O'DONNELL
Super Sport ENGINE

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Thank you for purchasing the O'Donnell SS .21 engine. Many years of engine expertise were used to develop an engine with maximum performance and reliability. This engine was manufactured using the highest quality standards, materials and manufacturing processes. When properly used and maintained, it will perform at the highest level of racing. Carefully read through the entire instruction manual before starting your SS .21 engine.

SAFETY PRECAUTIONS

- *Model engine fuel is poisonous. Make sure you read and follow all of the precautions on the fuel container.*

- *Keep fuel out of the reach of children.*

- *Model engine fuel is flammable and when ignited has a flame that is difficult to see. Avoid sparks, flames, smoking or any other ignition source when fuel is near.*

- *The engine emits harmful fumes just like a real vehicle. Do not operate the engine indoors.*

- *The engine and its exhaust can become very hot during operation. Avoid touching these parts during use and until they have cooled down completely.*

- *The engine and exhaust produce quite a bit of noise. Do not run your vehicle when or where it can disturb others.*

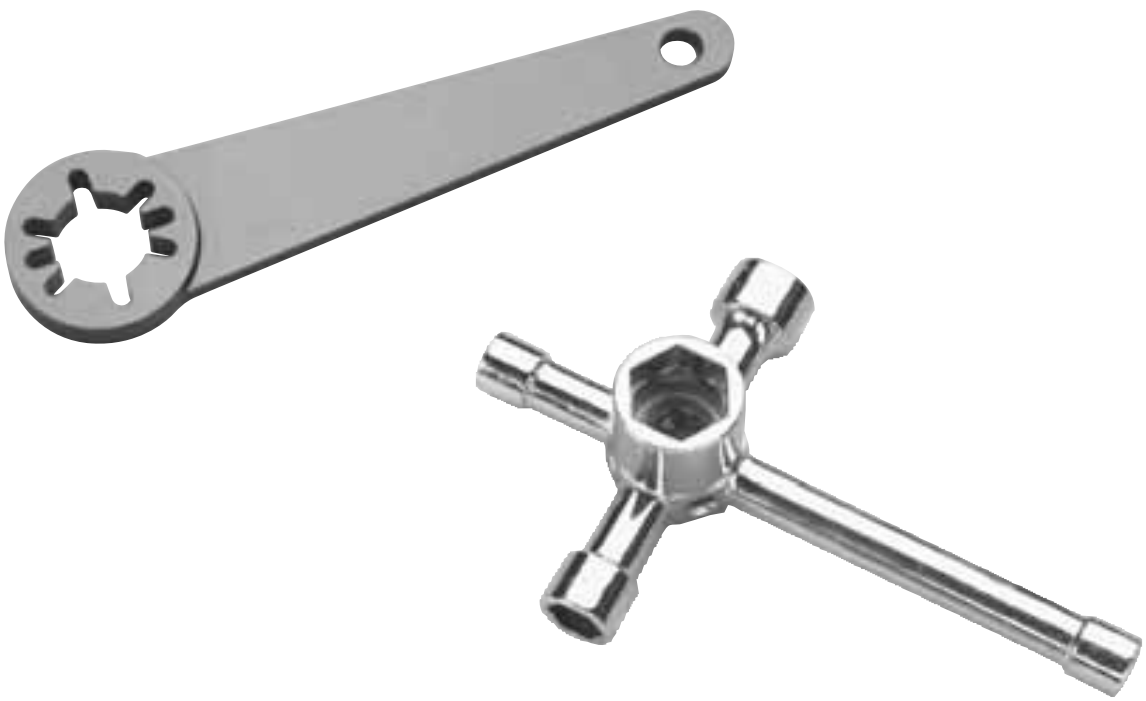
- *Avoid running the engine in cold weather. Running the engine in cold weather can result in premature wear and poor performance.*

IMPORTANT INFORMATION

- *Make sure you properly tighten the flywheel/collet onto the engine. We recommend using a flywheel wrench and a 10mm socket. DO NOT put something in the exhaust to prevent the engine from turning over.*

