



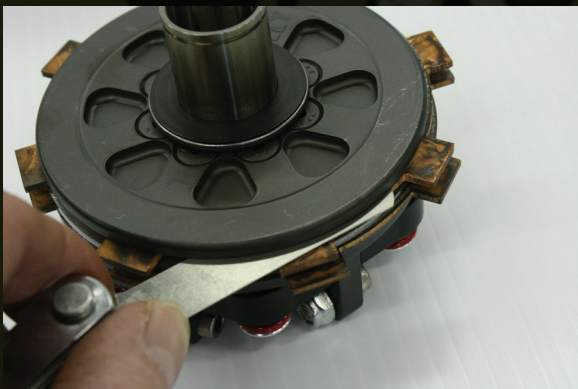
DOUBLE CLUTCHING

In last month's edition of the "Grassroots Tech Barn," we discussed proper care and maintenance of the shoe clutch. This month, we are going a couple steps fur-



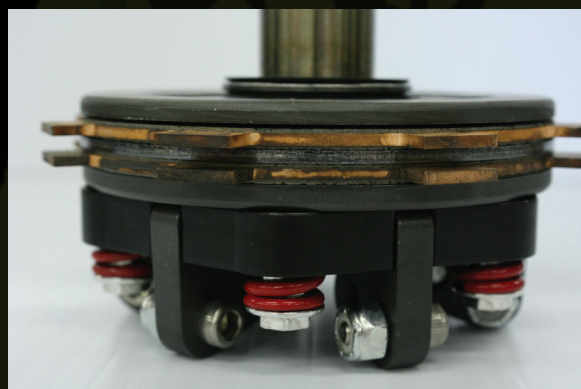
ther and explain the steps required to keep your disc clutch in top operating condition.

Before we cover the maintenance, let's take the time to explain the operation of the clutch. A disc style clutch has one or more friction discs, a floater disc if need-



ed, along with an inner and outer pressure plate. These parts are complemented by a series of levers and springs. The manner in which all these work together determine the lockup, or engagement speed.

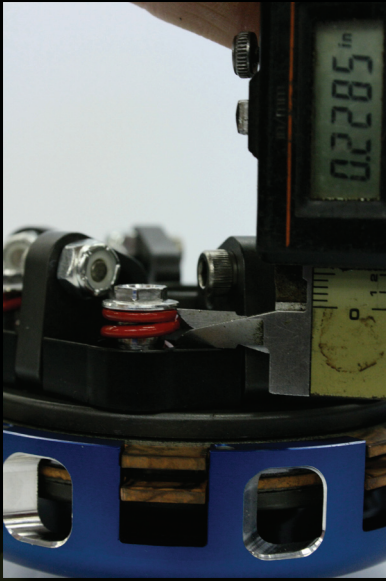
As the clutch spins up, centrifugal forces cause the lever arms to sling out, overriding the spring pressure. This in turn closes the air gap between the clutch discs and the



pressure plates, energizing the clutch. The higher the tension on the springs, the more centrifugal energy it takes to override, creating a higher engagement speed. Heavier lever arms will sling out quicker, lowering the lockup rpm, just as a light weight lever will raise it. Consult the owners manual for your particular model for initial setting guidelines.

Obviously, there are many moving parts involved in a disc clutch. These parts all have to work in harmony if we are to get the performance we desire. For this rea-





son, it is imperative that the clutch not ever get wet. Water in itself is bad enough, but couple this with the dirt and grit that comes from the track, and those free moving parts aren't so free moving anymore. Always remove your clutch before washing the kart. Besides, a peak performing clutch must be maintained weekly, and this cannot be done on the kart.

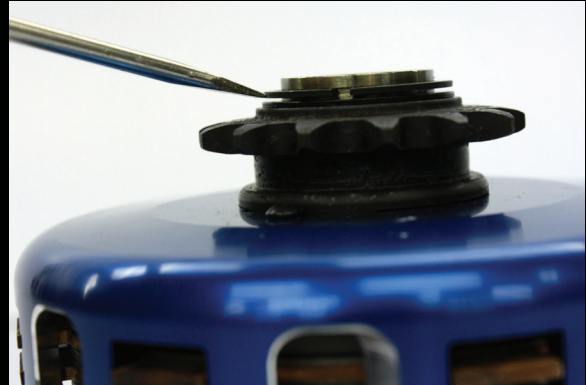
With the clutch on your worktable, remove the snap ring retaining the sprocket and bell, and separate the bell from the rest of the clutch. Look for any areas of concern, and with a supply of dry compressed air, blow the center section enough to remove all dust and particles from within the clutch. On occasion, brake cleaner can be used to assist with this, however I don't believe in using it weekly.

Take the bell and sprocket assembly and thoroughly wash out the inside of the bell, as well as the needle bearing in the sprocket. Brake cleaner does a good job with this as well. When the parts are clean, a good drying with compressed air prepares us for reassembly. Taking one drop of a heavyweight oil or a VERY small dab of a lightweight grease, such as Vaseline, rub this into the needle bearing thoroughly to distribute it throughout. Note: Excess amounts of oil will find its way into the plates, and slipping is the result. Excessive chain lube can also attribute to this, so be careful with that as well.

Before assembling your parts again, take a moment to check the air gap between the internal plates of the clutch center section. Factory specifications usually state between a .030 to a .045 air gap as optimal. However, as the clutch is raced, wear is increasing this number. Using a feeler gauge, measure this gap. I recommend the gap to remain below .055, as high gaps causes elevated engagement speeds and erratic jerking and snapping that can lead to further damage and poor

starts. If your clutch falls outside this range, it needs to be rebuilt.

It is very important that the bell/ sprocket assembly has movement on the drive hub. It may be necessary to add or remove thrust washers to achieve this. Usually, .015-.030 end play is sufficient. This is important because



as the clutch heats up, this gap decreases, causing a tight clutch. Note, the flat thrust bearing inside the clutch should NOT be lubricated. Run this bearing dry, inspect weekly, and replace as needed. Any oil here will find its way to the plates, and create problems.

Spring height is critical. Any movement of one spring requires the same movement on every spring. Uneven spring load causes warping of the pressure plate and poor engagement.

Engagement speed is a recommended number based on your class. Engagement speed must be checked on the ground with the driver in the kart. Checking on the stand is not accurate.

Engagement RPM is changed by changing the spring preload. To increase engagement speed, tighten each spring, (clockwise direction) and to lower decrease the spring ten-



sion, or turn in a counterclockwise direction. Each ¼ turn makes approximately a 75 RPM adjustment on most clutches.

Just as always, keep your eyes open for potential problems. Regular maintenance and inspection are critical to peak performance. You cannot win the race if you can't start the race.

See you next month!