

Yamaha FZR 400 SP Kawasaki KDX 125 Spondon RG500

THE ULTIMATE STREETBIKE MAGAZINE

SUPER BIKE

A LINK HOUSE MAGAZINE

OCTOBER 1991 £1.65

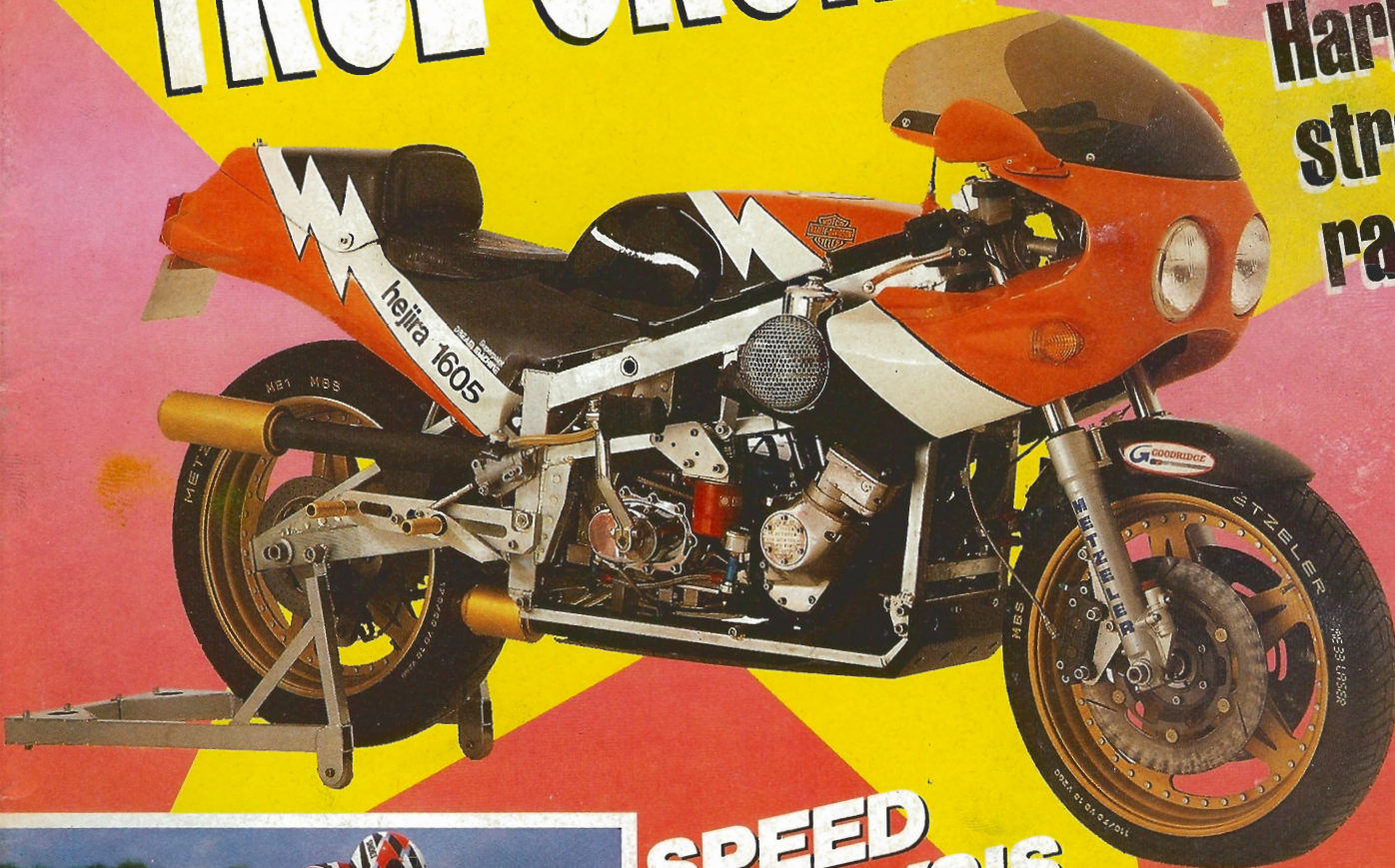
Ducati 750ss



Sweetness and Light

TRUE GRUNT!

