



## Hobby Lobby RCM Funster ARF

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### The Electric-Powered Sport Aerobatic Airplane That is Also a Basic Trainer

How does that saying go? What is old is new again? That is definitely so in the case of the RCM Funster. Dick Tichenor originally designed the Funster in 1984 by taking a Telemaster 40 wing, adding landing gear to it and then designing his own fuselage to match it. The result was basically a tricycle gear, low wing, Telemaster 40. It was a very popular kit as a glow-powered airplane. The plans were first published in Radio Control Magazine, the "RCM" in the airplane's name. Sadly, RCM no longer exists but many of its published designs live on as part of its legacy.

Now, this fine sport/trainer design has been revived by Hobby-Lobby International as an electric-powered ARF. The RCM Funster ARF is the companion to the [Hobby Lobby electric-powered Telemaster ARF](#), just a bit bigger in the fuselage. It's a very complete package, needing only your radio, a motor, battery and electronic speed controller to complete assembly and have it ready to fly.

The RCM Funster is easy to put together, but there are some things missing from the instructions that a novice modeler could really use some explanation about. This article should help to fill in those gaps, ease things along and get your Funster in the air. It will be worth the effort, because this is a nice flying airplane!



Photo 1

When you first glance at the picture on the box cover, the thought comes to mind "Hey, something is missing!" The lack of a glow engine's cylinder head in the picture is conspicuous. But rest assured that there is a power plant hiding in there. It goes to show that the original Funster design has been preserved to the extent that it would be possible to fit a glow conversion if you have the know-how to replace the motor box with an engine mount that could withstand the vibrational stress from a glow engine.

In fact, this kit, as delivered, can be built as a glow-powered airplane. However, now that we're in the age of electric-powered airplanes, why go to all that trouble when you could be flying electric in a day or two after receiving the box?



Photo 2



Photo 3

The photos above show a well packaged kit. The two wing halves come stacked over the vertical fin, rudder, and horizontal stabilizer. A separate corrugated cover protects the fuselage, canopy and bags of hardware. Everything is neatly bagged and organized.

#### ASSEMBLING THE FUSELAGE



Photo 4

Here are the pre-hinged stabilizer and elevators. For that matter, all of the control surfaces are pre-hinged in the same way, with CAA type hinges, ready to be glued permanently in place with *thin* CAA. Note the accurately pre-cut slot in the center of the stabilizer, which forms the mounting point for the vertical fin.



Photo 5

The only thing that will stop you from having the Funster in the air in the next 1 or 2 days is if you spend too much time admiring it and not enough time putting it together! Getting down to business, it's time to break out the thin CAA glue and bond the top two rudder hinges to the vertical fin. The bottom rudder hinge does NOT get glued at all until after the entire tail assembly is attached to the model in a later step.

If you've never used CAA hinges before, it's very easy to do but also easy to make the mistake of not using enough glue. For detailed directions about installing these wonder hinges, see the Sport Aviator Flight Tech article, "[Installing Mylar® Hinges](#)". Normally you hear about not overdoing it with glue and it's still true here, but in the case of CAA hinges, you must be sure to use enough glue on both sides of the hinge to insure that it wicks all the way inside to bond firmly with the balsawood hinge slot.

Make sure that the rudder is held closely to the fin while bending it over enough to expose a small hinge line gap to the let 3 drops of CA fall onto the CA hinge. You follow one drop right after the other, as soon as you see it start to wick inside. This just takes a few seconds. Do both hinges on the one side, then immediately flip it over and repeat the procedure on the other side. With CAA hinges, you must complete gluing both sides of the hinge in one step. If you allow the glue to harden on one side, it will destroy the properties of the CAA hinge material that allows the glue to wick inside so effectively, and the gluing operation on the other side will not form a good bond. In fact, it will tend to just build up and drip away from the hinge if you make this mistake.

Set the assembly aside for about 10 minutes or so, and then move the rudder back and forth a few times to allow it to move freely after it is installed on the airplane. If you use 3 drops of CAA, you normally won't have any excess glue drip on anything, but if you do get some on the finish, don't worry about it too much. CAA remover will take it off. Just be sure to avoid getting any remover in the hinge slot and everything will be fine.



Photo 6

Attach the one-piece elevator to the horizontal stabilizer, following the same CAA hinge gluing procedures as on the rudder. It's now time to join the rudder/ vertical fin assembly to the horizontal stabilizer. One final note about CAA hinging though: When the "hinge count" starts to get up there, you may want to do smaller groups of hinges at a time so that you have enough time to wet both sides of the hinge before the adhesive sets. In other words, it may be best to glue top & bottom of the left side, and then move to top and bottom of the other side. This will assure that the CA will wick properly, as described. Just be sure to keep the parts close to each other and in alignment throughout the procedure.

