

XR-sizes...



Honda led the revival of four-stroke off-road singles and over the past few years has offered a number of model choices. Some good, some bad and some misunderstood. With the release of the new XR250 and revised XR350, Team DBR downed pool cues and donned riding gear...



THE Japanese have a lot to answer for when it comes to off-road four-stroke singles. The Oriental two-stroke onslaught in the mid-'sixties which carried on through the 'seventies virtually robbed a generation of dirt enthusiasts from experiencing four-stroke power.

As a result, the misunderstandings of big thumpers stem largely from ignorance. How many riders have told you big four-strokes are evil-handling overweight and underpowered slugs? Quite a few no doubt. But how many have actually admitted to riding a TT600, a KTM500 or even an XR350?

It would be a brave man who said Arthur Browning's ISDE performance last year aboard a Yamaha 600 was a fluke. And that on a bike inspired by performances in wide open African deserts - a far cry from bog jumping in Wales.

The Japanese in the 'seventies did little to further the four-stroke cause; although

extremely popular, the first Honda XLs/XRs and Yamaha XTs/TTs were hardly enduro class leaders. However, that situation is slowly changing. TTs and XRs are now winners in thinking hands.

By 'sixties standards the current crop of Honda XRs could hardly be called big bore singles, however, they can at last carry the label "serious". In the XR250 and 350 - the only two of the family to be brought into Britain this year - Honda has shown its respect for market demands.

Weight, handling and power have all come under the Honda eye. And while the 250 is new for '84, the 350 has not been forgotten in the revision stakes.

The heart of both engines is the Radial Four Valve Combustion Chamber (RFVC). As can be seen from the accompanying diagrams, the four valves are positioned radially around the combustion chamber. Normally a four valve chamber has a pent roof which allows easy arrangement of the valve operating mechanism; be it by a

camshaft bearing on buckets positioned directly above each valve, or by cam followers normally forked to operate two valves from one lobe on the camshaft.

Arranging the valves radially around the chamber would normally be precluded by the need for sophisticated valve gear. If the valves have to be operated individually some special form of camshaft – one per valve – would be called for. An horrendously expensive mechanical complication.

By using operating levers called sub rockers, Honda is able to employ the advantages of a hemi-spherical chamber without the normal performance limiting factor from this type of chamber. That is, the maximum valve size and port area which can be fitted into the chamber without problems of valve inertia which arises from fitting large diameter valves.

The RFVC allows maximisation of a small valve area by using four valves instead of two without the inherent two valve problem of massive valves requiring heavy springs to control return motion.

Coupled with the RFVC head is an inlet reed valve which controls the fuel mixture from the twin 26mm carburettors.

However, the carburettor arrangement is an interesting one. In an effort to improve low and mid range power without sacrificing top-end, Honda has gone for the twin carb idea; the primary carb contains pilot and needle jets and operates in the low and mid range, while the secondary carb with main jet comes in from around half throttle.

Complicated though it sounds, in practice the set-up works fairly efficiently, although cleaning float bowls of foreign matter in the middle of a rainstorm could be an uncomfortable exercise. Access is limited.

Stung by criticism last year of its poor starting, especially after a get-off, Honda has improved the electrics, although the reason for direct wiring to the head and tail lights is something of a mystery. Nevertheless, starting is still the key to a happy relationship with any reasonably-sized thumper.

For the record, the procedure for firing up either the 250 or 350 is: Cold, choke and no throttle; hot, no throttle. In both cases a hefty right boot action is required on the kickstart. And if the carbs happen to be flooded, go for the wide open throttle method.

Externally, both chassis look similar, although that is far from true. The 350 comes with a wheelbase of 1405mm – shorter than the current crop of 125 motocrossers – while the 250's 1360mm is only 5mm longer than the old XR200.

