

VIPER JET

Brian Collins loves EDFs and this 90 mm EDF from Taft Hobby is no exception!



One very happy Viper Jet owner!



Taft Viper Jet ready for take-off

I have to confess the Viper Jet has to be one of my favourites! I just love the sleek looks, the way it looks like it is going fast even when it's standing still! From the slender lines of the fuselage to the vortex winglets on the swept wings I think the Viper is a stunning-looking aircraft. So when I saw that Taft Hobby have produced a large 1450 mm (57") wingspan version, powered by a 90 mm fan unit and packed with features, I just had to have one!

A Boxful of Fun!

I eagerly awaited delivery and as expected the box is very large with excellent full colour artwork. An A4 sized black and white instruction manual with photographs is included and is easy to understand giving good assembly instructions. The model is constructed from tough EPO foam and is very strong. I have come across some EPO foam that

has a rather soft feel to it and can even damage quite easily, but this version is very compact providing a tough airframe. All the components are well wrapped and packaged, and no damage to any component was evident whatsoever. This is a true ARTF model in that just about all the construction work has been done for you

at the factory, even the decals are factory applied. However, there are one or two 'tweaks' I felt necessary to perform during the assembly and before committing the model to flight – more on this later.

As I mentioned earlier, this model is just packed with features. It uses an 11-blade 90 mm EDF unit with a ready fitted 3541



A very large colourful box!



RIGHT: Gear up with doors ready to close



Fast low pass from the left



Excellent battery cooling underneath fuselage



Front gear door and servos; note metal sprung oleos

All the servos, navigation LEDs and metal worm drive retracts in each wing are plugged into a PCB 'circuit board' in the fuselage via a single plug that aids assembly at the field, which eliminates the need for several Y-leads and servo extension leads – a very good idea that saves time and also

Brushless 'outrunner' motor, which has a relatively low kV of 1450 (revs per volt). The model runs on 6S (22.2 V) LiPo 5000 mAh packs hence the low kV motor. The 11-bladed EDF uses curved blades that help produce that lovely 'whoosh' sound and not a high pitched 'whine' or 'scream' sometimes associated with some EDF models.

A HobbyWing 80 Amp ESC is fitted with a built-in 4 A BEC (more on this later). The model uses metal worm drive tricycle undercarriage and is also fitted with gear doors, which are sequenced via an on-board door sequencer. Eleven metal-gear servos are fitted to power the control ailerons, elevator, rudder and flaps.

LED navigation lights are also fitted.

A factory applied red and white chequered colour scheme should help aid orientation. The cockpit has two seats and two 'joysticks' but no pilots are supplied, which is such a shame given the effort Taft have gone to produce such a nice looking model.

TOP TIP:

Keep the canopy out of the sun when not flying the model! The cockpit interior is painted matt black, as a result in direct sunlight it gets hot inside the 'cabin' – hot enough to cause the black painted foam to 'bubble' or 'blister'.

saves wiring a 'spaghetti junction' each time one wants to fly!

The same plug-in method is also used on the tail section with servo plugs for the twin elevators and rudder also plugging into the single PCB in the fuselage. I did ask myself the question, "What if the PCB ever develops a fault?" But in this case it

The wings have winglets moulded into them. The wing panels are removable to aid transport. Each wing is joined to the fuselage with two screws and a large metal wing joiner is also used.

is of course possible to connect all servos via traditional Y-leads and servo extension leads if ever needed.

The elevator and tail section is screwed onto the fuselage and held in with screws. I have no intention of removing the tail section so I glued the whole tail section on



Connection board in fuselage saves a lot of wiring!



Note large tail section ensures excellent stability



Supplied EDF; note the 11 curved blades produce 1.9 kg of thrust!



Rear of the EDF showing 1800 W brushless outrunner motor



The business end – brushless outrunner motor and 11-blade 90 mm fan now installed

with strong bond epoxy as well as using the screws. The forces on such a large model are massive in flight especially in high 'G' manoeuvres and the thought of the screws ripping through the plastic moulding mid-flight is not one I wanted to contemplate.

With the tail and wings fitted it was time to check all the components, control surfaces, sequenced gear doors and retractable undercarriage for correct operation. I use a separate receiver battery to test the control surfaces and retractable undercarriage in a new model, as I do not connect the motor system at this point.

Upon powering up I noted that two of the servos were 'singing' and tracked them down to the sequenced gear doors. Servos which 'sing' can cause a higher current draw as something is causing a strain on the gears that can cause issues, especially when using an on-board BEC (battery elimination circuit) so for extra safety (and good practice), I like all my models' servos

to be totally silent with no binding when ready to fly. A quick adjustment of said gear doors eliminated the servo 'singing' issues altogether. The retracts also feature all-metal oleos with suspension and rubber tyres.

Using a UBEC

Next task was to power up the fan unit. As I mentioned earlier, the model is designed for 6S (22.2 V) LiPo packs. I connected a freshly charged 6S pack and slowly ran the fan up. I have had a few ARTF EDF models in which the fans run rough and vibrate badly (especially at full throttle) as a result I have had to strip the fan down and balance the impeller. Not something one should have to do in a brand new model but I can report there were no issues at all with the Viper's 90 mm fan as it ran very smooth throughout the entire rev range.

