

AUDACITY MODELS

Pantera P6

50-SIZE GLOW HELICOPTER

I personally have been a big fan of Audacity Models for the past 5 years since I first acquired their Tiger 50. It was easy to build, very rugged and very affordable to fix. The Tiger 50 has been out of production for some time now which led to my distress following a recent crash. A quick call to Audacity and I was relieved that they still stocked a good supply spares for this model which got me back in the air in no time.

I got to know John Beech, owner of Audacity Models, pretty well over the years. Anyone who knows John knows that he has a big heart and a major passion for this hobby, especially when it comes to introducing RC helis to new pilots. I told John that I could not believe he still had spares and he replied, "It's because we feel a model can be made of gold, yet not be worth a pound of salt without spare parts."

While I had John on the phone I asked about getting a Pantera 50 (the replacement of the Tiger 50) and he informed me that he could not sell me one because the Pantera P6 just superseded it. He then told me about new side frames, new tail case, new pitch slider, plus a new canopy and how this led to it

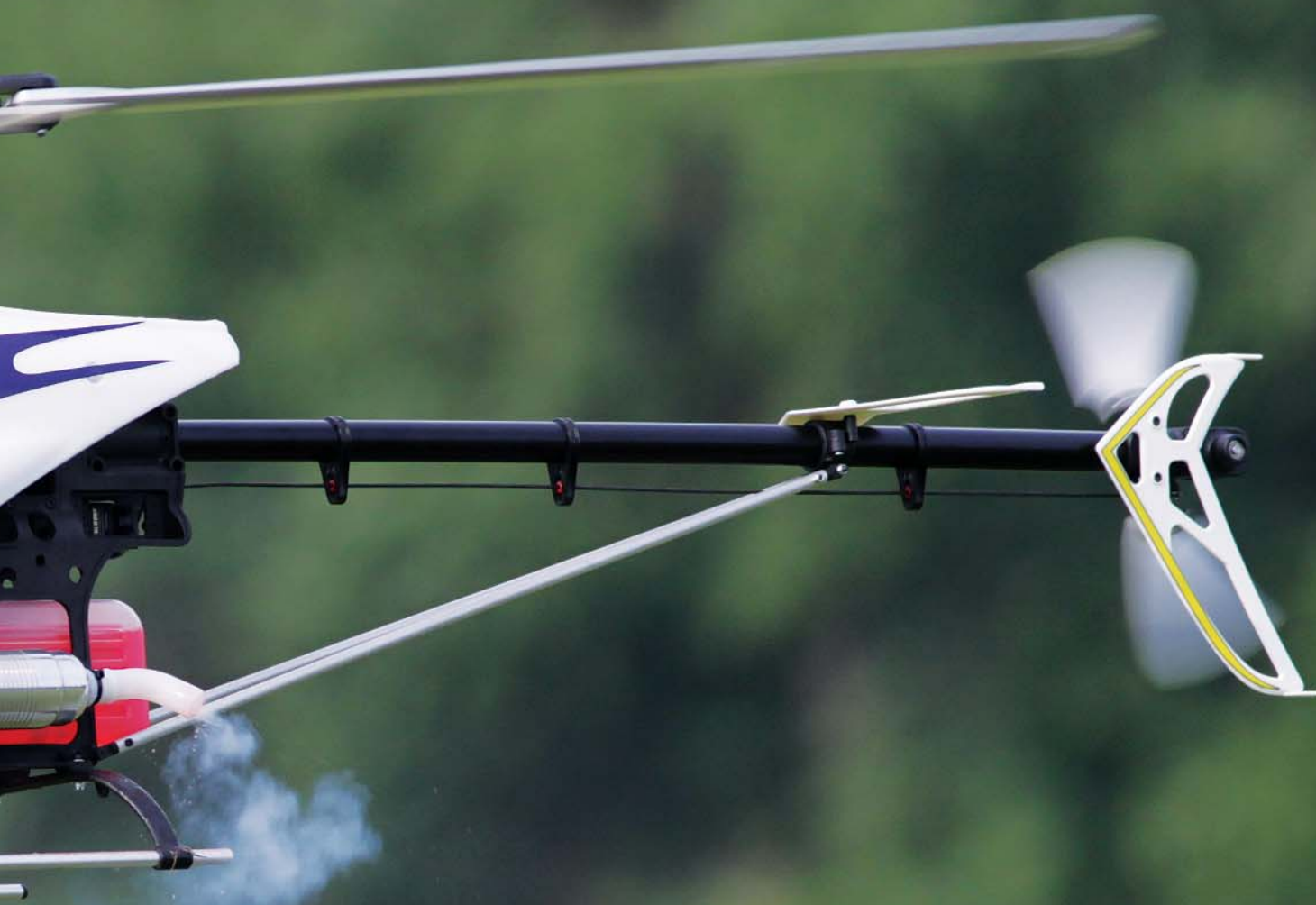
being a new model. He continued with how the P6 designation was due to the Pantera being capable of conversion to electric power with an option kit. So, as any modeler would know, a \$40 spare parts order ended up with a new Pantera P6 on its way.