With a steeper fork angle, the 250 also comes with different suspension: 38mm air forks with 254mm of travel compared with the 350's 41mm legs and 280mm of travel. At the rear it is a similar story. The 250 runs Pro-Link with 244mm of travel, while the 350 offers 270mm. The overall effect makes for a slightly lower 250, some 20mm down on the 350's 920mm seat height.

Both bikes come with a front disc this year – straight away a vast improvement on the '83 350's drum number. Rim sizes are the same – 21 inch and 17 inch – although in standard form the 250 comes with IRC rubber, the 350 with Bridgestone.

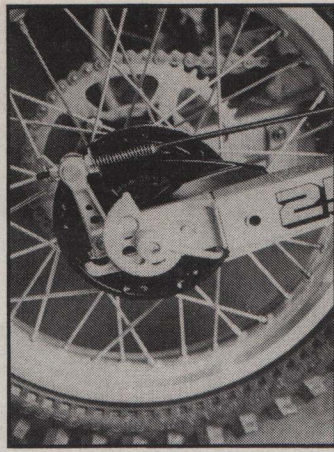
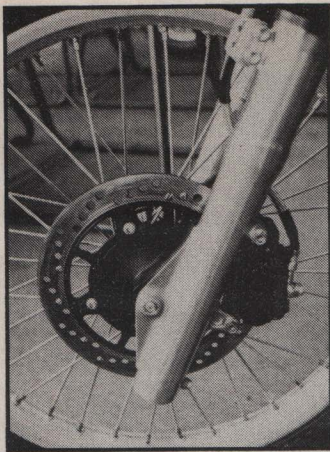


Plastic work on both bikes is red, with hand guards this year's bonus. However, the 250 comes with a smaller fuel tank. With a nine litre capacity, it is three litres down on the 350. Other similarities include the nifty quick change rear wheel system, sidepanels which hide the oil foam air filter – which are different – and the engine decompression levers.

And so to the action. We'd be telling fibs to say our relationship with Honda was anything but cordial after our test of

the 1983 350 (DBR, September 1983). With this in mind we steeled ourselves to approach the 1984 offerings with an open mind – and increased fitness should a swift departure be required.

Tackling the 350 first, we were immediately impressed with starting. First or second kick all day, although four prods were required after a particularly long period of it resting atop a Team DBR member. So much for any doubts in that area.



Power is not something the XR350 lacks. Of course at 32.7hp it's not in the same league as a two-stroke of equivalent size, but with the XR the power is there throughout the range. The 339cc engine with a 84mm x 61.3mm bore and stroke delivers the goods with ease. Breathing through its twin 26mm carbs, there is no hesitation at any point.

It pulls the higher gears at low revs with little complaint, although the faster riders will probably opt for taller overall gearing. On fast sections it's revving hard in top gear. But one complaint from last year, the weak clutch, no longer exists. It's been boosted and we found no cause for worry.

With any enduro bike, two-stroke or four-stroke weight is relative to fitness. At 112kg the 350 isn't that heavy, especially if you consider an IT250 Yamaha comes in at 120kg. However, if it falls over it is heavy. And Welsh bogs should definitely be avoided if your fitness is in question. Also, the lack of a rear frame loop makes manhandling the bike just that little bit more difficult.

However, as one of our riders commented, the 350 is an ideal bike in the third or fourth hour of an enduro. With ample grunt on tap, gearchanges and physical effort can be kept to a minimum. That's if you don't fall off!

Although it has a relatively short wheelbase, the 350 is a very slow steerer. In tight turns it's a matter of dragging the bike down. In the tight of a forest, too, steering is a conscious effort, with plenty of body movement required to keep it pointing in the right direction.

Out in the open, the story is somewhat different. Wide fast sweepers are the XR350's forte. It also remains comfortably stable on long straights. But like last year, the quick boys might like an additional couple of centimetres in the swing-arm.

