model Helicopter world

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JR's Venture 30CP
Add engine, muffler and radio - go fly

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JR's Venture 30CP

An 'ARF' model for the newcomer and experienced alike, add engine, muffler and radio and go fly.

My first Impression on seeing this kit was that this is a very large box and I expected to see an equally large helicopter inside, but this was not the case, the large box is due to the fact that this is the 'Almost Ready to Fly' (ARF) version of the all new JR VENTURE 30 CP helicopter for someone who wants something a little bit above the base line starter model with potential to do aerobatics as the person learns. Or your regular Sunday morning flyer who just wants a good reliable flying machine.

Looking into the box I soon discovered that this would not take long to have flying, as there is a minimal amount of assembly left to do. In fact one only has to install the engine, radio and boom and you are away.

This is what the large box contains: plug in the boom, bolt on the blades, add radio and engine - go fly!

Rotor head with twin bearing support for the blade grips. 4 mm blade bolts, ball bearings on the mixer arms and seesaw. Nice all-round flybar carrier.

QUICK SPEC

AUTHOR: Rob Creasey
PHOTOGRAPHER: Rob Creasey & Jon Tanner
WE USED: JR X-378 radio, OS 32 SX-H with Zimmermann muffler running 15% Nitro fuel, JR G410T gyro with NES-591 servos for CCPM, TG 55 cm Carbon/Glass Main blades and Zimmermann JRVenture 30 muffler

The Model (out of the box but less servos)

The first thing that struck me about this model is the very clean lines formed by the reinforced plastic side frames as all the bracing and webbing is inside the frames, so you are left with a smooth and uncluttered exterior which looks bullet proof and would make cleaning the model a simple affair. The Model has 120° eCCPM control system and the three servos nestle into recesses within the frame so you barely know they are there. The two lateral servos have direct links to the swashplate while the fore and aft servo is connected via one bell crank, which gives the system a very solid feel. The rotor head is mounted on a 10 mm main shaft with the fly bar slung underneath. The washout unit and swashplate are reinforced plastic but the washout base does have a metal bearing sleeve fitted, which should reduce wear in this area. With 4 mm blade mounting bolts and an aperture of 14 mm, the blade holders look more than adequate and will be capable of taking a wide variety of blades. The fly bar is 3 mm and has a fairly large set of paddles fitted in which lead can be slotted into the leading edge. One point that is different to most models is that the undercarriage is mounted on four vibration absorbers, which may aid some of those heavier landings. There is a nice finishing touch, a head button which comes as standard. To aid assembly the Venture 30 comes with a 51 page comprehensive set of assembly instructions; the sort that would be supplied if you were assembling the helicopter from a kit rather than an ARTF version which is good should you need to replace any components at a later date (i.e. crash) or just routine maintenance.

But let me take you through the short assembly process.

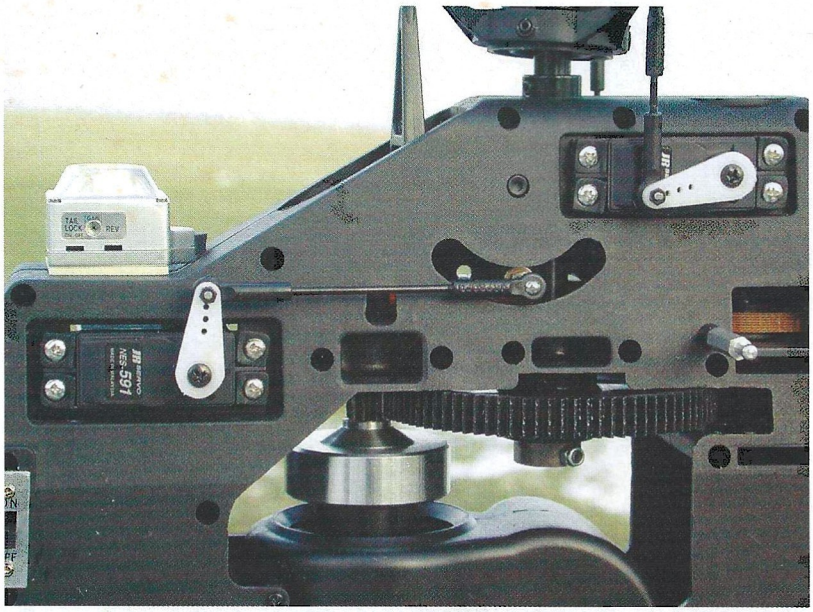
'gives the blade change mechanism a smooth feel'