Using a Wattmeter I noted 1795 W with a current draw of 78 A giving it plenty of

power! (These figures are only a guide and normally I would not recommend running high-powered EDF systems up statically for long periods due to cooling issues, but I wanted an idea of the power output for review purposes).

One issue I do have is with the supplied ESC; it is an 80 Amp unit, that can run on 4-6S LiPo batteries and has a built-in BEC rated at 4 Amps. Considering the model runs on 6S (22.2 V) and is fitted with 11 metal-gear servos as well as three worm drive retract units, not to mention lights, this is a lot of residual power for an on-board BEC to cope with. It may well be fine and indeed I have heard of some people flying similar set - ups with no problems but this is a large, powerful model aircraft and for safety reasons and peace of mind, I would suggest a separate battery or a designated UBEC to power the receiver, servos, retracts and lights leaving the ESC 'OPTO isolated' only to power the motor. With this in mind I fitted a separate UBEC rated at 6 Amps and capable of handling the 6S 22.2 V with ease. It is a relatively simple task to fit and offers more peace of mind. I also think the 80 A ESC fitted is running close to its maximum current levels but having said that I have had no issues with the included ESC at all. I have checked it for overheating just after landing and it shows no signs of overheating whatsoever.

Fan-tastic Flying

So with the model fully assembled and set-up, balanced to the recommended C of G it was time to head to the flying field! North East weather can cause havoc with flying schedules so I had to wait weeks for a suitable flying opportunity.

The Viper is a large model, indeed it has to be one of the largest foam EDF models I have come across, but because of the 'plug-in' wiring system assembling it at the field is no problem, not even for me who has to do it from a wheelchair! It will also fit in the boot of my car without having to take the wings off.

After fitting the flight battery and doing all the checks (including a range check) it was time to fly!

Lining her up into the wind I opened up to around three quarters throttle and watched the Viper hurtle down the tarmac runway where she was airborne within about 45 feet. At this point I didn't know what effect the flaps had on the flying characteristics so I didn't use them at all for take-off. The Viper has plenty of power on tap and gains altitude very rapidly. It only required two clicks of 'up' trim adjustment on the elevator, which I think was down to the fact

On finals with retracts
and flaps deployed



I had it a little nose heavy for the maiden flight but no other trim adjustments were required at all.

After gaining a safe altitude (which didn't take long) I checked the stalling point, which was virtually non-existent. The nose dropped a little and that was about it, very impressive and somewhat reassuring for a first flight. The Viper is not the fastest EDF jet I have ever come across but will loop from level flight with no hesitation at all.

The rudder is responsive and the roll rate was also very impressive as is the way the model handles in general. It gives the pilot a very positive feel. We have heard the term 'it flies as if on rails' used a lot in this hobby but I have to report in this case it is totally true!

Low, fast fly-bys are particularly impressive and the sound of the 11 curved blade 90 mm EDF unit is awesome! Sounds more like a turbine than a foam EDF model!

I slowed the Viper down at a good altitude to see what the slow flight characteristics

are like and also to see what effect the flaps have with the landing approach in mind. I applied the 'half' flap setting, which did not cause the Viper to pitch up at all and even at full deployment no dramatic pitching was evident so I knew I could use flaps to good effect for the landing approach.

After lining up to the runway I triggered the retractable tricycle undercarriage, which I have to say are a work of art! The gear doors open first (mains and nose) then about 2 seconds later the retracts smoothly drop from the fuselage and lock into position. With the flaps down she came in very smoothly and if I say so myself a very smooth landing was concluded, the end to a very satisfying 5-minute maiden flight. My heart rate could now drop to below 200 beats per minute!

Conclusion

This is a very impressive 90 mm EDF jet. The fact it is constructed from foam doesn't take anything away from the fact that it has some nice features. It is well equipped, looks great and has good performance for such a large model. It is very stable at slow speeds yet can fly quite fast and is also aerobatic if needed. On the ground or in the air the Taft Hobby Viper Jet is a real 'head-turner' and is sure to impress at any flying field, however with the need to buy at least two 6S 5000 mAh LiPo packs for a decent flying session it is not for those on a budget, but in my humble opinion it is well worth the investment. **Q&EFI**

Quiet & Electric Flight International Specification

INFORMATION

Name:	Viper Jet
Motor:	BL3541 ducted fan motor, 1450 kV
Battery:	5000 mAh 22.2 V 6-cell 30C LiPo (not included)
Speed Controller:	HobbyWing 80 Amp BEC Brushless ESC
Ducted Fan Unit:	11-blade 90 mm
Servos:	Eleven 9 g Digital (metal gears)
Landing Gear:	Retractable metal landing gear

R/C FUNCTIONS

Servos: Eleven 9 g Digital (metal gears)	
1 Ailerons	4 Rudder
2 Elevator	5 Retracts/gear doors
3 Throttle	6 Flaps

SPEC.

Wingspan:	1450 mm (57")
Length:	1274 mm (50¼")
Flying Weight:	3050 g (107.6 oz)

Flared out ready for a smooth touchdown