- *Make sure you keep your vehicles fuel tank free of dirt and debris.*

- *Make sure your vehicle's clutch is in good working order before installing it onto the SS .21. Periodically check your clutch to ensure optimal performance.*



FUEL

- *We recommend O'Donnell 20% or 30% racing fuel be used whenever possible. If at any time during the life of the engine you change fuel, either the percentage of nitromethane or brand, we recommend that you set the carburetor needles back to the stock settings to help prevent possible damage or premature engine wear.*

- *Whenever possible, do not allow the fuel container to sit in direct sunlight or opened. Always close the container promptly after each use. Do not store on a concrete floor. Doing so will decrease the quality of the fuel and could cause the engine to perform poorly.*

- *We recommend that you install new fuel tubing on your vehicle before installing the SS .21. This will help prevent problems related to old or torn fuel tubing.*

- *We highly recommend a quality fuel filter be used between the vehicle's fuel tank and the SS carburetor. This will help keep out dirt and debris that could be detrimental to the life of the engine.*

AIR FILTER & GLOW PLUGS

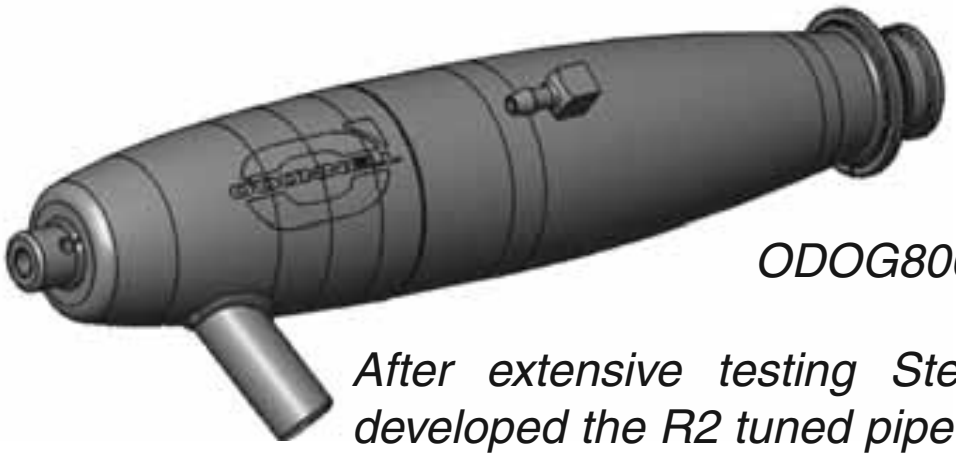
- *It is very important that you use a quality air filter like the O'Donnell ODOC1525 air filter. It is also just as important that you properly maintain it. Using an air filter that is overly dirty, torn, improperly oiled or worn out could allow dirt to be ingested, which will cause premature wear and failure. We recommend that you clean and re-oil your air filter regularly and always use a quality air filter oil.*

- *The SS .21 comes with an O'Donnell 97T glow plug. After extensive testing, Steve O'Donnell has found that this plug gives you maximum performance and superb durability.*

- *We recommend that you always keep a spare O'Donnell 97T (ODOG0497) on hand so that you can replace the plug when needed. You can check your glow plug by pulling it out of the engine and install it onto a charged glow starter. If the glow plug glows bright orange it should still be good. If it does not glow it is time to replace the plug. You can also check to make sure that the coils are not distorted. If the coils are distorted, replace the plug.*

- ***Important:** If you change plug types or brands, you will have to re-tune your engine.*

TUNED PIPE



ODOG8000

After extensive testing Steve O'Donnell has developed the R2 tuned pipe for the SS .21. The R2 tuned pipe helps the engine achieve maximum performance, with a smooth, broad power band.

