

rci feature



# BIG-BRO

By **Steve Chatwin**

## Ho Bao Hyper ST

**A**fter much development during 2006 by factory and team drivers alike, Ho Bao have released the new Hyper ST Truggy. Designed specifically with Truggy racing in-mind this new design is sure to take the expanding Truggy scene by storm. The Hyper ST shares all the design innovations and quality manufacture of its sibling, the successful Hyper 8 buggy, with subtle changes to even rougher terrain.

First to be released is a 'Ready-To-Rip' version, though a 'Sport' version without radio or engine is available very soon. Our version is the Ready-to-Rip, and brutal is a word I'd use when first catching sight of the aggressive looks of the bodyshell and the slammed nature of the beast which gives it a low, purposeful stance as soon as it hits the ground.

### POWER PLANT

The MacStar 28 engine has an enormous black cooling head which is separated from the cylinder head button, with two shim washers bringing the total squish of 1.4 mm, which explains the easy starting and will produce a user friendly engine, with a good working life. The 7-port cylinder liner has 6 inlet ports and 1 large exhaust; hence it is labelled a 6P engine. The liner is chamfered on the transfer and main inlet ports to help the gas flow,

while the large extended exhaust port should ensure the spent gases can escape efficiently enough to allow rapid cylinder filling on the down stroke.

The tuned alloy silencer should bolster the motor performance, as the manifold moves through a nice arc to the pipe with no restriction. The motor is attached to the chassis on finned engine mounts, and breaths through the low profile, dual filter via the com-

posite slide carburettor.

Everything comes nicely secured with cable ties so you shouldn't find yourself hunting for the air filter mid race, and the engine should remain properly protected from dust and dirt ingress. The clutch is of unique fabrication, with a steel back plate wearing a composite shoe, held down by a regular wire wound gold spring. This offers a lightweight, high revving clutch with a good grip condition for maximum power transfer.

### DRIVELINE

The steel spur gear and hardened clutch bell have a ratio of 14/52 3.71:1 to compensate for the larger diameter truck wheels. While you don't the Spider Diffs of the Hyper 8 Pro buggy, you do get substantial four gear diffs ready filled and raring for action. The centre diff requiring only the top four bolts to be removed to gain swift access to the diff and brake assemblies. The bearing supports remain seated on the

*Running in complete, it's time to let loose!*





## HO BAO HYPER ST



four alloy posts with the disc guides integral for a simple and accurate rebuild.

Dog bone rear driveshafts are complemented by UJ drive shafts at the front, for durable power transfer through all steering and suspension travel ranges.

The pre-mounted kit wheels and tyres are amongst the lightest we've ever seen, weighing in at just 0.83 kg the set of four. The soft compound, directional, triangular pin tyres work amazingly well with a very light insert on vented six spoke rims.

### CHASSIS

The main chassis plate is braced across the centre drive by a substantial 5 mm plate which is bolted to the main chassis, and keyed into the forward and rearward chassis braces up to the gearbox housings. Wow that is one stiff chassis! The underside of the chassis plate is completely smooth with all mounting bolts countersunk for a flush finish. The orifice around the engine fly wheel is chamfered to allow easier starter wheel access if a bump box was your preferred starting method, which for a race day I'd highly recommend, reserving the pull start as a trackside back up. The sides of the chassis are protected by narrow mouldings to help reduce dirt and dust ingress under body and offer a modicum of crumple zone for the inevitable T-bone lunges from your opponents.

The inboard suspension pivot pins are braced by alloy front plates and moulded rear supports, keeping the strength where it is required and saving weight where it can be scavenged without degrading the strength of the overall suspension. Anti-roll bars are fitted front and rear to help keep the truck running flat during hard cornering, while the long stroke alloy bodied shock absorbers keep all four wheels on the floor.

With lower shock rod over boots to keep the worst of the weather from the shock, seals, and rubber shielded bearings on all rotating drive line components you should be able to run in all conditions with minimal maintenance. Rear roll centre is adjusted by choosing one of four alternate positions on the wheel hub carrier upright. With turnbuckles all round the fine tuning of the chassis geometry is a simple and easy job, so start with the recommended settings and work from there to find the perfect combination of camber, toe and droop to suit your particular location and driving style.

One nice design feature that will improve race day durability is that

**Note engine sits low in body, so will need more airflow**

the front outboard pivot pins are held captive by cap head screw retaining the pin in a blind hole that has an access orifice through which you can poke a small Allen key to encourage the pin out of its hiding place. No fiddly clips to lose or replace, nice! The steering system is a ball raced twin post set up with an alloy crosslink that has a fixed Ackerman positions.