The reason for the good handling is the front and rear suspension. With 41mm forks offering 280mm of travel up front and a Showa rear-shock with 270mm of travel at the rear, the 350 can be ridden hard into and over rough terrain. We were particularly impressed with the XR through a series of whoops at the end of one long straight on the Blaxhall enduro loop. The forks, run with zero air pressure, and the fully adjustable Pro-Link handled the bumps very well. Under brakes the bike remained remarkably stable, with just a minimal amount of rear wheel hop.

But then, the new-for-this-year twin-spot front disc is an absolute delight. Barely

*ABOVE RIGHT:
Honda's dual piston front disc, fitted to both the 250 and 350, is one of the best around. Quick wheel changes are the go with the "U" section.
ABOVE: axle mounting on the alloy swing-arm.*

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RFVC

For 1984, we've got only one thing to say to the enduro competition: RFVC.

No, it's not a new swear-word; it stands for Radial Four Valve Combustion Chamber. Which is bad news for the opposition, because not only is the XR350R still equipped with this particular type of cylinder head for the second year running, the all-new XR250R is as well.

The RFVC cylinder head features four large, radially disposed valves that occupy virtually all of the cylinder head area, and two carburetors; one for low and mid-range power, the other chiming in at higher revs for maximum power output.

The result? Massive lugging power, throughout the rev range.

XR250R

All-new for 1984, the XR250R's overhead camshaft single cylinder four-stroke engine punches out 29PS and 2.40kg-m of torque.

Front brake is a disc unit with dual piston caliper, sintered metal

pads and braided stainless steel hose.

Sturdy 38mm front forks are air-assisted, while the single-shock Pro-Link rear suspension has 16-way adjustable compression damping, 4-way adjustable rebound damping and a rigid box-section swingarm.

To help prevent hand injuries, the handlebars feature plastic lever shields. Weight is a mere 105kg.

XR350R

Pumping out a hefty 32PS and 3.08kg-m of torque from its single cylinder four-stroke engine, the XR350R gets a lightweight disc front brake with dual piston caliper, sintered metal pads and braided stainless steel brake hose for 1984.

Front forks are massive 41mm air-assisted units, while rear suspension is single-shock Pro-Link with 12-way adjustable compression damping, 4-way adjustable rebound damping and lightweight box-section swingarm. Like the XR250R, the XR350R has plastic lever shields to protect your hands.

Weight is only 112kg.



SPECIFICATIONS	XR350	XR250
Price (incl VAT)	£1545	£1425
Engine	Air-cooled OHC four-stroke with RFVC	
Bore and stroke	84 x 61.3mm	75 x 56.5mm
Capacity	339cc	249cc
Carburation	Keihin 2 x 26mm	
Air filter	Oiled foam	
Clutch	Wet multi-plate	
Gearbox	Six speed	
Compression	9.5:1	10.2:1
Max Horsepower	32.7 @ 7000rpm	29.4 @ 9000rpm
Max torque	3.08kg-m @ 6500rpm	2.40kg-m @ 7000rpm

CYCLE PARTS		
Tyres	Bridgestone IRC	
Front	90/90 x 21	300 x 21
Rear	130/80 x 17	460 x 17
Brakes		
Front	dual piston disc	
Rear	SLS drum	
Suspension		
Front: Air assisted forks	41mm	38mm
Travel	280mm	254mm
Rear: Fully adjustable Pro-Link		
Travel	270mm	244mm

DIMENSIONS		
Weight (dry)	112kg	105kg
Wheelbase	1405mm	1360mm
Seat height	920mm	900mm
Ground clearance	310mm	315mm
Fuel tank capacity	12 litres	9 litres

SPARES PRICES (excl VAT)		
Air filter	£11.00	£8.41
Piston	£17.19	£15.22
Rings	£13.06	£9.11
Rear sprocket	£38.31	£40.15
Front mudguard	£28.99	£22.93
Rear mudguard	£29.35	£28.56
Exhaust pipe	£56.58	£56.58
Brake master cylinder	£88.32	£88.32
Supplied by	Honda GB Limited, Power Road, Chiswick, London.	

bedded in at the start of the test session, it got better and better. Strong enough to stand the bike on its front wheel, it must be the best enduro brake around. The rear drum, while quite small, works well, its size amply suitable considering the amount of engine braking available.

