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A very easy way to build an eddy current brake is to just use any ac induction motor, and feed dc current through the windings. It only works for low power engines tho ugh, because the solid steel (squirrel cage) rotor does not dissipate heat well.

But if you are experimenting at home with very small engines, it is a very practical ultra low cost way to do it.

A three phase motor will have three terminals, just feed a dc current into any two terminals, and ignore the third. The rating plate will have a current rating for the motor, which should not be exceeded.

Only a low dc voltage is required because the resistance of the windings will be quite low. Also the braking torque will be extremely high, even at currents far below the maximum on the nameplate.

With a given braking current, the required torque to turn the motor increases very rapidly with speed. A given motor will brake full rated torque at its slip rate, which might be only 150 RPM.

Just to explain this, if the mains frequency is 50Hz, the magnetic field inside the motor rotates at 50 x 60 = 3000 RPM. The motor speed might be rated at 2850 RPM, so the slip will be 150 RPM.

If you try to spin it faster than 150 RPM with full field current, it will readily sink far more torque, so a small electric motor can easily hold almost internal combustion engine. But the big problem is heat buildup in the rotor. It will get very hot very fast, so that is what limits the power absorption, not torque sinking ability.

So, a single or three phase induction motor would make a nice home chassis dyno for a cart or small bike, provided you were careful not to cook it. A large external blower or submerging the whole thing in oil might also work.

It is all a bit Mickey Mouse, but some of us are not that wealthy. Short power runs are all you really need with long cool down periods for home use. Also, excessive RPM and heat might cause it to fly apart, so a bit of caution is required.

Try it yourself, get a quarter horse or larger single phase motor, and while turning the shaft by hand, apply 12v dc and see what happens.