WHAT'S NEW?

What's new about the P6? Almost too many things to list; from mere details like a silicone stopper for the fuel tank (replacing one made of rubber), to details like metal pins in the tail pitch arm to reduce wear. There are also skeletonized horizontal and vertical fins for those aerobatic pilots. The seesaw arms have been made more heavy duty, and have 3 additional points of adjustment. These are great because it means more flexibility in tuning the handling so the model won't hold you back as you progress as a pilot. There are also refinements of the autorotation hub, plus a unique fuel shut-off for the engine.



Big, Tough,
and Durable!
A Perfect Trainer



NEED TO KNOW

MANUFACTURER:

Audacity Models

DISTRIBUTOR:

Genesis Hobby

TYPE:

50-size glow powered heli

FOR:

Beginner/intermediate pilots

PRICE: \$369.99

Author's Opinion

The Pantera P6 is nothing shy of a workhorse. It's a heli that is capable of just about any 3D maneuver you can throw at it while at the same time it can be tamed for the novice. It can handle a .50 to .91 size glow engine and can also be converted to electric. To say its construction is rugged is putting it mildly. It can take a punishment both in the air from the seasoned pilot and near the ground with a novice. The P6 is attractively priced and parts pricing is excellent. This is the heli that you will fly every day. It is the heli you will venture into new territory on, such as 3D, without worrying about putting a \$2,000 machine at risk. It's easy to build and easy to maintain.



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The big changes are the new side frames, new tail case, and a more visible canopy. The P6 designation, by the way, is due to the Pantera being capable of conversion to electric power with an option kit (electric models of this size are referred to as 600-class, a reference to the typical blade length). Interestingly, the decal sheet has P7 as well as P6 on it – more on this later.

THE SIDE FRAMES

At the heart of the model are the side frames. Here is where the engine and electronics attach, as well as main and tail rotor sub-systems. We'll begin with them by examining design features plus how the engine/fuel assemblies mount, as well as servo mounting and linkages, plus bearings for the various shafts. Then we'll examine the tail and main rotor assemblies and finally, we'll go fly. Here's what we discovered.

SYNTHETIC POLYMERS

Like the Pantera 50 (and the Tiger 50 before it), Audacity's commitment to engineering polymer side frames continues. The plastic they use is the same type of tough fiber-reinforced thermoplastic as used in Glock handguns because it's tough and impact resistant.

Better still; the flexible nature of polymer lets the whole frame assembly give a tiny little bit during a crash, which means P6 side frames are very rugged and durable. After all, when you're dishing out abuse learning to hover and fly, as beginners and novice pilots are apt to do, the additional durability

of plastic is a huge plus. The cost to replace the side frames is less than 50 bucks; considerably less than compatible carbon frames.

ENGINE

With respect to the engine, any O.S. Max compatible 50-class engine bolts right up to the cast aluminum mount. We used the new O.S. Max 55HZ Hyper engine. Since the mount protectively cradles the engine, it transfers impact forces through it instead of the engine's crankcase which can save you some serious dough in the event of a hard crash. Additionally, the engine mount is finned on the bottom to aid cooling.