Now, on to gluing the vertical fin to the horizontal stabilizer! It is very important to have things squarely aligned; otherwise you will have trim problems for the life of the airplane. Using a pair of triangles as pictured above is an easy way to assure proper alignment. After aligning, simply wick in CAA along the joint; avoiding the area near where the triangles are set. Use a decent amount of glue here (not excessive). However, keep in mind that thin CAA will not fill any gaps. A good bond with thin CAA requires that the parts mate snugly and that enough adhesive is used to wick well into the joint. Basically, you slowly draw a line with a steady flow of CAA along the joint. It should take maybe 5 seconds per side of "drawing a line" to get enough glue in there with a steady flow coming out.



Photo 7

After allowing it to set a few minutes, remove the triangles and dab a little more thin CAA on each side.



Photo 8

Every model airplane I have ever built over nearly 40 years has provided its own “journey of discovery”, and the RCM Funster is no exception. Actually, I never really expected to find that the covering would be pre-trimmed in the area where the bottom of the horizontal stabilizer gets glued to the fuselage, but I was thinking that some explanation of how to properly remove it would be helpful. In fact, the instructions didn’t even mention that you have to do this at all. It’s obvious to an experienced modeler, but perhaps not obvious to all. You should not try to cut the covering directly with a knife, because it will almost certainly damage the underlying wood by cutting it across the grain and weaken the structure.

The next series of photos show one method of removing the section of covering without ruining the structural integrity of the stabilizer. First, please take notice in the photo 8 that the area to be removed has already been marked with a felt pen. You must first align the tail assembly on the model exactly as it will be when permanently installed. Then make the markings using the fuselage sides at the saddle to guide the felt tip pen.



Photo 9

Using a sharp, new single sided razor blade, carefully slice the covering in between the lines. Watch those fingertips! You may need them later. Also, you must not press the blade into the wood below! Hold the blade as nearly horizontal as possible and using just the corner of the blade, slice into the covering only. You just can't be very accurate with the line when doing this, which is why you just strive to stay *between* the lines for now. Do this from the trailing edge to the leading edge.

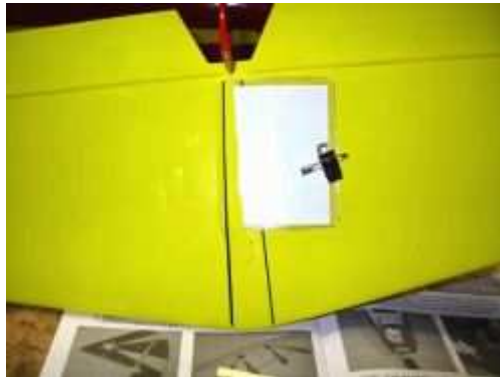


Photo 10

Next, slide something like a piece of thin cardboard or plastic under the covering, just far enough to assure that when you cut along the line, the wood underneath will be protected. I used one of those "Hi! My Name Is..." badges from some trade show I once attended. The choice of suitable protection material is yours, but this seemed very appropriate to me. Notice how this raises up the covering, but the part that remains after the cut is completed can be ironed back in place after the center covering has been safely removed.



Photo 11

Using a straight edge and that sharp razor blade, carefully cut the covering along the line, being sure to keep the protective material *under* the cut. Cut a little, slide it down, and then cut the rest.



Photo 12

Voila! No blood was spilled during the filming of this documentary and most important of all, no balsa fibers were harmed either. Clean up the pen markings with some denatured alcohol. Then grab a covering iron and seal down the edges that were raised during the process. Don't worry if some ink smears into the wood.



Photo 13

Photo 13 shows the fuselage saddle area for gluing the horizontal stabilizer. The instructions didn't specify what kind of glue to use here, but I would definitely *not* recommend using CAA of any kind. The gluing surface area is fairly small and the saddle isn't necessarily perfectly flat. Even gap filling CAA may not bond well. In fact, since the covering is wrapped over the edge and onto the saddle, there is a guaranteed gap there. I trimmed some of the covering overlap away. Even so, the best solution seemed to be to use 30-minute epoxy.