Transmission

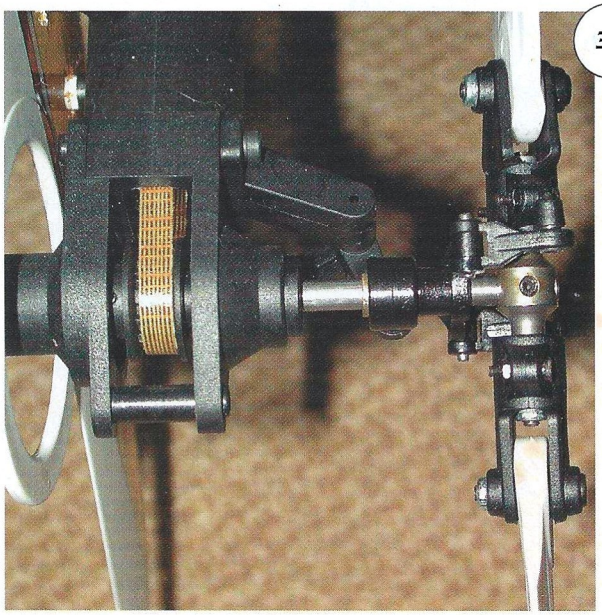
The engine drives up through a directly mounted clutch on to a 9-tooth pinion gear onto a 88-tooth main gear which houses the autorotation unit on the main shaft. And so to start assembly, the engine I used for this model was a new ringed OS 32SX-H with a Zimmerman muffler. I first fitted the plastic fan to the engine and ran a Dial Test Indicator (DTI) around the edge to check for run out which was not bad at about 0.08 mm; the instructions do not give any run out figures here so I presume you are expected to fit and not check. The next operation is to fit the clutch shoe and starting shaft direct to the plastic fan assembly. Now this did give me a bit of a problem and I could see by turning the engine over in my hand that there was a run out (0.6 mm) at the end of the starter shaft and with it being fitted directly to the top of the fan this could be the source of vibration which would be detrimental to the mechanics and even cause premature failure of parts. I took the clutch and starter shaft off and clocked the fan face, which was 0.05 mm out of true and proceeded to carefully sand the high side away. Eventually I managed to get the starter shaft run out down to about 0.15 mm, which I considered would be reasonable especially as the shaft is well supported at the top. (All kits are supplied with an upgraded fan unit so this is something which JR has rapidly nipped in the bud).

Tail Boom

The tail rotor is a pusher (that is the thrust is against the boom in the hover) and belt driven via 17-tooth tail take-off pinion from the main gear which gives a 5.18:1 ratio main to tail rotor drive. The tail rotor shaft is supported in 2 bearings and the blade feathering spindles are also supported by 2 bearings each, which gives the blade change mechanism a smooth feel. The assembly of the tail boom is a simple affair and a little care is needed to ensure the belt is crossed the correct way to ensure the tail turns the right way. Next to fit was the pitch change rod which when retrieved from the box had assumed the bend it had when packed in the box (box shorter than rod) and needed a little persuading to straighten it out. However when fitted with the fully adjustable boom clamps this gave a very positive connection to the tail. The tail feathers and single boom support completed the tail assembly as two curved tip tail rotor blades come ready fitted.



Left side of the smooth finished frames. Strengthening webs are on the inside. Note how the servos are recessed so the links are parallel with the frames. Neat G410T gyro sits above the fore/aft servo.



Belt driven tail rotor, nice beefy tail mouldings giving strength. Pitch slider is smooth and the tail blade grips house twin ball races.