SERVO MOUNTS

There are eight servo mounts in Pantera side frames versus the usual five. The additional mounting locations allow you to install a dedicated mixture servo if you choose. This can make adjusting the engine's needle valve in-flight practical instead of having to land each time. Scale modelers like extra servo mounts because it means extra servos for controlling accessories like lights, etc.



Audacity's options Servo Output Shaft Stabilizer can be added to each servo. They provide additional support and take the brunt of the force off the rubber mounts and focus it onto the center pivot point of the servo. These are a must for heavy 3D flight.

PROS

- The main head, tail rotor, washout, mixer, and tail drive assemblies come preassembled
- Very thorough instruction manual with a lot of tips, great for the newbie
- Oversized main bearings and drive train will accommodate a .91-size engine
- There are a lot of setup adjustments to fine tune the heli to your flying style
- Fan and clutch assembly can be fine tuned for perfect runout
- Low replacement parts cost
- Built in fuel clamps make refueling easy
- Belt drive tail transmission is smooth and reliable
- Extremely solid feel in flight

CONS

- Digital manual. Not a huge deal but I cannot assemble while looking at a computer screen, expect to print it out
- With everything level/90deg at zero pitch, collective pitch limited to 10 degrees as washout base hits bottom of rotor head block

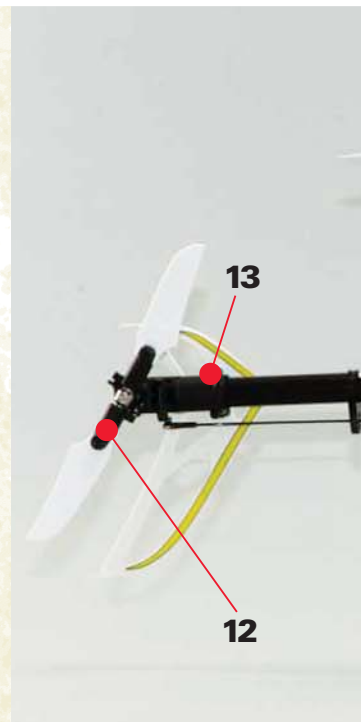
AIR FILTER THE LIFE OF AN ENGINE

Audacity offers something that I have never seen before, an air filter option. I never gave it much thought, but the rotor blades kick up a lot of debris when close to the ground

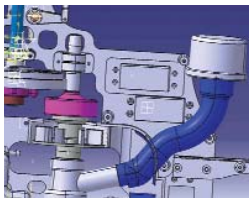
HOT POINTS

1. The large fuel tank provides 13 minutes of aggressive flight. It is supported by four rubber dampeners. The ribs in the side of the tank make it very strong. The optional header tank was installed to provide a consistent flow of pressurized fuel to the engine.
2. The P6 comes with an integrated full shutoff which makes stopping the engine and refueling a breeze.
3. The oversized clutch sits between a set of oversized main shaft supports and bearings. The model is designed for a .91-class engine as well as electric power.
4. Two of the three cyclic controls are direct link to the servo arm, reducing parts and making it easier to repair. The front cyclic control is provided through a bellcrank.
5. Again with the power of a .91 in mind, the tail drive gear and bearing blocks are also oversized. The tail is driven via a belt which has a very smooth feel to it in flight.
6. Large radio tray can accommodate any electronics and appropriate receiver battery. There is plenty of room to move the battery to obtain proper CG (center of gravity)
7. Unique to Audacity, the air cleaner connects to the carburetor via a tube and brings the filter to where it is less susceptible to picking up debris.
8. Sometimes it's the little things that you appreciate such as the molded switch receptacle for the radio system.
9. The RPM sensor for the Futaba GY701 Gyro/Governor is mounted to the engine rail. The magnets are glued to the bottom of the cooling fan. Audacity molded places for the magnets into the fan making it easy to position them.