CARB RESTRICTORS

- *The SS .21 comes with a 7mm restrictor installed in the carburetor.*
- *For increased performance, install the included 8mm restrictor. The engine will need to be re-tuned after changing the carburetor restrictor (richer mixture).*

NEEDLE SETTINGS

The high speed needle (A) controls the amount of fuel entering the engine when the carburetor is fully open. Turning the high speed needle ***counterclockwise*** *(****richer****) allows more fuel to enter the engine. Turning the high speed needle* ***clockwise*** *(****leaner****) allows less fuel to enter the engine.*

The low speed needle (B) controls the amount of fuel entering the engine during idle to the mid range. The low speed needle affects your low end power. Turning the low speed needle ***counterclockwis****e (****richer****) allows more fuel to enter the engine and turning the low speed needle* ***clockwise*** *(****leaner****) allows less fuel to enter the engine.*

The throttle stop screw (C) adjusts the idle of the engine. Turning the stop screw clockwise will increase the idle. Turning the stop screw counterclockwise will lower the idle. Setting the idle too high can cause damage to the clutch. Setting the idle too low can cause the engine to stall frequently.

The factory needle settings for the SS .21 are:

High Speed: 2-1/2 turns out
Low Speed: 1-1/2 turns out

PRIMING THE ENGINE

We recommend that you prime your engine before starting it. While holding the throttle open, place your finger over the muffler outlet on the tuned pipe and turn the engine over using a starter box for 3–5 seconds or until fuel reaches the carburetor. DO NOT install your glow starter during priming. Turn your transmitter and receiver on, install your glow starter and then start your engine. Do not hold the throttle wide open while starting, use only 1/4-throttle. Allow the engine to idle for 10–15 seconds before increasing the throttle. If the engine does not start within 8–10 seconds, remove the glow plug and check that it and your glow ignitor are working properly.

Note: *If you are having problems tuning your engine, we recommend that you return the needles to the factory settings and make small tuning adjustments until you achieve the optimal settings for the particular conditions.*

To reset the needles to factory settings, gently close (clockwise) the needles. Then open (counterclockwise) the needles the designated number of turns.

Important: *Make sure when closing the needles you do not overtighten. Overtightening the needles can cause damage to the carburetor.*

ENGINE BREAK-IN

It is critical that you properly break-in your SS .21. Proper break-in will help ensure optimal fit between critical engine components and help prevent premature wear. Proper break-in will help obtain maximum performance.

- *It is recommended to NOT run the body on your vehicle during break-in.*
- *DO NOT run the engine at full throttle until the break-in procedure is complete and the needles are set for your current conditions.*
- *We DO NOT recommend that you idle your engine on a starter box for break-in.*
- *Do not allow the engine to run out of fuel during break-in. This will cause the engine to lean out possibly causeing engine damage.*
- *We highly recommend the use of a quality temperature gauge like the O'Donnell TGX1 (ODOP0900) to monitor engine temperature.*

The high and low speed needles are preset at the factory. The factory needle settings are a safe (rich) starting point.

Find a large, flat, open area to perform the break-in procedure. Make sure you are in an area where you will not disturb others or have to worry about traffic.

When leaning the engine during break-in, only make adjustments of 1-hour increments. This will help prevent over leaning the engine during break-in and causing damage to your engine.

1 hour = 1/12 turn

Tanks 1-4: *Start the engine and run the vehicle approximately 100 feet back and forth or in a figure eight. Do not squeeze the throttle more than 1/2-way. Every 4-6 passes check the engine temp making sure that it does not go over 170° Fahrenheit. Continue this procedure for the first four tanks, making sure you do not allow the engine to run out of fuel.*

Tanks 5-6: *Continue running the vehicle approximately 100 feet back and forth. Now you can squeeze the throttle 3/4 of the way. Continue to temp the engine every 4-6 passes, making sure that the engine temperature does not go over 190° Fahrenheit. After tank 6 you are ready to fine tune in your engine. After tank 6 allow the engine to cool down. Then restart the engine.*