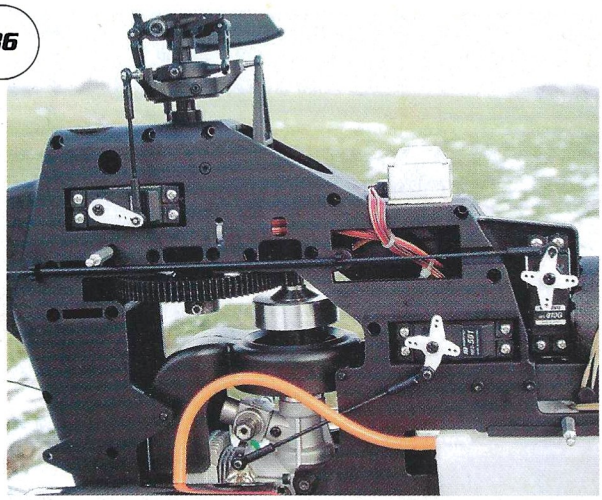
Canopy

The canopy is a fairly heavy duty white polypropylene that secures to the main frame via four rubber grommets that fit over aluminium stand offs on the main frame. When fitted it extends back at the top to shroud the swashplate and servos. The canopy is pre-trimmed and only needs the tinted clear cockpit cut out and secured by 6 screws. I found the lines on the tinted cockpit to be very accurate after edging ever closer to them when fitting this item. There are two access windows moulded into the canopy, which do give good access to the main needle, on/off switch and engine.

Radio and Bits

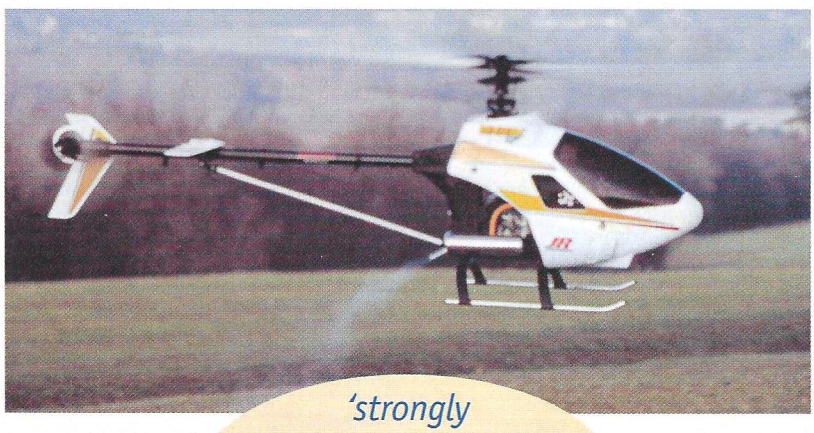
The helicopter requires 5 servos and I chose for collective (3) and throttle (1) four JR NES-591 servos and the economy Super Servo NES-810G for the tail. The servos are retained in place by four screws which screw into a type of plastic split collet affair. Now I had a small problem here, as the screws provided in the kit were a little short and did not secure sufficiently so I used the screws that come with the servos, which worked fine. I liked the way the servo leads could be fitted out of sight inside the main body, even providing two small holes for a tie wrap to secure the wires next to the mast so they do not rub (well I hope that's what they were for). I had to fit two short extension leads to the rear servo leads as they were 30 mm short, something I try to avoid if possible but such is life. The front radio tray has two compartments so the 1100 mAh flat battery was wrapped in foam and stowed in the very long lower compartment which should help to get the C of G in the right place. The receiver was wrapped in foam and secured on the upper location. A nice touch here is the moulded-in rubber band securing points on the side of the tray, which make life just that little bit easier. A simple JR Piezo G410T gyro was fitted in the front location rather than the rear as this would keep it out of any

'the servo leads could be fitted out of sight'



OS 32 SX-H sits neatly in the one-piece GRP engine mount. Gear mesh is easy to set and engine alignment is also easy to set. You can see how the servo leads are routed inside the frames and retained with a cable tie.

Flybar carrier has Hex inserts to transfer Hiller inputs to the 3 mm flybar. The mixer base has Oilite bushings. Swashplate is GRP with M3 set screws to pre-load the bearing if needed. Mixer arms have 2 positions for the output ball links - use inner hole for softer controls.



weather, exhaust oil mist and also mean no extension lead would be needed. The on/off switch was fitted which lines up with the aperture in the canopy and the radio installation was now complete

Pitch Set up

To set up this machine the correct collective swashplate lift needs to be selected within the radio (3-servo 120°) and the manual describes a number of different types of JR radio settings. The servos are set to the mid position and the pushrods supplied attached to the servos. The pushrod lengths were correct as set to the dimensions in the manual. I found that there was a vast amount of pitch available here so I set it up as follows which is just my preference and may not suit everyone.