10. As mentioned in the article, the main head on the Pantera P6 is "programmable" with many possible adjustments to dial the P6 to your type of flying; from very docile for the beginner, to an all-out 3D performer.
11. The oversized blade grips are made from fiber reinforced polymer making them very durable while still allowing them to flex in the event of a crash.
12. The one-piece triple bearing tail rotor grips are stout and supported on a 5 mm shaft, but they rotate in bearings that are much larger than typically found on a 50-class model.
13. The vertical fin (and horizontal fin) are skeletonized allowing air to pass through it for 3D flight.
14. The boom mount for the horizontal fin is oversized providing more strength on the boom and boom supports.



and the carburetor is always taking in that air. These particles get ingested into the engine, scratching the piston and ring and thus, reducing horsepower. This option becomes even more valuable during a crash when the engine is running



The illustration shows how the Audacity Air Filter System works. The tube is very flexible making it easy to install and work on. The filter is removable and can be cleaned.

After 4 flights we cleaned the air filter through a coffee filter and this is the debris that would have otherwise been sucked into your engine.



and the rotor is kicking up the dirt. This dirt and sand will ruin several hundred dollars' worth of engine long before you can shut it down.

FUEL SYSTEM

The fuel tank is isolated from engine vibrations by rubber inserts, and large enough to average 13 minute of aggressive flight. And if you're hovering, the tank lasts longer still—enough so you're going to be tired and ready to land by the time it's empty. The 4-point isolation mounts really help reduce foaming in the tank. We also used a header tank from Audacity to keep a constant flow of pressurized fuel to the engine.

BEARINGS AND CLUTCH

Sometimes it's what you can't see about that's most important. Things like main shaft bearings, which are 40% wider than those of competing designs. Then there's the clutch, which is 37% larger; large enough to handle the 3.4 horsepower of a .91-class engine. Yes, the Pantera P6 is fully capable of running a .91 engine for you extremists.

CYCLIC SERVOS

There are three cyclic servos for 120° swashplate support. Two have very short and stiff direct linkages, and one operates through a bellcrank to clear the engine start system. This simple design has fewer



This is one heavy-duty main head, especially for a .50-size heli. Audacity touts it as a "programmable head" because there are multiple adjustments that can be made to cater the P6 to your particular flying style; from very docile to extreme 3D.

parts with fewer maintenance issues. Audacity has an optional output shaft stabilizer kit which can be added after the model is built and flown. This kit totally eliminates slop and wasted motion; a must for extreme 3D flying.

MAIN AND TAIL ROTOR SUB-SYSTEM

The main shaft slips into the frame in conven-



Top: The Pantera P6 main shaft bearing on the right compared to a competitive .50-size heli. Center: No one can fault Audacity for making a light-duty heli. Here you can see the P6's clutch on the right as compared to a competitive 600-size nitro heli. Above: The Pantera P6's tail case and bearings on the right compared to a competitive .50-size heli.