Another important reason to use 30-minute epoxy has to do with aligning the entire tail assembly to the fuselage. If you could be sure of a very snug fit of the parts, you could pre-align it, fasten it all with pins and then use thin CAA to wick in. However, based on how my kit was constructed, it would not have bonded very well. Trying to use gap filling CAA would not have allowed enough time to align things properly before the glue set. We keep circling back to why 30-minute epoxy was chosen! It's easy to add weight with epoxy glue, so use just enough to "lightly butter" the wood on both parts to be mated, and no more.



Photo 14

Photo 14 shows one method of holding the tail assembly in alignment while the epoxy adhesive sets up. A few strategically placed T-pins hold it down, after first doing measurements from each elevator tip to a point aft of the canopy, exactly centered on the top of the fuselage. Making these distances equal assures that one axis is aligned, but it is also necessary to make sure it's not cocked over to one side either. With a flat bench, you can measure from the stabilizer tips to the bench top and get this right. Other methods, such as using a crosshair laser (the kind used to hang pictures on the wall straight) can be used, as long as you are sure that the fuselage is also sitting level.



Photo 15

The wheel and bag of hardware resting on the right stabilizer half was needed to keep it from creeping out of alignment while the glue set. Very high-tech indeed.



Photo 16

“Into each life a little rain must fall”, or in this case, a little servo tray must fall. The glue joints for the plywood tray had popped loose while screwing in the rudder servo, so be aware that this is a potential weak point. You may want to add some reinforcement here. Notice that, keeping in character with the vintage revival theme that I had in mind, my trusty old Kraft KPS-24 servos were used for rudder, elevator and flaps. I ran out of these older servos and resorted to using some more modern equipment (JR 337 servos) on the ailerons, but everything coexisted well together.

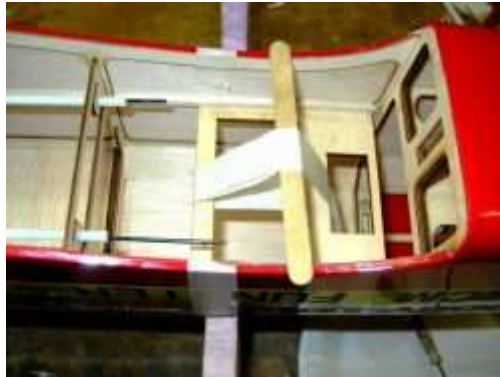


Photo 17

The Popsicle stick splint in photo 17 was needed to hold the servo tray in place while the epoxy glue set. The pushrod guides were preinstalled, requiring only that the control rods be inserted. Very easy!



Photo 18

After “the laying on of hands” to fix the injured servo tray, things progressed smoothly. Originally I was planning to use the BEC (Battery Eliminator Circuit) capability of the Atlas 45A Electronic Speed Controller (ESC not shown)). However, the Atlas controller instructions stated that, with a 3 cell LiPo motor battery, no more than 4 to 5 servos should be used. This model has 5 servos: one elevator, one rudder, two aileron and one flap servo.

Knowing from previous experience that BEC’s often have a tendency to run hot when approaching their rated limits, I decided to disable the BEC and use a separate, external voltage regulator (the green and black thing) and a 2 cell, 730mAh Lithium Polymer (Li-Poly) battery to run the receiver and servos. I like using Li-Poly batteries and regulators, but you could just as easily use a 4 or 5 cell Nickel Cadmium (Ni-Cd) or Nickel Metal Hydride (Ni-MH) battery for simplicity. But there is a weight penalty using those battery systems. However, a 4-cell Ni-Cd or Ni-MH battery pack will not require a voltage regulator.



Photo 19

I prefer a conservative approach with airborne components, so while the BEC circuit might handle the maxed out configuration, I chose to avoid it. Your mileage may vary! Photo 19 shows all the components locked in place, ready for flight.



Photo 20

The regulator was mounted using Scotch brand double-sided, heavy duty foam tape to provide a cushion underneath and held in place with a small nylon wire tie at one end. A second piece of foam tape was placed over the wire at the other end.

As can be seen, there are more mixed metaphors in play here. First, Hobby Lobby mixed a modern electric motor power system with a great, 1984-vintage model design, and then I mixed a modern AR7000 Spread Spektrum receiver with some 1980's era servos. It all plugs and plays very nicely though, with just a little bit of soldering to make adapter plugs for the old Kraft servos. By sheer coincidence, JR servo arms fit the KPS-24 servos perfectly! (*Ed. Note: Hey Ed, I am getting dizzy from all the time jumps but it sounds like fun.*)



Photo 21

Photo 21 shows that mounting the remote receiver for the AR7000 was easily done using some Velcro with adhesive backing. To assure that Velcro stays put on the balsa fuselage side, a spot of gap filling CAA was added to the adhesive side. Another note is that since the Funster is electric powered, there is virtually no vibration and some liberties can be taken when mounting sensitive components like receivers. The main AR7000 receiver is mounted with Velcro as well, but I would never skip using a foam cushion mount in a glow or gas powered model!