World's most
powerful
Harley
street
racer



SPEED ANALYSIS

Roll on, Tuck in, Max out!

Yamaha FZR1000
Suzuki GSX-R1100



ISSN 0262-8457



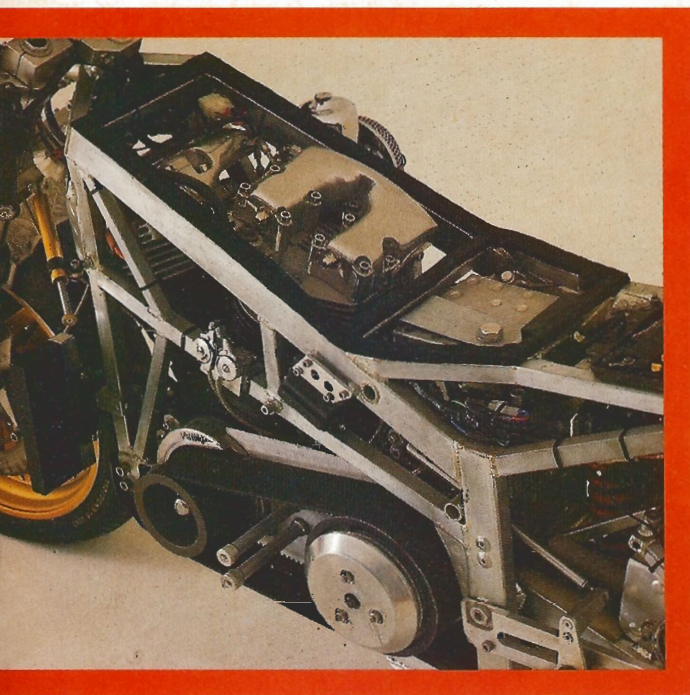
9 770262 845046



1605 SPECIAL

(from Milton Keynes)

This is what's known as a Big Big Twin — a 98-inch, stroker Shovelhead with enough grunt to shake the leaves on the trees. It was designed in America but it was built in the UK. This is John McIntyre's 1605cc Hejira Harley-Davidson



STUDIO PHOTOGRAPHY BY NORMAN HODSON AND ROGER PHILLIPS



It emerges from the van and is rolled down the ramp into the morning sunshine, where, just sitting on its rear axle stand, it kind of takes everyone's breath away. Here it is — 1605cc of brute Harley — the Whole Hog.

We watch in silence as its devoted owner begins to kick it over — slowly, methodically, carefully. It sounds good even before it fires. The clicks of relays and solenoids, of fuel pumps, regulators and ignition switches. The tinkering of the remote, camera shutter release cable as it lifts the piston in the 2in SU carb, the ten tiny tickles of fuel. The ignition is switched off while the throttle is opened wide and the engine turns over under two exploratory kicks. The mechanical squish and ratchet-whizz of this huge, 98-inch, vee-twin motor with its big slugs and starter gubbins, sounds like the muted rumble before the storm. Before the thunder. Before the flood of noise erupts.

The ignition is switched back on, another ten tickles, feel carefully for compression along the fearsomely long stroke, and one good, careful kick and . . . well, if you don't get it right, this motor will definitely launch you, up and over the handlebars. Jump off quick if it threatens to bite or end up in the next street.

