

## Tier Motorsports, LLC

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### Benefits of the front swing arm

Here is a list of advantages that front swing arm suspensions have over classical forks:

- a. **50% anti-dive vs. 90% pro-dive with forks.** The classic front fork suspension makes the front of the motorcycle dive under braking which in extreme cases can cause the motorcycle to flip forward. Having a front swing arm allows to design the front suspension with any type of positive dive (like with forks) or negative dive as well as progressive dive. With negative dive the bike will actually raise during braking. Of course most riders like to have some dive to have a feel for how hard they are braking so the ideal bike will have just enough dive to be felt by the rider.
- b. **Greater comfort.** Because the front suspension undergoes less dive during braking it does not tend to compress the suspension as much. This allows for softer springs to be installed.
- c. **Lighter frame and a lower center of gravity improving handling.** There is no longer a need for a sturdy frame around the upper steering column to counter force from the telescopic fork. On some models the engine can be used as the structural main frame of the motorcycle (true with redesigned frames; doesn't apply to kits mounting to existing frames).
- d. **Suspension rate and dampening can easily be adjusted** on the fly as on rear suspensions.
- e. **Constant stability.** Minimal change in wheel base throughout suspension travel.
- f. **More precise handling.** Minimal change in trail throughout suspension travel.
- g. **Increase in braking performance.** During braking the reduced dive result in less weight transferred to the front which allows for the rear wheel to absorb more braking power.
- h. **More pronounced separation between suspension and steering/control.** Allowing adjustment of both to achieve optimum performance. The percentage of anti-dive can be varied with minimal effect to the steering (On telescopic forks, the dive under braking causes the wheelbase to get shorter, the rake to steepen and the trail to reduce.)