### SPLASH AND DASH

The fuel tank opens to the side, so with the deft application of a cable tie for a handle, you can easily re-fill during a quick pit stop. A 'sharks fin' splash shield stops any excess fuel falling onto the brake

discs and pads, whilst offering extra support to the bodyshell roofline in the event of a roll over. The fuel tank at first seems to be rather mobile, easily moved when opening the lid, but then you realise it is standing on 'S' bend posts to absorb chassis vibration induced by the high revving engine, in a bid to reduce fuel foaming and ensure a consistent fuel supply to the carburettor, clever thinking huh?

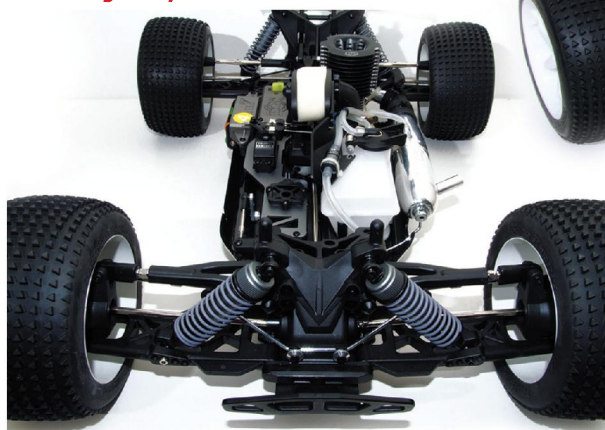
While the side window in the pre-painted body is already pre-trimmed to allow tank access, it's worth considering cutting a hole in the front windscreen. Despite messing up the appearance of the truck, it will help airflow over the engine, aiding cooling to increase performance and reliability during extended finals.

Another couple of neat ideas are the inclusion of an in-line fuel filter between tank and carb, plus hose guides built into the bottom of the tank to keep the fuel supply line away from the hot exhaust silencer.



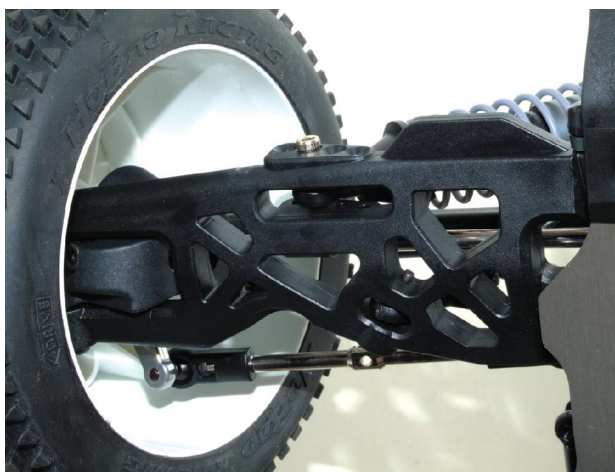
**Low-level air filter and side access fuel tank are familiar Hyper 8 designs**

**All the weight stays central on the narrow chassis**



**Slammed, aggressive looks reflect performance and attitude of the ST**





**Front lower arms have clearance for minimum turning circle**

### IN THE KIT

The kit comes complete with shock preload spacers, 2 hole pistons as an alternative to the four hole pistons fitted, a fuel bottle, Allen keys and combination spanner but strangely no wheel or glow plug spanner. I tried several wheel spanners but ended up with my proper ratchet set because the nut driver needs to be quite narrow to fit into the recess in the wheel rim. In the RTR version you get the radio gear installed, including a high torque, 9 kg steering servo and a matching 6 kg throttle/brake controller, plus 27 MHz radio gear and transmitter with the usual reverse

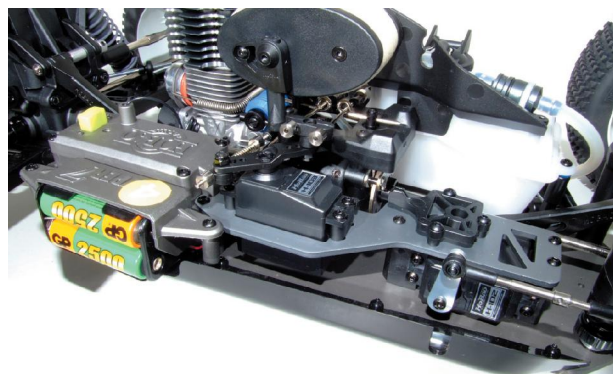
switches, trim knobs but with a steering dual rate adjuster and charging jack plug as added bonuses.

### TRACK TEST

As supplied from the box, once fitted with the McCoy MC9 glow plug, the MacStar 28 motor burst into life as soon as fuel reached the carburettor. The main jet was 4.5 turns out, the low end was 6.5 turns out, we took note of this so we could come back to base settings if we tied our selves in knots during the tuning process. After a couple of tanks of fuel at tickover on the bench, we started running with the body off and set about leaning it off gradually as we trundled around the track.