Our only worry about the front brake is the handlebar-mounted master cylinder. Compact and reasonably well protected, it is still a vulnerable item in the event of a big endo.

With the XR250 Honda has looked to the XR200 for inspiration. Probably the most popular of the XR range – though no longer being brought into Britain – the 200's light weight and handling won it many friends. If only it had more power...

But the all new 250 – some 14kg lighter than the last XR250 – isn't just a bored 200. Although the engine shares the same stroke as the 200 of 56.5mm – its bore is 75mm for a 249cc capacity – the bike is a totally different proposition.

Like the 350, starting is not a problem so long as the throttle is kept closed. However, we found our 250 wouldn't run clean off idle. Draining and cleaning the two 24 Keihin carbs helped a little but the problem persisted throughout the test. Possible re-jetting is the answer.

Honda claims some 29.4hp from the 250 – about 10 up on the 200 and in the 250 two-stroke league – but the engine has to be worked hard to find it. Completely different from the 350, the 250 is lacking in low and mid range grunt. Peak horsepower comes at nine grand compared with seven for the 350.



As one of our riders commented, "it's like riding a two-stroke." The key to fast section times is plenty of throttle and constant juggling of the six-speed gearbox. In this respect the 250 is the more difficult bike to ride quickly.

The 250 comes into its own in tight turns and through narrow wooded areas. The steeper head angle of the 250 makes it easy to flick about. Only that carburation flat-spot ruins otherwise excellent manners.

Out in the open country, however, the story is different. Why Honda hasn't given the XR250 the same suspension as the 350 is a mystery. In this area the 250 is a disappointment.

While the rear Showa unit with its 244mm of axle travel is reasonable, the 38mm front forks aren't happy in really rough going. They top and bottom out, and during hard braking on the rough the 254mm of travel is well and truly used up in a desperate fight to keep everything reasonably in line.

Unfortunately we were unable to spend more time with the bike and experiment with air pressures and spring and damping positions. Hopefully, later in the year we'll get another chance to look into this aspect of the XR250's performance.

Like the 350, the 250 is very undergeared, though going one tooth larger on the front sprocket will improve things. As it is standard, the 250 revs its heart out around 60mph.

In the 250's favour is its light weight, excellent steering and general layout. About what we've come to expect from an all-new Japanese model. Seat height at a low 900mm and ground clearance at 315mm will find friends among the short and light – the 350 compares at 920mm and 310mm respectively.

In summing up both the 250 and 350 and making a choice – if that's what your enduro shopping list has come down to – three aspects of the bikes come under scrutiny: weight, power and suspension.

Starting with weight, obviously the 250 being some seven kilograms lighter is the more attractive proposition. None of our riders fancy dragging the 350 from a Welsh bog, or attempting a re-start halfway up a muddy hill. But as we said earlier, fitness and weight are relative. Nevertheless, the 350's weight will put off many people.

In the power stakes we favour the 350, not just for its top end potential, but more so for its ability to pull high gears in the lower rev range. If you like, it's a more forgiving bike for the lazier/less fit among us. The spread of power offered by the 250 is all at the top of the rev range, so making it a machine more suited to a retired motocrosser-turned-enduroist.

Handling. Now this is a tricky area. On the basis of our test session we favour the 350 without hesitation. The big 41mm forks work well, with plenty of travel back and front to match the fiercest bumps. The 250's suspension proved quite disappointing. But we'll qualify that by saying time prevented us from experimenting.

So where does that leave us? If you're into decision time consider the type of terrain where most of your riding will be done. For tight, low-speed wooded areas or sheep tracks the 250 gets the nod. If fast open terrain enduro competition is the thing then grab a 350.