Builder, owner and tamer of the beast, the bearded John McIntyre, jumped off just the once before starting the meticulous ignition sequence all over again. Next time, it fired — and caught, soon settling to a fast, distinctly Harley, lumpy thrump of an idle. "Now listen to this," shouted the maniac McIntyre, the fire now burning fiercely in his eyes. He tugged a cable lever that raised the silencer butterfly valves in the exhausts. *THRAP, THRAP, THRAP, THRAP, THRAP, THRAP, THRAP* . . . what a noise these now straight through pipes made once it was given the gun. We were enveloped in a wall of sound. It was deafening. We couldn't even shout at each other now, not that there was anything much to say. We just stood with our ears burning, kind of dumbstruck, full of fascination and admiration. Sometime after it was shut down, a bloke wandered by and said he'd heard it half a mile away and thought it must be a Spitfire engine.

This motorcycle is fabulously detailed and so it should be, its construction has taken over six years. Owner, John McIntyre, a computer engineer from Milton Keynes, has lived, dreamt and built the numerous details that go to make up the whole hog over a long gestation period. John loves to talk the details. In fact, he loves to talk. And why not? This is his pride and joy, and it is, in anybody's book, one *mother* of a motorbike. John's Bomb. American Excess.

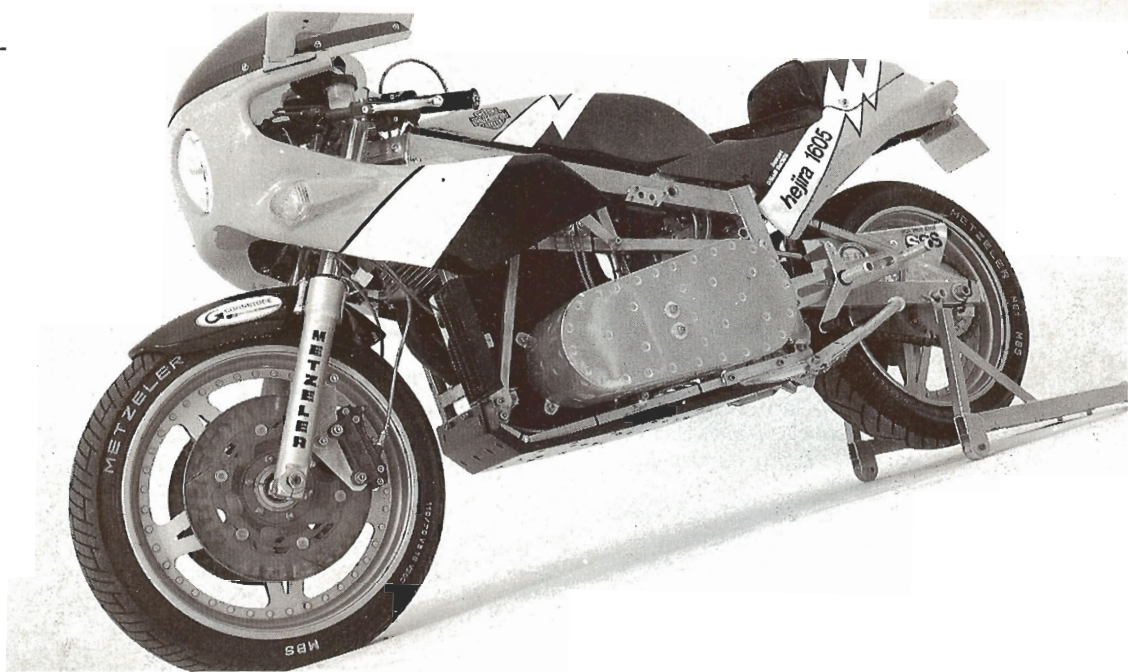
It began life as a stock 1980 Wide Glide Shovelhead (the flamed tank model). John liked it enough to run it completely as stock for three years before the plan to give it more power, better handling and brakes was hatched. "Especially the brakes," he says. "Old Harley brakes were truly awful. The quality control at that time was suspect. The suspension bottomed out, the tyres were made of Teflon. It wasn't hard to find components that could easily be improved upon."