Once we had a decent amount of performance we slipped the bodyshell on again for some action photos, and the truck flew over the double time and again without struggling at all, it was flying, but pretty soon the performance dropped off and sure enough the motor had overheated.

The engine sits low in the body down behind the roofline with nothing projecting into the air-flow, and the side window refuelling orifice doesn't invite enough air to circulate beneath the body to aid cooling. To get the performance back without over heating we removed a sensible portion of



**High torque servos in an RTR was a first, but they need more juice than 4 AA cells can provide**



**Super long rear arms aid stability**

the front windscreen and that cured it straight off. Having measured the 1.4 mm squish and selected the 20% RTR fuel we really weren't expecting this level of performance, so we were pleasantly surprised.

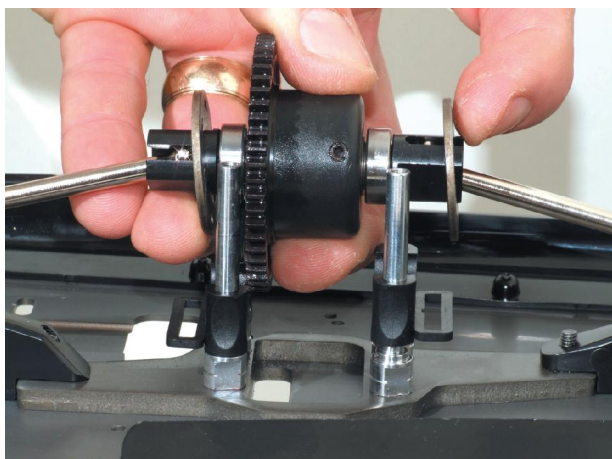
For starters we ran the engine in and did initial trials with the recommended 20% Byron RTR fuel, but as race day approached and we wanted more speed and acceleration to stay competitive we started to explore the limits of the MacStar 28 engine by removing the largest shim washer and raising the game with Byron 25% race fuel, but to be honest we couldn't tell the difference in performance and the engine just overheated quicker, so we went back to 20% RTR fuel and refitted both head shims again before we did any damage.



**The ST wears some of the lightest, grippiest tyres I've ever tried**



**The chassis is chamfered to ease bump box access**



**Just four bolt access to the middle diff and brakes**



**Byron 20% RTR fuel suited the MacStar 28 perfectly**

By the end of practise we re-inspected the carb settings and found we were now on 2 3/4 turns out on the main needle and 4 turns out on the low speed jet, so these will be recorded for use if we ever stray too far from base settings and find we are struggling to get it dialled in properly.

Once we'd tried the 4-cell receiver pack as supplied it was discarded in favour of a 6 V, 5-cell pack in search of a stronger steering effort, improved throttle response and a sufficient braking effort from the kit servos. The kit battery strap will accommodate a 5-cell hump pack, easily shrink wrapped into position, but the smarter way to get



**Gentle porting and low squish produced a long life, easy starting engine**



**The RTR MacStar 28 and alloy pipe were a pleasant surprise**

faster steering and throttle responses is to swap for a straight 5-cell pack and get the appropriate hanger from CML, plus a rubber band which holds the pack securely in place and unlike the hump pack all the cells then remain within the boundary of the main chassis plate and hence get some protection from side intrusion.

Despite the firm feel of the dampers, on a cold and damp day the truck still felt dialled and we resisted the temptation to refill the shocks with something softer in search of more grip, though we did rebuild the centre diff with 30,000 weight oil in a bid to prevent the front wheels spinning away all the power on corner exits, which was a good move.

### RACE DAY

For race day we decided to see what we could have done if we'd bought the Sport version instead, so we fitted a few upgrades to get the ST really singing as if we'd bought the bare-rolling chassis. These are the type of thing you could do once you've driven your Hyper ST RTR to the limit and start thinking about improving your results by swapping components one at a time.

I replaced the stock motor with a Vega .28 Monster, but kept the original air filter. The 4-cell receiver pack was replaced with a 5-cell stick pack and the steering servo was moved to the throttle and replaced with a super high torque, high speed, all metal geared ACE 1015. We also exchanged the 27 MHz radio gear for hassle free 2.4 GHz Spektrum system to ease booking in and race change over stress.

With the mods complete I put aside my usual buggy racing in exchange for a stab at the growing Truggy class for a change and I immediately noticed the absence of certain

bumps I knew so well after a season of Buggy racing. The truck floated over features I would normally have to steer around, or feather the throttle over, in order to maintain a forward trajectory! Wow, no wonder Truggy racing is catching on so fast all over the world; they will perform better on surfaces requiring less preparation, and allow precision, touring car style driving on the better facilities like here at Baginton. I could simply choose my line and drive through any sequence relying on the suspension and geometry to keep the truck pointed in the exact direction I desired.

