ATD DISC BRAKE SYSTEM

DISC JOCKEYS



All Terrain Disc is a new disc brake system that fits virtually any bike, front and rear, works superbly and is made in Britain.

Report: Andy Stephenson.

Photography: Dave Willis

When Ian Weatherill, Simon Sharpe and Owen Hardisty, all national level motorcycle trials riders, first started riding mountain bikes, they set off attacking their local rides as if they were still on their trials irons.

Like most people making the switch from motocross to trials, the first thing they noticed as they clattered and bounced down their favourite downhill was the lack of suspension. The point was rammed home the whole day after the ride when their arms, shoulders and necks ached like they had just done ten rounds with Mike Tyson.

The lads learned to adapt to having no suspension quite easily, but the one thing they could not get used to was the indifferent braking, particularly in the wet. And it's often pretty wet in deepest Yorkshire.

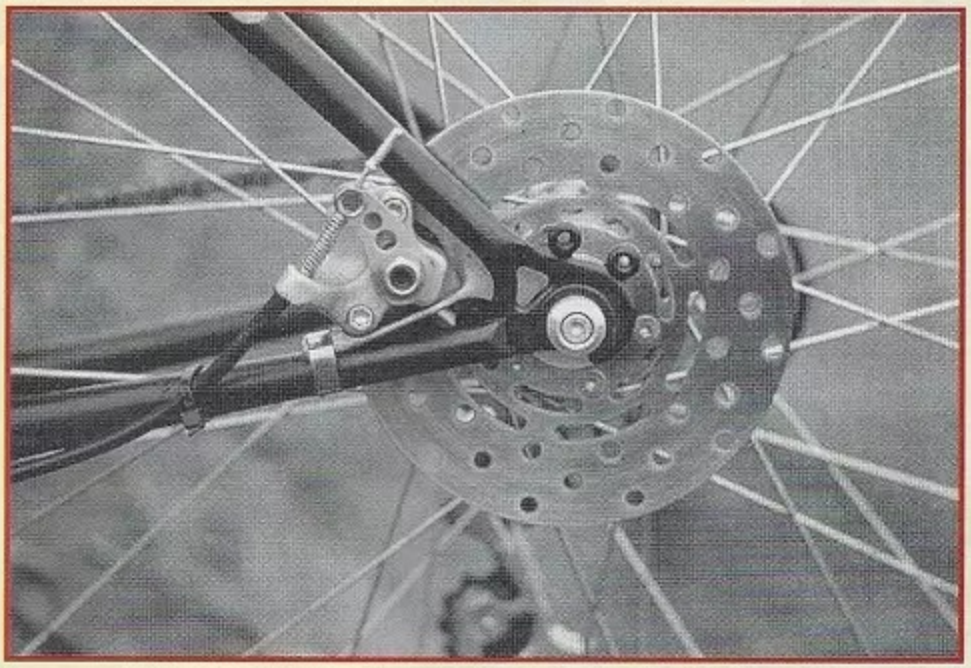
So like most of us, the trio looked at what was available to improve braking performance and came up with the conclusion that even if they parted with large amounts of the hard-earned, all they could buy was an uprated cantilever system. Or, for an even bigger wedge of moolah, they could actually buy a disc brake set-up, but would be forced to buy a new pair of forks as well, which they didn't need.

Look at any off-road motorcycle and you will find disc brakes, front and rear. Let's face it, they are chosen for a reason - they work. You kinda get used to one finger braking, no matter what the conditions. Knowing the advantages that a disc system would offer, the

intrepid trio decided to design and fabricate their own.

Tackling such a task might sound like a tall order, but not to Ian and Simon. Both are Rolls Royce trained engineers who now run their own engineering and machining business, largely staffed by other refugees from Britain's top engine makers.

The brains behind the ATD design belong to one of these ex-Rolls Royce men. Owen Hardisty's enthusiasm for the project led him to patiently burn the midnight oil at home and then use lunchtimes at work to first design and then make a working prototype. Thus the All Terrain Disc was born, but how does it work and, more importantly, how does it perform? Well, the short answer is: simply and outrageously well. End of test...



CENTRE OF EXCELLENCE - THE ATD HUB AND DISC

If you want to run the disc brakes, the fact that you have to use ATD's own hub is a definite bonus. Machined from a solid billet of aircraft spec 6082 T6 aluminium, in itself the hub is a quality upgrade to any bike.