His dream was a hot stroker engine plus improved suspension and brakes, wheels and tyres. But once he'd talked with Derek Chittenden at Hejira Racing about what was possible, the design parameters grew wider while the plan and the price grew bigger. *Much bigger.*

"The stock bike weighed 680lb of which the frame

Behold the beast. Six years in the making, this thunderer is now prowling the streets, sucking the air from the lungs of new born babes and leaving pedestrians with their ears bleeding. Insert pics left: top — the 2in (50.8mm) SU carb and rocketman kick start. Below — potent heads and powerful 3in primary belt all housed in Hejira's immensely strong, steel frame





ACTION PICS BY KEITH PERRY

Fancy a ride on the wild side? The engine makes 100hp and 120ft/lbs-plus of torque. The chassis offers sharp steering, pro-squat rear suspension, good roadholding, plenty of clearance and plenty of brakes. The conversion has lost over 200lb in dry weight compared to the stock Shovelhead

contributed 100lb. The original frame is massively engineered largely just to contain the vibration. A new frame meant it could be lighter, monoshocked and could use decent rubber and brakes. Engine access could be made easy instead of infuriating. I owe an awful lot to Derek at Hejira not only for helping me build it but for all the discussion and advice along the way."

While Derek was drawing up and fabricating the starkly functional steel frame, John's cylinder heads were heading Stateside to the Harley tuning experts he'd already spoken to and judged the best. He is no follower of Jerry Branch. The Harley gurus according to John are the Baisley father and son team (Baisely Hi-Performance), Dan Kinsey (S&S Products), Mel Magnet and John Ventriglia (Rivera Engineering) and Dick Hilferty (Red Shift). These people love to talk the details as well. They like to be asked questions and suggest answers. They are open and friendly and want you to understand their products. John is well satisfied with the work they undertook.

The extensively reworked '80 Shovelhead engine features an S&S Sidewinder stroker kit that hogs out the cylinder dimension to a 92.1mm bore and an incredible 120.7mm stroke. The balanced crank runs in modified Harley cases with much smaller, lighter and stronger flywheels and conrods. The stock .39in lift cam has been replaced by a .55in high-lift and

wide-duration Red Shift cam, which is about as big as you can go without using aftermarket crankcases. John sent his original cam to Red Shift's designer, Dick Hilferty, who pressed off the gear wheel and refitted it to his own new cam billet so that the original gear wheel profile on the rest of the gear mesh (breather and magneto) was about the same as the original Harley's (okay, so he also didn't want the hassle of cutting gears, but this is still first-class service).

The head and valve work is all Baisley. Bossman Dan Baisley built the first gas Harley ever to run an eight-second quarter (it was an iron head 1000 Sportster which in August '78 broke the beams in 8.75sec/156.9mph). Baisley have also been involved in notable horsepower engines like Elmer Trett's supercharged nitro-methane Kawasaki (the first single engine bike to turn 200mph in the quarter) and Jim McClure's nitrous-injected 96 inch Sportster, the world's fastest single engine Harley (7.85/172mph). Baisley know about tuning Harley engines. In particular, they know about Harley heads. Indeed, their head work customers include the factory race team.

The key Baisley cylinder head knowledge runs like this — stock Shovelhead airflow stinks, particularly in the exhaust ports (Sportster and Evolution engines are better but still leave plenty of room for improvement). Extensive rewelding in the exhaust ports is mandatory,