Photo 22

The above photo shows the battery compartment. On the left side, a pair of round magnets can be seen. These hold down the hatch. This works well, unlike other magnetic hold downs I have seen on some other models. It works because the front of the hatch has plywood tabs that slip under the edge of the opening, so the job of the magnets is only to keep the back of the hatch from flapping about. The main force is born in the front by the plywood tabs. This hatch does not blow off in flight!

The plywood floor has a piece of hook and loop tape to hold the 3-cell (3S 1P system) 3700 mAh battery in place. With a battery like this that weighs over 10 oz; it's a good idea to add a few spots of gap filling CAA to the adhesive side of the Velcro strip from the kit. The battery attached to the fuselage side in photo 22 is the 2-cell (2S 1P) Li-Poly battery that feeds the voltage regulator and runs the receiver and servos. Since it is necessary to open the hatch each flight to connect/disconnect the big motor battery, we might as well do the same for the flight pack battery. There is no switch on the version of the regulator used; it is on whenever a battery is attached.



Photo 23



Photo 24

The PolyQuest 3S3700 (3-cell, 3700 mAh rating) Li-Poly battery fits nicely into the compartment. Photo 24 shows the Atlas 45A Electronic Speed Controller (ESC), the PolyQuest 3S3700 Li-Poly battery and the Atlas AM2927/07 [Outrunner](#) brushless motor. This motor is also referred to as the Atlas .46 Trainer.

## PREPARING AND CONNECTING THE ELECTRICAL COMPONENTS

The next few photos show how to get these components ready to connect to each other, since not all of the electrical connectors come attached from the factory. You need to have some decent soldering skills to do a good job with this. If in doubt, it's a good idea to ask someone for help who has this type of experience. It's not hard to learn, but mistakes can be costly!



Photo 25

The Atlas 45 amp ESC pictured above is almost completely wired from the factory, requiring only that a power connector be soldered on to the red and black leads that will later connect to the battery. The 3 pins and pieces of black heat shrink tubing in the lower left are for the motor leads; described later. However, they will mate with the 3 sockets from the ESC (those are pre-soldered to the 3 black leads, pictured on the right).



Photo 26

Brushless electric motors always have 3 wires that connect to the Electronic Speed Controller. The wires are color coded, but as you will later see, it is not necessary to match wire colors of the motor to those on the ESC.



Photo 27

Some means of holding the motor wire pins steady while soldering is needed! It can be as simple as a small alligator clip, but it must allow you to keep the parts from moving around while being soldered and especially while cooling down to allow the solder to set. Ordinary rosin core electronic solder can be used, although I prefer to use a silver-bearing electronic solder because it provides the best conductivity.

Wires must be stripped of enough insulation to make a connection inside the cup section of the connector pin. They also need to be thoroughly pre-tinned with solder. I find that filling the connector pin cup area with solder, then keeping it molten with the soldering tip inserted in the hole in the side of the cup as the wire is inserted works the best. (*Ed. Note: Great Tip*) The wire is going to get very hot, so be prepared with something to protect your fingers.



Photo 28

After soldering, the protruding connector pins are protected with black heat shrink tubing (photo 28) to prevent them from shorting together when installed in the model. The only exposed metal is the part that slides completely into the connector sockets from the ESC.



Photo 29

Let's get more familiar with the .46 Trainer motor now. The mounting bracket and flat head bolts are provided with the motor and install easily to the rear of the motor case, near where the wires exit. The bracket is the thin black piece of metal, with an aluminum keeper collar installed behind it.

Everything forward of the section where the wires exit is a rotating part! Motors such as this develop a great deal of torque and should never be connected to a power source and run unless they are securely mounted to the model or a suitable test stand. The aluminum propeller shaft is also provided with the motor and is mounted to the rotating motor case with flat head bolts.



Photo 30

The PolyQuest battery is a 3-cell, 3700 mAh capacity Lithium Polymer (Li-Poly) battery pack. As provided, the power leads have no connectors installed and you must be prepared to install them yourself. Be advised, that the battery comes from the factory partially charged and is ready to deliver a very considerable electrical current, so be extremely careful not to allow the leads to touch each other when removing the insulating heat shrink tubing that protects the red (positive) and black (negative) power leads!