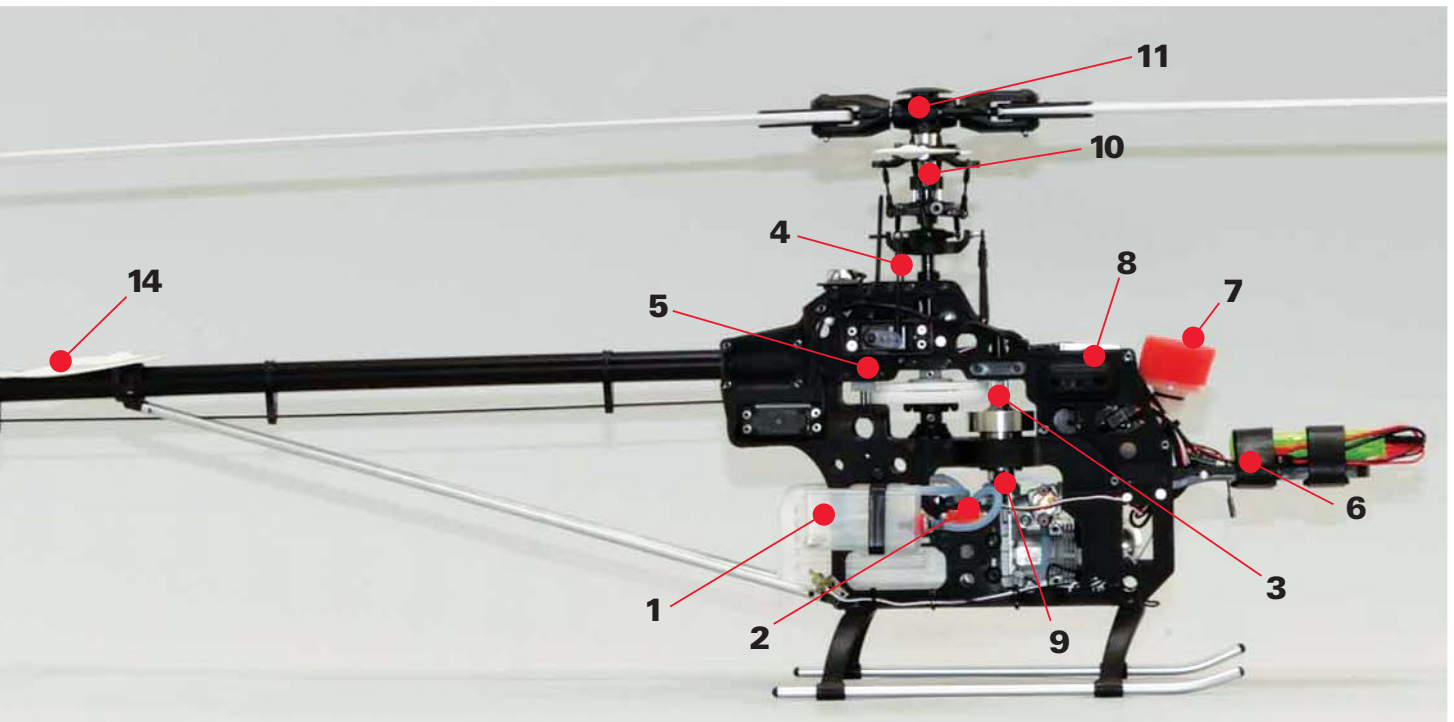
tional fashion. There are two main gears; the first one driven by the engine with drives the autorotation hub. The second drive gear provides a 100 percent driven tail during autorotation maneuvers and offers up the high speed 5.33:1 tail gear ratio. The P6 has a strong tail rotor control despite sporting short 87 mm tail rotor blades. They use the shorter blades because they have less chance of impacting the ground and they do not

stall as quickly as larger blades do.

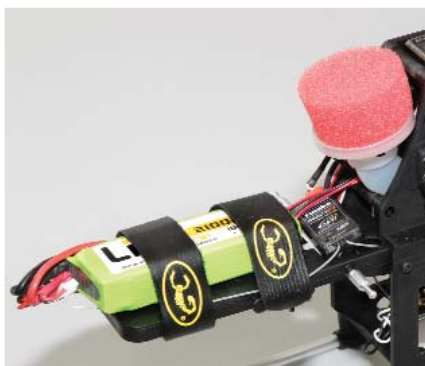
The one-piece triple bearing tail rotor grips are stout and supported on a 5 mm shaft, but they rotate in bearings that are much larger than typically found on a 50-class model.

PROGRAMMABLE MAIN ROTOR HEAD

Turning to the main shaft and the swashplate/linkages and through to the main rotor head reveals a seemingly conventional



design . . . except it's not. At first glance the P6's head looks very similar to others on the market but a closer look reveals a lot of setup flexibility. The Pantera's programmable head has two Bell-Hiller positions, 0.7:1 and 1:1. Use the latter for smooth flight and the former for a quicker 3D maneuvers. There are also two positions for mounting the flybar paddles, with the aft holes delivering insane roll rates. The seesaw arms have three adjustment positions, and there are a total of three different ratios for controlling the flybar tilt. There are also three



The large radio tray easily houses this 2100mAh LiFe receiver battery from Hobbico with plenty of room to move it fore and aft to adjust the center of gravity.

more tuning positions for the washout arms, with the inner being for beginners, the middle for sportsmen, and the outer for extreme agility. The flybar, at 4mm in diameter instead of the more common 3mm is 85 percent stiffer and versatile because you can fit 700-class paddles.

