Rekluse Motor Sports
z-Start Pro Tuning Guide

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The z-Start Pro can be tuned to suit a wide range of riders, terrain and bikes. The engagement RPM and engagement rate settings will have a dramatic effect on how the z-Start Pro performs. A low engagement RPM with a harder engagement rate will have very little slip as the clutch engages. A high engagement RPM with a softer engagement rate will slip the clutch more as the clutch engages. Choosing the right setting depends on many factors.

The Short Answer

If you don't want to read four pages of technical information on how to set up your z-Start Pro clutch, then here's all you need to know… Go to the **Tuning Chart** included with your z-Start Pro and choose the ***Medium Engagement RPM*** and the ***Softer Engagement Rate***.

The Long Answer

There are three primary tuning options for the z-Start Pro:

Engagement RPM - RPM at which the clutch first begins to engage (adjusted with different springs)
Engagement rate - how quickly the clutch fully engages once it begins to engage (adjusted with number of balls used)
Engine idle speed - engine's steady idle RPM (revolutions per minute) when then engine is warm.

Engagement RPM

The engagement RPM is set using wave springs within the z-Start Pro clutch. There are three engagement RPM settings: low, medium and high. The low engagement RPM setting begins to engage the clutch at or just below a normal engine idle speed. The medium engagement RPM begins to engage the clutch just above a normal engine idle speed. The high engagement RPM begins to engage the clutch several hundred RPMs above a normal idle speed.

Engagement Rate

There are two engagement rate settings included with your z-Start Pro: softer and harder. The softer engagement rate provides more slip as the clutch engages at low RPMs. The harder engagement rate provides less slip as the clutch engages at low RPMs. If you are looking for even harder engagement rates, contact your authorized Rekluse dealer to purchase a tungsten carbide ball kit.

Engine Idle Speed

Engine idle speed is another very important tuning factor for the z-Start Pro clutch. If your idle speed is below your engagement RPM and you lock and then release the rear brake, the z-Start Pro clutch may not automatically re-engage and the bike may "free-wheel". By "blipping" the throttle to raise the RPMs, the clutch will re-engage and provide normal compression breaking.

Most riders prefer consistent compression braking when the rear tire is locked and then released. To get consistent compression braking after the rear brake is released, the ***engagement speed must be below the idle speed***. In other words, the clutch should have some engagement drag at idle. Ideally with the bike in first gear on flat ground with no rider aboard, the bike should just be creeping forward.

If you prefer your bike to free-wheel after the rear tire is locked, make sure your idle speed is well below your engagement speed. Higher engagement speeds work better to get your bike to free-wheel after the rear tire is locked.

Choosing a Setup

There are three primary factors to consider when selecting an engagement set-up for the z-Start Pro: the motorcycle, the terrain and the riding style. There is no perfect setup for any particular rider, motorcycle or type of terrain. Try to understand the characteristics that are important to you in making a decision about setup. Remember, the set-up can always be changed.

The Motorcycle

Some motorcycles are more prone to engine stalls with certain setups than others. In general, two-stroke motorcycles will work well with almost any setup. Off-road oriented motorcycles are less prone to engine stalls. Four stroke motocross bikes, especially 450-class motorcycles, are more prone to engine stalls. Four-stroke motocross bikes are more likely to get engine stalls from the low engagement speed and hard engagement rate.

Motorcycles with lots of flywheel effect (most off-road oriented motorcycles) will generally perform better with the hard engagement rate and low or medium engagement speed. Motorcycles with less flywheel effect (motocross) will generally perform better with the soft engagement rate and medium or high engagement speed.

The Terrain

In general, if traction is low, the softer engagement rate will provide better traction. If traction is high, the harder engagement rate will perform well. Rocky, technical terrain is generally better suited to the softer engagement rate and the low or medium engagement speed. Most riders prefer the harder engagement rate in sand.

Riding Style

If you are new to riding with an automatic clutch, most riders feel more comfortable with the harder engagement rate. This is not necessarily the best setup for new automatic clutch riders though. If you are a “momentum” rider (ride in low RPMs, a gear or two high), choose the harder engagement rate and low or medium engagement speed. For most motocross riders, the softer engagement rate and medium or high engagement RPM will generally give the best lap times.

If you are just out to enjoy trail riding, the medium engagement RPM and the softer or harder engagement rate should work well.