A solid aluminium axle mixes high shock resistance and maximum strength with light weight. The design removes the need for a hollow axle plus skewer, as the axle itself becomes the Q/R skewer. To help reduce weight further, the spacers are also aluminium.

Quality high precision 28mm SKF double sealed bearings are pressed into the hub body. While offering up to 75% reduction in friction over normal cone-type traditional bearings, they should also reduce maintenance to virtually zero. The rear hub is designed to fit standard SunTour splined freewheels. Both front and rear will be available in any drilling.

The ATD disc is also very trick. With a 150mm diameter that keeps it small and neat, it has also been drilled and cut-out to reduce weight and its surface has been subjected to a special process to harden it.

ART IN ALUMINIUM - THE ATD CALIPER

Cast in aluminium, the caliper is mechanically operated, fully floating and - like the hub - the workmanship and attention to detail is superb. All the nuts and bolts are either aluminium or titanium. The actuating arm is laser cut from stainless steel, and the heart of the caliper, the actuating screw is hard anodised aluminium with a PTFE coating.

Fully floating means the caliper mounted to the forks or stays has a degree of lateral movement around its mounting pin built into the design. This arrangement reduces uneven brake wear and uneven stress on the disc and eliminates snatching and grabbing in brake performance. This is quite possibly the smallest disc brake caliper I have ever seen that is fully floating...period. As you can see from the pictures, it fits neatly and unobtrusively to the bike.

HOW DOES IT WORK?

The system is entirely mechanical, and is really quite simple. The caliper has its own cable stop cast into the housing, which allows a conventional brake lever and cable to be used. The cable is attached to the actuating arm, which turns the actuating screw, pushing the pad onto the disc. The full floating design ensures that both pads move against the disc, and also release off it, allowing the disc to spin without binding on the pads to give silent, frictionless running.

RIDING WITH ATD

The test bike was an Orange Clockwork, equipped with very light and trick Dia-Compe SS-5 brake levers. Riding it, the first thing I noticed was the very light finger pressure required. The discs offer very powerful braking, stronger even than hydraulic set-ups, and have superb modulation allowing precise control. The light action means one finger is all that is required. No more white knuckles heaving on the brake levers!!

The feel of the brake is very smooth and progressive. It exactly reflects your finger pressure: no grabbiness, nothing unexpected.

After almost three weeks hard riding in the Lake District, riding through rivers, getting stuck in bogs and descending off some of the highest fells, one feature in particular was shining through. The major improvement over 'normal' rim-action brakes is the ATDs' ability to provide instant, controllable braking whatever the conditions. In almost every situation that 'normal' brakes let you down, the ATD works and works better.

Remember that horrible noise after you've just ridden through mud, the sound of your brake blocks grinding away the surface of your expensive rims? Well forget it, with these it's history.

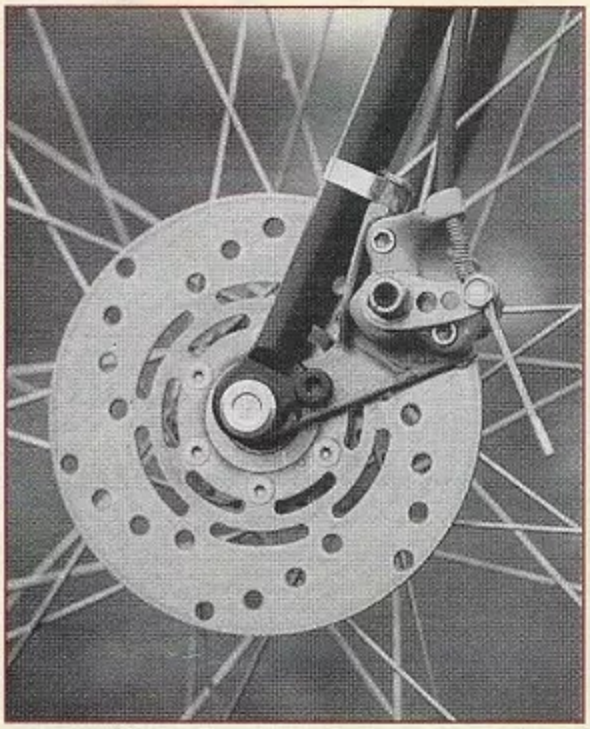
With the disc only 150mm in diameter and placed - obviously enough - in the centre of the wheel, it is well out of reach of all but the deepest mud. Even when I deliberately buried the disc in gloop, it cleaned itself in a couple of revolutions and worked as effectively as ever.