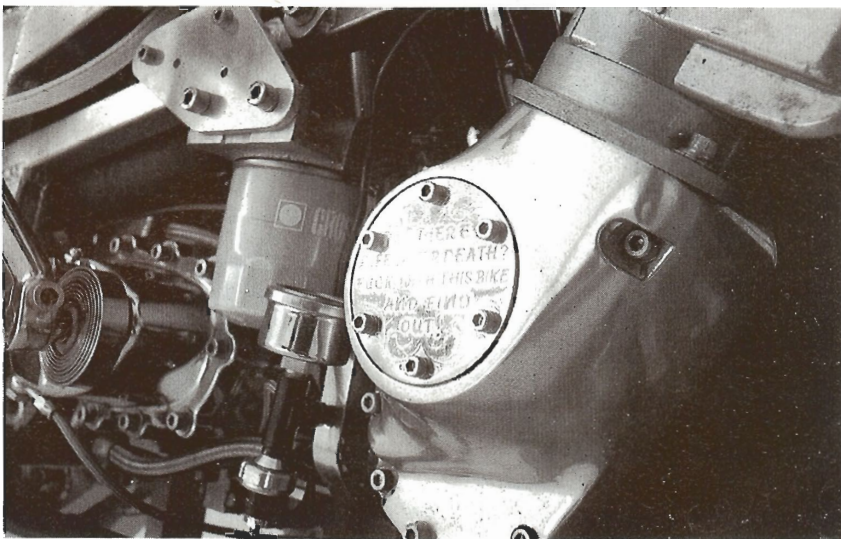
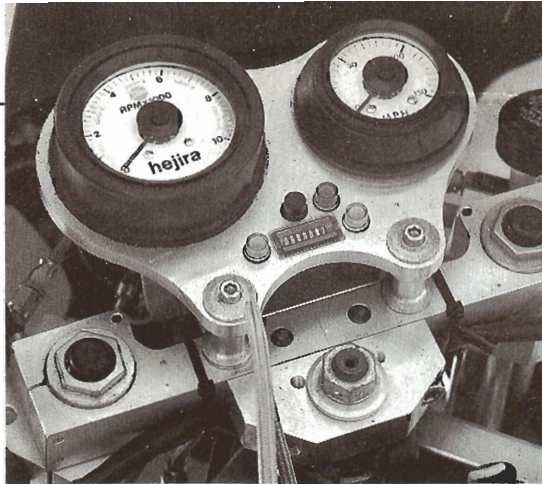
it increases exhaust gas velocity and the better flow scavenges the combustion chamber more efficiently. Exhaust pipe design has pretty fixed, widening diameter header sections and overall length is always around 40in. Inlet ports need work too, especially to help airflow at mid-to-maximum valve lift. They recommend bigger, thin-stemmed, tulip-shaped Manley valves and no other (these alone guarantee you a 10% increase in airflow). Valve seats are bored out and new seats ground to a near perfect .00025in squareness between seat and guide. Valve stem clearances and triple spring assemblies are similarly precise. As is head machining in the chambers and gasket areas where the central locating ring is machined down to provide a squish band. Dual plug heads are recommended for torque, more complete combustion and an even flame front, and for increased longevity since you can retard the ignition 5 to 10-degrees.

Bigger engines can handle bigger cams more efficiently, say Baisley, and they recommend Red Shift's cams because they also offer longer duration and the useful bonus of being able to work at the stock, safe and low compression ratio of 8.5:1. Less squeeze, less heat but a precise bang and plenty of blow.

Ported, polished and flowed to perfection, the heads and indeed, the whole engine were rebuilt by John aided by Dave Francis of H-D Southport. John had already chosen an ignition — a Morris Mk5 magneto (60kv) with an Andrews Hi-Performance coil. The 2in (50.8mm) SU carb (with all the car crap jetisoned) and air cleaner came from Rivera Engineering. Dave Kerby built the 2in tapered steel, drag pipes. The variable baffle, butterfly valves in the tail pipes were John's idea of some demonic fun, get it through the MoT and through town somewhere near legal decibel levels then hit the thunder lever and unleash Noise Incarnate. The baffle valves take the sting out of it but . . . damn, a motorcycle engine this big and special should not have its considerable voice unduly silenced. And this is one neat solution. Best of both worlds.