ELECTRIC OPTIONS

Earlier we mentioned there are factory options available for electric and 91-conversion. There are actually two electric conversions, the Stage I whereby the pinion gear drives the main gear directly, like in other electric models. There are provisions for the P6 to handle 12S packs if a stretch conversion is applied (longer tail boom). But it's the stage II electric conversion where the P6 shines as it contains a full clutch assembly.

The value of the Stage II conversion becomes apparent during an inadvertent hot start because it buys you time to correct the condition before the several thousand watts of power are uncontrollably unleashed on you, your friends, and anything around you. The Stage II can be thought of as a safety feature and as far as I am aware this is unique to the Pantera P6. *Editor's note: we will be taking a closer look at this Stage II electric conversion in an upcoming issue of Radio Control Heli Pilot.*

SPECS

FLYING WEIGHT: 7 lb. 2 oz. (3230g)

LENGTH: 48 in. (1220mm)

HEIGHT: 17 in. (432mm)

ROTOR SPAN: 56.1 in. (1423mm) with 640mm blades

ROTOR DISC AREA: 2470.5 sq. in.

ROTOR DISC LOADING: 6.6 oz./sq. ft.

TAIL ROTOR DIAMETER: 10.5 in. (267mm)

RADIO: Futaba 10CHG 10-channel transmitter, R6203SB S.Bus 3 channel receiver, Hobbico LiFeSource 6.6V 2100mAh 10C receiver battery

SERVOS AND GYRO: Futaba S9072SB servos for cyclic and throttle, BLS251 Brushless servo for tail, GY-701 Gyro/Governor

ENGINE: O.S Max 55HZ Hyper

BLADES: Flown with generic 600mm set of wood blades

MAIN ROTOR RPM AT HOVER: 1,950

DURATION: 13 minutes per tank depending on flying style

MINIMAL FLYING AREA: RC Club Field

COMPONENTS NEEDED TO COMPLETE: 600-640mm main blades, .50-.91 size glow helicopter engine w/optional AUD1550 XP conversion kit, 7-channel radio system, 3 cyclic servos, throttle servo, high-speed tail servo, gyro, governor (optional), receiver, receiver battery, switch harness, remote glow extension

SPECIFIC SPECS

FRAME

MATERIAL: Fiber reinforced polymer

TYPE: 2-piece

SERVO LINKAGE TYPE: Direct servo to swash and via bellcrank on pitch

ROTOR HEAD

GRIPS: Fiber reinforced polymer

HEAD BLOCK: Composite/aluminum

LINKS: Plastic

SWASHPLATE: Composite

CONTROL: Composite

TAIL

DRIVE SYSTEM: Belt drive

AUTO CAPABLE: Yes, constant drive tail

TAIL PITCH SLIDER TYPE: Composite with tail slide ring

TAIL BLADE GRIPS: Fiber reinforced polymer

TAIL CASE: Fiber reinforced polymer

BOOM MATERIAL: Aluminum

BOOM STRUT MATERIAL: Aluminum

GEAR RATIOS

MAIN GEAR RATIO: 8.7:1

TAIL GEAR RATIO: 5.25:1



The clutch assembly is attached to the engine's main shaft. This design allows you to dial indicate a perfect setting reducing vibration and extending clutch life.



The oversized tail housing encases the belt drive system. The tail rotor shaft is supported via heavy duty bearings. The tail pitch control arm grips the tail pitch slider from the top and bottom for more positive control.



The Futaba GY701 installs perfectly in between the frames on top of the front cyclic servo. This makes access to the unit much easier when you need to make adjustments.



The gyro tray is located just behind the anti-rotation arm keeping it very close to the main shaft's centerline.