Tanks 7-8: *You can now run the vehicle approximately 150-200 feet, pulling the trigger to full throttle the last 50 feet of each pass. Continue to temp the engine every 4-6 passes, making sure that the engine temperature is close to 200° Fahrenheit but no more than 210° Fahrenheit.*

During tanks 7-8 bring the vehicle to a stop and allow it to idle for 10 seconds. Then pull full throttle for approximately 100 feet. Take note of how much smoke comes out during acceleration. Optimum is a small amount of smoke from stop to approximately 100 feet. Once this is achieved do the same thing only go 150-200 feet. Continue to check the engine temperature every 4-6 passes. The final head temp after break-in should be approximately 210° Fahrenheit.

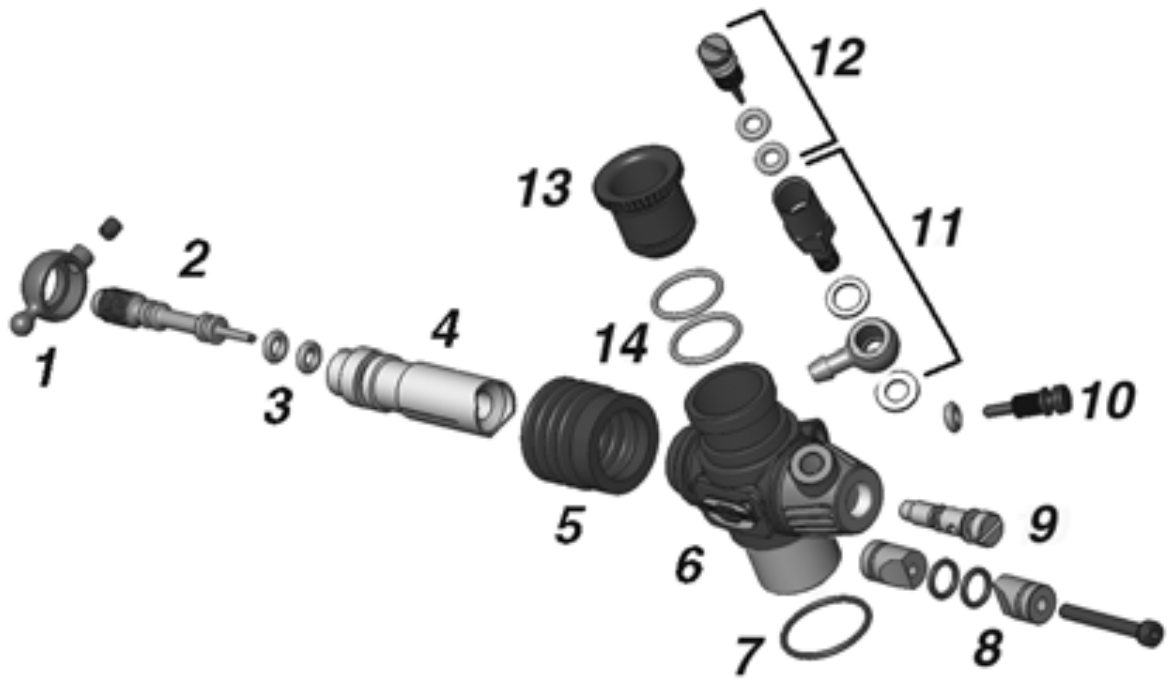
After the 8th tank, your engine should be ready to race. Additional tuning may be necessary at the track for optimal performance.

ENGINE MAINTENANCE

To increase the life of your SS .21 it is critical that you properly maintain your engine.