Final motor touches we haven't touched upon include Velve-Touch solid lifters (solid performance with the flexibility of hydraulic lifters), roller-tipped rocker arms to reduce top-end friction, a hydraulically-operated, heavy-duty dry Atlas clutch, a full (one through four) Andrews close-ratio box and a novel, split final drive sprocket for quick final drive ratio changes (31-35 available off a 15-tooth front sprocket and a 3in belt primary drive). Final drive is by 630 chain, uprated from the puny original and needed to handle the extra poke. John and Derek spent a lot of time considering and aligning the chain run and modifying the gearbox rear bearing support plate to allow full swingarm movement. Drive-wise, the bike is eminently streetable — you can whip it through the gears or hook 35mph in top and max it out some 100mph plus later.

This 100bhp engine is housed in Derek Chittenden's one-off, zinc plated, square section steel, rectangular frame (let's call it a four-poster featherbed). It's very cleanly welded and there's a lot of it. Rigidity across the frame was considered paramount and the layout is fully triangulated. The front crankcase mounts bolt directly to the frame. The rear of the crankcase and the front of the gearbox share a common mounting supported by a big and rigid dural plate. In addition, two rose-jointed rods run from the frame top rails to this fixed point, rear crankcase/gearbox mount. John says that this three-plane mounting allows the gearbox some up/down, forward/back and sideways movement while still being held in tension and giving both the chain and belt



drive a clean run. There is no chance of the huge motor twisting in the frame.

John had toyed with the idea of upside-down forks but they weren't fashionable at the time, so plumped for a pair of 42mm MR1s carried in trick Hejira offset yokes that not only allow for adjustable trail (3.5 to 4.8in) but also neatly carry the hydraulic clutch and brake lines. The steering head angle is a sharp 26-degrees. Straight bars clip-on to the fork stanchions for fast easy steering. A White Power steering damper is fitted just in case things get too fast and not so easy.

At the back is a Hejira-spec Spax monoshock feeding off a Pro-Squat-designed cantilever suspension system. The wheels are 18in Astralites with 3.5 and 5in rims wearing Metzeler tyres (the rear is a 170/60). The brakes are all Lockheed, four piston calipers at the front biting on 300mm floating, cast iron discs with a twin piston and 220mm disc at the back. The unsprung weight saving on the wheels alone is exceptional. The original 21in front wheel with its single disc and tyre weighs more than *both* new wheels with their bigger rims, tyres and brakes.

The overall wheelbase is 58in, the all-up dry weight is 215kg (475lb) or over 200lb less than the original Wide Glide porker ("Just throwing away the stock starter motor, inner and outer primary chaincases, and ancillaries saves you 40lb instantly. It's ridiculous . . . the stock starter motor has the same horsepower as a restricted 125.")

Since John currently spends three weeks in every month working in Germany, the bike's only covered 2000 miles to date. Tickover is steady at 1000rpm and on the lowest gearing, it's pulling 70mph in top at 2000rpm. The rev ceiling is 6000rpm with maximum torque (over 120ft/lb) at 5000rpm.

Other final details. The glass bodywork is based around Harris's Magnum III fairing modified by John and Michael Brown. All the paint was applied by Dream Machine and matches Harley's racing colours, as do John's leathers which were made by Paul Varnsberry at

Hejira offset yokes offer adjustable trail and neatly house hydraulic clutch and brake lines. Is there life after death? The traditional owner's advice to would-be thieving scumbags is engraved on the timing cone



Those dual Cibies offer serious illumination — 220/180W. With the wheelbase set at 58in, a 24-degree steering head angle and good weight distribution, this is that rare thing — a Harley that handles like a modern sports bike

Swift. The four gallon petrol tank is from Hejira as is the 7lit oil tank and remote filter. All oil and hydraulic lines are Goodridge.

Albert Emmett of the Harley Riders Club of GB tooled the individual leather seat (the club's logo also graces the bar ends). There's a rather blunt message about the afterlife engraved on the right-hand timing cone cover (see pics).