IN THE AIR with Tony Yap

After filling up the tank with Byron's 30% Rotor Rage fuel and setting the needles on the carburetor to their recommended startup positions, it was time to start the engine. The cylinder head of the engine faces forward, so you'll want to use a remote glow to be able to start the engine without removing the canopy. After a few quick blips of the starter, the O.S. 55HZ came to life and settled into a nice idle.

The GY701 gyro has a built-in governor, and I set it to provide 1600 rpm for normal, 1800 for idle up 1, and 2000 for idle up 2. For the first tank, I ran the needles a bit rich to let the engine break in, and did some figure 8's to get a feel for the Pantera. Throughout this, the Pantera felt extremely solid, and as I started to pick up more speed, I was impressed at how well the Pantera tracked as the velocity increased. Hovering work also felt solid, and it was easy to hold a stationary hover even as the wind increased to about 15 mph. I believe this can be attributed to the long 4mm flybar and relatively heavy paddles.

The next few flights I started to push the Pantera a bit more. I switched into idle up 1, which increased the head speed to 1800 rpm. At this rotor speed, the Pantera felt even more solid. I then tried some basic aerobatics. Starting with moderate forward speed, I initiated a loop. Since the heli is set up with the "beginner" head settings, the cyclic pitch rate was relatively slow, so it took quite a bit of time to get all the way around and I lost most of my forward speed as it approached the top of the loop. With six degrees of cyclic pitch, I estimate it takes roughly 3-4 seconds to complete one full rotation. Knowing this, I entered subsequent loops with more forward speed and they came out much nicer. Rolls also take a little bit more finesse, but when done correctly they look very majestic. The rotation rate can be easily increased by using lighter rotor blades, lighter paddles, increasing the throws in the radio, and of course changing the head/mixer adjustments. Talk about versatility!

To get the full benefit of the O.S. 55HZ's power, you'll need to run around 2000 RPM. At this speed you are in the peak power range of the motor. Climb out power was excellent, and even with the air filter in place, there was no noticeable loss of power.

Throughout the entire flight testing, the Futaba electronics package and O.S. engine worked wonderfully well. The GY701 held the tail rock solid throughout everything, which inspires a lot of confidence. The built-in governor of the 701 makes setting throttle curves a snap, as basically all you have to do is program in a couple numbers, and you get whatever head speed you desire. The 55HZ engine got stronger and stronger during each and every tank and started easily with a quick blip of the starter.

After making some adjustments to the head for "hotter" performance, the aerobatic potential jumped up 10 notches. It was like flying a totally different machine. The cyclic controls were much more nimble and loops and rolls that were taking a few seconds now appeared almost instantaneous. There is a lot of flexibility on this model to have it grow with you as your skills advance, and if you are looking for a machine to practice new maneuvers with, the P6 is a very good choice, especially with the "hotter" head settings.

THE LAST WORD

Sometimes an exceptional product comes together with exceptional times. The Pantera is, in our view, a model for the times. It's tough. It's rugged. It's durable. It nearly builds itself and repairs are easy and cost effective. Equipped with huge bearings and clutch to better withstand abuse, completely predictable in flight and so mellow it hovers nearly hands off it's the perfect confluence of design and user. If you're new to models or if you are a 3D pro looking for a great practice machine, then we think you will love the new Pantera P6.

With the electric and .91 upgrade options, this model is extremely versatile. The handling is a joy and it will give you the confidence you need to advance your piloting skills. Since it's so tough and durable, you find that you are repairing less, especially after minor "incidents". Considering how much fun value you get for your money, the Pantera P6 is a great choice. 🌀

Links

Audacity Models, Genesis Hobby Distributor, www.audacitymodels.com, (407) 302-3361

Byron Originals, www.byronfuels.com, (712) 364-3165

Futaba, distributed exclusively by Great Planes Model Distributors, www.futaba-rc.com, (800) 682-8948

Hobbico, www.hobbico.com, (800) 682-8948

O.S. Engines, distributed exclusively by Great Planes Model Distributors, www.osengines.com, (800) 682-8948

For more information, please see our source guide on page 121.