Photo 31

Deans Ultra Connectors were chosen for the battery connections. The correct polarity markings are molded into the plastic, so be sure to follow them. To avoid a potentially catastrophic short circuit, be sure to only expose one lead at a time.



Photo 32

Strip the insulation off of one lead, tin and solder it to the connector, shrink the insulation over it and *only then* proceed to do the 2nd power lead.



Photo 33

This technique prevents shorting the power leads together.



Photo 34

The heat shrink tubing is now ready to be shrunk over the 2nd battery power lead. After it is in place, shrink it to fit using either a model covering heat gun or a strong hair dryer.



Photo 35

As shown in photo 35, after installing the Speed Controller (ESC), the positive power lead was disconnected from the throttle lead. A pin gets pushed in while carefully lifting up the plastic snap retainer, which allows the socket inside to slide out. This was a precaution due to the decision to not use the ESC's built in battery eliminator circuit (BEC). Instead, a separate battery and voltage

regulator powers the receiver and servos. This step assures that no conflict between two voltage sources to the receiver would occur. The leads remaining do not carry power and are used for the signal path from the receiver throttle channel to the ESC.



Photo 36

Heat shrink tubing covers the red power lead from the ESC's BEC.

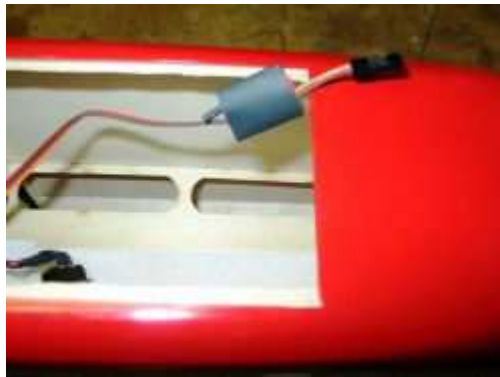


Photo 37

A 2nd, larger piece of heat shrink tubing is used to secure the unused power lead. (*Ed. Note: Ed is really, really good with this electrical stuff. For us mortals, either covering the unused BEC connector with heat-shrink tubing or an old matching connector, minus wires, also works.*)



Photo 38

The smaller battery being held with the red hook and loop band is a 2S730 Li-Poly that connects to a separate voltage regulator and powers the receiver and servos. The ESC is just out of the picture, but is held in on the right side of the interior with another hook and loop strip.

Power connectors for each battery are connected and disconnected each flight. Even though the ESC is designed for safety and won't power the motor until a low throttle position is first detected, it's wise to always power up the receiver battery first, to assure that you have control of the throttle position for the motor before its power source is connected. The motor battery should also be unplugged first before unplugging the receiver battery.

#### FINAL FUSELAGE ASSEMBLY

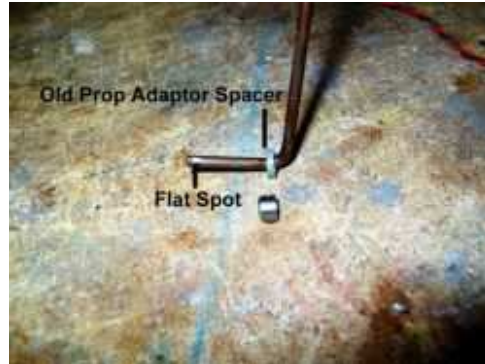


Photo 39

Photo 39 shows how a flat spot was ground into the end of the nose gear axle. This is necessary to assure that, when the wheel collar is installed, the set screw has a firm spot to grasp and can't easily slide off. A similar step is needed for the steering tiller arm that attaches to the top of the nose gear wire (not pictured). You have to first align the steering arm with the gear slipped into the nylon mount. Also of note here is that it was necessary to fashion a spacer to assure that the nose wheel didn't rub against the gear wire.

The wheel provided in the kit is too wide to allow the use of a normal wheel collar as the spacer, so a spare propeller shaft adapter from an APC® propeller was used instead (photo 39 – enlarge if necessary).



Photo 40



Photo 41

This left just enough room to use the wheel from the kit and still get the retaining collar on the very end of the axle.



Photo 42

The Atlas .46 Trainer motor is fairly simple to install. Blind nuts are already installed in the motor box, so all that is necessary is to screw it in place. Use thread locking compound on the mounting bolts. The only difficulty encountered was due to the lack of adequate clearance to get a small screwdriver to pass through the hole in the front of the motor compartment, past the motor to reach each screw. Care must be taken to avoid scratching the case.