Sir Alan Cathcart had a ride on this 1605 Special (he wisely refused to kickstart it) and not only broke the lap record around the Milton Keynes ring road system but reported it was a much more mannered beast than the awesome 1630 Harley Buell Sundance racer he rode in Japan (see *SuperBike* January 91). He thought it'd be very competitive around someone like Three Sisters (third gear only required) or Mallory and apart from needing some heavier fork oil to control a slight pogoing, there was nowt much wrong with it. John's Hejira has plenty of ground clearance, plenty of poke and ace brakes.

He got it MOT'd and taxed okay (with the exhaust baffled down). Strangely the DVLA chose to describe it as a "two-wheel scooter combination."

This is some *bad* motor scooter. We're hoping to blag a ride at a 'Harley's Only' track day we have planned while John is aiming to blow all-comers away in the Four-Stroke Twin class of *Ultimate Streetbike* next year. All those present in the fire-up and pre-stage area are advised to wear heavy-duty earplugs.

Insured for £20,000, this is a meaty tool that eschews fashion in favour of function and form. There's hardly any brightwork ("chrome weighs too much"). Just an awful lot of brutework. Why stop when you can go the whole way — the Whole Hog?

JC

John McIntyre would like to thank everyone who helped at various stages throughout the project and especially the following: Paul Hobbs, Steve Bayford, Paul Varnsberry, Dave Francis, Tony Buckingham, Paul Parslow, Mel Magnet, John Ventriglia, Albert Emmett, John Hemming, Derek Chittenden, Dan and Wes Baisley, Dick Hilferty, John Winthroppe, Stuart Taylor and especially Julie McIntyre

HEJIRA 1605 H-D

Model	Big Big-Twin
Engine	Air-cooled pushrod ohv 45° V-twin Shovelhead
Bore × Stroke	92.1mm × 120.7mm
Cases	Modified Harley-Davidson
Capacity	1805cc/98 cu.in.
Cylinder Heads	Re-radiused rocker arm geometry with roller R/A tips, Ported, polished and gas-flowed by Bailey Hi-Performance, USA
Cam	Dick Hilferty, USA 0.550 in.
Lifters	Velva-Touch
Power	More than 100bhp
Torque	More than enough
Carburation	2 Inch Rivera SU
Compression Ratio	8.5:1
Exhaust System	Kerby Racing
Ignition	Morris Mk5 Magneto, dual ignition EDI, Andrews coil
Transmission	4-speed, 3 Inch primary belt drive, Andrews CR gears
Clutch	Atlas Heavy Duty multiplate, dry with hydraulic operation
Final Drive	630 chain, QD Hi-Lo ratio final drive sprockets
Engine Sprocket	3in belt drive pulley
Transmission Sprocket	15T/630
Chassis	Steel lattice, open cradle
Trail	95mm, adjustable in range 89mm – 122mm
Suspension	front 41.3mm Marzocchi MIR forks rear Hejira spec. Spax rising rate monoshock cantilever with Pro-Squat linkage
Wheelbase	1473mm (58in)
Head Angle	26°
Brakes	front Dual Lockhead Racing four-piston caliper, 220mm Brembo cast iron disc rear Single Lockhead Racing two-piston caliper, 220mm Brembo cast iron disc
Wheels/Tyres	front 110/70 × 18 Metzeler radial on 3.5 inch Astralite rim rear 170/60 × 18 Metzeler radial on 5 inch Astralite rim
Weight	475lbs/215kg
Petrol tank	4 imp. gallons/18 litres
Oil tank	6 imp. quarts/6.75 litres, Remote spin-on oil filter
Seat	Albert Emmett
Paint	Dream Machine UK

S & S Products Inc, Box 215, Route 2, County G, Viola, Wisconsin 54664, USA (0101-608-627-1497).

Baisley Hi-Performance, 5804 N. Interstate, Portland, Oregon 97217, USA (0101-503-289-1251).

Rivera Engineering Inc, 6416, S. Western Avenue, Whittier, California 90606, USA (0101-213-692-8944).

Hejira Racing, Unit 16, Ball Moor, Buckingham Ind. Estate, Bucks MK18 1RT, England (0280 822143).