LIVING WITH ATD

After realising how powerful the disc system is, most riders' reaction was to ask 'What about wheel changes. Are they fiddly?'

Wheel changes proved to be no problem. You simply undo the axle end bolt, or Q/R, slide out the axle and the wheel falls out. Putting the wheel back in involves aligning the disc between the pads. This is slightly more fiddly than cantilevers but after two or three changes I could almost match the speed of someone using a traditional set-up.

Pad changes are straightforward. The removal of one split pin is all



that is required. Pad life is expected to be up to six months, although this will vary depending on how hard you ride.

The whole system has been designed to reduce maintenance as far as possible. Just think, no more fiddly set up with cantilever brakes, a job that seems to be getting harder, as rims get narrower and tyres get wider. Also, you can buckle or dent your rim and it won't affect your brakes. And if you've ever managed to wear a rim sidewall out, that problem is also history. Ceramic rims, who needs them?

ATD - IS IT PERFECT?

In terms of braking performance, ability to fit almost all bikes and low maintenance - almost. The trade-off is that ATDs weighs more than normal brakes, adding about 3/4lb when fitting front and rear discs. Gram shavers could reduce this figure by cutting off unwanted canti bosses, but it wouldn't make too much difference.

After riding on the ATD discs for nearly three weeks, getting back on my own bike with XT cantilevers brought home to me just how good the discs are. Personally I think the slight weight increase is worthwhile.

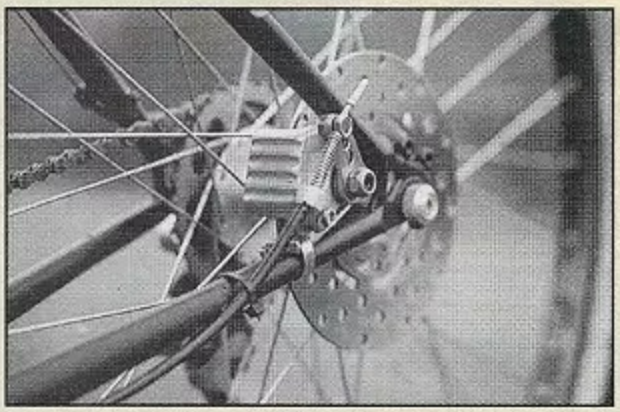
The ATD disc sets new standards of braking performance. Up to now it is the best engineered, best looking, neatest and most effective disc available. Book your Christmas present now. The only question is 'Can Santa fit an ATD disc down your chimney?' Time to get the tape measure out.

THE FUTURE

I'll stick my neck out and suggest that in the future more mountain bikes will be fitted with disc brakes than with suspension. Wait and see, if I'm right on that score.

The people at Hope Technology aim to offer quality products at a realistic price, so that the average rider can afford to buy and use them. The ATDs are their opening shot and they're currently looking at product developments for the rest of the bike. Already in the pipeline are titanium bottom brackets and titanium cranks. The possibility of making an HG compatible rear hub for the disc system is also being investigated.

SPECIFICATIONS - ALL TERRAIN DISC



HUB BODY	Machined from solid billet 6082 T6 aluminium. Large flanges to reduce torque loading. Any drilling available.
AXLE	Solid 2014 T6 aluminium axle, Q/R or Anti-Theft.
BEARINGS	High precision, 28mm diameter SKF cartridge type bearing, double sealed for reduced maintenance.
DISC	150mm diameter hardened disc, drilled and slotted for lightness.
CALIPER	Cast aluminium body with heat dispersing fins. Full floating design, stainless steel actuating arm, drilled out. Hard anodised, PTFE coated actuating screw with neoprene seal. Most nuts and screws, aluminium or titanium.
PADS	Ferodo high friction pads.
COST	Approx £180 each end, including sealed bearing hub.
SUITABILITY	The ATD disc is designed to fit virtually all bikes. Special custom fitting brackets will be available from the factory for certain models.

SUPPLIER - HOPE TECHNOLOGY, HOPE MILL, SKELTON ST, COLNE, LANCS. TEL/FAX: (0282) 870498. DEALER ENQUIRIES WELCOME.