Photo 43



Photo 44

Mounting the aileron servos is quick and easy. A removable plywood hatch has the servo mounting rails already installed. There is a string guide inside the wing for the aileron extension wire. Each end of the string is tied to a small piece of plywood that is tack glued to a rib. You just snap off the end at the servo hatch, tie it or tape it to the servo extension and pull it through from the center section end of the string (below), then discard it (photo 45).

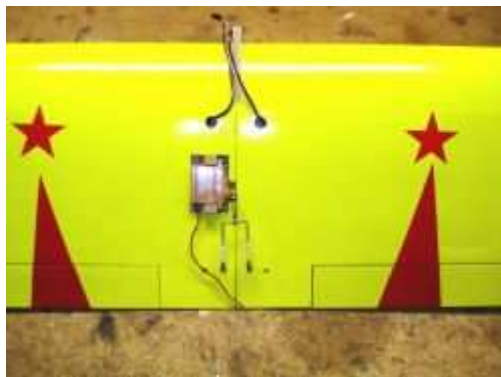


Photo 45

The photo above shows how the wing halves look when joined together. Each half has a plywood "finger" at the leading edge, which, together, will fit into a mating slot in the forward area of the fuselage wing saddle to secure the wing during assembly.

There are sliding spars that join the wing together inside a spar box in each wing half. Notice that near the wing's trailing edge, there are holes for the 1/4-20 nylon wing bolts which secure the wing to the wing saddle.

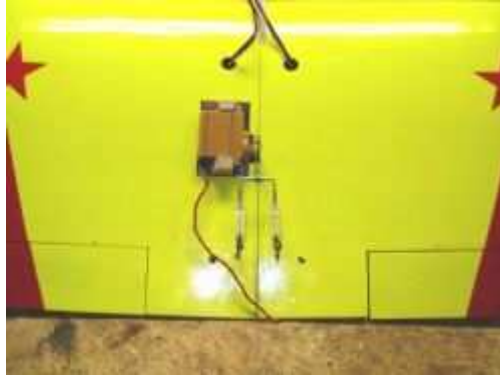


Photo 46

More detail of the flap servo can be seen in the photo above. It mounts on a removable plywood mounting tray, which is then screwed into the plywood floor in the flap servo compartment. A "Y" type pushrod joins both flaps together to be actuated simultaneously. The wire extensions for the aileron servos can be seen near the wing's leading edge.

The balance point ([Center of Gravity](#) [CG]) was just about right on the money without moving anything or adding any ballast weight anywhere. The instructions call for a range from 3 1/4 in. to 3 3/4 in. behind the leading edge of the wing and mine was in between these numbers. I set up the control throws with slightly more than the recommended amount, since I was expecting to wring out the Funster as thoroughly as possible to test its aerobatics capabilities, as well as its trainer handling qualities. Dual rate throws in my radio setup allowed me to try either control range during flight. For the flaps, I set up the three position flap switch on my JR9303 2.4 GHz transmitter to provide no flaps, mid (15 degrees) and full flaps (30 degrees) for take off and landing flight testing

#### FLYING THE RCM FUNSTER



Photo 47



Photo 48

Here is the Funster assembled and ready to fly. The color scheme looks great and is highly visible. Also visible in this photo are the flaps in the fully deployed position. Having flaps installed on a sport airplane, even one that lands as slowly and handles as well as the RCM Funster,

widens the airplane's performance envelope. It also allows use of shorter runways for take offs and landings.



Photo 49

All of the flight testing was done in relatively calm conditions, from a grass runway. The first thing noted was that the ground handling is not quite as positive as expected from a tricycle gear arrangement. The model is a bit light on the nose gear and would handle better if the main landing gear wire legs were bent aft somewhat. I would estimate that putting a 15 to 20 degree bend in each main gear leg would do wonders for the ground handling. Nevertheless, it is manageable.



Photo 50

Takeoff acceleration was moderate with the recommended 13x8 APC propeller. Later on, switching to an APC 13x10 helped somewhat. This is where the flaps for takeoff help. On the first flight, the takeoff was done with no flaps, but they were used much after that. That is, they were used after trying them out at altitude first.

Owing to the large horizontal stabilizer and a relatively small area elevator, it takes a fair amount of up elevator to rotate and break ground, but at least with flaps deployed, the model wants to get airborne at a slower speed than without flaps.