Degrees of pitch at each stick position

	Low	1	2	3	High
Normal	-2°	1°	5.5°	7°	9.5°
Idle-up 1	-5°	0°	5.5°	7°	9°
Idle-up 2	-9°	-4.5°	0°	4.5°	9°
Throttle Hold	-2°	1.5°	5.5°	8.5°	12°

Blades

The kit blades are wooden 550 mm long x 50 mm chord and weigh 95 g each. They are pre-covered and only require to be checked for balance, which the instruction manual covers in some detail. In fact the ones in the kit were just about perfect and only required the smallest amount of tape on one tip to bring them into balance. The one thing that did surprise me a small amount was that the cuffs are screwed directly to the wooden blades sandwiching the plastic film covering in between them. But I guess for the basic learner, this is probably adequate, as they will not be pushing the machine too hard with standard wooden blades anyway. However I would strongly recommend that they be glued in place as well as screwed.

'strongly recommend that they be glued in place as well as screwed'

Trim

There is a nice set of vinyl trim that needs to be cut out and when fixed to the model gives it a splash of colour and did not take long to accomplish.

Flying

Before I trotted to the flying field with the editor in tow to take those so important first pictures, I did check the position of the centre of gravity (C of G) and found that this was well behind the mast. The finished weight of the model came out to 2.9 kg (less blades) and so I had to put 100 g in the front radio tray to bring the C of G to just behind the mast and a little in front with a full tank of fuel. All up weight now less fuel came out to 3.00 kg, possibly a little on the heavy side I thought. Anyway after getting the motor to burn and with the rotors turning, off I went. The first hovers were to get the mandatory photos in case I broke it. So with these accomplished and an increase in pitch applied I started to move the machine around a little being careful as the engine was not run-in yet by any means. The first impression is how rock steady the heli is with a balanced feel to the cyclic controls and a crisp response to the tail even at low head revs.

After 3 tanks in various hover scenarios and feeling very confident with the feel of the machine I sent it on a number of circuits where it performed faultlessly and after taching the blades at 1300 rpm in the hover, I decided to up the revs a bit to 1580 rpm and this made the climb out feel very smart for a 32 sized engine (still not run in). With the increased revs I

Large fuel tank gives good flight times. Paddles weight is adjustable by the amount of lead you insert, the large area gives good control response, while more weight will make it more stable. Sturdy undercarriage is mounted on dampers which will help absorb landing shocks.

Servo tray is quite short and extra weight was needed to bring the C of G to the mast. The on/off switch is easily reached with the canopy in place.

embarked on a number of loops and rolls, which it performed with ease but would be better with a little more cyclic input I decided. With the cyclic input increased (by increasing the swashplate tilt via the CCPM mix, upping it from 50% to 60%) the machine went round the loops and rolls without pitching up or down and the controls felt progressive at all times with no hint of snatching at all. I finished off the session with a couple of autos and considering we were using the kit blades and there was no wind, it performed them well, however, needless to say, there was not a lot left to play with at the end of the descent.

On returning home I checked the pitch settings, as I was concerned that I had misread the pitch gauge, having had to increase the pitch setting after I arrived at the field. I had quite a shock as the static gauge indicated that the pitch range in normal mode was now zero to 11°: some 2° more positive pitch than I expected, but perhaps confirmed that I had set the pitch correctly in the first place. Well after a bit of investigation I found that both blades drooped a bit more than expected for a single, rigid feathering spindle head. I fitted the pitch gauge again and found that by lifting the blade holder up I could induce a 2° pitch change. I then removed the feathering spindle from the head and found that the feathering spindle bearings were not a tight fit in the blade cuffs, allowing the blade holders to move up and down which resulted in the pitch change.