Other Considerations

Compression Braking

The amount of compression braking the bike gives can be changed slightly with the idle speed and engagement speed. Higher engagement and idle speeds will slightly reduce the level of compression braking. Lower engagement speeds and idle speeds will keep the level of compression breaking very close to stock.

Regardless of engagement speed, the key to consistent re-engagement of compression braking after the rear tire is locked is clutch engagement drag at idle. If you are finding that your bike sometimes freewheels after the rear tire is locked, turn up your idle and/or lower your engagement speed.

Engine Stalling

There are two types of engine stalls associated with the use of an automatic clutch: acceleration stalls and braking stalls. Acceleration stalls are caused by the sudden loading of the engine at low RPMs with an open throttle. Braking stalls are caused by a sudden deceleration of the motor. The deceleration can come from the rear brake or from the rear tire hitting a steep object (like a large rock or a downed tree).

Acceleration stalls are most common on 4-stroke motocross bikes and are almost non-existent with 2-strokes. Twisting the throttle too quickly from low RPMs in taller gears can cause a “pop-stall”. There are several things you can do to minimize acceleration stalls. On a modern 4-stroke, getting the pilot jet adjusted correctly with the fuel screw is very important. Remember that temperature and elevation have a significant effect on your pilot jet setting. A heavier flywheel weight can also reduce acceleration stalls. Higher engagement speeds and softer engagement rates with the z-Start Pro will tend to reduce the incidence of acceleration stalls. Finally, good throttle control, rolling on the throttle instead of whacking it open, will reduce acceleration stalls.

Braking stalls are caused by the engine being decelerated very quickly to the idle point and/or the clutch not releasing quickly enough. Again, good low-speed carburetion is key to prevent braking stalls. Higher engagement RPMs and idle speeds will also reduce braking stalls. Often times, just slightly raising the bikes idle speed will eliminate braking stalls.

Detail Setting Descriptions

The following descriptions are for the internal spring and ball configurations found on the **z-Start Pro Tuning Chart**.

Low Engagement RPM, Softer Engagement Rate

On most bikes, this setting will give some clutch engagement drag at a normal idle. This setting will give good control in technical riding situations but may require more manual "clutching" to maximize acceleration out of corners in higher gears. This setting is better for high traction terrain.

Medium Engagement RPM, Softer Engagement Rate

On most bikes, this setting will require a normal to slightly higher idle to get enough engagement drag to maintain consistent compression braking. This setting gives good balance between control in technical riding situations and providing enough slip to maximize traction and acceleration in terrain with poor traction. ***This is a recommended setting.***

High Engagement RPM, Softer Engagement Rate

On most bikes, this setting will require a very high idle to get enough engagement drag to maintain consistent compression braking. This setting is geared towards maximizing acceleration, especially in low traction situations. This setting may cause the clutch to overheat in high-load, low RPM situations. This is a good setting for someone looking for a setup that will freewheel after the rear brake is locked and released (with a lower idle speed).

Low Engagement RPM, Harder Engagement Rate

On most bikes, this setting will give some clutch engagement drag at a normal idle. This setting is most susceptible to acceleration and braking stalls and provides very little slip. Control in rocky, technical situations is more difficult and the bike has a tendency to be "jumpy". This setting will require manual "clutching" to maximize acceleration out of corners and to be smooth in slower, rocky technical situations. This setting is best for well carbureted large displacement 4-strokes with lots of flywheel effect and 2-strokes where the rider is looking to do most of their clutching manually.

Medium Engagement RPM, Harder Engagement Rate

On most bikes, this setting will require a slightly higher than normal idle to get enough engagement drag to maintain consistent compression braking. This setting is much less susceptible to stalls than the Low Engagement Speed, Hard Engagement Rate. This setting still offers good control in technical riding situations and allows the motor to be lugged down low in the RPM range with very little slip. ***This is a recommended setting.***

High Engagement RPM, Harder Engagement Rate

On most bikes, this setting will require a high idle to get enough engagement drag to maintain consistent compression braking. This setting tends to have a bit of a "hit" to it. This setting is geared towards maximizing acceleration, especially in high traction situations, especially for motors that have lots of torque. This setting is not as well suited to technical riding situations. This is a good setting for someone looking for a setup that will freewheel after the rear brake is locked and released (with a lower idle speed).