The recommended flap setting for takeoff is 15 degrees. I tried all combinations; no flaps, 15 degrees and 30 degrees and saw a definite improvement in being able to break ground and perform the initial climb with 15 degrees of flaps. It's wise to keep in mind that flaps do add drag, so having more than is needed on takeoff can be detrimental to climb performance after breaking ground.

In fact, even with 15 degrees of flaps, it is a good idea to "clean up" the airplane shortly after takeoff to extract the best climb performance from the model. I would suggest going to no flaps before the first turn after take off, if not sooner. After getting used to how it handles in slow flight

with no flaps and 15 degrees, it is safe to say that once the model has performed a shallow climb to about 50 feet of altitude, the flaps should definitely be retracted.

With the Atlas .46 "Trainer" motor, the climb performance is moderate. Going to an excessively steep climb angle will quickly result in loss of airspeed and produce the opposite result of what the pilot had in mind! The good news here is that the Funster is very docile and handles slow flight quite well. As a stall is approached, it gently falls forward, without much tendency to drop a wing, as long as the ailerons and rudder are not being thrashed about at the time. Recovery from too steep of a climb is simple: keep the wings level, keep the throttle in and push the nose down to get some flying speed back.



Photo 51

In-flight handling is pleasant. The aileron response is positive and confidence building, even at low speeds. Elevator response is good for a trainer. It is also positive, but does not allow the novice pilot to over-control too easily. On high rates, a certain amount of aerobatic handling is possible too.



Photo 52

Steep turns do require a fair bit of "up" elevator to maintain altitude, but owing to the moderate roll rate of the Funster, it's fairly intuitive to see when it needs more elevator input as the angle of bank is increased. The Funster has a certain amount of tendency to "correct" mistakes, in other words, it will very gradually roll towards level flight from higher bank angles. It also wants to pull out of a dive in a gradual way, but of course it still needs the pilot to make the right decisions!



Photo 53

The flight speed with the Atlas motor, even at full throttle, is fairly modest. Even after switching to a 13x10 prop, the flat out airspeed could be easily handled by most new pilots. (*Ed. Note: While the Funster's top speed was moderate, it was much faster than the Electric Telemaster could manage.*)

This, combined with the rate of control response gives you plenty of time to think and to react to what the airplane is doing. The downside of this is that there isn't much energy to trade off for altitude if you want to climb in a hurry.

With the flat bottom airfoil wing and all of the dihedral that is built in to the RCM Funster, you might expect that the turning performance using rudder would be quite good. However, the rudder itself is relatively ineffective for turning, most likely because it is a relatively small control surface. It takes full rudder deflection to produce a very low rate of roll into or out of a turn.

For an aerobatic airplane, this small amount of "rudder coupling" is actually a good thing. The last thing a pilot wants is to have to counter a rudder induced rolling motion with ailerons when doing [stall turns](#) or knife edges. The best aerobatic airframes have no rudder coupling at all. The Funster occupies that middle ground, along with most sport airplanes, of having some coupling but not too much. Use the ailerons when you want to bank, that is what they are there for.

To be sure, the Funster can be flown on just the rudder and elevator, but it produces only wide, sweeping turns that you really have to plan for to put the model where you want it to be. As far as being able to use the rudder to good effect to "crab" into the wind on final approach to landing, it's good to know in advance that you won't get a lot of help from it and will need to use ailerons to bank into the wind instead.



Photo 54

When it comes time to land, the Funster really is fun and relaxing, because it handles so predictably. It's also nice to have the option of flap settings to modify the glide path. This is mainly what flaps do for you on landing. They do allow you to land at a slightly slower speed, but the main thing you will notice is how you can approach at a steeper angle and better control the landing spot.



Photo 55

I found it worked well to do a typical landing pattern approach, much like you would observe a light aircraft doing. You fly a downwind leg with no flaps and when turned onto base leg, add in half flaps as the descent begins.



Photo 56



Photo 57

Upon turning to final approach, you have the option of going to full flaps. However, keep in mind that it may take a touch more power to get to the landing spot with full flaps. This is because of the extra drag that the flaps hanging out will produce. Again, use of the flaps is really optional, but it is a nice option to experiment with.

The Funster can do basic aerobatics, such as loops, rolls, stall turns and even sustained inverted flight. The flat bottom airfoil wing definitely limits the performance while inverted, but a pilot with some experience can do it. Loops are easy, but realize from the outset that because this power plant / airframe combination is really meant to provide good manners as a trainer, you will not be able to do very large loops from a level flight. Diving from altitude to first pick up some airspeed helps, but that's not what you would normally want to do to perform a loop. Plan on making relatively tight loops, which allow the model to attain the inverted position while it still has enough airspeed to maintain directional control.