I was surprised at this and so we asked MacGregor Industries for their thoughts. The response from JR is that the bearing hole is made a little large to avoid damaging the bearing. Plastic blade grips expand or shrink due to changes in temperature. Also when under high pressure, the bearing hole will shrink and can damage the bearing. Normally, a certain amount of play will have no influence when flying as the centrifugal force will pull the rotor blades into the correct position. The proof of the pudding as they say, is in the flying and the model certainly flies well. Interestingly, the grips only move vertically on the bearings with the effect of washing out pitch. This in turn will add to the model stability as it acts in a similar fashion to an articulated rotorhead with Delta 3 offset.

Later on in the week I fitted a set of TG blades from Motors and Rotors and with these fitted and weighing in at 135 g I found that the auto performance was as good as some 60 sized machines I have flown. With the heavier blades fitted it did tame the roll and pitch response a little, but it's a pleasure to fly with the very smooth flight pattern which one would normally associate with a larger model.

Conclusions

This is a very smooth and easy helicopter to fly and I am sure it will find its way into the hearts of club flyers that want a bit more of a quality machine, or for that matter, someone who wants a rugged trainer to learn the sport. The build quality is high and I believe the sturdy side frames will take a good deal of punishment in the hands of a beginner and expert alike.

As the model comes out of the box, it is stable and the control response will suit the beginner. With some of the lead removed from the flybar paddles, standard aerobatics such as loops and rolls are smooth and predictable to perform and the roll is noticeably axial. Despite the slightly loose bearing fit in the blade grips, the flight performance inspires confidence with a nice forgiving nature balanced by progressive controls. The tail is also nice and positive with plenty of power - courtesy of the relatively high gear ratio of 5.18:1. The solid feel of the tail is no doubt helped by the excellent performance of the JR G410T gyro.

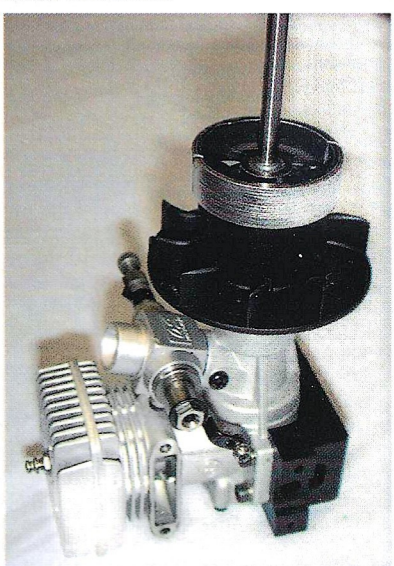
I think the Venture 30 could be tempted to perform a reasonable 3-D performance as it has a vast a mount of pitch available and maybe I will get the chance to report on that at a later date...

'it's a pleasure to fly with the very smooth flight pattern which one would normally associate with a larger model'

Verdict

I like it, a good looking, bullet proof machine, that can be in the air in no time at all. JR have come up with a helicopter that will inspire confidence into the beginners and have them flying in no time all. The unique side frames, with the servos buried within, will be a winner for others to follow. The construction time is minimal and very easy, I think there is a market for this simple but high quality product. MHW

GRP fan/hub is mounted on the crankshaft with the clutch/start shaft bolted on top. Run out at the end of the start shaft should be minimal.



SPEC CHECK

PRODUCT:	Venture 30CP
MARKET PLACE:	30 Sport
MANUFACTURER:	JR PROPO Heli Division
UK IMPORTER:	MacGregor Industries Ltd Canal Estate, Langley, Slough. SL3 6EQ. Tel: +44(0) 1753 549111
MAIN ROTOR DIAMETER	1,235 mm
TAIL ROTOR DIAMETER	238 mm
OVERALL LENGTH	1,120 mm
ALL-UP WEIGHT (No Blades)	4.0 kg (6 lb 10 oz)
MAIN GEAR RATIO	9.77:1
TAIL GEAR RATIO	5.18:1
CONTROL REQUIREMENTS	5 servo 120° CCPM heli. radio and gyro
POWER REQUIREMENT	.30 size 2 stroke helicopter engine

CURRENT UK RRP

JR Venture 30 CP:	£289.95
TG620/55 cm Carbon Main blades:	£39.99
Zimmermann JR Venture 30 muffler:	£59.99