- *Before each run check that your air filter is clean and properly oiled.*
- *Occasionally check your fuel filter and remove any dirt or debris that may have accumulated.*
- *Keep the outside of your engine clean and do not allow large amounts of dirt to accumulate on the engine. This can act as an insulator and cause the engine to run excessively hot. It is recommended to use a brush to remove most of the debris. If using a spray cleaner, be careful not to allow dirt or debris to enter the front bearing or carburetor.*
- *After each day of running, remove any excess fuel from the vehicle's fuel tank. Then start the engine and allow it to idle off any fuel left in the fuel lines and carburetor. DO NOT give the engine throttle input during this procedure.*
- *After each day of running make sure the fuel tubing is not damaged or torn. If you find any potential problems with the fuel line, replace it before your next run.*
- *Properly maintain your clutch, replacing any worn out or damaged parts.*
- ***Warranty:** This engine is warrantied against manufacturer defect for 90 days from the date of purchase. Due to the extreme conditions of racing we are unable to extend any other type of warranty.*

CARB PARTS & VIEW

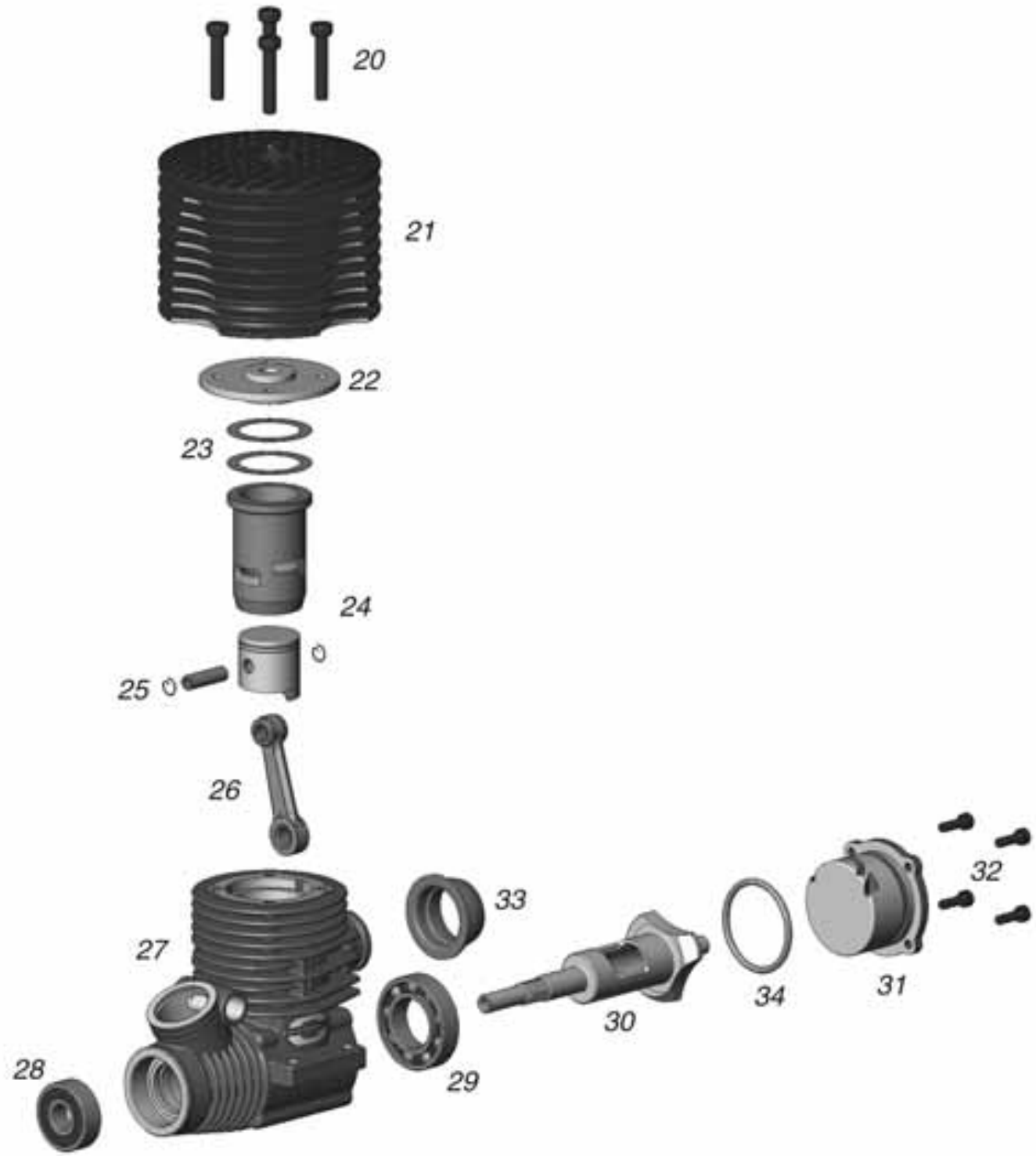


	Carburator Assembly Complete	*ODOG6010*
1	*Carb Slide Ball Clamp*	*ODOG6025*
2	*Low Speed Needle w/O-Rings*	*ODOG6095*
3	*Low Speed Needle O-Ring*	*ODOG6105*
4	*Slide Valve*	*ODOG6024*
5	*Carb Slide Boot*	*ODOG6027*
6	*Carburetor Body*	*ODOG6010*
7	*Carburetor O-Ring*	*ODOG6105*
8	*Carburetor Drawbar w/O-Ring*	*ODOG6020*
9	*Carburetor Spraybar w/O-Rings*	*ODOG6030*
10	*Idle Screw w/O-Ring*	*ODOG6090*
11	*High Speed Needle Housing w/Inlet & Seal*	*ODOG6085*
12	*High Speed Needle w/O-Ring*	*ODOG6086*
13	*Carburetor Restrictor Set*	*ODOG6023*
14	*Carburetor Restrictor O-Ring*	*ODOG6105*

REPLACEMENT PARTS

20	Cylinder Head Screw 3.5 x 14mm (4)	ODOG6120
21	Cylinder Head	ODOG6056
