler with clamps to the firewall, standoffs or formers when using the flex extension or it will break.

When mounting the engine be sure to eliminate any foreign objects that may be ingested by the rear mounted carb. Be sure that the carb can get adequate airflow but not exposed to excessive turbulence. You may adapt a suitable linkage hookup to the existing hardware on the throttle and choke shafts. We recommend a firewall thickness of 10mm(3/8") and engine mounting bolts should be 5mm grade 12.9 or 10-32 grade 8.

Mount the ignition unit to isolate it from vibration and engine heat. Route the cables and braided spark plug lead so they do not come in contact with hot engine components. Use a good battery of at least 1400-1800ma and a heavy duty switch harness. Ignition input voltage MUST NOT exceed 6.7v. If using a 5 cell pack where peak voltage is higher than 6.7v, you must use a voltage regulator. NGK CM6 spark plug gap is 0.014". Keep all ignition related components at least 12 inches away from the receiver and antenna as a precaution.

Recommended fuel tank size for the 50 VT should be 12-16oz, but of course you may use any tank size you wish. Fuel line should be medium sized 1/8"ID gasoline resistant tubing. Use a 2 line fuel system with a simple "tee" fitting installed between the tank and carb to fill the tank and a vent line to the bottom of the fuselage.

Start the engine by initially priming the carb by closing the choke plate with full open throttle. Turn the ignition "ON" and flip until the engines starts and then stops. Then open the choke and REDUCE the throttle to a high idle position. Cycle the ignition OFF and then ON (the ignition has a soft shutdown feature and must be cycled to re-arm after approx. one minute of inactivity), flip smartly to start. Let the engine run at approx. 1200rpm for 2 minutes to warm up. Thereafter the carb may be adjusted to suit your propeller. Please avoid prolonged idling or extended running on the ground as the engine will have a tendency to overheat from decreased airflow through the cylinder fins. For cowled installations, it will be necessary to install light ply or balsa baffles to help direct cooling air through the cylinder and cylinder head fins. Please recognize that in some cowled installations, the cowl pressure will change in flight or in certain aircraft attitudes. This could cause carb mixture inconsistencies. Proper baffling and proper air extraction by the use of spoilers or cowl flaps will typically cure this problem. Once the engine is warm, hot air with a low fuel/air mixture may lead to a reduced maximum RPM, this is an indication that the carb need to be richened. Please note that The L needle influences the H needle and visa versa. If the engine tries to stop when advancing the throttle, then richen the L needle. If the engine is slow to respond then the L needle is too rich. The H needle should be adjusted for max rpm very quickly to avoid overheating, and then richened approx. 1/8 of a turn. Although the carb has a pump, it is good practice to make sure the fuel tank is on, near or close to the carburetor centerline. Periodically check the tightness of all bolts and don't forget to lightly lubricate the valve gear.

**We wish you many successful takeoffs AND landings!**

### **Warranties for DL, MT, DA, RCS, ZDZ, SV, Moki, and more.**

Warranties are broken down into two groups. Either you pay more for the engine and you get a very inclusive warranty, or you pay a low price for the engine and the warranty is very basic. It is your option. You choose what you want. All engines that TBM carry are excellent and have few factory defects. If you are handy with engine repairs, then I suggest you purchase one of the lower priced engines. The lower priced engines have excellent reliability, power and performance, very comparable to the higher priced engines. The higher priced engines are proven performers, offer excellent performance and offer a warranty which pays labor costs as well. Desert Aircraft offers the best warranty of ANYTHING ANYWHERE. Sometimes they don't even charge for repairs that they should charge for, but you will pay a little more for the products.

**Basic Warranty** – DL, MT, RCS/SV, offer a basic warranty which is less expensive than a full blown warranty, so the price of the engines is the lowest. These warranties are all similar, which is that if there is a defective part in the first 12 months after purchase, it is replaced by the factory. There is no provision for shipping of the parts or shipping of the engine to a warranty repair center. TBM will replace the warrant part at no charge once the part has been verified by the factory to be bad. We need photos to send to the factory for them to authorize the replacement. Once factory authorized, TBM will ship the part to you or to the repair center of your choosing. TBM only charges for the shipping. TBM will get the part replaced by the factory later. Then you replace the part yourself or have your repair facility replace the part. The customer pays for any labor and shipping involved. TBM may recommend outside service contractors to perform warranty repairs for these engines, or TBM may do the warranty work in house.

**Full Blown Warranty** – Desert Aircraft, RCS/Moki Radials, and ZDZ engines sell at a premium price yet offer a premium warranty. Warranty on the RCS/Moki radial engines and ZDZ are all 3 years parts and labor (not shipping). Warranty on the Desert Aircraft are all 2 years parts and labor (not shipping). Desert Aircraft handles of their own warranty issues. RCS/Moki engines and ZDZ engine warranties are handled by TBM. Labor is paid for by TBM only if the issue is warranty related and the engine was purchased from TBM. Parts are paid for by the manufacturer, and manufacturer authorization is required. If the engine was purchased from RC Showcase or any other retailer, the warranty is limited to parts only. Warranty is limited to the original owner only.

There is no warranty on any manufacturer's ignition. If ignitions are exposed to more than 6v they can stop working. Since there is no way to tell if the ignition was operated with a higher voltage, then there is no warranty on it.



Troy Built Models, Inc.  
1650 Honore Ave.  
Sarasota, FL 34232

941-342-8685    [www.troybuiltmodels.com](http://www.troybuiltmodels.com)