Photo 58

An [Immelman Turn](#) can be done, but only if the tight loop rule is observed to maintain enough speed to permit the ailerons to be effective at the top of the half inside loop, so that the  $\frac{1}{2}$  roll to upright can be performed. It is also possible to simply extend the  $\frac{1}{2}$  loop into sustained inverted flight, but keep in mind that the airspeed will be low at first and the model will want to drop. Know that even at full speed in level flight, it takes very nearly full “down elevator” to remain level. Gradual inverted climbs can be done from a “running start”.

Aileron rolls are achievable. But since the Funster rolls relatively slowly, it will take a fairly vigorous elevator input to maintain altitude, especially while inverted. Start high until you are totally familiar and comfortable with how it reacts! The same rule holds for inverted flight, whether it is entered from a  $\frac{1}{2}$  inside loop or from a  $\frac{1}{2}$  roll from level flight.

I preferred to roll into inverted flight, since I could use a full-power level flight run to get inverted with more positive control than by using the  $\frac{1}{2}$  loop method. While inverted, you can fly all around the field with relatively good handling in turns, but know in advance that you can indeed run out of “down” elevator if you either lose too much airspeed, bank too steeply or achieve some combination of the two. Remember this is a sport airplane and aerobatic trainer, not an Extra 330!

Be mindful that you should not peg the motor at full throttle for a very long time, because you will chew through your battery reserve rather quickly that way. It’s not good to find yourself low and slow with a waning battery charge, especially if inverted!

The rudder can be used during an aileron roll if you know the techniques to use to help to keep the nose on line with it. Stall Turns however (AKA Hammerheads), were a pleasant surprise! The Funster does these very nicely, although you will not get a very tall vertical before it is time to kick it over with the rudder. As long as you put in some power at the apex of the stall turn (about  $\frac{1}{3}$  throttle), the rudder is actually very effective at pivoting it over for a nice looking stall turn. The Funster’s low rudder coupling helps the pilot coast through this maneuver.

However, snap rolls didn’t seem to work and spins just didn’t happen. It’s possible to get a nice spiral dive / spin “hybrid” from the Funster if full rudder, full up elevator and a fair bit of aileron in the direction of rudder is used. But most good trainers do not snap roll or spin unless really forced into the spin using full power and vertical approaches.

Old fashioned Barrel rolls work very nicely with the Funster. Here, the technique is to initiate a gradual climb as the aileron roll is started, and hold some “up” elevator throughout the roll. Much less “up” elevator is needed while inverted than at other times. Again, start high with this maneuver until you get a feel for what it will do! Other combinations of rolling and looping elements can be combined to produce some nice aerobatics figures such as various types of Cuban Eights.

## SUMMARY

Overall, the Funster is a good trainer and sport model that will give you some room to grow and experiment. It builds more easily than do most ARF's as the wing does not require gluing and a lot of work is pre-done. As an inverted "Telemaster", the Funster outperforms its inspiration while retaining all the original's excellent handling characteristics. This is a trainer and sport airplane that a new pilot can trust to bring him "home" safely each time he dares the fates. For only \$170, this is a good buy as well.

This RCM Funster is designed for electric power. However, it can be converted to glow power. If you intend to do that, I would suggest using a "55" size glow engine (the largest engine packaged into the "40" size crankcase) or a true .61 powerplant.

For more information on this airplane, go to: <http://www.hobby-lobby.com/funster.htm>



## Specifications

**Manufacturer:** Hobby Lobby

**Wingspan:** 72.5 in.

**Radio:** JR Quattro 4-channel

**Servos:** 3 x Kraft KPS-24

2 x JR 537

**Motor:** Atlas AM2927/07

**Length:** 53

**Wing Area:** 846 sq. in.

**Wing Loading:** 14.7 oz./sq. ft.

**Weight:** 5.40 lb. Airfoil: Flat-Bottom

**Cost:** \$170.00

**Special Airframe Features:** Inverted Telemaster Airframe, Very Large Flat-Bottom Wing, Quick ARF Assembly; Flaps; May Be Built as a Glow Power Version.

### Notable Positives

Gentle aerobatic handling

Extremely fast, easy assembly

Attractive trim scheme

Very light flying weight

Good basic trainer performance

Hey, it's a TELEMASTER!

### Notable Negatives

Could use a little more powerful motor