

I was recently at a bike shop checking out some bicycle parts for a source, when I came across hydraulic disc brakes for bikes. Anyone currently using hydraulic brakes on their cars? I haven't checked the rules on it yet, but are they even allowed; anyone know off hand? I see some possible advantages like easier line routing versus cable, less driver fatigue, and maybe even force multiplication for more clamping force.

arekowski

They are allowed. Biggest problem with them for most teams is the cost.

If you have students that want to problem solve, there are quite a few companies selling the complete caliper, hose, and master cylinder (with stop light switch included) for pit bikes. The system is bigger and has more pad area than a typical bicycle part. It also costs only \$30 for the entire unit. We have purchased them with a 50" hose assembly. The biggest issue is building the mounting system for your spindle design.

Watertown is using Bicycle Hydraulic Disc Brakes for the caliper/wheel ends. Though we were unable to push enough fluid from one bike master cylinder to two calipers on our vehicle to stop, so we adapted an old Jeep's dual output Master Cylinder to our two front calipers last year. (It was 2 am the day before RA last year when we realized this issue and a student happened to have an old truck/jeep in their back yard collecting dust :)

This year we plan to run same set-up, but are looking at smaller/lighter master cylinders that will still have enough volume to stop us. The brakes worked great last year AND we hooked up a pressure sensor inline with the brake line that read like 5psi, so when we stepped on the brakes, the brake light turned on! Took care of that hassle pretty nicely.

Biggest trouble we had was adapting the bike caliper input to the master-cylinder output. Threads and fittings were both different, but enough searching and we found the right parts.

Jesse Domer, Watertown High School  
[www.GoslingElectric.com](http://www.GoslingElectric.com)

What kind of fittings are they, are they like compression, AN, SS braided hose fittings or something totally different?

Jesse, back at Stout the SAE mini-baja team used go-kart master cylinders made out of aluminum with a dual out that was light but still large enough for the application. A bit of advice though, don't bolt a pedal directly to the brake lever. That's how ours was snapped of by a inspection judge at the baja competition my first year.

I am curious on how your team was able to combine the two calipers. My contact at the bike store said it wasn't possible or is this part of finding the right fittings?

arekowski

[www.Surpluscenter.com](http://www.Surpluscenter.com) has some nice little master cylinders that are just about perfect for what we need them to do. If I remember correctly, they were only \$13.00 a piece.

The connecting of the master cylinder is an issue. The master cylinder does not have a divided reservoir, you will lose all brake pressure in the event of a single hose leak.

We're running dual master cylinders with dedicated lines for each side. Fitting should not be a problem. Just take the parts to a local auto parts supplier. They will have the parts you need to get everything to match up.

Just for you Jeremie, I will claim we stole another idea from you :) But no, one of our parents brought that concept to the team as we were trying to figure out how to run the brake lights...

For dual calipers, we ran standard non-flexible automotive brake line out of the master cylinder into a Plumbing Pipe Tee fitting. One half of tee fitting converted over to the flexible bike brake lines and went to a caliper. The other side of the Tee went to Another Tee. That tee split to go to the other caliper. The remaining side of that second tee was piped in the pressure switch. (If I had a digital camera handy, I would take a picture!) The hardest part if I remember correctly was converting the Bike Brake Fittings over to standard pipe thread for the tee fittings. The Auto Brake Connectors were I think flare fittings where as the bike brake fittings were compression fittings. it worked out, but our local auto places did not have what we needed for fittings somehow??? Hopefully you luck out better.

Jesse Domer, Watertown High School  
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Has anyone ever tried brakes from a motorcycle? We have few partially dismantled cycles in our autos lab just collecting dust.

We have often considered running motorcycle components, but ruled them out due to weight and size. They can get pretty large and heavy. The rear master cylinder may be realistic with a remote reservoir and about a 5/8 bore.

Thanks for all the advice and tips on the brakes, I think we'll be trying to make a go of it. We too have considered motorcycle brakes but found them too large for the application. However, go-kart or four-wheeler brakes would be a good compromise; I think. It will depend on how the vehicle is setup. A previous attempt to fit/attach the rotor to the bicycle wheel didn't go too well. Thanks again.

arekowski

The easiest way to set up a bicycle rim for disk brakes is to purchase a set already set-up for disk brakes.

If your students want to try something different, here's another idea:

Get a bicycle hub designed for disk brakes. Then have your students design a custom brake rotor to fit that hub's mounting pattern. Get a local company with a laser to cut the rotors, then use a surface grinder to finish your new rotors to the thicknesses needed to fit your calipers.

Found a cheap supply of pressure switches

<http://www.surpluscenter.com/item.asp?UID=2008020112530793&item=11-2400&catname=electric>

I would like to have the information on the legality of hydraulic disc brakes on an electric car?

Dave

Team NWTC/SWEAT will be using Avid Code. I am a Mountain Bike Racer and these brakes are monsters in the MTB world. four piston calipers with 185mm discs (hydraulic). I definitely believe in hydraulic. After a 20mile bike race my hands died with mechanical brakes. Hydraulics really save your hands. Of course we plan on using the brakes as little as possible LOL. I don't see Road America as a brake heavy course in any way especially. I really don't understand any question of legality with hydraulic. As long as they safely stop the car who cares (excluding drag style brakes of course). Just think that a bike is 25lbs with a 180lb person. These cars range from I would think at least 350lbs up to 500lbs with driver. That is a considerable weight difference. Any bit of extra stopping power is a plus. In the 90's when I did the high Mileage vehicle all we had was one mechanical disc in the back. That being the case it kind of contradicts my plan for what may be major overkill with our huge brake system. Just remember at least two wheels must have brakes. Motorcycle brakes are major overkill and much more heavy duty than anyone should need.

Road America and brakes.....

Just remember, RA has the strictest braking requirements. ALL Electrathon/Supermileage vehicles must stop within 25 feet from 15 MPH. Most teams are building their Electrathons to set the shortest braking distance anyways, so this usually is not an issue.

The MTB Hydraulic brakes are more than up to the task, it's just their expense. If you are running a 20", narrow, high pressure tire, the brakes will have WAY more stopping power than what the tire can transmit to the asphalt. If the tires lock-up, the vehicle is going to have a longer braking distance than if they didn't.

Also, Electrathons need to hold the 35 MPH speed, even when going downhill at Road America.