I found I was able to concentrate on race craft and let the Hyper ST worry about the lumps and bumps, which made for a much more enjoyable day with less maintenance and marshalling required. With the larger tank capacity allowed for truck racing, running out of fuel during a heat was not the usual worry; I could run the 2 minute warm up and 5 minute heat and still have a quarter of a tank of fuel left as a safety margin!

So how did it perform? Well I'm pleased to say very well, for my first Truggy race I qualified 6th overall (out of 24), with a best run of 5th and finishing 6th in the Monster Truck 'A' final. This result has to speak volumes for the quality of this truck for out of the box set up and durability, plus the ability to utilise all the performance you can bolt on.

### CONCLUSION

The Hyper ST is a substantial truck with a proven heritage on track as the Hyper 8 buggy, from which the designers have learnt valuable lessons. Weighing in at just 4.5 kg ready to run the Hyper ST is an agile and responsive truggy with handling and performance capabilities to suit



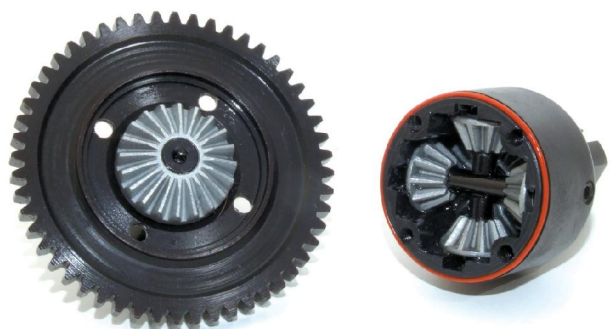
rrci feature



**A unique lightweight clutch, fabricated shoe wearing a composite pad**



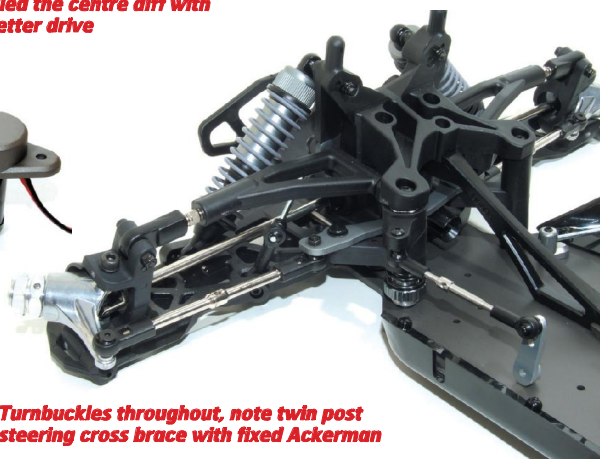
**Sturdy chassis. The centre reinforcement connects the front and rear braces**



**Steel spur and 4 gear diffs. We refilled the centre diff with 30,000 weight silicone diff oil for better drive**



**A simple upgrade, faster servos by virtue of the Venom 6 V receiver pack**



**Turnbuckles throughout, note twin post steering cross brace with fixed Ackerman**



**Diff cases, shock towers and braces combine for a rock solid assembly**

everyone from beginner to expert.

If you already have radio gear and race engines, go for the Sport version and build as you desire from the offset, but if you're just getting into truggies the RTR makes a sensible starting point. The kit servos worked extremely well for an RTR, especially once we'd swapped to a 5-cell, 6 V receiver pack. As your driving improves and your race craft and confidence builds you can always upgrade the servos and engine as and when your budget allows.

The CML website: [www.cmldistribution.com](http://www.cmldistribution.com) has downloadable set up sheets and full details are included in a pdf manual also.

**RRCI**

**quick spec**

**CLASS:** 1/8th 4WD Truggy

**TYPE:** RTR Nitro

**MANUFACTURER:** HoBao

**PRICE:** HBM7-ST RTR £375 RRP

HBM7-ST.SPORT. £279.99 RRP.....

**REQUIRED AND RECOMMENDED**

Radio Batteries – GP2700 NiMH

Fuel – Byron RTR 20%

Glow Start – Fastrax

Spare Glow Plug – McCoy MC-9

**OPTIONS FITTED**

H87083 Battery Box – £3.99 RRP

Ven1500 5-cell Venom – £9.99 RRP

Fast32 Rubber holder – £3.99 RRP

**DISLIKES**

4-cell receiver pack

No wheel spanner

**LIKES.....**

Rigid chassis plate

Pre-assembled, 'Ready to Rip'

High grip, lightweight kit tyres

High torque servos installed

Sturdy shock towers and braces

Out of the box performance

**CONTACT**

More details from CML Distribution,

Telephone 01527 575349 or

[www.cmldistribution.co.uk](http://www.cmldistribution.co.uk)