22	Cylinder Head Button Turbo	ODOG6061
22	Cylinder Head Button Standard	ODOG6062
23	Cylinder Head Shim (2)	ODOG6068
24	Cylinder Sleeve & Piston	ODOG6071
25	Wrist Pin Set	ODOG6150
26	Connecting Rod	ODOG6032
27	Crankcase Assembly	ODOG6041
28	Bearing Front 7 x 19 x 6mm	ODOG6001
29	Bearing Rear 14 x 25 x 6mm	ODOG6005
30	Crankshaft SG	ODOG6051
31	Backplate w/O-Ring	ODOG6115
32	Backplate Screw 2.5 x 8mm (4)	ODOC6120
33	Exhaust Coupler	ODOG6078
34	Backplate O-Ring	ODOG6105

EXPLODED VIEW



WARRANTY & REPAIR SERVICE

*O'Donnell will warrant this engine for 90 days after the purchase from defects in materials or workmanship. O'Donnell will either repair or replace, at no charge, the incorrectly made part. (**Please note:** O'Donnell engines are manufactured to the highest standards using only the very best materials. However, since this engine will be used in high level racing conditions using high Nitro fuels, wear and tear and/or damage as a result will not be covered under this warranty.)*

Make sure you save the receipt or invoice you were given when you bought your engine! It is your proof of purchase and we must see it before we can honor the warranty.

Repair service is available anytime. You can have your engine repaired for a small charge by the experts at O'Donnell's authorized repair facility, Hobby Services, at the address listed below. To speed up the repair process, please do the following:

1. *Under all circumstances, return the entire engine.*
2. *Send written instructions that include a thorough explanation of the problem, the service needed and your phone number during the day. (If you expect the the repair to be covered under warranty, be sure to include proof of purchase.*
3. *Be sure to send your full return address*

Hobby Services
3002 N. Apollo Drive, Suite 1
Champaign, Illinois 61822
Attn: Service Department
(217) 398-0007
9:00 am-5:00 pm Central Time M-F
E-mail: hobbyservices@hobbico.com
www.hobbyservices.com